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THE IRON TRADE REVIEW

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VOLUME LXV

July 1 to December 31, 1919

THE PENTON PUBLISHING CO.
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THE IRON TRADE REVIEW

Vol. LXV Cleveland, July 3, 1919 No. 1

June Turns Steel Trade Upward

Pig Iron Production Shows Increase After Eight Months of Steady Decline—Mill Operations Keep Up Gradual Gain—New Buying is Sustained—June Pig Iron Sales Estimated at Over 1,250,000 Tons

JUNE definitely turned the tide in the iron and steel industry toward better and more stabilized conditions and the evidence of this fact grows with each passing week. Cumulative effects of the recent period of freer buying are marked not only by the steadily mounting line of production but, what is probably more important, by the apparent adjustment of consumers to present price levels. This acceptance of prevailing conditions is bringing forth a continuing movement in placing future wants under contract and in ordering out tonnage for immediate use. Blast furnace activities for June furnish another index to the upturn of the steel industry. The steady monthly decline of production dating from September, 1918, was broken and an output of 2,116,702 tons for the 30-day month is a gain of 8973 tons over May with 31 days. The June daily average was 70,557 tons against 67,991 tons in May. Steel works production gained 72,438 tons over May but merchant output lost 63,332 tons. Furnaces in blast on the last day of June were 200, a gain of 3.

General operations of the industry continue to expand and are well covered by a range of 70 to 75 per cent of capacity. Steel corporation activities are on a slightly higher plane than those of the independents. Sheet mill output now is up to 75 per cent with the leading interest scheduled at 88 per cent for next week. Tin plate and wire operations are around 80 per cent. Lapweld pipe makers continue to run full and are sold up for three to five months. Some of these producers now are refusing orders and others are scaling offered business, 50 per cent. Merchant bar operations at Chicago are estimated at 60 per cent but the situation is being helped by the inauguration of last half buying by farm implement makers.

Iron Sales Are Huge

Sales of pig iron in June based on a careful canvass are shown to have totaled in excess of 1,250,000 tons. This summary credits about 375,000 tons to Cleveland sellers; 300,000 tons to Buffalo; 200,000 to 225,000 tons to Chicago; 100,000 tons to eastern Pennsylvania and Virginia; 100,000 to 150,000 tons to the south; 40,000 to 50,000 tons to Pittsburgh and the remainder to southern Ohio and scattered districts. Probably nine-tenths of this aggregate was made up of foundry and malleable grades and necessarily the number of individual sales was unusually large. Steelmaking iron which included a 20,000-ton basic sale just made by southern Ohio furnaces for St. Louis delivery, furnished an exceedingly small proportion for so large a movement. New buying of iron now is continuing to run in a more subdued way although it still foots up a favorable tonnage weekly. The General Motors Corp. has inquired for 11,000 tons of malleable and foundry.

Take Private Armor Bids

Somewhat of a departure in matters of this kind is the taking of private bids on approximately 50,000 tons of armor plate for six battleships by the navy department. This is the largest quantity of this material ever sought at one time and is equal to 18 months' production of the three producing plants of the country.

An important order of collateral importance to the steel industry is the 300,000 to 400,000 barrels of portland cement placed with the Steel corporation subsidiaries for the approaches and viaduct of the new Cleveland union station. This is one of the largest contracts of its kind ever closed.

June, as had been looked for, made the best record of the year in structural work placed. As showing the liberal way in which work is being released, of 13,000 tons recorded as offered to independent shops in one week in June, 9000 tons were put under contract. An interesting order awarded to a Pittsburgh shop calls for 2500 tons of bridge work for the South Manchurian railways.

Chicago Base Hearing

The controversy over Chicago as a basing point for finished steel prices is to be laid before the federal trade commission for settlement. This is in accordance with the suggestion recently made by Chairman Gary of the Steel corporation to the western association of consumers which had been formed to push the latter's claims.

JULY 3, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
PHILADELPHIA - - - - 1316 Land Title Bldg.
PITTSBURGH - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Stable Prices Before Normal Trading

WITH the war officially ended by the Versailles treaty machine tool sellers hope that by the same token a real period of industrial rehabilitation and reconstruction will have been begun formally. Spasmodic recoveries of the equipment market have been made since the signing of the armistice and sudden spurts in machine tool buying have occurred. These mostly have been confined to the automotive industries. Withal, however, promising outlooks have not developed into real business, there has been an intangible something which ever has pulled the other way. This has been shown in the postponement from month to month of a resumption of normal business. Varied solutions have been offered and discarded.

This deterrent, whatever it is, is still present. June did not come up to expectations as a tool-selling month. Industry generally, outside of the automobile trade, has not resumed its full stride. Something is acting as a checkrein. What is it? Some say labor. In some measure that may be true. But, the advertising columns of the daily newspapers prove there never was a larger demand for skilled labor. As for the labor troubles that crop out here and there, those always have been present. Apparently it is something more deeply rooted.

One likely answer to the question is prices. It is claimed that purchasing agents do not know just where they are with quotations fluctuating in an abnormal way. Dealers do not blame them; they are in a similar position. Before the war, manufacturers' agents did not know what it was to have price changes, unless an improvement in a machine increased its manufacturing cost. Sheets in their listing books were replaced only when worn out; now the sheets do not have a chance to become soiled. In some cases, new prices come before others are filed.

It is thought by some who have studied the situation that this price uncertainty is at the bottom of the unsettled condition in the machinery-using trade, at large. Buyers are not anticipating their needs, not knowing what prices will apply at the time they close.

Tool builders have been loud in their complaints against the consuming public for not being able to make up its mind. If market uncertainty is the correct answer to the procrastination in buying then it is up to these manufacturers to lead in the resumption of prewar practice by stabilizing prices. The sooner confidence in prices can be established the sooner will the country be able to realize the unusual industrial prosperity for which all signs show it is destined.

Locomotive Crane Situation Good

PERHAPS no industry, which has played a heavy part in the war, finds itself in a more healthy position at the present time than the locomotive crane industry. Unlike many of the other branches, that industry was forced to expand comparatively little to meet the war emergency. Prior to the war, the total locomotive crane capacity, figured on a 10-hour basis, was estimated at anywhere from 110 to 120 cranes a month, and although this output during the war was increased anywhere from 30 to 40 per cent, this gain was brought about more by increased operating schedules than by actual plant expansion. It is doubtful if at present capacity has been enlarged more than 5 or 10 per cent at the utmost. Therefore, it is obvious that the locomotive crane industry has an advantage over many other branches in coping with the problems of readjustment.

Another fundamental factor in the present good position of the locomotive crane industry has been the government work which has been allowed to be completed. While some of the business was canceled upon the signing of the armistice, fully two to three months' work was left on the books of most builders. As in the case of government work, a number of accumulated orders were canceled; nevertheless, enough were left to aid materially in maintaining normal production through the recent dull months.

While the disposition of government locomotive cranes still is to be officially announced, it is pretty generally conceded that they will be absorbed by the

railroad administration. That such a disposition was to be made was unofficially announced some time ago, and it is known that the government is accepting these cranes and at the same time is not offering them for sale, as has been the case in some instances with machine tools. By the disposing of these cranes to the railroads, a large buying factor partially has been taken out of the market. Nevertheless, it has afforded the locomotive crane builders an opportunity to better gage their position, and if the present rate of new inquiry can be taken as a guide, the industry will have considerable work for many weeks.

Again, while it is now impossible to state accurately the volume of new orders being placed, it is estimated that the total number of cranes booked at the present time is not under 30 a month, and in all likelihood higher. This compares favorably with the output of normal times, and in view of the rather unsettled state of industry is gratifying to most manufacturers.

Emigration Problems Must be Met

A SURVEY of the emigration situation just completed by the department of labor discloses that 1,300,000 aliens are planning to return to Europe. This number is in excess of the ordinary outgo of aliens, which will swell the total, and confirms reports that have been coming from large industrial and mining centers for weeks, that thousands of aliens are determined to get back to their native lands as soon as they can obtain passports and ships.

This development incident to the ending of the world war is certain to have a profound effect upon the labor situation and large employers are rapidly awakening to an appreciation of the fact. Because of the large number of aliens employed as common laborers in the coke regions, the coal fields, and in iron and steel plants, the problem especially is important for the iron and steel industry. A widespread shortage of unskilled labor in all probability, would result in the offering of excessive wages to attract men to this class of essential work. Such a development would increase further the present high cost of production.

How may the movement be checked? Before attempting to stay the outflow it is necessary to understand what is causing it. A number of reasons may be cited why the alien is eager to return to Europe. Among them are, his homesickness to see his native land now that the war is over; desire to look up relatives not heard from in years; belief that great opportunities exist under the new order of things and inability to realize the deplorable state of disorganization and lack of food in Europe; failure to become assimilated into American life; and false propaganda spread by unscrupulous fellow-countrymen agents of steamship lines.

In cases where family ties are drawing aliens back to Europe little can be done, but where these employes are laboring under misunderstanding of conditions abroad, or are being preyed upon by steamship agents, it would appear that there is opportunity for effective work by the employer. The big need is to impress the advantages of the United States strongly upon the alien mind. Sympathetic treatment, good wages and working conditions, and a candid description of conditions abroad as they actually exist, together with efforts to truly Americanize aliens are the means being successfully employed by some plants. One large company which has an Americanization department reports that only 30 of its employes are going to Europe. For their own good, aliens who desire to return to the unstabilized nations should be discouraged. An association of eastern employers and the Cleveland chamber of commerce have begun a study of the problem and it is probable that the government will be asked to co-ordinate a national effort to check the exodus of desirable foreign-born as well as to expedite that of those who are undesirable.

Why is Labor So Blind?

ORGANIZED labor seems determined to abolish premium and bonus systems but its efforts to demand high wages without giving value received are inconsistent and ignore the economic equation. The manufacturer of the present day faces serious problems which in the easy days of ten years or more ago were much less vital. He must pay high wages, enormous taxes, build modern plants and install up-to-date machinery or be outdistanced.

A consistent premium or bonus system whereby the honest worker is rewarded in direct proportion to his efforts aids materially in helping the manufacturer to get value received from the wages he pays. Yet organized labor cannot or will not admit the practical justice of this system. Its stand seems to be that labor must be continually employed at all hazards including the poor workman and the indifferent. The slacker and the incompetent, according to the edicts of organized labor must be paid as much as the fair-minded worker who does his best.

If organized labor were half as sincere as it pretends to be it could not advocate measures to compel manufacturers to pay the lazy and the incompetent the same wages as are earned by the honest toiler. Productive efficiency is and must remain the guiding star of industry for this country if prosperity for employer and employed is to be enjoyed and kept. If labor and capital would co-operate as partners in business this country could embark on an industrial expansion program the like of which the world has never known. On the other hand, however, if labor is so blind that it cannot see the employers' side of the question, we are bound to be seriously handicapped while more progressive nations reap rewards of reconstruction.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 66 AND 68

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	26.00 to 26.25
Basic, Buffalo, furnace	25.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25
Malleable, delivered eastern Pa.	30.00 to 31.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No 2 Southern	2.25 to 2.75
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X eastern	2.75 and up
No. 1, Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25
No. 1X, eastern delivered Phila.	$29.50 to 30.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 27.00
No. 2 foundry, Cleveland furnace	26.75
No. 2 foundry, Ironton furnace	26.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	28.90 to 29.80
No. 2X, eastern, N. J. tidewater	28.60 to 29.35
No. 2X eastern, Boston	31.90
No. 2X foundry, Buffalo furnace	28.00
No. 2 foundry, del. Philadelphia	27.90 to 28.80
No. 2 foundry, N. J. tidewater	28.10 to 28.60
No. 2 southern, Birmingham	25.00
No. 2 southern, Cincinnati	28.60 to 28.85
No. 2 southern, Chicago	30.00
No. 2 southern, Phila.	31.50
No. 2 southern, Cleveland	30.00
No. 2 southern, Boston	33.50 to 34.50
No. 2 southern, St. Louis	29.00
Virginia, No. 2X, furnace	26.50
Virginia, No. 2X, Philadelphia	30.60
Virginia, No. 2X, Jersey City	31.90
Virginia, No. 2X, Boston	31.90
Gray forge, valley, Pittsburgh	27.15
Gray forge Buffalo	25.75 to 26.00
Gray forge, eastern Pa.	27.50 to 28.50
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	41.00 to 42.00
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	40.00
Charcoal, Superior, Chgo., last half	31.45

Coke

(At the ovens)

Connellsville furnace	$4.00 to 4.50
Connellsville foundry	4.75 to 5.25
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.00 to 6.50
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports.	115.00
Spiegel, 16 to 20 per cent furnace, spot	30.00 to 32.50
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$36.50 to 38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Youngstown	36.50 to 38.50
Bessemer, Pittsburgh	36.50 to 38.50
Bessemer, Youngstown	36.50 to 38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-hearth, Pittsburgh	$40.00 to 42.00
Open-hearth, Youngstown	$40.00 to 42.00
Bessemer, Pittsburgh	40.00 to 42.00
Bessemer, Youngstown	40.00 to 42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, refined, Phila.	2.595c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, refined, New York	2.62c
Bar iron, extra refined, Pittsburgh	2.75c
Hard steel bars, Chicago	2.45c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	35.00 to 38.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	2.45c
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.35c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c

Wire Products

(Per 100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c
Plain wire, Pittsburgh	3.00c
Galvanized wire, Pittsburgh	3.70c
Barb wire, painted, Pitts.	3.40c
Barb wire, galvanized, Pitts.	4.10c
Cut nails, Pittsburgh	4.445c
Coated nails per count keg, Pitts.	$2.75 to 2.85
Polished staples, Pittsburgh	3.40c
Galvanized staples, Pittsburgh	4.10c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.50c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

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Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.15c to 4.35c
No. 28, bessemer, Pitts.	4.15c to 4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.50c to 5.70c
No. 28, bessemer, Pitts.	5.50c to 5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.35c to 3.55c
No. 10, bessemer, Pitts.	3.35c to 3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1588.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

	Black	Galv.
Base, Pittsburgh	Per cent off	
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1588.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Full tube schedule page 1588.

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	$54.80
Six-inch and over, Chicago	51.80
Four-inch, New York	55.70
Six-inch and over, N. Y.	52.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.05c to 3.30c
Shafting, Pitts., carloads	28 off list

Cotton ties, lots of 1000 to 3000 bundles, $1.73½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.71½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.70c
Boiler rivets, Pittsburgh	3.80c
Rivets ⅞ in. and smaller Pitts.	65–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches; smaller and shorter)

Rolled thread	60–5 off
Cut thread	50–10–5 off
Larger and longer	45–10 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60–10–5 off
Cut thread	60–5 off
Larger and longer	50–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70–10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	80 off
Gimlet and cone point lag screws	65–5 off

NUTS

Hot pressed, square blank	3.25c off
Hot pressed, square tapped	3.00c off
Hot pressed, hexagon blank	3.25c off
Hot pressed, hexagon tapped	3.00c off
Cold pressed, square tapped	3.00c off
Cold pressed, square blank	3.25c off
Cold pressed, hexagon blank	3.25c off
Cold pressed, hexagon tapped	3.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices July 2, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	31.45	31.45	33.25	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
**Southern, No. 2, Birmingham	25.00	25.25	28.00	33.50
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa.	26.00	25.50	29.65	32.00
**No. 2X Virginia, furnace	26.50	26.50	28.45	33.50
**No. 2X, eastern del., Philadelphia	29.50	29.60	31.90	34.50
Ferromanganese, 80 per cent, delivered	110.00	114.00	130.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.00	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	38.00	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73

	Prices July 2, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Iron bars, Cleveland	$2.52	2.52	2.52	3.64
Iron bars, Chicago mill	2.62	2.53	2.58	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.09
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.30	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.50	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.65	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.25	3.90	3.80	6.00
Connellsville foundry coke	5.00	4.65	4.55	7.00
Heavy melting steel, Pittsburgh	18.00	17.25	15.75	29.00
Heavy melting steel, eastern Pa.	18.25	16.15	15.90	28.50
Heavy melting steel, Chicago	18.50	16.75	16.40	29.00
No. 1 wrought, eastern Pennsylvania	24.50	22.50	21.50	34.00
No. 1 wrought, Chicago	20.00	18.70	18.50	33.50
Rerolling rails, Chicago	21.50	19.25	17.95	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Eastern Basic Sold at Advance

Market Established at $26 to $26.25 by Sales of 10,000 Tons, or 50 Cents Higher—General Sales Less Vigorous But of Good Total—General Motors Wants 11,000 Tons—St. Louis Basic Closed

Philadelphia, July 1.—Pig iron sales in this district during the past week aggregated 30,000 to 40,000 tons. Of this approximately 10,000 tons was basic sold by two makers at prices which established the market for this grade at $26 to $26.25, delivered eastern Pennsylvania. These sales leave the market considerably stronger as one of the two sellers has no more of this grade to dispose of for this year. It is figured that the minimum cost of making basic in the eastern district at the present price of raw materials is considerably in excess of $27 and in fact is nearer $28 so that higher prices of necessity are expected to be quoted as soon as old raw material stocks are worked up. A sale of 1000 tons of standard low phosphorus for export was made at $38, furnace, and about 1000 tons of copper-bearing low phosphorus was sold at $35, furnace. Some charcoal iron was sold at $29.25, Michigan furnace. The remainder of the week's business was made up of foundry iron which went at practically the same prices previously ruling. These are the equivalent to all the way from $28.60 to $30.60, delivered Philadelphia, for No. 2X (2.25 to 2.75 silicon). Most of the foundry business was divided among three eastern Pennsylvania furnaces. Only three furnaces now are operated in Virginia, Iron Gate, Max Meadows and Pulaski. The Leesport, Pa., furnace now is making foundry iron preparatory to producing ferromanganese. The Robesonia furnace will blow in shortly after July 4. It was shown at last week's meeting of the Eastern Pig association that stocks of pig iron now piled at furnaces throughout the country are much smaller than in normal times. The Pennsylvania railroad is inquiring for 3000 tons of charcoal iron. The Stanley G. Flagg Mfg. Co. is in the market for 1000 tons of foundry and 1000 tons of malleable.

New England Inquiry Good

Boston, June 30.—While it is too early to predict the effect of the signing of the peace treaty, a noticeable increase in inquiries has appeared in pig iron. Prices are firmer in all districts supplying this market and the shading noticeable a week ago has disappeared. Furnaces which made concessions to obtain backlogs are now well supplied. A Buffalo maker who has been finding good business here at $30.40 for 2X, 2.25 to 2.75 silicon, has jumped his price to $33.40. Another interest which until the end of last week was the weakest factor in the New England market, this week has refused orders at the regular market price and quotes $29.75, furnace, for 2.75 to 3.25 silicon. The larger portion of the year's tonnage from the big consumers is known to have been placed and few large orders are looked for until 1920 business starts. The aggregate of small orders, however, continues favorable. Current inquiries out are for small tonnages, several of 500 tons being reported and two of 1000 tons. The inquiry for 3000 tons noted last week evidently has been split and placed in part for last half delivery. A sale of 500 tons of 2X (2.25 to 2.75 silicon) at $28, Buffalo furnace, is reported this week. Other districts are maintaining a freight differential to equal the delivered price in many cases. One southern interest has refused to go below the so-called Redfield schedule of $26.75, furnace, for 1.75 to 2.25 silicon, and reports that all its furnaces are to blow in soon and pile the iron.

15,000 to 20,000 Tons Sold

New York, June 30.—Buying of pig iron reflected some improvement during the past week. It is estimated that at least 15,000 tons were sold and probably the total was considerably in excess of this figure. Most of the business embraced foundry iron, which went at about the same prices as prevailed a week ago. However, some of the furnaces which were quoting these prices now have advanced. Considerable eastern Pennsylvania iron has been sold at $27, furnace, for No. 2 (1.75 to 2.25 silicon), and at $28, furnace, for No. 2X (2.25 to 2.75 silicon). More Buffalo iron has been sold at the equivalent of $29 to $30, delivered New York and Brooklyn, for No. 2X (2.25 to 2.75 silicon). In general, however, Buffalo makers are inclined to ask higher prices and one interest, which a week ago was on the above basis or lower, has advanced to the regular schedule. Several eastern Pennsylvania makers are disregarding the low prices which some of the furnaces in that district are doing and are rigidly adhering to around $28 to $29, furnace, for No. 2 (1.75 to 2.25 silicon), to $30, furnace, for No. 2X (2.25 to 2.75 silicon) and to $30.50 for No. 1 (2.75 to 3.25 silicon). Much of the eastern Pennsylvania foundry sold during the past week was taken by an interest which usually makes low phosphorus. Recently this producer blew in his furnace on foundry, and is filling orders for the remainder of the year. An unusual sale was 200 tons of Alabama iron to a Connecticut maker.

This sale was not a market factor, however, since southern furnaces are unable, by reason of the freight to sell on a competitive basis in this district. The business of the week included a small tonnage of basic. Numerous export inquiries are out. One involves 10,000 tons of foundry for England and there are numerous other inquiries for foundry for that country. There also is some inquiry from abroad for hematite, but it is not looked upon seriously. It is considered likely that some of the big English inquiries for basic and foundry which have come out lately, including one lot of 20,000 tons, will result in business shortly.

Dealings Extremely Limited

Pittsburgh, July 1.—Demands for pig iron have fallen to extremely slim proportions, with almost no business whatever in the steelmaking grades. The inquiry of the American Steel Foundries for 2000 to 3000 tons of basic, has not yet progressed beyond the preliminary stage. Other inquiries for steelmaking iron are for small lots for prompt shipment, while shipping instructions against contracts, although fairly good, could be much better and still be far from satisfactory. A brokerage inquiry for 1000 tons of bessemer iron is out but a sharp cut from the regular price of $27.95, furnace, is sought on this business. Users of foundry iron appear to be well covered for the present and like steelmaking grades the bulk of the inquiries is for small lots. Blowing in of blast furnaces by some steel manufacturers points to a better market at no distant date in basic pig iron, but the assertion is still heard that increased production by the steel manufacturers is partly due to the scarcity of scrap steel. As far as prices are concerned, the market probably is better described as steady, rather than strong. While merchant producers generally are quoting full prices against all inquiries, it is believed some tonnages are being moved with brokers for slightly less than the regular quotations. The situation is better to the extent that the valley furnaces are having less competition than those of other districts. Foundries outside of those engaged in making castings for the automobile manufacturers are not crowded with business at present. It is reported that the new 600-ton blast furnace of the Weirton Steel Co., Weirton, W. Va., which for the present will be a merchant stack, is being warmed up preparatory to being blown in. The Carnegie Steel Co. still has 33 of its 59 stacks in blast.

Shipments Moving Promptly

Buffalo, July 1.—Although demand for iron has dropped off to some extent there is still sufficient tonnage to keep makers busy. Inquiries for small lots are coming in for third and fourth quarter delivery. One interest has contracted for small tonnages amounting in total to 8000 tons. Shipments on old and new contracts are moving promptly, and producers regard this as a sign that iron bought recently will soon be consumed, leading to another buying movement. Shipments are going now from Buffalo by way of the barge canal to tidewater points. Shipments of high silicon irons have been particularly good. So far as can be learned no price concessions have been made during the past week. One interest reports its total tonnage for the past week as 5000. Most of the tonnages sold thus far have been foundry iron, principally of high-silicon grade. One interest which has had two furnaces out since the armistice is considering putting them in blast shortly.

Fair Selling Continues

Cleveland, July 1.—A fair buying movement in iron has been carried forward during the past week but it falls considerably short of the activity of the several weeks preceding. Sales by Cleveland interests in the week total probably 40,000 to 50,000 tons additional. Some large producers now report that they are substantially sold up for the last half and are cutting into the tonnage previously piled. No steel making iron of consequence is included in the sales which still are made up of foundry and malleable grades. One transaction for last quarter represented 4500 tons of malleable. A Berea, O., implement manufacturer closed for 2000 to 3000 tons of foundry and is seeking an additional amount. The General Motors Corp. is inquiring for 7000 tons of foundry and for 4000 tons of malleable for last half. The American Steel Foundries which was asking for 2000 to 3000 tons monthly of basic for Alliance, O., for July-August has increased its inquiry to include a similar amount for September-October. Furnace A at Detroit was blown in last week. One of the McKinney Steel Co. stacks in this city may blow in within the next week.

Holiday Slows Buying

Chicago, July 1.—With the approach of a double holiday at the end of the week, pig iron inquiry and buying have slowed perceptibly from the rate it had been going formerly and there is a distinct lull. Another reason for the present slowness may also be found in the fact that producers have been pushing the market to some extent but are now willing to let it drift for a time as their bookings are ample. The leading producer in this district finds its sales during June exceed any other month during the present year and experience of others is practically parallel. Malleable melters continue to show more interest than formerly and two inquiries became current today for 1700 tons and 1400 tons. Foundry iron leads in activity with practically no demand for basic. One inquiry for 2500 tons of basic has been current for delivery to an Ohio plant. Among inquiries now pending are 500 tons of low phosphorus iron for third quarter, 500 tons of silveries and 1200 tons of foundry iron. A recent sale of 1800 tons of silvery iron went to a Michigan melter. Southern producers are less anxious to sell iron into this district and this department is quieter, although some sales are being made. Eastern iron is not as active as formerly and several makers formerly selling here have withdrawn.

Southern Market Growing Firmer

Cincinnati, June 30.—There has been a let-up in the inquiry for foundry iron, but some business is being transacted by nearly all selling agencies. A sale of 1000 tons of southern iron was made to an Ohio melter last week, and it is understood that the difference in freight rate was absorbed by the furnace. Southern producers, however, are not inclined to equalize freights as freely as they were a month ago, and the market in the South is much firmer. As far as can be learned no foundry iron can be obtained at $24.50, Birmingham, for any shipment, and $25 is considered minimum. The report of a sale of 20,000 tons of basic from the Ironton district to a St. Louis user has been confirmed. It is not known at what price this business was taken, but it is rumored the seller took it considerably below the regular schedule in order to meet Chicago competition. Both malleable and Lake Superior charcoal are in better demand, but sales are confined to carload and 100-ton lots. Sellers here are holding their own remarkably well, due not only to the good demand for high silicon iron, but also to the announced intention of furnaces in Jackson county to close down at an early date for repairs.

20,000-Ton Order Placed

St. Louis, July 1.—While leading consumers of pig iron have filled their needs optimism still prevails in the market. Sales during the past week have been in small lots, the largest heard of being 800 tons of 2.25 to 2.75 silicon, but the aggregate of such transactions is close to 7000 tons. This does not include the big order of the National Enameling & Stamping Co., which is understood to have been closed early in the week with the Ironton, O., furnace interest. The order involved 20,000 tons of basic, to be delivered during the last half. The inquiry for 1500 by a Quincy, Ill., stove manufacturer has been partially filled, and stove interests generally have covered on their immediate needs. This is especially true of the Belleville, Ill., foundries, which took liberal tonnages during the recent buying movement. Building operations have broadened to an astonishing degree. More structures are under way in the city than since the fall of 1914, and in the surrounding territory activities in this line are even more marked.

Southern Prices Advancing

Birmingham, Ala., July 1.—Prices of pig iron have advanced $1 and the base grade of foundry (1.75 to 2.25 silicon) has been sold at $25.25 for delivery during the third and fourth quarters of the year. For iron with 2.25 to 2.75 per cent silicon content, $26.25 is asked. No especial effort is being made to get business for last quarter delivery, and but little attention is being paid to inquiries relating to delivery in 1920. Furnace officials are very optimistic now, and reiterate their belief that No. 2 foundry will go to $30 shortly. The Republic

Iron & Steel Co. will blow in a furnace soon, in addition to two at Bessemer, previously announced. It is probable that two other furnaces will be made ready this month for operation. The third quarter begins with a large proportion of the probable production sold.

More Sales

Continue to be Made in Ore—June Shipments 7,400,000 Tons

Cleveland, July 1.—A stronger tone has developed in the ore market, most of the leading operators reporting an increase in inquiries and more sales than were made during the preceding week. Included in recent transactions were the sales of three blocks of 50,000 tons each, one of 60,000 tons and another of 75,000. The past week's business amounted to more than 250,000 tons. Formal contracts on a considerable amount of business negotiated several weeks ago were closed by one of the leading interests. The tonnage specified in one long-time contract was increased. While a better feeling is in evidence, ore men say there is room for decided improvement. They point to the fact that most of the ore sold recently is going into the manufacture of malleable and foundry grades of iron, and until more interest is shown in steelmaking grades the ore movement will not attain its full stride.

Operators of iron ore properties in Michigan have been advised of action by the tax commission of that state increasing assessments on all properties by approximately $7,000,000 and raising the total to about $116,000,000. Recommendations made by Dr. R. C. Allen, state geologist, following the filing of reports by the ore companies, considered an increase of approximately $10,000,000 over last year's assessments. The commission recently completed hearings in the principal towns on all the ranges. Some of the largest increases recommended by Dr. Allen were permitted to stand, while individual reductions from his figures amounted in some instances to as much as $400,000.

Vessel shipments of Lake Superior iron ore during June amounted approximately to 7,400,000 tons, or about 1,622,000 less than the shipments in the same month last year.

Jobbing Trade Fair

Boston, July 1.—Warehouse prices are sustained in spite of varying conditions in the finished steel market. Good business is looked for now that the peace treaty is signed and the long continued strike of local building carpenters is at an end. Some sizable building hardware inquiries are circulating and the demand for bars has perceptibly strengthened during the past week. These are going to textile machine manufacturers, toolmakers and automobile accessory plants. Demand for plates from shipbuilding interests has fallen off and the building trade in this line has not yet developed. Much new work is expected this fall. Some jobbers report increased activity in sheets for roofing purposes.

Spot Coke Prices Are Firm

Operators Indifferent at Selling at $4.25, Expecting Production to Taper Off—Car Shortage Hampering Operations

Pittsburgh, July 1.—Although blast furnace interests report no difficulty in picking up fair-size spot tonnages of standard furnace coke at $4 ovens, a number of operators having free supplies are indifferent about selling at less than $4.25, and brokerage houses claim to have paid as high as $4.40 in the past few days. The spot market may be described as firm this week, as expectations of a tapering off in production are strong. Not only are operations likely to be largely suspended over Friday and Saturday, but it is said that a good many of the coking operations are hampered through a shortage of cars. Under the car-rating scheme of the railroad administration, failure on the part of operators to report output means they will be alloted only a share of the surplus supply of cars after the distribution to those mines that have reported and made requests for cars. The contract market is holding within the recent price limits. On a sliding scale agreement, business continues to be done on a basis of 6¼ and 6 to 1, $25.75 basic pig iron, valley furnace, or $4.12 to $4.28 ovens. On six price contracts coke operators are having a good deal of difficulty in obtaining more than $4.50, ovens, although it is reported that bid of $4.35 on a contract calling for 3000 tons per month, has been refused. Operators have taken three months' contracts on a basis of $4.25 ovens. Blast furnace interests whose stacks are idle are trying to line up coke requirements to be prepared for resumption, but this sort of business does not find favor with the coke interests who prefer to have shipments begin immediately. The general asking price for standard foundry coke is $5 ovens on spot and $5.50 ovens on contract, but buyers are succeeding in bettering these prices by at least 25 cents per ton, and in some cases even more. Production of coke in the Connellsville region for the week ending June 21, is estimated by *The Connellsville Courier* to have been 131,200 tons as compared with 127,095 tons in the previous week.

Foundry Coke Goes Up

Boston, July 1.—Foundry coke in New England will advance 50 cents July 1. The Connellsville base price for July is taken as $5.50, making the New England price $9.90. This applies to contract consumers as well as for immediate delivery. Domestic coke does not take the same increase, although the New England Coal & Coke Co. states that a substantial increase will be made about the middle of July. Demand from foundries has been exceptionally large during the last few days in anticipation of a price increase July 1.

New Jersey Prices Higher

New York, July 1.—The northern New Jersey by-product coke producer has raised his price on foundry coke, effective July 1, to $5.50, Connellsville, an advance of 50 cents. Until the new price went into effect, this maker booked last half contracts at $5, Connellsville. The business booked at that price is on a flat basis and is not subject to the arrangement prevailing during the first half whereby the price was fixed at the beginning of each month to accord with the Connellsville market. The new price, $5.50 Connellsville, is equivalent to $8.60, delivered Newark and other northern New Jersey points. The New England Coal & Coke Co. is expected to advance its price on by-product foundry coke tomorrow.

Pennsylvania beehive foundry cokemakers are showing an advancing tendency. One has advanced to $5.50, ovens, equivalent to $5.30, Connellsville. Considerable last half contract business has been entered by the beehive makers during the past week at from $5 to $5.50, Connellsville, for standard brands, with considerably higher for choice brands.

Furnace Coke Advanced

Cincinnati, July 1.—The market is gaining strength and while no general marking up in prices may be noted all quotations are much firmer, especially in the Connellsville district. Furnace coke there is around $4.25 but some prompt fuel could probably be had around $4. Foundry coke is unchanged around $5.50 and while there is little contracting for future shipment, some sales of both furnace and foundry coke are being made for nearby delivery. Wise county furnace coke has advanced and is now around $6, oven, while as reported last week foundry coke in that field is held around $7.50. Very little Pocahontas coke is being shipped to this market at present, but foundry coke is quoted by producers around $6 to $6.50.

St. Louis Market Steady

St. Louis, July 1.—Dealers and consumers of coke describe the market as steady to strong, with a broadening tendency. Good inquiries in a majority of instances lead to actual buying. Melters are more disposed to cover for the balance of this year, and quite a number of contracts for the 12 months beginning July 1 have been closed. Shipments are not going along as satisfactorily as heretofore. Labor and car shortages are largely to blame, but coke also is scarce. A few plants are endeavoring to increase their accumulations. Price does not seem to be the drawback, but the leading buyers are loath to contract heavily for fuel until they know definitely about their needs.

Price Advances in South

Birmingham, Ala., July 1.—There is a better demand for coke, and beehive fuel has advanced $1 per ton. Inquiries are coming in from foundries, smelting works and furnaces, and the production is to be further increased.

Mills Take Steel Scrap

Purchases Made at $18.15 Pittsburgh and $18.75 Eastern Pennsylvania —Midvale Asks for 20,000 Tons of Borings—Market Moves Up

FOR COMPLETE SCRAP PRICES SEE PAGE 68

Philadelphia, July 1.—Scrap again reflects an upward price movement. In fact, the market is distinctly bullish, and dealers' prices as a rule are considerably higher than mills want to pay. For instance, $18.75, delivered, is the highest price paid for heavy melting steel in this market, but most dealers are holding out for $20 and $21. Wrought scrap continues dull because of the idleness of the iron mills, and foundry scrap is not much in demand, although prices on both grades are moving up in sympathy with steel. The latter shows the principal activity in the market. As a result of the Midvale Steel & Ordnance Co.'s recent inquiry for 5000 tons it had good offerings and bought at $18.75 a ton two to three times as much as it sought. The company now is inquiring for 20,000 tons of blast furnace turnings for the Cambria Steel Co., and is willing to pay $12.

Boston Prices Advancing

Boston, July 1.—The scrap market is stiffening rapidly. No. 1 machinery which has hovered around a cent a pound has advanced to $24 per gross ton, on which basis sales were made last week. Nearly all other grades are firm or advanced. Heavy melting steel has sold for $14, while $13.50-$14.50 probably represents the market. The manager of a large local scrap firm visited New York, Philadelphia and Pittsburgh furnace districts last week and found conditions so encouraging that he wired his house not to sell steel scrap under any conditions. Most dealers are holding their stocks in anticipation of higher prices. Much steel scrap is stored in New England as prices offered by open-hearth furnace interests are not sufficient to move it. Foundry scrap for local consumption continues in good demand but prices have remained practically unchanged. Bids on government stock of shell forgings at Orange, Mass., were rejected as too low, although one bidder offered $15.09 per gross ton. Bids on the same class of scrap elsewhere have exceeded market quotations.

Heavy Melting Steel Going Up

New York, July 1.—Prices of heavy melting steel scrap are moving rapidly upward, and $20 seems assured according to dealers. It is understood that some of the Coatesville consumers have already paid $19, delivered. Sales for shipment to the Pittsburgh district have been reported here at $15 and $15.25, f.o.b. New York. Demand is becoming more general. Borings and turnings also are moving in sizable quantities, although buying is still confined principally to one large eastern Pennsylvania consumer. This material also has advanced. Railroad wrought is stronger, with the market up about $1. While trading in cast scrap involves only fair tonnages, prices are up about 50 cents. Various odd lots of government scrap continue to come out. The 2000 tons of mixed scrap at the Morgan, N. J., shell loading plant went to Briggs & Turivas, at $20.36. This company also was low bidder on approximately 260 tons of high explosive shell forgings at Boston, at $17.631, f.o.b. cars. Another lot of shell forgings at Boston went to the Brier Hill Steel Co. at $17, f.o.b. cars.

Mills Paying Higher Prices

Pittsburgh, July 1.—Scrap iron and steel prices recently established by the bids of dealers either to cover sales or on speculation are beginning to be backed up by sales to the steel manufacturers. Sales of heavy melting steel as high as $18.50 have been made to some of the steel companies, but as yet the Carnegie Steel Co., has not paid that price. In fact, it has not raised its price limits of $16 to $16.50, and these prices, being $2 to $3 a ton below those of the dealers', it is not getting any acceptances. While the improvement in finished steel has prompted more interest on the part of consumers, actual business still is of rather moderate proportions and seems to be confined largely to heavy melting steel and similar grades. No lack of confidence in ultimately higher prices is observed among dealers, but while paying big prices to the government for shell steel, it is noted that they are not throwing down large tonnages of other kinds of material at current prices. Bundled sheets are reported to have sold at point of origin at $14.50 to $15, baled sheets at $16.50 to $17 and sheet bar crops at $22. Iron and steel foundries are buying much scrap and so many blast furnaces are inactive that borings and turnings are not much sought. Rerolling rails are in good demand and while $22 is as high as any recent business has been done, it is hinted that this price would not be attractive to those now holding supplies.

Little Demand at Buffalo

Buffalo, July 1.—Demand for scrap has fallen off. Local mills have not been in the market in this territory since the armistice, the demand having come entirely from outside sources. Dealers are practically the only interests trading, and they are buying freely. It is generally believed that local mills are stocked up for three or four months.

Steel Sells at $19

Cleveland, July 1.—Unexpected strength has marked the Cleveland scrap iron and steel market, the last few days. Early last week the market was uncertain with a slight tendency toward weakness. Some dealers claimed to see in this the effects of the seasonal dullness. But toward the close of the week consumers who had scoffed at $18 steel were displaying more interest. Some heavy melting steel in fact has been sold for $19 in this market, and there are reports that $19.50 has been done in a nearby district. Dealers are most active, and are willing to pay $19 for melting steel to cover contracts, where a few days ago offers of $18 and $18.50 was sufficient. Trading the past week has been in fair volume. Turnings and borings, to a degree, have reflected the increased strength of melting steel.

Chicago Buying Heavier

Chicago, July 1.—Much better feeling is in evidence in the scrap iron and steel market in Chicago than has been the case for some time and practically all consumers are buying more or less material. Prices have been advanced steadily at 50 cents to $1 per week and in some grades even more rapidly. Consumers are coming to the front to cover their requirements before the top is reached. It is doubtful if a heavy tonnage of steel or other scrap could be placed at present as dealers are not selling under present conditions. Such scrap as was laid down earlier in the year for a rise is being held tenaciously for the higher price which all dealers believe will come soon and this is helping to make the situation strong. In spite of government offerings, much of which is not scrap, the supply is not equal to demand and the market is absorbing everything readily. The Chicago, Milwaukee & St. Paul offers 1300 tons and the Chicago, Burlington & Quincy 350 tons. The ordnance department offers 3197 tons of forging billets and 95 tons of hand grenade castings.

Cincinnati Quotations Marked Up

Cincinnati, July 1.—Quotations on practically every grade of scrap have been advanced and there is a much better demand both from steel mills and foundries. Heavy melting steel and malleable scrap are in better demand than for a long time. There also is a good call for No. 1 railroad wrought.

St. Louis Prices Advance

St. Louis, July 1.—Prices of scrap have advanced again, increases during the past week ranging from 50 cents to $2.50 per ton. The upturn was due principally to the continued speculative enthusiasm among dealers, but several of the larger consumers were in the market for relatively sizable tonnages. The demands were filled, and the interests have again withdrawn from the market, leaving matters entirely in the hands of dealers. The latter are now buying everything in sight. Recent increases in prices make a favorable showing on paper, but the difficulty just now seems to be in realizing, as the industries here are not disposed to meet current quotations, and prices offered by eastern consumers are no better. The National Enameling & Stamping Co. was in the market for a heavy tonnage of steel, borings and turnings, and it is generally understood to have purchased a large quantity of this material at high figures. Dealers

who were speculating on this order raised prices virtually $1 a ton. Several dealers having tonnages of steel laid down are refusing to dispose of it at less than $20, although $18 to $18.50 is the best consumers are willing to pay. One interest with upwards of 1000 tons of rerolling rails in its yards is asking $22, but this figure is not obtainable. Cast iron is scarce and in demand.

Track Work

Wanted by Bulgaria and Other Foreign Buyers—Railroad Orders Few

Cleveland, July 1.—Various lots of railroad steel for export are being figured in this district. A recent inquiry from Bulgaria called for 2000 to 3000 tons of light rails and fastenings for track work. Several lots aggregating 1000 tons of similar material are pending for another foreign destination.

Rail Mills Not Pressed

Pittsburgh, July 1.—Current demands for standard rails are not proving much of a tax upon mill capacity. A fair amount of export business is on the books of the Carnegie Steel Co., which also is rolling its quota of the 200,000 tons recently placed by the railroad administration. The combined business, however, is only sufficient to keep busy one of the two standard mills of the Edgar Thomson works. It is said the Mexican government is planning construction of 1500 miles of new railroads, but inquiries have not developed. Fair inquiry is noted for light sections especially for export, but actual bookings are few. Orders for standard spikes seem to be waiting on delivery of rails recently placed by the railroad administration. Jobbers continue to stock up on light spikes. Prices of splice bars and bolts are holding firm, but price cutting continues in light rails, while it is said freights are being absorbed by some makers of spikes.

Military Cars Released

Chicago, July 1.—The Pullman Co. has received a release on 523 additional military cars for use in France. It is said this release will be the last and that all other cars remaining on the original purchase have been canceled. No other car buying is being done and the inquiries for cars for Poland and Chile still are pending. Railroads are practically out of the market on iron and steel products except for some track fastenings to take care of rails recently bought. Demand for light rails is slack except for some business coming from foreign countries.

Plates Look Better

Pittsburgh, July 2.—The situation in plates is looking better. One maker recently had an inquiry for about 50,000 tons of ship plates. The buyer, however, offered about 2.40c, base Pittsburgh, but the bid received no consideration. A price of 3c, Pittsburgh, was quoted against 10,000 tons of this business. A car builder recently closed for more than 2000 tons at 2.65c, Pittsburgh.

Sheet Production Rising

General Operations Now Up to 75 Per Cent—Leading Maker Schedules 88 Per Cent—Prices Seem Firmer

Youngstown, O., July 1.—Sheet mills in this territory now are well booked with orders. Demand for galvanized is heavy now that the building trade is consuming good-sized tonnages of both corrugated and roofing products. A good demand exists for black and blue annealed and few gaps in the rolling schedule exist for these grades under a three-week delivery. A good business is being done in highly-finished sheets. At present six mills at the only valley plant rolling this grade are operating. Heretofore, only four of these mills were active. Some of the orders under schedule now by certain valley makers were closed a few weeks ago at slight concessions but it is doubtful whether any tonnage could be obtained now at other than full market prices. The recent concessions were made on spot business only to swell production. Business came out more plentifully last week which resulted in a more regular mill schedule. With the usual yearly shutdowns at hand, practically all valley makers are filled until nearly the end of July. Several producers are declining to quote on certain material and are picking their specifications. An inquiry for approximately 800 tons of Nos. 30 and 31 black is before valley mills. A few makers are sending out lists of accumulated stock and in some cases the attached notification reads "Quotations at base prices" while in other cases it states "The maker is in a position to name an attractive price."

Chicago Mills Well Sold

Chicago, July 1.—The leading independent manufacturer of sheets in this market is unable to sell for delivery before fourth quarter and has taken some contracts for that period at the full price. Business for this delivery is not being sought, but customers desiring fourth quarter tonnage are being accommodated, and without concessions. It appears that occasional shading of price is still being done by some eastern interests.

Less Cutting of Prices

Pittsburgh, July 1.—Not only is the market in sheets still showing marked activity but prices are considerably firmer. Most of the manufacturers who recently were making concessions have become filled up and no longer are anxious for business except at the March 21 levels. Cutting of prices of galvanized sheets has been especially severe and is explained by the fact that one company that recently took a considerable tonnage at 5.50c, Pittsburgh, some years ago when the price of spelter went up so rapidly dropped its contracts for galvanized sheets. It has recently set out to re-establish its trade and has offered low prices. Manufacturers generally are well booked in black, galvanized and blue annealed sheets, some being sold from 60 to 90 days ahead. A meeting of the independent sheet manufacturers is scheduled for today at Mansfield, O. It is believed the meeting will consider the recent wage scale agreement and the contract with the unions. Independent mills now are running at better than 75 per cent of capacity and the schedules of the American Sheet & Tin Plate Co. are on about the same scale. Schedules of the latter for next week call for 80 per cent operations.

Orders Refused

In Lapweld Pipe by Filled Mills—Deliveries far Back

Pittsburgh, July 1.—Demands for lapweld pipe in connection with the oil boom still are on an enormous scale, and even though manufacturers are running their lapweld plants 100 per cent they are daily falling behind. New business either in oil or line pipe is not getting much consideration, so heavily booked are the manufacturers. An inquiry from an oil well supply house for 234 miles of 8-inch line pipe for shipment to Oklahoma is before manufacturers. In fact, in the aggregate probably more than 500 miles of 6, 8 and 10-inch line pipe are sought. The Sinclair Consolidated Oil Corp., is building an 8-inch pipe line from Healdton, Okla., to Burkburnett, Tex., and is said to be planning an 8-inch line from Healdton to Cushing, Okla., to parallel its present 6-inch line. In their lapweld departments manufacturers are sold from three to five months ahead. So urgent is the demand that they are unable to guarantee the usual protection to regular customers. As a matter of fact, new business, even from old customers, is being scaled to about 50 per cent of the tonnage asked for.

Eastern Prices Firmer

New York, July 1.—Sellers of cast iron pipe in the East state that prices are now somewhat firmer. They assert that there still is some shading being done, but that instances of this sort are fewer. While there is little municipal inquiry, demand from private sources continues to come out in fairly good volume. Included in recent awards are 1100 tons of 36-inch pipe for Hartford, Conn. This business was placed with the Warren Foundry & Machine Co.

Maker Refuses Business

Youngstown, O., July 1.—So heavy is the demand for lapweld pipe that one large maker in this district is refusing business. Most of this grade is being shipped into the oil country and the demand continues heavy. The demand for standard-sized pipe is improving, the building trade consuming good sized lots. Some good business for buttweld was taken this week.

Implement Trade Buying

Farm Tool Interests Place Last Half Business at Chicago and Cleveland —Reinforcing Steel Active—Barges Require 4500 Tons

Chicago, July 1.—Agricultural implement makers are in the market for some tonnage of soft steel bars but are buying conservatively and orders are considerably less than usual for these interests. General business is taking steel bars at about its usual rate and mills are operating close to 60 per cent as a general average. Inasmuch as the railroads are taking nothing, this seems to be as much as could be expected, as normal railway requirements usually take care of at least 40 per cent of production.

Hard steel bars are being contracted for by agricultural implement makers and one mill which has been down for several weeks will start up immediately after July 4, with an order book sufficient to give operation for some time. Some inquiry is being received from reinforced concrete builders but this has not yet become actual business. General manufacturers are taking more or less hard steel bars and angles.

Bar iron is slack. Occasional tonnages are being taken from railroads, though in much less quantity than usual. It appears that all mills in this district are holding firmly to 2.62c, Chicago mill, with one exception and this maker is expected to fall into line shortly.

Eastern Business Active

Philadelphia, July 1.—Steel bar orders continue coming in actively. All bar mills are operating full and have enough tonnage ahead to keep them busy for weeks. Considerable contracting has featured the past week. Further shading on bands is reported. This consists of selling bands on the bar schedule. Continued idleness of the Lebanon mills by reason of a strike keeps the iron bar business at a minimum. Makers report some improvement in bolt, nut and rivet demand.

Business Could Be Better

Pittsburgh, July 1.—Lack of railroad buying and the fact that the makers of agricultural implements are not yet covering freely more than offset rather generous demands for merchant steel bars from the automobile manufacturers and the liberal specifications from the makers of shafting. While a fair amount of business is being done, it could be considerably better and still not crowd the mills. However, most manufacturers are better provided with orders than they were a short time ago and practically no shading of the regular base of 2.35c, Pittsburgh, now is noted. Makers of iron bars are fairly busy and report that while orders individually are not large, they are fairly numerous. The plant of the Pittsburgh company is closed down this week for repairs. Makers of extra refined bars are adhering firmly to a base of 2.75c, Pittsburgh, claiming that a lower price is not possible. Inquiries for concrete reinforcing bars are numerous, both by consumers and by the jobbing trade. Orders from the latter source have shown a notable gain in the past week or so. Makers of rerolled bars are quoting 2.35c, mill, against all new business, but as yet 2.25c, mill, appears to be the maximum. Hard bars from new billets are firmly priced at 2.35c, base Pittsburgh, with the usual extras for twisting and deforming.

Implement Makers Placing Orders

Cleveland, July 1.—Implement manufacturers in this territory now are placing contracts for soft and hard bars and small shapes for last half. Several tonnages of this character have been closed and others are pending. These interests are paying the full price of 2.35c, Pittsburgh, on soft bars, and on hard bars have been quoted to 2.35c, mill, for third quarter to 2.35c for fourth quarter. In one case 2.30c, mill, for last half was named. Miscellaneous bar buying is going along steadily. Some members of the jobbing trade have placed contracts for round tonnages for stock. Specifications are more active in all directions, and the past week has been one of the best in this respect shown in a long time. Demand for reinforcing bars is lively. An inquiry for 4500 tons and 30 concrete barges for the railroad administration is being figured upon by local builders. For the Bamberger-Reinthal Co. knitting mill, 1000 tons are wanted. Other jobs include 300 tons for a bridge at Niles, O., for which the Walsh Construction Co., has the general contract, and 200 tons for the Crown building, this city. The 800 tons for the city sewage disposal plant are being closed and 300 to 400 tons for the Rivitz building, this city, have been placed with a Pennsylvania mill.

General Demand Growing

Chicago, July 1.—Buying of nuts and bolts is excellent on the part of general consumers and jobbers are also taking considerable material to replenish their stocks. Some makers who specialize in automobile bolts are operating at full capacity, while others not equipped to handle this business are running about 70 per cent.

Foreign Inquiries Heavy

Cleveland, July 1.—Foreign inquiries for nuts, bolts and rivets are more numerous and larger. French consumers are asking for 200 tons of hexagon nuts to be delivered monthly over a period of one year. One large maker is reported to have received an order from overseas for approximately 100,000,000 nuts and bolts and now is at work upon it. Specifications continue to come in freely from both jobbers and users and the tone of the market is increasingly strong, even in the absence of railroad business. Prices generally remain strong. A leading local manufacturer has withdrawn all prices as of July 1, the inference being that an advance will be announced in the near future.

Specifications Are Heavy

Pittsburgh, July 1.—The last week of the second quarter of the year found a great many buyers of nuts, bolts and rivets who have not forwarded shipping instructions, and the past week consequently has been marked by a rush of specifications. Automobile manufacturers are free buyers of bolts, and demands from other sources, except railroads, also are on a fairly heavy scale.

Business is Better

Pittsburgh, July 1.—Demand for hoops and bands especially for the narrower widths has been good in the past week, and mill operations are on a heavier scale.

Liberal Sales

Of Ferromanganese at $110 Continue —English Makers Reduce to $115

Philadelphia, July 1.—Domestic producers of ferromanganese here sold several thousand tons additional at $110, delivered, for 80 per cent. This business involved tonnage previously offered and on which there was some delay in closing. Now the minimum at which domestic will sell is $125, delivered.

Spiegeleisen reflects a firmer tone. Some makers are quoting a minimum of $35 furnace, on 18 to 22 per cent for any position. It is more difficult now to buy spot at less while this seems to be the absolute minimum on futures. Among current inquiries is one for 1000 tons and one for 1500 tons.

An unusual inquiry is for 1000 tons 10 to 12 per cent spiegeleisen believed to be for Holland or Belgium. Ferrochrome containing 6 to 8 per cent carbon now may be had at 30 to 35 cents for all position. Demand is quiet.

English Price Reduced

New York, June 30.—Following the reduction in the domestic price on 78 to 82 per cent ferromanganese from $125 to $110, delivered, an English maker has reduced from $121 to $115, c.i.f. This price is equivalent to around $119 to $120, delivered, and it probably is on a parity with the minimum at which domestic producers now would sell. During the past week several additional sales of standard ferromanganese running into thousands of tons were made at $110, delivered, but the producers now claim that higher would have to be paid for additional lots. New inquiry at the present time is not very active.

Demand for spiegeleisen is showing considerable improvement. There are numerous inquiries out involving up to 500 tons each. The prices asked are higher for the future than for spot shipment. On round lots for spot and nearby shipment, the makers now are asking $31 to $32, furnace, for 19 to 21 per cent metal, whereas on forward delivery there now is a tendency to ask as high as $36. Sales

of spiegeleisen during the past week have been moderate.

Several round tonnages of bessemer ferrosilicon have been sold during the past week for third quarter at prices which are withheld.

Ferromanganese Prices Erratic

Pittsburgh, July 1.—Prices of 80 per cent ferromanganese continue to move erratically. At last accounts this material was quoted at $110, delivered, by domestic producers but at least a couple of times during the week they have quoted $125. Passing of resale tonnages and a material increase in the demand was followed by a reduction from $125 to $110. Having closed on about 5000 tons at this price, makers withdrew and named $125. No business having been possible at that figure, the quotation then dropped back to $110.

A stronger market appears to be developing in electrolytic ferrosilicon, some speakers quoting 50 per cent metal at $90, furnace, freight allowed in bulk and $95 packed. Inquiry has improved appreciably in the past week or two, but as yet prices higher than $85 find little basis in sales. On actual sales the market still is quotable on new material at from $80 to $85, freight allowed. Small resale lots recently have been sold for considerably less.

Offerings of English ferrotungsten by the imperial munitions board at $1 per unit, delivered at Atlantic seaboard, have occasioned considerable uneasiness on the part of domestic producers. This English material is said to contain impurities, but the price is 25 to 30 cents below that asked by domestic makers.

A good many inquiries are coming out for ferrovanadium but so much of current production is going to meet contract obligations that almost no free metal is available. Ferrovanadium is moving on contracts anywhere from $5 to $6 a pound but brokers are unable to obtain supplies even at a substantial premium over those figures.

Ferro Tonnage is Closed

Cleveland, July 1.—Buying of ferromanganese for last half shipment by steelmakers in this territory has continued and recent sales are estimated at from 4000 to 5000 tons. A Canton, O., interest bought 1000 to 2000 tons, and a Youngstown plant is understood to have closed for 1200 tons. A local steelmaker also was a buyer of several hundred tons. All of this business was placed at $110, delivered, for domestic 80 per cent.

Sold on Low Level

Chicago, July 1.—A local representative recently placed between 1500 and 2000 tons of ferromanganese in the Chicago district at $110, delivered, before this price was withdrawn and $125 restored. Ferrosilicon 50 per cent is steady and resale material formerly disturbing the market seems to have been absorbed. Spiegeleisen is firm at $35 and resale is no longer evident. An exception to this statement is that the government has a lot of 500 to 600 tons in the St. Louis district which will be offered shortly.

Ship Plates Are Placed

Carnegie Steel Co. Reported to Have Tankship Tonnage—Chicago Mills Get Orders From Pacific Coast Yards—Market Quiet

Philadelphia, July 1.—Several thousand tons of steel for tank ships to be built for the Sun Oil Co. by the Sun Shipbuilding Co. are reported to have been placed with the Carnegie Steel Co. This is the only important development in the eastern plate market although one large sale for vessel construction is reported from another district. Eastern makers declare that the plate market from the general standpoint now is duller than at any time since the armistice. Nothing yet has resulted from the pressure being brought by the shipbuilders upon the Emergency Fleet corporation to declare the government's needs in yard capacity for its program so that the builders may determine to what extent they can accept contracts for private work.

Little Better Feeling Noted

Pittsburgh, July 1—Although business in plates continues of extremely moderate proportions, most manufacturers report better inquiry and a fair amount of tonnage moving to makers of oil and gas tanks. Pipe mills are taking some tonnages of grooved and universal plates for the larger sizes of tubular goods. Efforts on the part of buyers to secure concessions have been unavailing. At the same time talk of an early advance is not nearly so general nor so strong here as it seems to be in the East. Suggestions of higher prices seem to be coming chiefly from the independent companies. Some of the independent companies have a considerable tonnage of plates held up by the suspension of contracts by the Emergency Fleet corporation, but as a general proposition mills in this district have no considerable amount of advance bookings.

Mills Need Orders

Chicago, July 1.—With greatly enlarged capacity for producing steel plates, the mills have not nearly enough business on their books to insure comfortable operations. Present business is far from sufficient to give efficient operation. Builders of tanks are taking fairly large tonnages, especially those supplying storage tanks for oil. Boilermakers are not busy. Most demand outside of tank work is from miscellaneous sources. One interest finds the demand is increasing somewhat and recently was unable to take some business because desired delivery could not be made. Buyers seeking plates for export are asking concessions and apparently do not understand the present situation. The leading interest has finally received specifications for steel for two ships being built on the Pacific coast which were released recently. This involves about 4800 tons of plates and about 3000 tons of structural steel. It is understood other ship releases probably will be made during the summer.

Wire Advance

Fails to Take Place July 1—Mills Are Well Booked

New York, July 1.—The advance in wire prices which was expected in some quarters did not materialize. There is a possibility that wire prices may be advanced later in the last half. It now is thought as improbable that there will be any advance for at least another month. There is considerable disappointment on the part of some manufacturers at the failure of prices to advance. This is particularly the case with regard to the wire nail price, which some makers say does not cover their cost. New business in wire products continues to be entered at a satisfactory rate, and in most cases, in fact, the mills are taking on new business faster than they are shipping. It is to be doubted, however, whether any of the mills now are operating at more than 80 per cent of capacity.

Higher Price Talk Strong

Pittsburgh, July 1.—Although the attempt of one independent company to obtain higher prices on export orders for nails and wire has not yet been successful and rumors are current that one of the export combinations has been accepting business at less than 3.25c, Pittsburgh, talk of higher prices still is strong here. In fact, it was expected that announcement of an advance might be made this week, but apparently the leading interest is not yet ready to take this step and the independent manufacturers are waiting. Demands still are large and urgent and all makers have become so well sold ahead that they are indifferent about new business except from regular customers at current prices. Current specifications continue to run considerably in excess of present operating capacity and some manufacturers are worried that they sold so far ahead.

Jobbers Stocking Up

Chicago, July 1.—Demand for wire and nails is unusually active, with jobbers buying for stock. For several months prices appeared high and most wholesalers feared to lay in a stock for fear of a decline. The situation has been thoroughly sifted out in recent weeks and the impression is strong that present prices are here to stay and orders are being received for future delivery. This usually is a dull season in the wire market but these circumstances have brought about a reversal of the rule. It seems almost certain that an advance will be made before long. Jobbers hold this opinion and are seeking to obtain contracts before this event takes place.

New Lettings Keeping Up

June Record Remains Favorable—Chinese Bridge Work Closed—Big Chicago Building Projects Estimated Will Require 15,000 Tons

Pittsburgh, July 1—While demands for shapes are not of sufficient size to bring about any material increase in mill operations, structural inquiries and lettings continue to grow and fabricating shops now are busier than they have been at any time before this year. Lettings in the week ended June 21, according to reports to the bridgebuilders and structural authorities, come within a few thousand tons of the tonnage sought. The approximate figures were 13,000 tons up for bids and 9000 tons let. While not much improvement has yet developed in the prices of fabricated material, the fact that so many of the shops are now fairly well off in the matter of business has materially reduced competition on new jobs and the market is not nearly so much in the buyers' favor as it was recently. Among recent awards was one for 2500 tons for bridges for the South Manchurian railway which went to the McClintic-Marshall Co, being placed through Matsui & Co. The former company also is the low bidder on 3500 tons for ship ways at the Brooklyn navy yard. Plain material is firmly priced by all manufacturers. The McClintic-Marshall Co. has divided the 4000 tons of steel for the new plant of the Kelly-Springfield Tire Co, Cumberland, Md., between the Jones & Laughlin Steel Co. and the Bethlehem Steel Co.

Nothing is known at the main offices of the McClintic-Marshall Co. here about the large contract reported to have been taken by that company in conjunction with the Vulcan Steel Products Co. Although the company has a representative in France and has an export branch in New York, no word regarding the company's participation in the reported contract has been received here from either source.

Awards Keeping Up

New York, July 1.—Activity in the local structural market is being well maintained. Fabricators report a good volume of inquiry, involving both large and small tonnages, and a considerable amount of business continues to be placed. As a result, fabricators are showing less tendency to shade prices. There continues, however, a great lack of railroad demand, the last important inquiry of this description from the Boston & Maine railroad several weeks ago for 1800 tons, and this business still is pending.

Bids have been submitted recently on several navy yard jobs. M. H. McClosky, Philadelphia, was low on 1700 tons for an assembly shop addition at the League Island navy yard, and also on 300 tons for a pattern shop. Levering & Carrigues were low on 1500 tons for a structural shop at the Boston navy yard. This company was also low several hundred tons for a government power house at Indian Point. It has been announced through the local offices of the American Bridge Co. that the company has been formally awarded the steel contract for the new office building of the General Motors Corp. at Detroit. About 14,000 tons are involved.

Awards Coming Slowly

Philadelphia, July 1.—Discouragement is reflected in some corners of the structural market here over the failure of many projects now on the boards to materialize. A great amount of work has been figured lately but is not being awarded very fast. The only lettings of the past week were small. The largest was a small tonnage to the Pittsburgh Bridge & Iron Co. for trinitrotoluol buildings at Fort Mifflin. One eastern shape mill having faith in the future, now is rolling tonnage for stock.

Viaduct Steel Needed

Cleveland, July 1.—About 2500 tons of steel it is expected will be needed for viaduct work in connection with the new union station, this city, for which some large contracts for construction material have just been let. This steel is not likely to be needed, however, for several months. Fabricators in the Cleveland district declare that the time has arrived to stop making sales below costs and as a result an upward movement of the price curve is freely predicted. Reluctance of fabricators in this district to submit bids upon a certain important inquiry because the price expected by the inquirer was too low, is cited as indicating how far this feeling has developed. As business expands in number of inquiries and volume of awards, fabricators are disinclined to go after business, they say, to obtain which would mean diving beneath costs. The 2500 tons of plain material for bridge work for the Nickel Plate recently placed will be furnished in considerable part by the Bethlehem Steel Co.

Structural Buying Less

Chicago, July 1.—With most large tonnages of structural material placed with fabricators, the market in the west is somewhat quieter than has been the case for several weeks. Mills and fabricators now are provided with considerable business. A recent inquiry asks about 1500 tons of tank material for the Beacon Oil Co., Boston, the Leonard Construction Co., of Chicago, asking bids. A large tonnage is expected late this year on a new building for the combined Merchants Loan & Trust Co., and the Illinois Trust & Savings bank at Chicago, which is estimated at 15,000 tons. The new building for the Federal Reserve bank of Chicago promises also to furnish a large tonnage. Neither of these buildings is yet planned. The Scullin Steel Co., St. Louis, has awarded 1314 tons for a rolling mill building to the Christopher & Simpson Iron Works, the Banner Iron Works and Stupp Bros. Bridge & Iron Co.

CONTRACTS AWARDED

Addition to Pierce-Arrow plant, Buffalo, 200 tons, to Ferguson Iron & Steel Co.

Plant addition for Federal Sugar Refining Co., Yonkers, N. Y., 700 tons, to American Bridge Co.

Office building for Chicago Pneumatic Tool Co., New York City, 600 tons, to the Hedden Iron Construction Co.

Theater building at Wilkesbarre, Pa., 300 tons, to Bauman Iron Works.

Twelve storehouses for Marine Corps, Quantico, Va., 500 tons to McClintic-Marshall Co.

Bridges for South Manchurian railway, 2500 tons to McClintic-Marshall Co.

Steel mill buildings for rolling mill for the Scullin Steel Co., St Louis, 1314 tons, to the Christopher & Simpson Iron Works, Stupp Bros. Bridge & Iron Co. and the Banner Iron Works.

Beam spans for the Minneapolis Bridge Co., Norman and Clay counties, Minn., 138 tons, to the American Bridge Co.

Building for Northwestern Telephone Co., Minneapolis, 2500 tons, to the Minneapolis Steel & Machinery Co.

Extension to the plant of the J. P. Devine Co., Buffalo, 200 tons, to the Lackawanna Bridge Co.

New automobile factory building, Nordyke-Marmon Co., Indianapolis, 400 tons, to Fort Pitt Bridge Works.

Addition to Peerless Motor Co., Cleveland, 100 tons, to Van Dorn Iron Works.

Federal reserve bank, Dallas, Tex., 1200 tons to Mosser Mfg. Co.

No. 2 Telephone exchange, New York City, 950 tons, to Bethlehem Steel Co.

Apartment house West Thirty-fourth street, New York, 1100 tons, to Heddon Iron Construction Co.

CONTRACTS PENDING

Addition to New York stock exchange, 500 tons, contract pending.

Addition to assembly plant, League island navy yard, 1700 tons, M. H. McCloskey low bidder; also 300 tons for pattern shop.

Structural shop at Boston navy yard, 1500 tons, Levering & Garrigues low bidders.

Government power house, Indian Point, several hundred tons, Levering & Garrigues low.

Shipways for Brooklyn navy yard, 3500 tons; McClintic-Marshall Co. low bidder.

Leonard Construction Co., Chicago, oil storage tanks, 1500 tons, for Beacon Oil Co., Boston. Bids asked.

Building for Youngstown Steel Car Co., Niles, O., about 500 tons; bids asked.

Administration building for National Malleable Castings Co., Cleveland, 500 tons; bids asked.

Assembly building, Philadelphia navy yard, 1600 to 1700 tons, revised bids being taken.

Garage for B. Altman & Co., West Thirty-sixth street, New York, 900 tons, bids being taken.

Garage for George Keen, Inc., West Thirty-seventh street, New York, 350 tons, bids being taken.

Will Add Mill

Chicago, July 1.—The Interstate Iron & Steel Co. will add at its South Chicago plant a 75-ton open-hearth furnace and continuous bar mill and will rearrange trackage system. It also will install a scrap-handling system to be equipped with cranes. Counselman & Co., Chicago, have taken $7,400,000 seven per cent preferred stock to finance the work and will offer this for sale.

Liggett & Drexel and Knauth, Nachod & Kuhne, New York bankers, are taking subscriptions for stock in the new Clinton-Wright Wire Co., Worcester. This stock initially is being offered at $36 a share.

Good Orders

Keep Semifinished Makers Comfortable —Sheet Bars, Rods and Skelp Active

Pittsburgh, July 1.—With makers of sheets and tin plate running their mills on a steadily increasing scale, demands for sheet bars continue to grow. Tin plate mills are running now close to 80 per cent of capacity and the sheet mills rapidly are approaching that rate. Thus far, the nonintegrated manufacturers have been able to cover their requirements at their regular sources of supply and middlemen have had comparatively little chance to do any business. While the bar mills are busier than they were recently and orders are coming forward more freely with the makers of strip steel, specifications for billets are not particularly heavy, although they are much larger than they were three or four weeks ago. Offerings of skelp are extremely scant owing to the huge demands for pipe. One independent steel manufacturer in this district now has no skelp for sale. A large domestic demand for wire products, good size export orders, as well as improvement in bolts, rivets and chain keep makers of wire rods in a comfortable position. Export inquiries for all kinds of semifinished steel are numerous and a good business is being done, although individual transactions are of moderate size.

Sheet Bars Are Improved

Youngstown, O., June 30.—Ordering of semifinished material continues in good-sized quantities. A decided improvement is shown in the demand for sheet bars and plenty of business is being entered on mill books. The bessemer grade is in greater demand than open hearth although orders for the latter are fairly heavy. The increased activity for sheet bars is due to a certain extent to makers of auto sheets who have taken on considerable business during the past two weeks. Domestic inquiry is good and some fairly large tonnages are pending.

Fair-Size Purchases Made

Cleveland, July 1.—Consumers of forging billets in this district have been making some fair-size purchases for forward delivery. One important user placed 2000 tons of forging billets for third quarter and is figuring on a similar tonnage for fourth quarter. Smaller sales have been made. Sheet bar and billet specifications with local mills are much better.

Buyers Seeking Protection

Pittsburgh, July 1.—Demands for strip steel, both hot and cold rolled, are good but the most interesting feature of the past week has been an increased disposition on the part of buyers to seek protection for the remainder of the year. Manufacturers are not booking beyond the third quarter but they have had several chances to make contracts extending over the last half and in some instances running into 1920. The price of 3.30c, Pittsburgh, for hot rolled strip does not apply to much actual business as many mills are willing to accept the hoop and band base of 3.05c. On cold rolled strip steel, however, aside from the fact that some makers are absorbing a part or all of the freight, the base price of 5.65c, Pittsburgh, is observed.

Plants Consolidated

Consolidation is announced of the proposed Sharon Steel Mfg. Co. which recently acquired the site and buildings at Wheatland, Pa., of the Blaw-Knox Co., with the Hydraulic Drawn Forging Co., of Ellwood City. This involves the formation of a company to be known as the Slick-Knox Co. with an authorized capital of $6,000,000 in equal amounts of common and preferred stock. All of the machinery of the Hydraulic Drawn Forging Co. will be moved to Wheatland and installed in the plant there and new and special machinery added to the equipment and the plant considerably enlarged. The Ellwood City plant will be occupied by a subsidiary company known as the Pressed Steel Truck Co., at present making commercial trucks and trailors.

The directorate of the new company will include Edwin E. Slick, formerly vice president and general manager of the Cambria Steel Co., Johnstown, Pa.; L. L. Knox, of the Blaw-Knox Co.; W. H. Schoen, William McIntyre, C. K. Strausbaugh and A. R. McGill. Mr. Knox is the patentee of water-cooled furnace doors and steel plant equipment.

Large Order

For Tin Plate Placed by Standard Oil Co. at Pittsburgh

Pittsburgh, July 1.—The tin plate industry at last seems to be swinging back to its normal stride, and mill operations now are on the heaviest scale they have been since early last fall. Including both the American Sheet & Tin Plate Co., and the independents, operations today are averaging close to 80 per cent of capacity. Several of the independent companies in the greater Pittsburgh district are running 100 per cent and next week the American Sheet & Tin Plate Co. plans to put into full operation all but two or three of its smaller plants. Makers quite generally have opened their books for third quarter requirements and business has been coming forward in gratifying fashion. The Standard Oil Co. of New York has placed specifications with the American Sheet & Tin Plate Co. for 100,000 base boxes. Demands from other consumers of tin plate for container purposes also are good while there has been no let up in the demand for long terms and considerable business still is being booked in tin mill black for export to Japan. Makers quite generally are adhering to a base of $7 per base box, Pittsburgh, for standard cokes on domestic business but it is reported that on export transactions, which lately have been quite numerous, concessions of as much as 50c a box have been made.

The Nonferrous Metals

	Copper	Future Straits N. Y.*	‡Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony
June 25	18.50	52.25	5.40	7.00	33.00	8.375
June 26	18.625	52.00	5.40	7.02½	33.00	8.375
June 27	18.625	51.50	5.40	7.05	33.00	8.375
June 30	19.00	51.50	5.40	7.05	33.00	8.375
July 1	19.25	51.50	5.40	7.125	33.00	8.50

†United States Steel Products Co.'s price to consumers, dealers and jobbers; future Straits for shipment from Orient after ban, now 52.25c-52.50c, c.i.f. New York.

‡American Smelting & Refining Co.'s price.

*July shipment from Singapore, c.i.f. New York, August, 51.25c.

NEW YORK, June 30.—Zinc, as the market now is beginning to say, instead of spelter, has gained about 15 points in the past seven days. Since last Friday, however, the market has been comparatively quiet, after the good business with galvanizers at the end of the week. Brass mills still are saying little in the zinc market. Prompt metal now generally is quoted 7.05c St. Louis, with each month following five points up. Some prices are made a little above and a little below this level.

Copper continues to gain a fraction of a cent each day or two, amounting to around a cent in a week. Today prompt electrolytic metal was quoted at 19c and as high as 19.12½c, while August was quoted 19.25c to 19.37½c, delivered. Casting copper now is up around 18c and futures have been sold as high as 18.37½c. Much of the strength of the copper situation is due to sentiment, such as acknowledged cheapness of the metal for the past six months, expectation of big exports soon, concentration of supplies in the hands of producers. Sales lately have been fair but not large. There is strike talk at the mines but as yet there is nothing definite. A surplus of enormous size still exists.

Brass and copper products were put up two cents to two and a quarter cents last week. This unusual advance was caused partly by the strikes at a number of mills in New York and New England, some of which are not yet settled, and partly by the advance of the ingot market. Previous prices of rolled and drawn products were based upon 18c metal.

Tin for future shipment was weak in the past few days, with the market quiet today. At the end of last week several small lots of spot Straits brought 70.50c to 71c and one or two lots a little more. There is a possibility some tin mills will resell their stocks in part on account of the good price since the market has been opened up again, and buy futures, Straits for July shipment from Singapore being quoted 51.50c and August 51.25c. These prices are nearly one cent under those of a week ago. July shipment metal is expected to arrive in August or not later than early in September.

Lead is in a fairly active market and prices are holding firmly around 5.17½c to 5.20c St. Louis and 5.50c New York in the outside market for prompt metal, while the American Smelting & Refining Co. continues to quote 5.15c and 5.45c. Some metal is available in the outside market at these figures.

No. 12 aluminum remelted is stronger, 27c to 28c, and resale virgin No. 1 32c to 33c.

Peace Brings Joy to Exporters

England and Italy Plan to Buy Heavily of American Iron and Steel Products—June Business Far Exceeds That of May—India, Australia, Far East and South America Afford Flourishing Markets

NEW YORK, June 30.—England still is the center for all export iron and steel inquiries, and yet, due to the high prices prevailing in that country, a great volume of these negotiations are being transferred to the United States than ever before. According to recent statements made in the British house of commons, American manufactured steel can be delivered at English ports at a cost from $15 to $20 per ton below the British prices. According to a report of the National City Bank of New York the United States is today supplying approximately one-half of the manufactured products entering into international trade. In spite of this situation, England remains the predominating export market and foreign inquiries are usually directed there before they reach the United States.

With the downward tendency in ocean freight rates which became marked during the past week, English exchange went off, due to the fact that the British had raised their last governmental restriction. Some American export houses were prone to criticize the British for this action, being inclined to the belief that it was prompted by a desire on the part of our competitors to see that no advantage is given exports from the United States.

Notwithstanding this development the outward movement of steel products continues brisk. This has been particularly true of the shipments of sheets, plates and railroad material to Peru, while some large orders are pending with Japan. The U. S. Steel Products Co. shipped two large cargoes of steel this week. One went to Australia and the other to South America. Among the Australian shipments were galvanized wire, nails, plain wire, steel hoops, steel plates, rolled steel angles, etc. South American shipments contained the usual run of wire products together with various machinery and auto supplies.

While the wire and specialty business continues to predominate in the export trade there are reported many opportunities abroad for agricultural implements. Argentine as a market for such implements is expected to develop before long.

The Chinese market, which showed a sudden demand about a week or so ago, continues to develop. Among the recent sales made to China were bars, nails, and wire. The individual orders varied in size from 50 to 200 tons each, although the total volume would undoubtedly be large. The Chinese business is not confined to any particular export house or group of houses, but their inquiries seem to be distributed rather generally. Japan is a heavy purchaser. Shapes, plates, bars, wire products and nails are some of the products bought. Among the more recent inquiries received from Japan was one for 2000 kegs of nails, another for 700 tons of sheets and a third for 1200 tons of light rails. The heavy demand in Japan at the moment is for light gage sheets, which are galvanized there. Japan has repeated her inquiry for 10,000 tons of heavy rails. The chief business with the Far East today, however, consists of merchant orders. Probably the best sale made in India recently was 1700 tons of bars, which was received by an American house. About 2500 kegs of nails left this port last week for India along with 2500 boxes of tin plate, and fair quantities of steel plates, sheet steel, plain wire, steel strips, black pipe, bar steel, steel hoops and steel car plates.

European Prospects Are Better

England, being confronted with an enormous demand for finished products, is turning to the United States for the necessary raw materials. An English inquiry for 20,000 tons of basic pig iron has been in the market recently, and this may be closed at any moment. It is known that about 5000 tons of semifinished products were sold to England recently, and a small tonnage of finished goods.

During the past week or 10 days there has been little export business in rails although a small shipment was made to Belgium. The business at the present moment is concerned chiefly with light rails. Even England has purchased recently 300 tons of light rails from the United States, and the English rail inquiry in the market at the present is a pleasing development to American houses.

Spain has been purchasing plates, bars, angles and other miscellaneous products. Sweden has sent in an inquiry for approximately 200 tons of light rails, and an order for 500 tons has just been placed by Italy. One of the most recent inquiries received from Italy was for 20,000 tons of billets. One sale of 2000 tons of billets to that country was reported during the week.

Among other European shipments leaving this port during the past week were 200 tons of steel rails and a like amount of steel beams for France. About 100 tons of copper cable were shipped to Holland, and to Italy was forwarded 1000 tons of bessemer pig iron, 500 tons of scrap rails, 400 tons of spring steel, a number of freight cars and cast iron car wheels, and a small consignment of galvanized sheets. A shipment of 150 tons of steel bars was made to Sweden.

The confirmation by R. D. Chipp of the Vulcan Steel Products Co., of a contract closed by that company with the French government to rebuild the Nancy district has revived the interest of American exporters in the French market. According to the plans now reported to be under way the French will spread the period of reconstruction over 10 years and only such material as cannot be had in France will be purchased outside. Numerous French manufacturers have been visiting the United States; many are still here. Their statement of the case appears to close the doors of France to any of the basic iron and steel commodities. The contracts obtained by American engineers in France provide that French labor and French material must be used in all cases where it is at all obtainable.

Greece is coming into the market but no sales could be discovered as yet. Among the Greek inquiries were noted wire and bars.

South American business is going very strong, consisting of railway material and manufactured specialties chiefly. Sales of bars, plates, and other steel products are being made there, however. South America is a market second in importance only to the Far East. Argentine and Brazil have been purchasing wire products, bars, etc. One house reported a sale of approximately 2000 tons of light rails to South America and another, a sale of 150 tons of sheets. Shipments during the past week for Buenos Aires included 800 tons of plain wire and 200 tons of steel bars. Argentine shipments also included

miscellaneous supplies of galvanized wire, mild steel bars, hardware, nails, tacks, etc.

Export houses generally state that the business done during the last two weeks of June was much better than during the first half of the month.

Bid Privately on 50,000 Tons of Armor Plate

Washington, July 1.—Armor plate manufacturers are eager to know what course Secretary of the Navy Daniels will pursue in regard to private bids he has received on 50,000 tons of armor plate for six battleships. Daniels' dissatisfaction with prices quoted in the past by the manufacturers and the question as to whether he still has authority to commandeer their plants, if he considers such action necessary, contribute to the making of an interesting situation.

In view of the high labor cost it is not generally believed that manufacturers could reduce their bids, despite the large tonnage involved. Three courses now remain open for the secretary: To accept the bids, to reject them and negotiate privately for lower prices, or commandeer the plants.

In view of the signing of the peace treaty and the sentiment in congress against further exercise of wartime powers by various agencies of the government it is not believed the secretary will seek to take over the plants, even if the attorney general should rule he has the power to do so.

Nothing has been announced to indicate the price named by the manufacturers in their bids, and it is not known why the secretary asked for private bids, unless he considered that it would be an easier matter to negotiate in the same way subsequently if the bids were unsatisfactory.

This is the largest tonnage of armor plate ever asked for at one time by the department and represents about 18 months' operation of the three producing plants of the country.

May Exports

Show Increase Over April of 11,082 Tons

May iron and steel export statistics as issued by the department of foreign and domestic commerce, show that foreign trade is steadily on the increase. April exports were 396,813 tons, while in May they aggregated 407,895 tons, an increase of 11,082 tons. Importations of iron and steel also showed a slight gain, the imports for April totalling 16,500 tons, while those for May were 17,885 tons, an increase of 1325 tons.

Pig iron exports showed the greatest increase. They totalled 37,087 tons, compared with 17,038 tons for April. Structural iron and steel suffered a slight decrease, the figures for April showing 42,550 tons against 36,411 tons in May. The greatest decrease was suffered by sheets and plates, the exports for April totalling 121,544 tons, while in May only 90,116 tons were exported. Steel billets and blooms increased from 11,488 tons in April to 20,771 tons in May. Wire rods showed a marked decrease, the May total being 5357 tons, while that for April was 13,365 tons. Steel rails gained, exceeding the April figure by 15,671 tons. Hoops and bands stayed at about the same figure as in April, when the total exports were 4501 tons. May figures were 4464 tons.

Imports increased 1325 tons. During April 5089 tons of pig iron were imported and in May only 2428 tons were brought in. Importation of scrap showed a slight increase, April's imports being 8746 tons while May's figure was 10,130 tons.

No iron ore was imported from Spain as against 1358 tons in April, but 16,989 tons came in from Sweden, where during the preceding month none was received. The total imports of iron ore from all countries in May were 28,164 tons, compared with 24,195 tons in April.

There were no imports of ferromanganese during May, while 260 tons of ferrosilicon were received, an increase over that of April.

Knecht is Honored

M. Marcel Knecht, distinguished French scholar and publicist and well known to American iron and steel manufacturers through the invitation he recently extended to the American Iron and Steel institute to visit France next summer, was the recipient of the honorary degree of doctor of laws from the University of Wisconsin at the annual commencement exercises at Madison. This honor was bestowed on M. Knecht in recognition of his eminent work for the strengthening and preservation of the existing warm friendship between the United States and France. Following the conferring of the degree, Marcel Knecht was the honorary guest at a dinner given by Dr. Arthur G. Sullivan, of Madison, at the Madison club, at which E. A. Birge, president of the University of Wisconsin, Governor E. L. Philip of Wisconsin and other notables were present.

Chicago Base

On Steel Will be Inquired Into by Trade Commission

Chicago, July 1.—Inquiry into the fairness and feasibility of establishing a Chicago base on iron and steel products is to be made by the federal trade commission at the suggestion of Chairman E. H. Gary of the Steel corporation, according to an announcement made by the Western Association of Rolled Steel Consumers which was organized some months ago to push this matter. The proposal that the trade commission examine into the facts was made by Judge Gary under date of June 19 in a letter to John S. Miller, Chicago attorney, who has been retained by the association as its counsel.

In that communication Judge Gary wrote:

"I suggest to you that, under all circumstances, it might be appropriate and wise for you and me to visit the chairman of the federal trade commission, and for you then to state the position of your clients and ask the commission to make an inquiry into the subject. I would consent, so far as my corporation is concerned. Of course, the whole steel industry ought to be heard in regard to such a matter, and if the commission desired I would call the manufacturers together and ask them to appoint a committee to represent them before the commission so that we could have a full hearing at which all interests would have an opportunity to be heard."

Prior to this development Mr. Miller had taken up the case directly with Judge Gary and considerable correspondence was passed. The association's announcement covering these negotiations states:

"Judge Gary's first suggestion was that the matter was an economic and not a legal one. He then said he was giving it earnest consideration 'from the standpoint of what is fair and just.'

"Other correspondence passed between the two, culminating, only a few weeks ago, in a suggestion by Judge Gary that a committee of the Western Association of Rolled Steel Consumers meet a similar committee representing the mill interests and thus seek to bring about an amicable adjustment of the controversy.

"It appeared that such an adjustment was upon the brink of being consummated, when the general protest against the sole Pittsburgh base came from a number of other quarters."

It is expected that Judge Gary and Mr. Miller will appear soon before the federal trade commission and the date will be set for the hearing of the controversy.

Pig Iron Output Finally Gains

Increasing Production During June is First Shown Since Decline Began Last Fall —Steel Works Furnaces Responsible for Upturn—More Stacks Now Active

AFTER eight successive months of declining production, pig iron output has started on the upgrade. The June figures showing production of coke and anthracite pig iron, reveal a gain of 3.8 per cent over May. The 8-month steady decrease had brought production down 40 per cent from the high mark of September, 1918.

Production in June was 2,116,702 tons compared with 2,107,729 tons in May, a gain of 8973 tons. In view of the shorter month, the average daily production record reveals more clearly the extent of the gain. The furnaces averaged daily during June 70,557 tons against 67,991 tons in May, a gain of 2566 tons. The high mark set in September was 113,774 tons.

MONTHLY PRODUCTION

	1919	1918	1917
January	3,306,279	2,403,227	3,159,839
February	2,947,555	2,318,242	2,649,935
March	3,088,023	3,209,996	3,255,813
April	2,474,374	3,273,355	3,328,061
May	2,107,729	3,451,884	3,413,677
June	2,116,702	3,316,148	3,260,234
Total 1st half.	16,040,662	17,972,852	19,067,559
July	.....	3,408,584	3,337,442
August	.....	3,378,479	3,238,970
September	.....	3,413,223	3,140,742
October	.....	3,482,392	3,296,286
November	.....	3,347,844	3,198,597
December	.....	3,434,114	2,885,380
Total 2d half..	.....	20,464,636	19,097,417
Grand total..	16,040,662	38,437,488	38,164,976

Increased output of the steel works or nonmerchant furnaces was responsible for the gain, these stacks producing 1,647,117 tons in June against 1,574,679 tons in May, a gain of 72,438 tons. The production of merchant iron last month was only 450,670 tons against 514,002 tons in May, a loss of 63,332 tons. The average daily output of the steel works furnaces in June was 54,904 tons and in May, 50,796 tons, a gain of 4108 tons, or 8 per cent. Merchant stacks produced daily in June 15,022 tons, and in May 16,581 tons, a loss of 1559 tons, or 9.4 per cent.

AVERAGE DAILY PRODUCTION

	1919	1918	1917	1916	1915
Jan.	106,654	77,523	101,930	102,319	51,323
Feb.	105,270	82,794	94,641	106,157	59,521
March	99,614	103,548	105,026	107,343	66,009
April	82,479	109,112	110.936	107,517	70,484
May	67,991	111,351	110,119	108,535	72,747
June	70,557	110,538	108,675	107,127	78,998
July	.....	109,954	107,659	103,907	82,687
Aug.	.....	108,983	104,483	103,156	89,510
Sept.	.....	113,774	104,691	106,935	94,478
Oct.	.....	112,335	106,332	113,167	100,656
Nov.	.....	111,595	106,620	110,593	101,174
Dec.	.....	110,602	93,077	102,715	103,278
Avg.	88,622	105,293	104,562	106,610	81,022

Active stacks on the last day of June numbered 200, a gain of three over the May 31 record. Relighting of nonmerchant furnaces accounted for the gain as 13 stacks of this class were put in blast and three blown out. Six merchant furnaces were relighted and 13 blown out.

Production for the first half of 1919 totals 16,040,662 tons, a decrease of 4,400,000 tons from the total output in the last half of 1918, and a decline of 1,930,000 from the total in the first six months of last year.

The output of ferro shows a slight gain, increasing to 14,479 tons in June from 14,301 tons in May, a gain of 178 tons. Spiegel production dropped to 4436 tons in June from 4747 tons in May, a loss of 311 tons.

JUNE PIG IRON

States	No. of stacks	No. in blast last day of month: June	May	Total tonnage made: Merchant	Nonmerchant	Totals: June	May
Pennsylvania	159	75	77	131,215	672,693	803,908	782,985
Ohio	80	48	44	86,285	453,986	540,271	525,783
Alabama	45	17	16	62,782	74,925	137,707	133,200
Virginia	19	3	5	16,408	.....	16,408	18,556
New York	28	15	11	64,461	57,057	121,518	135,073
New Jersey	5	2	2	8,034	.....	8,034	9,621
Illinois	25	12	12	19,752	150,123	169,875	171,820
Colorado	6	3	3				
Indiana	16	11	13	25,727	219,817	245,544	239,606
Maryland	4	1	1				
Wisconsin	6	2	2				
Kentucky	7	1	1				
Tennessee	16	3	4	11,353	7,563	18,916	26,642
West Virginia	4	1	1				
Washington	1	0	0				
Georgia	2	0	0				
Texas	3	1	0				
Minnesota	3	2	2	24,653	10,953	35,606	45,395
Michigan	3	3	2				
Missouri	1	0	1				
Spiegel—All states	..	..	..	.....	.....	4,436	4,747
Ferro—All states	..	..	..	.....	.....	14,479	14,301
Totals	433	200	197	450,670	1,647,117	2,116,702	2,107,729

Makers Protest

Railroads Order to Bill at Price Ruling at Delivery

Washington, July 1.—Instructions from the railroad administration to car builders not to include in their material certificates, bills for steel plates, shapes, bars and sheets where the base billing price exceeds those in effect when shipment is made are based on the policy of some of the leading steel interests to continue for the benefit of the government a ruling the price fixing committee of the war industries board insisted upon when that body was in power. This ruling was to the effect that the price in force in the quarter in which delivery was made should be the price the purchaser should pay the maker.

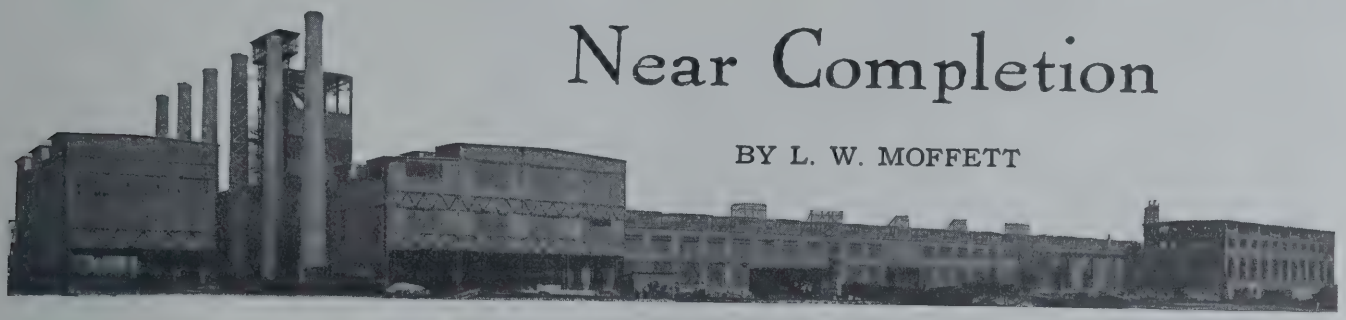
Termination of the price-fixing authority exercised by the war industries board carried with it such injunctions as have been in force but several producers, reducing their prices along with those of the entire industry on Jan. 1, notified the government the clause calling for the price in effect at time of delivery would be continued until all government contracts or those by which the government would benefit would be filled or canceled. Then when the industrial board approved the reduction effective March 21 this intention was again expressed and apparently will remain operative until all the war-time contracts are terminated.

Many steel producers have protested the order and their claims in all probability will be given full legal consideration.

Mr. Spencer's order that steel hereafter be bought only from Pittsburgh mills is in fact only a recommendation to the regional purchasing directors. It had been contemplated to issue such an order, but after consideration it was decided to make it a recommendation.

Maryland Steel Plant Extensions Are Near Completion

BY L. W. MOFFETT



Exterior View of the Blooming Mill Building of the Maryland Plant of the Bethlehem Steel Co., at Sparrows Point

ASIDE from work on two new 450-ton blast furnaces and a 60-inch universal plate mill which is almost finished, the extensive additions and improvements to the Sparrows Point, Md., plant undertaken some time ago by the Bethlehem Steel Co. have been completed. According to the official announcements of Chairman Charles M. Schwab and President E. C. Grace, of the Bethlehem Steel Corp., the company by the end of 1919 will have expended $50,000,000 on the Sparrows Point property since its acquisition from the Pennsylvania Steel Co. It is the purpose of the company to continue its policy of expansion, eventually developing at Sparrows Point one of the largest steel plants in the country, with many lines of commercial products.

Supplementing this program, the company will authorize for immediate completion the doubling of the tin plate mill, making a 24-mill plant, and the building at once of a plant for the production of sheets, as well as adding another 250-ton tilting open-hearth furnace to the new furnace plant. This will involve an increased expenditure of approximately $5,000,000 over and above the work just completed and in progress. With the additions made and under way the Sparrows Point plant will have an annual ingot capacity of practically 1,200,000 tons.

Situated on the Patapsco river, about four miles from the point where the river enters Chesapeake bay, this plant, ideally located for export trade, is ready to meet demands at a time when there is promise that the steel industry of the United States will enter upon the greatest era in its history in serving foreign markets. Also, the Sparrows Point plant finds itself in a much better position to take care of domestic markets.

Before entering upon a description of the units added since May 31, 1917, when THE IRON TRADE REVIEW carried an illustrated article regarding the company's new tin plate mill, brief reference will be made to the general layout of the plant and the relative location of its extensions as shown in Fig. 2. A 600-foot ore dock, additional to the original 600-foot dock, has been built to the eastward on the water front. There have been no additions made to the originating loading wharves. Immediately to the west of these wharves is located a new central water pumping station and to the west of this, four new batteries of 60 Koppers ovens each, paralleling the water front. The other new units include two 450-ton blast furnaces running east in a line with the four old ones which stand to the north of the docks; a duplexing plant to the north and running at right angles with the furnaces; a 40-inch blooming mill; and a 110-inch plate mill and a 60-inch universal plate mill, nearing completion, north of the duplexing plant.

The ore dock frontage now is 1200 feet, the additional dock doubling the capacity, and is laid out with a view of further extensions east, which can be made almost without limit. The new dock is shown in Fig. 1. The river has been dredged so that there now is a channel 90 feet wide by 40 feet deep leading from the government channel, 600 feet wide and 35 feet deep, which is amply large to handle any boat entering the bay. Ore, which at this time is coming from Cuba, can be put into cars for shipment to other plants, into stock, or directly into larry cars for immediate use in the furnaces.

The ore is delivered by one 6500-ton and four 11,000-ton steamers and is taken from the boats by two 7½-ton grab buckets made by the Brown Hoisting Machinery Co., Cleveland, and two 17-ton grab buckets made by the Mead-Morrison Mfg. Co., Boston. There also is a 15-ton grab bucket for handling ore into and out of stock. The discharging capacity is one 12,000-ton boat in 12 to 14 hours, the 1200-foot pier being capable of unloading

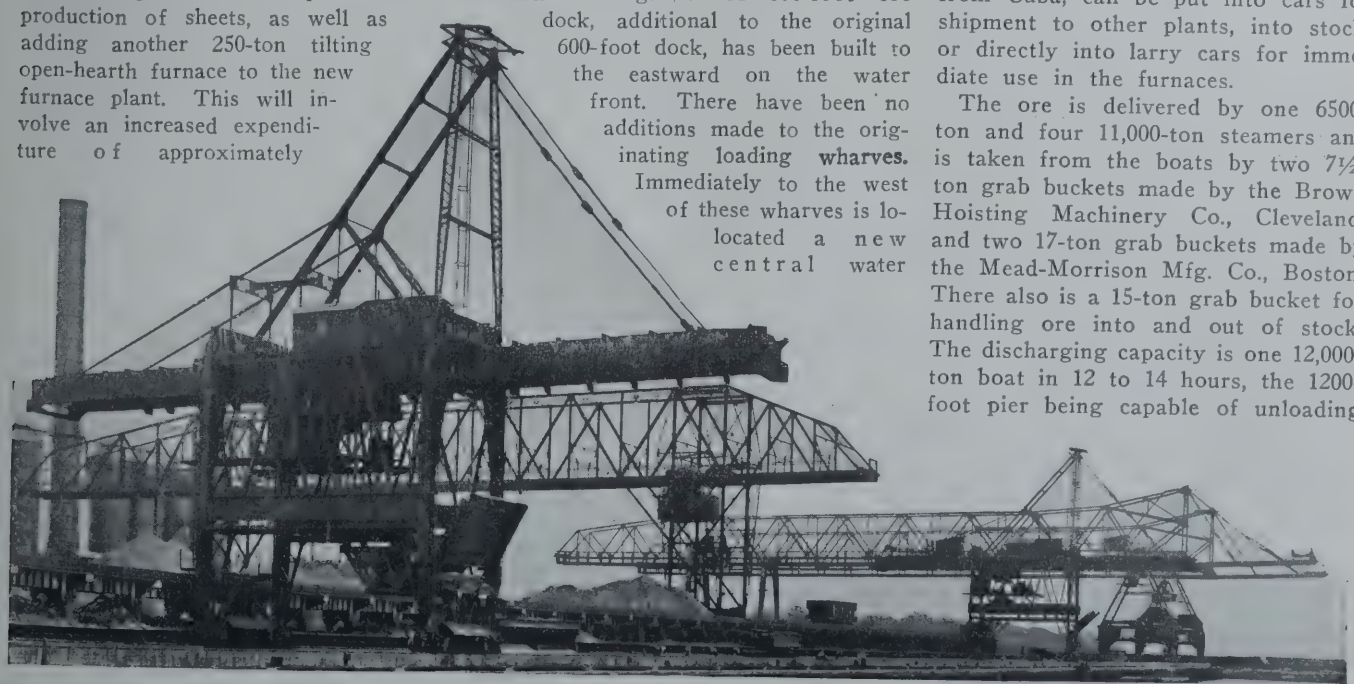


FIG. 1—VIEW OF THE NEW 600-FOOT ORE DOCK WHICH DOUBLES THE ORE HANDLING CAPACITY AT SPARROWS POINT

two ships simultaneously. The capacity of the ore storage yard is about 1,000,000 tons.

The extension at the coke plant consists of a 1000-foot coal dock of 300,000 tons storage capacity. The dock is equipped with two 9-ton man trolley buckets and a cable car system. The dock is arranged to unload coal shipped either by rail or water. A coal handling and preparing plant is provided with two breakers, four crushers made by the Pennsylvania Crusher Co., Philadelphia, and the necessary belt conveyors and bins.

With the four new batteries of 60 Koppers ovens each, the Sparrows Point plant has a total of six batteries, which can produce about 125,000 tons of coke each month. Modern by-product recovery equipment has been installed, including a benzol plant. Compressors made by the Ingersoll-Rand Co., New York, have been provided to pump the surplus gas to the city of Baltimore. New equipment similar to the old has been provided for handling the coke. It is quenched and discharged on a wharf and then elevated by an incline belt conveyor and screened over a revolving grizzly, after which it is conveyed on a horizontal belt to the blast furnace bins.

The old blast furnaces are 85 feet high, each with four stoves, while each of the new ones, being built by the Riter-Conley Co., Pittsburgh, is 95 feet high, with a 17-foot hearth and 22-foot bosh, each with four stoves which have 2½-inch checkers. All of the furnaces are equipped with Neeland tops.

Water for the furnaces is supplied by a new centrifugal pumping station erected immediately above the loading pier. The station has four electrically driven centrifugal pumps, each of 30,000,000-gallon capacity, with a 4-foot discharge main. The water is first pumped into a large standpipe before being supplied to the furnaces, each of which will be blown by two 2000-horsepower gas engines made by the Bethlehem company. As a reserve there are three blowing engines built by the Southwark Foundry & Machine Co., Philadelphia.

The new open-hearth extensions consist of a duplexing plant completely housed in a building 1100 feet long. The crane on the charging side has a span of 78 feet, while that on the pit side has a span of 70 feet.

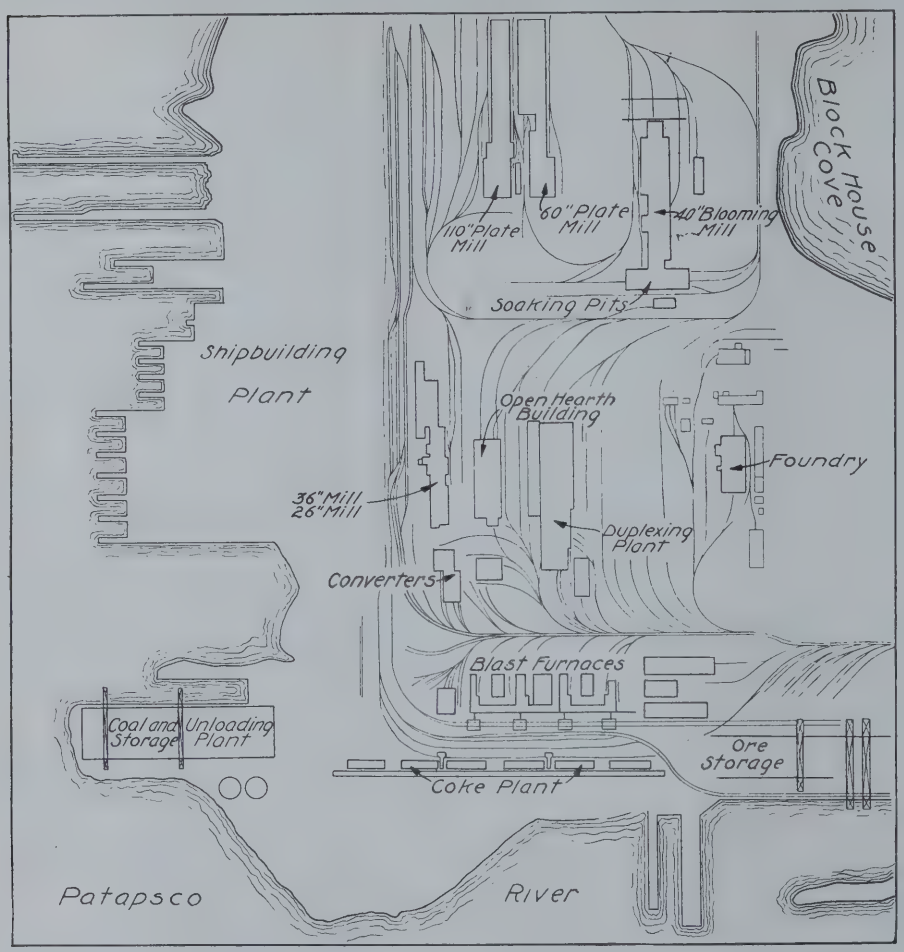


FIG. 2—ARRANGEMENT OF UNITS OF MARYLAND PLANT OF THE BETHLEHEM STEEL CO., SPARROWS POINT

There are four 200-ton open-hearth tilting furnaces, four 30-ton bessemer converters built by the Pennsylvania Engineering Works, New Castle, Pa., and one 1300-ton metal mixer, coke oven gas fired, built by the same company and located at the south end of the building adjacent to the converters. A 250-ton metal mixer is being installed between the second and third open-hearth furnaces. It is so constructed that hot metal can be poured out either on the charging side or on the pit side for recarburizing the heats in the ladle.

There are three 100-ton cranes on the charging side, and two 175-ton and two 40-ton cranes on the casting side, all built by the Morgan Engineering Co., Alliance, O.

Scrap is carried to the converters by means of a skip hoist shown in Fig. 5, the material being loaded in the skip with a magnet. The skip is raised by an electrically driven cable hoist to a point above the converters where it is dumped automatically into another car which travels parallel on a line with the converters. The scrap is dropped on the scrapping floor of any desired converter and from there it travels by chute into the converter in the usual manner.

The pit side of the mixer is served by a 100-ton crane. The metal can be poured from the mixer directly into a ladle hanging on a crane and carried to the converter or it can be poured into a ladle on a transfer truck on the scales. After being weighed a sifter moves the cars in front of the proper converter where the ladle is handled by a crane.

Novel Routing of Blown Metal

The blown metal is caught in a crane ladle and either can be carried directly to the open-hearth furnaces or placed in a transfer truck which runs on a track underneath the charging floor. In front of each furnace is a hatchway, as shown in Fig. 5, through which the metal can be lifted, allowing any furnace to be charged without interfering with the charging of the other furnaces.

Three of the 200-ton furnaces are in operation and the fourth is under construction. Each furnace has a 17 x 44-foot hearth, having an area of 748 square feet along the metal line and 54 feet from chill to chill. The furnaces are equipped with water-cooled frames, doors and chills made by the Blaw-Knox Co., Pittsburgh. At present oil and tar are being used as fuel and consequently no ports are used. Reversing valves of the Blaw-Knox type are installed.

Any reaction slag is poured off from the front side of the furnaces from

spouts into slag bowls on the ground level underneath the furnace. These bowls also are used for catching the overflow slag from steel ladles as shown in Fig. 6. Each furnace has waste-heat boilers constructed by the Babcock & Wilcox Co., and four mechanical producers built by the Morgan Construction Co., Worcester, Mass., which are housed in a building parallel to the furnaces on the charging side.

The stock yard is east of the open-hearth department. Limestone, ore and scale are carried on overhead tracks and dumped in storage bins and drawn out into standard charging pans through hoppers underneath.

The scrap yard paralleling the stock yard which is 600 feet long and 80 feet wide, is served by two 10-ton cranes equipped with magnets. The mold yard is adjacent and parallel to the pit for its entire length and has a span of 80 feet. In addition to the regular runway tracks it contains 12 lateral tracks, each of such length as to carry a sufficient number of trucks with roller bearings manufactured by the Hyatt Roller Bearing Co., New York, for a 100-ton heat. All cold stock and supplies are brought on the charging floor on an elevated track entering the building opposite from the converting end.

The stripping cranes are equipped with auxiliary hoists, making it easily possible to pick up molds or ingots which may be knocked off of the buggies.

Assures Cool Working Floor

The soaking pit building has 24 pits equipped with electrically operated covers. The gas is supplied by mechanical feed producers built by the Morgan Construction Co. The soaking pits are provided with two cleaning holes; one in front and one in the back of the bottom of the pits. The cinder from these pits drops into cars on a narrow gage track which runs under each pit and is dumped into a large pit outside of the building where it is loaded by means of a grab bucket operated by an electric crane. The soaking pits are built with false crowns over the combustion chambers, allowing an air space of 3 inches. Above this is a steel plate working floor paved with fire brick which reduces the amount of heat radiated to the working area above.

After the steel is heated it is drawn by pit cranes and charged into ingot buggies which are pushed by an electric locomotive to a position over the hydraulic ingot tilter. The tilter tips the ingot pot in the buggy, throwing the ingot on the table. Two approach tables carry the ingot to the front reversing table of a 40-inch reversing bloom mill built by the Mesta Machine Co., Pittsburgh. The blooming mill, which is shown in Fig. 8, is driven by a 5000-horsepower reversing motor capable of a peak load of 200 per cent, built by the General Electric Co., Schenectady, N. Y. This bloomer rolls all sizes of slabs up to 40 inches wide and 10 inches thick and can roll blooms and billets down to 4 x 4 inches without a change of rolls.



FIG. 3—SCRAP IS LOADED AT DUPLEXING PLANT IN SKIP BY MEANS OF A MAGNET

The slabs when rolled are idled through a 500-ton hydraulic upcut crop shear. The slab then is transferred over to an 800-ton steam intensifier shear. This shear is equipped with two loading tables which are hydraulically operated. One of these loads slabs to be put in stock in the slab yard and the other loads slabs which are to be delivered to the plate mills hot, thus saving heat which ordinarily would be lost if the slabs were allowed to cool before being rolled. A 24-inch continuous mill built by the Morgan Construction Co. receives 8 x 8-inch blooms from the 40-inch mill. The blooms may be rolled into 6½ x 6½, 6 x 6, 5 x 5 or 4 x 4-inch billets or 2 x 8-inch sheet bar blanks.

The 4 x 4-inch billets or the sheet bar blanks enter an 18-inch continuous billet mill and are rolled into billets of any size down to 1½ x 1½ inches or any weight of sheet bar. The billets or sheet bars are cut to the desired length by a steam flying shear.

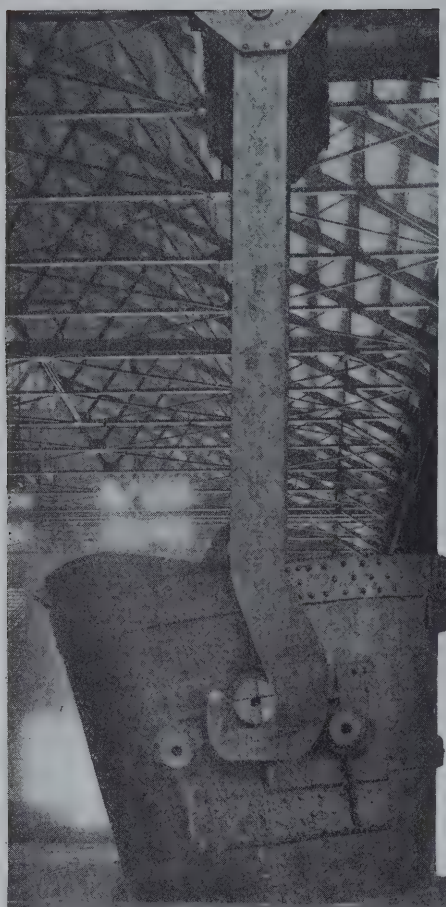
Handling Semifinished Material

The sheet bars pass through the pinch rolls and are placed in the piler in drafts of two ingots each, after which they are lifted from the piler by a 15-ton, 120-foot span electric crane equipped with a spider for lifting the bars which are then placed on specially constructed cooling beds.

When changing the 18-inch continuous mill from sheet bars to billets or vice versa, the practice will be to change the housings which are always



FIG. 4—VIEW OF DISCHARGE SIDE OF COKE OVENS, THE WHARF AND BELT CONVEYOR



set up and ready with rolls and accessories. The 18-inch mill is equipped with two 120-foot cooling beds with sufficient capacity to handle the product of this mill. These beds also are equipped with scales situated under the loading cradles so that it is possible to weigh the product of the mill.

The 24-inch mill is equipped with a broadside transfer of sufficient length to transfer a standard ingot when rolled into 4 x 4-inch billets. This transfer carries the different products of the 24-inch mill, which it is not desired to send to the 18-inch mill, off to one side to tables which carry it to a separate billet shear. This product also can be weighed on scales similar to those used in the 18-inch hot bed.

All of the switchboards throughout the mill have spare boards, which makes it possible when the working boards give trouble for the operator to turn a knob and throw in a spare switchboard while the working board is being repaired, thus saving time which ordinarily is lost in making repairs.

The motor room contains the latest electrical appliances and is served by a 50-ton electric crane. The mill building is equipped with a 50-ton and a 25-ton electric crane. Three 15-ton 85-foot span electric cranes handle material in the slab yard. For handling hot slabs for the plate mill the blooming mill is equipped with two 15-ton, 21-foot span electric cranes which load the slabs on a specially constructed car for transfer by locomotives.

Crops from the 500-ton hydraulic upcut crop shears are transferred by an auxiliary conveyor to the large loading conveyor which handles the crops from the 800-ton steam intensifier slab shears. This latter conveyor loads all crops into charging boxes ready for charging in the open-hearth furnaces.

All of the mill buildings are built of brick and steel with metal sash windows. Good lighting and ventilation is assured. The motor room of the blooming mill has a cement floor while the mill proper is paved with brick. The stripper building is 58 feet 7¼ inches wide and 135 feet long, while the gas producer and soaking pit building is 90 feet 4 inches over the pits and 32 feet 4 inches over the producers, making a total span of

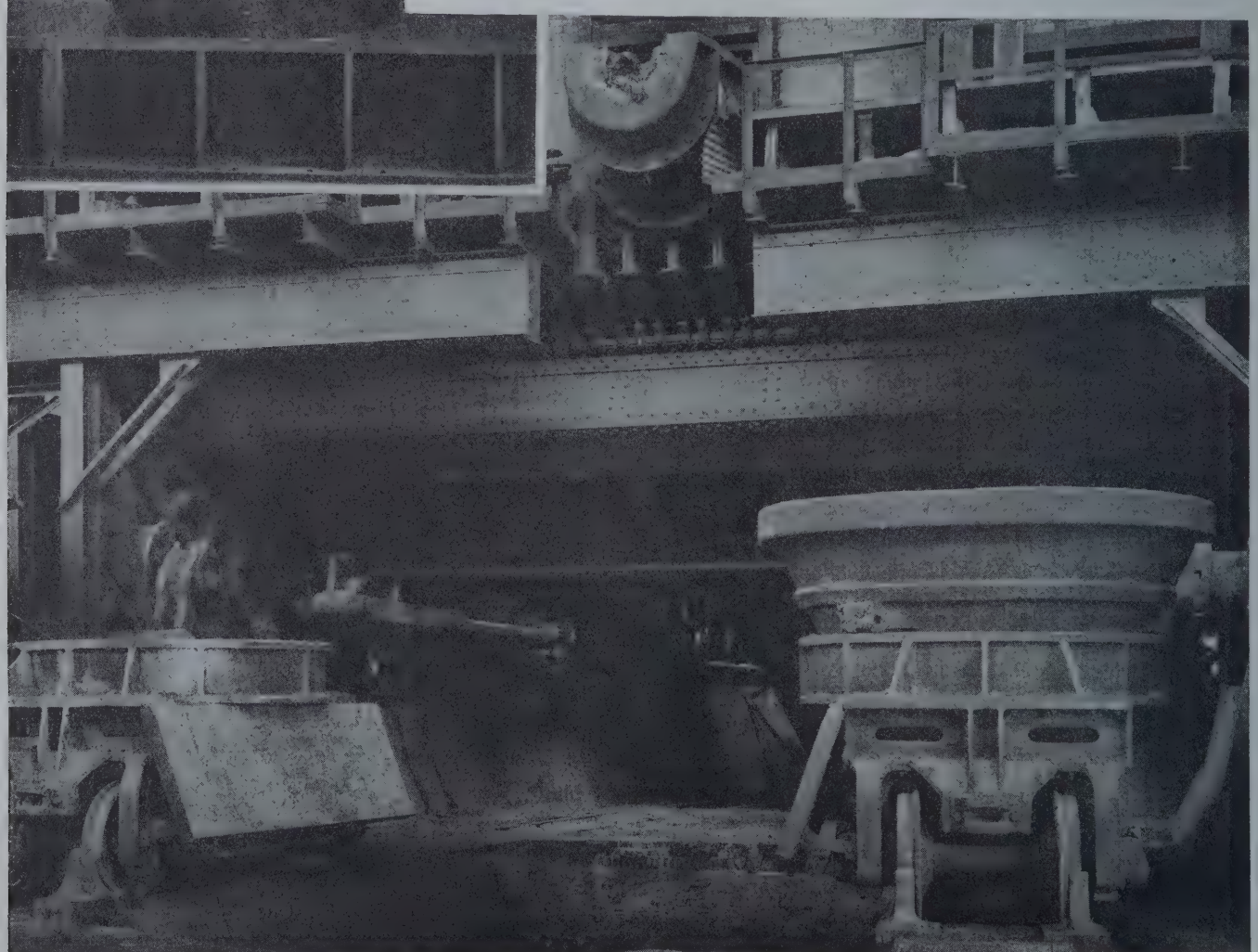
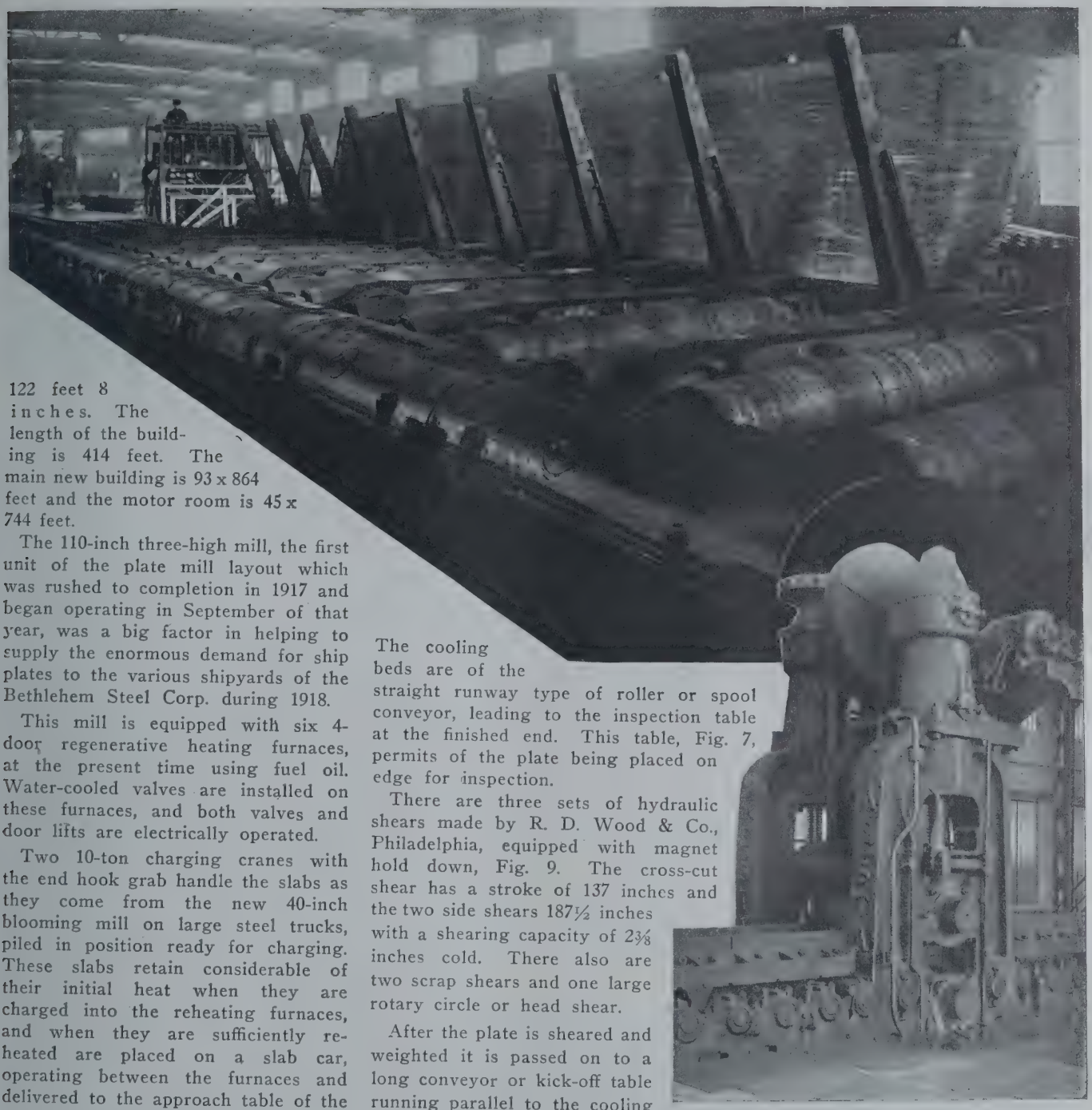


FIG. 5—RAISING BLOWN METAL THROUGH HATCHWAY PREPARATORY TO CHARGING OPEN-HEARTH FURNACE FIG. 6—THESE CARS RECEIVE OVERFLOW SLAG FROM LADLES



122 feet 8 inches. The length of the building is 414 feet. The main new building is 93 x 864 feet and the motor room is 45 x 744 feet.

The 110-inch three-high mill, the first unit of the plate mill layout which was rushed to completion in 1917 and began operating in September of that year, was a big factor in helping to supply the enormous demand for ship plates to the various shipyards of the Bethlehem Steel Corp. during 1918.

This mill is equipped with six 4-door regenerative heating furnaces, at the present time using fuel oil. Water-cooled valves are installed on these furnaces, and both valves and door lifts are electrically operated.

Two 10-ton charging cranes with the end hook grab handle the slabs as they come from the new 40-inch blooming mill on large steel trucks, piled in position ready for charging. These slabs retain considerable of their initial heat when they are charged into the reheating furnaces, and when they are sufficiently reheated are placed on a slab car, operating between the furnaces and delivered to the approach table of the mill proper.

The mill, one view of which is shown in Fig. 10, was built by the Mesta Machine Co., and is driven by a 4000-horsepower motor built by the General Electric Co., Schenectady, N. Y. The roll diameters are 36 inches for the top and bottom rolls and 24 inches for the middle roll.

A special feature in connection with this mill is the electrically operated lifting tables which are so designed in width as to prevent any overhang of the hot plates in the bearings to the rollers. The mill operates at 52 revolutions a minute and has no difficulty in rolling plates up to 70 feet in length. The minimum gage of material rolled is $\frac{3}{16}$-inch, and the maximum width of about 100 inches.

The cooling beds are of the straight runway type of roller or spool conveyor, leading to the inspection table at the finished end. This table, Fig. 7, permits of the plate being placed on edge for inspection.

There are three sets of hydraulic shears made by R. D. Wood & Co., Philadelphia, equipped with magnet hold down, Fig. 9. The cross-cut shear has a stroke of 137 inches and the two side shears 187½ inches with a shearing capacity of 2⅜ inches cold. There also are two scrap shears and one large rotary circle or head shear.

After the plate is sheared and weighted it is passed on to a long conveyor or kick-off table running parallel to the cooling tables, and divided into nine kick off sections that allow for the distribution of various orders into separate piles for loading or storing on the loading bank.

Running parallel with the loading bank is a depressed track capable of holding 15 cars for loading at one time. Three 15-ton 96-foot span cranes constructed by the Alliance Machine Co., Alliance, O., handle the entire product from this mill.

Electric energy for the Sparrows Point works is supplied from a power plant designed for an ultimate capacity of 100,000 kilovolt amperes. Five generating units are under installation, each unit consisting of a 5000-kilovolt ampere generator, made by the General Electric Co., producing 3-phase, 25-cycle current at 6600 volts. The generator is driven by a Bethlehem tandem blast furnace gas engine. A unique feature of the station is that all auxiliaries, including gas washing equipment, pumps, air compressors, ignition apparatus and exciters, are contained in the building proper.

The electric switching equipment, furnished by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is carried in three galleries, one containing the main bus structure, the second all switching equipment and

7—INSPECTION TABLE AND FINISHING END OF 10-INCH PLATE MILL. FIG. 8—A VIEW OF THE 40-INCH BLOOMING MILL

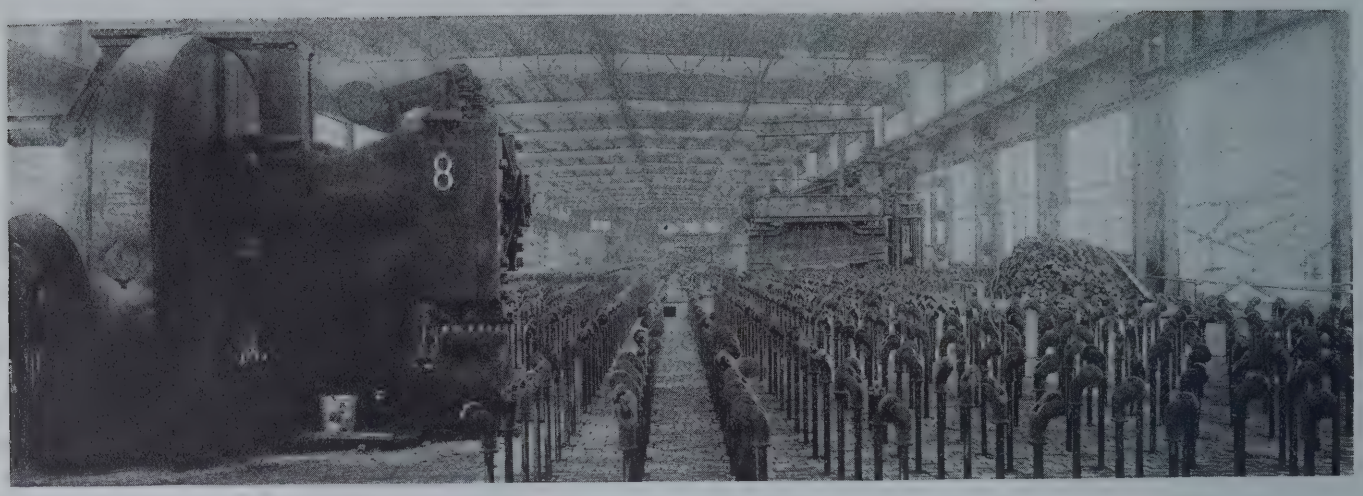


FIG. 9—THE PLATE MILL IS EQUIPPED WITH THREE SETS OF HYDRAULIC SHEARS HAVING MAGNET HOLD-DOWN

operator's bench board and the third reactances and lighting arresters.

A complete substation is arranged in one end of the power house to take care of all auxiliary electrical equipment in the blast-furnace and open-hearth departments which are in close proximity. This station furnishes electrical energy over a double ring bus transmission system to seven substations located throughout the plant.

In order to accommodate its employes, the Bethlehem company has built a number of modern hollow-tile stucco residences in Sparrows Point.

French War Imports

During the war French imports of iron and steel according to statistics just issued amounted to more than 50 per cent of her prewar production. The heavy total is suggestive of the extent to which the French iron and steel industry was crippled by the German occupation of the producing districts of northern and northeastern France. The imports of by-product in metric tons in 1916, 1917 and 1918 were as follows:

	1916	1917	1918
Pig iron	612,012	657,022	375,447
Steel blooms, billets and bars.	1,510,549	1,509,169	932,365
Wire rods	80,203	54,093	52,483
Plates	262,558	265,132	218,295
Wire	78,070	84,896	33,259
Rails	131,852	121,515	156,248
Tin plate	80,708	45,329	58,219
Total	2,755,952	2,737,156	1,826,316

The United Kingdom furnished more of this tonnage than any other country, supplying 1,448,894 tons in 1916, 1,482,030 tons in 1917 and 708,504 tons in 1918. The United States is credited with 170,832 tons in 1916, 1,277,349 tons in 1917 and 1,015,456 tons in 1918.

The pride of the former Germany navy, the "unbeatable" U-boats, are not designed for a watery grave as was suggested at the early sessions of the peace meeting. G. Cohen Sons & Co., London, England, recently purchased 25 undersea craft which had been turned over to England. This company during the war handled considerable quantities of scrap iron brought from the battlefields of France.

Vanadium From Waste

According to the *Stockholms Dagblad,* a new industry has been established in Smaland, Sweden. The concentration of ores at Taberg throughout the course of centuries has left huge accumulations of waste. Recent research has revealed a content of vanadium in this waste. A Swedish company has purchased a portion of these old workings with a view to the extraction of the vanadium.



FIG. 10—THREE-HIGH 110-INCH PLATE MILL WHICH HELPED SUPPLY SHIP PLATES DURING THE WAR

Finding Costs of Manufacture

Efficient Method to Enable Executives to Have Full Knowledge of Conditions of Their Business at All Times Outlined—Special Forms for Keeping Records Advantageous—Direct and Indirect Charges Computed

BY CLIFFORD E. LYNN

COSTKEEPING is a subject of such fundamental importance in manufacturing, that to solve its problems a man must bring to them an unbiased mind, and a determination to analyze situations thoroughly so as to form an accurate judgment.

When cost of production and operating is known it should be properly tabulated, so that it may be compared with previous or subsequent costs. In this manner any variations in the cost of manufacture are immediately determined, and any economy that may be necessary is at once brought to the attention of the executive, thus enabling him to have a full knowledge of the conditions of his business at all times.

Among other advantages of an efficient cost system, are the following: It serves as a basis for judging the efficiency or inefficiency of each plant, department, foreman, or group of men; supplies the proprietors with information requisite for increasing business; locates the leaks; serves as a basis for determining selling prices; establishes a perpetual inventory, and gives the employer a monthly statement of business conditions.

Cost-finding methods are divided into two classes, estimating costs and determining actual costs. The former consists of estimating the material used, labor expended, and a percentage to cover overhead expenses. The latter method, which beyond doubt is the best, consists of the special order system in which elements of cost are charged to an order, job or article, and the product system in which the costs are charged to the product direct. The elements of all costs are direct and indirect material and labor, and indirect expense, sometimes called burden or overhead expense, which includes supplies, light, heat, power, freight, maintenance, insurance, taxes, interest, rent, depreciation, in fact, anything that does not enter the product itself.

To secure direct and indirect material and labor costs it is necessary for the cost department to receive from the stores department all requisitions issued for material supplies, etc., to be charged to any department, product, job or order. These requisitions should then be checked against the production reports and orders to prevent useless waste of material and ascertain the correct amount, size, weight and description of the material and the date it was used. A record of all labor, showing on what job or product the expense was incurred, and salaries of clerks, foremen, inspectors, etc., should be secured from the time

This is the fifth article in the series on cost accounting methods suitable for industrial plants written exclusively for THE IRON TRADE REVIEW.

Production Order and Cost Sheet

_____ Dep't. No. _____ 19____

Quantity	Description	Diagram

Date Wanted _____ 19___

Complete _____ 19___

Signed _____

You are hereby authorized to manufacture the above articles as stated.

_____ Supt.

Material				Labor					Pattern		
Quan.	Descp't.	Rate	Amount	Date	Workman	Hrs.	Rate	Amount	Particulars	Rate	Amount
Total Mat'l									Total		
" Labor									Drawings		
" Pattern											
" Dwg.											
Indirect											
Total Cost				Total Labor					'Total		

CONVENIENT FORM FOR PRODUCTION ORDER, WITH PROVISION FOR MAINTAINING RECORD OF COST

Statement of Factory Expenditures

Accounts	Department 1	2	3	4	5	6	7	Total
Direct								
Mat'l								
Labor								
Total								
Indirect								
Labor								
Supervision								
Supplies								
Light Heat Power								
Freight, Express and Cartage								
Maintenance								
Depreciation								
Total Exp.								

Store Room		Operating Expenses			Distribution		
Operations	Amount	Account	Amount	Total	Dept.	%	Amount
Inventory		Superintendence			No. 1	20	
Purchases		General Labor			2	20	
Total		Light, Heat and Power			3	20	
		Insurance			4	20	
Dept. Oper'd		Taxes			5	20	
Inv. Raw Mat'l		Freight Express			6	20	
Mat'l Fin.		Factory Supplies			7	20	
Grand Total		Salaries Factory Office					
		Factory Offie Supplies					
		Incidentals					

Approved _____ Correct _____

①

Daily Time Ticket

Dept. _____ Clock No. _____

Date _____ Name _____

Time Record	Elapsed Time H.	M.	Order Number	Operation No.	Machine No.	Fin. O. K.	Damaged	Bad	Piece Wk. Rate	Amt.	Day Wk. Rate	Am't	Office Use Productive	Non-Prod.
Stop														
Start														
Stop														
Start														
Stop														
Start														
Stop														
Start														
Stop														
Start														
Stop														
Start														
Stop														
Start														
Total Time			Correct _____ Insp't.			Totals								

_____ Foreman

Each Job Must Show Time Started and Finished

Total Must Agree With Time Clock

No More Time Allowed Than Accounted For On Time Cards

②

FIG. 1—FORM FOR MAINTAINING RECORD OF FACTORY EXPENDITURES. FIG. 2—FORM FOR TABULATING TIME RECORD

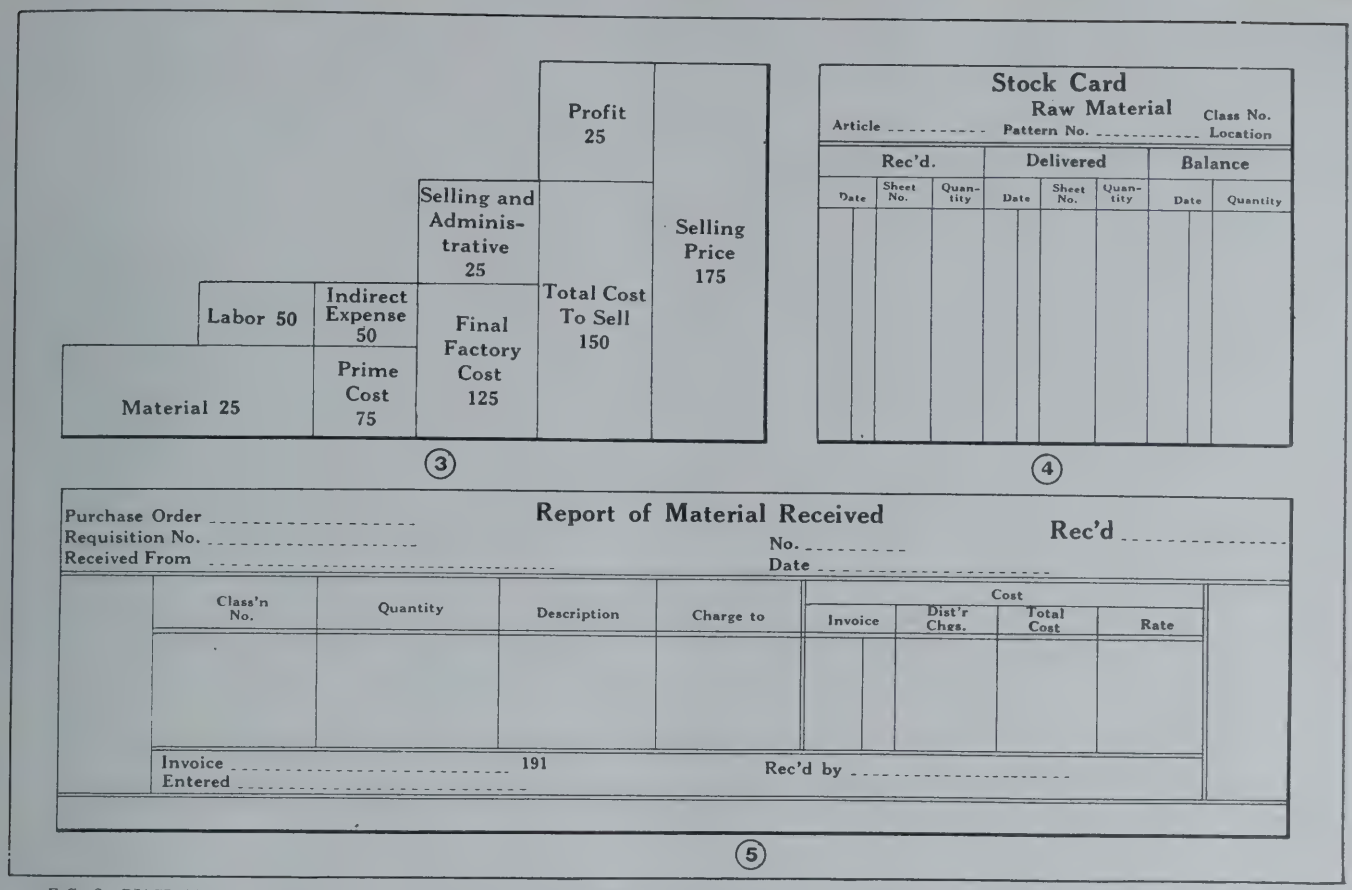


FIG. 3—DIAGRAM FOR COMPUTING COST-TO-SELLING PRICE. FIG. 4—FORM FOR KEEPING RECORD OF MATERIAL ISSUED. FIG. 5—REPORT OF MATERIAL RECEIVED

department. From such records a total of direct and indirect material and labor costs charged to any product, order or article must be computed. To determine the rate of distribution of indirect expense over direct material and labor costs, divide the total amount of indirect expense by the total cost of labor and material for the same period of time. Light, heat and power usually are distributed from one center, and it is necessary to arrive at a ratio in order to secure an approximate cost of each.

If interest is a factor of overhead, the ratio of distribution should be based on the value of equipment in each department, and distributed accordingly over production. To determine approximate maintenance, and as far as possible depreciation occurring in one department, the expense should be charged to the articles passing through that department, the remaining depreciation to be prorated over the whole plant.

In the steel industry, both the product and special order systems are used in cost finding. However, the writer believes the product system finds the most favor, especially in plants where the orders are small and costs uniform.

The personnel of a cost department varies in accordance with the number of operating departments, and may embrace the efficiency department, consisting of time study, rate, standardization, statistical, bonus and organization clerks.

In addition to the regular cost-office force, one large steel corporation maintains in each department a cost clerk who secures all cost data from that department on labor and material costs, losses, etc. These reports are checked with the regular time and production records of that department, results verified and then forwarded to the cost office where they form the basis for computing material and labor costs and for efficiency study.

Little Aids in Selection of Personnel

BY GEORGE E. HOLMES

GREATER and more lasting results will be obtained in the selection of the personnel in industrial establishments if both the psychological and physiological aspects of the situation are given due consideration. Too often the employer centering his attention on the physical side of his problem, to the exclusion of the mental side, leaves this to the direction of some one who has consecrated his life to "the emancipation of the workingman," only to be rudely awakened some morning to a realization that something was overlooked.

The mental attitude of the man should be the very first consideration whether his peculiar viewpoint is the result of his nationality or has been brought about by previous environment. Men will always work best, and remain longer contented in that class of work into which their natural desires would have led them had they been given free choice. Many men will be found working under conditions that are absolutely out of harmony with their mental viewpoints simply on account of fear of being idle or through lack of ability on the

The author of this article is general manager of Industrial Relations Service, New York City.

management's part to place them properly.

During a survey of one of our largest industrial centers, in an effort to relieve the housing situation, the peculiarities of different nationalities was taken advantage of. Efforts were being made to erect sufficient dwellings for the help, but due to a shortage of carpenters and material the management could not get the matter attended to as quickly as needed for accommodating the influx of new help.

Common labor gave the management its hardest problem. Most of the laborers were Poles, and objected most strenuously to being herded into close quarters. Italians were suggested, and this proved a solution, as their national tendency is to live in one room, all herded together like sheep.

In another instance the management of a plant had trouble in holding its help owing to the damp, foggy atmosphere surrounding the locality. In this case Portuguese were suggested, and they solved the problem. Portuguese love salt water fishing, and it is their custom to salt down large quantities for winter use. Having ample scope for activities of this sort, they simply took root on the spot and remained contented.

Other Traits may be Utilized

These illustrations show that certain national traits may be considered to advantage in handling labor. Many others of like nature are available. Traits of character, brought about through religious teachings, public or private schoolings, or through the home life of the worker can be used to an equal degree. In making a physical examination of an applicant, a day or two of habit-study before he is finally placed will accomplish wonders not only in fitting him for his job but in satisfying his personal desires.

If the employment manager will formulate leading questions often in direct opposition to what he hopes the man will answer he will find that he has come upon one of the oldest laws of nature, what we are pleased to call stubbornness. Most every human being in the world can be "sold negative."

It is the most natural thing we do when we take the opposite to any one's statement. In the first analysis it is a heritage from the old law of "self-preservation;" in the second it is ego, and in the third it is curiosity. The latter of the three is commendable because it is a desire on the objector's part for more information, but curiosity sometimes leads one into trouble—we are liable to be misunderstood.

An examination should always be conducted in such a manner that the applicant is freed as much as possible from self-consciousness. It is not always the man who assumes a bold front and tries to impress one with his confidence in himself that makes the best workman. In fact the opposite is usually the case. Gentlemanly conduct or personal modesty often is misconstrued as lack of initiative. The habit-study referred to can be carried on by some member of the employment department passing as a workman, who cultivates the newcomer, and is able to make a first-hand study of him. But what seems to have greater possibilities for securing, placing and holding help in any industry is the idea of calling upon all the employes in the plant to assist.

Plant representation, or industrial democracy as it is called, opens up an avenue for the accomplishment of these things with a permanency that seems without limit. In the institution of the plan, the subject of labor turnover is one of the big items out of which the employes obtain their increased profits.

A report on turnover cost per department is given to the employes, and the company contracts to share equally any savings they are able to effect. This naturally has the desired effect in creating interest on the part of the worker not only to stay on the job but to induce his fellow workers to do likewise.

Bonuses Tend Toward Quality

Quality bonuses also are provided for, and as the profits are based on the joint results from the department, this creates a desire on the individual worker's part for quality, and his attention is turned to helping his fellow workers produce better products. In the event of need for more help, the interest created in the individual department is so great that the workers themselves will endeavor to induce their friends and acquaintances to accept positions in that plant. It is naturally to their interest to assist in the education of their fellow workers to the end of obtaining more products, and of a better quality.

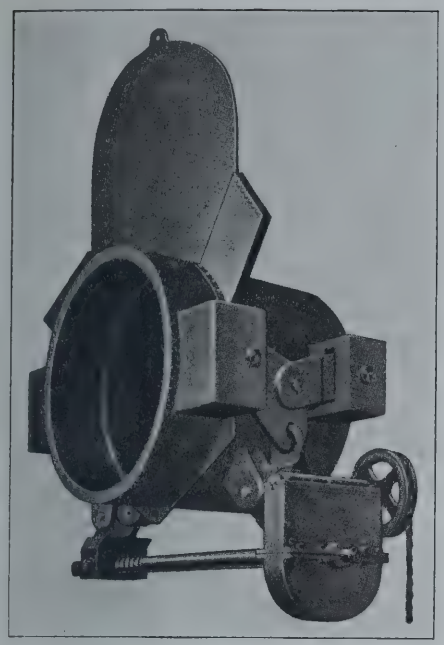
Instances have occurred in plants, where representation plans are in practice, where men have gone to the extent of requesting the foreman to resign his position in favor of some other worker in the department, in an effort to raise the standard of the work and make for better management.

Such cases as this are rare, but it goes to show the extent to which interest has been developed within the rank and file of the workers through the application of ideas that give them a "square deal."

Valve For Gas Mains Is Quick-Acting

PROBABLY one of the most arduous duties which men are called upon to perform wherever blast furnaces are arranged in groups, is shutting off the gas supply of one stack from the common main. This is usually done by means of a goggle valve, which is shaped similar to a figure 8 with one loop open and the other loop closed. The isolation of any particular gas supply is accomplished by turning the goggle so that the blind end is inside the main, bolting the goggle plate to the flanges of the main. This usually entails shutting down the furnace for an hour or two. A crew of from four to six men equipped with gas masks are required to tighten the bolts while a crew of riggers are required to turn the goggle. Recently important improvements have been made in these valves. One of the latest types is shown in the accompanying illustrations. It was designed by Grant D. Bradshaw, B. F. Jones building, Pittsburgh, and it is said it can be closed or opened by one workman from the ground in approximately 10 minutes. One of the features of the valve is that it can be operated without taking the blast off the furnace. The valve consists of two steel sleeves to which the gas main is riveted. The ends of the sleeves, where they join, are faced and make seats between which a steel shut-off plate slides. Instead of bolting these sleeves together through the plate to make a gas-tight joint, as in the ordinary valve, no bolts are used. The sleeves are clamped together and seat on the plate by means of two powerful goggles, one on each side. These grip the plate with a force on the seating surfaces of 2000 pounds per square inch. Usually less than one-tenth of this force is required.

When the valve is to be opened the direction of the toggle action is reversed and almost unlimited force is available to separate the sleeves allowing the plate to slide freely up or down. With such an intensity of force avail-



BLAST-FURNACE GAS VALVE. THE JOINTS ARE MADE GAS TIGHT BY MEANS OF TOGGLES

able for clamping the sleeves together on the valve plate, when the sleeves are separated the plate adheres to one or the other. Two lugs are provided on the inside of one of the toggle levers for the purpose of separating the sleeves from the plate. The valve plate slides between these lugs which also act as guides. When the toggle levers raise, separating the sleeves, one lug pushes off the plate from one seat while the other lug restrains the plate from following the other seat. This is possible by reason of the lugs working on a smaller radius than would correspond to the movement of separation of the sleeves. In this manner there is no possibility of the plate sticking to the seats.

In order that the seats on the sleeves shall be always in alignment the sleeves must operate in a guide. Due to the dirt in the gas a sliding guide is not practical and for that reason the diaphragm type was selected. Two wings are fastened to each sleeve on the sides; they extend out at 45 degrees to clear the valve plate which slides between them. The ends are riveted together, thus forming two diaphragms which permit the valve seats to separate freely, yet keep them always in line. The valve plate is handled by a light cable which passes over a pulley and carries a counterweight. The pulley is supported in a light A-frame carried on pads on the top of the sleeves. The valve is one more step in the safety movement which is receiving ever increasing attention in blast furnace design, for it provides a means of operation which eliminates any possibility of gassing the operator.

Figures compiled by the Metal Workers' Trade Union of Germany show that from the beginning of the war the number of women employed in the metal industries of that country increased from 12,968 in 1914 to 624,688 in 1917, which was 32.5 per cent of the total amount of labor employed at that time.

Tools Formed by Grinding

When forming a high-speed tool from a solid steel bar, it ordinarily is necessary to forge the steel to the shape required. This entails an item of expense for each tool produced, and involves a certain risk due to the development of cracks from careless handling. Some of the larger users of tool steel in this country admit actual losses of thousands of dollars per year through poor workmanship in this connection. Prior to the war, H. Boker & Co., Inc., New York, put on the market special high speed tool steel sections from which it was possible to form tools merely by grinding. These sections are rolled by Jonas & Colvar, Ltd., Sheffield, England. In 1914, the company's importation was stopped by the war and it only recently has been possible to resume deliveries.

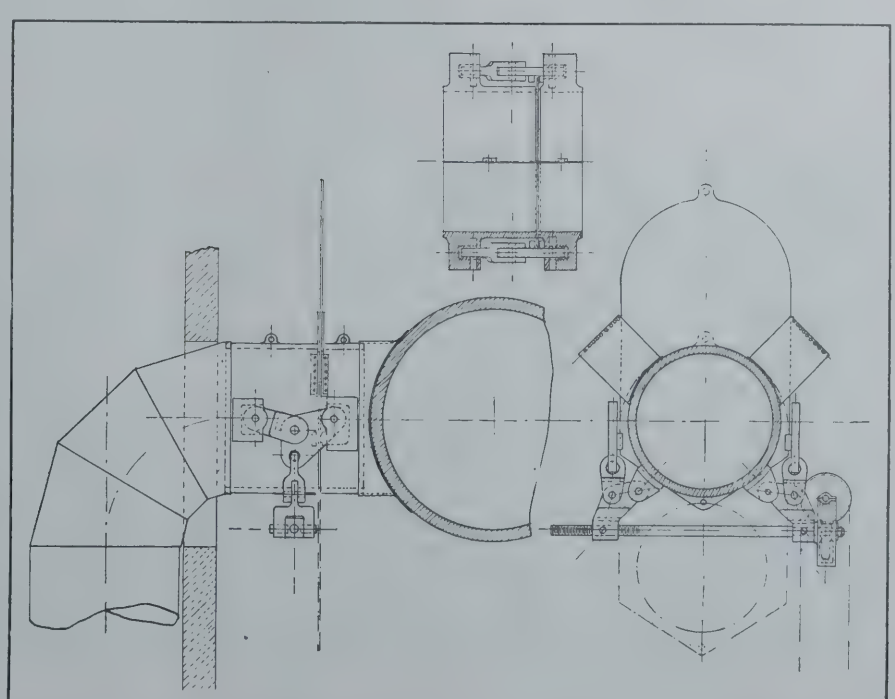
From these sections, practically any desired lathe or planer tool can be made. In order to produce the greatest possible variety of tools, the sections are rolled in I and Z shapes. They are so designed that the cutting edge may be ground on either face and the webs contain enough metal so that in grinding the necessary clearance may be provided.

Chief of the advantages advanced for these tools is the economy afforded by their use. It is claimed that in grinding tools from pieces of I-section, approximately 40 per cent less steel is wasted than where the tool is formed from ordinary solid bar steel. A similar saving of approximately 30 per cent, it is estimated, is afforded when producing tools from Z sections. The I sections are made in four sizes while the Z sections are made in five sizes. The steel is shipped in various lengths and is annealed so that it may be cut by means of a hacksaw, to the desired tool lengths.

French Tin Plate Industry

The tinplate industry in France did not suffice to supply home requirements before the war. The production has increased from 20,000 tons in 1901 to 41,500 in 1910-11, while the consumption had risen from 36,000 tons in 1901 to 52,500 tons in 1910. This production was entirely stopped by the war, and France was dependent upon England for 80,500 tons in 1916.

Although the chief use for the plate is in the manufacture of containers for canned goods, there is also a large trade in ornamental boxes. The jam manufacturers ask for free imports of English tinplate to enable them to compete with their rivals in Spain and Portugal. The English production is quoted as 380,000 tons in 1908 and 954,979 tons in 1915, while the French production in 1908 was only 37,967 tons and in 1915 quite insignificant. It is pointed out that the tinplate industry and also the detinning of scrap must be protected in France if the industry is to be preserved. (*La Nature.*)



LUGS ON THE TOGGLE MEMBERS GUIDE THE PLATE AND BREAK IT LOOSE FROM THE SEATS WHEN THE VALVE IS OPERATED

Plant Builds Jigs and Fixtures

Job-Work Establishment Called on for Special Exertion During the War Now Fills Peacetime Needs—Jigs and Fixtures Must be Made With an Eye to Economic Factors

BY B. K. PRICE

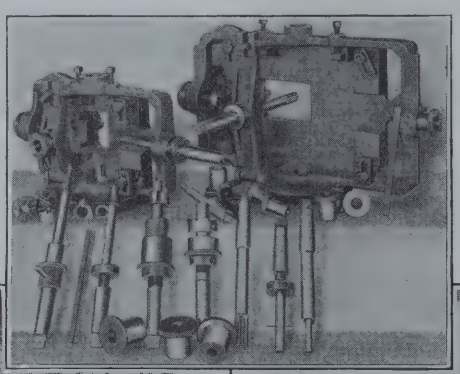
GREAT strides have been made in recent years in industrial organization. This is demonstrated by the growth of the idea of the tool manufacturing plant as a separate and complete unit. In the past, when manufacturers added new products, they were forced to design and build the necessary jigs and tool equipment themselves. This not infrequently worked a considerable hardship. Toolmakers, representative of the highest class of mechanics, were not easily available and costly delays were occasioned in organizing a satisfactory force. Furthermore when the tooling job finally was completed, it became necessary to reduce the force and allow the machinery to remain idle until the next proposition was offered. This constant fluctuation and loss in overhead was not only costly in itself, but it exercised a demoralizing effect upon the entire organization.

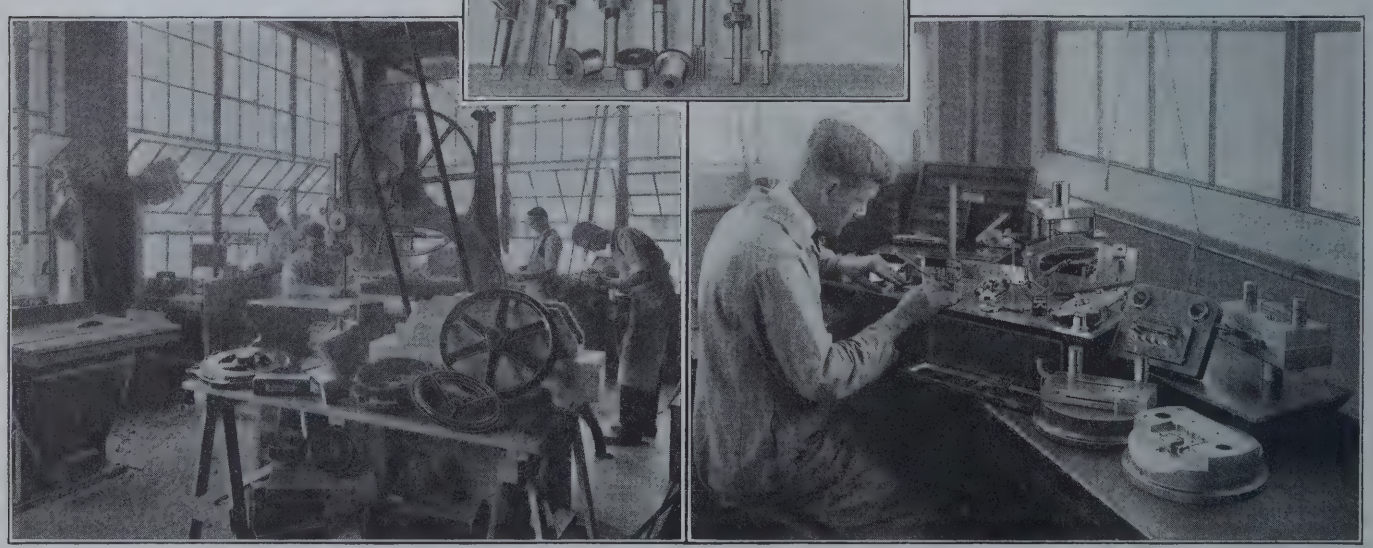
While a number of job-tooling establishments have been operating for many years, it was not until the full force of the war was felt throughout industry that the important work of the centralized tool shop became more generally appreciated. The shops then in existence virtually were deluged with work from all sides and so heavy were the demands that new shops sprang up by the score. Many, however, were doomed to failure, owing to the haste with which their forces were organized and to various other factors. With the passing of the abnormal conditions created by the war, a large number went out of existence. However, the services rendered by many such plants throughout the country during the war, has made and left an impression upon industry at large, which makes for them a permanent place in the business world.

One of the more important plants of this character is that of the Mehl Machine Tool & Die Works, Roselle, N. J. This organization was established in 1913 by Walter Bird Mehl. Located in northern New Jersey, it has been brought into touch with the production problems of a wide and varied line of manufacture. The plant, which is of modern, daylight construction, is equipped to accommodate more than 100 operators; and, owing to the special character of its work, the machinery is nearly all of a precision character. The usual factory requirements call for speed and staunchness, but where the construction of gages, jigs, dies and fixtures is involved accuracy is the prime requisite.

The Mehl organization, in addition to the office staff, comprises four departments, namely, the designing, toolmaking, pattern and inspection departments. It is in the designing department that the manufacturer's problem is taken up for transformation into a definite solution in black and white; and it is an important function of the staff of this department to indicate where limits of accuracy should be observed and how close these limits should be.

The pattern shop is complete and patternmakers versed in foundry practice are employed. In the inspection department, the work of the staff differs in an important respect from that of the factory-production inspector, which calls principally for inspection of duplicate pieces. The latter, as a rule, works with a gage designed for the one purpose at hand, and, consequently, his work is semiautomatic. In the job tool shop, however, the inspector must





A CORNER OF THE PATTERN SHOP IS SHOWN AT THE LEFT, WHERE PATTERNMAKERS VERSED IN FOUNDRY PRACTICE ARE EMPLOYED. ACCURATE WORK IS ACCOMPLISHED AT INSPECTOR'S BENCH, SHOWN AT THE RIGHT. INSET SHOWS THE JIGS CAPABLE OF DRILLING, REAMING, COUNTERBORING AND TAPPING SHAPER VISES IN ONE SETTING

be a man of judgment, possessed of mechanical experience. It is true that blueprint notations are his main guide, but not infrequently, circumstances arise not provided for on the blueprint and the inspector therefore is left to depend upon his own judgment. A feature of the equipment of this department are several devices designed by the company's engineers for testing particularly exacting work. Several of these are shown in the accompanying illustration. One, the precision taper gage, shown in the accompanying drawing, was developed for the purpose of determining the exact angle and diameter of tapers.

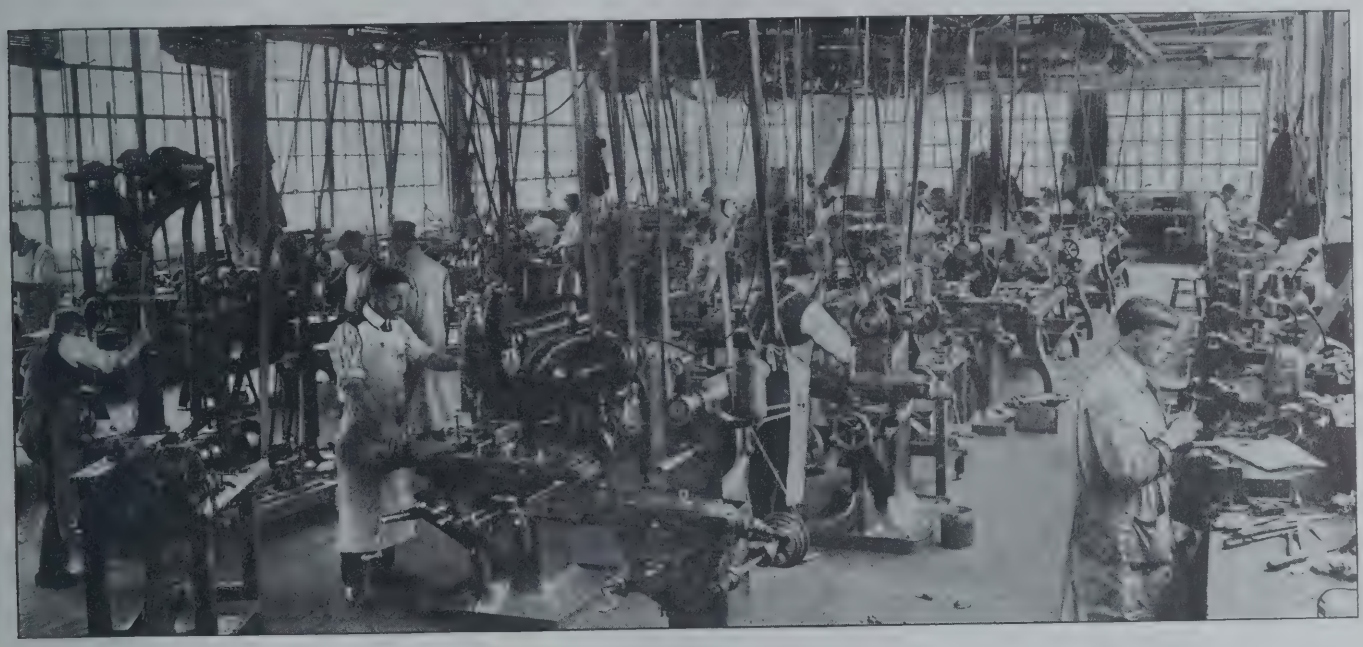
In this taper gage the blocks *B* form a slip fit in slots *C*, which are accurately spaced so that they are 1 inch apart. Pins *A*, all precisely the same diameter, are mounted upon the blocks *B* and are placed exactly in the center of one end of the blocks. When it is desired to ascertain the angle of a taper, the taper is placed between the centers and one of the blocks is placed in each end of one of the slots *C*. Each is moved toward the center until each of the pins *A* come in contact with the taper at its opposite sides. At a point one or more slots distant, the same operation is then repeated, using the other two blocks.

A micrometer measurement, as shown in the accompanying illustration, then is taken between the outside diameters of the pins *A* at each of the two posts and the total diameters of the pins are deducted in each case, which gives the exact diameter of the taper at each point. Since the distances between the two points is definitely known by reason of the accurate positioning of the slots, it is a simple matter to figure the exact angle of the taper in degrees, minutes and seconds, or in inches per foot and also to learn the diameter of the taper at any point to within 0.0001-inch.

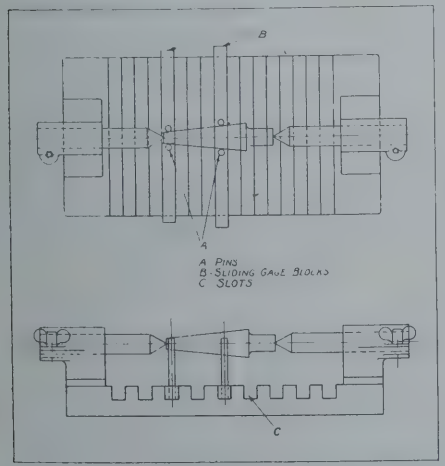
Modern milling fixtures also have been constructed by the Mehl engineers, one of which is a continuous milling fixture. This fixture is designed like a turntable. A rotary table, which swings on a substantial pin at the center, is provided with a number of work holding devices so arranged that the work is inserted at one side of the table, while the cut is being taken at the opposite side. The center of the pin holding the rotary fixture is adjusted off center the correct distance from the milling machine cutter.

As previously stated, the production of dies, jigs, gages and fixtures, constitutes an important part of the work at the Mehl plant. War has brought home to the industry at large the importance of these refinements. The progress in the use of these aids to production may be aptly illustrated in the case of jigs.

Manufacturers at one time employed skilled mechanics to lay out and drill holes by the surface-gage and prick-punch method, a slow and expensive process. However, a demand for quicker and more efficient production finally resulted in the evolution of the modern drill jig, making possible interchangeable manufacture at a fraction of the old cost. Jigs now are made for drilling a single hole or for accurately drilling, reaming, tapping and counterboring many holes at various angles with but one setting of the work. As the accuracy of the jig influences its cost, it is necessary that judgment be exercised in making it just as accurate as the product demands but not more so.

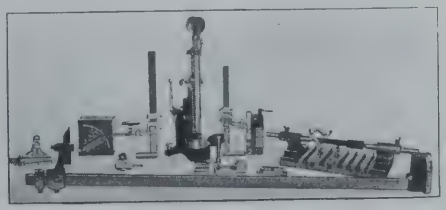


A GENERAL VIEW OF THE MACHINE SHOP SHOWING DIVERSIFIED TYPES OF MACHINES



ORIGINAL PRECISION TAPER GAGE

Ore containing about 113,000 pounds of tin was mined in Alaska during 1918, according to a bulletin issued by the bureau of mines. Most of this ore came from the York district, Seward peninsula, where one tin dredge was operated. Stream tin was also obtained in this district.



SEVERAL ORIGINAL TESTING DEVICES SHOWING MICROMETER MEASUREMENT

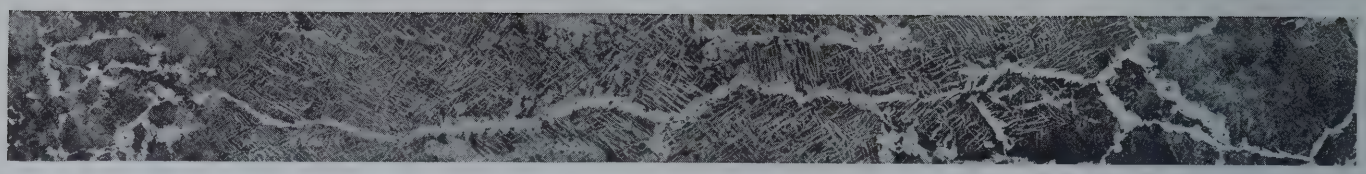


Fig. 1—Micrograph of Cast-Steel Runner Showing Differential Crystallization—Magnification About 30 Diameters

Odd Structure of Steel Runner

A Cast-Steel Sample Examined Microscopically Shows Three Distinct Structures Leading to Conclusion That Differential Crystallization Has Taken Place—Widmanstattian Zone Shows Decarbonization Under the Skin

BY FRANCIS B. FOLEY

IN examining steel under the microscope one is constantly confronted with structures which are difficult to interpret. Recently, in a collection of samples for exhibition purposes, the writer found a piece of open-hearth runner metal 2 inches in diameter which had been fractured for use as a sample of cast-steel structure. On polishing and etching a section of this runner for the purpose of photographing a field to typify the microstructure of steel in the "as cast" condition, a variety of structures was found so arranged as to arouse interest at once. For a distance of about 0.065-inch in from the skin of the runner normal ingot structure was found; this was followed by a zone, about 0.215-inch wide of considerably lower carbon content in which occurred a most pronounced widmanstattian structure; from this point on to the center of the runner the metal was again of normal ingot structure.

Representative samples were taken from the metal in the three zones for analysis the following results were obtained:

	C.	Ni.	Cr.
Metal from skin.....	0.34	1.26	0.63
Widmanstattian zone	0.21	1.18	0.63
Metal from center.....	0.34	1.32	0.67

Such a condition might result from decarburization followed by recarburization of the skin. This section came from one of the branch runners to the bottom of the mold, not from the main runner, and it is difficult to conceive of decarburization occurring in this portion of a runner. If the metal were stripped while quite hot it is true that some oxidation would take place but the recarburization is unaccounted for. It could not occur by segregation after solidification—the tendency then is for diffusion and homogeneity. The following seems to fit the conditions and is offered as an explanation.

The outside layer of normal structure 0.065-inch thick is a layer of metal which was chilled on the walls of the runner brick when the molten metal first entered the runner. As the molten metal flows by, the outside of the stream is cooled by the walls of the runner and crystallization starts, the crystals so formed being attached to the chilled metal on the wall of the runner. These crystals, being the first to form, are necessarily of the lowest carbon concentration. When the wall of the runner has reached a certain temperature, the outside of the flowing stream of metal comes to a fairly constant temperature, and, that temperature being just under the liquidus, solid metal of low carbon content is constantly separating out of the liquid, crystallizing on the walls of the runner. The crystals so formed build outward into the stream as it flows. When the difference in temperature between the solid metal attached to the walls of the runner and the molten stream has become so small that no chilling effect is any longer exerted, the formation of these low carbon crystals ceases or perhaps they grow until such a length that they are no longer strong enough to withstand the force of the flowing metal. After the mold has been filled and the metal comes to a state of rest, solidification proceeds normally and the structure of the interior of the runner is the result. In subsequent cooling in the solid state, some diffusion takes place, but evidently it does not become complete. This diffusion is first materially retarded when the metal of lowest carbon content passes through its Ar_3 point and is stopped completely at Ar_1.

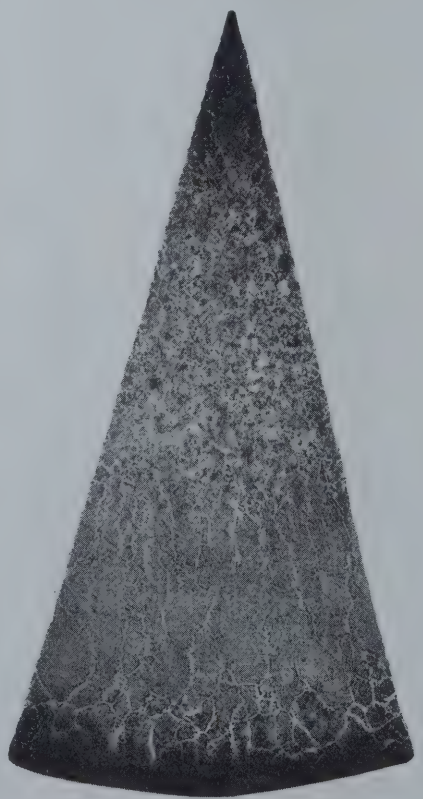


FIG. 2—SECTION OF CAST STEEL RUNNER UNDER MAGNIFICATION OF ABOUT FOUR DIAMETERS

Two Solutions Suggested

The very marked widmanstattian structure in the low carbon band might have been produced in either of two ways, or by a combination of the two. One possibility is that it is due to the fact that the metal where this type of structure is so pronounced existed in the solid state at a higher temperature and for a longer time than the metal elsewhere. Its freezing point is higher than that of either the skin or the center metal, and it did not cool as rapidly as the skin but somewhat faster than the center. The other possibility which suggests itself is that this type of structure formed more readily in the particular part of the runner than elsewhere because of the difference in the processes of crystallization, and that the ferrite needles are actually in the same position which the original low carbon crystals occupied during their formation and growth.

A paper prepared for presentation at the Chicago meeting of the American Institute of Mining and Metallurgical Engineers in September. The author, Francis B. Foley is metallurgist, U. S. bureau of mines experiment station, Pittsburgh and this paper is published by permission of the director of the bureau of mines.

Increasing Life of Electrodes

Main Wear is Found to Result From Surface Burning on Parts Inside of the Melting Chamber—A Seal 24 Inches Above the Furnace Roof is Recommended

SOME interesting facts regarding electrodes were brought out in a paper on large electric steel-melting furnaces read recently at a joint meeting of the British Institute of Electrical Engineers and the British Iron and Steel institute by Victor Stobie. The author brings out the point that the main wear on electrodes in ordinary electric steel furnaces does not take place at the arc but results from the surface burning of the carbon all over those parts of the electrodes which are inside the melting chamber and up to a point about 15 inches above the roof. On looking inside most furnaces the electrodes will be seen to be considerably tapered from where they enter the roof. Fully 75 per cent of the heavy expenditure on electrodes is wasted through this defect.

It is thought by some people not acquainted with electric furnace practice that there is always a reducing atmosphere inside electric furnaces of the older types in use. This is an utterly mistaken notion, which is proved by the ease with which the raw materials charged into such furnaces oxidize, even without the help of iron ore or other solid oxidizing agents.

Gases Escape Through Clearances

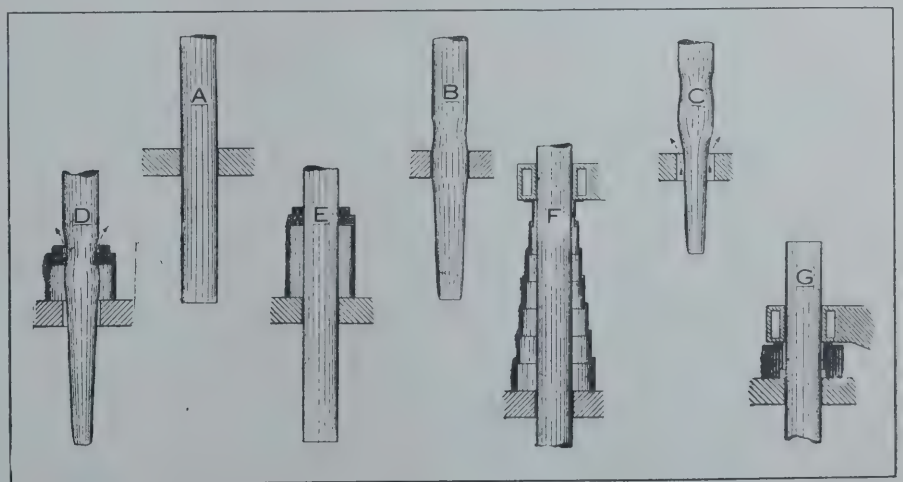
The cause of the oxidizing atmosphere inside the older electric furnaces lies in the crude method of feeding the electrodes into the melting chamber. This is usually done by leaving in the roof a number of plain holes equal to the number of electrodes which have to be fed continuously into the furnace, the bricks forming such holes support annular water-jackets which fit new electrodes with a small clearance. The heated gases inside the furnace continuously pass up those clearance spaces between the roof and the electrodes. The results are serious. The hot gases cause the clearance to be rapidly increased by burning away the electrodes; all the heat value of the gases and flames which are constantly pouring out of the furnace through the electrode holes is wasted; the duration of a heat is lengthened in proportion to the heat lost through the roof holes; and the undue heating of the electrode terminals necessitates their being cooled by means of water.

At first sight it may seem a simple matter to close up the clearance between the roof of a furnace and the electrodes passing through it but this is not so, as is illustrated by the fact that there have been few if any devices developed for this purpose. The author proposes a device which he has found to be successful in preventing the wasting away of the electrode by oxidizing gases.

Observations showed that at about 2 feet above the roof in most furnaces the electrodes, even when raised for charging, are seldom at a temperature at which they can burn; therefore, that is the only point at which a permanently good seal can be made round the electrodes. If an electrode is closed hermetically from the roof up to that point, the burning away of the electrode and the escape of the heated gases from the furnace are prevented.

In practice, a light metal cylinder a few inches larger in diameter than the electrode and about 2 feet in length is fixed on the roof around each electrode. The top end of this jacket is covered with a sealing plate which prevents the passage of the flames, the electrode passing through a neatly fitting hole in the center of such a cover. Another form of economizer, as this device is termed, has been developed for use on furnaces which have only a short electrode travel. It is sealed to the electrode in the same way as the economizer just described but differs from it in having a telescopic tube around the electrode.

In the accompanying illustration, *A* shows a new electrode in a roof; *B*, a used electrode burned away inside of the furnace and above the roof; *C*, a burned electrode raised for a fresh charge; *D*, ineffectiveness of seal 12 inches above roof, due to burning away in air of red-hot electrode; *E*, seal 24 inches above roof where it is maintained because the electrode does not get red hot above this point; *F*, telescopic economizer extended; and *G*, telescopic economizer closed.

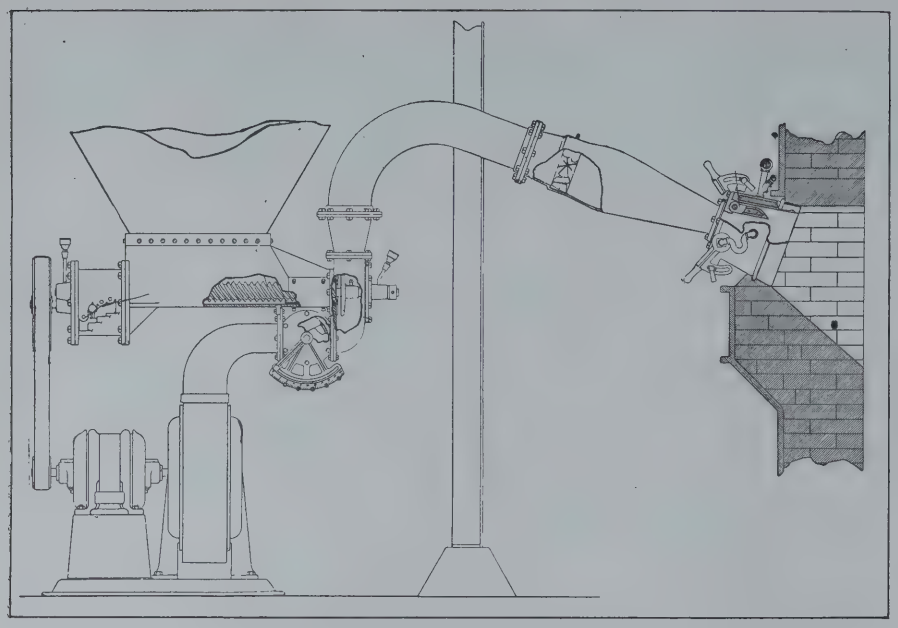


ILLUSTRATIONS OF THE EFFECTS OF OXIDATION ON ELECTRODES WITHOUT SPECIAL PROTECTION AND WITH VARIOUS ECONOMIZERS

Feeds Powdered Coal Into Furnace

A system for burning powdered coal in furnaces, developed by the Combustion Economy Corp., Nineteenth and Rockwell streets, Chicago, has a number of interesting features. Since high temperatures are obtained and economy in fuel result from burning powdered coal, experiments have been conducted for the past century in an effort to devise a practical method for handling and feeding coal to the furnace in a powdered condition. The scheme in general has been to carry finely divided coal in a sufficient quantity of air to insure complete combustion with small losses due to smoke and inclusions in the ash.

In the accompanying illustration is shown diagrammatically the essential



DEVICE WHICH MIXES POWDERED COAL AND AIR FOR FEEDING INTO FURNACE

parts of the new equipment. The coal is first crushed to 1½-inch diameter or smaller, dried, and then pulverized in a roller mill to a fineness such that 85 to 95 per cent of it will pass through a 200-mesh screen. Supply for over 24 hours should not be accumulated as longer storage allows the coal to collect moisture and therefore it becomes more difficult to feed. A hopper holding from ½ to 10 tons is provided near the furnace. Enclosed in the cast iron hopper bottom is a worm feed screw which feeds the entire length of the screw and thus prevents the coal from packing and arching above the feed to interrupt feeding. A revolving disk at the discharge end of the screw breaks up any packing which has taken place along the screw so that the coal is delivered steadily to the mixing chamber.

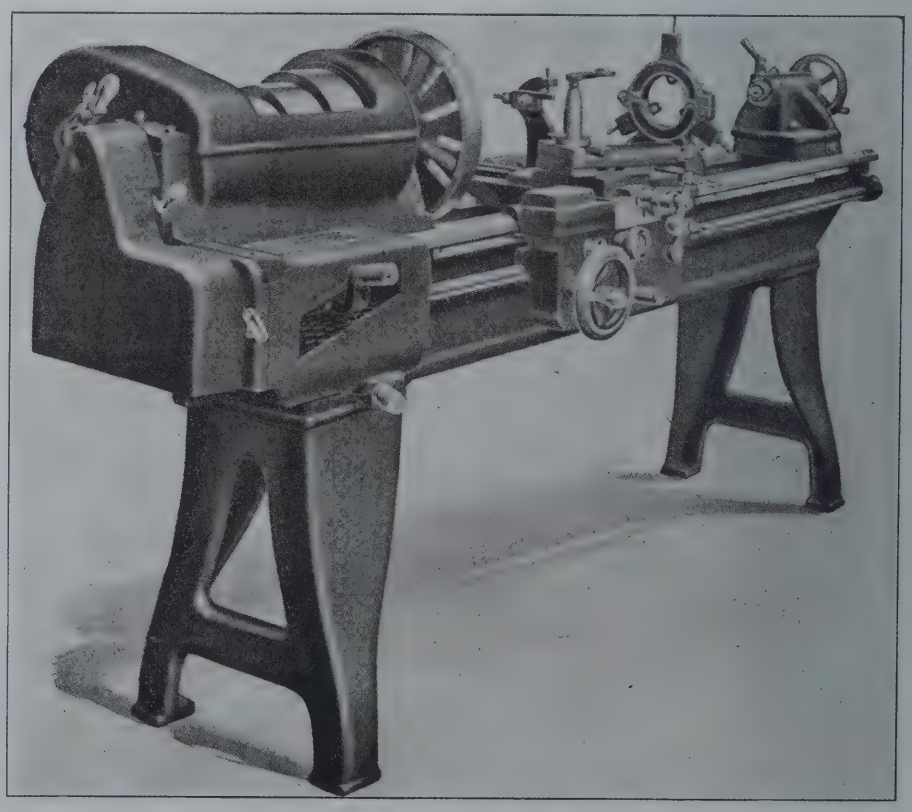
A low-pressure air line fed into the mixing chamber mixes the coal with air and then carries the mixture to the carburetor which may be any place from 3 to 100 feet from the coal control. The low-pressure air supply is usually supplied by a blower connected to a constant-speed motor which also drives the coal control. A speed-change box connected with the coal screw shaft gives accurate control of the quantity of coal fed to the mixing chamber. The speed control is plainly marked for each speed and gives a uniform delivery at that speed. An air gate marked to correspond with the open area of the gate controls the air supply which, it is claimed, may be synchronized with the coal supply so that inexperienced workmen without knowledge of combustion practice may handle them without trouble.

While passing through the line the coal and air are partly carburized but the process is completed in the carburizer in which is placed a stationary fanlike mixer. The outlet of the carburizer is fanshaped and causes the flame to spread across the furnace and to ignite more readily. The nozzle is designed to give the operator complete control of the direction of the flame. Two plates are provided which can be raised or lowered to direct the flame upward or downward or by bringing them closer together, the flame can be lengthened. This adjustment is essential on some furnaces and successful operation sometimes depends upon the ability of the operator to control it.

Engine Lathe Has Quick-Change Gear Box

A light pattern lathe built by the Sidney Machine Tool Co., Sidney, O., is equipped with a quick-change gear box which is attached to the bed in a recess provided. The gears, which cover a wide range of thread cutting and feeding, are shielded from dirt and grit by means of a swinging cover at the end of the bed. This lathe is of the 14-inch size. As shown in the accompanying illustration, the headstock is made with a three-step cone pulley and double back gear, the pulley being locked to the spindle by means of a spring plunger. The bearings, which are ground to standard sizes, are scraped to seat in phosphor-bronze boxes. End thrust is taken up by a hardened and ground steel thrust washer. A positive locking plunger is said to insure the correct position for the gear centers.

The ways are wide and deep to give great rigidity under cuts. An oil trough around the front and the rear of the carriage prevents the lubricant from running down over the apron. The bridge of the carriage is heavy but still not so wide that it becomes necessary to overhang the tailstock arbor for short jobs. The feed rack is of high-carbon steel and is made in one piece, dowel pins and screws securing it to the bed. A back plate making a double walled apron, supports the studs front and rear. All pinions are of steel and the studs are of high-carbon steel.



LIGHT PATTERN LATHE PROVIDED WITH A GEAR BOX FOR QUICK CHANGES

Bronze bushings are provided where necessary. Due to a positive lockout device, the threads and feeding cannot be engaged simultaneously. In addition to being bolted, the apron is doweled to the carriage and has knurls for engaging the longitudinal and cross feeds. Graduated micrometer dials are provided for the cross and angular feeds.

The Power Supply Co., Terre Haute, Ind., has increased its capitalization from $60,000 to $120,000.

British Steel Men Visit American Works

K. D. Mackenzie, general manager, and George West, chief engineer of Fredk. Braby & Co., Ltd., Eclipse Iron & Steel Works, Glasgow, Scotland, have been making a tour of inspection of a number of steel works in this country, especially those engaged in lines of production similar to their own. The Eclipse works is a producer of light plates and blue annealed, black and galvanized sheets up to 31 gage. It consists of 12 mills in two plants, one of which of 7 mills is steam driven and the other of 5 mills is electrically operated. During the last 18 months of the war, one of these mills was devoted to the production of copper plates for the ministry of munitions. The company also operates a tank works, manufactures steel sashes, special types of roofing and other lines, and carries on a structural engineering business. It operates no steel works and obtains its rerolling steel in the open market.

Engine Lathe Has Cast Iron Spindle

TO reduce chattering to a minimum, the engine lathe shown in the accompanying illustration is equipped with a cast-iron spindle. The machine recently was developed by the Wright Works, Chicago. To insure ample strength of the spindle its journals are large in proportion. The front bearing is 16 inches diameter x 24 inches long while the rear bearing is 14 inches diameter x 20 inches long.

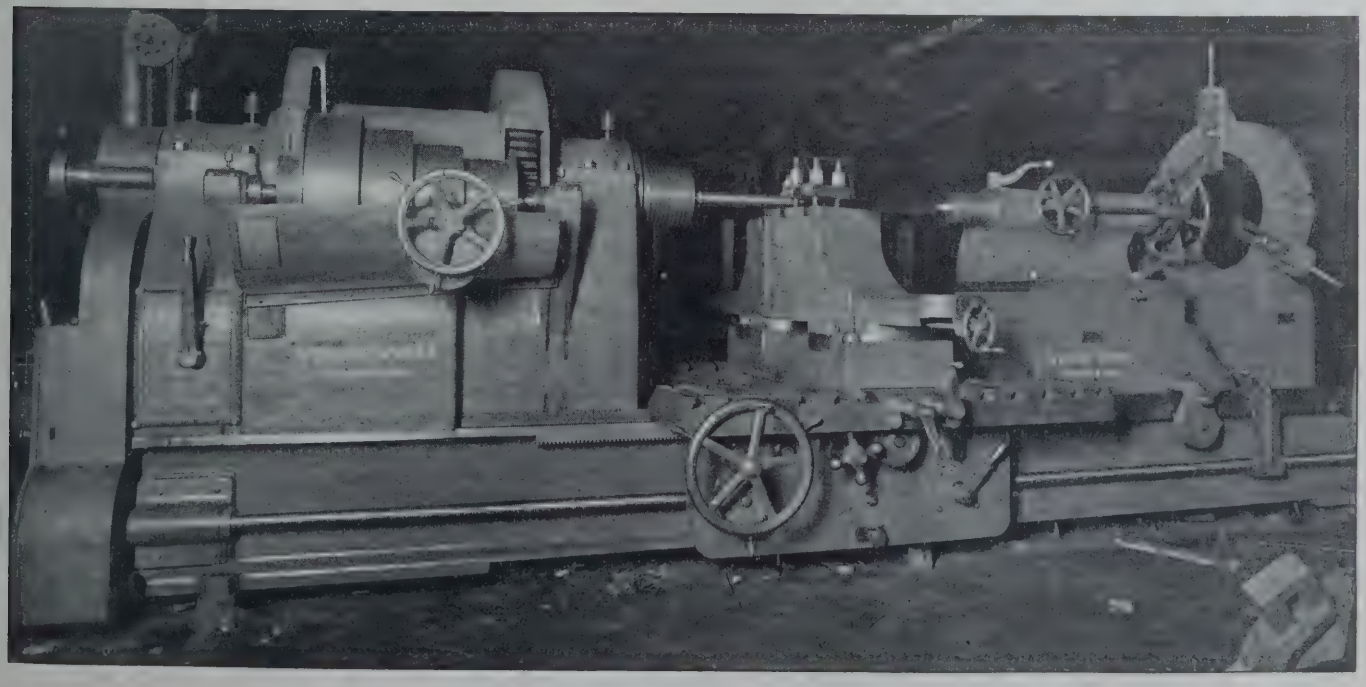
The lathe is driven by an 8-inch overhead belt from a countershaft which transmits 40 horsepower. The lathe is triple geared and all gear changes are made by a hand wheel in front of the cone pulley, within easy reach of the operator. One change is through sliding gears while the others are manipulated by toothed clutches. The speeds are in geometrical progression ranging from 0.75 to 76 revolutions per minute. In all 12 speeds are provided. All gears are steel and the pitch and face width is increased in proportion to the load transmitted in running the lathe at low speeds.

All shafts in the headstock run in phosphor bronze journal boxes and are lubricated by sight-feed oilers. For thread cutting, 24 changes are provided by means of change gears which are incorporated in a quick change box with lever feed. For turning, four feeds of 0.025, 0.05, 0.1 and 0.2 inches per revolution of the spindle are provided. More feeds can be had by changing the regular feed gears with the thread cutting gears.

The carriage is equipped with two compound slides. These are so designed that they may be fitted with a power angular feed. The carriage has a 90-inch bearing on the ways. The apron is steel, equipped with bushings for accommodating the various feed units. The lead screw is prevented from buckling by adjustable supports.

The tailstock is of box design and is readily moved by a pinion that meshes with the feed rack. The tailstock spindle is actuated by a hand wheel. Each machine is equipped with a substantial 3-jaw steadyrest.

The bed is ribbed with box sections and is fitted with a rack over the center rib which engages a pawl on the tailstock. This takes the thrust of the cut from the tailstock clamps and transmits it directly to the bed. The lathe shown in the illustration has a 96-inch swing and is 48 feet long. It takes work 34 feet between centers, weighs 150,000 pounds and is said to be one of the largest engine lathes ever built.



ENGINE LATHE EQUIPPED WITH CAST-IRON SPINDLE

Better Demand

For Refractories — Production Increased—Fire Clay Brick Advanced

Pittsburgh, July 1.—Business in refactories is better than it has been in some time, and while the best demand still is for fire clay brick for relining blast furnaces and rebuilding stoves, a fair volume of orders is being booked for silica and other grades required for open-hearth furnaces. Plant operations are on a heavier scale, for during the recent period of limited output manufacturers made big inroads on their stocks. This had made necessary some speeding up of production, while summer weather also accounts in part for the increase. Plants now are averaging about 60 per cent of capacity, as compared with the recent rate of about 50 per cent.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38 00
Kentucky	36.00 to 38.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent	$ 40.00 base
76 per cent	100.00 base

Competition apparently is keener on fire clay brick than it has been and there has been a general revision of prices on first quality brick, few sales of which from any of the producing districts now are being made at better than $40 per 100, works. On Ohio and Kentucky brick of this grade, $38 now is the top price, and St. Louis manufacturers, while quoting this grade as high as $40, are known to have done business for considerably less. Makers in that district have a stiff freight rate to the East and consequently are obliged to quote low in order to do business outside their regular territory. Prices of second-quality brick have been revised in keeping with the cut in the first-quality grade now on the market.

The inquiry for the brick requirements for the seven 100-ton open-hearth furnaces to be constructed by the Weirton Steel Co., Weirton, W. Va., which are estimated at 4,000,000 brick, is expected to come out shortly.

Using Domestic Manganese Ores in Steel

As the result of an investigation conducted recently by Samuel L. Hoyt of the United States bureau of mines, department of the interior, on the use of manganese alloys in open-hearth steel practice, a bulletin has been issued containing the details of the research. Although the original purpose of the investigation was to determine how domestic manganese ores could be utilized in place of imported ores so that more shipping could be freed for war service, it is believed that the results obtained may be found useful to the steel industry in peace time. Although this country has considerable deposits of manganese, it occurs for the greater part as a low-grade mixture with either iron or silicon or both.

Domestic ores can be utilized in three ways. A molten spiegel mixture may be used for deoxidization and recarburization. Melting and refining the steel bath may be done in a manner insuring a comparatively high residual manganese content of about 3 per cent. Finally, the manganese alloys containing silicon may be utilized. The advantages of the first method are that low-grade or domestic ores can be used in the preparation of the mixture; that deoxidation is accomplished by means of a dilute solution with an increase in the efficiency of the deoxidizer; that the deoxidizer is added in the molten state insuring certain advantages; and that if a large output is desired, the amount of the recarburizer is large and capacity of the plant is increased. The advantages of the second method are that it leads to high-grade and uniform steel; the manganese finals can be added to the furnace with a recovery comparing favorably with ladle additions; and that the same pig iron used for the charge and containing more manganese than ordinary basic iron, can be used to recarburize and partly deoxidize the bath. There is nothing new about the practice of using manganese-silicon ores in steel making. Its use is limited, however, since in steel that is to be welded, silicon should be very low or absent. Silicon is always an efficient reducing or settling agent when used in the customary small amounts, but it may or may not be desirable in finished steel.

Display Tools

Railway Supply Manufacturers Stage Notable Exhibit at Atlantic City

Evidences that the war stimulated rather than hindered the development of machine tools, labor saving devices and machinery of all kinds were found at the exhibit of the Railway Supply Manufacturers' association, Atlantic City, N. J., June 18 to 25. In machinery hall, at the boardwalk end of Young's million dollar pier, was displayed a remarkably representative working exhibit of machine tools and accessories for railroad repair shops. Production tools were prominent and high-speed tool steels played an important part in a number of exhibits. Among the manufacturers who displayed machine tools and shop equipment are the Bullard Machine Tool Co., Bridgeport, Conn.; Cincinnati Milling Machine Co., Cincinnati; Landis Machine Co., Waynesboro, Pa.; Manning, Maxwell & Moore, Inc., New York; Newton Machine Tool Works, Inc., Philadelphia; Niles-Bement-Pond Co., New York; Southwark Foundry & Machine Co., Philadelphia; Warner & Swasey Co., Cleveland; and the Simonds Mfg. Co., Fitchburg, Mass.

The American Car & Foundry Co., New York, through the courtesy of the ordnance department, United States army, showed a mobile machine shop unit composed of a complete line of machine tools mounted on heavy trucks and trailers. This company also exhibited gun mounts and other ordnance material. The Baldwin Locomotive Co., Philadelphia, displayed caterpillar and railway mounts for heavy guns.

Of interest to all manufacturers who use coal or coke were the 100-ton capacity hopper and gondola cars exhibited by the Pennsylvania Railroad Co. The first car of this size was built in 1916 for the Woodward Iron Co. Six-wheel trucks and 6 x 11-inch axles are required to support the loads carried by cars of this type.

A large number of exhibits of material handling apparatus was noticeable. The Clark Tructractor Co., Chicago, and the Elwell-Parker Electric Co., Cleveland, showed various types of tractors for industrial use. Edgar E. Brosius, Pittsburgh, displayed an automatic clam-shell bucket. Hoisting apparatus was exhibited by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.; the Whiting Foundry Equipment Co., Harvey, Ill.; and Yale & Towne Mfg. Co., New York. Nearly 20 steel companies exhibited steel and steel products.

Navy Accepts Suggested Prices

After Careful Investigation of March 21 Steel Conference and Subsequent Events Department Consents to Furnish Order Requisition for 15,000 Tons on Carnegie Steel Co.—5000 Tons Added—Price Inquiry Scouted

WASHINGTON, July 1.—The navy department, as did the railroad administration, has finally accepted the steel prices approved by the industrial board on March 21. Assistant Secretary Roosevelt, who had hesitated to accept the bid prices, which were identical with the board's quotations, in the midst of the board's controversy with the railroad administration, has notified the Carnegie Steel Co. the requisition made upon it May 18 will be supplemented by formal acceptance of the bid price in full. This action, after more than a month of careful investigation, vindicates the industrial board which, following two days' conference with the steel manufacturers' committee, announced the level at which it believed the government and the public should begin their purchasing.

In addition to accepting the Carnegie company's bid on the steel covered by the requisition, 11,000 tons of plates and 4000 tons of shapes, the navy has also awarded to this maker contracts for 5000 tons of steel making up the full 20,000 tons of plates, shapes and bars covered in the original inquiry and on which bids had been received at three different times before the order was served upon the Carnegie company. The requisition was issued under the navy's war powers in order to save the appropriation allowed by congress for four battle cruisers and one fuel ship, work on which was to have been under way by today in order to make use of the funds authorized. The navy has taken precisely the course outlined in these columns May 22.

Studied Market Reports

The navy department's cost inspectors, together with higher officials here in Washington, made a thorough study of steel prices both in the markets at Pittsburgh, Chicago, Youngstown and other producing points, and in the market columns of THE IRON TRADE REVIEW and other iron and steel publications. In addition to this the federal trade commission's costs information was thoroughly canvassed, the result of the entire investigation vindicating the action of the steel men who, under invitation of the government, suggested the proposed price level and the action of the industrial board in approving the schedule. This action, following Director General Hines' acceptance under protest of $47 per ton for open hearth rails, adds plates at 2.65c per pound, shapes at 2.45c and bars at 2.35c to the list gradually being reapproved by subsequent government purchases.

None of the members of the industrial board, which was disbanded through resignations of the members on May 9, have been in Washington since it became known that the navy had formally accepted the suggested prices, but it is evident what their expressions may be. Supporters of the board have at all times maintained that in the end the board's action would be justified and in addition to this the navy approval of the prices, practically all of which were uniform in the bids received, further scouts the possibility of an investigation by the department of justice into the combination alleged by Mr. Hines to have been entered into by the producers to sustain the board's prices.

The railroad administration so far has not indicated its intention to enter the market for additional steel purchases, although it has requested the federal trade commission to investigate the cost of manufacturing rails. This investigation is now under way by the commission, but, unless there are similar requests from the administration or other government departments, it likely will mark the last of these activities by the commission for sometime. Steel costs investigations, which had been carried on monthly from the middle of the summer of 1917, were discontinued on the first of the present year. Making the discontinuance of these investigations almost compulsory is the striking out of the sundry civil bill by the senate appropriations committee of $100,000 from the commission's salary roll.

May Sell Tools To Schools At 90 Off

WASHINGTON, July 1.—Surplus machine tools held by the war department will be sold to trade, technical and public schools and universities and other recognized educational institutions at 10 per cent of their cost value if congress acts favorably on a bill reported to the house by the house committee on military affairs, with recommendation that it pass. The report was made by the author of the measure, Representative Caldwell, of New York, who, at the previous session of congress had introduced a bill recommending that the machine tools be given to the educational institutions. The war department, however, pointed out the large expense it would have to assume if the machine tools were given to the schools and in a letter to the house committee on military affairs, as well as a similar suggestion to machine tool manufacturers in Cincinnati, recommended that the machine tools be sold at 10 per cent of their cost value. Machine tool makers, as well as the war department, favor the bill as amended. A provision in the bill holds the schools equipped with the tools responsible to the United States under regulations to be prescribed by the secretary of war for the proper care and safe return of such equipment when demanded, ordinary wear and tear excepted.

The report of the house committee on the Caldwell bill says:

The schools are sadly in need of these machine tools and few are financially able to buy what they need at ordinary prices. The committee does not know of any better use to which they could be put than the education of the youth of the country, for by this act will be added many native Americans who would not otherwise become so trained. At the beginning of the war one of our greatest needs was skilled artisans of this kind. It was thought best to amend the bill because of the representation of the secretary of war who, in his report to the committee under date of May 31, 1919, said among other things:

"If the tools are loaned, the department remains charged with the responsibility for the care and preservation of the tools until they are worn out. This would involve periodical inspections as in the case of other government property and would be a constantly recurring expense to the government. The war department would have no control over a great number of the institutions to which

these tools were loaned, and it would be difficult to protect the interests of the officers who would remain accountable for this property.

"The method of bonding each institution results in a constant source of annoyance to the school authorities and many schools would prefer not to take tools under those conditions. In any case the loaning of the tools involves constant expense in the pay of a number of officers required for administration. In addition, it has been estimated that the cost of intelligent distribution of these tools would involve an expense of $150,000, and if the project is to be accepted in its present form, it would be necessary to add an appropriation for this amount in order to make the distribution effective."

It was because of this expression from the war department that the bill was amended by which the tools would be sold to the schools at 10 per cent of their cost value.

The committee report said that there is a large quantity of tools to be disposed of and that their public sale would result in low prices, flooding the market and disorganizing the industry. To store the tools would require large expenditures in taking them down, cleaning, oiling packing and transporting them, to say nothing of the continuing expense incident to storage.

In the event the Caldwell bill is passed, which seems to be probable, the war department will be rid of much worry as to the disposition of its surplus tools. The army appropriation bill, as it passed the senate last week, carried an item of $14,000,000 for the salvage board of the war department, which would use part of this money for removing the tools from private plants, slushing them with oil, and packing, transporting and storing them. The house provided only $5,000,000 for the board. Brig. Gen. C. C. Williams, chief of the ordnance department, had asked for $20,653,111.

Contracts Have Moving Clause

In many of the department's contracts it is necessary to get facilities in the way of machines, etc., out of buildings in which they now are located because the contract provides that within a given time these facilities will have to be removed from the premises or buildings owned by the manufacturer. The department has endeavored where possible to sell the machines as they stood in the shop, but General Williams told the senate committee on military affairs that the department had not found that feasible and had not made much progress in that direction. Consequently the machinery has to be taken out, put in fair condition in order to get a better price in the market. This, it was pointed out, means an expenditure of considerable money for handling the machines, for transportation, storage and for the maintenance of the salvage board personnel throughout the country, the board being headed by Col. D. K. Shurtleff.

The comptroller of the treasury has definitely ruled that the money appropriated for the manufacture of ordnance material is not available for the purpose of salvage of material which is to be sold, nor can the money arising from sales be used for this purpose.

General Williams told the committee that the finance department has about $300,000,000 invested in machinery, but that he had no idea what percentage would go to the schools if they are provided with equipment. The department is reserving sufficient of that amount to fully equip the arsenals and is retaining some for manufacturing purposes, taking out the machinery that is worn out and replacing it with new and modern machinery. Until that is appraised, he said, he did not know just what the value is. Colonel Shurtleff, however, estimated the value of machinery and raw materials held by the department to be approximately $500,000,000, this including buildings erected under its jurisdiction. It was stated by Colonel Shurtleff that there are about 156,000 machines in this country, which includes manufacturing equipment of all kinds.

On the average, he said, it cost $15 a unit to dismantle, and in many cases the machines have to be cleaned, slushed with oil and crated and moved. It is necessary, he told the committee, to move practically all of them in the sales being made and in addition to that a great amount of this equipment has to be moved to temporary storage even before it is sold, because it must be taken away from the private plants so they can resume their commercial work.

Want Fabrication Privilege

WASHINGTON, July 1.—Extension of the fabrication-in-transit privilege to include iron and steel when fabricated for frame work and sections for steel ships is being urged upon the railroad administration with renewed vigor by eastern shipbuilding interests. Application was made in February, 1918, but was held up pending settlement of more important problems. Since the signing of the armistice, however, efforts have been put forth again, first with the division of traffic and now with the public service division, and an early decision may be obtained.

Steel shipped from the Pittsburgh district to the Philadelphia district for bridges, tunnels and buildings takes a rate of 24.5 cents with an additional charge of 1.5 cents for the fabrication privilege. Similar steel from Pittsburgh to Philadelphia, or the Delaware river shipbuilding district, when intended for ship construction, takes a rate of 40.5 cents. Extension of the fabrication privilege would mean a difference of 14.5 cents per 100 pounds, or from 60 cents to $4.20 per ton, depending upon the location of the steel mills and the fabricating plants, as regards Delaware river shipyards.

The net saving to the shipbuilders of the United States annually would approximate $60,000,000, it is estimated. The railroad administration of course would lose that amount and just now, when its financial troubles are paramount, this item is probably the main reason why the shipbuilders are experiencing delay in getting action upon their application. They point out, however, the railroad administration is losing an opportunity to promote the commerce of the United States, which they expect would ensue upon the extension of the privilege to ships.

Low On Steel Work

Washington, July 1.—With a bid of $403,936, the McClintic-Marshall Co., Pittsburgh, submitted the lowest bid to the bureau of yards and docks, navy department, for erecting a crane runway involving 3600 tons of steel for the shipbuilding ways of the New York navy yard. The company offers to make delivery in 180 days. The Bethlehem Steel Co. put in a bid of $427,000, delivery in 200 days, and the American Bridge Co. submitted a bid of $449,000, delivery in 180 days. The bids were opened on June 25.

The bureau of supplies and accounts opened bids today for about 3600 tons of plates, 1000 tons of shapes, and a small tonnage of bars for a repair shop at the Puget Sound navy yard.

The Chicago Ferrule & Nut Co., 880 Lill avenue, Chicago, has increased its capitalization from $40,000 to $100,000.

Short-Day Labor Schedule Hit

Investigation of National Industrial Conference Board Shows Production is Decreased by the Adoption of 48-Hour and 50-Hour Weeks in the Metal Working Plants—Few Report Gain of Output

THAT adoption of a 50-hour week by the metal manufacturing industries could not be done without a noticeable loss in production, is the conclusion reached in a report just issued by the national industrial conference board, Boston. This investigation includes the metal trades proper, foundries, automobile, hardware, electrical equipment and some miscellaneous establishments. The report states that it is possible for a proportion of establishments to maintain production on a schedule of 50 hours per week, but states, "that such a schedule could not be universally adopted without some loss in production."

In the case of a 48-hour week a much smaller number of establishments reported production maintained, and the report holds "that notwithstanding the fact that reductions to such a week proved satisfactory from a production standpoint in a sufficient number of cases to invest such a schedule with a high degree of interest, the weight of the evidence leaves little ground for doubt that a general reduction to a 48-hour week at the present time would mean a serious loss in production."

In establishments where a large percentage of the work is performed by automatic machinery the evidence gathered, indicates that in general, maximum production cannot be had on a schedule as low as 48 or 50 hours per week. No significant change in the health of the workers resulting from shorter hours, was developed by the investigation, but it was found that health conditions among the workers were relatively favorable judged by the average hazards of industrial employment.

What could and would will be done on a 50-hour schedule is pointed out by the report. Much depends on the degree of co-operation between the management and the workers. "No single factor," says the report, "could do more to accomplish good results, than the recognition by workers of the indisputable principle that their real interests for bettering their condition lies in increasing the efficiency of individual production.

"If both management and workers would actively co-operate to this end, a 48-hour week might prove practicable in a larger number of establishments than is now the case. But unless such co-operation is secured the general adoption of a 48-hour week in the metal trades would involve a serious economic loss to the nation."

In the course of the investigation two questionnaires were sent out, one in the latter part of 1917 and the other in March, 1919. Replies were received from 1247 establishments employing 755,534 workers. Of these, 409 establishments employing 361,371 workers, had reduced hours and furnished data as to the effects of such reductions.

In the case of the 48-hour group, covered by the 1917 returns, the establishments reporting an increase in production had more than two-thirds of the total number of workers. It is significant, that 16 establishments, none of which were of unusual size, reported either an increased or a maintained output under the shorter schedule. Of 66 establishments which reduced to a 50-hour week, four reported increased production, 28 as maintained and 34 as reduced.

The results of the 1919 inquiry are less favorable to the practicability of a 48-hour or a 50-hour week. So far as the 48-hour group is concerned the number of establishments maintaining or increasing production was small. In the case of the 50-hour week, the result was similar, 11 establishments showing they held or maintained production, against 24 reporting a loss. The report states that due to the fact that the metalworking industry during the time the 1919 questionnaire was sent out, was in a somewhat demoralized state, because of the signing of the armistice and efforts to get back on a peace basis, the evidence gathered by the 1917 questionnaire is a safer criterion of the practicability of a shorter week schedule than that obtained through the 1919 questionaire.

A striking feature of the report is the rather general satisfaction with a 50 or a 48-hour week, expressed by manufacturers who had reduced to such schedules. Of the 40 establishments which had reduced to a 50-hour week, 29 expressed a preference for such a schedule, while of 40 who had reduced to a 48-hour week, 20 favored this schedule and 10 others a 50-hour schedule. It is shown that 93 per cent of the establishments investigated are open shops.

This report is the fifth thus far issued by the board in the course of an extensive investigation of the effect of reductions in hours of work on output, and on the health of workers in the various major industries.

War-time Labor Agencies Go Out of Existence

Washington, July 1.—Effects of congress' policy of retrenchment were apparent during the week ended June 28, when the national war labor board and several other bodies dealing with labor problems organized for the war, went out of existence. In the case of the war labor board, action by the President is still necessary to make its dissolution complete, although there are no funds for it.

No more cases will be accepted by the board. Those now under consideration will be submitted to the joint chairmen or a section of the board. All administrative duties in connection with any cases not settled will be transferred to the department of labor.

Other labor agencies which ceased to exist include the investigation and inspection service, the working conditions service, and the information and education service of the department of labor.

Train Foremen Class

The Taylor-Wharton Iron & Steel Co. of Easton, Pa., has inaugurated a special course of training for its foremen to improve production and labor relations in its plant. A study group has been organized under the direction of John E. Calder, of the Business Training Corp., New York, and W. M. Henderson, superintendent, to take up a course in modern production methods. An additional object is to develop competent understudies for the foremen among the more ambitious employes.

The class is studying plant layout and routing, purchasing, stockkeeping and storekeeping, reduction of waste, production records, cost accounting, labor turnover, the selection, training and supervision of employes, discipline, safety and sanitation.

Peace Problems Sober Sentiment

Stock Market Marks Time as Peace Comes—Many Uncertainties Loom in the Economic Horizon—Necessity of Sending Producing Goods to Europe Plain—Business Activity Ahead—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

WALL STREET joined with the country as a whole in receiving with composure the news of the formal closing of the greatest and most destructive of all wars. This was natural in view of the fact that the event was precisely what had been expected. Moreover the actual dawn of coveted peace is not without its sobering effect. America, in common with a vast portion of the rest of the world, finds itself confronted with tremendous problems, hardly less difficult of successful solution than those of the war itself.

Contemplation of some of those problems—the present state of unsettlement in the world, uncertainty as to the future economic and political developments in Europe, the questions of labor and of credits for stricken Europe and of trade with the central powers—was sufficient to check any outburst of demonstration, even though the people had not exhausted all the enthusiasm and feelings of relief upon the signing of the armistice in November. Though of gigantic proportions, these problems are not of an insuperable character and none believes that they may not be satisfactorily solved.

As for the stock market, it displayed a tendency to mark time. Two things have combined to check the upward flight of the level of share quotations; the high call money rates, resulting from the adverse attitude of the federal reserve board toward runaway speculation; and the coming of peace. The treaty had long been a tangible objective of the bull movement, and with this accomplished the market finds itself under the necessity of finding a new basis for enthusiasm. This it doubtless will do in connection with the crop prospects and promise of unprecedented industrial activity.

America Has Needed Goods

Viewed economically the most outstanding fact shining forth in the post-war period of the coming months is the urgent world need for goods of every description. To this country, and to the rest of the world as well, the most important fact subsidiary to this, is that America is the only available storehouse of food and goods, and also the only nation with sufficiently unimpaired credit resources to supply these goods on credit to temporarily-impoverished peoples.

American financiers and business men, no less than the leaders in Europe, see the absolute necessity of providing the countries of Europe with food and goods in order that their people may get back to work and their industries again may be put upon their feet. Otherwise, idleness, non-production, extreme want and the inevitable consequence of bolshevism, must prevail. Europe must be supplied on long time credits, and definite announcement of the details of a plan being worked out by American financiers may be expected soon. This plan will point the way for the whole country to co-operate.

The proceeds of Liberty bonds were spent for engines of destruction. War represents economic waste upon a grand scale. The debentures of any corporation that may be formed to finance exports to Europe will be sold in order that machinery of production may be purchased. The money thus spent will set millions at productive, not destructive, tasks. It will help rebuild the shattered economic structure, and bring back prosperity to poverty-stricken lands. In this way, and this way only may Europe be put in a position to pay the enormous interest upon her debt to us. In the meantime the money spent for this purpose will keep our own expanded capacities busy, our export trade flourishing and the country in an era of undisputed prosperity. It is important that imports of productive goods, such as building materials, tools, agricultural implements and railroad equipment be permitted by Europe. French thought, at first inclined to the exclusion of foreign goods, now is swinging around to see that production is the great need and that to attain this, productive goods are indispensable. England is still inclined to maintain restrictions.

Probably the most difficult problem facing America is that of wages and labor. No surplus of labor is apparent in the immediate future. The heavy emigration of aliens returning to Europe will create a shortage of common labor, which will tend to lift the level of all wages.

To counteract the emigration of aliens, there may be an immigration movement from Europe of people desirous to escape the burdensome taxes. The condition of the labor supply, the insistent and never-ending demands of employes for higher wages with shorter hours, and consequently less production and the world shortage of goods creating a "scarcity demand" for food and materials, may keep the prices of commodities moving up for some months. That the advances of wages are ahead of the cost of living, is made apparent by the lavish spending for luxuries and expensive commodities of all kinds, now universally reported by retail stores.

Central Assets Shown

Current assets of $7,588,341 and total assets of $13,701,282 are shown in the financial statement of the Central Steel Co., Massillon, O., as of April 30. The property account is figured at $6,764,896. Investments in National Pressed Steel Co. amount to $982,125 while deferred charges to operation, prepaid interest, insurance and taxes amount to $38,001. The liability account shows accounts payable $1,240,537, notes payable to banks, $2,948,510; merchandise payable, $329,397, and deferred credits of $12,607, making gross liabilities of $4,531,052. There is $2,131,300 preferred and $1,969,300 of common stock outstanding, $1,801,583 reserve for taxes and $61,042 for new buildings and $3,207,003 in undivided profits, leaving net assets of $9,170,230.

War Causes Losses

War work done by the Standard Parts Co., Cleveland, required extensive readjustment of the plants and made it necessary to go into the surplus to meet dividend requirements, the annual report of the company shows. Net profits for the year ending Dec. 31, after deduction for taxes and contingencies, amounted to $1,261,419. Dividend requirements were $1,270,315, or $5894 more than the net profit earned. It was stated that the company operated

to about 75 per cent of capacity on war work. All but about $600,000 of a total of $1,632,892 in government claims outstanding on Jan. 6 has been paid. Officials report that orders are coming in on a large scale and that the plants are operating at capacity, with the exception of the axle plants, which will be doing likewise when tools are made.

Radiation Profits Good

The annual report of Steel & Radiation, Ltd., Toronto, Can., for the year ended Dec. 31, 1918, shows profits from operations almost double that of the previous year amounting to $556,191. Interest charges were $74,727, leaving a net profit of $481,464, compared with $213,516 in 1917. The balance at profit and loss at the beginning of the year was $49,803, making a total credit of $531,267. From this were deducted preferred dividends in respect of 1917, $46,529, transferred to depreciation and amortization reserve, $299,090; provision for reduction and inventory against falling prices of material and restoration of plant to resume peace business, $175,000; a total of $520,619, leaving a surplus for profit and loss at the end of 1918 of $10,647. President Sir Henry Pellatt, in his statement to shareholders says that the liquid position of the company is vastly improved; for the year 1917 there was a surplus of current assets over liabilities of about $125,000, while the present statement for 1918 shows a surplus of $332,614.

To Distribute Stock

The Charcoal Iron Co. of America has announced a 20 per cent stock dividend in lieu of the regular cash disbursement. At a meeting called for July 31 shareholders will vote on the directors' decision to increase the capital stock from $2,839,350 to $5,000,000, out of which increase the stock payment will come, the balance to go into the treasury for future requirements. In his statement to stockholders, President Frank W. Blair said the action was decided upon because of the fact that cash is tied up in inventories, which June 1 were $650,000 in excess of the amount on Jan. 1, a condition due to the difficulty of moving finished products. Practically all of the heavy inventory is covered by orders, according to the president. The company's pig iron situation has improved and earnings are fully up to expectations, he says.

Government Sells Steel

Various offerings of government-owned steel continue to be made. Bids will be opened at Rochester July 7 on 533 tons 1 x ⅞-inch carbon steel; 786 tons 3½ per cent nickel steel, and 294 tons soft steel; on July 9, 1997 tons 155-millimeter forgings and 685 tons 75-millimeter forgings; on July 10, 104 tons steel plates, assorted sizes; on July 11, 1857 tons sheet steel billets; on July 12, 59 tons head forgings for 75-millimeter shrapnel and 178 tons 2 13/16-inch cold rolled round steel bars; on July 15, 398 tons round cold rolled screw stock, assorted sizes; 49 tons 150 x 6¼ x 93¾-inch cold rolled strip steel; 32 tons ⅞ x 2-inch hot rolled forging steel; 1070 tons 9.2-inch steel base plug forgings and 2989 tons 9.2-inch shell forgings.

Philadelphia is offering for bids on July 3, 108 tons 23/32-inch squares; on July 7, 161 tons 15/32 and ⅝-inch rounds. Detroit will take bids until July 3 on 488 tons 75-millimeter common steel forgings; on July 7, 155 tons semisteel scrap castings and 397 tons 75-millimeter shell forgings.

Andrews Steel Additions Increase Ingot Output

An extension to the plant of the Andrews Steel Co., Newport, Ky., which increases the ingot capacity of that plant by about 8000 tons a month, recently was completed and now is in operation. Work which included excavations, foundations, two 100-ton basic open-hearth furnaces, charging floor, building storage bins, the installation of a mechanical gas producer plant, ash and coal handling equipment and the rearrangement of all railroad and stock tracks, was under the direction of the S. R. Smythe Co., Pittsburgh, consulting and contracting engineers.

The mechanical gas producer plant consists of five Morgan mechanical producers. The Smythe company also rearranged the gas producer plant of the company for the blooming mill, soaking pits, changing the gas system from underground to overhead. By this change the gas is conveyed from the producers entirely over the top of the blooming mill building with downtakes, headers and connections embodying a number of new features as to soot catchers and insulation. New soaking pit furnaces have been built embodying the patented ideas of H. E. Smythe. These furnaces have no checkers for the gas, but are arranged for checkers in the air chambers only.

Considers New Stack

Chicago, July 1.—The Steel & Tube Co. of America is considering plans for an additional blast furnace stack at the South Chicago plant of the Iroquois Iron Co. The size and design of the stack and its location have not yet been definitely decided but it probably will be as large as or larger than the one erected more than a year ago.

Prices Firm

In Market for Coke Oven By-Products —Sulphate Inactive

New York, June 28.—Although considerable strength is manifested, prices in the eastern coal tar products market remain unchanged. Pure benzol, for which the demand continues heavy, is still holding at 24 to 28 cents, and 90 per cent benzol at 23½ to 27 cents. Toluol and solvent naphtha are quoted at 25 to 35 cents and 22 to 27 cents, respectively, and owing to a good movement of these products, in conjunction with the heavy buying of motor benzol, of which they are a component part, supplies are exceedingly scarce.

Spot phenol is now available in better quantity and the market on this delivery is pretty clearly defined at 9½ to 10½ cents per gallon. Contract shipments are being booked at the same level. Trading in naphthalin continues to slump off, the drug trade now being virtually out of the market. Nevertheless, the market on this product is unchanged. Naphthalin in flakes for spot and contract business is quoted at the producers' plants at 8½ to 9½ cents, and in balls at 10½ to 11½ cents.

The market for sulphate of ammonia is still inactive. Sellers, however, are hopeful that the fertilizer industry will come into the market shortly. In the absence of any domestic business the market continues nominal. Prices on the little foreign business booked appears around $4.85 for material in double bags.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	0.09½ to .10½
Naphthalin, flake	0.08½ to .09½
Naphthalin, balls	.10½ to .11½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Contract

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

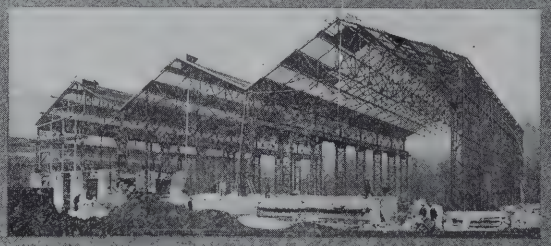
Phenol	$0.09½ to .10½
Naphthalin, flake	0.08½ to .09½
Naphthalin, balls	.10½ to .11½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	nominal

Commercial Treaty With America Favored in France





Yesterday Today and Tomorrow in European Industry

BY FRANCIS MILTOUN

Paris Correspondent of The Iron Trade Review

PARIS, June 13.—The Paris and provincial Republican committee of commerce, composed of the "Republican" senators and deputies of the French parliament and provincial counsellors, has indorsed a motion, on the basis of a report by Monsieur Havey, of the customs committee, urging that an immediate commercial convention be signed between France and the United States to develop and augment commercial exchanges between the two countries.

This convention is intended to make amends for errors committed in 1910 in surtaxing a large proportion of American products, while the tariff convention with Germany, of which there is nothing said in the peace treaty, allows that country to export to France on a minimum tariff basis, to the detriment of the United States.

This is something that every American ambassador to France, every consular officer, and the American Chamber of Commerce at Paris have been working for, but without success, or without having made any appreciable progress, since the original decree was made. The reform, however, is now near achievement and it is believed that it only is a question of time before its adoption.

As a rider the project carries with it a "rectification of tariffs in comport with the constantly rising costs of most of the necessities of modern life." Certain products which the United States and France previously bought of Germany are desired to pass under a regime which shall transfer the surtax to them, thus permitting French and American merchants and manufacturers to arrive at an understanding as to a reciprocal "most favored nation" basis which hitherto has been absent from Franco-American relations.

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Belgium Orders Rails

The Belgian State railways have just ordered 40,000 tons of rails. The circumstance demonstrates that Belgium itself already is in production. The price quoted was a trifle less than 500 francs per ton. For a moment it was a question of placing this order in the United States or England but time presses and actually with local furnaces lighting their fires, notably Cockerill at its Marchienne au Pont plant, it was deemed good business and good politics for Belgium to handle this business itself. There is a big project in view for the electrification of Belgian railways almost in their entirety, looking to a normal speed of 60 to 80 kilometers an hour. This presumes that many bridges, road-beds and rails will be laid anew, the work beginning with those portions which have suffered most under the intensive service rendered during the war. The first line to be electrified will be Brussels-Antwerp, the second Brussels-Charleroi, arriving ultimately at Luxembourg.

* * *

Report Wire Orders

The "Revue Metallurgique" cites an instance of German manufacturers reporting a big demand for iron and steel wire in spite of the cessation of hostilities, the period covering the past three months; furthermore that these demands come from allied countries by "indirect" solicitation. Whether this is true or not is a question. Since it is a German report it is believed to be significant. The following prices quoted as of May 1 in Germany may have some bearing on the productiveness of German plants: Wire, 550 marks per ton; plates, 660 marks; pig iron, 440 marks; billets, 475 marks; profiles, 520 marks, and bars, 550 marks.

* * *

Revive Douai Foundry

The Wauthy foundry at Douai which was transferred to Eu during the period of the invasion, now has been returned to the former city with a considerable program of extension. Bronze castings for ship work, locomotives and electrical machinery are to be its specialty, with a department devoted to the casting of bells. A new property acquired since the armistice will enable this foundry and forge to become one of the most important and highly specialized of the Douai region.

* * *

Promote Electro-metallurgy

Hydraulic power is to be developed intensively in the France of the future. The metallurgical industry especially is interested as the production of electric steel throughout mid-France and the mountainous districts around Grenoble and in the Rhone valley will bring a new and prosperous industry and a decentralization which in every way is desirable. French industry of all kinds previous to the war largely was centralized, to its detriment. The fact that so much of the metallurgy of France was flanking the eastern frontier actually brought about its devastation. Of the costs of production of steel in electric furnaces there

is a wide divergence of opinion, as recent discussion in the French parliament has shown. The largest scheme projected is to use the torrential Rhone as it flows out of the Lake of Geneva down through mid France to the Mediterranean. A convention soon is to meet at Grenoble to discuss the procedure of harnessing the Rhone but curiously what may well be called a snag has been encountered. The fact is water cannot be drawn from the Lake of Geneva by the Rhone at a rate which will reduce the lake level below 372 meters above sea level. This was arrived at by an international agreement in 1884. The Rhone project which has been studied in all its details by the inspector general of Ponts et Chaussées provides for an expenditure of 900,000,000 francs, and a like outlay to care for the demands of navigation in the shape of new locks, bridges, etc. The use of the portion of the upper river between Lyons and the Swiss frontier alone it is expected will effect an economy of 5,000,000 tons of coal annually.

* * *

Krupps In Holland

The *Matin* publishes a report from its correspondent to the effect that the Krupp Works of Essen are about to erect a gigantic plant at Appledoorn in Holland. The plans are already completed and the land necessary already acquired. Naturally products from the Krupp Dutch works will go forth into the world as of Netherlands origin, though the plant will be connected with the iron of the Ruhr and the coal of Westphalia. Shipments will be readily made through the great port of Rotterdam, which has always been the predilection of Germany to the detriment of Antwerp, which has been at a disadvantage because of Holland controlling the Scheldt. It is only an indication of the way the wind may blow some day, but it does look as though it was in the Dutch quarter. Belgium won't like it, neither will France, neither will England. I wrote some weeks ago of the phenomenal growth of the metal trades of Holland during the war period, some seven fold increase in capital. Does this mean a new industry for Holland on a big scale, backed by German capital and nourished with German raw products, leaving a minimum of benefits to the Dutch? No one knows as yet but all the world will speculate.

* * *

Poland's Steel Needs

The economic council figures out that Poland's needs in iron and steel are insistent if that country is to be put into immediate condition to take care of itself, to say nothing of a future expansion when the time comes. The need of the moment is for 240 stationary steam engines (18,600 horsepower), 3000 dynamos, various metals, excluding iron and steel, 2700 tons, steel for machinery parts 1700 tons, copper 5000 tons, aluminum 200 tons, iron and manganese ore 600,000 tons, pig iron 400,000 tons, rolled iron —plates, etc., 300,000 tons.

* * *

Steel Plate Bureau

The Comptoir Sidérurgique de France—the metal sales office, has been inaugurated under the auspices of various metal groupments, but is virtually a distinct organization. It is to deal only with plates and large shapes and is under the direction of Monsieur Fournier, of Schneider et Cie. It will begin operations July 3, and will be the organization which will practically make the market price for plates. A similar organization was in operation from 1894 to 1904 under the sales managership of Monsieur Vital Hucguet, who is to occupy a corresponding post in the present organization.

Another sales bureau to occupy itself with "merchant steel" products on similar lines is in a way of formation but will not be ready for business for some weeks yet. Virtually these organizations are an exemplification of the trust, or combination or cartel idea, not only for export trade but for delivery and distribution at home. Orders placed will be handed out to members best fitted to produce the goods economically and expeditiously, with a view also to the geographical situation of the place of production and delivery.

* * *

To Make Tin Plate

The Longwy ore field was one of the most sorely tried districts of the war, and may be said to have marked the only victory to the credit of the crown prince. It was a declassed fortress at that, so it was not much of a victory. Today, it having been brought into such prominence, all its population and industry is spurred to a new effort. The Longwy Steel Works, the Aciéries de Longwy, are about to undertake the production of two new lines—corrugated construction iron and tin plates. France produced very little of either of these specialties in the past. The Mont Saint Martin plant of this company has already put its blast furnaces into operation along with a new rolling mill and an open-hearth furnace. The production is to be confined to large castings for naval and other industrial works. A great difficulty in getting the plant into operation at once is that of recovering essential working parts which were carried off to Germany as loot, but, remarkable as it may seem, much of this has been found and identified and a very great effort is being made to get into full production before autumn.

New Plant

For Columbia Motors to Double Capacity—Other Detroit News

Detroit, Mich., June 30.—A modern new plant is being planned for the Columbia Motors Co. to provide 150,000 square feet of floor space and double the present production capacity. The site containing six acres is located at Boyd street and West Jefferson avenue. J. G. Bayerline is president.

The Paige-Detroit Motor Car Co. is completing factory additions which are to give a total of 15 acres of floor space, according to President Harry M. Jewett.

The Detroit Radiator Corp., organized 10 months ago with an authorized capital of $300,000 to manufacture auto and airplane engine radiators, has purchased a 4-acre site at Royal Oak, Mich., for its new plant. The company manufactures the Curran radiator designed by E. T. Curran, president of the company. Headquarters are at 435 Woodward avenue. H. H. Rowe is general manager.

The Steel Products Co. of Detroit and Cleveland has purchased the $250,000 site and plant of the Parker Rust Proof Co. of America in this city. The plant includes four buildings constructed three years ago and contains 65,000 square feet of floor space. The Parker organization will move into new quarters.

The Fisher Body Corp. is having plans prepared for a 6-story reinforced concrete and steel sash building.

The Hupp Motor Car Corp. is running 50 per cent behind on its production schedule for 1919 which calls for 18,000 cars. The company has 2500 unfilled orders.

The McCord Mfg. Co., one of the largest manufacturers of automobile radiators in the world, has issued $1,500,000 of first mortgage bonds to provide for expansion of its local plant. A bond issue of $500,000 is also being marketed for the extension of the Chicago plant.

The Shuler Axle Co., Detroit, contemplates the erection of a plant second in size only to that of the Timken-Detroit Axle Co. Authorized capital has been increased from $200,000 to $500,000.

Recalls Concessions On Sulphur

American Society for Testing Materials in Annual Meeting Votes to Stiffen Acceptance Requirements—Metallurgists Discuss Deep Etching of Rails and Making of High-Speed Steel

A RULING of great importance to the manufacturers and users of steel products was made by the members of the American Society for Testing Materials at its twenty-second annual meeting, held at the Hotel Traymore, Atlantic City, N. J. The concessions made by the society in 1918 *by increasing the rejection limits of sulphur and phosphorus were recalled in the case of* 29 *specifications and action on* 14 *other specifications was deferred. The action of the society was governed by the belief that some of the difficulties in obtaining certain materials exist now as in* 1918 *when the note, which reads as follows, was applied:*

> *"In view of the abnormal difficulty in obtaining materials in time of war, the rejection limits for sulphur in all steels and for phosphorus in acid steels shall be raised* 0.01 *per cent above the values given in these specifications. This shall be effective during the period of the war and until otherwise ordered by the society."*

The specifications affected by this note in 1918, *classified according to their present status, follow:*

Specifications From Which Note is Removed

Designation	Specifications for
A 2 12	Open-hearth steel girder and high tee rails.
A 4 14	Medium carbon steel splice bars.
A 5 14	High carbon steel splice bars.
A 6 14	Extra high carbon steel splice bars.
A 49 15	Quenched high carbon steel splice bars.
A 50 16	Quenched carbon steel track bolts.
A 51 16	Quenched alloy steel track bolts.
A 7 16	Structural steel for bridges.
A 8 16	Structural nickel steel.
A 14 16	Carbon steel bars for railway springs.
A 58 16	Carbon steel bars for vehicle and automobile springs.
A 59 16	Silico-manganese steel bars for automobile and railway springs.
A 60 16	Chrome-vanadium steel bars for automobile and railway springs.
A 68 18	Carbon steel bars for railway springs with special silicon requirements.
A 17 18	Carbon steel and alloy steel blooms, slabs and billets for forgings.
A 18 18	Carbon steel and alloy steel forgings.
A 19 18	Quenched and tempered carbon steel axles, shafts and other forgings for locomotives and cars.
A 20 16	Carbon steel forgings for locomotives.
A 21 18	Carbon steel car and tender axles.
A 22 16	Cold-rolled steel axles.
A 63 18	Quenched and tempered alloy steel axles, shafts and other forgings for locomotives and cars.
A 57 16	Wrought solid carbon steel wheels for steam railway service.
A 25 16	Wrought solid carbon steel wheels for electric railway service.
A 26 16	Steel tires.
A 29 18	Automobile carbon and alloy steels.
A 70 18*	Boiler and firebox steel for stationary service.
A 71 17*	Carbon tool steel.
A 32 14	Cold-drawn bessemer steel automatic screw stock.
A 54 15	Cold-drawn open-hearth steel automatic screw stock.

Specifications to Which Note Still Applies

Designation	Specifications for
A 1 14	Carbon steel rails.
A 3 14	Low carbon steel splice bars.
A 67 18*	Steel tie plates.
A 76 18*	Low carbon steel track bolts.
A 9 16	Structural steel for buildings.
A 10 16	Structural steel for locomotives.
A 11 16	Structural steel for cars.
A 12 16	Structural steel for ships.
A 13 14	Rivet steel for ships.
A 15 14	Billet steel concrete reinforcement bars.
A 27 16	Steel castings.
A 28 18	Lap-welded and seamless steel boiler tubes for locomotives.
A 52 18	Lap-welded and seamless steel and wrought iron boiler tubes for stationary service.
A 56 18	Iron and steel chain.

Note:—*Indicates tentative standard.

Report On Steel and Wrought Iron

RARELY does a technical session in a convention of engineers and scientific men attract the attendance and sustain the unabated interest which was accorded the meeting on steel and wrought iron of the American Society for Testing Materials held Wednesday morning, June 25, at the Hotel Traymore, Atlantic City, N. J. The reports of two committees, one involving unusually important revisions in the specifications for a great number of steel products, were acted upon. Papers dealing with modern high-speed steel and the etching of rails and forgings brought forth 12 written discussions which contributed greatly to the interest of the session.

Upon the invitation of Capt. Robert W. Hunt, who presided over the meeting, J. A. Capp, chief of testing laboratories, General Electric Co., Schenectady, N. Y., as chairman of the committee on steel submitted a lengthy report covering the numerous activities of that committee during the past year. An abstract of the report, containing practically all of the important changes recommended by the committee, was published in the June 26 issue of THE IRON TRADE REVIEW.

Referring to the note added to a great number of specifications in 1918 providing that the rejection limits for sulphur in all steels and for phosphorus in acid steels be raised 0.01 per cent above the values given in those specifications, Mr. Capp stated that the conditions which necessitated the addition of the note still exist in regard to certain materials. Therefore the committee recommended and the society approved that the note be removed at once from 29 specifications and that action on removing it be deferred until the next annual meeting in the case of 14 specifications. The specifications affected by this ruling are listed in tabular form on this page. Chairman Capp also

announced that a committee composed of the chairmen of the subcommittees of the committee on steel has been created for the purpose of co-operating with the United States bureau of standards in thoroughly investigating the effect of phosphorus and sulphur on steel so that future revisions in specifications can be based upon more recent and complete data than are now available.

The report of the committee on wrought iron was presented by its chairman, H. E. Smith, engineer of tests, New York Central railroad, Washington. The committee recommended revisions in the specifications for engine-bolt iron and proposed tentative specifications for extra-refined wrought iron bars, both of which were adopted by the society. The changes in the specifications for engine-bolt iron involve the inserting of the words "all pig" before the word "puddled," making the section read, "The iron shall be made from all pig puddled iron and shall be free from any admixture of iron scrap or steel." The proposed specifications just adopted as tentative for extra-refined wrought iron bars were prepared to cover large rectangular bars used in the construction of locomotives. The iron described in the present specifications for refined wrought iron bars is not of the quality desired, especially with reference to the raw material, while the requirements of the present specifications for engine-bolt iron are too severe for rectangular bars of rather large dimensions.

Discuss Deep Etching of Steel Rails

PROMINENT metallurgists discussed the subject of deep etching introduced by F. M. Waring, who read a paper entitled, "Deep Etching of Rails and Forgings," by F. M. Waring and K. E. Hofammann. In this paper, which was published almost verbatum in the June 26 issue of THE IRON TRADE REVIEW, the authors present the results of some deep etchings with hot acid on new and old rails and infer that the cracks developed to visibility by this process may have been caused in the mill during some stage in the fabrication of the rails. The discussion was focused upon the factors influencing the development of the cracks revealed by the deep etching.

J. A. Capp suggested that the cracks are the result of gas pressure set up by the acid added to the internal strain of the metal. James E. Howard, interstate commerce commission, Washington, supported the contention that the cracks had their origin in the mechanical treating of the metal during manufacture. A series of investigations in which X-ray photographs of specimens are used in connection with deep etching was advocated by W. P. Barba, production division of ordnance department, United States army. J. S. Unger, central research bureau, Pittsburgh, asserted that the only way to distinguish good rails from bad is to etch a number of new rails; separate them into two classes, supposedly good and supposedly bad; place them in service and check their performance with the conclusions drawn from the etchings. A number of these discussions are presented in abstract form as follows:

Rate of Acid Attacks

By J. S. Unger

Whether the conclusion of Messrs. Waring and Hofammann to the effect that the defects shown in the rails have their origin in the manufacture of the material remains to be proved. We have been investigating rails to determine the rate of acid attack in the three dimensions; the transverse vertical from a disk section taken from the end of a rail; the transverse longitudinal, taken from a disk section at the interior or under side of the longitudinal slab; and the vertical longitudinal disk section taken from the interior of a longitudinal slab cut from the side of the rail.

In the few experiments made up to this time, the action of the acid has been found to be four times as rapid in the transverse vertical disk, or that from the end of the rail, than on either of the longitudinal specimens. When such specimens of the same area taken from the same rail and as closely adjacent as possible, are immersed in the same solvent at the same time, the difference is apparent at once by the rate of the evolution of the gas. If transverse sponginess exists in a rail which is not visible to the eye or under the microscope and this be developed by the etching solution and the action of the solvent is four times as great in one direction as in another, the extent of such sponginess is greatly magnified leading to erroneous conclusions as to the extent of the supposed defect.

A certain railroad has purposely removed several good rails from the track and cut them up for examination. Of these good rails some were found to show supposed defects after etching, while others were free from such defects. All showed longitudinal lines in the direction of rolling. Additional rails removed from the track were defective, some having transverse fissures. These were etched and the etchings were practically the same as those from the good rails.

In the face of such conflicting evidence, it appears unwise to draw any conclusions as to the detrimental character in service of a rail which has shown sponginess during etching.

The only solution of the question as it now stands is to take a number of new rails and etch them. Separate them into two classes, supposedly good and supposedly bad. Place these rails into the same service at the same time, alternating the rails as laid and from their average track service, determine what ones are good and what are bad. Until this is done, conclusive evidence to warrant drawing conclusions will be lacking.

Does Gas Cause Cracks?

By J. A. Capp

It is common knowledge that when hardened steel parts, such as springs, are pickled in acid, they frequently break up. Some years ago there were several papers on this subject published in the *Proceedings* of the American Electrochemical society which purported to prove that the breaking of the hardened steel springs was due to the absorption by the steel of the hydrogen liberated on the surface of the steel by chemical action of the pickle bath. The explanation given was that atomic hydrogen penetrates freely into the steel; in fact, it passes through such thin sections as spring steel. Wherever the atomic hydrogen finds sufficient room in the steel to unite with other atomic hydrogen to form the molecule of hydrogen or H_2, enormous pressure is set up. When the steel is already in a highly strained state the additional strains set up by the internal pressure developed by the formation of the hydrogen molecules is sufficient to rupture the steel. As further evidence it is pointed out that annealed steel, which is free from internal strain, is not ruptured by the internal gas pressure.

The articles examined by Messrs. Waring and Hofammann are of fairly hard steel and the methods of manufacture of them are such that an in-

ternally strained [illegible] may be expected. The acid used is strong and it is very active at the temperature employed. May it not be the case then that the fissures which develop are result of the gas pressure added to the internal strain? It would be interesting to test two adjacent specimens, one of them to be pickled in its hard state and the other to be pickled after annealing. If the explanation offered in this discussion is correct, the hard specimen should crack and the annealed piece should show no cracks.

Advises X-ray of Steel Before Etching

By W. P. Barba

As to deep etching and its use in determining the possible presence of fissures, either developed or potential, a great deal of work was done by the army ordnance office in the manufacture of gun forgings in 1917 and 1918. Deep etching with quite strong sulphuric acid with some hydrochloric acid developed surely the locus of what later developed into fissures as well as flakes. Many times flakes are incipient fissures, becoming fully developed upon later application of breaking force, especially when suddenly applied, as when fractured under the drop test.

Later work at the bureau of standards, carried on by Mr. Rawdon under Drs. Burgess and Stratton, caused us to resort to the Upton Lewis alternating-stress machine, using pieces 6 x 2 x 0.375 inches, stressing them only to about 30,000 pounds per square inch and using as many as 30,000,000 alternations. Mr. Rawdon applied the Coolidge tube to these pieces before, during and after rupture. The experiment was primarily started to see if known small flakes or incipient fissures would "run" or develop as in a detailed fracture under repeated stressing within the elastic limit. It was found that they did so develop and quite appreciably.

When Messrs. Waring and Hofammann displayed their work, it was at once evident that a similar method of research might well disclose the presence or absence of such steel defects as result in rail fissures. The deep etching can be applied after the Coolidge ray exposure, thus determining if the cause is a simple one or more complex as has been discussed by J. A. Capp.

Steelmaking is Secret of Good Tools

IN the absence of John A. Mathews, president, Halcomb Steel Co., Syracuse, N. Y., his paper on modern high-speed steel which appeared in the June 26 issue of THE IRON TRADE REVIEW, was summarized by C. L. Warwick, assistant secretary of the society. In the discussion which followed, practically all of the speakers agreed with Dr. Mathews on his statement that improvements in the method of steelmaking, rather than changes in the analyses of steels have been responsible for the progress made in high-speed tool steel during the past 15 years. Several metallurgists differed slightly in regard to the value of certain additions to steel, particularly cobalt. The heat treatment of the steel came in for considerable discussion, and it was the unanimous opinion of all speakers that too much attention cannot be given to the subject of uniformity in treatment. The need of standardization in this respect was emphasized by George L. Kelley, engineer of tests, Nicetown plant, Midvale Steel & Ordnance Co., Philadelphia. J. Heber Parker, metallurgist, Carpenter Steel Co., Reading, Pa.; N. B. Hoffman, metallurgist, Conolian Steel Co., Pittsburgh; W. J. Baxter, captain, United States navy, and Edward W. Rettew, assistant metallurgist, New Departure Mfg. Co., Bristol, Conn., discussed Dr. Mathews' paper. Abstracts from a number of these discussions follow:

Urges Standardization

Mr. Rettew presented the results of three months' study of a considerable number of analyses of high-speed steels representative of present American practice. As a result of these investigations the following limits and desired analysis were prepared:

Element	Limits (per cent)	Desired (per cent)
Carbon	0.60-0.70	0.65
Manganese	0.15-0.40	0.30
Phosphorus	not over 0.015	under 0.010
Sulphur	not over 0.015	under 0.010
Silicon	not over 0.30	0.20
Chromium	3.50-4.50	4.00
Tungsten	16.00-18.00	17.00
Vanadium	0.65-1.05	0.85

Continuing, Mr. Rettew stated that he firmly believes that if steel manufacturers and users will concentrate on the standardization of raw materials, melting practice, forging and annealing processes and methods of treatment and grinding involved in the manufacture and use of a high-speed steel which lies between the limits above indicated, aiming to attain the desired analysis, that truly remarkable improvements very likely will be attained.

Describes Cobalt-Chromium Tool Steel

A paper of considerable interest prepared by the bureau of construction and repair, United States navy, was presented by Capt. W. J. Baxter, captain, United States navy. The paper deals with a new kind of high-speed tool steel, samples of which were obtained from the mills of Darwin & Milner, Sheffield, England, by Lieut. S. E. Woodworth, bureau of ordnance, United States navy. This steel has been investigated in comparison with well known brands of tungsten high-speed steels and the data obtained forms the basis of the paper in question. One series of tests was conducted at the Brooklyn navy yard by William Campbell, consulting metallurgist, on samples of the steel in the form of a ⅞-inch octagon forged bar and a cast milling cutter 4 inches in diameter and ¼-inch thick. The octagon bar analyzed as follows: Chromium, 13.57; cobalt, 3.66; molybdenum, 0.84; carbon, 1.48; silicon, 0.80; and manganese, 0.19 per cent.

Hardness determinations were made by heating both samples to various temperatures in a small electric furnace, one piece being quenched in oil and the other cooled in air. The test on the forged bar showed that hardening begins at 850 degrees Cent. and reaches a maximum at 1000 degrees Cent., the hardness being practically the same whether the material is cooled in air or in oil. The tests of the cast metal show slightly higher values, with a maximum at 1000 degrees as in the case of the forged metal.

In a second investigation made at the bureau of standards at Washington, cast and forged samples were submitted to comparative tests with tungsten high-speed tools. The description of these tests is presented in detail in the paper. Tests of milling cutters made from the English non-tungsten steel and tungsten steel were made to compare the qualities of the steels in actual performance on a belt driven milling machine. Both cutters made an unusually good record, compared with current experience with the best grades of high-speed tool steel. While the tungsten

cutters were slightly superior to the cobalt-chromium cutters, the performance tests indicated that under slightly different conditions, their mechanical performance probably would have been about equal. The results seemed to indicate that when production is of secondary importance in comparison with precision, the nontungsten tools compare favorably with tungsten high-speed tools, but where the main purpose is to secure production, tungsten high-speed tools must be considered preferable.

Corrosion of Sheets

CONSIDERABLE discussion over the methods of testing corrugated iron sheets for corrosion developed during the Wednesday evening session. The report of the committee on corrosion of iron and steel was made by its chairman, F. F. Voorhees, chemist, United States bureau of standards, Washington. The report of the subcommittee on inspection contained data on the condition of corrugated test sheets which have been exposed at Fort Sheridan, Ill., Annapolis, Md., and Pittsburgh.

Following the report of this committee, D. M. Buck, metallurgist, American Sheet & Tin Plate Co., Pittsburgh, read a paper on the influence of very low percentages of copper in retarding the corrosion of steel, which was presented in abstract form in the June 26 issue of THE IRON TRADE REVIEW.

A. F. Robinson, bridge engineer, Atcheson, Topeka & Santa Fe railway, Chicago, stated that after witnessing tests of No. 26 gage corrugated sheets at Gary, Ind., he concluded that from 0.15 to 0.25 copper in steel retards the rusting of the metal; that all soft steels rust after exposure to the atmosphere; that there is no such thing as an absolutely rustless iron or steel; and finally, that it is not worth much extra expenditure to obtain chemically pure iron or copper bearing steel when the sole protection from rust is due to galvanizing, paint coating or other method of treating for protection.

A. S. Cushman, director, Institute of Industrial Research, Washington, entered into a lengthy discussion focussed principally on the methods pursued in conducting the tests described in the report of the committee on corrosion of iron and steel, and those mentioned by Mr. Buck. He said that rain and fog bring down on the inclined surface of the sheets very dilute sulphuric acid washed out of the air and that wind and sun evaporate the water, concentrating the nonvolatile sulphuric acid on the uncoated sheet until it is strong enough to etch into or cut the surface.

Continuing, Dr. Cushman said that if uncoated sheets, when newly exposed, meet a slow rusting attack for the first six months, either on account of environment or on account of comparatively good weather, they have the opportunity to grain themselves with a tight granular dehydrated oxide surface which in itself is a natural protective coating and enables the sheet to show an extraordinary long life out of doors. If, however, the initial attack on the raw uncoated sheet is very severe, as it was in the Pittsburgh case, because of the exceedingly acid atmosphere, the grain formed is loose and instead of being protective, is stimulative to corrosion.

For the first time in the history of the society, considerable importance was attached to magnetic analysis, the major part of the Wednesday evening session being devoted to a topical discussion on that subject. Abstracts of the papers, "Magnetic Analysis as a Criterion of the Quality of Steel and Steel Products," by Charles W. Burrows and Frank P. Fahy, and "Magnetic Surveys on New and Failer Rails," by P. H. Dudley, appeared in the June 26 issue of THE IRON TRADE REVIEW. A paper entitled "Application of Magnetic Analysis to the Testing of Ball-Bearing Races," by R. L. Sanford and M. F. Fischer, was read by Mr. Fischer. "Location of Flaws in Rifle Barrel Steel by Magnetic Analysis," by R. L. Sanford and W. B. Kouwenhoven, was presented by Mr. Sanford; and "Certain Aspects of Magnetic Analysis," was read by C. Nusbaum. At the conclusion of the reading of the papers listed, N. J. Gebert, New York, submitted a discussion, illustrated by lantern slides, showing the relation between the heat treatment and magnetic properties of tool steels. Dr. Unger discussed the entire series of papers on magnetic analysis, stating thoroughly the requirements which must be met by any form of testing apparatus and setting forth the advantages of magnetic testing.

Obtains Interesting Data on Malleable Iron

Upon the recommendation of the committee on malleable castings, the society, at its Thursday evening session, decided to adopt as standard, the specifications for malleable castings which have been carried as tentative since their proposal in 1918. The new standard applies to malleable castings for railroad, motor vehicle, agricultural implement and general machining purposes.

H. A. Schwartz, chemist, National Malleable Castings Co., Indianapolis, read a paper entitled, "Some Physical Constants of Malleable Cast Iron."

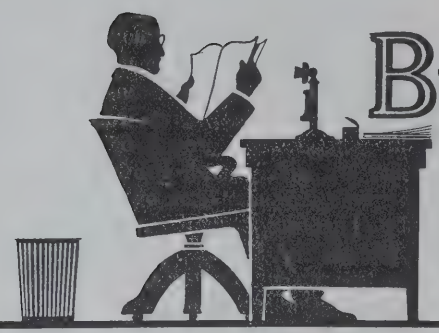
Enrique Touceda, metallurgist, Albany, N. Y., stated that Mr. Schwartz should have entered more fully into the question of hardness tests for malleable iron. He pointed out that hardness tests of steel, gray iron and alloys in general have proved of great value and are widely used. Professor Touceda regards hardness tests on malleable iron by either the Brinell or the schleroscope methods to be of little value, except to indicate whether or not a casting has been under-annealed.

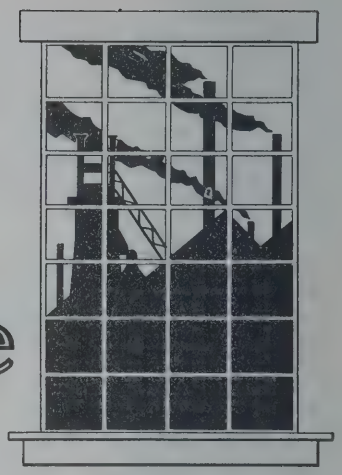
W. R. Bean, Eastern Malleable Iron Co., Naugatuck, Conn., said that he has records of several thousand tests which substantiate the data submitted in Mr. Schwartz's paper. Mr. Bean also mentioned tests made on a heavy section of malleable to investigate its physical properties. A test piece 3 inches square and 12 inches long was annealed in the regular way with light castings. Nine test pieces were cut from the same section of the bar; one at each corner, one at each side and one in the center. The bars from the corners had a tensile strength ranging from 45,914 to 45,450 pounds per square inch; the bars from the side, from 41,489 to 43,866 pounds, and the center bar, which naturally would be expected to be the weakest, had a tensile strength of 39,839 pounds per square inch. Mr. Bean summarized a number of tests made on bars which were tested as cast, and of duplicate bars which had $\frac{1}{8}$ inch machined off the surface. Two bars were cast from each of 58 heats, those tested in the rough being $\frac{5}{8}$ inch in diameter and those machined being turned to $\frac{1}{2}$ inch. The results of these tests are as follows:

Condition of bar	Elongation per cent, in 2 in.	Tensile strength, lbs. per sq. in.
Rough, maximum	22.0	58,263
Rough, minimum	8.0	51,333
Rough, average	12.8	53,259
Machined, maximum	23.0	60,060
Machined, minimum	8.5	50,241
Machined, average	13.2	53,234

At the Thursday morning session the executive committee reported its decision to move the headquarters of the society from the University of Pennsylvania to the Engineers' club, Philadelphia. A committee was appointed to negotiate for these quarters. Approximately 650 men and almost 200 ladies attended this year's meeting. Among the entertainment features was the annual golf tournament, held Thursday afternoon. Prizes were won by R. E. Griffith, H. M. Kinney, W. D. Lober, G. D. White and A. S. Hook.

Little Stories of Business Life





The Spirit of Morgan

A BRONZE bust of J. Pierpont Morgan has been installed in the board room of the United States Steel Corp., at 71 Broadway, New York. Mounted upon a stained pine column, the bust enjoys an impressive elevation at a spot along the southern wall of the room, overlooking the board table, and immediately opposite the seat of Chairman E. H. Gary at the head of the table. To the observer, there is something singularly appropriate in placing the dead financier's likeness in the chamber where are decided the policies of the gigantic industrial offspring which he fathered with so much pride, and the thought also occurs that the directors and the members of the finance committee at their meetings through the long future, always will have a sort of subconscious feeling that it is in Mr. Morgan's presence that they are shaping the destiny of the corporation. The bust, which is the work of J. Massey Rhind, the New York sculptor, reflects the light from the western windows of the room, and depicts the power and virility of Mr. Morgan in his prime.



Lucky Strikers

A DECISION just has been reached in an important matter at Newburgh, N. Y., which possibly may serve as a precedent for deciding all kinds of business problems and particularly during the hot summer months just ahead. A few weeks ago, the union sheet metal workers in Newburgh went on strike for an increase in pay to $5.40, whereas their employers thought that $5.25 was enough. On being brought together by an agent of the state department of labor, it was suggested that the dispute be settled by flipping a coin. This method of settling the controversy was accepted with acclaim and by the toss of the coin the strikers won their case. The men therefore went back to work.



Crittenden to Front

THE steel industry obtains a large percentage of its fluorspar requirements from the district of which Marion, Ky., is the center. In Crittenden county, in fact, of which Marion is the seat, the principal industry is the mining and shipping of fluorspar. In the victory loan campaign, the Crittenden county liberty loan committee obtained a huge oversubscription with the result that it was given the privilege of naming a vessel to be launched from the huge government yard at Hog island. Accordingly, the committee decided to name the vessel FLUORSPAR. The good ship FLUORSPAR took the water at Hog island on June 16, its sponsor being Miss Frances Gray, of Marion, Ky.



Youth Wins

THOUGH the manufacture of iron and steel goes back into the mists of antiquity, to Tubal Cain, the fourth man from Adam, it is a new industry in its present state. On a visit to a large steel plant recently an observer commented on the average youth of the men in charge of departments and mills and the absence of gray hair in the force. "So much of our practice is new," explained one of the heads, "that the younger men have grasped it more readily and therefore have occupied the positions." There seems to be no place for the man who cannot advance at the speed the industry has set. Changes in practice are rapid and what was excellent yesterday will not earn dividends today. The rare man who can keep abreast of this tide may stay in the harness until snow touches his temples but for the most part young men take the lead.



Blowing off Steam

AMERICANS are not the only people in the world having a penchant for investigations by commissions, and the ridiculous situations sometimes developed have counterparts in other countries. Describing the proceedings of the British coal commission, the *Birmingham Chamber of Commerce Journal* says:

"We had the opportunity of spending an hour in the king's robing room at the house of lords a few days ago, when the duke-and-earl baiting was about to commence. If the consideration of the future policy of the country were to be placed in the hands of other commissions of this kind, then we should despair of the result. If, on the other hand, the purpose of the coal commission is to provide a safety valve for the letting-off of steam, and this is successfully accomplished, then it does not so much matter. Mr. Justice Sankey has a difficult team to handle, in any case, and he seems to be satisfied if he can prevent the room becoming a beer garden. * * * Mr. Smillie asks a question, the witness answers, and the miners' leader contradicts the witness. Then Mr. Smillie tries to tell the witness what he ought to say, and if he refuses, he is

probably made the subject of some uncomplimentary remark."



Flying Talk

EVERYONE in the iron and steel business who has occasion to travel realizes how much a train telephone connection will increase his range of activity. It seems likely from investigations which now are being carried on by the McFarland Train Telephone Corp., of New York, that it soon will be possible to conduct telephone conversations from rapidly moving trains with the same facility as from one's desk. Several weeks ago a section of the Philadelphia & Reading railway's tracks between Tabor Junction and Jenkintown, Pa., was wired for experimental purposes, and it was found possible to carry on a conversation between a moving train in Jenkintown and the railroad offices at the Reading terminal in Philadelphia. Two trains from the Reading terminal now are equipped with telephones and valuable results have been achieved which will aid in leading to the development of practicable train telephoning apparatus. Officials of the Philadelphia & Reading railroad say that with the coming of the train telephone that can be used in everyday work, practically every train will include it as a part of its equipment.



Shades of Opinion

"Colors are an important factor in export transactions in many parts of the world which is not generally understood," says a leading Cleveland manufacturer of industrial haulage and handling equipment who does a large overseas business annually. "Take India for instance," he said, "one could not think of sending to certain districts a machine or product which is painted red because that color is held in reverence by the Mohammedans as it signifies to them the blood of the martyrs to their religion. Similarly green is a sacred shade to the Hindoos for the reason that it symbolizes the grass upon which the Hindoo martyrs were clain. Now black to Australia is essentially the mark of mourning. It is said there are no black automobiles in Australia. The other side of the picture is the importance of blue as applied to any product for which negotiations may be carried on with Cuba. Anything that is painted blue, it has been found, obtains a better price in Cuba because of the shade. It is these curious twists of fancy and sentiment and the various peculiarities of different peoples that make export trade so fascinating and demands such deep study to be successfully pursued."

Buy Cleveland Foundry

After seeing the Taylor & Boggis Foundry Co., Cleveland, grow from a plant employing five workmen to one with approximately 500 men on its payroll, C. J. Morgan retired as president last week, when he and his associates disposed of their interests to a Cleveland company headed by I. T. Kahn. Mr. Kahn is president of the Republic Structural Iron Works and the Columbia Hardware Co., of Cleveland. H. J. Boggis and B. F. Wade also retired from the Taylor & Boggis company as vice president and treasurer, respectively. Associated with Mr. Kahn in the purchase are Jos. C. Hostetler and Thomas L. Sidlo, law partners of Secretary of War Baker. Mr. Kahn is president, Messrs. Hostetler and Sidlo are vice president and treasurer, respectively; E. B. Emery is second vice president, and Fred Blundell is secretary of the new corporation. Mr. Blundell will likewise continue his duties as factory manager. The new owners propose to continue manufacturing a line of heavy and medium castings as well as builders' hardware.

The Taylor & Boggis plant is one of the oldest of its kind in Cleveland, having been founded in 1865. The company was incorporated in 1883 by Robert H. Boggis, C. J. Morgan, F. E. Drury and C. F. Emery, Mr. Taylor having died before the company was incorporated.

Welch Firm

Takes Over British Forgings, Ltd.—Will Establish Steel Plate Mill

Toronto, Ont., June 30.—According to an announcement made by R. Home Smith, negotiations which were being carried on between Baldwins, Ltd., Swansea, Wales, the harbor commission and the imperial munitions board, for the purchase of the plant of the British Forgings, Ltd., Ashbridges Bay, have been completed. Baldwins, Ltd., will take over the plant and site of the company and will establish a steel plate rolling mill here at a cost of upwards of $2,000,000. The British Forgings plant is one of the largest electric steel plants in the world, having a battery of ten 6-ton electric furnaces of the Heroult type.

Several of the larger Canadian carbuilders have been asked to tender bids for the construction of 20 steel mail cars and 20 first-class coaches for the Canadian National railways. The whole order is to be placed in Canadian shops and if the prices asked seem unreasonable the order will be held over until they are lower.

Contracts for the construction of new lines and extensions of existing ones in connection with the Canadian National railways system in the west have been let, aggregating approximately 340 miles, principally in Saskatchewan. It is understood that the work will be pushed forward rapidly.

The Ontario Steel Products Co., Ltd., has begun the construction of a new motor spring plant at Oshawa. The main building will be 80 x 360 feet. It will be a fireproof concrete and steel structure and will be finished by October and in operation early in 1920.

The steel trade is feeling strongly the injurious effects of the strike of metal workers which has been in progress for some weeks. Much construction work has been postponed until next year. This has caused a falling off in the demand for steel, as a number of orders involving a considerable tonnage are known to have been withheld. The most encouraging feature is the increasing demands of the motor companies, which are showing much activity in production.

The General Motors Co. of Canada, Ltd., has planned important alterations and extensions of its plant at Oshawa, Ont. A building, 80 x 400 feet, four stories, will be erected, for the assembling of Oldsmobile motors and trucks. This building will be completed in time to start production this fall. A central shipping building, 80 x 200 feet, with a capacity for 56 freight cars under roof will be constructed, so that rough weather will not interfere with loading operations. Another addition will be a four-story, 80 x 400-foot storage building with a capacity of 1000 cars. A large central enameling plant will be built and equipped with the most modern facilities. It will be a three-story structure, 80 x 300 feet. All buildings will be of steel and concrete. There will be many alterations and improvements in the present plant equipment. Good progress is being made at the large plant of two units, 160 x 600 feet, now under construction at Walkerville, Ont., where the motors, transmissions and the heavy parts of cars assembled at Oshawa will be manufactured.

The tariff bill passed the Canadian house of commons on June 19. An amendment advocating free food, free farm implements and a general downward revision of the tariff was defeated by a vote of 121 to 70.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

INCREASED business during the past four years has compelled the J. P. Devine Co., Buffalo, manufacturers of vacuum drying and evaporating apparatus as well as chemical apparatus, to build several additions to its plant, located at 1372 Clinton street. One of these additions of steel and brick construction with improved light and ventillating systems 30 x 100 feet, has just been completed and is housing the vacuum pump assembly department. Another addition, 90 x 100 feet of the same general type, now is in course of construction. It will enlarge the general assembling department. For this equipment machine tools are to be purchased. The foundations for a third addition, a new foundry, have been laid and steel construction is proceeding. This foundry, 90 x 225 feet, will be fully fitted out with new equipment which is to be purchased. It will give the company greatly increased facilities for casting large commercial units. The general contractors are Chas. Berrick & Sons Co., and the steel contractor is the Lackawanna Bridge Co., both of Buffalo.

* * *

STOCK in the Belcher Malleable Iron Co., Easton, Mass., has changed hands and the plant is to be operated under new management. The officers of the new corporation are: R. P. Rowe, president, and C. B. Swasey, treasurer.

* * *

AFTER being engaged in the iron and steel brokerage business for many years, Henry Potts & Co., 650 Real Estate Trust building, Philadelphia, have started a fully equipped scrap yard at Coatesville, Pa. It is in charge of Vice President Charles J. Scott. John R. Briggs is president.

* * *

THE National Copper & Smelting Co., Cleveland, has taken a 99-year lease on four acres facing the Nickel Plate railroad. The lease requires construction of a $20,000 building in the first two years. The company plans to improve the land with a large plant in the near future. It recently bought the Erie Buffalo Tube Co., Buffalo, and the Michigan Tube Co., Detroit. Its product is seamless brass and copper tubes.

* * *

ARRANGEMENTS have been completed by the Cincinnati Ball Crank Co., Cincinnati, with C. H. Clark, New York City, whereby it will manufacture and market the Clark compression coupling, on which patents are pending, under the name of the Cincinnati compression coupling at its plant in Cincinnati.

* * *

NEW construction for the Lakeside Forge Co., Erie, Pa., comprises a warehouse and office building and does not call for any new machine tool equipment. A new forge shop is contemplated, however, to be erected in the near future, at which time the company will require machinery of that nature.

* * *

THE American Bosch Magneto Corp., Chicopee, Mass., has closed an order for 200,000 high tension magnetos, aggregating in value $2,500,000. It is the largest order of its kind ever booked. Deliveries will start within the next 30 days. The order is equivalent to over 40 per cent of a normal turnover for a year.

* * *

THE Oil City Silica Sand Co., recently incorporated with a capital of $300,000, has completed organization with the election of the following officers: President, Dr. George C. Magee; vice president, Edward J. Quigley, secretary and treasurer, H. Merrill Hughes, these men with R. G. Koch and Homer H. Schauer, to comprise the board of directors.

* * *

THE Maher Engineering Co. has been formed with offices in suite 818 Michigan Boulevard building, 30 North Michigan boulevard, Chicago. It will handle lines manufactured by the Erie Engine Works, the Sims Co., the Dayton-Dowd Co., the Wagener Steam Pump Co. and the Pratt Engineering & Machine Co.

* * *

OF steel and brick construction, a new foundry, 140 x 250 feet, was recently constructed for the Mahoning Foundry Co., Youngstown, O. It is located at Kyles corners, about 1½ miles from the company's Poland avenue plant. A 2-story warehouse also was recently erected for this company, 100 x 240 feet. All equipment has been installed. The company recently increased its capitalization from $65,000 to $150,000 to provide additional working capital.

* * *

THE contract has been let for the erection of the main and the dry kiln building for a $2,200,000 automobile body factory which the St. Louis Mfg. Corp., St. Louis, will build. The company is a subsidiary of the General Motors Corp., Detroit, and its automobile plant is expected to be completed by October. The main factory will be 600 feet long by 430 feet wide, and will cost about $400,000.

* * *

TEMPORARY offices have been opened at 729 New York block, Seattle, by the New Era Iron & Steel Corp., which was but recently organized. According to an announcement by O. B. Dagg, secretary, the company has taken over the plant of the Washington Iron & Steel Co., Sedro Woolley, Wash., which is equipped with a 60-ton open-hearth furnace. Definite information concerning the company will be announced later.

* * *

THE Ferguson Steel & Iron Co., Buffalo, launched its third seagoing tug on its navy contract for six all-steel 1000-ton tugs, Wednesday, June 25. Of the two which previously had been launched, one was completely fitted out and accepted by the department, sailing from Buffalo on June 14. Machinery on each tug consists of two Scotch marine boilers and a 1800-horsepower triple expansion reciprocating engine. The tug launched June 25 was christened KEWAYDIN by Miss May Martin as it lunged sideways into the Buffalo river. Aside from the work which the Ferguson company is doing for the United States navy department, it also is constructing a wood tug for the state of Pennsylvania and has a contract to build a steel oil barge of about 1000 tons displacement for private owners.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

CHARLES L. ALLEN, who became president and general manager of the Norton Co., Worcester, Mass., when the latter took over recently its subsidiary the Norton Grinding Co., has been treasurer and general manager of the company for some time. He succeeds Prof. George I. Alden, formerly president of both corporations, who has been made chairman of the board of directors of the combined companies. Aldus C. Higgins, who has been secretary and general counsel, has been named treasurer and general counsel, and George N. Jeppson, formerly works manager, secretary and works manager.

Mr. Allen is a native of Worcester and always has made that city his home. His business life, covering a period of about 35 years, has been entirely devoted to the interests of the Norton Co., and of its predecessors. When F. B. Norton commenced the business in a small experimental way in a pottery shop on Walter street, Worcester, in the early '70s, Mr. Allen was employed as his bookkeeper. It was not until 1880 that the business assumed any importance and its real development dates from 1885. At first conducted under the name of the F. B. Norton Co., and later as the Norton Emery Wheel Co., the Water street plant was operated until 1886, when it was removed to another location comprising a single building. From that time growth has been constant and the plant now occupies many acres. When the Norton Emery Wheel Co. was organized on June 20, 1885, Mr. Allen was made secretary; Milton P. Higgins, president; George I. Alden, treasurer, and John Jeppson, superintendent. Excepting Mr. Higgins, who died in 1912, all these officials serve as directors at the present time. In 1906, the Norton Co. and the Norton Grinding Co. were incorporated with Mr Allen in an important executive position. Since that time until last week the business of the two companies had been carried on independently, although having the same board of directors.

In addition to his Norton affiliations, Mr. Allen is a director of the Merchants' National bank and a trustee of the Worcester Five Cents Savings bank. He was the first president of the Bancroft Realty Co., owner of the Bancroft hotel. He is a member of various Worcester clubs and business organizations and of the Engineers' club, Boston. He was chairman of the fourth Liberty loan campaign committee in Worcester.

William LaCosta Neilson, Leicester, England, foreign manager, and Carl F. Dietz, general sales manager, Worcester, have been made vice presidents,



CHARLES LUCIUS ALLEN

newly-created offices of the new Norton organization. Herbert Duckworth becomes sales manager of the grinding wheel department, and Howard W. Dunbar, assistant chief engineer of the Norton Grinding Co., sales manager of the grinding machine department. Clayton O. Smith, who has been sales manager of the Norton Grinding Co., has been consulting sales engineer to Mr. Dietz. Henry Duckworth is controller. Ross C. Purdy, research engineer is to leave the exclusive employ of the company to become a private consulting engineer in Buffalo, although he is retained as consulting ceramic engineer. Lewis E. Saunders, Niagara Falls, N. Y., manager of the abrasive plants, is transferred to Worcester, and in addition to these duties he becomes research engineer.

Charles H. Norton, for many years chief engineer of the Norton Grinding Co., Worcester, Mass., has been chosen chief engineer of the grinding machine department and John C. Spence, superintendent of the Norton Grinding Co., works manager of the same department of the Norton Co., Worcester, under the reorganization plan.

Charles W. Jimnette has been made district manager of the recently established office and salesroom at 73-75 West Congress street, Detroit, for the Norton Co., Worcester, Mass.

F. W. Willett who has been treasurer for the Standard Fuel Engineering Co., Detroit, recently was promoted to be president, succeeding J. J. Beaman, who resigned.

John H. Schuler has been appointed Pittsburgh sales manager for the Camden Forge Co., Camden, N. J. His territory will include western Pennsylvania, Ohio and West Virginia.

A. E. Metiver, Paris, France, is visiting makers of machine tools and machinery in Worcester, Mass., with a view of purchasing for a private enterprise, in no way affiliated with the French government.

Arthur K. Wood recently was elected vice president and treasurer of the Westinghouse, Church, Kerr & Co. Inc., New York. He formerly was president of the Franklin Trust Co.

John Siegel, manager of the Wesseling, Germany, plant of the Norton Co., Worcester, Mass., has arrived in this country to discuss with the officials of his company the future of the plant, now in the hands of British authorities.

C. N. Talhelm now represents the Landis Tool Co., Waynesboro, Pa., and the Kearney & Trecker Co., Milwaukee, manufacturer of milling machines, on the Pacific coast. He formerly was in the New York office of the Landis company.

F. L. Hutchinson, founder of the Heating & Power Equipment Co., Milwaukee, has retired from that company to engage in the practice of mechanical engineering with offices at 1226 First National Bank building, Milwaukee. Mr. Hutchinson will specialize in central station installations and general designing and equipment of power and heating plants.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JOHN A. CAPP, who recently was elected president of the American Society for Testing Materials, first was employed in the testing laboratory of the Thomas-Houston Co., Boston. He accepted this position after he completed a course in mechanical engineering at the University of Pennsylvania in 1891. After working two years the company was combined with the Edison Electric Co., Schenectady, N. Y., to form the General Electric Co., Mr. Capp was transferred to the testing laboratory of the Schenectady works. Shortly afterwards he was placed in charge of the laboratory, and as chief of the testing department has been an important factor in its development. Since he became affiliated with the American Society for Testing Materials in 1898, Mr. Capp has been active in standardizing the specifications for copper wire and steel, and was chairman of committee A-1 on steel and B-1 on copper wire. Mr. Capp has been a member of the executive committee during the past two years.

Joseph A. Rogers has become identified with the sales force of A. C. Daft, Oliver building, Pittsburgh, dealer in ferroalloys and ores.

Fred Hooving, works manager of the Standard Seamless Tube Co., Ambridge, Pa., recently left for Sweden, where he will spend the summer.

George L. Norris, metallurgical engineer of the American Vanadium Co., Pittsburgh, for many years, has been transferred to the sales department of that company with headquarters at the New York office, 120 Broadway.

Walter W. Fowler has sold his interest in the Northwest Trading Co., Chicago, and has resigned as an officer and trustee. He is about to leave soon for the Orient and will announce his future plans upon his return.

Albert E. Dyment, who has been elected vice president and chairman of the board of directors of the Canadian General Electric Co., Ltd., Toronto, Ont., in place of the late W. D. Matthews, is a prominent figure in financial and commercial life, a director of several other companies, vice president of the Maritime Coal, Railway & Power Co., and president of the Dyment Securities Loan & Savings Co.

C. F. Michael has been elected president of the reorganized Carroll Foundry & Machine Co., Bucyrus, O. The other officers of the company are A. G. Stoltz, secretary; W. H. Picking, treasurer, and Fred C. Horn, formerly with the Ohio Foundry Co., assistant secretary-treasurer.

Howard W. Callahan, for the past two years a chemist at the Worcester Gas Light Co., Worcester, Mass., has resigned to take charge of research work in connection with combustion furnaces and thermal efficiency with the Jones & Laughlin Steel Co., Pittsburgh.

Alex Lentz, who for the past five years has been secretary and manager of sales of Brown's Copper & Brass Rolling Mills, Ltd., New Toronto, Ont., resigned on July 1. He has become associated with the Kent Ockley, Ltd., Toronto, Ont., as vice president, secretary and treasurer.

Scott Turner, E. M., has recently been appointed consulting engineer to the Mining Corp. of Canada, Ltd., 1511-20 Bank of Hamilton building, Toronto, Ont. Mr. Turner has had an extensive experience in consulting mining work, not only in the United States and Canada but in many foreign countries.

Frank R. Whitehead has become purchasing agent for the Parker Co., 165 Broadway, N. Y., exporters and importers. He formerly was purchasing agent for the United Steel & Metal Corp. The Parker Co., has branch offices in Japan and the Scandinavian countries.

H. S. Wineland, at one time connected with the Pittsburgh agency of the Missouri, Kansas and Texas railroad and later chief clerk to David W. Kuhn while the latter was fuel administrator for the Pittsburgh district, recently was appointed sales manager of the Le Moyne Steel Co., Pittsburgh.

E. W. Kratzer on Aug. 1 will become manager of the Pacific coast sales office to be established in the Monadnock building, San Francisco for the Oliver Iron & Steel Co., Pittsburgh. Mr. Kratzer for a number of years was Pacific coast sales agent for the American Iron & Steel Mfg. Co., Lebanan, Pa., now a part of the Bethlehem Steel Co. He recently resigned as assistant manager of sales of the Pacific coast office of the Bethlehem Steel Co. to join the Oliver company.

J. I. Thompson, chief engineer, and A. W. Grant Jr., gas engineer of the Koppers Co., Pittsburgh, designer and builder of by-product coke and gas oven plants, who have been investigating the by-product coke oven practice in France, Great Britain, Belgium and Sweden, expected to sail for home from Christiania, July 3.

Frank L. Estep has been made a member of the consulting engineer firm, Perin & Marshall, 2 Rector street, New York. For several years he was chief engineer of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., and later became identified with the Nova Scotia Steel & Coal Co., Sydney, N. S., in a similar capacity.

John Gillespie succeeds Arthur S. Breithaupt as general superintendent of the Philadelphia Electric Steel Corp., Conshohocken, Pa., which is controlled by the American Metallurgical Corp., Franklin Trust building, Philadelphia. Mr. Gillespie has been with the steel casting department of the Midvale Steel & Ordnance Corp. for many years.

Albert Mann recently resigned as purchasing agent of the Illinois Central railroad to become vice president in charge of purchases of the American International Steel Corp., New York City. Morris Metcalf continues as vice president in charge of the company's business. No successor yet has been named to Lieut. Col. Merrill G. Baker, who recently resigned as president of the corporation.

Jose M. Garmendia, who for the past two years has been connected with the iron, steel and machinery departments of the Federal Export Corp., sailed June 28 for Buenos Aires. He will take charge of these particular departments of the Federal Export Corp., in Argentina under the direction of the general manager, George V. Guyer. Mr. Garmendia is a member of one of the well known steel families in Spain, and obtained his early experience in the manufacture of steel in that country.

British Labor Restricts Output

Absenteeism and Tendency to Shirk in Coal and Ore Mines Curtails Iron Production—Supplies Are Short—Iron and Steel Wages Still Advancing—American Finished Products Competing Successfully in British Markets

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 6.

ALTHOUGH government restrictions are removed other limitations to output and to trade generally seem to be just as difficult to overcome. The report of Pease & Partners, Ltd., just issued says:

The output of the company's products has not been equal to the demand. The shortage of labor was felt in every department up to the time of demobilization; the shortage still continues at the iron works and iron-stone mines but the most serious feature is that the output per man employed at the colliers and iron-stone mines shows a heavy reduction, owing in some cases to absenteeism and in others to less work done per shift.

This shortage of supplies is one of the most ominous facts the trade has to face. In Cumberland the furnaces in blast have been considerably curtailed since the beginning of the year, and now, from the same cause, another furnace has had to be damped down at Cleator Moor in the heart of the ore field. At first it was said the shortage was due to the influenza scourge, but that explanation no longer is available and the inference is that as the coal owners do not hesitate to declare the men are not doing their best to supply ore in adequate quantities.

As in other branches of the trade, the export business is the first to suffer, no export licenses being issued until home requirements have been met. This is embarrassing to those of our foreign customers who have been accustomed to depend upon supplies from this country. It is impossible to get sufficient foundry iron, and the output of castings is being reduced accordingly, where forge iron cannot be mixed to make up for the deficiency. Forge iron is fairly plentiful. In fact, some of the Staffordshire furnaces are putting some of their iron on the bank, to be picked up later, an almost forgotten experience.

The northern ironworkers get a raise of 15 per cent on their wages as the result of the wages board ascertainment of selling prices by firms connected with the northern board for the two months ended April 30. The average selling price was £18 5s 7d ($87.14). This is attributable to the largely increased rates paid for bars. A year ago the average selling price was £14 2s ($67.68) while for January and February of this year £16 12s 10d ($79.78). Angles are 13s 3d ($3.18) more than in the last return and £4 12s 4d ($22.16) more than a year ago. The men received an increase of 12½ per cent on the last return so that the increase since the beginning of the year is 27½ per cent. The total rise in northern wages since August, 1914, is 125 per cent. The output is slightly below that of a year ago.

Iron Shortage is Far-reaching

The shortage of output in the iron trade is working mischief in various directions. The Cradley chain trade is nearly stagnated. There is no lack of call for chains, but the makers cannot get the requisite supplies of bars. Some of the chain shops have been restricted to one day per week. A few days ago, a large maker visited Birmingham warehouses to pick up any old lots of bars he could get. He was quite indifferent as to the charges, and was glad to get the material at any price. This state of things represents an entire change, as in the old days the Cradley chain makers often succeeded in beating down prices below the standard. A new trouble has been added to this industry, and that of nut and boltmaking, through the strike at the Earl of Dudley's pits which has stopped the supplies of coal, and shut down all the earl's great works with several others in addition. The chainmakers would be glad to use some of the American bar iron coming over; but the general impression here is that the metal will not be altogether suitable, American iron having the reputation of being rather "steely." It is hoped, however, that it will serve for nuts and bolts. There will be a scramble for the first cargo of iron coming over whenever it arrives.

Labor troubles are constant, and nearly universal. The ironmasters have made a great point of carrying out in letter and spirit the new scale adopted by the wages board to adapt wages to the 8-hour system. But this has not prevented some of the men giving notice to leave in case they fail to get satisfaction on their claim for higher wages recently presented to the board. This in itself is a flagrant violation, equally of the board's regulations, and of the honorable understanding maintained in the trade, which binds both employers and workmen to maintain production pending any wage controversy. It means, of course, that the men if they do not get what they want, mean to throw over the wages board and enforce their demands by strike—another sign of the new spirit prevailing between capital and labor—a spirit of a retrograde and utterly indefensible character.

THE IRON TRADE REVIEW cable received today states that billets are being sent over from America to this country for $63, delivered. This is evidence that British material is being undersold here. The Welsh billets sent from Wales are at the rate of £13 10s ($64.80) at works or about £14 ($67.20) delivered here. British makers heretofore have consoled themselves under the weight of American competition by the reflection that at all events it has been in the foreign markets. But this boast is now at an end since the above figure undersells the British billets as will be seen to a substantial extent. Scotch sheetmakers it is learned have placed several thousand tons of sheet bars with the United States Steel Products Co.

The fact, however, gradually is being realized that the successful competition in open markets is nothing short of a disaster to this country. The British maker of steel bedstead angles finds that he is being undersold in Bombay, hitherto almost wholly a British preserve, by no less than £7 ($33.60). Any number of similar cases are quoted by London merchants who are in despair at the loss of old customers, who find American quotations irresistible. A large structural expert in Birmingham, who has the handling of numerous structural undertakings abroad, declares that to his certain knowledge, no less than $20,000,000 worth of trade has been lost to this country in the last four months through American competition in South American, colonial, Indian and other markets.

Obituaries

IRA B. BASSETT, aged 71, retired steel merchant of Cleveland, died last week at his home in Hyannis, Mass. He was born in Hyannis and was educated in New York. At the age of 21, he located in Cleveland, and entered the employ of the jobbing firm of Butler, Wick & Co., where he remained until 1871, when he became connected with another jobbing firm, W. H. McCurdy & Co. This company became involved financially and Mr. Bassett carried on the business for the creditors for about two years. The business then was turned over to him. In 1886, with George Presley Jr., he organized the firm of Bassett & Presley. For a few years, A. R. Train was a member of the firm and during that period it was known as Bassett, Presley & Train. In 1901 the Bassett-Presley Co. was organized with Mr. Bassett as president. One year later Mr. Presley died. In June, 1911, the United States Steel Corp., through the Carnegie Steel Co., purchased the warehouse and stock of the Bassett-Presley Co., at Cleveland and took possession on July 1. Subsequently Mr. Bassett retired and re-established his residence in his native town.

C. A. Fuiden, vice president and general manager of the Continental Can Co., Chicago, died of heart disease at Minneapolis, June 17.

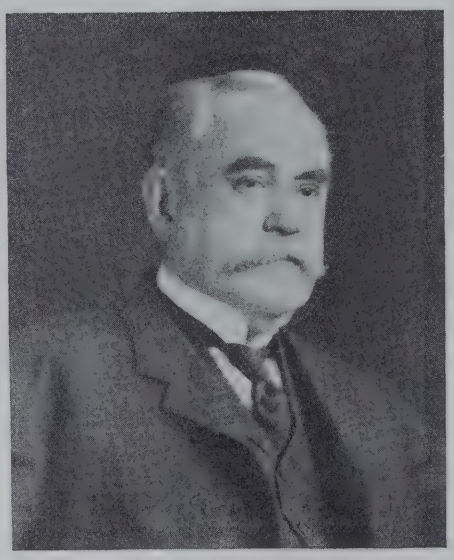
Edward A. Caswell, of Caswell & Starke, 99 John street, New York, nonferrous metal dealers, died June 25 at Westchester, Pa., aged 75.

William J. Schilling, aged 61, a retired foundryman, died recently at his home in Columbus, O. Mr. Schilling conducted a foundry in his home city for a period of 45 years.

Thomas Hill, aged 83, inventor of a patent steel dump cart, died recently at Jersey City, N. J. Mr. Hill was born in Birmingham, Eng., and removed to Jersey City 51 years ago.

J. Rossiter Valentine, president of M. D. Valentine & Bro. Co., firebrick manufacturers, Woodbridge, N. J., died suddenly of heart failure at Asbury Park, N. J., June 25. He was 74 years of age.

William Peat, aged 58, superintendent of masonry at the Farrel, Pa., plant of the Carnegie Steel Co.,



IRA B. BASSETT

and who laid the first brick for the initial building of that plant, died at his home in Sharon, Pa., June 24, after a lingering illness.

William A. Bole, vice president in charge of manufacturing of the Westinghouse Machine Co., East Pittsburgh, and for years a conspicuous figure in the foundry industry and in engineering circles, died at his home in Pittsburgh, June 16. He suffered a stroke of paralysis about a year ago and had been in ill health since. He was 58 years old. Following his graduation from the Allegheny high



WILLIAM A. BOLE

school, he took the examination for appointment to West Point. He passed successfully all but the physical requirements. He then entered the Western University of Pennsylvania, now the University of Pittsburgh, from which he was graduated with the degree of mechanical engineer in 1871. That year he entered the employ of the Westinghouse Machine Co. and remained with that company continuously until his death. In his capacity as vice president of the company he had charge of all of the foundry work. He was prominent in the affairs of several engineering societies, notably the Engineers' Society of Western Pennsylvania, of which he was president in 1900. He also was active in the American Society of Mechanical Engineers; in the Pittsburgh Foundrymen's association and the American Foundrymen's association, serving as vice president of the latter in 1910. He was a member of the Duquesne club of Pittsburgh and of the Engineers' club of New York.

James F. Larkin, organizer of the American Spiral Spring & Mfg. Co., Pittsburgh, died at his home in Pittsburgh, June 27, after an illness of about two years. He was born in Pittsburgh in 1857 and always made his home there. He retired from business several years ago.

Lewis A. Becker, vice president of the Bishop & Babcock Co., Cleveland, until his retirement from active business a year ago, died June 16 at his home in Chicago. He was president of the L. A. Becker Co. from 1900 to 1911, when it was consolidated with the Bishop & Babcock Co.

Thomas Hartley Given, Pittsburgh financier identified with the Crucible Steel Co. of America, the Window Glass Machine Co. and many banking and railroad interests, died at his home in Pittsburgh, June 28. He also was the owner of the *Pittsburgh Post* and the *Pittsburgh Sun*.

J. H. Bradley, president of the David Bradley Mfg. Co., Chicago and Bradley, Ill., died June 17, in Chicago. He was one of the founders and president of David Bradley & Co., when they located in Council Bluffs, Iowa, in 1882, who later were succeeded by Bradley, Merriam & Smith. He was prominent in the manufacturing, banking and social life of Chicago.

June's Tool Trading More Normal

Automotive Industries Lead All Buyers—Few Large Lists Current—Miscellaneous Inquiry Maintains Splendid Volume—Exporters Send Many Tools Overseas—Government's Tools Do Not Reach Market

MARKED for history as the month when Germany signed on the dotted line, June will be remembered in machine tool circles as the period when the market resumed some of its antebellum aspects. The improvement was not as great nor as steady as had been expected but it is believed that with the peace treaty now an accomplished fact hesitating buyers will fall into line and July will see many of the inquiries issued in June, translated into orders. While large lists, judged from a wartime standard, did not appear in number in June, a sufficient assortment of smaller inquiries were acted upon to make a considerable aggregate. The sale of new tools was somewhat hampered by the large amount of used machines which changed ownership. Delayed deliveries on many new tools militated against the invoicing of some large shipments. This latter factor also helped to influence buyers against placing their orders. Labor troubles both in the United States and in Canada, were a deterrent in many directions both among manufacturers of tools and the users of their products. Prices appear to have reached the low level and in some instances give every indication of recovering.

Automobile Trade Maintains Lead

FROM all reports, it is apparent that as has been the case for several weeks, the automobile trade in June led in the number of inquiries; in the number of orders and in the value of tools requested. In harmony with its May announcement of huge expenditures for buildings and new equipment, the General Motors Corp., Detroit, is reported to have purchased upward of $1,500,000 worth of tools from a Defiance, O., maker. The Studebaker Corp., Detroit, and South Bend, Ind., issued actual inquiries on its recently-announced 1919 requirements; it likewise made some extensive purchases. The Haynes Motor Car Co., Kokomo, Ind., bought several hundred thousand dollars worth of tools in Chicago and the Nash Motor Co., Kenosha, Wis., also took a fair number of machines. A Connecticut tool manufacturer is said to have given an option on about $500,000 worth of machinery to one automobile interest. A large list is expected from former Ford Motor Co. men, C. Harold Wills and John Lee, in the near future. They have acquired 3000 acres in Michigan for an automobile plant.

Floods of Miscellaneous Inquiries Filed

DIVERSIFIED lines of manufacturing activity again are reflected in June inquiries and orders for miscellaneous equipment. Industries generally find themselves in need of replacement and fill-in machines and during the month, a liberal flow of inquiries was received by sellers in every district. Two of the largest lists came from the Chicago Pneumatic Tool Co., Chicago, for its Franklin, Pa., plant and the Worthington Pump & Machinery Corp., for its Cudahy, Wis., plant for 40 and 35 tools, respectively. Rubber products and tire manufacturers bought heavily in Cleveland and Cincinnati. The Goodrich Tire & Rubber Co., and the Firestone Steel Products Co., Akron, O., both issued fair sized lists. The Bethlehem Shipbuilding Corp., Sparrows Point, Md., purchased on a sizable list and the Bethlehem company's new subsidiary, the Redington Standard Fittings Co., Redington, Pa., bought 12 machines. The Osgood Bradley Car Co., Worcester, Mass., bought about 50 tools. The Midvale Steel & Ordnance Co., closed considerable machinery for the Cambria plant at Johnstown, Pa. The Bucyrus Co., Milwaukee, Wis., took about $200,000 worth of tools during the month and the Columbia Graphophone Co., Bridgeport, Conn., made total purchases of about $500,000. Many steel manufacturers also purchased cranes.

Government's Tools Still Unsold

PUBLISHED first in THE IRON TRADE REVIEW, the government's plan for the inventorying and disposal of its machine tools, attracted widespread attention. This method places a value upon each tool commensurate with the length of service. No federal tools appeared among the large numbers of secondhand machines offered for sale. Bids received on advertised lists of federal-owned machines were not acted upon during June; some were returned as rejected because they were too low. One eastern bidder who bid 90 per cent of market value, stated that after filing his offer, he heard nothing and believed that the government would not sell any tools until its inventory was complete. War plant machinery continues to appear in all markets. One of the largest lists to come out in June was that of the Savage Arms Corp., from its Philadelphia and Sharon, Pa., and Utica, N. Y., plants, valued at about $1,000,000.

Raliroad Buying Remains in Abeyance

WITH the passage by congress of the railroad revolving fund of $750,000,000, hope was revived among tool sellers that the long-deferred buying by railroads would commence. Requirements in many instances, have been lined up for some time, but purchases will not be made until the money is available. The Pennsylvania railroad, however, is reported to have purchased tools for its Columbus, O., and Logansport, Ind., shops as well as several cranes for Stark, O. The Baltimore & Ohio and the New York Central roads both issued specifications on some cranes. The Cumberland Valley and the Long Island railroads have out lists of 25 and 10 tools, respectively.

Exporters Absorb Considerable Machinery

SELLERS of machine tools abroad express faith in the future. They believe these markets will flourish in the near future, now that peace actually has been restored. During June many fair sized inquiries were received from overseas, particularly from France and England. It is claimed by American toolmakers' representatives abroad that the market across the ocean has been hurt by the reported sale of surplus tools by the United States government at 10 and 25 per cent below prevailing prices on new and used machines, respectively. One New York export house received an inquiry for 40 tools for France. English and French buyers took many milling machines and lathes from the Cincinnati district, which also furnished much miscellaneous equipment to Central and South America. Japan likewise has been a big buyer in both Cincinnati and Cleveland.

Machine Trade Lull Widespread

Belief Prevails However That Many Tool Requirements Will be Placed in July—Projected Buildings Numerous—Railroads to Buy Soon—General Electric and Hydraulic Pressed Steel Issue Lists

IF a lull precedes a storm, it would seem that a flood of business is due to break in the machine tool markets. Dullness prevails in practically every district, particularly in the East. In the Cleveland and Chicago territories, free buying is being done in small lots and single tool orders predominate. The aggregate of this business is considered fairly heavy. Foundation for the belief that July will be different from midsummer months of other years in point of tool buying is laid in the large number of tool inquiries current, upon which action has been deferred as well as in the many construction projects which would seem to spell extensive machine tool requirements. It is claimed that if prices could show some stability, some large buying would culminate.

As indicated at the recent railroad convention at Atlantic City, railroads were never more in need of equipment. It is thought that buying by these interests will materialize within the next two months.

Tool inquiries come from many different lines. Among those who recently issued fair sized lists are the General Electric Co., Schenectady, N. Y.; the A. B. C. Elevator Co., Jersey City, N. J.; and the naval fueling station, Constable Hook, N. J., in the East; the Hydraulic Pressed Steel Co., and the Hussey Power Parts Co., Cleveland, and the Ohio Oil Co., Findlay, O., in Cleveland.

Orders chiefly are confined to single tools and small lots. It is reported, however, that in Chicago, the Victor Mfg. & Gasket Co., that city, bought 10 punch presses. Several other purchases were made there, each comprising four tools each. The majority of sales cover one or two machines. The General Motors Corp. has been buying again in Detroit and Cleveland. The Eastern Rolling Mills Co., Baltimore, has placed its heavy equipment requirements in Pittsburgh and Avonmore, Pa., and in Chicago. The Weirton Steel Co., Weirton, W. Va., also bought some heavy equipment. Other orders are pending for this type of machinery in Pittsburgh and Cleveland. Crane orders in the East are fairly numerous, although large lists are absent.

Several announced building projects arouse expectations for large tool needs. Included is the new $1,500,000 plant at Columbus, O., for the Timken Roller Bearing Co., Canton, O.; a $2,000,000 plant at McCalle, Md., for the American Cellulose Chemical Mfg. Co., Baltimore; and three additions to the plant of the Superior Gas Engine Co., Springfield, O. Many other smaller additions and buildings have yet to announce their equipment requirements.

As announced from Washington and fully covered on another page in this issue, there is every likelihood that the Caldwell bill calling for the selling of the federally-owned tools to schools at 10 per cent of cost value to cover handling charges, will be enacted. It has the approval of the house committee.

Tools Dull; Cranes Active in Eastern Market

PROFOUND dullness characterizes the eastern machine tool market and the inactivity which has been in evidence of late is more pronounced than ever before. Inquiries are few and far between and only a few scattered machines are being placed. Included in the few inquiries current is that of the General Electric Co., Schenectady, N. Y., which is in the market for a turret lathe, grinders and some other small equipment.

Despite the prevailing inactivity, however, machine tool sellers remain optimistic. Those who visited the railroad convention at Atlantic City recently appear particularly cheerful. Prevailing opinion among those present was that considerable railroad buying would materialize within the near future or as soon as congress has finally passed on the appropriation bills now pending. The railroads generally, it appeared, were in greater need of equipment than ever before in their history. While some are still skeptical over the possibility of any early business materializing in the railroad market, owing to the incessant delay which has prevailed since the beginning of the year, the general concensus of opinion, however, appears to be that the next two months will see considerable railroad buying.

Eastern machine tool builders who have been urging the war department to dispose of its equipment by giving it to various vocational schools throughout the country have apparently lost their fight. It now is believed that these will be sold to the schools at 10 per cent of their cost value. An article from Washington covering this proposition appears elsewhere in this issue.

Included in recent contracts for machinery and equipment are those placed by the Eastern Rolling Mills Co., of Baltimore. The hot mills for this company's new plant will be erected by the National Roll & Foundry Co., Avonmore, Pa. The cold mills will be erected by the Hyde Park Foundry & Machine Co., Chicago. The furnaces will be installed by George A. Hagan & Co., Pittsburgh, and the driving gears and the pickling equipment has been awarded to the National Machine Co., also of Pittsburgh. It is stated that contracts in all run well over $700,000. Another Baltimore concern likely to be in the market in the near future is the



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American Cellulose Chemical Mfg. Co., Ltd., which is now completing plans for the erection of a $2,000,000 plant at McCalle, Md. During the past few days, equipment has been purchased for a repair shop at the naval fueling station at Constable Hook, N. J The machinery includes a shaper, a few lathes and grinders. A few heavy tools have also been bought, it is understood, by the A. B. C. Elevator Co., Jersey City.

The eastern crane market, while far from active, does not present the appearance of dullness noted in the machine tool market. No large lists are up, but there continues to be a fairly satisfactory amount of small inquiries. The Standard Oil Co. finally has issued inquiries for all electric cranes it has had under contemplation for its Bayway, N. J., plant. The list, as it now stands, calls for two 30-ton cranes, with 5-ton auxiliary, 34-foot span; two 20-ton cranes, with a 5-ton auxiliary, 48-foot span; one 10-ton crane, 2-ton auxiliary, 21-foot span; and one 10-ton crane, 2-ton auxiliary, 30-foot span. The International Petroleum Co., Ltd., a subsidiary of the Standard Oil Co., 26 Broadway, New York City, is inquiring for a special gasoline operated crane of either 2 or 3 tons capacity. Shewan & Tomes, 10 Broadway, New York City, are inquiring for two 1½-ton jib cranes for shipment to China. Another new inquiry is that of the Dilts Machine Works, Fulton, N. Y., calling for a 10-ton and a 5-ton overhead crane, both of 20-foot span. H. J. Horn & Sons, Lister avenue, Newark, N. J., are expected to close within the next few days on a 5-ton crane, with a 60-foot span. Julius Blum & Co., 510-512 West Twenty-fourth street, New York City, will require an overhead crane for a warehouse improvement. The company deals in iron and steel products. Jerome A. Jackson, recently noted as being in the market for a 20-ton electric crane for Long Island City, also is inquiring for a 10-ton electric crane with a 50-foot span, for Bridgeport, Conn. The Eastern Rolling Mill Co., Baltimore, it is learned, placed the eight overhead cranes recently referred to, with the Chesapeake Iron Works. Other recent awards include a 3-ton crane with 17-foot span for the Nichols Copper Co., Laurel Hill, L. I., this business going to Niles-Bement-Pond Co.

Many Tools Sold in Small Lots

INQUIRY and selling are in heavy aggregate volume in the machine tool trade in Chicago, represented in small lots and single tools, as has been the case for some weeks. Large lots continue practically unknown. An illustration is found in the experience of one seller when in a day's business one buyer took a miller, a boring mill, a radial drill and a shaper; another took a lathe and a miller and a third took two lathes, a miller and a shaper. It is rare where a buyer asks for or buys 10 machines of one kind. In other words, present buying is a process of sorting up and filling in rather than buying complete outfits, as was the case during the war period.

The recent informal inquiry of the Rock Island arsenal for considerable equipment has not yet been made formal, although it is understood the appropriation has been made available. This is expected to be active in a short time.

The Worthington Pump & Machinery Co. has not yet closed on its recent inquiry. The Victor Mfg. & Gasket Co., Chicago, which is about to build a new plant, is placing orders for its equipment and recently bought 10 punch presses of a type already in use in its present plant. In the experience of several dealers inquiry is increasing steadily. No changes have been made in prices, though advances are expected to be made later in the year.

Heavy Equipment Makers Wait for Closings

SOMETHING of a lull has developed in the Pittsburgh machinery and tool market. While a good many orders for tools are being placed, they are largely for individual machines and only a few lists of any considerable size are being closed. In the heavier lines, aside from an inquiry put out by a Pittsburgh district manufacturer of sheets for a crane and a few other pieces of equipment needed in connection with an enlargement of his plant, it has been a case of manufacturers sitting back and waiting for buyers to close on some of the inquiries put out some time ago and upon which they have been quoted by various builders. Manufacturers of cranes and other heavy equipment are not running their plants much better than 40 per cent of capacity at present.

Miscellaneous Demand Keen; Deliveries Poor

MANUFACTURERS who supply the Cleveland demand for machine tools and machinery are said to have taken so many orders, they now are hampered in making deliveries. Many of them report that they are having labor troubles and in several cases, this is known to have held up delivery. One dealer reports that his

Japan Fast Becoming Factor in Tool Manufacture

THAT within five or six years the Japanese factory efficiency and skill in machine tool plants will be developed to a point where products will measure up to any turned out by American manufacturers was the view expressed to Commercial Attache James F. Abbott at Tokyo recently by an American iron and steelmaker of prominence. This expert has spent some time in Japan with the intention of investing and participating in a co-operative enterprise of some sort and has made a thorough study of the manufacturing plants of that country. He believes that the future of American competition in machine tool products is not good for the reason that Japanese plants are gradually getting into a state of efficiency.

On the other hand, however, his investigations show that Japan is extraordinarily deficient in the fundamental field of foundry practice and believes that it will be some time before Japan can become independent of the United States in the way of fabricated materials out of which machines and machine tools are made. This is an interesting point, it is declared, and worthy of being considered seriously by American iron and steel men. Japanese methods in foundry work are reported as being crude and inaccurate and unskilled. Moreover, it is found that in point of castings actually produced, an American at $4.50 a day is more efficient than a Japanese at 40 cents since the former can set up 60 box castings in a day, while the latter with a helper can set up only four. This observation was made at the Kawasaki foundry. It is also stated that the Mitsubishi works at Nagasaki are by all odds the most up-to-date and efficient in Japan.



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customers are more concerned about obtaining shipment against old orders than they are about placing further requirements; he has not taken an order for about a week. Other dealers report that small orders are coming in freely, although there seems to be a widespread hesitancy to close, owing to the more or less unsettled condition regarding prices. It is thought that if these become more stationary, large buyers will close.

Purchasing agents evidence a lack of knowledge regarding delivery possibilities on machines which are not made for stock. Several oil companies who delayed making their purchases of pipe threading and pipe threading and cutting machines now are demanding quick deliveries and builders are unable to ship this side of from three to four months. This is what the Ohio Oil Co., Findlay, O., is up against on its requirements of four pipe machines of varying sizes including a 16-inch, for its Oklahoma operations. The B. F. Goodrich Co., Akron, O., wants an 18-inch pipe machine.

Practically all industrial operations are represented in the miscellaneous inquiries and orders received. Most of these cover, one, two or three machines, as has been the case for several weeks past. Larger inquiries are rare. The Hydraulic Pressed Steel Co., Cleveland, however, issued a list of 12 machines of various types last week. The Hussey Power Parts Co., 1341 Giddings road, Cleveland, is in the market for a 20-inch shaper, a No. 2 universal milling machine and a No. 2 arbor press. In addition to the list issued early last month, the Truscon Steel Co., Youngstown, O., wants a Toledo No. 168 or 168¼ or a Bliss No. 3 or 4 power press, a tumbling barrel, 30 inches in diameter and two open-end tumbling barrels. The Torbenson Axle Co., Cleveland, as well as the Firestone Steel Products Co., Akron, O., still are looking for equipment. The Ohio Millwrighting Co., 1958 West Forty-fifth street, Cleveland, is understood to be in the market. The Dow Chemical Co., Midland, Pa., wants a powerdriven roll, 8 to 10 feet, with ½-inch plate capacity. The Defiance Screw Machine Products Co., Defiance, O., desires a Barnes standard all geared 24-inch drill or tapper. J. P. Devine Co., Buffalo, manufacturer of vacuum drying, evaporating and chemical apparatus, will buy machines and tools for its general assembling department. Greenlee Bros., who operate the Jackson Augur Bit Works, Jackson, O., are to install machinery soon in a new addition. The Chelsea Screw Co., Chelsea, Mich., is purchasing automatic screw machines, drills, grinders, milling machines, etc. The Bryan Screw Machine Products Co., Bryan, O., is understood to be about ready to purchase additional machinery. The Timken-Detroit Axle Co., Canton, O., has started work upon an addition to its machine shop which will require machine tool equipment. The Cleveland Milling Machine Co., Cleveland, again has increased its capitalization to $2,000,000 and is understood to be equipping itself to manufacture automobile motors. The Lake Erie & Western railroad will establish a new machine shop at Peru, Ind.

With many large projects in the formative stage, July is expected to be different from the usual dull summer months, since large tool needs are indicated. Among the major construction items noted is a large branch plant to be erected at Columbus, O., by the Timken Roller Bearing Co., Canton, O. Buildings and machinery are to cost $1,500,000 and a list is expected soon, since the plant is to be built within the next 30 days. Three additions to the plant of the Superior Gas Engine Co., Springfield, O., which supplies the Standard Oil Co., with its engines, are expected to develop large tool requirements. The Bourne-Fuller Co., Cleveland, is erecting a warehouse and among the equipment wanted is two cranes. Equipment for the new buiilding being erected by the Home Elevator Co., Indianapolis, will cost $30,000 and includes an electric crane. The Ohio Electric & Controller Co., 588 Maurice avenue, Cleveland, is to build a 2-story addition, 80 x 100 feet, and probably will need some machinery, as will the Cuyahoga Spring Co., Cleveland, which has let a contract to the Austin Co., for a 2-story factory in which it will manufacture coiled wire springs.

The trade is much interested in the announcement out of Washington carried on another page in this issue, that in all probability the government's stocks of machine tools are not to be sold on the open market. An amended bill features the selling of this equipment to educational institutions at 10 per cent of their cost value. While Cleveland sellers have always more or less discounted the effect of placing this equipment on the open market, they had conceded that it would be a factor in the sale of both new and used machinery. The statement now is made that the passing of the bill as amended will solve a really large problem.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

CONCORD, N. H.—The Power Securities Co. has been incorporated to develop power plants of all descriptions with $27,500,000 capital by Thomas Hollis, Joseph W. Worthen and Robert C. Murchie.

BOSTON.—The Holtzer Cabot Electric Co. is having plans made for a storehouse.

BOSTON.—The Leary Automatic Muffler Co. recently was incorporated with $90,000 capital, by D. Francis Leary, Francis M. Doyle and George F. McKelleget.

BOSTON.—The Alexander-Porter Co. recently was incorporated to make automobile supplies with $25,000 capital, by William L. Alexander, C. Harold Porter, Quincy, Mass., and A. E. Yont.

BOSTON.—The Hadley-Hayden Co. has been incorporated to make mechanical and electrical appliances with $25,000 capital, by Ralph E. Hadley, Fred L. Hayden, South Braintree, Mass., and B. P. Hadley.

NEW BEDFORD, MASS.—John I. Paulding, Inc., has been incorporated to make electrical fixtures, appliances, etc., with $75,000 capital, by Gustav A. Johnson, John I. Paulding and A. A. Johnson.

NORTH CAMBRIDGE, MASS.—The Beckwith Box Toe Co., 35 Clarendon avenue, has had plans drawn for a machine shop and storage building, 2-stories, 32 x 92 feet, estimated to cost $20,000.

WATERTOWN, MASS.—The war department has let the contract to the E. D. Ward Co., Worcester, Mass., for alterations and additions to the machine, smith, press and hardening shops and a concrete foundation for a 78 x 500-foot storehouse for ma-

SIGNING PEACE PAPERS FOR R. M. J.



Say Fellows:

You had better sign those orders for the Hubbard Rolls or you wont be able to get them.

You know what happened to the Huns by not signing early.

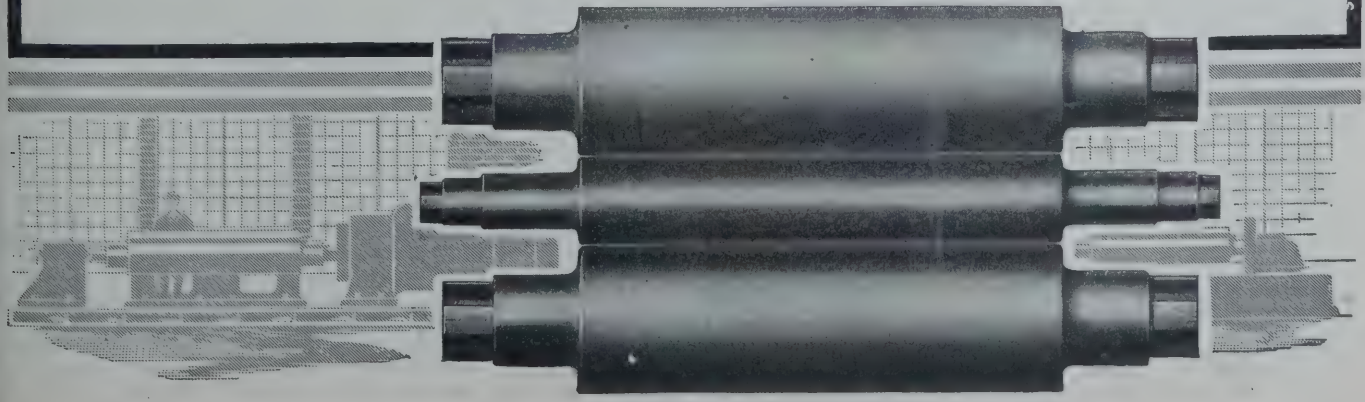
So Long,

Rolling Mill Jim.

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



chinery at the United States arsenal, to cost $150,000.

WEBSTER, MASS.—William C. Klebart and George H. Rowley, metal workers, plan to erect a 2-story, 45 x 90-foot plant, which will be a branch of their Putnam, Conn., business.

WORCESTER, MASS.—The M. B. Hill Co. has been incorporated to make machine tools with $5000 capital, by Milton B. Hill, William Arter and Harold Tattersall.

CRANSTON, R. I.—The General Fire Extinguisher Co. has let a contract for a pipe shop, 3-stories, 70 x 120 feet, estimated to cost $70,000.

PROVIDENCE, R. I.—The Atlantic Mills has let a contract for a power house, 3-stories, 46 x 98 feet, estimated to cost $25,000.

PROVIDENCE, R. I.—The Iodine Antiseptic Pen Co., Inc., has been incorporated to make pens with $50,000 capital, by Montafix W. Houghton, John F. Giles and Henry Hood.

BRIDGEPORT, CONN.—The Schwardtle Stamp Co. has let a contract for a plant, 3-stories, 40 x 100 feet, to cost about $25,000.

BRIDGEPORT, CONN.—The Presteel Mfg. Co., 183 John street, recently incorporated, has perfected its organization and will engage in the manufacture of steel specialties. Alexander Berg is president.

HARTOFRD, CONN.—The Fuller Brush Co., maker of wire brushes, etc., will build a 4-story factory to cost $150,000.

GROTON, CONN.—Plans will be ready to figure July 5 for a 3-story, 60 x 170-foot mill to cost $90,000 for the Max Pollock Co., which is in the market for motors, shafting hangers and elevators.

MILFORD, CONN.—The Lake Engineering Co. has been incorporated with $5000 capital by Cecil P. Ford, Thomas E. Lake and R. Melvil Keys, Bridgeport, Conn.

NEW BRITAIN, CONN.—The Cooley Co., Inc., iron and steel, recently was incorporated with $1,000,000 capital, by H. S. Hart, N. P. Cooley, E. N. Stanley and others.

NEW HAVEN, CONN.—The Standard Iron Works Co. recently was incorporated with $10,000 capital, by S. D. Pardoll, Louis Sachs and others.

North Atlantic States

ALBANY, N. Y.—The William G. Sheehan Construction Co. has the contract to erect a plant for the Thacher Foundry & Propeller Corp.

BROOKLYN, N. Y.—The Metal Package Co. is ready for bids for a plant addition, 5-stories.

BROOKLYN, N. Y.—The Edison Electric Illuminating Co., 360 Pearl street, has awarded a contract for a plant addition.

BROOKLYN, N. Y.—The York Sheet Metal Works, Inc., has been incorporated with $5000 capital, by I. Litner, H. Blecher and S. Wacht Jr., 170 Broadway.

BROOKLYN, N. Y.—Ground has been broken for the erection of the first unit of the proposed plant of the E. W. Bliss Co. The plant will be in four units and when completed will be 200 x 1200 feet.

BROOKLYN, N. Y.—Oscar M. Carter, Inc., tools, hardware and agricultural implements, recently was incorporated with $50,000 capital, by A. P. Saas, 140 West Fifty-seventh street, R. C. Perlman, 949 Fox street, and M. Berger, 600 Beach street.

BUFFALO. — Large additions to its plant are planned by the J. P. Devine Co. Foundations for a new foundry, 90 x 225 feet, are being put in.

BUFFALO.—The Auto Device Mfg. Co. recently was incorporated with $100,000 capital, by W. Miller, G. A. Loohn and P. S. Wheaton, Kenmore, N. Y.

BUFFALO.—The Auto Motive Tractor Corp. of America has been incorporated with $4,000,000 capital, by J. O. Moore, H. L. Jauch and F. J. Maloney.

BUFFALO.—The M. & M. Tractor Co. has been incorporated with $300,000 capital to manufacture tractors, etc., by C. M. Baldy, Marine Bank building. T. R. Wheeler and J. L. Kenefick.

BUFFALO.—The Smith Metal Arts Co. has been incorporated with $100,000 capital, by F. C. Smith, C. F. Damm and A. H. Jamieson. The company is establishing a plant at Niagara street and Massachusetts avenue.

MONTAUK, N. Y.—C. W. Parks, chief of the bureau of yards and docks, navy department, Washington, is taking bids for a power house.

MOUNT VERNON, N. Y.—The Charleston Dry Dock & Machine Co. has been incorporated with $2,225,000 capital, by Harold J. Gallagher, Winthrop H. Kellogg and Robert M. Reid.

NEW YORK.—The John Trageser Steam Boiler Works will erect a small addition. J. O. Whittenback is architect.

NEW YORK.—The Tungsten Tool Co. recently was incorporated with $50,000 capital, by G. Posner, A. and J. Simons, 2139 Daly avenue.

NEW YORK.—The Empire Metal Aircraft Corp. has been incorporated with $50,000 capital, by J. H. Claffy, W. M. G. Watson and H. A. St. George, 41 Park Row.

NEW YORK.—The David E. Allen Yonkers Foundry has been incorporated with $25,000 capital, by H. Whitehead, W. S. Pronk and E. E. Allen, Yonkers, N. Y.

NEW YORK.—The Universal Metal Parts Mfg. Co. has been incorporated with $10,000 capital, by J. Mumaw, G. Meyer and S. A. Lichtenstein, 608 West 188th street.

NEW YORK.—The Un-X-Ld Products Corp., signal devices, recently was incorporated with $10,000 capital, by N. Fishman, A. J. Concotta and R. M. Schnuer, 51 Chambers street.

NEW YORK.—The Finkel Umbrella Frame Co., B. Finkel, president, 2534 East 177th street, has had plans drawn for a plant, 1-story, 100 x 200 feet, estimated to cost $75,000.

NEW YORK.—The Martaler Mfg. Co. recently was incorporated with $10,000 capital to engage in the manufacture of electrical devices, by A. Ascher, M. Fogel and A. Kutz, 320 Broadway.

NEW YORK.—The American & British Mfg. Co., automobiles, airplanes, etc., recently was incorporated with $3,260,000 active capital, by W. J. Cullen, D. T. Connett and C. M. McKeever, 120 Broadway.

NEW YORK.—The Riverside Package Machinery Co., foundry and factory supplies, has been incorporated with $50,000 capital, by J. D. Reifsnyder, M. Galibert and E. Hirschberg, 434 East 157th street.

NEW YORK.—The Morse Magneto Clock Co. has been incorporated to manufacture clocks, etc., with $25,000 capital, by A. G. Morse, 233 Broadway, J. S. Morse, 222 Riverside drive, and E. F. Howard, 163 Lefferts place, Brooklyn, N. Y.

NEW YORK.—The Morrow Sales Corp. has been incorporated to manufacture machinery and supplies with $25,000 capital, by R. H. Clarke, 53 West Eighty-fifth street, I. F. Browne, 209 West 102nd street, and M. E. Barnaby, 20 Stephens court, Brooklyn, N. Y.

NIAGARA FALLS, N. Y.—The Carborundum Co. has let a contract for a tank storage building, 3-stories, 37 x 85 feet.

NORTH TONAWANDA, N. Y.—The Buffalo Bolt Co. will build an addition, 81 x 171 feet.

OSSINING, N. Y.—Hughes-Saunders Motors has been incorporated with $50,000 capital, by C. J. Hughes, E. L. Ryder and W. Saunders.

OSWEGO, N. Y.—The Hinkley Towing Co. has arranged to build a ship repair works to cost $40,000.

ROCHESTER, N. Y.—The Rochester Auto & Tool Co. recently was incorporated with $25,000 capital, by C. Wassill, K. Wojdakowicz and F. Rzepeci.

SYRACUSE, N. Y.—The Syracuse Auto Supply Corp. recently was incorporated with $60,000 capital, by H. W. Smith, L. W. Bennett and C. H. Sanford, to manufacture automobile specialties.

Syracuse, N. Y.—The King Shipping Case Corp. is being organized with $750,000 capital, to manufacture steel shipping cases. Those interested are F. C. King, A. N. Ellis, Levie S. Chapman and W. H. Foxhall.

ELLWOOD CITY, PA.—The Ellwood Nail Co. will build an addition 185 feet long.

FRANKLIN, PA.—The Chicago Pneumatic Tool Co. has arranged to build a plant here.

HOMESTEAD, PA.—The Homestead Valve Mfg. Co. plans to build a room for its melting furnaces.

LEECHBURG, PA.—The American Natural Gas Co. will build a plant here.

LEECHBURG, PA.—The Hutchinson Car & Roofing Co. has let the contract for a plant here.

McKEESPORT, PA.—Herman Telley, of this city, will fit up a plant to manufacture gas for welding purposes.

PHILADELPHIA.—The Niles-Bement-Pond Co. is taking bids for a boiler house, 1-story, 44 x 60 feet.

PHILADELPHIA.—A contract for the erection of a $262,000 pattern shop at League island has been awarded to M. H. C. McCloskey Jr., by the navy department.

PHILADELPHIA. — The Weston Automatic Steam Machinery Co. recently was incorporated with $100,000 capital, by Carroll C. Weston, Walter R. Moore and Edward E. Brent.

PHILADELPHIA.—The Philadelphia Textile Machine Co. recently obtained a permit to erect a plant addition, 1-story, 75 x 240 feet, estimated to cost $51,000. The contract has been let to the Hennebique Construction Co., 1170 Broadway, New York.

SOUTH ALLENTOWN, PA.—The International Motor Co. is taking bids on separate contracts for a factory and assembling building, 1-story, 300 x 600 feet, estimated to cost $150,000.

BUTLER, N. J.—The Apollo Magneto Co. and the Magneto Winding Co., Brooklyn, N. Y., with Isaac Q. Gurnee, Charles G. Wilson and William L. McCue, will build a plant for the manufacture of magnetos.

CAMDEN, N. J.—The Camden Auto Radiator Co. has awarded a contract to Potts Bros. & Cooperson for a small addition.

CAMDEN, N. J.—The Norton Mfg. Co., 38 South Thirty-second street, has been incorporated to manufacture novelties, hardware, etc., with $25,000 capital.

EAST ORANGE, N. J.—The Synthetic Coal & By-Products Corp. has been incorporated with $1,000,000 capital to manufacture a substitute for coal, by J. B. Day, B. J. Cummings and Charles Herzog.

JERSEY CITY, N. J.—The Diamond Flake Graphite Co., 15 Exchange place, recently was incorporated with $200,000 capital.

JERSEY CITY, N. J.—The Poertner Motor Car Co., Inc., of New Jersey, 15 Exchange place, recently was incorporated with $25,000 capital, to manufacture automobiles, airplanes, etc.

JERSEY CITY, N. J.—The D. D. Mills Co. has been incorporated with $18,000 capital to manufacture and deal in castings, by Agustine Davis, William G. McCune and William Lester, Plainfield, N. J.

NEWARK, N. J.—The Natural Carbonic Gas Co. will build additions estimated to cost $16,000.

NEWARK, N. J. — The A. W. Wheaton Brass Works will build a 2-story office and storage building.

NEWARK, N. J.—The American Aluminum Ware

FARRELL-CHEEK STEEL CASTINGS

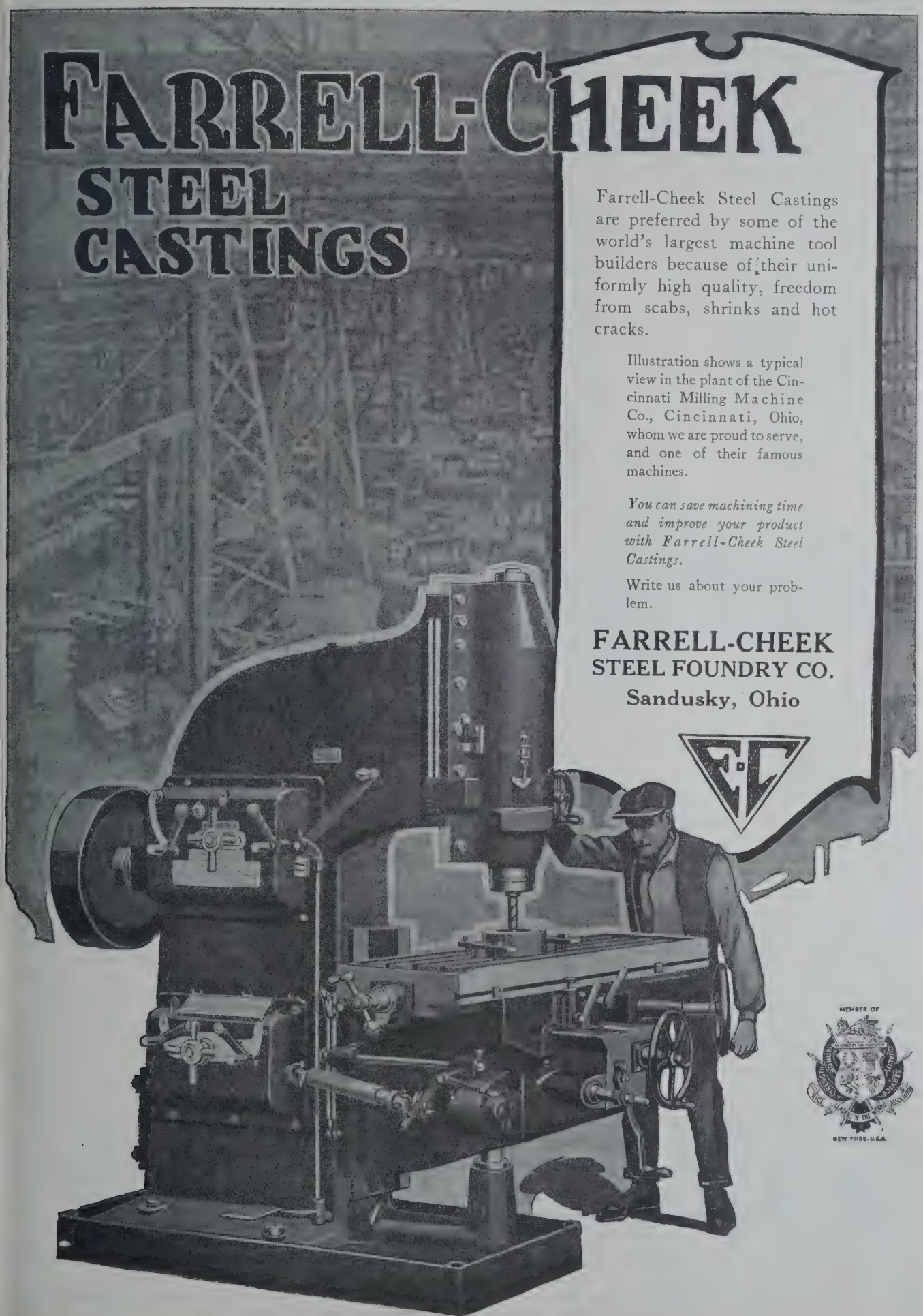
Farrell-Cheek Steel Castings are preferred by some of the world's largest machine tool builders because of their uniformly high quality, freedom from scabs, shrinks and hot cracks.

Illustration shows a typical view in the plant of the Cincinnati Milling Machine Co., Cincinnati, Ohio, whom we are proud to serve, and one of their famous machines.

You can save machining time and improve your product with Farrell-Cheek Steel Castings.

Write us about your problem.

FARRELL-CHEEK STEEL FOUNDRY CO.
Sandusky, Ohio



MEMBER OF STEEL FOUNDERS' SOCIETY OF AMERICA

Co. has a permit for the erection of a 3-story addition.

NEWARK, N. J.—The Organic Salt & Acid Co., Passaic river and Avenue R, will erect a 1-story gas producing plant, 36 x 48 feet.

NEWARK, N. J.—The Standard Mfg. Co. has been incorporated with $50,000 capital to manufacture hardware, etc., by H. A. Black, W. J. Hilton and A. F. McCabe.

NEWARK, N. J.—The Craig-Bullion Mfg. Co., 15 Clinton street, has been incorporated with $100,000 capital to manufacture snips, flexible files, scissors, etc.

NEWARK, N. J.—The American Utilities Contracting Co., 671 Broad street, recently was incorporated with $125,000 capital, to operate sewerage systems, disposal plants, etc.

NEWARK, N. J.—Although the Central Stamping Co. has just acquired a 150 x 200-foot plot adjoining its plant, it is understood that no improvements will be undertaken at the present time.

TRENTON, N. J.—John E. Thropp & Sons Co. has let a contract for a machine shop addition, 1-story, estimated to cost $50,000.

BALTIMORE.—The City Spring Works contemplates a plant, 2-stories, 100 x 150 feet, estimated to cost $40,000.

BALTIMORE.—George R. Guild, 3418 Guilford terrace, plans to engage in the manufacture of railway block signals and devices.

BALTIMORE.—The American Cellulose Chemical Mfg. Co., Ltd., is having plans prepared for a $2,000,000 plant at McCalle, Md.

BALTIMORE.—The Canion Air Brake Co., 563 Calvert building, will erect a machine shop, 60 x 200 feet, and also plans to erect a foundry and pattern shop.

BALTIMORE.—Plans have been completed for the rolling mill, which J. J. Jones and associates have been planning to build here. A company will be incorporated to be known as the Eastern Rolling Mill Co. and will be capitalized at $6,000,000. Steel sheets for automobile goods, etc., will be manufactured. Mr. Jones formery was general manager of the Massillon Rolling Mill Co., Massillon, O.

BRUNSWICK, MD.—F. L. Spencer, city clerk, will take bids shortly for a 5,000,000-gallon reservoir.

HAGERSTOWN, MD.—The Hagerstown Welding & Automobile Works, Virginia avenue, has been organized and will erect a 1-story, 40 x 100-foot, and a 2-story, 40 x 50-foot, buildings.

LYNCHBURG, VA.—The Reeves Coal & Dock Co. recently was incorporated with $500,000 capital, by O. W. Gardner, V. P. Clinton DeWitt and others.

RICHMOND, VA.—The plant of the Victoria Metal Co. recently was damaged by fire.

Central States Activity

BLACK RIVER FALLS, WIS.—This city is reported planning improvements costing $25,000 to the municipal light and power plant. It is expected plans will be ready for bids about July 10.

BELOIT, WIS.—Bids for a junior high and vocational training school will be taken in July by the board of education.

CLINTONVILLE, WIS.—The Topp-Stewart Tractor Co. is contemplating two additions for heat treating and general forging.

FOND DU LAC, WIS.—The National Drop Head Projector Co. expects to begin operation in its new plant shortly. It now is installing machinery and equipment.

KENOSHA, WIS.—The Nash Motors Co. has let a contract for a manufacturing building, 100 x 200 feet, estimated to cost $30,000. Charles W. Nash is president.

KENOSHA, WIS.—The Simmons Co., manufacturer of steel and brass beds, has awarded a contract to the Kenwood Bridge & Iron Co., Chicago, for a 6-story plant addition, 90 x 320 feet.

MENASHA, WIS.—The Menasha Boiler Works is having plans drawn for a plant.

MILWAUKEE.—Th Universal Iron & Wire Works has broken ground for a new plant to cost about $15,000.

MILWAUKEE.—The Briggs & Stratton Co. has taken over the motor wheel department of the A. O. Smith Corp. The plant will be enlarged.

MILWAUKEE.—The American Metal Parts Mfg. Co. has been incorporated with $150,000 capital, by Edgar Harum, Leon Smith and Arthur White.

MILWAUKEE.—The Standard Steel Corp., manufacturer of farm equipment, located at 491 Virginia street, is reported planning a new plant estimated to cost $75,000.

MILWAUKEE.—The W. L. Romaine Machinery Co. has been organized by W. L. Romaine, formerly of the Badger-Packard Machinery Co. The new company is capitalized at $50,000.

MILWAUKEE.—An additional 20,000,000-gallon pumping unit will be installed at the North Point pumping station of the municipal waterworks. Bids are being received until July 16, by the board of public works.

MILWAUKEE.—Articles of incorporation have been filed by the Galvanizing & Sales Co., with $12,500 capital. The company will engage in hot process galvanizing, tinning, etc. The incorporators are Royden E. Webster, 389 Thirty-fourth street, Albert B. Houghton and Neele B. Neelen, attorneys.

OCONOMOWOC, WIS.—The board of education plans a high school building, with vocational training departments, estimated to cost $150,000.

PORTAGE, WIS.—The Loomis-Weinke Motor Co. is having plans drawn for a 1-story building, 90 x 120 feet, estimated to cost $20,000.

PORTAGE, WIS.—Slinger & Sons, founders and machinists, are building an addition costing $20,000 for machine and automobile repair work.

SHEBOYGAN, WIS.—The F. Blocki Co., manufacturer of agricultural implements, etc., has purchased a site for a new plant, estimated to cost $45,000.

WAUKESHA, WIS.—The Waukesha Automobile & Machine Co. has been organized by H. M. Mauer and will build a machine shop, 50 x 120 feet, estimated to cost $20,000.

WEST ALLIS, WIS.—A new gray iron foundry, which will specialize in gas engine castings, will be established here by the Motor Castings Co. now being organized. Frank E. Gray, architect, 86 Michigan street, Milwaukee, is drawing plans for a foundry, 114 x 182 feet.

ADRIAN, MICH.—The Schwartze Electric Co. will take bids soon on a plant addition, 1-story, 100 x 100 feet, estimated to cost $20,000.

DETROIT.—The Grand Rapids Blow Pipe Co. will start work soon on a plant addition.

DETROIT.—The Hudson Motor Car Co. has had plans drawn for a plant, 1-story, 340 x 400 feet, estimated to cost $225,000.

DETROIT.—Part of the plant of the Commerce Motor Car Co. recently was damaged by fire. The loss has been estimated at $100,000.

DETROIT.—The Brown Hutchinson Iron Works, W. H. Steger, president, 531 Clay avenue, will start work soon on a plant, 1-story, 110 x 156 feet, estimated to cost $19,500.

LANSING, MICH.—The Novo Engine Co. has let contracts for a foundry, 100 x 160 feet and a machine shop, 1-story, 90 x 260 feet. The company is also building a new bank of five core ovens and is installing new equipment in the machine shop to the extent of $40,000.

MUSKEGON, MICH.—The Muskegon Scrap Material Co. has been organized to take over the business of the Marcus Iron & Steel Co. and that of H. Rubinsky.

OWOSSO, MICH.—Construction of a foundry, 40 x 100 feet and a machine shop of the same dimensions, will be started shortly by contractors for the Owosso Bronze Bearings Co., which was organized several months ago.

CHICAGO.—C. H. Fisk, 1581 Ogden avenue, has let a contract for a machine shop addition.

CHICAGO.—The B. Mercil & Sons Plating Co., 1911 Fulton street, has awarded contracts for a 1-story addition, 32 x 99 feet.

CHICAGO.—Albert Pick & Co., 212 West Randolph street, contemplates a plant addition, 5-stories, 112 x 256 feet, estimated to cost $400,000.

CHICAGO.—The Elliot-Stephens Machinery Co. has been organized by H. C. Elliot, formerly vice president of the Marshall & Huschart Machinery Co.

CHICAGO.—The Charles F. Elms Engineering Works will take bids soon for a plant addiiton, 1-story, 50 x 100 feet, esitmated to cost $12,000.

CHICAGO.—Geraghty & Co., 3035 West Lake street, manufacturer of metal novelties, has had plans prepared for an addition estimated to cost $25,000.

CHICAGO.—The Pacific Flush Tank Co., 4241 Ravenswood avenue, has let a contract for a plant addition, 1-story, 35 x 125 feet, estimated to cost $20,000.

CHICAGO.—The Armstrong Bros. Tool Co., J. Armstrong, president, 339 North Francisco avenue, is taking bids for a plant addition estimated to cost $65,000.

CHICAGO.—The Chicago Roller Skate Co., care of Ware Bros., 224 North Ada street, contemplates a machine shop, 1-story, 100 x 400 feet, estimated to cost $75,000.

CHICAGO.—The Ilg Electric Ventilating Co., 154 Whiting street, is having preliminary plans prepared for a plant. 4-stories, estimated to cost $750,000. S. W. Weiss is president.

CHICAGO.—The Chicago Baling Press Co., 305 S. LaSalle street, capitalized at $35,000, has been chartered to manufacture presses by Frederick G. Manual, Maxwell C. Tobias and Charles R. Holton.

DES PLAINES, ILL.—The Benjamin Electric Co., R. B. Benjamin, president, 120 South Sangamon avenue, is taking bids for a plant, 3-stories, 66 x 286 feet, estimated to cost $200,000.

EAST FREEPORT, ILL.—The Stover Mfg. & Engine Co. is erecting a plant, 1-story, 48 x 75 feet.

MOLINE, ILL.—The Victor Storage Battery Co. contemplates the erection of a 1-story, 80 x 300-foot building, to be used for manufacturing purposes. B. F. White is secretary of the company.

PETERSBURG, ILL.—The Carroll Motors Corp. has been incorporated with $20,000 capital, to engage in the manufacture of valve-in-head tractor engines.

PONTIAC, ILL.—The Meadows Mfg. Co., manufacturer of washing machines, etc., plans an addition.

QUINCY, ILL.—A new foundry company has been organized here to replace the Quincy Casting Co. which has moved to Cedar Rapids, Iowa. Those interested are Frank J. O'Brien, C. G. McDaniel, A. W. Humphrey and John Barton.

ROCK ISLAND, ILL.—The B. & D. Mfg. Co. has been granted a charter to manufacture metal tools, dies, etc., with $15,000 capital. D. H. Donaldson is president.

WAUKEGAN, ILL.—The Chicago Hardware Foundry Co., North Chicago, Ill., will increase its capital

The Sivyer Service of providing Electric Steel castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency in the completed unit.

Secondly, Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly, Sivyer Service makes a careful study of the pattern and molding problem involved, for improper gating and insufficient risers are often the greatest wasters of metal and machining labor.

Fourthly, Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little on the natural freedom of electric steel from occluded gases nor even on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

SIVYER S CASTINGS



CAST crank shafts for coal handling machinery caused the Roberts & Schaefer Co. much trouble until they came to us with a request to determine the steel proper for these castings. After careful analysis we recommended Sivyer Vanadium Electric Furnace Steel with a special carbon content, providing stiffness enough for the arduous work without loss of the necessary toughness and strength. This careful specification of the proper metal is one of the many factors in Sivyer Service that has set free the demand for Sivyer Castings from the usual local limits and made it nation-wide.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

from $400,000 to $500,000 and will build a foundry and warehouse, estimated to cost $100,000.

WOODSTOCK, ILL.—The Woodstock Typewriter Co. will build an addition, 36 x 64 feet, to be used for polishing, drilling and milling departments.

BELLVILLE, O.—The Bellville Foundry & Machine Co. recently was incorporated with $100,000 capital, by James P. Wood, Thomas H. Jones, Grover Higgins, Harold G. Mosier and W. B. Cockley.

CANTON, O.—The plant of the Henry Miller Foundry Co. recently was damaged by fire.

CANTON, O.—The Arctic Ice Machine Co., H. D. Powell, manager, is taking bids for a machine shop addition, 1-story, 100 x 250 feet, estimated to cost $75,000.

CINCINNATI.—Contracts are being let for a plant, 200 x 450 feet, for the Trailmobile Co., Oakley, O.

CINCINNATI.—The Volyum Pump Co. has been incorporated with $15,000 capital, by John A. Smith and others.

CLEVELAND.—The Scientific Heater Co. has leased the viaduct power block.

CLEVELAND.—E. Lemberg has a permit to erect a machine shop, 1-story, 60 x 120 feet, at 2934 East Fifty-fifth street, to cost $12,000.

CLEVELAND.—The Parish & Bingham Co. recently let a contract for an addition, 2-stories, 30 x 88 feet, estimated to cost $15,000.

CLEVELAND.—The Motor Patterns Co. has been incorporated with $50,000 capital, by H. R. Street, F. B. Whitlock, J. S. Polechek and others.

CLEVELAND.—The J. C. Cromwell Steel Co. recently was incorporated with $10,000 capital, by Harold T. Clark, Leader-News building, and others.

CLEVELAND.—The Austin Co. has the contract for a 1-story steel structure, 136 x 330 feet, for the Bourne-Fuller Co. The building will house two cranes.

CLEVELAND.—The Standard Metal Goods Co. has been incorporated with $10,000 capital, by Harry T. Hamilton, W. W. Hoyt, A. L. Lang, Harry H. Rose and others.

CLEVELAND.—Construction of an addition to the plant of the Grabler Mfg. Co., estimated to cost $75,000, has been started. The Sam W. Emerson Co. has the contract.

CLEVELAND.—The Foster Bolt & Nut Co., A. M. Foster, vice president, East Seventy-second street and Union avenue, has let a contract for a plant, 2-stories, 77 x 123 feet, estimated to cost $30,000.

CLEVELAND.—The Erie Mfg. Co., wood, metal and allied products, has been incorporated with $25,000 capital, by E. L. Cannon, F. H. Parker, H. Heiser, E. M. Morgan, C. W. Kelsey and others.

CLEVELAND.—The General Electric Co., Nela Park, has awarded a contract to the Sam W. Emerson Co. for a 4-story building, 112 x 300 feet, which will be devoted to the manufacture of lamps.

CLEVELAND. — Contractors have started on a foundry, 96 x 160 feet for the Nickel Plate Foundry Co., East 152nd street. Practically all necessary equipment has been purchased, according to C. M. Bolich.

CLEVELAND.—The Cuyahoga Spring Co., Berea road, has awarded a contract to the Austin Co., Cleveland, for a plant, 2-stories, 80 x 146 feet. The building will be used for the manufacture of coiled wire springs.

CLEVELAND.—The Acme-Palmers & DeMooy Foundry Co. has been incorporated with $400,000 capital, by Alonzo M. Snyder, Williamson building, W. H. Seagraves, Robert E. Roehm, M. H. Gallagher and N. I. Young.

DAYTON, O.—The Schwartz Electric Co. has been incorporated with $15,000 capital, by C. H. Schwartz, George F. Schneidler, R. H. Davis and others.

EAST LIBERTY, O.—The People's Light & Power Co. has been incorporated with $20,000 capital, by L. E. Traul, J. E. Dunaway, O. L. Slenker and others.

IRONTON, O.—The Marting Iron & Steel Co., according to a report, has under consideration the erection of a dust recovery plant. It has been estimated it would be built at a cost of $75,000.

JACKSON, O.—Greenlee Bros., operators of the Jackson Auger Bit Works, are reported planning to build an addition and install additional machinery.

MIDDLETOWN, O.—George Hills, formerly of the Ohio General Tractor Co., is reported to be organizing a $300,000 corporation to engage in the manufacture of tractors.

NEWARK, O.—The May Fieberger Furnace Co. recently was incorporated with $50,000 capital by F. W. Moser and others.

NILES, O.—The Falcon Steel Co., recently incorporated, has opened offices here, and bids are now being taken for a plant.

PORTSMOUTH, O.—The Reliable Tractor & Engine Co. recently was incorporated with $2,000,000 capital, by C. Heer and F. E. Adams.

TOLEDO, O.—The A. M. Mayle Mfg. Co., tools and machinery, has been incorporated with $20,000 capital, by Albert M. Mayle, John M. Vollmayer, Stuart S. Wall and others.

WELLINGTON, O.—The Sterling Machine & Stamping Co. has let a contract for an aluminum foundry, estimated to cost $35,000.

Business in Canada

MONTREAL, QUE.—The Robert Redford Co., Ltd., has been incorporated to build and repair ships, etc., with $1,000,000 capital, by Aubrey H. Elder, Felix W. Hackett, D. Burley-Smith and others.

MONTREAL, QUE.—The Satimo Co., of Canada, Ltd., has been incorporated to manufacture cutlery, etc., with $100,000 capital, by Errol Languedoc, Colville Sinclair, Ralph E. Alland and others.

HAMILTON, ONT.—The Quaker City Chemical Co., Philadelphia, has awarded the general contract to Mackay Bros., 66 St. Clair avenue, for the erection of a $30,000 plant.

KINGSTON, ONT.—This city contemplates the purchase of an electric pump, gas purifiers and other equipment.

OSHAWA, ONT.—A. F. Byers & Co., 340 University avenue, Montreal, has the general contract for a manufacturing plant here for the Gananoque Spring & Axle Co.

BRANTFORD, ONT.—Plans are being prepared for an addition to the Brantford Computing Scale Co., Ltd., 14 Grey street.

BRANTFORD, ONT.—The Ker & Goodwin Machinery Co., Ltd., has been incorporated to take over the business of the Ker & Goodwin Machine Co. The company is capitalized at $500,000 and was incorporated by Abraham Goodwin, Willoughby S. Brewster, George D. Hoyd and others.

GALT, ONT.—The plant of R. McDougall Co., Ltd., recently was damaged by fire. The pattern storehouse and the molding shop were the most damaged.

VANCOUVER, B. C.—The B. C. Equipment Co. has purchased a lot adjacent to its plant and will extend its traveling crane another 75 feet.

Business Changes Recently Announced

THE Pittsburgh office and store of the Niles-Bement-Pond Co., 111 Broadway, New York, machine tool manufacturer, has been removed from the Frick building to 425 Seventh avenue. A stock of the Pratt & Whitney Co.'s small tools will be maintained.

* * *

Edgar M. Moore & Co. has recently taken over the Pittsburgh sales agency for the Watson Wagon Co., Canastota, N. Y., manufacturer of industrial trailers.

* * *

The general office of the American Railway Equipment Co. now is located in the Liberty building, Philadelphia, with President G. W. Mingus in charge.

* * *

The Pittsburgh office of the National Trading Co. now is located in room 516 Oliver building. H. O. Price is general sales manager of the company.

* * *

The Nathan Mfg. Co., New York, has opened new offices in room 707 Great Northern building, Chicago.

* * *

The Mexican government has opened a commercial office at 112 West Adams street, Chicago, to care for interests in the middle western states, in charge of Senor Sealtiel L. Alatriste. It is designed to bring closer business relations between the countries and furnish information of commercial openings of interest to Americans.

* * *

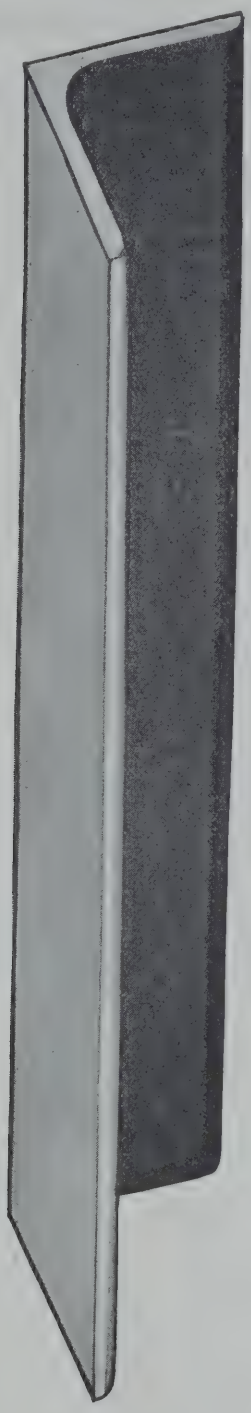
The Massey Concrete Products Corp., Chicago, has opened a new office at 1405 Oliver building, Pittsburgh.

* * *

The Oldberg Mfg. Co., Detroit, producing automobile and marine engine mufflers, has moved into its 3-story plant on East Grand boulevard.

* * *

The American Distributing Co. has taken new quarters in the Book building, Detroit. It is the agency for Livingstone automobile radiators, Weideley engines, Hartford automobile parts, Liggett springs and axles and other accessories.





A calendar in our organization indicates more than merely a date.

The trademarks at the head remind us daily of our obligation to uphold the century-old traditions of our house.

They stand for the highest in service to users of steel all over the world.

CROUCH STEEL
The Sign of World-wide Steel Service

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ROWNSON, DREW & CLYDESDALE, Inc.
Founded—1819

HEAD OFFICE:
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CODES USED: A. B. C., 5th Edition,
WESTERN UNION, LIEBER'S AND BENTLEY'S

Branch Offices
SAN FRANCISCO, American National Bank Building
LONDON, E. C., 225 Upper Thames St. GLASGOW, 104 West George St.
BELFAST, 16 Donegal Square South PARIS, 22 Rue Bergere

REPRESENTATIVES IN EVERY IMPORTANT TRADE CENTER OF THE WORLD.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.35c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.35c
Iron bars, New York	3.37c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.45c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.65c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10, blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.37c
No. 28 black sheets, New York	5.37c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.33c
No. 28 black sheets, St. Louis	5.30c
No. 28 black sheets, St. Paul	5.595c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv sheets, Chicago	6.72c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.68c
No. 28 galv. sheets, St. Louis	6.79c
No. 28 galv. sheets, Buffalo	7.05c
No 28 galv. sheets, New York	6.50c
Bands, Boston	4.70c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

	Black	Galvanized
Butt Weld		
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

	Black	Galvanized
Butt Weld		
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED
Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

	Black	Galvanized
Butt Weld		
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric GG Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$18.50 to 19.00
Chicago	18.00 to 18.50
Eastern Pennsylvania	17.75 to 18.75
Cleveland	18.00 to 19.00
St. Louis	18.00 to 18.50
Buffalo	16.50 to 17.00
New York (dealers' prices)	15.00 to 15.50
New Jersey points	14.00 to 14.50
Cincinnati	15.50 to 16.00
Birmingham	15.00 to 16.00
Valleys	16.50 to 17.50
Boston (dealers)	13.00 to 13.50

BUNDLED SHEETS

Pittsburgh	$14.50 to 15.00
Eastern Pennsylvania	13.50 to 14.50
Cleveland	14.00 to 14.50
Buffalo	12.00 to 13.00
Cincinnati	11.50 to 12.00

STEEL RAILS, SHORT

Chicago	$20.50 to 21.00
Cleveland	20.50 to 21.00
Boston (Dealers)	11.50 to 11.75
St. Louis	17.50 to 18.00
Birmingham	16.00 to 18.00
Cincinnati	15.50 to 16.00

STOVE PLATE

Pittsburgh	$17.00 to 18.00
Chicago	19.50 to 20.00
Eastern Pennsylvania	18.00 to 19.00
Cleveland	19.00 to 20.00
St. Louis	18.00 to 18.50
Buffalo	19.00 to 20.00
New Jersey points	17.25 to 18.25
Cincinnati	15.50 to 16.00
Birmingham	18.00 to 20.00
Boston (consumers)	17.50 to 18.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops.	$22.00 to 23.00
Chicago, billet and bloom crops	21.00 to 22.00
Eastern Pennsylvania unguaanteed.	17.75 to 18.75
Eastern Penna. (guaranteed)	23.00 to 23.50
Buffalo	21.00 to 22.00

SHOVELING STEEL

Chicago	$17.00 to 17.50
St. Louis	15.50 to 16.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$18.50 to 19.00
Chicago	20.00 to 20.50
St. Louis	17.00 to 17.50

BALED SHEETS

Pittsburgh	$17.00 to 17.50
Chicago	14.50 to 15.00

FROGS, SWITCHES, GUARDS

Chicago	$18.50 to 19.00
St. Louis	18.00 to 18.50
Eastern Pennsylvania	17.75 to 18.75

BOILER PLATE, CUT

Chicago, No. 1	$15.50 to 16.00
St. Louis, No. 1	15.00 to 15.50

ANGLE BARS—STEEL

Chicago	$19.50 to 20.00
St. Louis	18.00 to 18.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$19.00 to 20.00
Pittsburgh, No. 2	18.00 to 19.00
Chicago, No. 1	20.00 to 20.50
Chicago, No. 2	19.00 to 19.50
Eastern Pennsylvania, No. 1	24.00 to 25.00
Cleveland, No. 1	20.00 to 21.00
St. Louis, No. 1	19.00 to 19.50
St. Louis, No. 2	18.00 to 18.50
Buffalo, No. 1	20.00 to 20.50
Cincinnati, No. 1	18.50 to 19.00
Birmingham, No. 1	15.00 to 16.00
New York No. 1 (dealers' price)	20.50 to 21.50
Valleys No. 1	18.00 to 19.00
Boston (dealers)	17.00 to 17.50

WROUGHT PIPE

Eastern Pennsylvania	$18.50 to 19.50
Eastern Pennsylvania, ungraded	11.00 to 12.00
Buffalo	15.00 to 16.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	14.50 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$21.00 to 22.00

CITY WROUGHT

New York, long (dealers' price)	$17.00 to 17.50
New York, special	14.50 to 14.75

BUSHELING

Chicago, No. 1	$18.00 to 18.50
Chicago, No. 2	13.50 to 14.00
Cleveland, No. 1	17.00 to 18.00
Cleveland, No. 2	15.75 to 16.25
St. Louis, No. 1	16.50 to 17.00
Buffalo, No. 1	14.00 to 15.00
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$11.00 to 11.25
Chicago	8.50 to 9.00
Eastern Pennsylvania	12.00 to 12.50
Cleveland	10.00 to 10.50
Buffalo	8.00 to 9.00
New York (dealers' price)	8.50 to 9.00
St. Louis	11.50 to 12.00
Cincinnati	7.00 to 7.50
Birmingham	11.00 to 12.00
Valleys	11.00 to 11.50
Boston (dealers)	6.50 to 7.00
Boston (blast furnace) (dealers)	7.00 to 7.50

CAST IRON BORINGS

Pittsburgh	$12.00 to 12.50
Chicago	12.00 to 12.50
Eastern Pennsylvania	13.00 to 14.00
Cleveland	12.00 to 12.50
St. Louis	10.50 to 11.00
Buffalo	11.50 to 12.50
New York (dealers' price)	10.50 to 11.00
Cincinnati	8.50 to 9.00
Birmingham	11.00 to 12.00
Valleys	11.50 to 12.00
Boston (dealers)	8.50 to 9.00
Boston (blast furnace)	8.00 to 8.50

IRON AXLES

Pittsburgh	$28.00 to 29.00
Chicago	31.00 to 31.50
Eastern Pennsylvania	28.00 to 30.00
Cleveland	29.00 to 31.00
St. Louis	31.50 to 32.00
Buffalo	26.00 to 27.00
Cincinnati	25.00 to 26.00

IRON RAILS

Chicago	$22.00 to 23.00
Cleveland	24.00 to 25.00
St. Louis	22.50 to 23.00
Buffalo	23.00 to 24.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$15.75 to 16.25
Cleveland	15.50 to 16.00
St. Louis	16.00 to 16.50
Cincinnati	14.00 to 14.50

GRATE BARS

Chicago	$19.00 to 19.50
Cleveland	17.50 to 18.00
Buffalo	19.00 to 20.00
New Jersey points	16.25 to 17.00
Eastern Pennsylvania	17.00 to 18.00

FORGE FLASHINGS

Cleveland, large	$13.00 to 14.00
Cleveland, small	15.75 to 16.25
Chicago, small	15.00 to 15.50
Boston (dealers)	10.00 to 10.50

FORGE SCRAP

Chicago	$18.50 to 19.00
Eastern Pennsylvania, No. 1	12.00 to 13.00

ARCH BARS AND TRANSOMS

Chicago	26.00 to 27.00
St. Louis	23.50 to 24.00

ANGLE BARS—IRON

Chicago	$22.50 to 23.00
St. Louis	20.50 to 21.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$15.00 to 15.50
Eastern Pennsylvania	12.50 to 13.50
Boston (dealers)	7.00 to 8.00
Cleveland	15.00 to 15.50
Buffalo	13.00 to 14.00
Chicago	13.00 to 13.50

STEEL CAR AXLES

Pittsburgh	$25.00 to 26.00
Eastern Pennsylvania	28.00 to 30.00
Cleveland	28.50 to 30.00
St. Louis	28.50 to 29.00
Buffalo	26.00 to 27.00
Chicago	28.00 to 28.50
New York (dealers' price)	21.25 to 22.25
Birmingham	20.00 to 23.00
Boston (dealers)	19.00 to 20.00

SHAFTING

Eastern Pennsylvania	$25.00 to 27.00
St. Louis	26.00 to 26.50
New York (dealers' price)	19.75 to 20.75
Chicago	24.00 to 25.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh iron	$22.00 to 23.00
Pittsburgh, steel	19.00 to 19.50
Chicago, iron	23.00 to 23.50
Eastern Pennsylvania, iron	23.00 to 24.00
Cleveland, iron	23.00 to 24.00
St. Louis, iron	23.50 to 24.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	20.00 to 22.00
Boston	23.00 to 24.00
Cincinnati	18.50 to 19.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$21.00 to 22.00
Chicago, cupola	24.50 to 25.00
Eastern Pennsylvania, cupola	23.00 to 24.00
Cleveland, cupola	23.00 to 24.00
New York, cupola (dealers' price)	19.50 to 20.50
Cincinnati, No. 1, cupola	21.50 to 22.00
Birmingham, cupola	22.00 to 24.00
St. Louis, railroad	25.00 to 25.50
St. Louis, agricultural	24.00 to 24.50
Buffalo	22.50 to 23.00
Boston	23.50 to 24.50

HEAVY CAST

New York (dealers' price)	$19.50 to 20.50
Buffalo	21.00 to 22.00
Pittsburgh	19.50 to 20.00
Eastern Pennsylvania	19.00 to 20.00
Cleveland	18.50 to 19.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$16.00 to 16.50
Pittsburgh, agricultural	15.00 to 15.50
Chicago, railroad	19.50 to 20.00
Chicago, agricultural	18.50 to 19.00
Eastern Pennsylvania, No. 1 cupola	18.00
Eastern Pennsylvania, ordinary	18.00
Cleveland, railroad	18.50 to 19.00
Cleveland, agricultural	16.00 to 16.50
St. Louis, railroad	16.00 to 16.50
St. Louis, agricultural	15.00 to 15.50
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	12.00 to 12.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$22.00 to 23.00
Chicago	21.50 to 22.00
Eastern Pennsylvania	21.00 to 22.00
Cleveland	18.50 to 19.50
St. Louis	19.50 to 20.00
Birmingham	15.00 to 16.00
Boston (dealers)	13.50 to 13.75

LOCOMOTIVE TIRES

Chicago	$21.00 to 21.50
St. Louis	18.50 to 19.00

BOILER PUNCHINGS

Chicago	$20.50 to 21.00
Eastern Pennsylvania	21.00 to 22.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

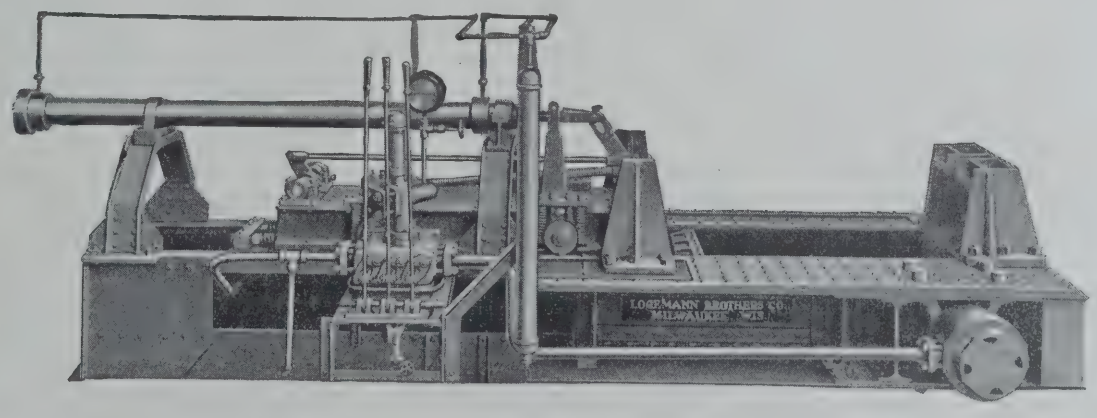
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

WELDING APPARATUS.—The Bastian-Blessing Co., Chicago, is ciculating a loose-leaf catalog, in which it describes and illustrates cutting and welding apparatus. Various parts and accessories of this equipment are also described and illustated.

PRODUCER GAS COSTS—The Steere Engineering Co., Detroit, is circulating a cardboard bulletin, containing a table showing producer gas costs, including those for fuel, power, repairs and maintenance, labor and supervision, interest and depreciation, etc.

PYROMETRY CHECKING—Bulletin No. 867-B issued by the Leeds & Northrup Co., Philadelphia, contains a treatise on the importance of standards and of checking in pyrometry. Various pyrometer and thermocouple equipment is described and illustrated.

LIFT TRUCKS—The Stuebing Truck Co., Cincinnati, is circulating a cardboard folder, calling attention to a lift truck which it manufactures. According to the folder, with these trucks one man can do work formerly requiring five, as there is no waste of time in loading and unloading, due to the platforms which are part of the trucking system.

STEEL FURNITURE—A loose-leaf catalog of 32 pages is being distributed by the Angle Steel Stool Co., Inc., Otsego, Mich., in which it describes and illustrates its line of metal furniture and equipment for factory and office use. Specifications, etc., accompany each illustration. Besides metal chairs and stools, factory trucks, tool trucks, machine tenders and merchandise conveyors are described.

INDUSTRIAL HAULAGE—Under the title "The Trackless Train," the Mercury Mfg. Co., Chicago, has issued an attractive 18-page booklet setting forth the development, etc., of a tractor which it manufactures. This tractor is driven by an electric locomotive obtaining its current from storage batteries in the body of the tactor. It is designed to pull or push one or more trailers.

ALLOY STEEL—A 4-page desciptive folder is being distributed by the Kinite Co., Milwaukee, in which it describes a new alloy steel said to be especially adapted for making cutters, dies, taps and other tools with multiple cutting edges. This tool steel is cast and not forged as are others. The booklet calls attention to the various properties of the steel and contains illustrations of several large dies.

ELECTRIC DRILLS. — Portable electric drills are described and illustrated in a 4-page folder recently published by the Black & Decker Mfg. Co., Baltimore. The motor with which these drills is equipped operates on either direct-current or alternating-current of 25, 40 or 60 cycles. It is cooled by means of a centrifugal fan on the armature shaft. Drills of various sizes are described.

HEAT CHART—The Onondaga Steel Co., Inc., Syracuse, N. Y., is circulating a graphic color heat chart, giving directions for the treatment of high-speed steel manufactured by the company. The directions given are said to be applicable to all first class 18 per cent tungsten vanadium steels. Directions are given for cutting for tool lengths, forging, hardening forged tools, hardening milling cutters and finished tools, tempering and annealing.

SPIRAL PIPE—The Standard Spiral Pipe Works, Chicago, is circulating a 40-page booklet in which it describes and illustrates reinforced spiral pipe. According to the booklet this pipe is made of two strips of steel of different widths. Both strips are rolled to shape on the edges and are interlocked and rolled down under high pressure. Various data are given and the illustrations include a number of actual installations.

RAILROAD EQUIPMENT—Catalog No. 145, issued by the Whiting Foundry Equipment Co., Harvey, Ill., is devoted to equipment for use in locomotive repair shops. Equipment described includes screw-jack locomotive hoists, shop trucks, movable jacks for locomotive hoists, spur geared hauling mechanism, transfer table cranes and other equipment. Illustrations showing the various equipment at work are given.

GAS MEASURING—The accurate measurement of gases and air is treated in a 16-page booklet recently issued by the Cutler-Hammer Mfg. Co., Milwaukee. The measurement of gases and air, according to the booklet, has always presented difficulties because of variations in physical conditions, pressure, temperature, gravity, humidity, composition, etc. The booklet is devoted to the measurement of gases and air in gas, coke-oven, steel, and chemical plants.

BOILER TUBES.—Seamless boiler tubes are described in a booklet being distributed by the Standard Seamless Tube Co., Ambridge, Pa. Data given include specifications for seamless boiler tubes, as adopted by the American Society of Mechanical Engineers. The first part of the booklet is devoted to a description of the company's plant. Illustrations showing the open-hearth plant, the pouring bay, the electric furnace, a 1000-ton hydraulic press, the chipping yard and other interesting parts of the plant are given.

ELECTRIC WELDING—Electric arc-welding is treated in a bulletin recently published by the U. S. Light & Heat Corp., Niagara Falls, N. Y. The equipment described includes an arc-welder of the stationary direct-current motor-generator type; an arc-welder of the stationary direct-current converter type; a direct-current converter; a portable alternating-current motor-generator welder, with cover; an arc stabiliizng reactor; electrode holder; panel for direct current motor-generator, and a direct-current motor-generator and armature for direct-curent motor-generator.

BUILDING PROJECTS.—Westinghouse, Church, Kerr & Co., Inc., engineers and constructors, New York, are circulating an illustrated folder showing actual construction work of all kinds done by the company. Some of the mechanical installations illustrated are those at the plants of the Cleveland Brass & Copper Mills, Cleveland, Freeport Sulphur Co., Freeport, Tex., mechanical handling apparatus at the shops of the Chicago & Alton railroad, Bloomington, Ill., electric power installation at the New York, New Haven & Hartford railroad, and one page of the folder shows construction of a plant step by step, which was started in May, 1917 and completed Jan. 1, 1918.

BUCKET CRANES.—An illustrated folder of four pages is being circulated by the Whiting Foundry Equipment Co., Harvey, Ill., in which bucket cranes are described and illustrated. Most of the illustrations are of actual installations and show cranes employed at the plants of the Scranton Electric Co., Scranton, Pa., handling coal; serving a cinder pit of the Western Maryland railroad at Hagerstown, Md.; handling cement clinker at the plant of Sandusky Portland Cement Co., Dixon, Ill., and handling coal in the milling plant of the Northwestern Consolidated Milling Co., Minneapolis. A list of railroads and steel plants using this type of crane and showing the capacity of each crane is given.

Opportunities Abroad

Information Can be Obtained From the Bureau of Foreign and Domestic Commerce. Requests Should be on Separate Sheets and Should be Accompanied by Opportunity Number

The purchase of steel, iron, metal sheets, black galvanized tin, foundry, hematite and malleable iron and steel for files and other tools is desired by a firm in England. Opportunity No. 29775.

A firm in Tunis desires to purchase calculating machines, typewriters, cash registers, numbering machines, etc. Opportunity No. 29781.

Saws, files, tools, builders' hardware, industrial hardware, screws, etc., are required by a firm in Spain. Opportunity No. 29713.

Cotton spinning and weaving machinery, 50 looms, one spooling machine of 200 spindles and one winding machine of 120 spindles, are required by a firm in India. Opportunity No. 29673.

The purchase of supplies for logging, such as wire rope, tree felling machines, motors, stump pullers, etc., is required by a company in Finland. Opportunity No. 29672.

A manufacturer in Argentina desires to purchase machinery and accessories necessary to install a plant for the manufacture of oleomargarine. Opportunity No. 29669.

The purchase of machinery for the manufacture of porcelain insulators is required by a manufacturer in Brazil. Opportunity No. 29666.

The purchase of tubing for high pressure turbines and electrical machinery of all kinds for developing waterfall power, is desired by a firm in a consular district in Spain. Opportunity No. 29741.

A firm in Denmark desires to purchase machine tools and other equipment for building a shop to make motorcycles. Opportunity No. 29743.

Engineering and building materials, such as iron, steel, metals, heavy hardware, machinery, electrical supplies for light, heat and power service, and for telephone and telegraph service, are required by a firm in Norway. Opportunity No. 29748.

A manufacturer in Italy wishes to secure an agency for the sale of iron, lumber, steel, coal, etc. Opportunity No. 29751.

A firm of manufacturers' agents in England desire to secure agencies for the sale in South Africa of hardware, motors and accessories, wire rope agricultural machinery, etc. Opportunity No. 29753.

The purchase of ice cream utensils is desirel by a firm in Wales. Opportunity No. 29755.

The municipality of a city in Greece desires to receive proposals until Sept. 11, for the installation and operation under contract for a period of years, of an electrical plant to furnish light and power to the city. Opportunity No. 29759.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, July 10, 1919 No. 2

New Orders Gain on Shipments

Steel Corporation's Bookings Exceed Daily Capacity—Orders for Sheet Industry Above 20,000 Tons Daily—Large Automobile Builders Closing Big Tonnage—Pig Iron Orders for 1920 Appear—Labor Becomes Factor

A GROWING gap between incoming mill specifications and production, despite the latter's steady increase, furnishes a wholesome symptom as to fundamental conditions in iron and steel. The result is an accumulating backlog of live tonnage on mill books in a number of lines which tends to fortify future operations. Average bookings of the Steel corporation at present are considerably in excess of shipments and also of capacity which means something over 50,000 tons daily. This fact promises to be reflected in the June unfilled order statement to be issued today. The point needs to be stressed that this is an extraordinarily good showing for the whole industry considering the absence of railroad demand.

New orders and specifications in sheets are coming in at the rate of over 20,000 tons daily. In wire products, the mills now are booked practically full for the third quarter and some for a longer period. The rush of demand for oil and gas field pipe has fairly swamped makers and some of the latter are being forced to turn away further business. Tin plate output is up to 90 per cent. The idle Columbus, O. works of the Carnegie Steel Co. is being made ready for early production of sheet bars. A number of steel works blast furnaces are about to blow in.

Large Sales in Sight

Automobile and farming implement manufacturers have been among the week's most conspicuous buyers. Some of the leading automobile interests in the central west now are negotiating for their forward requirements and these amount to several hundred thousand tons.. Accessory and parts manufacturers have continued to place sizable contracts and specifications. Buying by the implement trade is coming along in better volume. One consumer of this class in the west placed about 10,000 tons of rerolled bars. The Moline plant of the Republic Iron & Steel Co. has resumed operations especially to serve the farming tool demand.

Advances are appearing in some of the minor lines. Various nut and bolt makers have boosted their schedules 5 per cent. In small rivets, $10 to $15 a ton has been added. Some rerolled bar makers now quote 2.35c mill, a rise of $2 per ton. Talk of early advances in wire products persist and some makers are restricting their present offerings especially for third quarter.

Buy Iron for 1920

Some buying of pig iron for 1920 delivery has been done although makers generally are discouraging any contracting so far ahead. Notable in this business has been about 20,000 tons of malleable placed by consumers in the Pittsburgh district which it is thought may be discounting a revival of railroad demand. Some producers have been accepting orders for delivery after Jan. 1 only when joined with fourth quarter tonnage. In all cases where iron for next year has been booked by the furnaces it has been on the price basis prevailing for last half. Generally buying is on a reduced level as compared with recent weeks. The American Steel Foundries is understood to have closed for a round tonnage of basic for Alliance, O. Sales of basic have been made at Philadelphia at an advance of 50 cents. The market for steelmaking iron, however, has shown no appreciable expansion.

An interesting export transaction is the purchase of 20,000 tons of basic iron in Luxemburg by England. American producers had a chance to bid upon this inquiry but were at a geographical disadvantage. It is learned, however, that good sized tonnages of American basic were sold to England about two weeks ago. England also bought 3000 tons or more of bars and Italy 5000 tons of scrap. The latter also wants 5000 tons of ship plates, 1500 tons of structural shapes and 6000 tons of scrap. Latin-American trade in steel is active.

Labor is a Factor

There is more reference to unskilled labor shortage as a factor in production especially in the Pittsburgh district, and this is being taken into account in regulating future sales. A strike for higher wages has put out of commission temporarily three blast furnaces in the Jackson, O. district.

JULY 10, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
PHILADELPHIA - - - - 1316 Land Title Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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War Fails to Halt Progress

AS WAS to be expected, war caused a great expansion in the capacity of the steelmaking plants of the United States. It is doubtful if there is a company engaged in making iron or steel or their products which did not extend its activities as a result of the increased demand brought about by the great conflict. Notable among the companies which greatly increased their facilities are the Bethlehem Steel Co. and the Inland Steel Co., whose new plants are described in this and last week's issue of THE IRON TRADE REVIEW.

While the enlargements to these works are typical of the manner in which the steel industry arose to wartime necessities, they are especially noteworthy because in each instance the new installations embody important improvements in equipment developed in spite of many hardships and in the face of the urgent need of completing the new work at the earliest possible moment. In the case of the new Sparrows Point plant of the Bethlehem Steel Co., a modern duplexing plant was built without interferring with the vast amount of war work being executed in other works of the company. The Inland Steel Co. practically doubled the capacity of its harbor works under great pressure and in spite of unusual difficulties. It is remarkable that in planning the extensions to each of these plants the construction engineers were not satisfied to accept the current standard designs but insisted upon improving upon them. Thanks to their enterprise the Sparrows Point plant possesses an unusual method of handling blown metal in its course from the converters to the open-hearth furnaces. The Inland Steel Co. is likewise indebted to the foresight of its construction experts for a notably elastic routing of hot metal and an ingenious pivoted pulpit for its 28-inch mill which greatly simplifies the changing of rolls.

This improving of steel mill equipment, especially in the face of wartime difficulties, is a most encouraging sign. It signifies the unrelenting purpose of steel works engineers to strive constantly to improve existing standards. Now that the restraining hand of war has been removed, new ideas in mill equipment may be worked out under more encouraging conditions. In view of the enterprise already displayed, the prediction is justified that distinctive strides in the design of steel mill machinery will find expression in after-war construction.

Lake Ores Maintain Quality

THE three-year period, 1916-18, marks a definite chapter in the history of the great Lake Superior iron ore district. Shipments in those years averaged more than 64,600,000 tons, an increase of 33 per cent over what had been counted as a good season. Under such conditions it is reassuring to learn that the district withstood the drain on its resources without materially affecting the quality of ore.

Charts presented on a following page show this condition graphically. Complete figures just made available by the Lake Superior Iron Ore association, show the average iron content, natural, during the three years of greatest shipments was on a parity with the level held since 1908. Average phosphorus showed a quite slight increase, silica and moisture were practically the same while the manganese content jumped from an average of 0.66 to 0.77 per cent.

The definite trend toward lower grade ore is revealed in a study of the association's tables covering ore shipments annually since 1902. Comparing shipments at the two ends of this 17-year period, average iron content, natural, has fallen from 55.77 per cent to 51.29 per cent, while average phosphorus has increased from 0.075 to 0.104; average silica from 6.23 to 8.12; average manganese from 0.46 to 0.87; and average moisture from 8.71 to 11.29. In making up this total loss in average iron content, natural, of 4.48 per cent, the Mesabi range shows a decline of 5.44, and the old ranges of 3.64. The latter showing by ranges, embraces a drop in iron content of Gogebic ores of 2.60; Marquette, 2.53; Menominee, 1.09;

Vermillion, 3.74, and the Cuyuna in five years, 6.22.

Shipments of bessemer ores have shown a relative but not an absolute decline. Total shipments in 1918 of bessemer ores were close to 20,000,000 tons, or above the average since 1902. The percentage of these ores to total shipments has dropped from 64.9 per cent in 1902 to 32.9 per cent in 1918. The Mesabi range shipments in 1902 were 80.6 per cent bessemer ores and last year only 36.3 per cent. The Gogebic shows a drop from 87.5 per cent in 1902, 90.2 per cent in 1905 and 80 per cent in 1910 to 41.1 per cent in 1918.

Metallurgical developments as reflected in blast furnace operations have successfully kept abreast of the falling quality of the lake ores, upon which the country relies for the great bulk of its pig iron. The success met in employing the sandy ores of the western Mesabi is an evidence of this progress in the chemistry of iron making. The prospect of utilizing the enormous tonnage of magnetite ores of the eastern Mesabi is brighter today than ever before. The question of quality of Lake Superior ores is evidently not one which demands immediate solution.

How Unionism Throttles Britain

LABOR problems, as there is ample and specific evidence on all sides, have become the big question for the industry of the world. Conditions incident to and produced by the war, have had a profound effect upon the individual and his methods of daily life and thought. Manifestations of this fact are to be seen in the general unrest, in the unreasonable obstinacy and in the bad temper which accompanies so many demands put forth by labor today. The United States though spared much of this outcropping of class insistence in its worst and most vicious form, has had and is now having its share of disturbances, the bill for which has mounted high for employer and employed. How Great Britain is effectually handstrung by the exactions of unionism, to the ultimate benefit of neither the employing or the employed classes is told in facts and figures in a special article entitled "British Fettered by Labor Rule" in this issue as seen through practical American eyes. The crippled position of English manufacturers in many lines today at a time when world's competition offers such promising returns to successful operations is the logical outcome of the fundamental policy of British labor unionism to restrict output, to which new powers for enforcement have been added by the war. The situation is truly expressed by the fact that the British government today is expending $5,000,000 weekly in out-of-work donations to the unemployed, while production in iron and steel is languishing because sufficient skilled employes are not available to operate the plants on the 8-hour day basis recently forced upon the industry. In the coal industry, moreover, statistics show that the average output per British miner is less than in Japan with that country's necessarily cruder methods, and about one-third of that in the United States. This rate still is declining. As a result, the United Kingdom promises to have little coal for export above its domestic needs. A 6-hour day now going into effect in the mines will further intensify this unfavorable showing. Yet Great Britain's prosperity in a large measure depends upon her coal industry and particularly so upon her ability to export this fuel and other products of her mines and factories.

Great Britain's distressing experience at this time, has in it much food for thought for both workmen and employers in this country. There is an economic limit to which any industry can be saddled by either restrictions or exactions. A sane, moderate course on the part of either is the best assurance of permanent benefits to both sides in the labor equation.

Turn Genius to the Shipyards

A FAVORITE argument in the past of those who believe the United States cannot develop a merchant marine on a competitive basis has been that it would be impossible to obtain a sufficiently low cost of construction at our present labor and material rates, plus our inexperience. The country has been building ships on a major scale now for several years and if this continues, and there seems no doubt that it will, the inexperience side of the problem should be eliminated after a little time.

But the side of personnel and applied skill is only one of the big phases of the question. Quantity production ever has been the tradition and the cornerstone of America's industrial success. To carry forward this policy in shipbuilding, it is indispensable that suitable and efficient tools shall be provided. The situation accordingly has now developed where the manufacturers of machine tools and the builders of small and special tools and other shipyard equipment have their part and a large part to fill if permanency and success are to crown the nation's present great venture in the maritime field.

If the engineers of this country will turn their thoughts to maritime problems and to the designing of tools and appliances which will expedite production with the same zeal and perseverence they have shown in other important lines of industry, as exemplified by the automobile industry the battle for a restored American merchant marine will be more than half won. The final issue then would be a question of how far they would be allowed free rein to develop their ideas and ingenuity. If any cumbersome governmental regulations interpose they should and must be removed. As events now portend it will not be long before the government will be obliged to answer to this test.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 132 AND 134

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	26.50 to 27.00
Basic, Buffalo, furnace	25.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25
Malleable, delivered eastern Pa.	28.35 to 30.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No 2 Southern	2.25 to 2.75
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X eastern	2.75 and up
No. 1, Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25
No. 1X, eastern delivered Phila.	$29.90 to 31.60
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 27.00
No. 2 foundry, Cleveland furnace	26.75
No. 2 foundry, Ironton furnace	26.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	28.40 to 30.60
No. 2X, eastern, N. J. tidewater	28.90 to 30.90
No. 2X eastern, Boston	31.90
No. 2X foundry, Buffalo furnace	28.00
No. 2 foundry, del. Philadelphia	27.90 to 29.60
No. 2 foundry, N. J. tidewater	28.40 to 29.90
No. 2 southern, Birmingham	25.00
No. 2 southern, Cincinnati	28.60 to 28.85
No. 2 southern, Chicago	30.00
No. 2 southern, Phila.	31.50
No. 2 southern, Cleveland	30.00
No. 2 southern, Boston	33.50 to 34.50
No. 2 southern, St. Louis	29.00
Virginia, No. 2X, furnace	26.50
Virginia, No. 2X, Philadelphia	30.60
Virginia, No. 2X, Jersey City	31.90
Virginia, No. 2X, Boston	31.90
Gray forge, valley, Pittsburgh	27.15
Gray forge Buffalo	25.75 to 26.00
Gray forge, eastern Pa.	27.50 to 28.50
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	41.50 to 42.00
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	40.00
Charcoal, Superior, Chgo., last half	31.45

Coke

(At the ovens)

Connellsville furnace	$4.00 to 4.50
Connellsville foundry	4.75 to 5.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00 to 125.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports.	115.00
Spiegel, 16 to 20 per cent furnace, spot	31.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$36.50 to 38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Youngstown	36.50 to 38.50
Bessemer, Pittsburgh	36.50 to 38.50
Bessemer, Youngstown	36.50 to 38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-hearth, Pittsburgh	$40.00 to 42.00
Open-hearth, Youngstown	$40.00 to 42.00
Bessemer, Pittsburgh	40.00 to 42.00
Bessemer, Youngstown	40.00 to 42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, refined, Phila.	2.595c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, refined, New York	2.62c
Bar iron, extra refined, Pittsburgh	2.75c
Hard steel bars, Chicago	2.45c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	35.00 to 38.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	2.45c
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.35c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c

Wire Products

(Per 100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c
Plain wire, Pittsburgh	3.00c
Galvanized wire, Pittsburgh	3.70c
Barb wire, painted, Pitts.	3.40c
Barb wire, galvanized, Pitts.	4.10c
Cut nails, Pittsburgh	4.445c
Coated nails per count keg, Pitts.	$2.75 to 2.85
Polished staples, Pittsburgh	3.40c
Galvanized staples, Pittsburgh	4.10c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.50c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

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Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1588.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1588.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Full tube schedule page 1588.

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	$54.80
Six-inch and over, Chicago	51.80
Four-inch, New York	55.70
Six-inch and over, N. Y.	52.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.05c to 3.30c
Shafting, Pitts., carloads	28 off list

Cotton ties, lots of 1000 to 3000 bundles, $1.73½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.71½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.70c
Boiler rivets, Pittsburgh	3.80c
Rivets ⅞ in. and smaller Pitts.	60–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	60–5 off
Cut thread	50–10–5 off
Larger and longer	45–10 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60–10–5 off
Cut thread	60–5 off
Larger and longer	50–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70–10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	80 off
Gimlet and cone point lag screws	65–5 off

NUTS

Hot pressed, square blank	3.25c off
Hot pressed, square tapped	3.00c off
Hot pressed, hexagon blank	3.25c off
Hot pressed, hexagon tapped	3.00c off
Cold pressed, square tapped	3.00c off
Cold pressed, square blank	3.25c off
Cold pressed, hexagon blank	3.25c off
Cold pressed, hexagon tapped	3.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices July 9, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	31.45	31.45	33.25	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
**Southern, No. 2, Birmingham	25.50	25.25	28.00	33.50
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa	26.50	25.50	29.65	32.00
**No. 2X Virginia, furnace	26.50	26.50	28.45	33.50
**No. 2X, eastern del., Philadelphia	29.50	29.60	31.90	34.50
Ferromanganese, 80 per cent, delivered	110.00	114.00	130.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.00	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	38.00	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73

	Prices July 9, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Iron bars, Cleveland	$2.52	2.52	2.52	3.64
Iron bars, Chicago mill	2.62	2.53	2.58	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.30	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.50	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.65	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.25	3.90	3.80	6.00
Connellsville foundry coke	5.00	4.65	4.55	7.00
Heavy melting steel, Pittsburgh	19.00	17.25	15.75	29.00
Heavy melting steel, eastern Pa	19.00	16.15	15.90	28.50
Heavy melting steel, Chicago	18.50	16.75	16.40	29.00
No. 1 wrought, eastern Pennsylvania	25.50	22.50	21.50	34.00
No. 1 wrought, Chicago	20.00	18.70	18.50	33.50
Rerolling rails, Chicago	21.50	19.25	17.95	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Pig Iron Orders for 1920 Placed

Pittsburgh Interests Close for 20,000 Tons of Malleable for Next Year and Other Tonnage for That Period is Booked—England Buys Basic in East and Also Places 20,000 Tons With Luxemburg

Pittsburgh, July 8.—Transfers of malleable iron for deliveries over the remainder of this year and the first half of 1920 aggregating about 20,000 tons have provided the feature of the past week in this market. In view of the fact that almost no real buying is coming out at present and hopes are rather slight that any will develop until after the railroads go back to private ownership, the demand for this grade of iron is considered extremely significant. Evidently consumers are satisfied that chances for an advance in prices are equal to those of a decline, for requirements it is believed cannot be normal so long as the railroads are out of the market for castings. Another striking feature of this business has been the difficulty buyers have had in getting the furnaces to accept first half of 1920 business. Considerably less than half of the bookings are for shipment over that period as few furnaces feel safe in being committed so far in advance at current prices owing to the uncertainty over costs. Already in a number of producing districts a scarcity of labor is beginning to be felt and fears are common that the situation will grow more serious as the year wears on. All of the business in malleable was at the full market price of $27.75 furnace. In fact all sales of pig iron recently made here have been at full quotations. New sales have included some fair sized lots of foundry as well as basic and bessemer. It would be some exaggeration to say the market was active, but quietly a considerable tonnage is being moved. Sales aggregating about 4500 tons of bessemer have been made at $27.95 furnaces, and two or three lots of 1000 tons of foundry iron also are included in recent transfers, including 1.75 to 2.25 per cent silicon, selling at $22.75 furnace, and some No. 2 (2.25 to 2.75 silicon) at $28 furnace. Inquiries from 1000 to 1500 tons of low phosphorus for last half are before makers and also an inquiry for 1200 tons of northern foundry (2.25 to 2.75 silicon) and one for 1000 tons of southern iron (2.25 to 2.75) have reached the market.

New England Orders Less

Boston, July 8.—A lull in the sales of pig iron is reported by all dealers for the short week preceding the July 4 holidays. Orders for 200, 300 and 500 tons were placed by several foundries but carloads for immediate shipment made up the bulk of the business. Furnaces seem reluctant to make big sales and in many cases are quoting last quarter iron only to old customers. Prices have remained firm except in a few cases. One Buffalo district furnace which because of its eastern location has the same freight rate as eastern Pennsylvania, has continued to quote at the Buffalo schedule, which means $1 concession in the delivered price. Southern iron has been weak in spots and has sold in 200 to 300 lots at not higher than $25.50 furnace for No. 2 southern (2.25 to 2.75 silicon). All sales from other districts are reported at the $28 price for eastern Pennsylvania and $27 at Buffalo for No. 2X eastern (2.25 to 2.75 silicon) for last half or immediate delivery. Some furnaces are asking premiums for last quarter. These have been in the neighborhood of $3 per ton, but actual orders at this price are not evident. Little Virginia iron is reaching this market for the Virginia Iron, Coal & Coke Co. has only one furnace active and is not offering anything to New England. Such Virginia iron as reaches here has been sold at $31 delivered for No. 2X (2.25 to 2.75 silicon). Last week's sales through Boston agents are estimated at 6000 tons.

Furnace Banks Well Filled

Buffalo, July 8.—The feature of the pig iron market is the filled-up condition of the orderbooks of the various furnaces in this district. All of them still have some iron to sell but there is really very little tonnage available. Anything that is booked must be for third or fourth quarters. All furnaces will not sell for next year's delivery under existing circumstances. The heavy rush of tonnage it is conceded, is over for a time, but inquiry continues fairly good and sales fair. One Buffalo interest is practically out of the market so close has its capacity been taken up. Basic and foundry were sold in small tonnages during the week, two of the outstanding contracts being 1000 tons of basic and 2000 tons of foundry, placed at the March 21 schedule. A Lancaster, N. Y. melter has closed for several thousand tons of malleable.

One interest here which had two of its furnaces idle for several weeks following the cessation of market activity has put one of its stacks back in blast and proposes to have the other going within 10 days. This interest will then be operating four stacks.

English Sale is Lost

New York, July 7.—The 20,000 tons of basic pig iron, for which an English consumer recently put out inquiries in this market, it is reliably reported, has been placed with producers in Luxemburg, at a price of

£8, ($38.40) c.i.f. an English port. This figure was considerably lower than any quoted by American interests. The loss of this business occasions considerable interest but not much surprise, owing to the proximity of Luxemburg to England. The price which was done is regarded naturally as an indication of what Luxemburg makers are able to offer in the way of a bargain. Export business closed by American producers during the past week was rather small. The largest lot reported sold was one involving 500 tons of foundry. Numerous inquiries for export are pending but there is no assurance as to when or whether they will be closed.

Domestic demand for pig iron here has fallen off materially. Sales made during the past week in this district are small as compared with the records of preceding weeks. It is not believed that more than 5000 tons of all grades were involved in transactions in this district and of this business practically all involved foundry iron. New inquiries which are out from domestic sources total several thousands of tons but no especial buying activity is promised.

Sold Up to 1920

Youngstown, O., July 8.—Foundry iron is being contracted for in fairly large quantities although in some quarters there is plenty of room for improvement. The Republic Iron & Steel Co. is sold up on this grade to Jan. 1, 1920, and is quoting at present $26.75, Birmingham, on all inquiries. Some sales have been made at this figure.

Some Sales for 1920

Cleveland, July 8.—With most of the furnaces now in possession of well-filled order books for the balance of the year and with many consumers of foundry and malleable grades under contract, buying of pig iron in Cleveland and surrounding territory is running in a quieter course. Some melters are showing interest in taking up their requirements after Jan. 1 and inquiry for that delivery is increasing. Although some sales for the first quarter of 1920 have been made to old customers where they have been joined with fourth quarter tonnage, makers generally are discouraging contracting so far ahead at this time. The first quarter sales that have been made in this way have been on the same basis of prices as at present, or $26.75 for No. 2 foundry (1.75 to 2.25 silicon). Sales by Cleveland interests during the past week have amounted to probably 40,000 to 50,000 tons, most of it outside the local market. Inquiry is not so lively but some sizable lots continue pending including the 11,000 tons of foundry and malleable for the Buick foundry, Flint, Mich. Some round lots of malleable have been embraced in the week's business both in new purchases and by the increase of orders recently placed. A local stove manufacturer bought 1000 tons of high silicon southern iron for last half at $28 Birmingham. Steelmaking irons still are inactive although the American Steel Foundries which recently was inquiring for 4000 to 6000 tons of basic for June-September shipment at Alliance, O., is understood to have closed for a round tonnage. The three Jackson county, O., furnaces are idle because of a strike of their employes for higher wages and the Jisco stack has been blown out. These producers for the time being are out of the market. Furnaces are shipping more tonnage from the stocks which they recently have piled, since consumers generally are ordering in iron in a more liberal fashion.

Cincinnati Prices Are Firmer

Cincinnati, July 7.—Word has been received from the South that order books are fairly well filled. Foundry iron running from 1.75 to 2.25 per cent in silicon, for third quarter shipment, has about been cleaned up, and there is not much of this to offer for the last quarter. For this reason the former quotation of $24.50 Birmingham made by a few producing interests is now a thing of the past. Some desirable business might be placed at $25, but it is doubtful if any tonnage of consequence could be secured. From all information in hand from $25.50 to $26 represent the general minimum figures. The first part of last week a few sales of iron analyzing 2.25 to 2.75 in silicon were made as low as $25, but the same interests are now quoting the full schedule of $28. Northern iron is also firming up and Ironton producers are now back to $26.75 at furnace for No. 2 foundry (1.75 to 2.25 silicon), although it is reported that firm offers have been accepted on some small lots all the way from 25 to 75 cents a ton. The inquiry has died down. A few tentative requests for prices on iron to be delivered in the first half of next year brought out no figures from the furnaces.

Market is Less Active

St. Louis, July 8.—Relative quietness prevailed in the pig iron market through the week. The volume of sales was about the smallest since the recent movement started but inquiries were fairly numerous, and heavier buying is looked for during the balance of the month. A number of users have taken odd lots of different grades in order to even up, but bulk of inquiry at the moment centers in foundry iron, mainly in 1.75 to 2.25 per cent silicon. With but one exception, southern producers have reached a satisfactory price basis with their customers, and it is believed a number of leading melters are about ready to close up for last half requirements. Makers of specialties show greater activity just now than any other arm of the trade. Automobile and truckmakers are working to capacity, and are good buyers of the various materials needed in their line. After holding off about as long as they could, farmers in this region are finally coming into the market. Stove manufacturers are looking forward to the heaviest fall and winter business since before the war. Improvement in the building trade continues to broaden, and is directly reflected in the demand for finished materials.

Southern Market Holding Its Own

Birmingham, Ala., July 8.—A little lull in the activity of pig iron buying was noted during the past week, but Southern manufacturers are again receiving numerous inquiries for fourth quarter. A $1 per ton advance is being maintained with two companies still out of the market. There is but little iron available for third quarter delivery. A price of $25.75 for No. 2 southern (1.75 to 2.25 silicon) for fourth quarter is considered low by furnace companies and for that reason there is no anxiety to sell. But little iron has so far been sold for the last quarter of the year. Three furnaces are in condition to resume operations and it is announced that if the demand warrants it there will be no time lost in blowing them in. Alabama production for July is expected to go beyond 150,000 tons, against 137,000 tons in June. Local consumers are not much interested.

Foreign Sales Are Made

Philadelphia, July 8.—Basic iron following the sales at advances a week ago is stronger in a more pronounced way. On additional sales of about 7000 tons, the market is now established at $26.50 to $27, delivered eastern Pennsylvania. It is learned here that fair sized tonnages of American basic were sold to England two weeks ago, one lot at 8 5s ($39.60) c.i.f. Bristol channel, and another at 8 6s 6d ($39.96) c.i.f. Glasgow. The market the past week has been fairly active. Foundry sales included 6000 tons of Virginia No. 1 X (2.75 to 3.25 silicon) and No. 2 X (2.26 to 2.75 silicon for export delivery at the rate of 1000 tons monthly over the second half. The belief prevails here that export buying is to be a bigger factor in the future than in the recent months. Domestic foundry iron sales of the past week were around 20,000 tons, including one lot of 1500 tons of pipe iron and another of 1500 tons of 1.25 to 1.75 silicon. While some furnaces which recently have been selling heavily, have advanced their prices, others are naming the old level. A steel company which heretofore has been selling some basic, has started to offer foundry iron and will blow in a furnace on this grade shortly. The Princess furnace in Virginia is expected to blow in before July 15. The Robesonia, Pa. furnace went in yesterday on foundry. Most producers who have been selling freely of late have booked 50 per cent of their second half output and are not anxious to dispose of more iron. It is conservatively estimated that orders are sufficient to keep stacks now active in the east, busy for two to three months. A large eastern consumer bought 1000 tons of malleable at $27, Buffalo, and $27.25 eastern furnace, making this grade $28.35 to $30.90, Philadelphia. Copper free low phosphorus inquiries for 1500 tons from western consumers are understood to have been placed in part with a Wellston, O., stack which has just undertaken the production of this grade. Bids were opened by the ordnance office here today for the third time on 3100 tons of copper free iron at Vernon, Pa. On one lot of 1980 tons of Thomas iron, William Wharton Jr. & Co. bid $25, Corning & Co., $25.05, F. R. Phillips, $25.30, Walter Walingford, $23.60, Charles Dreifuss, $24.05.

On 260 tons of northern iron all bids were the same as on the first lot, except that of Frank Samuel which was $27. On 860 tons of northern iron all bids were the same as the first lot. Low phosphorus makers several months ago agreed to cancel tonnages due on ordnance work for $10 per ton, but with some minor exceptions the board of claims did not approve this claim for this amount.

Chicago Business Again Grows

Chicago, July 8.—The leading interest in the Chicago territory, which sold 125,000 tons of pig iron in June, reports business picking up again following a lull incident to the holidays. Current sales are on an average with those of the previous month. Buying of foundry and malleable is continuing in a satisfactory way, but no demand has developed as yet for basic. Inquiry for foundry is not quite so heavy as it was about 10 days ago. An inquiry for 500 tons of foundry is now out, but this is the only one of consequence in this territory. A sale of 3000 tons of malleable recently was made for last half at the scheduled price of $27.25.

Ore Sales

Are Comparatively Small—More Vessels in Commission—June Shipments

Cleveland, July 8.—Ore sales continue in moderate volume. Small lot business during the past week has held near to the same level maintained during the past month, the total volume of sales, however, being comporatively small. The ore carrying fleet now is slightly larger, several large vessels having been put back into commission. Ore shipments are fairly heavy, the coal movement is brisk, while the grain trade will be abnormally heavy during the fall. Some shippers already have received notice to have freighters available for handling grain after Sept. 1.

Lateness in starting a heavier buying movement points to a heavy demand for vessel tonnage during the closing months of the season. One ore seller states that the average monthly volume from now on will have to reach 8,600,000 tons in order to have stocks of ore in furnace yards at their average level next spring.

Detailed figures of ore shipments from the Lake Superior district in June show a total movement of 7,980,839 tons. This represents a decline of nearly 2,000,000 tons from the movement in June of last year, and of about 3,000,000 tons to July 1, compared with the same period ini 1918. Shipments by ports are as follows:

Port	June, 1919	To July 1, 1919
Escanaba	759,647	1,414,527
Marquette	296,127	447,876
Ashland	951,287	1,768,292
Superior	1,889,294	3,241,561
Duluth	2,947,651	6,699,038
Two Harbors	1,136,833	2,437,125
Total	7,980,839	16,008,419
1919 decrease	1,941,021	2,941,311

Reaction in Coke Market

Spot Furnace Quotable at $4.25 Ovens and Some Supplies Available at $4—Connellsville Producers Indifferent

Pittsburgh, July 8.—Purchases of furnace coke in anticipation of a light production and restricted shipment over the Fourth of July has amply covered the blast-furnace requirements, and business this week has been extremely quiet. Prices also have reacted somewhat from the extreme levels reached during the flurry of buying last week and today the market is quotable at about $4.25 ovens for spot tonnages and fair sized supplies are available as low as $4. So little is going on that the market on standard 48-hour fuel largely is nominal. Practically all of the blast furnaces that are in operation are protected on coke requirements by contracts and while a few cases have come to light where shipments were not sufficient, in most cases the holiday interruption had little effect on the amount of fuel moving to the furnaces. It seems that because of the indifference of a large number of the Connellsville producers, much tonnage is available for last-half shipment. These operators have had the idea that coke was or would be scarce and, for that reason, maintained rather exalted price notions during the period when the blast furnace interests were ready to contract for the remainder of this year. The result was that those producers who were open to negotiation secured practically all the business and those who did not get in, largely must depend upon the spot demand until more furnaces come in. may be quoted anywhere from $4.12 Practically nothing has been done recently on contract and the market to $4.15 ovens, the latter price being the maximum on fixed price contract, while the lower price refers to a sliding-scale contract concluded on the basis of 6½ to 1 on basic iron at $25.75 valley furnace. Current spot demands for foundry coke also are light with $5 ovens the price.

Demand Continues Heavy

Boston, July 8.—Following advanced prices and general stiffening in the coke market the demand continues strong. New consumers are placing orders and many large interests are beginning to buy for storage purposes. During the week New Jersey byproduct and Connellsville coke came into the New England market in larger tonnage than heretofore since the war embargo was lifted. The New Jersey producer is reported to have quoted $9.90 delivered as a fixed price for the balance of the year which has caused considerable comment in the face of the announcement from New England producers that the $9.90 price covered their sales during July only, and might advance for August. To clear up the matter the local producer explains that all standing contracts, which are based on a month-to-month price governed by the Connellsville market, still hold and that under these, prices for August may advance.

By-Product Fuel is Sold

New York, July 7.—Included in business in the coke market here recently have been sales of good-sized tonnages of furnace coke by the northern New Jersey by-product producer for delivery over the last half of this year. The price on this by-product furnace coke is $4.50, Connellsville, which is $1 less than its maker is obtaining for foundry coke.

Contracting for second half reached generous proportions during the past week despite the holiday. Good sized tonnages, both of beehive and by-product coke have been placed during the period for second half, the price on by-product foundry coke being $5.50, Connellsville, or $8.60 delivered at Newark and other northern New Jersey points.

Prices on the Rise

Cincinnati, July 7.—The market is showing considerable strength. Quotations in all districts are being pushed up on both furnace and foundry grades. Connellsville foundry is very firm at $5.25 to $5.50 and furnace coke in that field now ranges from $4.25 to $4.50 at oven. New River foundry grades are quoted around $7.50 to $8, although little has been sold at the last named figure. Wise county 72-hour coke is priced at $7 to $7.50, and Pocahontas foundry is fast moving up to the same figures.

First Half Buying Done

St. Louis, July 8.—The week developed no change in the coke situation worthy of note. Some further contracting at steady prices for last half requirements was reported, and two sales were heard for delivery through the first half of 1920. Shipments from eastern ovens are slowing down, but are apparently meeting all needs, as few complaints or requests for expedition have been received by the dealers. The undertone of the market is decidedly firm, despite lack of present activity. Large users show a disposition to provide against the winter's needs, and the bullish sentiment is emphasized by talk of fuel shortages before the end of the year. Plans of several of the more important plants in the district provide for accumulations, beginning early in September. To date, however, little in the way of stacking has been accomplished.

Inquiries Are More Numerous

Birmingham, Ala., July 8.—There are more inquiries for coke and the foundry product is bringing an advanced price. Furnace coke is also picking up as blast furnace operations are resumed. The Woodward Iron Co. has all by-product ovens going. The Alabama Co. has its beehive ovens again in blast. The New Castle Coal Co. is starting up all idle beehive ovens in condition.

Scrap Still is Moving Up

Higher Prices at Chicago, Cleveland, Pittsburgh and in the East —$19 Paid for Steel—Corporation Subsidiaries in Market

FOR COMPLETE SCRAP PRICES SEE PAGE 134

Chicago, July 8.—Prices of scrap iron and steel continue to rise, and all grades are in strong demand, except rolling mill grades, which are listless. Angle bars, car axles, rerolling rails and coiled springs were marked up $1 a ton at the resumption of business Monday, while No. 1 boiler plate, No. 1 busheling, and pipes and flues were advanced 50 cents a ton during the past week. A feature of the market is the heavy demand for cast iron, and the scarcity of this material. The market for heavy melting steel also is good, and leading dealers predict that it will soon reach $25, although no advance in the price of this grade was to be noted during the past week. All government offerings are being absorbed promptly. The railroad administration is taking bids on approximately 7000 tons of miscellaneous material, among which are 400 tons of heavy melting, 500 tons of steel rails, 300 tons of railroad wrought and 300 tons of short-steel rail ends.

Eastern Dealers Advance Prices

Boston, July 8.—The local scrap iron and steel market continues speculative. Few orders for open-hearth furnaces have been placed although buying elsewhere is reflected in advanced prices here, and in considerable activity among local dealers. Machine shop turnings have been more active than any other grade and the price has advanced to $8 to $8.50. Blast-furnace turnings have also advanced and are quotable now at $7.50 to $8.

Rerolling rails have advanced $2 and are now at $15 to $15.50, dealers' price. In isolated cases $16 has been offered. The demand from Southern plants for cotton ties for rebaling purposes has fallen off. A sale of a sizable lot of government-shell scrap was made last week to a dealer at $16 f.o.b. New England point. Local foundry trade has dropped off some, although prices are not affected.

Volume of Trading Declines

New York, July 7.—Trading in scrap during the past week has again fallen off. Demand for heavy melting steel, which for the most part has been holding up well, is not quiet, and, in fact, there is little inquiry for material of virtually any description at the present time. One factor in the inactivity of the past few days has undoubtedly been the holidays, most offices in this city being closed from Thursday until Monday morning. Due to this dullness, the advance in prices apparently has been checked. In a couple of instances, the tendency, if anything, has been downward. In heavy melting steel, $14.75 is now possible, whereas a week ago $15 appeared to be the best that could be done. At the same time, however, holders of scrap are still backward about parting with their material.

Eastern Advance Continues

Philadelphia, July 8.—A substantial advance continues in the scrap market here. The demand for all grades is improving right along. All grades are becoming scarce on account of dealers holding their stocks. Several sales of heavy-melting steel and No. 1 railroad wrought were made recently at $19 and $25, respectively. Approximately 5000 tons of blast-furnace turnings were purchased by the Midvale Steel & Ordnance Co. at $12 to $13, delivered, Johnstown. Numerous sales of machine-shop turnings and foundry scrap also are reported. Heavy axle and forge turnings have commanded $14.50, although sales are reported as high as $15. A round tonnage of iron axles was purchased for export from New York.

Prices Still on Upgrade

Pittsburgh, July 8.—Scrap-iron and steel prices daily are finding more basis in sales to the steel manufacturers. Prices still are tending higher, for, finding the steel interests inclined to raise their price limits, makes the dealers firmer holders. One steel manufacturer in this district has paid as high as $19, delivered, for heavy melting steel. Some dealers, who a short time ago were holding for that price, marked up their quotations and today the general asking price is $20 on this grade. Knuckles, couplers, springs and other kinds of railroad scrap also have advanced. The Carnegie Steel Co. is making some scrap purchases for other corporation subsidiaries, but not for itself, officials of the company asserting that it is self-sustained on scrap and that furthermore, it still is getting fairly large tonnages contracted for at much lower prices than now prevail. Turnings and borings are plentiful. Dealers are naming their own prices on rerolling rails and iron axles. The demand for rails is sharp. Government shell steel is not being awarded so freely as recently. On a tonnage recently offered at the plant of the Allegheny Steel Co., Brackenridge, Pa., $20.25 was refused by the salvage board, whose idea is that this material should bring around $30.

Tonnages Are Scarce

Buffalo, July 8.—The market continues strong for all grades of scrap and dealers say a real shortage is in process of development. There is a strong demand for heavy melting steel on the part of eastern Pennsylvania mills but the local call has not increased. So far as can be learned no big tonnages have been sold and it is difficult to buy in large quantities. Dealers' stocks are said to be comparatively low and the fact that country scrap is conspicuous by its scarcity, has not helped conditions. The tone of the market is strong.

Assortments Are Heavy

Youngstown, O., July 8.—Scrap is moving only in fair-sized lots from valley yards. A few dealers are well stocked and are quoting attractive prices in some instances. Crop ends and billet and slab croppings command $21 here.

Prices Take Sharp Advances

Cleveland, July 8.—Iron and steel scrap again is breaking out of bounds. Enthusiasm is being evidenced by dealers and yard interests now are offering more than melters. Heavy melting steel no longer is obtainable at $18, and not much is to be had at $18.50. Yards say they would not consider $20 or $21 for the melting steel they have thrown down. Actual trading in scrap has not been large in the past week because of the week-end holiday. Large forge flashings, machine shop turnings, cast iron borings, heavy cast railroad, malleable stove plate and No. 1 busheling have advanced from $0.50 to $1. One of the largest users of heavy melting steel is expected to be forced into the market shortly, and may have to pay better than $18.50 for melting steel which he turned down at $16.50 and $17 recently.

Prices Still on Rise

Cincinnati, July 7.—Prices continue to rise on practically all grades of scrap material. Advances made this week were only nominal ones, but they tend to show the strength of the market. Cast scrap is in better demand, as is also No. 1 railroad wrought. Cast borings continue to gain strength, but steel turnings are quoted lower. Rerolling rails are in demand. The supply in this territory is limited. No railroad offerings of consequence are reported by any of the local dealers.

St. Louis Market Quieter

St. Louis, July 8.—While scrap iron and steel price lists were not subjected to any revisions worthy of note in the week, the market quieted down considerably, and there was a shade easier tendency in values. The apathy was due more to the hot weather and triple holiday than any change in supply and demand conditions. Many dealers, however, who figured in the recent buying flurry, have acquired about all they care to carry at the moment, and as the demand from industries has not picked up, a softer feeling has followed. Holders continue bullish on the future, and declare they are prepared to retain their scrap until their hopes are realized. Offerings through the week were light. The Cotton Belt had 12 cars for sale and the Missouri, Kansas and Texas 13 cars. The Terminal Railway association had a list of from 1200 to 1300 tons, and the Wabash disposed of 1300 car wheels. The government, through the local ordnance department, will sell on June 15 about 4500 tons of 5½-inch gothic billets at the Curtis Mfg. Co. plant. Bids made in the government's recent offering of cast-iron pipe at the Laclede gas plant were

all rejected, and this material will not be put on sale again before the end of the year.

Southern Dealers Still Waiting

Birmingham, Ala., July 8.—Dealers in scrap iron and steel in the South are still waiting for the change in the market. A little business is going on but as much stock is being taken in as goes out. Railroad scrap is being purchased by dealers. Country scrap is out of the question, in quantity, until a better price is offered. Quotations for the week show no change, and the assertion is made that published figures are but nominal. Advance in prices and activity at St. Louis, Chicago, Cleveland, Buffalo and elsewhere has played no part in the market of the South as yet.

Steel Demands

May Cause Difficulty in Filling Rail Orders When They Appear

Pittsburgh, July 8.—The rail mills in this district although a fair amount of foreign business has been placed, are not crowded with orders and not more than 50 per cent of the capacity is engaged. Talk still persists that the railroad administration must take considerably more rails but the hope does not run particularly strong that the additional requirements will be placed much before the railroads are returned to the original owners. So much capacity now is being devoted to the rolling of sheet bars and small slabs that the opinion has been expressed in well informed circles that when rail orders do not come out there may be difficulty of fulfillment. It is even hinted that higher prices may prevail when more rail tonnage seeks the manufacturers. Demands for light sections are of extremely moderate proportions although some purchases have been made at concessions by coal mine developments.

Light Rails Firmer

Philadelphia, July 8.—The demand for light rails has been increasing rapidly especially from Pennsylvania and West Virginia coal mines which want all weights from 16 to 45 pounds. Less shading now is reported on light rails; in fact practically all sales are on the 2.45c basis. Small standard rail orders have been placed at $47 mill for open hearth.

Mine Operators Swell Demands

Chicago, July 8.—A slightly better demand for light rails is in evidence in both the domestic and export markets. While most of the buying is being done by general contractors, road builders and industrial concerns, operations at coal mines are picking up, and a strong demand from this source in the near future is indicated. Stocks of coal are disappearing rapidly, and the mines are preparing for renewals in line with plans for heavier operations. No car buying of any consequence is noted, and there is no demand for heavy rails. One manufacturer points out that the need for track repairs is so great that on certain systems all trains are compelled to reduce speed owing to poor track conditions.

Sheet Orders Mount High

Bookings Running About 20,000 Tons Daily—More Heavy Automobile Buying—Export Business on the Increase

Pittsburgh, July 8.—Makers of sheets literally are being flooded with business and most of them now are practically sold for the third quarter. A considerable amount of fourth quarter business lately has been entered by the leading interests. Orders and specifications now are coming in at the rate of about 20,000 tons per day. The volume of business still greatly exceeds production and a substantial backlog of orders is being accumulated. The size of the business is extremely gratifying, being well distributed among the different kinds of sheets. Considerably less price-cutting is going on than was the case recently and almost all manufacturers now are quoting the March 21 prices. One of the larger automobile manufacturers is seeking to place a contract for sheets covering requirements over the remainder of this year and the first half of 1920. This proposition, however, is not being entertained by any of the manufacturers, none of whom wants to be committed for so long a period at current prices. Another large automobile company has not yet placed its last half requirements but it is expected to do so shortly. Substantial orders have lately been coming from makers of galvanized utensils and from corrugating companies. Demands for blue annealed sheets also are considerably heavier and a large amount of the bookings have been made at 3.55c, Pittsburgh, for No. 10 gage, notwithstanding that some makers have quoted as low as 3.35c.

Contract for Third Quarter

Philadelphia, July 8.—Good contracting for the third quarter marked the eastern sheet market during the past week. There was also fair spot buying.

Bookings Are Heavy

Youngstown, O., July 8.—Bookings of various grades of sheets are running heavy and plant operations in the valley this week will average close to 75 per cent of capacity. An inquiry from a Canadian interest for six carloads of automobile sheets is before makers and it is heard $4.15 mill was quoted. Inquiries in general call for small tonnages and include some choice specifications. The roofing trade is patronizing valley mills strongly and some good galvanizing and forming business is being closed. Export business in some quarters is on the increase. Japanese interests are buying large quantities of black sheets and, it is heard, are about to come into the market for heavier tonnages. It is understood this new business will include specifications of 30-gage and lighter, 36 x 72-inch black and blue annealed. It is thought mills here will not take on this business unless at a premium, inasmuch as it is difficult specification to handle in hot weather. The scrap loss when rolling this gage is also large. A 1000-ton inquiry for 30-gage material was before makers here recently but they declined to quote. Prices are firmer. Regular carload business is being closed at prevailing market quotations, as follows: No. 28 black, 4.35c; No. 10 blue annealed, 3.55c; No. 28 galvanized, 5.70c. However, where a maker is in a position to work in an order with present mill schedules, it is thought a concession of $2 per ton or so might be had. Bundled scrap is bringing $13 per ton; hydraulically-pressed scrap, ready for charging, $14; black wasters, 3.35c; hot-mill warmers, $25 per ton; galvanized wasters, 3.50c; and, galvanized seconds, 4.50c.

Mill Schedules Are Tight

Chicago, July 8.—The slight weakness in the price of sheets noted recently has entirely disappeared, as buying continues to increase. Makers report they had twice as much business in June as in May, and now have on their books all the orders they can take care of.

Output Gains

In Tin Plate and Operations Are at 90 Per Cent

Pittsburgh, July 8.—Specifications and orders for tin plate are on a scale that has necessitated a further increase in mill operations. The American Sheet & Tin Plate Co. this week is running better than 90 per cent of capacity and the average for the entire industry is around 90 per cent full. It seems that the Pacific coast fruit and vegetable crops are greatly exceeding early estimates and this has resulted in a scramble on the part of the container manufacturer to secure additional supplies of tin plate to meet the revised requirements for cans. While it is considered unlikely that perishable food container requirements will be anywhere nearly normal this season, still more tin plate will be required than was thought likely early in the year. Export demands for tin plate, especially for oil containers, is good. No let-up is observed in the demand for long terne tin plate and Japan still is a big buyer of black sheets for tinning. It has been stated that a price of as low as $6.50, Pittsburgh, has been made on tin plate for oil cans for export.

Export Business Shows Strength

Youngstown, O., July 8.—Tin plate makers here are booked tightly over the next 10 weeks. Export business has increased considerably of late. It is understood Japan is about to come into the market for several thousand boxes. The mill in Marietta, O., is running heavily on domestic business and it is understood to have three months' business ahead.

Large Bar Orders Closed

Automobile and Implement Manufacturers Are Prominent Buyers --10,000 Tons of Rerolled Bars Placed—Hard Steel Stronger

Chicago, July 8.—Operations were resumed today at the Moline, Ill., bar mill of the Republic Iron & Steel Co. to work up orders for farming implement manufacturers. The company now has orders on hand sufficient to keep this mill, which has been idle for some weeks, busy for some time. Demand for hard bars is good. Implement manufacturers have increased their orders for hard-steel bars, while an improvement is noted in the demand for bars for reinforcing purposes in connection with building operations throughout the country.

The railroads have been buying some bar iron, but business in this line is not up to expectations. Most of the mills are on a 2.60c, Chicago, basis, and while one is quoting at 2.50c it is expected to fall in line within the next few days.

Eastern Buying Going Ahead

Philadelphia, July 8.—Steel bars continue to enjoy a better demand than any other form of finished steel. Further contracting was done the past week with sellers in this district and there was considerable spot buying. The mills now have from six to eight weeks' run ahead of them.

Literal Specifications Received

Pittsburgh, July 8.—Although not much demand is coming to makers of merchant steel bars from the agricultural implement manufacturers, excellent orders are being received from other consumers and the mills gradually are filling up. Demand from the automobile and tractor manufacturers are especially liberal and it is believed that with the completion of inventory, makers of farm tools will enter the market more freely. While some concessions still are being made here and there, the market is more uniformly on the March 21 quotations than it has been before. Inquiries for concrete reinforcing bars continue numerous and among them is one for 1200 tons for a new building for the Goodrich Tire Co., Akron, O. The market is showing much firmness and higher prices for rerolling rails have led some makers to increase their prices. Rerolled bars now are quoted as high as 2.35c mill and while no business yet has been done above 2.25c, this latter price means a recovery of $4 a ton from the extreme low point. Higher prices are being talked for iron bars, due to the advance in scrap material. The demand for iron bars are reported to be steadily increasing.

Mills Are Well Booked

Youngstown, O., July 8.—Several good-sized contracts for bars have been closed recently with mills in this district. One large implement maker closed recently for approximately 10,000 of bars rerolled from old rails. It is understood this business went to a maker in a nearby district. Implement makers are thought to be well covered over the third quarter.

More Contracts Are Placed

Cleveland, July 8.—Contracting in steel bars for third quarter and last half is going ahead and the past week has witnessed the closing of some round tonnages of this character. As has been the case in recent weeks, automobile builders and accessory manufacturers have been most prominent in this buying. Some of the leading automobile interests in this territory especially have figured in the market in a big way. One contract with a manufacturer in this city closed for 3000 tons. A forging interest closed for 2000 to 3000 tons of bars and billets. Specifications have continued to come in on an increasing scale. The demand for reinforcing bars is keeping up at a lively rate. One Pennsylvania producer has advanced his prices $2 per ton to 2.35c mill. The 930 tons for the sewage disposal plant for this city has been placed with the Franklin, Pa., producer. Small rivets have been advanced from 65-10-5 off to 60-10-5 off, representing about $10 to $15 per ton.

Some Makers Advance Prices

Pittsburgh, July 8.—Recent improvement in the demand for nuts, bolts and rivets continues and the strength of that fact, some of the leading manufacturers have advanced prices 5 per cent over the March 21 levels. This improvement, however, has not yet become general enough to quote a new list of discounts. Both consumers and jobbers and particularly the latter, now are ordering tonnages out quite freely.

Cleveland Makers Advance

Cleveland, July 8.—A continued improvement was noted in the general tone of inquiries for nuts, bolts and rivets during the past week, and demand has reached such proportions that a general increase on these products has gone into effect. This rise in price follows the recent withdrawing by various manufacturers of all prices as of July 1.

One manufacturer states that the market at present is in a better state than it has been for months. Foreign orders are fair, one maker having received good sized orders from both China and India. Domestic business in the rivet market is more active and small rivets are higher. The Emergency Fleet corporation has been one of the big purchasers of this material in this district.

Nuts-Bolt Prices Advanced

Chicago, July 8.—A 5 per cent horizontal increase in the price of bolts and nuts is now in effect. Leading makers announced the advance last week and since then others have fallen into line, making it general. The volume of business has been growing by leaps and bounds, and all makers expect to be operating soon at full capacity. The effect of the increase thus far has not become visible, owing to the holidays intervening since the advance was announced, but demand has been so heavy and insistent that makers do not fear it will check the market.

Business Thoroughly Good

Pittsburgh, July 8.—Makers of hoops and bands heer are busier than they have been for some time although the demand from cooperage interests still is considerably below normal. Loss in this direction is largely compensated for by the fact that hoop and band mills are being devoted more and more to the production of stamping steel for makers of automobile accessories and parts. It is claimed that the March 21 base of 3.05c Pittsburgh is being closely observed on both hoops and bands.

Shafting Demands Expanding

Pittsburgh, July 8.—Makers of cold-rolled shafting are getting orders and specifications in steadily increasing volume and contrary to the practice of buyers during the early part of the year, a number of contracts now are seeking the manufacturers for periods running from three to six months. Hitherto, buyers have been satisfied to order their requirements as they needed them, content in the belief that it was not necessary to make contracts to insure prompt shipment. The demand from the makers of automobiles is larger than from other consumers, although farm implement manufacturers are making more frequent inquiries. Mill operations continue at around 50 per cent of capacity.

More Tonnage

Booked in Ferromanganese at $110— Strength in Spiegel Continues

New York, July 7.—Some further business in 80 per cent ferromanganese has been booked by domestic producers at $110, delivered. These sales in all cases appear to have involved tonnage which had come under negotiation when the producers originally began to offer at $110 delivered, a couple of weeks ago. The asking price of the producers now appears to be firm at $125, delivered, but in the absence of business the market is entirely nominal. English ferromanganese continues to be obtainable at $115, c.i.f. Atlantic ports, but as yet there has been not business on this basis. Current inquiry for ferromanganese is in small volume.

The stronger tone which has characterized spiegeleisen for the past few weeks is more pronounced, and the lowest price which any producer is willing to do apparently is $35, furnace, for 19 to 21 per cent. Sales which have been made during the past week involve only a moderate tonnage.

Prices Are Becoming Firmer

Boston, July 8.—Consumers have come into the market recently for ferroalloys, and prices have stiffened following the recent softening. A government plant in Massachusetts has received quotations on 50 tons of ferromanganese and 25 tons of

spiegeleisen. The successful bids were $119 for the ferromanganese and $35 for the spiegeleisen. The local ferromanganese market is generally considered at $120 delivered. Orders for several small-tonnage lots were placed during last week.

Indian Ore Sold

Philadelphia, July 8.—The only important sale of manganese ore is 8000 tons of Indian mineral sold to a Johnstown, Pa., consumer a month ago at 58 cents c.i.f. Atlantic tidewater. No arrangements yet have been made for converting this ore but the buyer probably will do this at his own furnace. It is believed that the Indian ore now could not be had at less than 60 cents tidewater.

Not Getting Asking Price

Pittsburgh, July 8.—Although domestic makers of ferromanganese generally are quoting $125 a ton delivered for 80 per cent that quotation has not recently been accepted in actual sales. Some makers have turned down bids of less than $125 but it is known that a considerable tonnage is available around $110 and the fact that no sales lately have taken place here at that figure may be ascribed to the recent big purchases by Pittsburgh and valley-steel manufacturers. Only a few inquiries are before manufacturers at the moment. English material now is quoted at $115 c.i.f. Atlantic seaboard, or about $119, delivered Pittsburgh.

Several inquiries are before makers for 50 per cent ferrosilicon, among them being 500 tons from a Pittsburgh steel manufacturer for delivery over the next four months. Quotations against this inquiry have ranged anywhere from $85 to $105 furnace, freight allowed. Some makers are quoting $90 on this material as a maximum, but as far as sales are concerned, $85 seems to be the top and some business recently has been done as low as $80.

Demands for bessemer ferrosilicon are on a much heavier scale than they were recently and the market is showing considerable firmness at $49.75 furnace, for 10 per cent. In explanation for the larger demand for the lower grades of ferrosilicon, it is stated that makers of automobile sheets have complained of the quality of the sheet bars they have been receiving. In correcting this fault, bessemer ferrosilicon has been used more freely.

Market is Quieter

Chicago, July 8.—Ferromanganese remains at $125, delivered, the market being rather dull following the advance from $110. Spiegeleisen is firm at $35, f.o.b., eastern furnace. The holidays had a decidedly quieting effect, and the leading selling agency in the Chicago territory reports that no large tonnages have been placed during the past week.

To Build Warehouse

Youngstown, O., July 8.—A large warehouse will be built in this city by the Sheet Metal Mfg. Co. for storing a complete stock of tinners' and roofers' supplies. Thomas E. Farrell, formerly of the Ohio Corrugating Co., has accepted the presidency.

Plate Market Still Lags

Eastern Mills Only 30 Per Cent Active—Carnegie Takes 8000 Tons for New Jersey Pipe Line—Ship Work Slow

New York, July 7.—The Carnegie Steel Co. has taken the order for approximately 8000 tons of plates for the proposed pipe line for the city of Jersey City, N. J. The pipe is to be fabricated by the East Jersey Pipe Co. for the general contractor, John T. Brady & Co., New York, which took the contract for Section 1 of the line. Section 2 involving about 7000 tons has not yet been awarded. With the exception of this business the plate market here has been very quiet. Current orders are of a scattered character and involve nothing in excess of 200 or 300 tons. New York representatives of steel plants all over the country report that the rate of operations at their plate mills is low.

The Staten Island Shipbuilding Co. which was inquiring for the steel for three large vessels will not build these ships. Kyle & Purdy, City Island, N. Y., have taken an order from the Emergency Fleet Corp. for three trawlers; the steel is to be shipped from a southern point where it already has been fabricated. The government has placed some other ship orders in this district lately, it is learned. Plate inquiries from domestic sources have improved somewhat, but do not involve large tonnages. The tonnages now in the market are principally from fabricators and several eastern railroads.

Export demand for plates is showing considerably more promise. A number of inquiries are on the point of being closed. Practically all of them involve plates for shipbuilding. One tonnage, which is expected to be placed this week for Italy, involves 5000 tons, another to be placed this week involves 350 tons for France, while a third, which also is expected to close this week, involves 7000 tons. Numerous other inquiries are in the market from abroad.

Demand Still is Light

Pittsburgh, July 8.—Aside from the demands from the makers of oil tanks and the movement of grooved and universal stock to the pipe mills, manufacturers of plates still report business as extremely slack. At the same time they have had plenty of chances to book some good sized tonnages if they were willing to shade prices. Although all of them need business, only a few are cutting prices and this has been chiefly for the purpose of providing business to k the plants in operation and the organizations intact. Those manufacturers who are holding for the full price of 2.65c Pittsburgh, for tank plates complain that they have run into considerable business placed at less. A price of 2.50c, Pittsburgh, was mentioned in one case. The situation is not so bad as it seems when consideration is given to the fact that in the past few years plate mill capacity has increased close to 40 per cent, which would require a really phenomenal demand to fill the existing mills. Uncertainty as to the government's program in regard to shipbuilding is keeping back the demand from the shipbuilders while the car companies in Pittsburgh are almost at the end of their orders.

Eastern Mills Run Low

Philadelphia, July 8.—Eastern plate demand continues the disappointing feature of the business. There is some improvement but it is very slight and eastern plate mills are operating at 30 per cent or less at capacity. Nothing yet has come of the ship steel inquiires which have been in the market for several weeks.

Inquiry Remains Unsatisfied

Youngstown, O., July 8.—Practically no business is being done in the plate market here. An inquiry for 1500 tons of tank plates put out over a week ago by the Standard Oil Co. is still pending and is likely to go unsatisfied.

Market Shows a Better Tone

Chicago, July 8.—Some buying of plates on the part of the railroads is noted in the past week's business, and while the volume of this business is small it is considered an encouraging sign of more developments in the near future in this line. The leading maker reports business good, the principal demand at present coming from builders of oil tanks and similar equipment, and for export. The holidays intereferred considerably with current business, but June sales amounted to 50 per cent more than those in May.

Stocks in Good Shape

New York, July 7.—Stocks at local warehouses are moving rather slowly. The new inquiry which presents itself is not large, and this in conjunction with the fact that some mills are able to make shipments on material within two weeks is making for little activity at the warehouses. Despite this dullness, however, prices are holding steady. Stocks at most warehouses are said to be the most complete in months; one large warehouse interest stated that his stocks are in a better shape than they have been for four years.

Specifications Are Good

Pittsburgh, July 8.—Makers of cotton ties report specifications as fairly liberal. Practically all of the business for this season has been closed and the dealings from now will be composed entirely of shipping instructions. Makers have calculated production on the basis of a cotton crop of 12,500,000 to 13,000,000 bales. The July price for ties is $1.71½ for a bundle of 45 pounds in lots of 3000 bundles.

Pipe Orders Are Avoided

Lap-Weld Makers Deluged With Tonnage—Mill Stocks Being Reduced—Merchant Product Better—Cast Pipe Fair

New York, July 7.—Demand for oil-country goods continues to reflect the discovery and exploration work which is being pushed in the various oil-producing districts. So filled with orders are the mills that they are forced to turn down big tonnages of lapweld pipe. One interest just has turned down an order for 70 miles of 8-inch pipe. Other firm orders which are being placed, in numerous cases involve 20 and 30 miles of line pipe and casing each, ranging all the way from 4 to 16 inches in diameter. Among the interests which have bought most heavily lately, is the Standard Oil Co. The bulk of the orders being placed in this district involve pipe for Texas, Oklahoma and Mexico. One large order involving $1,000,000 worth of lapweld pipe which recently was under negotiation here, is to be placed from Texas shortly.

Demand for buttweld, merchant pipe is good, although not nearly so brisk as the demand for oil-country pipe. Some merchant pipemakers are operating at 70 per cent of capacity or less, but in other cases the mills have more merchant pipe business than they can handle.

Mills Swamped With Business

Pittsburgh, July 8.—No let-up is observed in the demand for lapweld pipe and makers in this district have become so thoroughly sold up that large tonnages are going begging in want of mills in a position to accept them. Demand for buttweld pipe has reached the proportions where practically all manufacturers now are shipping much larger tonnages than they are producing. This development is brought about in increased buttweld furnace operation by the smaller manufacturers and has materially reduced the warehouse stock of the larger companies. No talk of price concession now is being heard on tubular goods of any consequence.

Demand Continues Heavy

Youngstown, O., July 8.—Consumers of lapweld pipe continue to place heavy orders and mills are sold far ahead. One maker is committed over the next three months and states that some business for fourth quarter is being done. A better tone is noticed in the buttweld market.

Buying is in Small Lots

Chicago, July 8.—Cast-iron pipe is in fair demand, the bulk of the business being made up of small tonnages. The city of Chicago has placed with the U. S. Cast Iron Pipe & Foundry Co. a contract for 940 tons of 16-inch pipe. Springfield, Ill., is taking bids on 1000 tons of 24-inch and 200 tons of 6-inch pipe, while Hamilton, O., will open bids June 10 on 140 tons of 4 and 6-inch; Great Falls, Mont., June 15 on 150 tons of 6 and 12-inch, and Decorah, Iowa, June 16 on 125 tons of 4-inch pipe. A big business is being done in steel pipe, and manufacturers say prices probably will be advanced within the next few days.

Shape Tonnage Keeps up

11,000-Ton Cunard Building at New York Reported Closed—Many Projects Are Being Developed—Fabricating Prices Are Firmer

New York, July 8.—Activity in the local structural market continues to be fairly well maintained. Possibly the largest new tonnage to come up for bids is one involving 2000 tons for a building for the Metropolitan Life Insurance Co. Bids are being received through the George A. Fuller Co. One of the largest tonnages to be closed in the east in recent months involves 11,000 tons for the new office building of the Cunard Steamship Co. An informal contract for this steel, it is authoritatively stated, has been given Post & McCord. It now appears that some of the government business recently figured upon will be held up indefinitely. Included in tonnages understood to have been postponed are about 2000 tons at the League Island navy yard and 1500 tons at the Boston navy yard. M. H. McCloskey and Levering & Garrigues were respective low bidders on these jobs. These projects, it is understood, were included in an appropriation which was effective until July 1, and as action in awarding this business was not taken by that date, a new appropriation will have to be made. Two projects, however, to be acted upon were the crane runways for the Brooklyn navy yard, involving 3400 tons, and about 300 tons for a government power house at Indian Head, Md.

Work Slow to Develop

Philadelphia, July 8.—Many structural jobs continue to be talked of but they do not come to a head. Eastern shape mills report an improvement but it is slight. Ship shapes are featureless.

Fabricating Shops Filling Up

Pittsburgh, July 8.—Leading fabricating shops in this district are working to a better position on orders and while as yet there has been no appreciable improvement in prices at least competition for business is not quite so sharp. Apparently it is no longer necessary to name prices that means doing business for nothing or at a loss. Reports from across the water still tell of large contracts being booked by American interests in the reconstruction of France and Belgium but such reports find no confirmation among structural interests here. The McClintic-Marshall Co., which was credited with having secured a large order in conjunction with the Vulcan Steel Products Co., still is without advice regarding this job. Although the demand for structural shapes is better than it has been the mills are far from crowded with business, especially as almost no orders in ship shapes are coming out at present. Prices for plain material are firmly maintained.

Fabricators Advance Prices

Cleveland, July 8.—With order books comfortably filled fabricators in this district are beginning to advance their prices on new business, some concerns asking an average of $5 a ton more than the level prevailing two months ago. Some interests have quoted from $80 to $85 delivered during the week. Mill prices for structural material remain unchanged. The fabricators for some time have complained that production costs were in excess of the selling prices. Another tendency is toward the reduction of competition for new jobs, diminishing the advantage held for months by the buyer. Requirement contracts for shapes continue to be placed by shops in this district. Inquiries continue to appear in satisfactory volume, and a number of important building projects for which considerable steel will be required, are taking form. The award for 7000 tons for the Hanna building has not been made.

Jobs Are Hanging Fire

Chicago, July 8.—Actual business closed in the structural market is far from satisfactory, the many big building projects talked of for the past few weeks still being in prospect. Inquiries for small tonnages are comparatively numerous, but fabricators are figuring on but one new job involving about 3000 tons. Among the largest awards made during the past week is one of 1300 tons for the federal reserve bank in Dallas, Tex., which went to the Mosher Mfg. Co. The contract for several hundred tons of structural shapes for the Studebaker assembly building was awarded in New York. Other contracts were small. The Stone & Webster Engineering Co., is taking bids on 500 tons for a forge shop for the Whitman & Barnes Mfg. Co., West Pullman, Ill. The Chicago & Northwestern and the Missouri, Pacific railroads are about to let several contracts for bridges, calling for about 300 tons.

CONTRACTS AWARDED

New factory buildings for B. F. Goodrich Co., Akron, O., 1300 tons, to American Bridge Co.

Fabricating boat material for the Dravo Construction Co., Pittsburgh, 500 tons to the Jones & Laughlin Steel Co.

Factory buildings for Monroe-Binter-Board Co., Monroe, Mich., 650 tons to the McClintic Marshall Company.

Crane runways at Brooklyn navy yard, 3400 tons, to McClintic Marshall Co.

Government wireless towers at San Francisco, 300 tons, to Pittsburgh Des Moines Steel Co.

Steel building for International Harvester Co., Deer-

ing rolling mill, Chicago, 234 tons, to Worden-Allen Company.

Bridge for Southern railway, 200 tons; to Virginia Structural company.

Standard Oil tank at Charleston, W. Va., 250 tons, to American Bridge Co.

Office building for Cunard Steamship Co., New York, 11,000 tons, placed with Post & McCord.

Federal Reserve Bank of Dallas, Tex., 1305 tons, to Mosher Mfg. Co.

Meyer-Livingston department store, Bloomington, Ill., 311 tons, to Decatur Bridge Co.

Foundry building for the Defiance Machine Works, Defiance, O., 207 tons, to Duffin Iron Works.

Verde river bridge near Cottonwood, Ariz., for Yavapai county, Ariz., 177 tons.

CONTRACTS PENDING

Extension to the plant of the Colburn Machine Tool Co., Franklin, Pa., 450 tons, bids being taken.

Blackstone theater, South Bend, Ind., 185 tons, bids being taken by Henry L. Newhouse, Chicago.

Forge shop for Whitman & Barnes Mfg. Co., Pullman, Ill., 500 tons, bids being taken by Stone & Webster Engineering Co., Chicago.

Office building for Metropolitan Life Insurance Co., New York City, 2000 tons, George A. Fuller Co. taking bids.

Hospital at Orange, N. J., 200 tons, bids asked.

Theater at Philadelphia, 300 tons, bids asked.

Addition to Vanity Fair Silk Mills, Reading, Pa., 400 tons, bids asked.

Addition to school building No. 73, Brooklyn, 200 tons, bids closed June 7.

Bath house for city of Cleveland, 118 tons Republic Structural Iron Co., lowest bidder.

Wire Orders

Exceed Production and Backlog is Accumulating—Still Talk Advance

Pittsburgh, July 8.—Manufacturers of wire and wire products note no let-up in the demands and all of them are practically booked for the third quarter and some of them to the end of this year. Although prices were not marked up on July 1, as many had expected, it is not believed that the matter of higher quotations has been definitely abandoned but that it merely has been put off for 30 days. Higher prices for nails seem inevitable for they show a loss on the present scale of operations. In view of the fact that the demand for nails is on a tremendous scale, manufacturers generally believe that the time is ripe for an advance. Mill operations have increased somewhat in the past week but they are considerably below the present rate of specifications and this means that a substantial backlog of business is being built up. Not only are the domestic demands big but makers are being called upon to supply a large export demand. Foreign purchases generally are of small tonnages but the aggregate is large and extremely satisfactory.

Demand Continues Active

New York, July 7.—Orders for all kinds of wire products continue to come in actively both from merchants and manufacturers, so that mills continue fully occupied and have a schedule of several weeks ahead of them. There is an increasing tendency to urge prompt delivery. A number of makers say that although the present price of wire nails does not cover the entire cost of manufacturing, they are booked to capacity on the product.

Some Business Being Rejected

Buffalo, July 8.—The wire business in this district was never better. One interest reports its plant sold up above capacity till 1920. This concern has rod and nail mills working night and day and is compelled to turn away bookings.

Demand Continues Heavy

Chicago, July 8.—Increase in construction work throughout the country is reflected in the steadily growing demand for nails. Jobbers continue buying heavily, and mills report a plentiful supply of orders on hand. Demand for wire also continues good. While jobbers apparently are making efforts to stock up in anticipation of an advance no change in prices is announced.

Sheet Bars

Continue to be Ordered Freely—Electric Steel Being Closed

Philadelphia, July 8.—More inquiry for sheet bars has been brought out during the past week than any time since the armistice. Actual needs now being negotiated in this district involve 10,000 to 15,000 tons monthly over the remainder of the year. There is a good wire rod demand but billets are lifeless.

Sheet Bar Demands Heavy

Pittsburgh, July 8.—In keeping with the increasing sheet and tin plate mill operations, there has been a considerable enlargement of the demands upon the makers of sheet bars. Both the American Sheet & Tin Plate Co. and the independent manufacturers are running their sheet mills this week at better than 80 per cent of capacity. While no actual scarcity of sheet bars exists, a number of mills are not getting as large tonnages as they are ordering. This condition probably will be corrected through an increase in the production of bars. Specifications for billets are comparatively light, although demands are considerably heavier than they were a short time ago. Makers of wire rods are in a comfortable position in the matter of supplies for those operating their own wire mills are booked several months ahead and demands from nonintegrated plants are sufficient to absorb any surplus production. An active export demand also exists for wire rods. Skelp also is in scant supply because of the tremendous activity of the pipe mills. Prices are firm on all kinds of semi-finished material. Ingot capacity in operation in this district now is averaging around 75 per cent full.

Electric Steel Placed

Cleveland, July 8.—Buyers of electric steel in this territory have been placing some sizable tonnages covering their requirements over the third quarter and the balance of the year. Automobile parts companies have been included among these. One of these contracts closed for an excess of 5000 tons of blooms. A local forging manufacturer has placed a fair sized tonnage of forging billets.

The Nonferrous Metals

	Copper	Future Straits N. Y.*	‡Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony
July 2	19.25	51.00	5.40	7.05	33.00	8.375
July 3	19.50	51.50	5.40	7.00	33.00	8.375
July 7	19.75	51.00	5.40	7.125	33.00	8.375
July 8	20.06¼	52.50	5.40	7.15	33.00	8.375

‡American Smelting & Refining Co.'s price.
*July shipment from Singapore, c.i.f. New York.

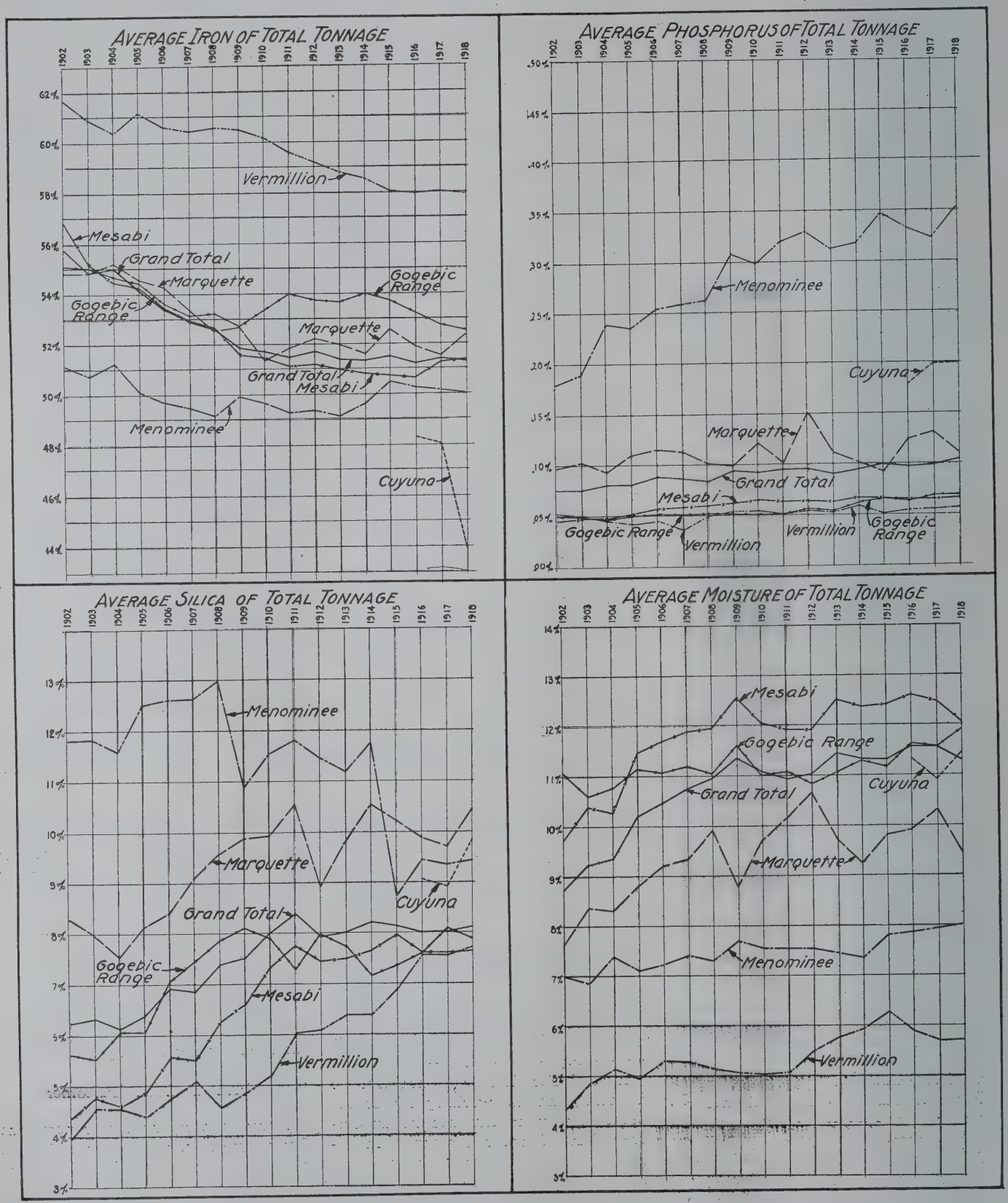
NEW YORK, July 8.—The approach of peace in formality as well as in the end of fighting, has brought further strength to the nonferrous metals in the past few days, and particularly copper is making a remarkable flight away from the low levels that prevailed all winter and spring. Brass and copper products are keeping company with the red metal. One of the factors in this climb is news of better business in the steel industry, indicating more activity in a number of kinds of manufacturing.

Copper has made one of the most remarkable records ever set up by any commodity, in that it has marched directly up from a level slightly under 15.00c to 20.00c and more a pound in less than four months, with hardly a hesitation and practically no reaction from the ascent at any point. For more than two weeks it has been averaging nearly a quarter of a cent a day. Buying has been of fair size by brass mills, but little is reported by the leading sellers for export. With the prediction of 20.00c copper fulfilled, gossip in the market is of 23c in the last quarter of the year.

Still further freedom of the tin market came in the past week. In fact, except for the dates set as the earliest time certain tin can be imported, this metal is as free as before the government began regulation nearly two years ago. Prices have shown little change until yesterday, when the Straits shipment price from Singapore, c.i.f. New York, went up about a cent, as shown in the table. The wide margin between spot tin and shipment is expected to shrink as the spot supply becomes larger in August and September, with the arrival of new metal. Some say the shipment price will move up several cents and the spot price down considerably, but this may not be expected at least for a few days.

Zinc was a little uncertain at the middle of last week and lost much of its strength, probably on account of slack trading that accompanies a holiday. In the first two days of this week has continued on its upward swing. Some good buying has been done by galvanizers but brass mills have said little. Lead is firm but prices have changed little in the past week. Aluminum is steady after some strength a week ago.

Heavy Shipments Affect Quality of Lake Ores



AVERAGE analyses of the iron ores of the Lake Superior district for the past 17 years are shown in the above charts. The average iron content, natural, has dropped from 55.77 per cent to 51.29 per cent. Average phosphorus has increased from 0.075 per cent to 0.104 per cent, silica from 6.23 per cent to 8.12 per cent, and average moisture from 8.71 per cent to 11.29 per cent. Figures in detail for all ranges and including old range manganiferous, low grade and siliceous, bessemer and nonbessemer ores have just been compiled by W. L. Tinker, secretary, Lake Superior Iron Ore association.

The charts are based on practically complete returns on all shipments each year. Heavy war shipments held at standard quality.

Europe's Needs Interest Market

England and Italy Send Large Inquiries to American Agents—Cargo Space Plentiful and Freight Rates Are Declining—Rumania Requests Novel Financial Accommodation—Foreign Sales Continue to Increase

NEW YORK, July 7.—Many important inquiries for iron and steel are in the market which promise tangible business at an early date. The heaviest of these come from England and Italy. While France is promising to become a better purchaser there is still no great confidence placed in that direction. The European inquiries upon which American export houses are busy at present are from England, Belgium, Italy and Denmark. One shipping company declares, however, it has between 5000 to 6000 tons of steel at southern ports awaiting shipment to Italy and France.

The prime obstacles confronted in Europe are the rate of exchange and the difficulty of financing the transactions. Even with England the exporters have obstacles to overcome. It may be necessary to extend a credit for but 120 to 90 days, but that is an important factor. Within the past two weeks it is known that England purchased approximately 3000 tons of bars, probably more. Italy has purchased 5000 tons of scrap and has made inquiry for 5000 tons of ship plates, 1500 tons of structurals and about 6000 tons of scrap including especially old wheels and axles.

American dealers of broad vision are not so enthusiastic over the sale of raw material to England and Italy as they might be expected. They would prefer to see America selling the finished goods instead. This raw material, it is pointed out, is merely to enable the English steel mills to fill their own export orders. More satisfaction is found in the sale of an occasional bill of rails, and a recent English inquiry for 500 tons of bars was received with satisfaction. It is noted by the more astute traders that the British competition is forcing finished American steel out of the Portugal market. Portugal has recently sent inquiries here for steel bars, sheets, and tin plate, but the English competition will not permit this country to get the business.

Advancing Europe Money

On the other hand is the problem of financing. A Rumanian agent has been making inquiries of American houses for various stocks of steel. The proposal to build a bridge across the Danube was one of these. An important American export house was approached this past week by the same agent with a proposition to purchase for Rumania approximately $1,000,000 worth of steel of all kinds for sundry rehabilitation purposes throughout that nation. The list of needs included plates, sheets, wire, structurals, lead, zinc, copper, etc. But when the problem of payment was reached it was suggested by this agent that he would give to the American salesman 3-year government notes. Naturally this was a medium of payment which could not be accepted.

The Rumanian situation is one that is not at all dissimilar from others in Europe. There is a great volume of business on the continent if Americans had the means of getting it. The Morgan committee of bankers is now working on this problem and exporters have given those bankers their full moral support and are hoping that some practical solution can be found. The tentative scheme under discussion involves the organization in each of the large industries, steel, cotton, cement, rubber, copper, lumber, etc., of corporations with full banking powers to trade in stocks, bonds, notes, and acceptances, issue debentures based upon these securities and to conduct all other banking transactions.

Some relief is naturally expected from the extension of credits by the U. S. treasury of an addition of $50,000,000 to France, $10,000,000 to Italy and $5,000,000 to Rumania. But after all debts are paid and the prime essentials of food and clothing purchased, it is doubtful whether much of these funds will remain to enable any of these three countries to purchase new steel supplies in the United States.

In the Far East this problem of financing and the working out of the peace settlement also has its important effect. China has planned an extensive railroad development. She hopes to increase her present 7000 miles of railways up to 100,000 miles, to cover the country with telegraph and telephone lines, and to establish wireless stations. American export agents have been making bids on business related to these improvements but little that is tangible has resulted. China has been purchasing wire and wire products in quantities, and today there are some good inquiries in the market from both China and Japan. Japan has purchased tin plate and structurals. One order of 1000 tons of bars recently was placed by Japan. A new inquiry from the same source for 1000 tons of sheets has appeared but inasmuch as it has been stipulated that these sheets must be 30 gage, difficulty is being encountered in finding a mill which rolls to that specification. A sale of 200 tons of wire rods was made to China by one house, and 1000 tons of similar goods were sold to Japan.

The notable thing about the Far East at this moment is the rapid recovery of the Japanese market. The armistice found Japan stocked with high priced steel. The merchants were able to work this off without great loss and Japan, being unable to fill its needs at home, has found it necessary to continue buying. The experience has taught Japan her lesson and it is believed for this reason many movements have been put on foot by that country to build steel mills and foundries so as to make her less dependent upon outside sources for finished products, although her dependency upon others for raw materials continues.

A small sale of steel bars to Singapore was noted last week. Singapore has also purchased 500 tons of wire rods. American interests are reaching far down into territory once supplied by England. Robert Dollar, the steamship operator, is now in Australia planning an extensive line between the island continent and the United States. He has been quoted as pinning his faith to the steel trade which will develop for supplying his ships with outward cargoes.

Cuba is Good Customer

Many export houses report that Latin-American trade is the best at the present moment. Mexico's railway equipment needs hold out a promise but this cannot be fulfilled so long as the present unrest exists in that country. To Cuba is being sold "the whole list", some of the special sales mentioned being concrete bars. Individual sales, however, are small in tonnage.

Chile has been taking some pig

iron. On the other hand this country is purchasing but little here, although the volume of trade with both Brazil and Argentine more than compensates for that. To South America generally, plates, structurals, angles, and vast quantities of wire are being sold. The Atlantic Steel Co. is reported to have obtained some of the best South American wire orders. A sale of 1000 tons of structurals to Argentine is noted. Brazil has been purchasing bars, sheets, tin plate, wire and pipe. Besides structurals Argentine has been buying bars, sheets, etc.

Prices have been holding rather firm, although no advances of importance have been noted. Other mills have failed as yet to follow the lead of the Jones & Laughlin Steel Co. to increase the price of nails. Any sudden drop in ocean freight rates, it is believed, might have the effect of running up slightly the export prices of iron and steel.

A movement is pending in shipping circles which promises to aid greatly the promised European business. The release of all neutral tonnage, the rapid dissolution of the war services and the return of ships to their owners, is breaking the freight market. A quotation of $1 from Boston to Europe was recently spoken of, and now the shipping board has promulgated a rate of $1.25 from North Atlantic ports to French and Dutch ports, a rate of $1.50 to Hamburg, $1.80 to Danzig, a direct rate to the Levant and similar reductions to nearly all ports.

Coincident with this, the railroad administration has announced that through bills of lading via North Atlantic ports will be issued from now on. Next through bills of lading will be authorized through South Atlantic and Gulf ports. This is a clear indication of the rapid restoration of normality. Many of these changes are directly due to the signing of the peace treaty and nearly all are dependent upon that political event indirectly.

Bid Lower Price

Philadelphia, July 8.—While on the usual run of business the makers are not shading $1.50 mill on high speed tool steel, lower prices were bid on an attractive lot of 73,000 pounds on which the navy department opened bids. On this business several makers quoted $1.35 mill.

Modify Scale Slightly

Youngstown, O., July 8.—Slight changes were made in the bar iron rate for the ensuing year at the meeting held recently at Atlantic City between representatives of middle-western bar iron makers and representatives of the Amalgamated Association of Iron, Steel and Tin Plate workers. A 5 per cent advance on a 1.30c card was agreed upon but the prevailing differentials above and below a 1.30c card remain unchanged. The only other important modification made was the reducing of the charging time on double-turn mills from 9¼ to 8 hours.

Sell Screw Stock

Washington, July 8.—Recent sales of screw stock held by the salvage board of the war department aggregate a little more than 2,000,000 pounds, leaving about 22,000,000 pounds still on hand. One transaction was for 1,500,000 pounds of 2⅞-inch free cutting bessemer bars, averaging about 12 feet in length, which went to F. R. Phillips & Son, New York, the highest bidder, at $34 a gross ton, f.o.b. cars, New York. Another sale involved 675,752 pounds of 2⅞-inch screw stock, made to William E. Friedman, New York, at $35.16 a gross ton. No distinction is being made by the board in prices between bessemer and open hearth steel. The latter is unusually high in sulphur.

Shell steel is being sold as scrap at prices which accord with market conditions. One sale made recently involved 528,159 pounds of 3-inch high explosive shell steel, which included 7304 pounds of copper bands attached. This tonnage went to Solomon Katz, New York, at $23.23 a gross ton, f.o.b. cars and netted the war department $19.80 a ton without the bands attached.

Index is Ready

The index to volume LXIV, of THE IRON TRADE REVIEW covering the first six months of 1919, now is ready for distribution. Copies will be sent to all subscribers who express their desire for them.

Government Sells Steel

Additional offerings of government-owned steel continue to be made. On July 15, bids will be opened at St. Louis on 4385 gross tons of billets for 155 millimeter shells, 5½ inches square, gothic structure in lengths of from 22 to 110 inches. At Rochester, on July 15, bids will be opened on 77 tons 9.2-inch adapter common steel forgings; 436 tons 5-inch shell forgings; 88 tons 4.7-inch common steel forgings; on July 17, bids will be received on 5501 tons 9.2-inch common steel forgings.

Raw Materials

Acquired by Steel & Tube Co. of America by New Merger

Chicago, July 8.—The Steel & Tube Co. of America has acquired the Newport Mining Co., owning the Newport, Palms, Anvil and Dunn mines on the Gogebic range, producers of bessemer and nonbessemer ores, and also has absorbed the Northwestern Iron Co., Mayville, Wis., with two blast furnaces and 108 by-product coke ovens, ore mines and large coal areas. The merger of these interests, announced in Chicago today, also includes the Harrow Spring Co., of Kalamazoo, Mich. At the same time the Steel & Tube Co. of America acquired from the By-products Coke Corp., 120 coke ovens at Indiana Harbor, adjacent to the plant of the Mark Mfg. Co.

The Steel & Tube Co. of America is the outgrowth of the merger about a year ago of the Mark Mfg. Co. and the Iroquois Iron Co. The company has mills at Indiana Harbor, Evansville, Ind., and Zanesville, O. At Indiana Harbor it operates an open-hearth plant with an ingot capacity of 160,000 tons per month. As a result of the merger, the Iroquois furnaces are now entirely self-contained in regard to the supply of raw material.

The Steel & Tube Co. of America has issued $17,500,000 worth of preferred stock, part of the proceeds of which will be spent in further developments. One of the first developments will be the building of another blast furnace at the Iroquois plant and a new tube plant and pipe mill.

The merger is the consummation of several years of effort along this line, and representatives of the principal interests concerned declare that the Steel & Tube Co. of America now has an especially strong position on ore and coal resources. Complete financial details of the new combine have no tbeen divulged, but it is understood the capitalization will be near $100,000,000.

To Improve Furnaces

Philadelphia, July 8.—Directors of the Cambria Steel Co. have authorized the installation of two dry cleaners, one on No. 5 blast furnace and the other on No. 6 blast furnace, at Johnstown. The remainder of the $3,500,000 appropriated at the last directors' meeting is to be expended for repairs and replacements.

Doubles Steelmaking Capacity

New Works of Inland Steel Co. Embody Many Important Improvements in Mill Equipment—Plant Layout Provides for Unusually Elastic Routing of Material

BY G. H. MANLOVE

FACED with the necessity of creating the site from submerged Lake Michigan land, and excavating in made land filled with slag waste, the Inland Steel Co., Chicago, practically doubled its plant between the summer of 1915, when the necessity for greater steel production became evident, and Dec. 30, 1916, when most of the new plant was in operation. Not only was this enlargement expediated under the circumstances, but the result is one of the most complete and efficient steel-producing units possible to conceive.

Plant Layout is Elastic

One feature that attracts notice is the provision made at every turn to prevent lost time because of delay to one part of the system. A veritable bypass or turnout is provided wherever continuous operation is likely to be stopped. To illustrate, blast-furnace hot metal may be served direct from the furnace to the open hearth in case the mixer is not in condition to be operated. If one of the three rolling mills is out of commission, ingots can be rolled by either of the others without delaying the progress of work unduly. These provisions give a high degree of elasticity.

When the problem of expanding to meet war needs was met in the summer of 1915, the existing plant consisted of two parts: The older, occupying about 45 acres



FIG. 2—POURING THE FIRST HEAT FROM NO. 18 OPEN-HEARTH FURNACE AT NEW HARBOR WORKS OF INLAND STEEL CO.

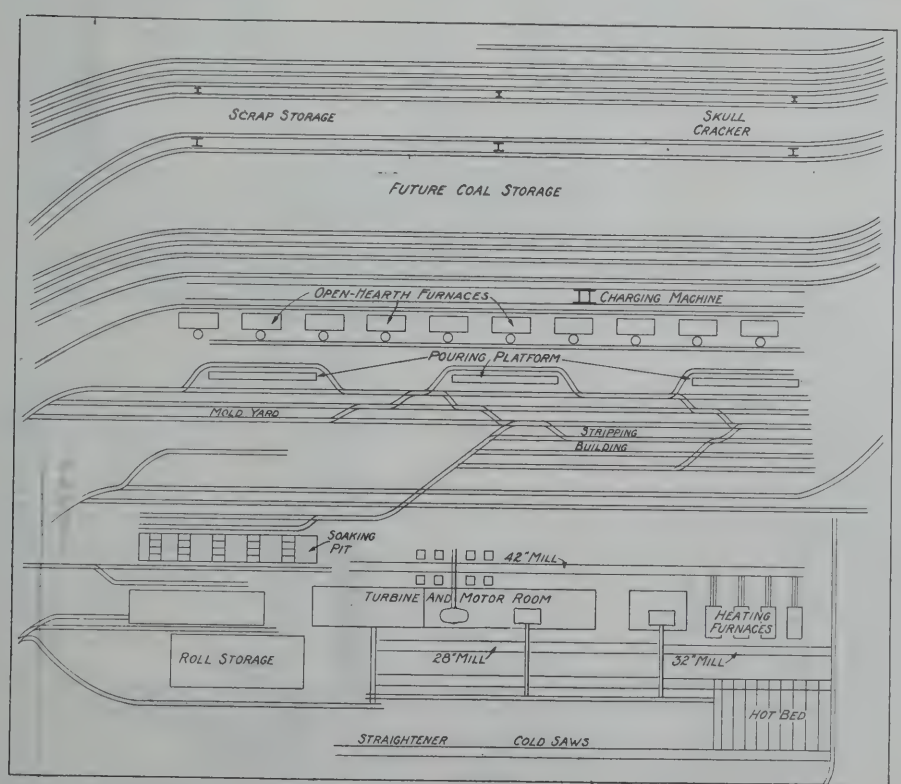


FIG. 1—SIMPLIFIED PLAN OF NEW STEEL WORKS SHOWING GENERAL LAYOUT OF PRINCIPAL UNITS

south of the tracks of the New York Central, Baltimore & Ohio, and Elgin, Joliet & Eastern railroads; and what is known as the No. 2 plant, between these tracks and Lake Michigan. The latter consisted of two blast furnaces and a coke plant, while No. 1 contained the open-hearth furnaces, mills and shops. Communication between the units was by two tunnels under the railroad tracks, one a single and one a double-track bore.

Preparation of Site Difficult

The space occupied by plant No. 1 was completely filled and offered no opportunity for additions of sufficient size to be worth while. On the lake shore, adjoining and including plant No. 2, was 240 acres of actual and submerged land, 128 acres of dry surface being available. This was practically filled by the two blast furnaces and coke plant and accessories, with the trackage necessary to serve them. The unoccupied land was a fill composed of slag which was dumped into the lake over a period of several years. This offered great difficulty in excavating for the complicated foundations

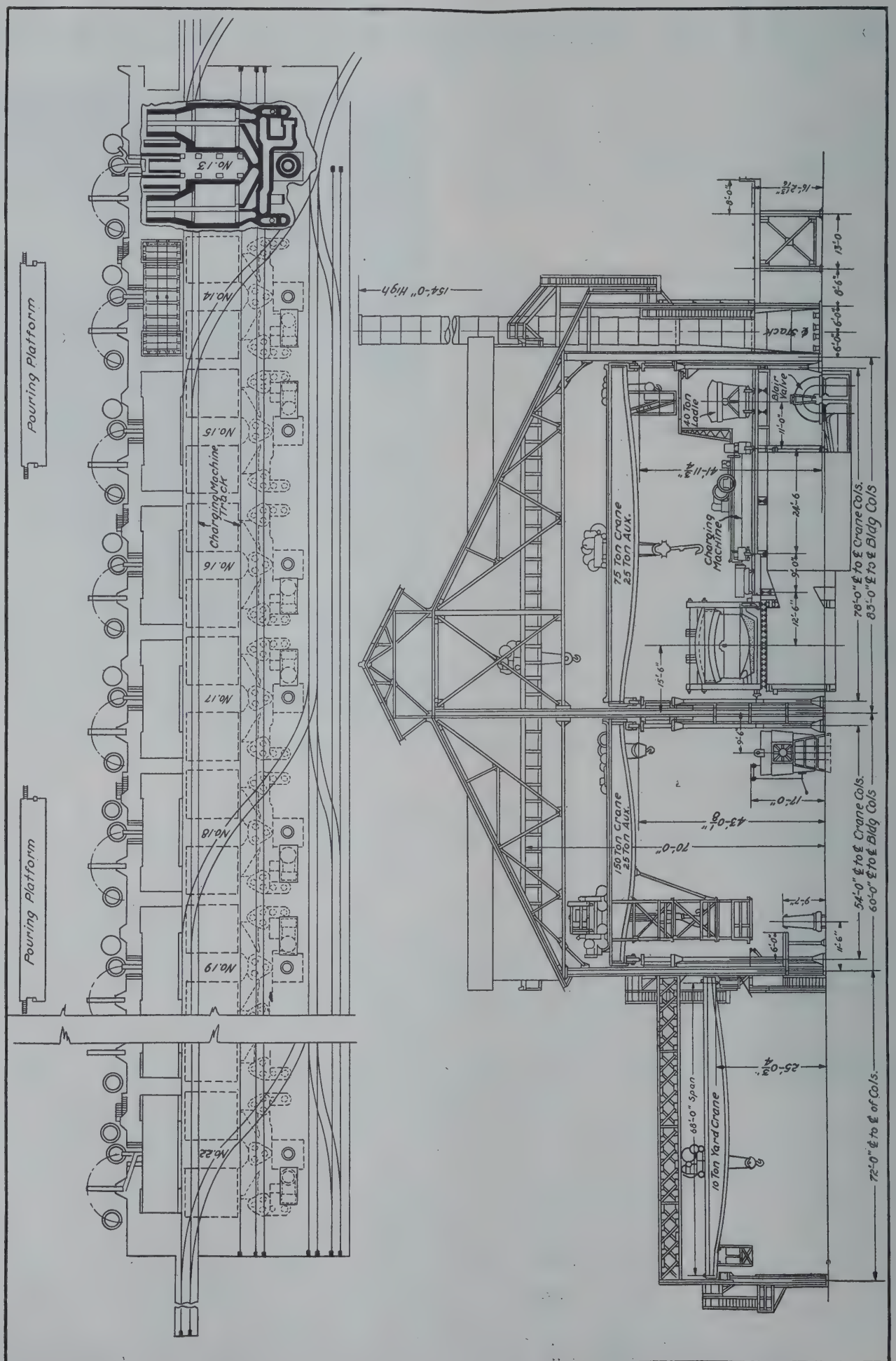


FIG. 3—PLAN AND ELEVATION OF THE TEN 60-TON OPEN-HEARTH FURNACES IN THE NEW PLANT OF THE INLAND STEEL CO.—HEAVY OIL OR TAR IS THE FUEL USED

for the new mills, and for watermains, sewers and tunnels. Blasting and steam shovels were used in preparing the ground for the new buildings. All excavations were made oversize and backfilled with lake sand to prevent the destructive action of slag on iron and steel pipe through the formation of dilute sulphuric acid. The total excavation was 200,000 cubic yards. The foundations contain a total of 80,000 cubic yards of concrete.

When work was started the existing plant consisted of 12 60-ton open-hearth furnaces, 36 Wellman-Seaver-Morgan gas producers, a 36-inch blooming mill, a 24-inch billet and sheet bar mill, a 24-inch structural shape mill, a 90-inch plate mill, several sheet mills and a continuous merchant mill. The new plant includes ten 60-ton Laughlin-type, open-hearth furnaces; a scrap yard; oil and tar storage; coal-storage and elevating plant; a 40-inch blooming mill with billet dock, soaking pits and gas producers; a 32-inch blooming mill; and, a 28-inch, three-stand, three-high finishing mill. It was necessary also to provide additional water supply to meet increased needs.

Description of Scrap Yard

The scrap supply, next to pig iron, is the first detail in the order of process in the production of steel. The plant has a new yard 1131 feet long, including a section for the breaking of pit scrap. It is spanned its full length by a craneway 100 feet wide and is served by a 10-ton combination scrap and bucket crane and two 10-ton bucket cranes, both built by the Morgan Engineering Co., Alliance, O. The motor-operated buckets were manufactured by the Hayward Co., New York, and the 60-inch magnets were made by the Cutler-Hammer Mfg. Co., Milwaukee.

The section devoted to scrap breaking is served by two 25-ton electric-traveling cranes, one built by the Cleveland Crane & Engineering Co., Wickliffe, O., and the other by the Alliance Machine Co., Alliance, O. Each is equipped with an auxiliary hoist and fitted with magnets. The scrap-breaking section is much higher than the runway of the main yard and is arranged so that cranes from the yard can operate over the pit. The scrap yard is 7 feet below the surrounding level, with a concrete retaining wall on each side. The drop ball for breaking scrap weighs 19,000 pounds and is dropped 108 feet from its greatest elevation. The speed of the hoist on the crane lifting this ball is 127 feet per minute, which has been claimed as a record. Between the scrap yard and the open-hearth building is a space reserved for future coal storage and gas producers for the open hearths when needed.

The new open-hearth plant, as has been mentioned, includes 10 furnaces, each 34 x 15 feet, designed originally for a capacity of 60 tons each. Each furnace was lengthened 4 feet and now produces 90 tons a heat. They are fired with heavy oil and tar but chambers are provided also for burning gas.

Tanks Have Large Capacity

Oil and tar for these furnaces are received in tank cars, unloaded by gravity into three 50,000-gallon storage tanks, and then pumped into three 300,000-gallon storage tanks from which the fuel is pumped to the furnaces. Blair-type reversing valves; Galvin-type removable slag pockets; and, water-cooled doors, operated by hydraulic pressure and furnished by the Blaw-Knox Co., Pittsburgh, are installed on all furnaces. The charging floor is served by two 75-ton cranes of 78-foot span, which deliver the hot metal to the furnaces. Scrap is delivered by three 7½-ton, Morgan-type floor chargers. The boxes are loaded in the yard and conveyed over an inclined trestle by a locomotive to the charging floor. The cars bearing these charging boxes were furnished by the Wheeling Mold & Foundry Co., Wheeling, W. Va. The charging boxes are cast of steel in a local plant from the company's own pattern.

On the pouring side of the open hearths are two 150-ton Morgan ladle cranes of 54 feet span. The ingot molds are arranged in front of the

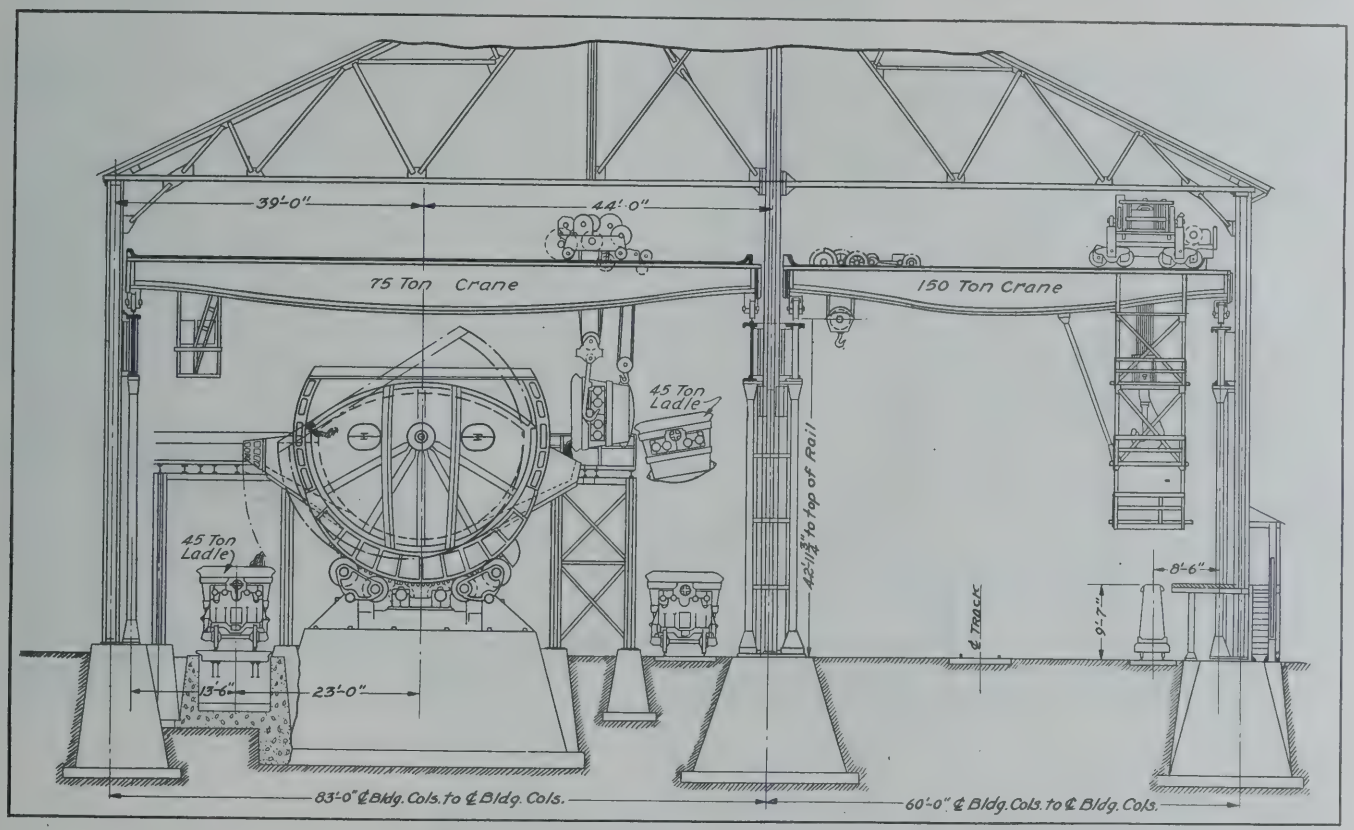


FIG. 4—ELEVATION OF THE 600-TON MIXER WHICH IS EQUIPPED WITH TWO COMPLETE DRIVING UNITS

pouring platforms, teeming being controlled by hand from these stands. Each furnace has a complement of ladles, including a 100-ton capacity steel ladle and a 300-cubic foot slag ladle. A jib crane of 6½ tons capacity is provided for each furnace for hoisting refractory material to the floor and for handling the furnace trough. A large brick-lined pit is located in this section for use in repairing ladles without interference with or from regular operations. A 5-ton trolley, which operates across the building, aids in crane repair, and in reducing the time necessary to make these repairs.

A waste-heat boiler is connected with each furnace. It is built between the furnace and stack, turbine-driven fans drawing the gas through the boilers to avoid loss of draft on the furnace. The boilers were installed by the Babcock & Wilcox Co., New York, and the radial-flow fans by the Green Fuel Economizer Co., New York. The turbines were built by the Terry Steam Turbine Co., Hartford, Conn., and the intermediate gearing by the Westinghouse Electric & Mfg. Co., Pittsburgh.

Install 600-Ton Mixer

One of the interesting devices in the open-hearth building is the 600-ton semicylindrical, hot-metal mixer which was built by John Mohr & Sons. The mixer is electrically driven through worm gearing. A special feature is a double drive, either unit of which is capable of tilting the mixer should the other be out of service. As a safety measure in case of failure of one drive, the other acts as a brake, stress from the weight of the mixer and contents being held by the worm gear so that back motion is impossible. Thus a sudden slip is prevented should the driving mechanism lose its hold. The Westinghouse motors are of 80-horsepower operating on 230-volt direct-current. The special control was built by the Electric Controller & Mfg. Co., Cleveland.

Hot metal reaches the mixer by the same route as that going direct to the open hearths, the same cranes which deliver it to the furnaces also lifting the ladles and pouring it into the mixer. To avoid confusion in the use of these cranes, a locomotive, which is operated by direct current from a conductor rail on the charging floor, transfers the car and ladle from the mixer to a point opposite the furnace to be charged.

The mixer is lined with 1½ inches of ganister and 18 inches of fire brick. The safety of workers about the mixer is enhanced by stairways and permits quick escape in case of a spill or fire. The platforms are of openwork design to allow spilled metal to drop through. The pouring nose is of cast iron, lined with refractory material, and is made in sections to facilitate replacement as it is worn away. The sections are held in place with keyed bolts which are removed readily.

A mold storage yard, 273 feet long, is located alongside the furnace building, and is served by a 10-ton Morgan crane of 68-foot span. A narrow-gage railroad is used in transferring the molds and cars. This has a spur for each pair of furnaces, allowing the molds from any furnace to be removed to the stripper building without disturbing cars at any other furnace. The ingot-stripping building, 50 x 64 feet, is between the open-hearth building and the mills. It is equipped with a 150-ton Morgan stripper crane. The practice is to strip the mold and place it on an empty car on a parallel track with one movement of the crane trolley. A three-track system in this building has been found most efficient.

Pit Covers Are Electrically Driven

A runway, 30 feet wide, separates the open-hearth mold yard and stripper building from the 40-inch blooming-mill building. This is utilized as a runway for trucks delivering material to the mills. Ingots from the stripper are delivered by the narrow-gage railroad to the soaking-pit section, which includes 20 units, arranged in five batteries of four pits each. The capacity of each pit is ten 22 x 24-inch ingots or equivalent. The covers are operated by 10-horsepower motors actuating worm gears, chains and wire rope. This system does away with damage to the usual rack and pinion control when an ingot is dropped. With the chain and cable the damage usually is slight. Limit switches control the electric motors which operate the doors and prevent overtravel in either direction. The motors are placed under cover between pairs of batteries to protect them from damage.

Two 10-ton cranes of 80-foot span handle the ingots. The latter are placed on an electric-driven buggy which carries them to the mill-approach table. Control of the cover

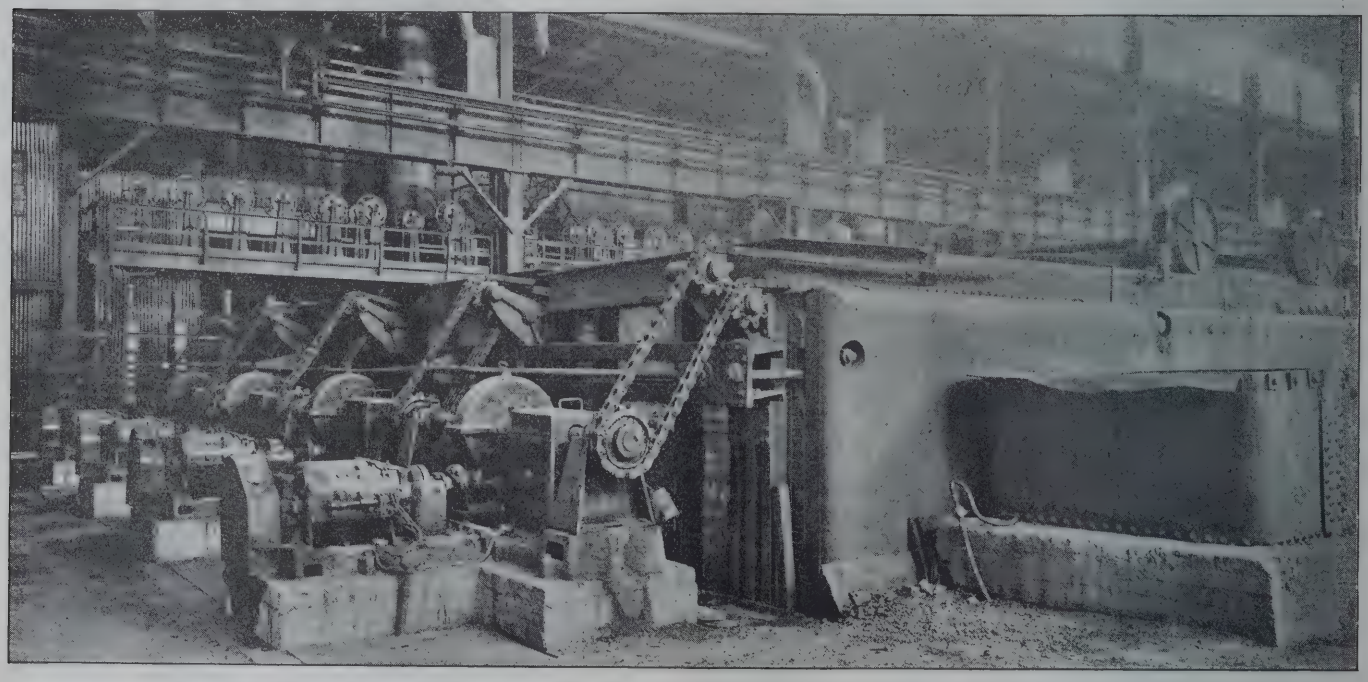


FIG. 5—VIEW OF APPARATUS WHICH MOVES COVERS OF SOAKING PITS—THE MOTORS ARE CONTROLLED FROM THE PULPIT SHOWN IN THE REAR

drives, ingot buggy and damper regulation is centered in pulpits along one side of the building. The buggy does not carry an operator, being entirely controlled from the pulpit. It travels about 360 feet from the pits to the approach table at a speed of approximately 300 feet per minute. The ingot buggy was built by the Mesta Machine Co., Pittsburgh, and the electrical equipment by the Westinghouse Electric & Mfg. Co. A complete spare buggy is ready to be set on the track without delay in case of accident. On reaching the mill approach table, the buggy automatically dumps the ingot by tipping the carriage.

Producer gas is used for heating the pits, and coke breeze for making bottom. Ash chambers underneath the producers contain small cars which are run outside the building and dumped by an electric crane of 19½-foot span, the smallest crane in the plant, with the exception of the crane-repair trolley in the open-hearth building. Gas for the pits is generated in producers located in a building close to the soaking-pit house and is delivered in brick-lined, sheet-steel pipes. These leave the producers in the form of a gooseneck and connect with a tapered main 66 and 54 inches diameter at the intake and exhaust ends. Downtakes and underground flues carry the gas to the point of consumption. Dust removers or baffles are located in the pipes to remove foreign matter. The latter is deposited in hoppers below the floor, elevated to a hopper and discharged into cars outside. Each battery of pits consumes the gas from one producer, although six of the latter are in service to give a spare in case of repair or breakdown.

Coal for the producers is handled by an elaborate plant. It is dumped into an underground track hopper and elevated 135 feet to a storage hopper. Chutes deliver it to cars in which it is weighed and then dumped into hoppers above each producer. The same coal-handling plant serves the steam boilers in connection with the electric installation.

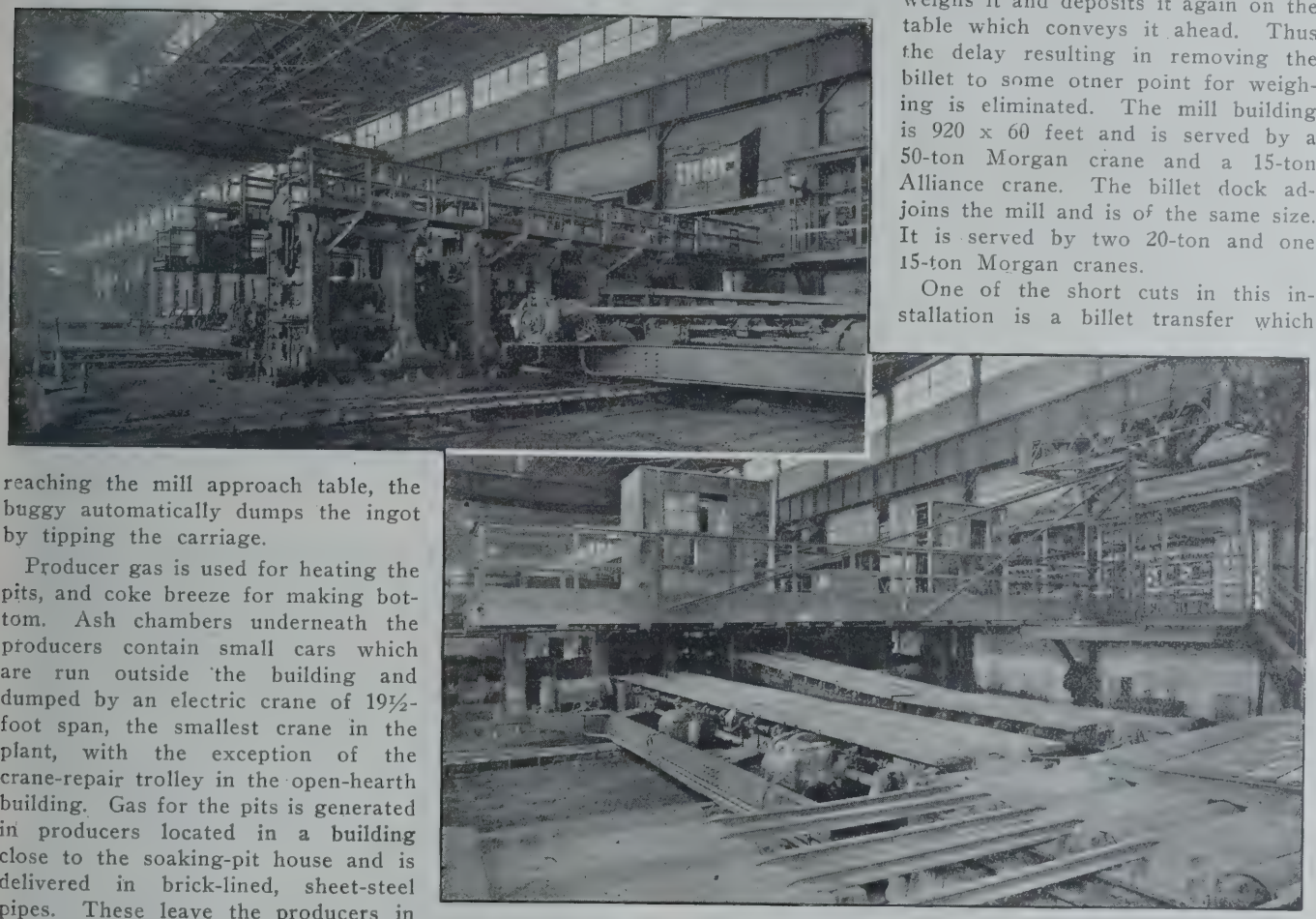
The 40-inch blooming mill was built by the Mackintosh-Hemphill Co., Pittsburgh. The crop and outgoing billet conveyors were built by the M. H. Treadwell Co., and the incoming billet conveyor by the Mesta Machine Co. The electric equipment was supplied by the Westinghouse Electric & Mfg. Co. The mill tables are served on both sides of the mill by electrically-driven side guards and manipulators furnished by the Mackintosh-Hemphill Co. The mill bearings are ring oiled and the gears run in oil. All motors are air cooled. A steel-plate box under the housing collects the scale which is removed easily while the mill is in operation.

Ingots 22 x 24 inches are rolled to 8 x 8-inch billets at the rate of one a minute at capacity. At about the same rate a 24 x 24-inch ingot is rolled to a slab 39 x 6 or 8 inches.

The shear was designed to cut 36 x 8-inch slabs of soft open-hearth basic steel and has cut 17 x 17-inch blooms. The first three rollers on the runout table lift when the first cut is taken on the bloom and allow the crop to drop into a hopper whence it is carried by the crop conveyor to a car in the billet dock. The billet is moved from the table to the conveyor by means of a grasshopper type pusher. Just beyond the pusher is an electrically-operated billet scale, designed by Inland engineers for weighing certain billets in each heat, the necessity depending on the specifications covering the steel. This device saves much time as its cradle spans the table, picks up the billet, weighs it and deposits it again on the table which conveys it ahead. Thus the delay resulting in removing the billet to some otner point for weighing is eliminated. The mill building is 920 x 60 feet and is served by a 50-ton Morgan crane and a 15-ton Alliance crane. The billet dock adjoins the mill and is of the same size. It is served by two 20-ton and one 15-ton Morgan cranes.

One of the short cuts in this installation is a billet transfer which connects the 40-inch mill with the 32 and 28-inch mills. The latter mills are located on the other side of the motor room. The billet transfer, 120 x 28 feet, is of the rope-and-dog type. It connects the shear-runout table of the 40-inch mill with the approach tables of the other two mills. The roof and sides form practically a tunnel through the motor room. By means of this arrangement two routes are provided. The billets may be transferred directly from the 40-inch mill to the other mills for finishing, or they may be reheated in furnaces prior to their transference and then to either of the other mills.

The two reheating furnaces are of



FIGS. 6 AND 7—TWO VIEWS OF THE THREE-HIGH, THREE-STAND, 28-INCH MILL—THE PULPIT IS PIVOTED SO THAT IT CAN BE SWUNG CLEAR OF THE HOUSINGS TO FACILITATE REMOVAL OF ROLLS



FIG. 8—A PLEASING DEPARTURE FROM THE DUSTY POWER STATIONS OF THE PAST. FIG. 9—A VIEW IN ONE OF THE STOCK ROOMS. FIG. 10—THE LARGE MACHINE SHOP IS WELL EQUIPPED TO HANDLE REPAIR JOBS

the continuous type, 55 x 19 feet wide. They take billets direct from the 40-inch mill or cold stock from the billet dock. The billets are pushed through the furnace from the 40-inch mill or ingoing side. After heating they are lowered by gravity to the outgoing or 32-inch mill side. The incline has a drop of 5½ feet. From the furnace table the billet is carried to the 32-inch mill, broken down to proper size and delivered by means of tables to the 28-inch mill for finishing.

Routing of Metal is Flexible

The route of steel through this combination of mills and furnaces thus offers several alternatives which make for great flexibility. Ingots are broken down into slabs or billets in the 40-inch mill and proceed to the billet dock for storage, to the 32-inch or 28-inch mill for immediate finishing, by way of the transfer, or to the reheating furnace before being handled in the smaller mills. Cold stock from the billet dock is carried to the furnace and thence to the finishing mills. With this choice of routes it is possible to maintain continuous operation with any unit in case any part of the chain is out of commission temporarily, the continuous operation not depending on a series of links which cannot be varied.

The 32-inch mill is a typical blooming or breakdown mill, similar to the 40-inch unit. The tables and shear are electrically driven. The mill was built by the Mesta Machine Co., and the electric equipment by the Westinghouse Electric & Mfg. Co. The 28-inch mill is a three-high, three-stand unit, rolls I-beams up to 24-inch weighing 80 to 100 pounds to the foot. The passes are served by four shifting and tilting tables, two on each side, supplemented by one non-tilting-trailer table on the outgoing side for extra-long sections. These tables pass back and forth opposite each stand of rolls, and receive and deliver the steel from and to the proper set of rolls during the roughing, intermediate and finishing passes. In case of damage, any table can be pushed clear of the roll stands for repair while the remaining table on that side performs its work. These tables are controlled from the pulpit.

Pulpits Swing on Hinges

A pulpit is located each side of the mill and present an unusual feature, in that they are pivoted to the wall and can be swung back close to the wall. This allows roll changing in a short time, the crane simply picking up the entire housing containing a set of rolls and replacing it with another housing fitted with rolls in advance. This done, the pulpit is swung back to position, the entire operation taking only a fraction of the usual time for changing rolls. This mill was built by the Morgan Engineering Co., while the electrical equipment is Westinghouse.

The finished product is delivered from this mill by means of tables to a 115 x 145-foot hot bed, of the rope-and-dog type. It extends from the 32-inch and 28-inch mills to the warehouse. After cooling sufficiently, the product goes to straighteners and then over roller tables to shears, which will cut angles up to 8 x 8 inches and 1 inch thick. The shears are offset from the table in which the straighteners are placed so that sections not requiring shearing can pass direct to the bulldozers. Sections requiring shearing are shifted to the shear table by means of a rope-and-dog transfer. Two saws are available, one opposite the table which serves the hot bed and the other opposite the shear-runout table. An intermediate table between these two serves in emergencies. Beyond the saws are the bulldozers or gag straighteners, connected by roller tables. When straightened in the bulldozers, the material is ready to load.

The building containing the reheating furnaces is an extension of that containing the motor room and is between the two mill buildings. It is 64 x 240 feet. Jib cranes will be installed soon at the ingoing side. The building which houses the 32-inch and 28-inch mills is 920 x 80 feet, and is served by a 10-ton and 75-ton Morgan crane. In the south end of the mill building is a roll storage of unusual design. It has a capacity for 600 rolls which are arranged like a card catalog and easily accessible by a crane. The racks are built of steel, and rest on concrete foundations. This storage is to be enlarged eventually to accommodate 900 rolls.

The warehouse building, 920 x 90 feet, runs parallel to the mill buildings. It is equipped with two 10-ton Morgan cranes. Storage space of about 16,000 square feet is available in this building but this is insufficient and a duplicate building will be erected soon. All buildings are of steel construction, with concrete foundations. They are enclosed with galvanized corrugated roofing and siding rolled at the Inland mills, and with the exception of the open-hearth, which has wood sash and window frames, they are equipped with Fenestra-type steel sash.

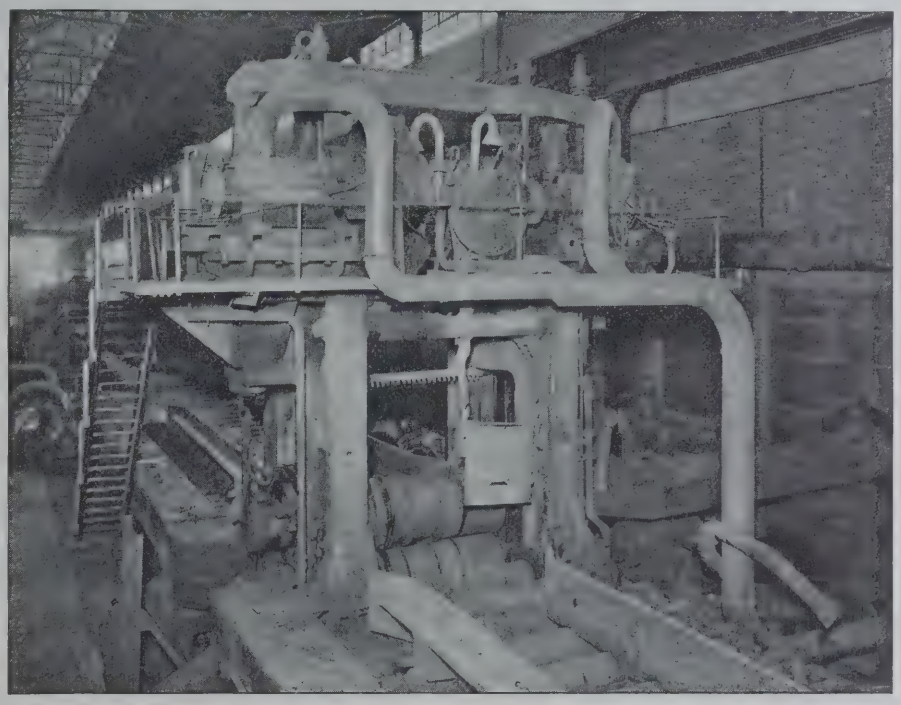


FIG. 11—STAND AND HOUSING OF THE 40-INCH BLOOMING MILL

All the mills are equipped with scale pits. The scale is collected in cars which can be removed without interfering with the operation of the mill. The scale is dumped from these cars into railroad cars by crane. A system of traffic tunnels allows passage through the mills without climbing over tables or stock piles. The tunnels are 8 feet diameter and have off-takes at convenient points, allowing ingress and egress in any building. Various accessory buildings are conveniently placed. One is a stock shed, about 800 x 50 feet, for storing refractory materials for furnaces and pits. A roll shop with sufficient equip-

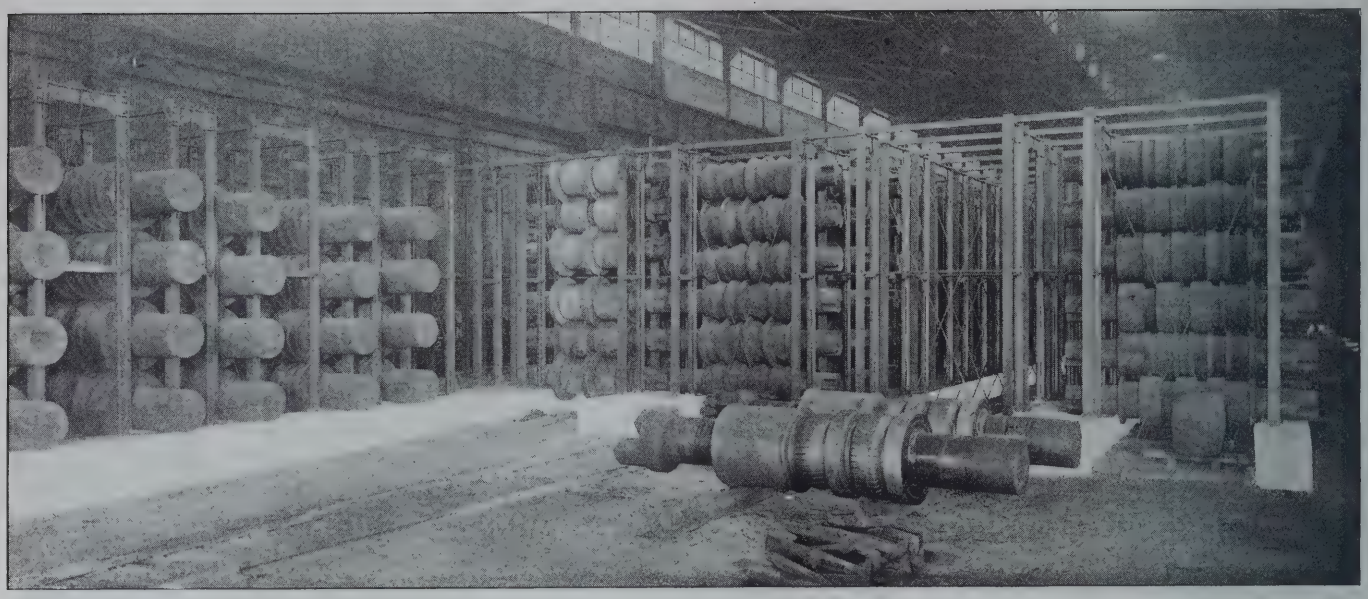


FIG. 12—STORAGE RACK FOR 600 ROLLS—THE ROLLS ARE EASILY HANDLED BY A CRANE WHICH TRAVERSES THE BUILDING

ment for present needs and room for additional machinery is built near the mills.

The steam plant which furnishes power for the turbines contains three 1076-horsepower, Springfield, water-tube boilers. These are equipped with superheaters and soot blowers. The superheaters are interconnected with the other high-pressure steam lines, and give great flexibility and economy in steam production. The boilers are housed in a brick and steel building, 45 x 170 feet, with wood and corrugated-steel roof. The building is placed in line with the producer building and is served by the same coal-handling plant. Taylor stokers made by the American Engineering Co. serve the boilers.

One of the most interesting portions of the new plant is the turbine and motor room. This is situated between the 40-inch mill building and that containing the other two new mills. With its tile and enamel-brick interior and filtered, cooled air, polished brass railings and immaculate neatness, it transports instantly the observer from the seeming disorder and grime of a steel plant into a new atmosphere utterly foreign to what has been experienced in gaining entrance through the remainder of the plant. This neatness and care is not a fussy idea but a most practical and economical measure, protecting the valuable and somewhat delicate machinery from dirt and keeping it cool, thereby promoting efficient operation.

In this room are installed two high-pressure steam turbo-generators, each with capacity of 5000-kilovolt-amperes and generating 2200 volts. The excitation for these generators is furnished at 250 volts, by a 100-kilowatt motor set. Two 1000-kilowatt, synchronous, motor-generator sets are connected with the turbo-generators. They are tied into the general plant supply lines and furnish direct current throughout the plant.

The unusual feature of the electric plan is the motor and motor generator for the 40-inch mill, which is placed in the center and on the ground level. This set consists of a 3000-horsepower induction motor with a 45-ton flywheel and two direct-current generators, each of 1450-kilowatt capacity. The set is 47 feet in length and operates at a synchronous speed of

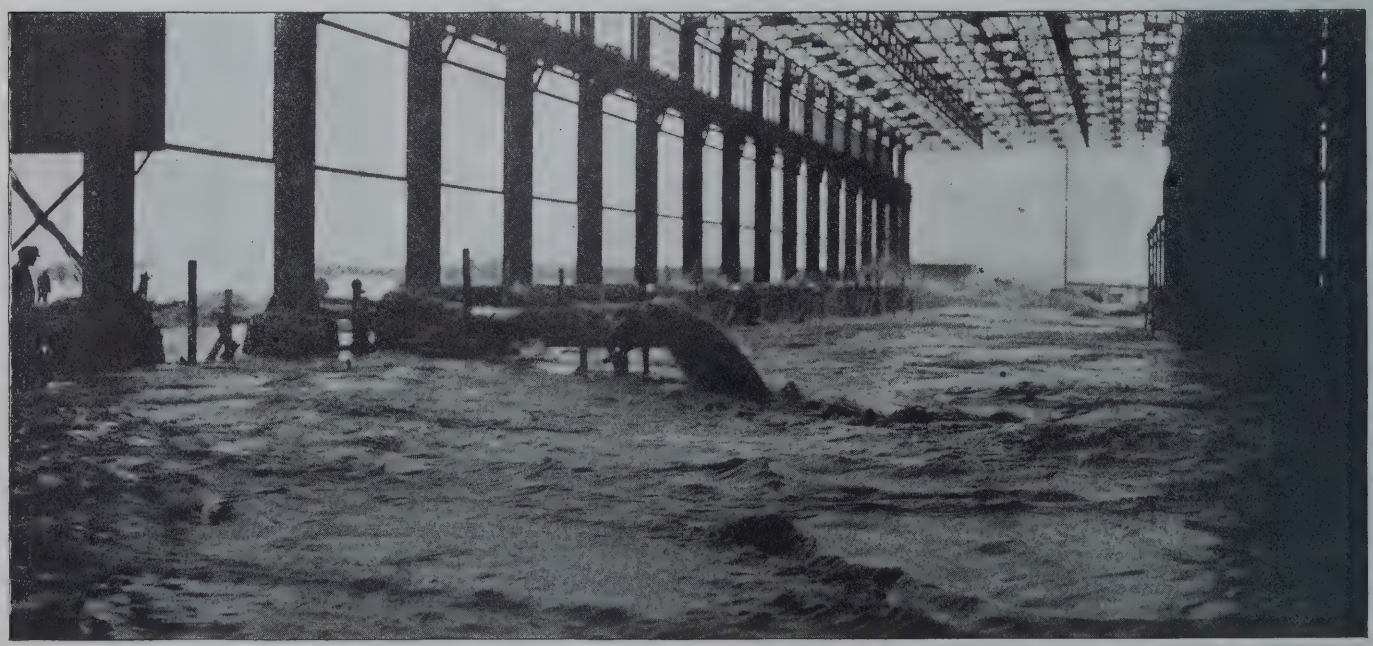


FIG. 13—THIS IS NOT A FLOOD SCENE—THE HYDRAULIC DREDGE IS BACKFILING IN THE BILLET YARD

375 revolutions per minute. The generators produce 600 volts and are connected in series, giving a total of 1200 volts. This set is served by an exciter set composed of an induction motor, constant-potential generator and variable-potential generator.

The motor for the 40-inch mill was one of the largest motors in the world at the time of its installation and is the largest in the Inland plant now. It has two separate and complete sets of winding and is, in fact, two motors on the same shaft, operated as one. The voltage across each is 600 volts and the two in series is double that. The combination operated as a unit is rated at 15,000 horsepower and will reverse from a speed of 40 revolutions per minute in one direction to the same speed in the opposite direction in 90 seconds. The motor weighs 268 tons and required ten cars for its shipment. The armature alone weighs 90 tons, the shafts being 28 inches in diameter.

Connection from motor to mill pinions is by a universal joint, a similar joint connecting the pinions and the mill. These are found to be unusually flexible couplings and much blacklash is eliminated. The motor is reversed by means of a drum-type controller which is placed in the mill pulpit.

The 28-inch mill is driven by an electric motor which operates in one direction on 700 volts. It may be reversed whenever the occasion arises. It is rated at 7500-horsepower. The 32-inch mill is operated by a reversing motor similar, though smaller, than the 40-inch mill motor, and is of the same capacity as the 28-inch mill unit. These motors are served by a separate motor-generator set, 48 inches long. Each set is equipped with a 5000-horsepower induction motor, a 45-ton flywheel and two 1950-kilowatt generators developing 700 volts. It is served by an exciter set which includes an induction motor, a constant-potential exciter and a variable-potential exciter for each of the two mill motors. This entire equipment was furnished by the Westinghouse Electric & Mfg. Co.

Windings Are Air-Cooled

Because of the heat created by the operation of this equipment, each set of apparatus is supplied with cooled air through the windings at the rate of 45,000 cubic feet per minute. The air is taken from the motor room, passed through washers and dryers and thence to the motor windings and into the room to be used again. The Carrier Air Conditioning Co. installed the washer and dryer, which is placed in the motor building basement. As a result of this installation, air in the motor room is maintained at 70 to 80 degrees Fahr., even on the hottest summer days. Without this the temperature would run high at all times, decreasing efficiency of the installation.

The motor building is 60 x 520 feet, with steel framework, brick walls and wood roof covered with corrugated metal galvanized and painted. The floors are laid in red tile and the walls to the crane runway are white-enamel brick. In the basement of this building four electrically-driven air compressors are installed, each having a capacity of 500 cubic feet per minute. Three are driven by Westinghouse motors, and one by a General Electric Co.'s motor. The air is used for various purposes about the mill.

In the general enlargement of the plant a third blast furnace with three stoves and all accessories was built in line with the former two, John Mohr & Sons, Chicago, being the builders. An additional pig-casting machine with a capacity of 2400 pigs per hour was erected. In connection with the blast furnaces, a skulling and ladle-repair building, 83 x 120 feet, was erected. It is served by a 40-ton Alliance crane. In this building the blast-furnace ladles are dried and repaired. The ore-handling equipment was increased by two Hoover & Mason unloaders of 7½ tons capacity each.

The new plant was placed in operation in sections as fast as completed. The first two open hearths were put in service before any of the mills, in July and August, 1916. This was done to relieve the open-hearth furnaces in plant No. 1, which were severely pressed for tonnage. Other furnaces were put in service as they were completed and when the 32-inch mill was ready, Dec. 30, 1918, eight open hearths were producing steel.

When the 32-inch mill was started the 40-inch mill was not ready and the former was used as a blooming mill. This was rather hard on the mill, particularly on the tables, which were not designed for such heavy ingots as were delivered direct from the soaking pits. The mill stood this punishment well and turned out considerable tonnage before the 40-inch mill was in service. Operation was inconvenient because it was necessary to transfer ingots to the aproach table of the 32-inch mill over a special track which passed over the site of the 28-inch mill. Part of latter was delayed in erection until the track could be removed. The round trip for the locomotive from the soaking pit until it had delivered the ingot and returned was about five minutes. The 40-inch mill was started March 24, 1917, and the 32-inch mill then was shut down for overhauling. The 28-inch mill was started in September, 1917.

How Impurities Affect Gun Metal

BY F. JOHNSON

THE literature on the influence of impurities on the mechanical properties of admiralty gun metal contains little actual information concerning definite results of tests. So far as the author has been able to ascertain no attempt appears to have been made to make up alloys of admiralty gun metal composition from pure metals under standardized conditions and to determine the alteration in mechanical properties which may be brought about by the addition of other metals. This is what the author, under adverse conditions as regards time, material and assistance, has attempted to do.

The choice of admiralty gun metal as the basis alloy may appear to some as requiring justification. The justification which the author offers is that this particular alloy finds greater favor among engineers than any other alloy composed mainly of copper and tin, if the extensive and highly important series of phosphor bronzes be excepted. The popularity of this alloy is based on no misconception. It is undoubtedly superior to its progenitor, zinc-free gun metal.

As a casting alloy it possesses few equals among the alloys rich in copper, while its range of mechanical properties may be enormously extended by heat treatment. Unannealed castings are used for journal bearings, water and steam fittings, etc., while annealed castings are probably better for fittings of pumps used for pumping mine water and other corrosive liquids.

Unannealed castings have a metast-

Abstracted from a paper presented at a meeting of the Institute of Metals, London. The author is a metallurgist of Birmingham, Eng.

able structure, the tin-rich eutectoid being present only on account of the relatively rapid rate of cooling. Thus one of the necessary conditions of a bearing metal is fulfilled, a uniformly distributed phase (delta) of great hardness possessing a low coefficient of friction in a relatively soft matrix (alpha phase) possessing good thermal conductivity.

Annealing, if sufficiently thorough, establishes equilibrium, the eutectoid reverting to the homogeneous beta phase, this in turn passing into solution in the alpha phase.

Thus an alloy consisting entirely of homogeneous alpha may be produced by annealing, and this should be more resistant to corrosion than the metastable alpha + eutectoid structure in the unannealed casting. There appears to be no experimental evidence on this point, but it seems reasonable to assume that the obliteration of an electronegative constituent by annealing should serve to reduce corrodibility.

One authority states that aluminum is never found in gun metal unless purposely added. He says the drawbacks to its use consist of the formation of a skin, alumina, on the skimmed surface of the molten metal, the increase in contraction and an increase in corrodibility. The author would point out, however, that the increase in contraction must be regarded, if unaccompanied by disadvantageous structural changes, as proof of strength and soundness. One has not to seek far for an analogous case. The addition of phosphorus to tough-pitch copper results in the formation of a depression at the surface of an ingot which would otherwise be level. Visual examination of the fracture or microscopic examination of a polished surface proves that the addition of phosphorus has eliminated gas cavities while chemical examination would show that the gases which caused those cavities had also been eliminated. Thus the condition which is opposing the natural property of the metal to become more dense, and therefore to occupy a smaller space when solid than when molten, is removed.

Use of Aluminum Urged

Physical and mechanical tests show that phosphorized copper is denser, stronger, and tougher than tough-pitch copper. Similar beneficial results accrue from the addition of small quantities of aluminum to admiralty gun metal. The author would plead for a reconsideration of the use of aluminum, believing that foundrymen could produce improved castings by efficient feeding, using adequate runners and risers. There is, however, the other, and possibly more serious, objection to its use, the formation of a tenacious film of alumina. This trouble is increased rather than mitigated by remelting. Possibly some efficient flux such as cryolite may be pressed into the service of foundrymen to obviate this drawback. The author has greater faith in the employment of some such specific as aluminum or phosphorus for the elimination of unsoundness than in merely controlling temperature, while not losing sight of the fact that control of temperature, either by pyrometer or by expert judgment, cannot fail to contribute towards the same end.

The author is not disposed to quarrel with the introduction of arsenic into admiralty gun metal as proposed by some authorities. More important than a slight lowering of tensile strength and elongation is an increase in soundness. It has been proved that arsenic can act beneficially on copper in reducing porosity. That it can act similarly in admiralty gun metal is not a rash assumption.

Effect of Impurities on Gun Metal

Impurity (not exceeding 1 per cent)	Effect on Mechanical Properties	Effect on Fluidity and Surface Appearance of Chill Castings
Aluminum	Hardening and embrittling	Good
Silicon	Hardening and embrittling	Good
Manganese	Inappreciable	Bad
Arsenic	Inappreciable	Good
Antimony	Inappreciable	Inappreciable
Iron	Strengthening without loss of ductility	Bad
Nickel	Toughening; increase of ductility	Inappreciable

Bismuth is rarely present in reputable brands of copper in amounts likely to be harmful. The presence of lead lowers the rate of wear when gun metal is used for bearings but increases the friction coefficient. None of the recent investigators has a good word for the presence of iron in the metal and little seems to be understood about the influence of nickel. One authority does not favor the addition of nickel owing to its alleged action of liberating occluded gas during cooling of the casting, thus causing porosity. A beneficial influence in aiding to form a dense close-grained structure and in lowering the rate of wear has been claimed for its use.

The practice of using silicon as a deoxidizing agent in preference to phosphorus for bronze for electrical purposes is old. Investigation would indicate that a small amount of silicon as a deoxidizer does not improve the mechanical properties of zinc bronze.

Aside from the chief results of the author's experiments as shown in the accompanying table the main feature of interest may be summarized as follows:

Lead does not appear seriously to affect the mechanical properties, although it is possible the resistance to shock is lessened.

Iron has a beneficial influence on mechanical properties, yield point, tensile stress, and elongation all being raised. Its effect on pouring qualities is bad, but much improvement is effected in this respect by the addition of a trace of aluminum.

The influence of manganese is bad in every way, the mechanical properties being adversely affected and the pouring qualities also. The surfaces of the castings were bad.

The annealing treatment goes far towards eleminating ill effects produced by undesirable additions, notably aluminum and silicon. The general improvement brought about by annealing is remarkable.

Oil From Shale Deposits

Attention is being paid to the oil-shale deposits in the United States, and the possibility of exploiting them to take the place of the present liquid oil supply. It is estimated that the latter source of supply will be exhausted in about 20 years. Oil-shale deposits are found in several parts of the United States, but those in Colorado and Utah are the most extensive and have so far received the greatest attention.

Oil-shale has no oily appearance to indicate that it contains free oil, but upon being subjected to heat, its organic materials are broken up, and, among other things, oil and gas are yielded. The yield varies from 6 to 90 gallons of crude oil per ton of shale. The crude oil when distilled may give 7 to 12 per cent gasoline, 28 to 49 per cent kerosene and 39 to 62 per cent residuum. Shale analysis indicates 0.5 to 3 per cent moisture, 20 to 52 per cent volatile matter and 45 to 80 per cent ash. The asphalt varies from 0.5 to 4 per cent and paraffin from 2 to 9 per cent.

The by-products of oil shale are valuable, and include gasoline, kerosene, lubricants, enamels, varnishes, paints, rubber substitutes, manufacturing products for glass, pottery and ornamental tiles, dyestuffs, ammonium sulphate, flotation oils and producer gas. The Colorado shale area covers more than 2500 square miles and the Utah area over 3000 square miles. The strata varies from a few inches to 80 feet thick. The yield is from 31½ to 80½ gallons per ton.

Fixing Building Factors in Costs

Division of Elements Entering into Indirect Production Charges Explained in Detail—System Shows That Items Considered of Minor Importance Sometimes Involve Largest Expense

BY M. H. POTTER

As nearly every manufacturing process is carried on in a building it will be readily understood that the land factor in cost accounting is merged into the building factor. However, the building factor includes more than the land factor; as, for instance, cost of maintaining, repairing and cleaning. Elements of the building factor will depend upon existing conditions, but the principle and application of the factor and its elements as related to production costs are the same as explained in the article relating to the computation of the land factor, published in a recent issue of THE IRON TRADE REVIEW.

In order to establish a standard which can be used for comparison the various elements for each building should be separated. It is only through such a system of division that unit values can be determined. In some instances, elements apparently of minor importance will be shown to have the most importance, or just the reverse. For this reason the ordinary methods of apportioning indirect expenses should be revised.

While certain expenses, such as cleaning and painting, are fixed and can be predetermined, other expenses such as repairing and maintenance can not be calculated so readily. In the latter case it is necessary to establish the expense through the groupings of such expenses as totaled for the past few years, to consider the construction and age of the building and to estimate accordingly. In this manner the annual cost of repair and maintenance can be determined for each building and this cost divided into its various elements.

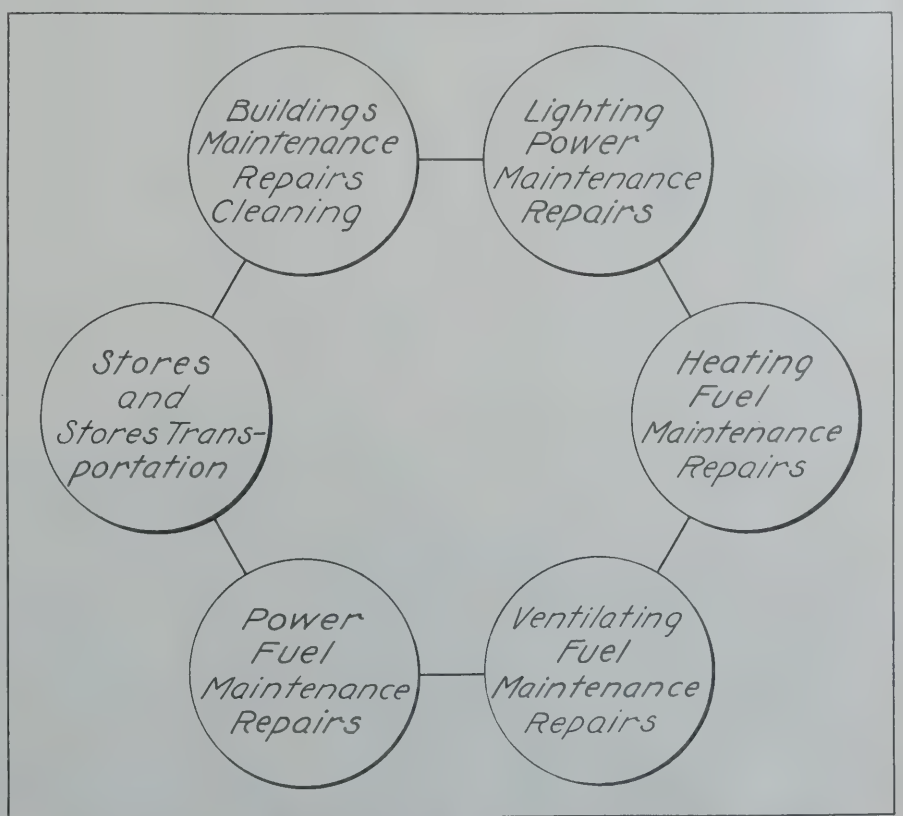
Costs as Related to Space

When these elements have been determined the next step is to figure the actual amount of productive space in use. Productive space does not include stairways, landings, passages, etc. The figures representing various elements of each building are then divided by the number of square feet of productive area in each building to obtain the cost per square foot. The unit value can now be figured for each department, and this is important because it definitely fixes costs directly related to the department, and does not merely represent a percentage basis of indirect expenses.

It is through such a method of correct apportioning of expenses that more economical use of space can be studied, and steps taken to reduce the overhead in the departments where such expenses are the greatest. Also the work done in departments which call for high expenses in this factor can be charged to the purchaser accordingly, and not taken from the general profits, as often is the case.

The unit value of representing expenses also is applied to lighting and heating factors, which are in turn divided into elements and charged to each building or department as desired. Here again, repair and maintenance must be dealt with and considered on the same principles as previously outlined. The annual cost of lighting and heating for each building is divided by the productive area of the building, and the cost per square foot thus determined. In some industries ventilation must also be taken into account and determined as a factor, with various elements as related to each building or department. As to whether the unit values will be based upon the building as a whole, or divided into the departments, will depend upon the individual case, that is, a company manufacturing a completed article probably will not be interested in the subdivisions of departments while on the other hand a concern doing a general jobbing or similar business will be interested mainly in apportioning indirect expenses to each department.

The power factor likewise is divided into elements representing expenditures involved. In instances where the power is supplied under contract



HOW BUILDING AND ASSOCIATED FACTORS ARE APPORTIONED IN FIXING INDIRECT PRODUCTION COSTS

This is the fourth article in the series on cost accounting methods as applied to steel works, prepared for THE IRON TRADE REVIEW.

at a fixed rate the power factor is determined automatically. In the event the manufacturer generates his own power the elements must be divided and grouped to cover all repairs, maintenance, attendance and similar expenses.

Determining the Stores Factor

The stores factor is the next to be considered, and this includes expenses incurred in storing, handling and transportation of all materials directly related to production. The various elements will include all charges which are related directly to raw and semifinished material in course of manufacture. These elements, as regards transportation costs, are as follows: (A) To and from storage or stockroom; (B) from storage or stockroom to the shop or department where needed; (C) from one department to another. The costs chargeable to these elements are as follows: Interest, maintenance, and depreciation of handling apparatus, wages of cranemen, operators and laborers, and all power involved.

The costs chargeable to the stores (mechanical) factor are as follows: Interest, maintenance and depreciation of shelves and storage places; interest on reserve stock held in readiness, and wages of storekeepers and helpers. Through this method of division the stores and stores transportation costs are easily and accurately apportioned to the production costs, and afford valuable means of comparison and establishing figures for standardization.

In determining the stores and stores transportation costs chargeable to each department, the following methods of procedure should be followed: (1) Determine through the elements previously named the total cost; (2) determine the stores percentage of unit value taken by each department or similar class of machines, that is, drill presses, large and small lathes, etc.; (3) determine the percentage cost of transportation as specified under (2). It is obvious that material in process of manufacture will entail cost to store or transport in proportion to its size, and that one class of machines will handle only certain work. This also is true as to tools, fixtures, etc.

Accurate percentages can only be secured by careful study of the particular plant under consideration, after this factor has been divided into elements. The unit cost thus obtained definitely fixes one of the most important items of direct expenses in many industries and eliminates entirely the errors so often included in stores and stores transportation costs as computed by the usual accountancy methods. As a value of comparison and standardization, the unit values of this factor in most cases will not be great. At the same time these values will suggest the possibility of reducing such expenses. Many opportunities may present themselves for better means of simplified transportation and storage.

Many Opportunities Suggested

Thus it will be seen that not only does this method determine accurate values for indirect expenses, opportuning them to correct production costs, but also suggests opportunities for better and cheaper means of securing the same results. Such unit values also help the executives determine the advisability of increasing production in certain lines, by showing which particular lines or classes of work are most profitable.

Economic Metallurgy, Slogan in Britain

ISAAC LESTER, president of the Birmingham Metallurgical society of Birmingham, England, in his presidential address at a recent joint meeting of the Staffordshire Iron and Steel institute, the British Foundrymen's association, the Institute of Metals and other kindred societies recently, called attention to the recent statement of Sir Robert Hadfield that the total allied steel production amounted to 60,000,000 tons per annum. He declared that metallurgists and economists would have to face the problem of balancing this stupendous industrial expenditure and stabilizing industry on an economic basis by at least an equal production during peace time. He said post-war conditions restoring open competition in the world's markets will demand maximum output at lowest cost. Economical production must cover labor, fuel, refractories and all metallurgical and material resources and they must all be utilized and controlled in connection with reconstruction. The whole array of academical science, all the essentials of economic practice must be captured and swifty but securely harnessed. He recommended more facilities for technical education and referred to the practical man as the nation's valuable asset in the future. Assuming that a youth had inherited the practical instinct he should have a good general education, his reasoning faculties should be developed on sound scientific principles and his practical ability should have a proper direction. This kind of education should equip the youth with the means of thinking for himself and enable him to be observant, comparative, synthetic and analytic in his work and profession.

During the past four years, owing to irregular supply or no supply of the accustomed material, makes brands or specialties, there had been many instances in which trade or output had suffered in quantity or quality and in many cases had been held up owing to the lack of proper technical education of employers and employes alike. Only by the specialist or metallurgical expert had the real difficulty in diagnosing the trouble.

Mr. Lester proceeded to emphasize the imperative necessity of eliminating all waste, a word which he said should spell anathema. Waste, he said, betokened ignorance and did not conform to the principles of scientific production. It was to be deplored that all courses in metallurgy did not include a study of economics and the value of costs. He would like to read "Economic Metallurgy" written over the entrance to every metal works. Economy had converted the waste of one century into the wealth of another. Century-old slag heaps in India had been exploied as iron ore and used for the profitable production of wrought iron. Dud Dudley revolutionized the making of pig iron by using coal instead of charcoal, at the same time saving forest lands. Abraham Darby and George Milson heated the air of the blast, Henry Bessemer blew cold air into molten iron and obtained a steel-melting temperature. David Mouchet introduced ferromanganese and made the pneumatic steel process a success. Discarded steel pots, firebricks and other refractory materials were now utilized; spent foundry sands were reclaimed, pickling liquor from iron and steel sheets and galvanizing plants yielded excellent oxide paints. Undoubtedly the iron ores of the continent once considered unfit for steel-making by the acid process owing to their high phosphorus content had been made through the basic process a powerful factor in the world's greatest war.



Fig. 1—By-Product Building Containing Stills and Tanks for Recovering Alcohol and Lime Acetate. Furnace is Shown in Background

Builds Charcoal Furnace in Mid-West

IN the early days of the iron industry charcoal was used exclusively for melting the furnace charge. The charring of the wood was done in kilns which were built in the surrounding woods and the charcoal was hauled by wagon to the furnace. Because of the abundance of coal, the use of coke as fuel in blast furnaces gradually gained the ascendency and charcoal smelting practice became more and more restricted to the production of special irons. At the present time in this country but 38 of approximately 472 furnaces are users of charcoal as fuel. Some revival of charcoal practice was brought about by the war which greatly increased the demand for wood chemicals. The war department, anxious to secure these supplies, encouraged charcoal-iron makers financially to enlarge their chemical plants. This was the deciding factor which led to the organization of the Mid-Continent Iron Co., Kansas City, in 1917, and to the building of a modern wood-chemical plant and charcoal blast furnace in Carter county, Missouri, about 100 miles from St. Louis.

Ground was broken in November, 1917, and before the signing of the armistice, the plant was in limited operation. It is now producing up to capacity, the daily output approximating 100 tons of mild-blast charcoal pig iron, 2000 gallons of crude-wood alcohol and 40,000 pounds of acetate of lime per day. The chemical and furnace plants are built in the midst of the company's timber and native iron-ore holdings, four miles from the Frisco railroad in Carter county, covering approximately 30 acres. Two and one-half miles of railroad track are provided for interplant switching. The company owns a 16-mile, standard-gage, tram road which is used for logging purposes and operates four locomotives together with flat and dump cars. Over 400 modern houses, equipped with water and lighting facilities, were built for the employes.

The furnace is 64 feet high with a 13½-foot bosh, and a 9½-foot stock line. It is lined above the mantle with 28 inches of fire brick, a 4-inch packing space having been left between the lining and the shell. The hearth, which is 9 feet in diameter, is lined with 28-inch fire brick while the bosh is constructed of 13½-inch brick laid tight against a $\frac{3}{16}$-inch petticoat. Three sets of sprays are used for keeping the hearth jacket cool. Two cinder notches are provided.

Ore and limestone are brought to the furnace over a trestle and are unloaded either by means of a clam-shell bucket suspended from a boom of a locomotive crane or dumped directly into the trestle bins. The charcoal is brought from the retort plant over a separate track and trestle in trains of 10 cars each and is dumped into bins. These bins are housed in a separate building adjoining the ore trestle. From this point it is discharged over screens into buggies, the charcoal breeze being used for steam generation. The stock is taken to the top of the furnace by means of two elevators which operate alternately in a hoist tower. The furnace top is equipped with a single bell and a gas seal both of



FIG. 2—IRON IS CAST INTO SAND BEDS AND LOADED INTO CARS BY MEANS OF A MAGNET AND LOCOMOTIVE CRANE



FIG. 3—REAR VIEW OF FURNACE. CHARCOAL IS DUMPED INTO BINS HOUSED IN THE BUILDING TO THE LEFT

which appliances are steam operated.

The blast is preheated in two side-combustion, 2-pass stoves, 18½ x 74 feet. These are equipped with mushroom-type hot-blast and chimney valves. The waste gases are led into an underground flue and then discharged through a concrete chimney into the air. The chimney is 162 feet high, 14 feet diameter at the base, 8 feet diameter at the top and is lined with fire brick. The blast is provided by two horizontal Filer and Stowell-type blowing engines with air cylinders 38 inches diameter and a stroke of 4 feet. These are provided with Iverson-type valves. The warm blast is led from the stoves to the furnace through a 14-inch hot-blast main, a bustle pipe and six tuyeres. A mixer valve is provided on the hot-blast main for regulating the temperature of the blast. The temperature of the blast and top gases are recorded by pyrometers built by the Brown Instrument Co., Philadelphia.

Cooling water is supplied to the plant by gravity from a large standpipe built on the hillside. Water is pumped into this tank by two 1000-gallon pumps. A 1200-gallon pump is held in reserve for fire service. All three pumps may be operated in series whenever the occasion arises. Approximately 3,500,000 gallons of water are required per 24 hours, the supply being obtained from deep wells blown with air. The pumps, two blowing engines, two air compressors built by the Ingersoll-Rand Co., New York, and two 275-kilowatt generators are housed in a brick and steel building near the furnace. They are all driven



FIG. 5 — DISCHARGE SIDE OF RETORT PLANT SHOWING THE STEEL COOLERS IN THE FOREGROUND

by steam which is generated in stirling-type boilers of 2000-horsepower each. Six boilers are installed, provision having been made for burning either blast-furnace gas, coal, tar or oil.

The iron is cast into sand beds and is either piled in the storage yard to apply on orders or is loaded into cars which are switched into the plant over a depressed spur at the end of the cast house. The pigs are loaded or piled by means of an electric magnet and a locomotive crane. The slag is flushed on the ground, and, after cooling, is loaded into cars.

The wood for charcoal making is harvested mechanically by means of a Lidgerwood aerial skidder. The logs are loaded mechanically on cars, hauled by the company's locomotives

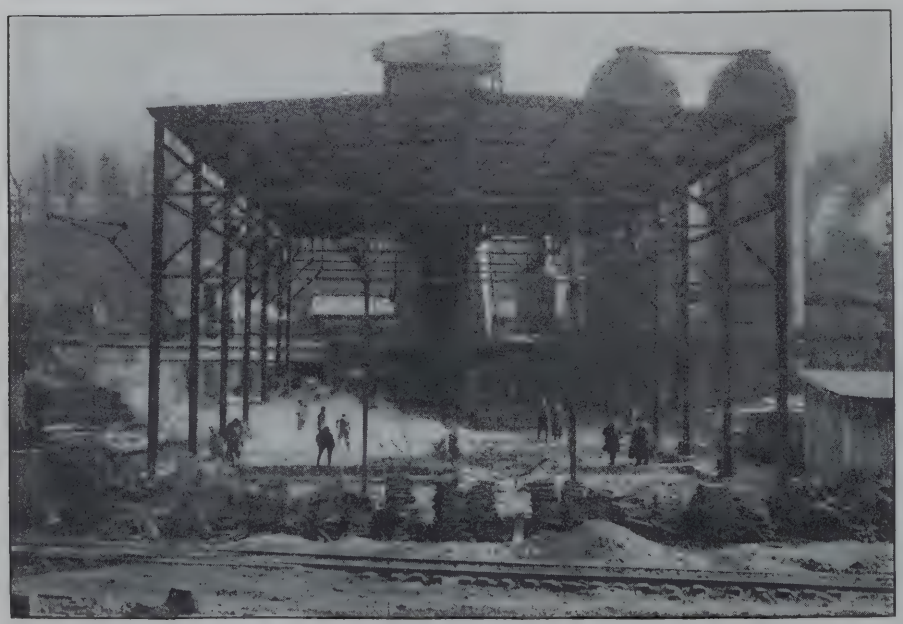


FIG. 4—BREAKING AND RACKING THE PIGS AFTER THE CAST

to the saw mill on the plant site, and dumped on a conveyor table. Here they are ripped with a double-cutting band-saw, the cants proceeding on live rollers to two slashing tables. The latter are equipped with 20 saws each which cut the cants into 8 x 4 x 6-inch blocks. These fall on a chute which directs them into steel baskets mounted on cars. The latter, when filled, are switched to the retort plant.

This plant includes 16 retorts which are supported by heavy settings and fired from both ends. Each retort holds five charcoal cars. This, as far as can be learned, represents a capacity for one car more than any retort heretofore built. Opposite the retorts are 32 steel coolers into which the charcoal cars are shifted after carburization. The charcoal is held in these coolers about 24 hours, which eliminates any danger of combustion. The cars are shoved into the retorts by means of a locomotive and are withdrawn from the retorts by means of a cable. Both the logs and charcoal are handled mechanically from the time the blocks of wood arrive at the saw mill until the charcoal is in the trestle bins.

Reclamation of By-Products

A battery of tile predryers is now under construction. These predryers will be heated by the exhaust gases from the retort chimneys. By means of this arrangement the temperature of the wood will be increased to nearly the carburization point and a considerable portion of the moisture driven off. The wood is brought into the retort comparatively dry thus decreasing the period of carburization from 30 to 24 hours and effecting considerable fuel economy. The vapors are drawn from the retort







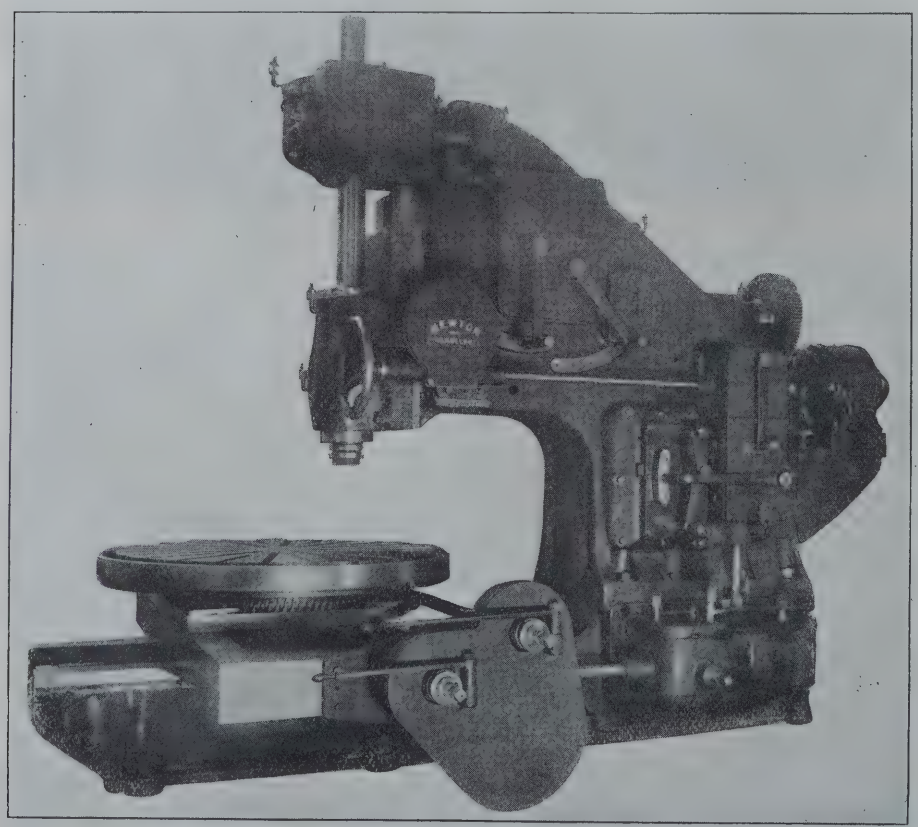
FIGS. 6 AND 7—VIEWS OF BY-PRODUCT BUILDING. FIG. 8—PANORAMIC VIEW OF RETORT PLANT

through two condensers which consist of 201 copper pipes, 1¼-inch diameter. The resultant condensate, pyroligneous acid, is collected in two measuring tanks from which it is pumped through a 6-inch copper pipe to the storage tanks. After settling the raw liquors are passed into a Webre-Badger type evaporator where the combined tars are extracted. The tars are then neutralized and the alcohol is distilled off in a Barbet-type, continuous still. The remaining liquor, acetate of lime dissolved in water, is further evaporated almost to the point of crystallization in a Webre-Badger evaporator. It then passes to the dryer building where it is reduced to a sludge by means of drums which revolve slowly in a pan of liquor. The sludge is shaved off by knives, and drops on to a conveyor which transfers it to an open-mesh wire belt 24 inches wide. The exhaust gases which are drawn from the main stack through an underground conduit, 6 x 8 feet, are blown against the belt and the acetate of lime is thus dried. It is beaten off mechanically at the dry end and falls directly into the sacking hoppers. Exhaust steam is used throughout the process of evaporation and distillation, the condensed water from the exhaust steam being trapped and returned to the boiler feed-water heater.

Manual operations have been eliminated throughout the plant in ore and iron handling, logging, loading, charging of wood, handling of charcoal, drying of chemicals and firing of boilers. A considerable quantity of tar is produced which is fired in the same manner as fuel oil. The saw mill has its own fuel plant and burns the sawdust. The plant was designed by J. S. Ferguson, formerly of the Woodward Iron Co., and the Colorado Fuel & Iron Co., and now superintendent of the plant. The brick and concrete work was done by the Rust Engineering Co., Pittsburgh, and the structural work by the Gage Structural Steel Co., Chicago. The chemical apparatus was built by E. B. Badger & Sons, Boston.

Designs Vertical Miller

FOR the accurate milling of large, irregular pieces the vertical milling machine, shown in the accompanying illustration, is said to be especially adapted. It is a product of the Newton Machine Tool Works, Inc., Philadelphia, and was designed primarily for marine and railroad work. In the design of this tool, it is pointed out that many features have been incorporated that previously were found only on small, precision machines.



HEAVY DUTY VERTICAL MILLER WITH MULTIPLE CONTROL

The machine is equipped to handle continuous milling operations requiring face milling cutters, the finishing of surfaces requiring cylindrical cutters and for drilling and boring operations. An extensive range of spindle speeds is provided as well as power table feeds for circular, longitudinal and transverse directions.

The machine, it is pointed out, is carefully constructed so that all its parts align properly. The spindle revolves in bronze journal boxes in the spindle saddle and is equipped with a retaining drift key which is controlled through the medium of nuts threaded on the spindle nose.

The spindle saddle is provided with a side adjustment maintained through the medium of a taper shoe and is counterweighted to equalize its weight. It is equipped with a hand vertical adjustment in addition to the reversing feed and has a reversing fast-power traverse.

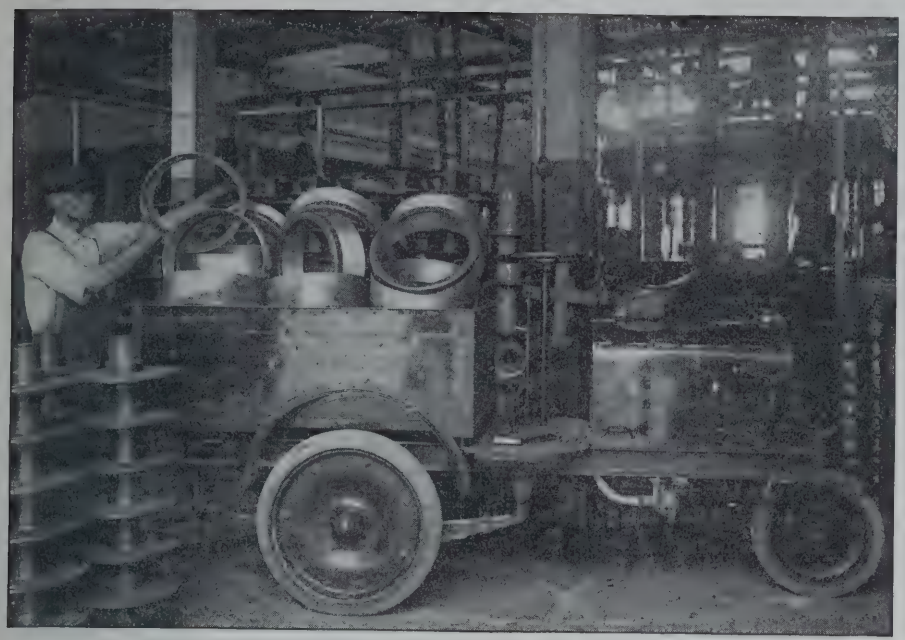
The platen is circular, of heavy construction, and is surrounded by an oil pan, made integral. The platen has a full bearing on its saddle to which it is held by four corner clamps.

The platen saddle has a narrow guide alignment on the cross slide and is fitted with a taper shoe, while the cross slide has square bearings on the base and is also fitted with a taper shoe. Some of the principal dimensions of this machine are: Diameter of spindle, 6⅜ inches; diameter of platen working surface, 60 inches; cross feed, 65 inches; in-and-out feed, 50 inches; vertical traverse of spindle, 24 inches; distance from the center of spindle to the frame, 50 inches.

Shop Tractor Has Wide Speed Range

A commercial tractor, designed for use in manufacturing plants but possessing a number of features of an automobile truck, is being manufactured by the Clark Tructractor Co., Chicago.

The truck, as shown in the accompanying illustration, has two driving wheels in front and one steering wheel in the rear to enable it to traverse narrow and crooked passages, to turn corners sharply and to deliver its load where desired with the minimum of maneuvering. The body of the tractor is in front, the load resting over the driving wheels and in full view of the driver. A ground clearance of 9½ inches enables the truck to operate over rough ground. Recently one of these



THE LOAD ON THIS TRACTOR IS DIRECTLY OVER THE DRIVING WHEELS

machines was run from the plant at Buchanan, Mich., to Chicago, a distance of 143 miles, in one day and was in good condition upon arrival.

The speeds of the truck vary from ¼ to 15 miles per hour. When necessary to operate in soft ground or in sandpiles of a foundry, large wheels with an 11-inch tread may be used to prevent the truck stalling. Several types of standard bodies are made, the regular cargo body for ordinary tractor work and shop hauling having a capacity of about ¾ yards or 1½ tons. Tractors may be equipped with an end-dump body which is operated by a special hand-operated hoisting mechanism. This is used in foundries and other places where materials can be dumped without breakage. Castings can be dumped directly into tumblers, avoiding extra handling. A gravity dump body of rocker type has been designed for handling coal and sand. In certain shops a platform type of body is useful in transporting heavy materials, such as spare rolls, electrical units and machine parts. One plant uses its tractor part of the day as a switch engine and the remainder of the time to haul trailers loaded with steel. Steel foundries are making use of the truck for hauling charging materials.

Publish New Magazine

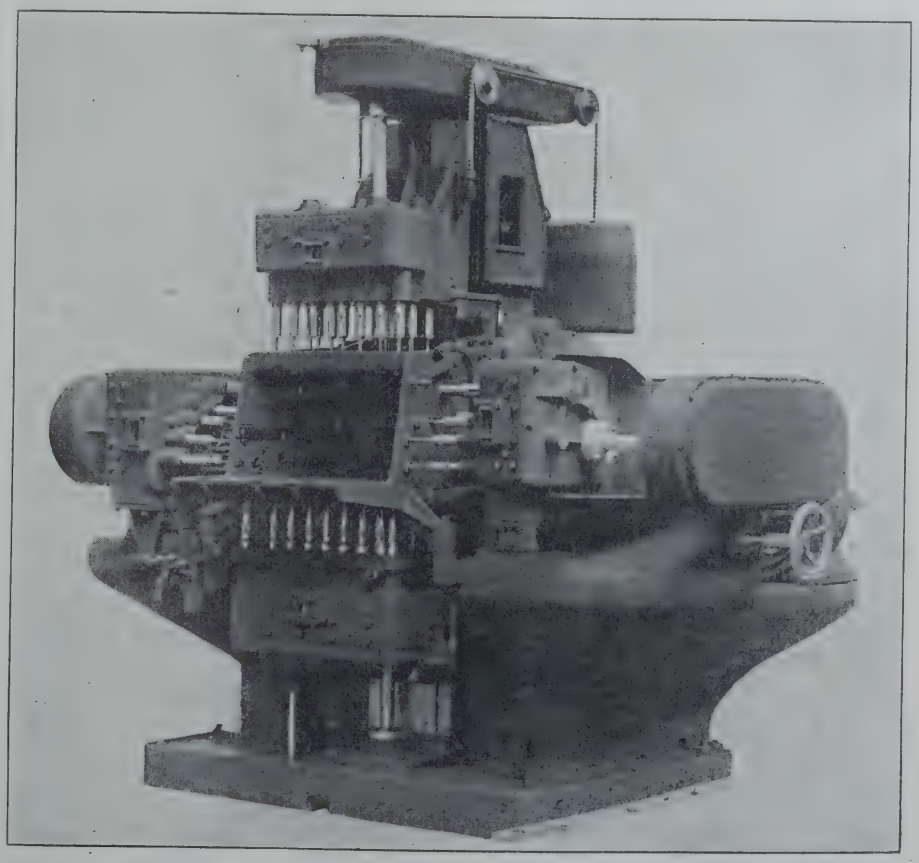
Successful Methods, a magazine devoted to construction service has made its initial appearance. It is published by the Manufacturers Publicity Bureau, Inc., Chicago, which is an organization of about 15 manufacturers of construction equipment including road machinery, industrial railway track, steam shovels, hoisting equipment, shovels, wheelbarrows and other similar supplies for contractors.

The first issue of the publication, bearing the date of July, is an attractive magazine of fifty 9 x 12-inch pages, 20 of which are devoted to editorial and news matter. Several well illustrated articles on road building and contracting appear in this section of the magazine. A two-page series of illustrations shows a number of machines which have reduced labor costs in construction work.

Develops Four-Way Drill Without Oil Cups

A 60-spindle, 4-way, semiautomatic drilling machine embodying recent improvements in the method of lubrication, is shown in the accompanying illustration. The machine, which is manufactured by the Foote-Burt Co., Cleveland, has been designed so that all bearings are lubricated by a splash system. There is not an oil cup of any kind on the entire machine. The oil is pumped from a reservoir of 35-gallon capacity in the base of the machine, and after being used drains back into the reservoir through a wool filter. All bearings, except those of the spindles, are manufactured by the Hyatt Roller Bearing Co., New York.

The machine was designed to drill 60 holes in the top, bottom and two ends of castings for 4-cylinder automobile engines. The spindles revolve in fixed bearings, making it possible to drill a multiple layout of holes. The fixed center principle is advantageous in that larger spindles and gears may be used than would be possible if the spindles were adjustable. Special alloys have been used in the construction of spindles, gears and other parts whose dimensions are small because of the short distance between bearings. The machine is semiautomatic.



ALL BEARINGS OF THIS 60-SPINDLE DRILL ARE LUBRICATED BY SPLASH SYSTEM

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

INCREASED demands for hammered, pressed and drawn forgings has made it necessary for the Pollak Steel Co., Cincinnati, O., to work out plans for expansion both at Cincinnati and at Chicago. The new improvements consist of a merchant rolling mill at Cincinnati, to produce material which cannot be forged for farm implements, railroad work, etc., and a large drop forge plant at Chicago.

* * *

WM. MACCLEARY & CO., 2 Rector street, New York City, recently were appointed eastern sales and export representatives of the Hudson Sheet & Tin Plate Co., of Marietta, O.

* * *

REPRESENTING the Cleveland Milling Machine Co., Cleveland, the General Tool & Supply Co., Saginaw, Mich., has opened an office and store, carrying a stock of that company's milling machines and a large supply of cutters.

* * *

TO increase its nut, bolt and rivet manufacturing facilities, the Falls Rivet Co., Kent, O., will construct a new building this summer. Capital stock has been increased from $250,000 to $600,000, the new issue being absorbed by the present organization. New building and equipment will call for the addition of about 75 men to the force.

* * *

INCORPORATED under the laws of Maine the Gauld Supply Co. has taken over the business of the Gauld Co., Portland, Oreg. Directors of the new company are: William P. F. Ayer, Thomas Nickerson, G. A. Ricker, Theodore W. Little and Carl T. Keller, all of whom are prominently connected with the Walworth Mfg. Co., Boston, manufacturer of valves, fittings, etc.

* * *

SALES representatives of the Midvale Steel & Ordnance Co., and the Cambria Steel Co., from all over the United States, attended a convention at the company's headquarters in Philadelphia the last week in June. A feature of the occasion was an excursion in a special train to the plant of the Cambria Steel Co., Johnstown, Pa., where an old-fashioned picnic was held.

* * *

A BRANCH of the Baldwin Locomotive Works, Philadelphia, will be established in Buenos Aires in September in charge of Wallace R. Lee. H. P. Austin, a nephew of William L. Austin, until recently chairman of the board of Baldwins, will open a branch in Madrid, Spain, sometime in July. The Brazilian branch will be opened in August by Col. C. H. Crawford, until recently at the Eddystone munitions plant.

* * *

DESIGNED primarily for use in connection with machines and tools for cutting tool lubrication, force feed lubrication of bearings, etc., the line of pumps to be manufactured by the Michigan Machine Co., Detroit, will range in size from ⅛-inch to 2-inch intake and discharge. They also will be adaptable for oil circulation on tractors, marine engines, fuel systems of all kinds, brine circulation, etc.

* * *

FOR physical tests and research work along microscopic and hearth forging steel, tin plate, etc., is equipping a laboratory at its Cumberland, Md., steel plant. It will be in charge of Isaac Berman, under the direction of R. C. Drinker, the company's consulting metallurgist. This laboratory will supervise tests and experiments of the various grades of steel produced by the company for use in the manufacture of tin plate and heat-treated forgings.

* * *

WITH its organization complete, the Lake Erie Bolt & Nut Co., Cleveland, lessee and successor to the business of the Lake Erie Iron Works has organized with the election of officers as follows: President, Norris J. Clarke; vice president, Richard Inglis; secretary and treasurer, H. E. Volmer. These officers, with Chester C. Bolton, E. D. Rogers, Harold T. Clarke and Charles W. Schofield, comprise the board of directors.

* * *

AN order has been placed with the Electric Furnace Construction Co., Finance building, Philadelphia, for an electric furnace for the manufacture of ferroalloys in Spain, by the Sociedad Espanola de Construccion Naval, the advisory committee of which consists of the firms of Sir W. G. Armstrong Whitworth & Co., Vickers, Ltd., and John Brown & Co. This is said to be the first furnace of its kind to be erected in Spain for converting native ores into ferroalloys.

* * *

LICENSE has been granted to the Algoma Steel Corp., Sault Ste Marie, Ont., by Freyn, Brassert & Co., 645 Peoples Gas building, Chicago, engineers, to use three of the latter's gas washing and drying units on its blast furnaces. This brings Freyn and company's total installations to 72. They now are rebuilding No. 3 blast furnace of the Steel & Tube Co. of America, at its Iroquois plant, South Chicago. It is expected that this furnace will be ready for operation the latter part of this year.

* * *

THE Motor Castings Co., Milwaukee, has been organized with a capital stock of $100,000 to build, equip and operate a new foundry in West Allis for the manufacture of gray iron and semisteel castings for the gas engine, automobile, truck and tractor industries. The organizers include Gustave Anderson, formerly works manager of the Wisconsin Aluminum Foundry Co., Manitowoc, Wis.; John S. Wilson, Milwaukee, and Arthur C. Swallow, a Milwaukee capitalist. Ground was broken July 1 for the new foundry, which will be 111 x 180 feet, of brick and concrete. One cupola will be installed for the present, giving a capacity of 300 tons a month, but plans provide space for a second cupola. Mr. Anderson will be general manager. The new shop will be ready to begin production about Sept. 1.

British Pig Iron is Still on Rise

Further Wage Advances Bring About New Additions to Prices—American Pig Iron Dealers Courting British Market—American Billets Being Taken in Larger Quantities—Home Makers Indifferent to Competition

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 20.

ANOTHER upward movement has commenced in pig iron, stimulated by the advance in wages, following upon the wages returns under the Northern and Midland boards. There is little unanimity in these matters. Several of the Derbyshire smelting firms are grouped together for wages purposes, and they agreed, some weeks ago, to an advance to blast furnacemen, increasing the wages by about 8/– ($1.92) per week. In the Midland district, although, with trifling exceptions, such firms are not affiliated to the wages board, it is customary for the workmen to share in the advances. There is a good deal of irregularity in prices chiefly owing to the congested state of some order books but the general advances range between 2/6d. ($.60) to 5/– ($1.20) per ton for Northampton and Derbyshire firms. The Staffordshire furnaces are advancing the wages of their workpeople, but they do not propose formally to declare a rise until July, as they fixed their prices in May to cover sales made in May and June; but they are declining to accept new business for the rest of this month, at the same time hinting to their customers that they must look for a rise of something like 10/– ($2.40) per ton in July. A great complaint in the Midland district relates to the poor quality of ironstone from some of which they declare it was impossible to obtain good pig iron. The result of this is that foundry iron continues very scarce and the foundries could not get through without judicious mixing of brands.

The Middlesborough market shows a strong tone and the output has been somewhat increased, as the result of repairs carried through during the holidays. Makers, however, are selling very cautiously.

Resume Cumberland Ore Shipments

A gratifying feature is a certain amount of improvement in the output of ore which has enabled the sending of Cumberland ore to the East Coast. This is said to be the first delivery of the kind since the outbreak of war. At the same time, the supply is not considered either sufficiently plentiful or reliable to justify the bringing of new furnaces into commission, although the scarcity of hematite is very pronounced. The enlarged steel works, whenever they become really busy, must consume a great deal more hematite pig iron than sufficed for the pre-war period. The current rate for East Coast mixed numbers is 190/– ($45.60) for home consumption and 195/– ($46.80) for export, but with prices of raw material advancing, producers are predicting an early increase and new business is accepted strictly on the basis of the price ruling of the time of delivery.

A Sheffield correspondent has published the following circular from an iron, steel, coal, coke and ore firm in Philadelphia which has been endeavoring to cultivate a British market. The circular has been read with a good deal of interest here as illustrating the keenness of American dealers in looking after British business. It is said that great numbers of such circulars have been received in this country.

"We enclose herewith a booklet showing our pig iron list and our coal list. This has been arranged so that it shows all the grades of foundry pig iron, also all the hematite or bessemer pig iron that we handle, also the analyses of the various grades of ferrosilicon, open-hearth basic machine-cast iron, also Lake Superior charcoal iron, and southern charcoal iron. You will notice that the grading in this list is that which was universally adopted in the United States of America when the government took charge and controlled the iron and steel business. Our grading of foundry iron is, as you will see, very close, only allowing .50 in silicon between grades. No other country in the world, so far as we know, grades their pig iron so closely. Any iron which is purchased from us will be guaranteed to be within the limits of analysis shown on this folder and it gives the foundrymen the opportunity of making a very nice and close distinction in mixing this pig iron. It is impossible for us, in this letter, to quote prices, but if you are interested in the matter and, either by cable or by letter, will refer to the code word, you will see that you can indicate to us exactly what you want and we will be pleased to quote you promptly. In regard to coal, the same system has been carried out. Of course, the analyses of coal are necessarily approximate analyses."

While not greatly disturbed for the time being over this rise in price, the future is regarded with no little uneasiness, chiefly in view of the increasing success of American competition. It appears that the first cargo of American bars has not yet reached this country but the importing merchant claims to have sold it all in advance and to have received offers for much larger quantities. The American quoted price is £18.15s. ($92) c.i.f. Liverpool, and another £1 ($4.80) has to be added for the delivery of the material to the inland buyer, but as this price competes with the British basis of £21 ($100.80) delivered in the district, there is clearly a very good working margin both for the importer and the buyer. It stated that the bars are coming from American firms, whose deliveries in former periods of successful American competition were satisfactory to buyers generally, although these bars were required for a great variety of uses. There is clearly no lack of confidence as to the suitability of the American material for the purposes in view. British supplies are so deficient that the opening for America is not only obvious but urgent. There are numerous makers of nuts and bolts and chains on short time for lack of the bars. The competition will be greatly assisted by the further fall of $3. in freights, of which the importers have been advised this week.

Steel billets from America are also being bought in larger quantities and these can now be got to Liverpool at about £13.10s. ($64.80), competing rather closely with Welsh semifinished steel, quoted at the same price at works. It is assumed here that this competition has been made possible by very favorable quotations from the transatlantic lines. American rods have been quoted at £17.40s. ($84.00) as compared with £19.10s. ($93.60) the British price. Several steel rerollers in the district state that they have purchased on terms quite satisfactory to themselves substantial supplies of these billets.

British Makers Indifferent

A curious feature is the comparative indifference of British makers. While they do not relish the capture of their trade by Americans there is a very prevalent idea that a term of fairly successful American competition entailing a proportion of unemployment here might prove a convincing argument with which to confront what are regarded as the extravagant claims of British labor. All the same they would be much happier without it, realizing that it may be very much easier to admit American material than to get rid of it when it has served to reduce the cost of British production.

Employment Offices Cut In Half

Congress Allows Appropriation of $672,000 Against $4,600,000 Originally Asked—Private Funds Will Help in Maintaining Some Branches—Secretary Wilson Explains How Charge of Union Favoritism Came About

WASHINGTON, July 8.—Forces of the United States employment service, both field and office divisions, are to suffer a cut of practically one-half of the present number in accordance with the reduction made by congress in the sundry civil bill providing appropriations for the operation of the service. In the urgent deficiency bill the employment service is given $272,000 for expenses incurred up to June 30, 1919. The sundry civil bill allows $400,000 to the service to continue operations, which compares with the $4,600,000 originally asked by the service. Officials of the employment service state that no definite conclusions have been reached as to the number of offices that will remain open. It is expected, however, that the civic and business interests which have kept a large number of the present offices in operation will take over more of the branches and keep them going on private funds.

The sundry civil bill as it finally passed congress carried an item of $400,000 for the employment service for the fiscal year which began July 1. The house had cut the appropriation to $200,000 which provided for the work of the service to be confined to its main office in Washington, but the senate insisted on increasing the sum to $400,000 so as to permit the service to co-operate with state employment bureaus and to work through its own agents throughout the country. Previously congress passed the sundry civil bill which appropriated $272,000 for the employment service, to be expended for obligations already incurred. The $400,000 in the sundry civil bill was determined upon as a compromise, the senate at first having agreed to an appropriation of $950,000.

The number of offices in New York state will now be cut to less than ten or twelve, according to a report received from George R. Kirchway, state director of the federal service. Mr. Kirchway states that the appropriation of $400,000 is far inadequate for a nation-wide service and that New York's share of that amount would only keep two offices operating in New York city. With the present fund which is being supplied by J. P. Morgan & Co. and other private organizations, Mr. Kirchway expects to keep 12 offices open.

Placements of soldiers and civilian workers by the employment service during the week ended June 21 totaled 80,574, with reports from three states missing. This is the largest weekly placement total since the latter part of March when the service was forced to reduce its placement machinery through lack of funds. During the week 115,375 persons applied to the service for employment.

Wilson Denies Any Favoritism

Organization of both employers and employes into groups is upheld and advocated by the department of labor, states Secretary of Labor William B. Wilson, and yet it is vigorously denied that preference is shown to union bodies over the unorganized division of workers. Secretary Wilson declares the department of labor was created in the interest of the wage earners of the entire United States, this being expressly declared by the organic act.

Secretary Wilson explained that the case which was cited in congress, accusing the labor department and the United States employment service of giving preference to union labor, came about through a call by a shipyard in the state of Washington for union men. The employment service notified the workers on hand but confided to them that it would be of no use to apply unless they held union cards, as the yard employed no nonunion workmen. Through some channels this information got to members of congress and the labor department and its employment body were charged with favoritism.

English Plants Improve Working Conditions

(*Staff Correspondence*)

Birmingham, Eng., June 13.—The Sheffield Forge & Rolling Mills, Ltd., Sheffield, Eng., recently has purchased a house near to its works' gates for the use of employes. The place has been converted into a canteen and club where literature, billiards and various games are provided. For outdoor sports the firm has placed at the men's service a large piece of ground at Owlerton. Clubs have been formed for cricket, football, swimming, cycling, rambling and so on. The scheme is said to have made a good start.

The great firm of Alfred Hickman, Ltd., Sheffield, recently has evolved a profit sharing scheme which has been laid before the employes by Edward Hickman, chairman of the company. Mr. Hickman informed the men that, with a view to increasing the interest of the employes in the concern, it proposed to offer for subscription preferred shares in the company. So far there had been no preferred shares and it is proposed to make them pay 6½ per cent. A decided advantage over the ordinary shareholder is to be given inasmuch as the dividend is to be cumulative, no exception being made even in the case of the occurrence of a great railway or coal strike. It is proposed to issue 50,000 shares at £1 each. No one person would be allowed to hold more than £1000 worth of shares.

Common Labor Higher

New York, July 8.—Wages of common labor all over the east again are showing a rising tendency. Shortly after the signing of the armistice, there was a general expectation of a lowering in wages of laborers, and in some districts, particularly in New Jersey, some decreases actually were made. In the Perth Amboy district, laborers and road workers who had been getting 40 and 42 cents an hour, in many cases were reduced to as low as 30 cents. The trend now again is the other way, and a number of companies have reinstituted old rates. Large firebrick interests at Woodbridge, N. J., which reduced their rates of labor from 42 cents to 30 and 35 cents per hour now have gone back to 42 cents. There is a general shortage of labor in the east, and the only way in which manufacturers who are busy can get men, is to compete for them against other employers. The result is increasing wages. In the Newark, N. J. district the foundries are having difficulty in getting laborers. They now are paying $4 per day of nine hours for ordinary labor. One cause of the shortage in the northern New Jersey district is the fact that great numbers of foreign laborers have returned to their native countries since the beginning of the armistice. The opinion prevails that these men will not find conditions abroad desirable, and that many of them will return.

Obituaries

HIRAM SWANK, pioneer manufacturer of fire clay refractories and founder of the firm of Hiram Swank's Sons, Johnstown, Pa., 63 years ago, died at his home in that city, recently, after a four months' illness, aged 85. He decided to learn the pottery trade at the works owned by his brothers at Davidsville, Pa. In 1854 the plant was removed to Johnstown. At that time Hiram bought out his brother Josiah and shortly after commenced the manufacture of fire clay products. The plant was again removed to larger quarters where it has since been in operation under the firm name of Hiram Swank's Sons, with works also at Irvona, Pa., and at Clymer, Pa. These plants now have an annual capacity of 50,000,000 refractories. In 1870, Mr. Swank was requested by D. J. Morrell and George Fritz, officials of the Cambria Iron Co., to endeavor to make a nozzle to replace those then imported at high cost. He succeeded in making several by hand which produced better results than the imported ones. After a few weeks he developed dies and began to produce by machinery. In a short time he was furnishing nozzles, the first manufactured in the United States, to practically every steel manufacturer.

William P. Roberts, president of the Quakertown Stove Works, Quakertown, Pa., died June 27.

John Farrell, one of the founders and president of the Bailey-Farrell Mfg. Co., Pittsburgh, and long identified with the industrial and business life of that city, died at his home there June 28. He was born in Ireland in 1835, coming to this country and locating in Pittsburgh in 1844.

Frederick Dunham Somers, died recently at Montclair, N. J., after a long illness. For 30 years he was connected with Adriance, Platt & Co., manufacturers of harvesting machinery, and at the time of his retirement was secretary of the corporation.

Frederick Robinson Pettit, vice president and general manager of the J. I. Case Plow Co., Racine, Wis., and one of the best known of the younger generation of industrial executives in the Middle West, died of pneumonia recently after a week's illness. He was 35 years of age and a son-in-law of H. M. Wallis, president of the Case company.

Frank C. LaMarche, general superintendent of the Chicago Ship Building Co., South Chicago, died recently, at his home in Chicago, after an illness of six months. He was first taken ill during the pressure of war work. He was 57 years old, and had been in the shipbuilding business since he was 12 years of age. He had been with the Chicago Ship Building Co. for 10 years. He started his work in Cleveland.

Frank S. Bissell, organizer and for several years head of Bissell & Co., Pittsburgh, stove manufacturers, and latterly connected with the Stove & Range Co. of Pittsburgh, with which the firm of Bissell & Co. some years ago was consolidated, died at his home in Pittsburgh, July 4. He was 87 years old and was born and resided all his life in Pittsburgh. He was a graduate of Williams college.

William Thum, president of the U. S. Metals Refining Co., East Chicago, Ind., died at his home in Hammond, Ind., June 28, of pneumonia. He was connected with the Balbach metals refinery at Newark, N. J., for 20 years and built the plant at East Chicago. During the war he perfected a process for safety in handling explosives which was adopted by the government.

William H. Colcord, for the past 16 years outside sales manager for the Clinton Iron & Steel Co., Pittsburgh, Pa., died recently at the home of his brother, Capt. J. E. Colcord, in Chicago. Mr. Colcord, who was 71 years of age, was a native of St. Louis, and before joining the Clinton Iron & Steel Co. had been connected with one of the western harvester companies, and also had been in business with his father.

William Holmes Black, secretary of the Standard Scale & Supply Co., Pittsburgh, died at his home in Pittsburgh, June 30, at the age of 57. He was a graduate of Harvard University, class of 1887, and was a member of the Harvard Clubs of New York and Boston. Mr. Black has been associated with the Standard Scale & Supply Co. for more than 20 years and took a prominent part in building up the sales organization of the company.

Charles K. Totten, of Edgar M. Moore & Co., Pittsburgh, and previously connected with the Fort Pitt Foundry of which his father was one of the founders, died at the Presbyterian hospital, Pittsburgh, June 24. He was born in Pittsburgh 70 years ago and was the son of William J. Totten, who was prominently identified with the early iron business of Pittsburgh, being a member of the firm of Knap & Totten, afterwards known as the Fort Pitt Foundry.

George A. Farrall, vice president and general manager of the Massey-Harris Harvester Co., Batavia, N. Y., died at Batavia hospital, that city, recently, as a result of injuries received in an automobile accident that day. Mr. Farrall was born at Hamil, Monroe county, N. Y., on Nov. 4, 1856. In June, 1884, Mr. Farrall became identified with the Johnston Harvester Co., in its experimental department and soon advanced to the position of foreman of the wood shop and later to that of foreman of the binder-erecting department. He later became superintendent of the shop and subsequently was elected to the board of directors. In 1899, he was elected vice president and following the death of E. W. Atwater, was made president. He served as president from September, 1910, to February, 1911, when the company was taken over by the Massey-Harris Co., Ltd., Toronto, Ont. In the reorganization, Mr. Farrall was elected vice president and general manager.

Edwin J. Sherwin, who died recently at his home in Providence, R. I., was a member of the American Foundrymen's association since its inception. During his active career in iron and steel manufacturing lines he was foundry superintendent for the following firms: Platt Iron Works, Dayton, O.; Fairbanks, Morse & Co., Beloit, Wis.; Vulcan Iron Works, San Francisco; Fall River Machine Co., Cuyahoga Falls, O.; Wellman-Seaver-Morgan Co., Akron, O.; General Fire Extinguisher Co., Providence, R. I.; General Electric Co., Pittsfield, Mass.; Blakes & Knowles, Cambridge, Mass.; Fore River Shipbuilding Co., Quincy, Mass.; and more recently the Textile Finishing Machinery Co., Providence, R. I. He was also owner of the Enterprise Foundry Co., Muskegon, Mich. Mr. Sherwin is survived by two sons, one of whom is connected with Brown & Sharpe Co., Providence, R. I., and the other is superintendent of the Wheland Machine Co., Chattanooga, Tenn.

Question Naval Commandeering

Justice of Clause in Appropriation Act Permitting Department to Requisition Steel and Other Supplies Six Months After Peace Under Fire—Could Stock Materials For Years Ahead at Own Price

WASHINGTON, July 8.—Manufactures and producers furnishing the navy its supplies are beginning to question seriously the justice of a clause in the naval appropriation act of July 1, 1918, which gives Secretary Daniels authority to exercise the President's commandeering powers until six months after the proclamation of peace with Germany. The navy's requisition upon the Carnegie Steel Co. for 14,000 tons of plates and shapes, its subsequent summary ordering of 5,000,000 tons of coal for the Atlantic fleet and its more recent commandeering of vast quantities of fuel oil and gasoline for the Pacific fleet, all because of the department's dissatisfaction with the prices bid, are examples of wartime powers being used virtually in time of peace.

Under the provisions of the appropriation act, which may extend the power for a period of at least six months, depending upon the length of time it takes the senate to ratify the peace treaty, the secretary of the navy has authority to stock his bureaus with materials sufficient to last a number of years at prices he can make himself. In each of the three cases where he has used his authority the bidders insist his action was unnecessary and, in the case of the Carnegie company, the price subsequently fixed was that originally bid by the company and other manufacturers. The clause in the law which allows this application of authority is as follows:

"That all authority granted to the President herein or by him delegated shall cease six months after a final treaty of peace shall be proclaimed between this government and the German empire."

If the ratification by the senate of the treaty of peace takes as long as the present attitude of the senators indicates, months likely will pass before the President can issue the proclamation of peace, after which another six months must ensue before this power of the act is terminated. Skeptics point out that Secretary Daniels could do much in the meanwhile to embarrass industries and load upon manufacturers and others orders for materials and supplies at prices which may not be at all commensurate with market conditions at the time such requisitions may be made. It is this situation which is causing some concern among navy contractors and it has been intimated some steps may be taken to have congress rescind the secretary's power.

Test Case Being Fought

While these after-the-war acts of Secretary Daniels are engaging the immediate attention of producers, the navy is preparing to wage a fight against the Atlantic Refining Co. which has a suit for $2,200,000 pending against the department in the United States district court in Philadelphia. A motion has already been entered by the navy to have jurisdiction established in the court of claims instead of the district court.

The amount sought by the Atlantic company is the difference between prices paid by the navy as tentative prices during the war for gasoline, fuel oil and similar commodities and the current market prices in Philadelphia during the war. The navy has tendered the refining company approximately $600,000 more than it has already received in the form of partial payments, the amount offered being, according to navy officials, in accord with a scale of prices fixed by the navy after a study by the federal trade commission of the cost of production. The price-fixing committee of the war industries board was to have reviewed the prices, but the signing of the armistice came before the work could be undertaken and the committee asked to be relieved.

The navy's position in the pending suit is that the price it fixed was a fair one considering the cost of production in the oil industry as a whole and allowed a fair margin of profit. The navy claims the Atlantic company practically controlled the market price in Philadelphia and that war conditions kept the price from being normal. Navy officials are said to be worried over the fact that if the refining company wins the suit the government will be confronted with the question of whether the companies which have accepted payments on the basis of the navy's prices would be entitled to additional payments in order to equalize the returns of the Atlantic company. An official of the navy said the amount involved should such a contingency arise "would be enormous."

War Council to Resume Peace Basis

WASHINGTON, July 8.—The council of national defense, according to a statement of Director Grosvenor B. Clarkson, is maturing plans to return to its peacetime functions under the congressional act creating it, and will probably submit these plans to congress on or before the regular session in December. These plans are made possible by reason of the fact that under the sundry civil act there has been reappropriated to it its unexpended balance for the fiscal year 1918.

The act charges the council, which was created as a peacetime body nearly a year before the United States entered the war, with the co-ordination of industries and resources for the national security and welfare and with "the creation of relations that will render possible in time of need the immediate concentration and utilization of resources of the nation." With the closing of the work of the capital issues committee, the committee on public information, the food administration, the fuel administration, the war industries board, which the council organized and which remained under its organization for a year, and the war trade board, the council remains the single interdepartmental unit which can centralize the study of the records established by these war agencies. It is claimed

that the council will become in effect the residuary legatee of these war agencies to the extent that their records are not allocated to the executive departments.

The council is composed of the secretaries of war, navy, interior, agriculture, commerce and labor. With it throughout the war acted an advisory commission of seven members, composed of Daniel Willard, Samuel Gompers, Bernard M. Baruch, Howard E. Coffin, Julius Rosenwald, Dr. Franklin Martin and Dr. Hollis Godfrey. In the first year of the war the council and advisory commission, acting jointly, made the major part of the industrial mobilization. The council created such agencies as the general munitions board, the war industries board, the commercial economy board, the aircraft production board, and the committee on coal production.

Utilizing the best experts in all fields as dollar-a-year men, the council was able to make the preliminary mobilization of industry up to July 1, 1917, at a cost of but $127,000. Its entire expenses up to May 1, 1919, have been but $1,500,000, this having included the operations of the war industries board for nearly a year and the expenditure of $225,000 for erecting the council of national defense building. The committee on supplies of the council alone arranged for the purchase of $800,000,000 worth of goods for the quartermaster department of the army, at an expenditure of but $20,000 by the council, this committee handling 45,000 contracts in 200 days. It is estimated by the council that more than $3,000,000,000 was saved to the government by the prices which its experts on raw materials, minerals and metals made in the procurement of iron and steel products.

In the early part of the war the council, aside from its activity in industrial and scientific fields, initiated the system of state councils of defense; and at the war's close its field machinery consisted of nearly 185,000 units composed of the state, county, community, and municipal councils of defense. It has been the council's policy since the armistice to decentralize this machinery and to recommend that the great system of community councils particularly be established as a permanent nonpartisan basis under local rather than federal direction, in the belief that there can be best preserved to the nation the lessons of co-operation and unity born of war.

Among the subordinate bodies of the council dealing with matters separate from the co-ordination of industries as such for the national defense are the reconstruction research division; the highways transport committee, with its 46 state committees and approximately 400 units throughout the country; the emergency employment committee for soldiers and sailors, of which Col. Arthur Woods is chairman; the committee on labor headed by Samuel Gompers; national research council, which is the council's department of science and research, and the naval consulting board, which acts as the council's bureau of inventions. Contacts are also being maintained where necessary with the state, county, community, and municipal councils of defense or with the agencies which have succeeded these bodies since the armistice. The same holds true with the state divisions of the woman's committee of the council.

Apparently timed to offset the statement of Director Clarkson regarding plans of the council of national defense to return to a peacetime basis, Representative William J. Graham, chairman of the select committee on war expenditures, made public yesterday a statement condemning the advisory commission of the council. Incidentally, the statement by Mr. Graham, which charges the council and the commission with a violation of the law, makes reference to the foresight shown by Judge E. H. Gary, chairman of the United States Steel Corp., who, as chairman of the committee on steel and steel production of the advisory commission, called the attention of the commission to violation of the law in permitting committees of the council to direct purchases from their own companies. It will be recalled that steel manufacturers and others who were associated with the advisory commission resigned their memberships because of the attitude taken that they were serving the council in violation of the law. The attorney general said such violations were "matters of national policy" rather than of legal consequence." The letter of Judge Gary calling attention to the alleged violation was written on June 2, 1917. The result of the resignations of manufacturers and others from the advisory commission was to organize the war industries board, and committees for it named by the chamber of commerce of the United States. This was done, Mr. Graham said, so that the letter of the law might be complied with, "but by which scheme no part of the method of buying was changed in the slightest degree, so far as I can see."

Mr. Graham's statement speaks of the advisory commission as "the secret government of the United States" and at some length alleges that it exercised autocratic power both before and during the war. It is charged that the President "not only ignored, but reversed, the intent of congress, making the advisory commission the real executives, clothing them with unprecedented and almost illimitable powers. These powers they used in such manner as at times seriously to embarrass the cabinet, as is shown by the minutes, the members of the cabinet being compelled to protest the abuse."

It is claimed that the commission allowed interested parties to fix the prices of war supplies and "that it put the people of the country to incalculable unnecessary expense, and carried things with a high hand." In one instance, it is claimed one man, Maj. Gen. George W. Goethals, repudiated and practically defied the commission according to current gossip in Washington.

Basing Cases May Raise Questions

WASHINGTON, July 7.—E. H. Gary, chairman of the United States Steel corporation, and John S. Miller, the Chicago counsel retained by Western Association of Rolled Steel Consumers, are expected to come to Washington this week to meet William B. Colver, chairman, and other members of the federal trade commission for a preliminary discussion of an investigation which will weigh the equity of the trade custom of freight equalization on Pittsburgh base in iron and steel prices as applied especially to the Chicago district. Upon suggestion of Judge Gary and Attorney Miller officials of the commission have selected Wednesday for the meeting although it may not be determined until that time whether the session will be executive or public. If the conference results in a determination by the commission to go into the full subject it is expected the subsequent hearings will be public.

In this connection the reported filing

with the federal trade commission by the Superior Commercial club of Duluth, of charges against the United States Steel Corp. to restrain continued application of the trade custom of freight equalization, may open up a question more far-reaching than that which arose when Comptroller Warwick of the treasury ruled that the government would not pay freight differentials, or, as he expressed it, "for service not rendered." While the comptroller later reversed himself under plea that the contracts called to his attention had been entered into in good faith by manufacturers under the war industries board's acceptance of the trade practice, the question now arising may not be settled so easily.

The federal trade commission, before which it is reported the complaint has been lodged, will not admit the case has been called to its attention. This is in accord with the commission's policy to keep secret its activities until at such times, as in this particular case, it has investigated the complaint and finds the charges worth prosecuting. While the case may have been filed, as reported from Duluth, so far there is nothing here to indicate what the actual complaint may be or what course the commission may take in the matter. It does, however, recall the comptroller's decisions, although it is doubtful if the commission's findings in any event would be retroactive.

The Duluth complaint is another chapter of that community's efforts to have Duluth made a steel basing point the same as Pittsburgh. According to the report, the charge is that by following the trade custom of adding the freight from Pittsburgh to Duluth to the base price, the Steel corporation, through its subsidiary, the Minnesota Steel Co., has driven away industries which otherwise would have located in this territory.

Comptroller Warwick last year first began to disapprove the trade custom as applied to government contracts because, due to the haste and excitement in meeting the war's demands, contracts frequently were made in which it was stated the price would be determined later. Then when the time came for computing the price the freight differentials on the respective shipments were figured out and added to the base price, showing to the comptroller that the government was paying "for services not rendered." He went so far in his decision as to suggest that the trade practice might be the result of a combination of manufacturers in violation of law.

Later certified copies of the war industries board's interpretation of "f.o.b. Pittsburgh," which was identical with the trade custom of freight equalization, were presented to him, along with typical contracts covering the point. After a series of decisions which tended more and more to reverse his original position, he finally agreed disbursing officers could pay the differential, but specifically stated that any responsibility would rest with the price-fixing committee of the war industries board. The decisions against the custom were not based on the comptroller's personal views, but were in accord with the statutes of the United States. His reversal of his opinions was due largely to enactment by congress of a law legalizing informal war contracts under which moral if not legal obligations of the government could be settled.

The comptroller's ruling specifically applied to government contracts so drawn as to indicate the computing of rates and prices. Other contracts in which freight differentials were included in a flat price, as the price for steel delivered at an arsenal or a navy yard, were passed without question. The price, in this case, was the bid price in accord with the practice of the steel and other industries, while in the informal contracts the prices were more or less as he outlined and opposed. His decisions may not have weight in any consideration the federal trade commission may give the Duluth complaint, and the commission's action may not guide him. Interest, nevertheless, will be shown in the case not only by the steel industry generally and other industries where the custom is practiced but in government departments as well.

Structural Steel Tenders at Full Prices

Washington, July 8.—Bids on approximately 3600 tons of plates, shapes and bars for a structural shop to be built at the Puget sound navy yard, opened last Tuesday by the bureau of supplies and accounts, navy department, all were made on the basis of the prevailing market base prices of 2.65c, 2.45c and 2.35c, respectively, f.o.b. Pittsburgh. Additions are provided for extras and for inspection. The bidders included the Bethlehem Steel Co., the Youngstown Sheet & Tube Co., the Otis Steel Co., the Midvale Steel & Ordnance Co., the Inland Steel Co., the Jones & Laughlin Steel Co., the Donner Steel Co., the Carnegie Steel Co., and the Brier Hill Steel Co.

Bids also were opened last Tuesday for 102,600 pounds of tool steel for the naval ordnance plant at Charleston, W. Va., the rounds under one class ranging from ¾-inch to 3 inches, and the squares from $\frac{5}{16}$-inch to 1¼ x 2½ inches. In the other class the rounds range from ¼-inch to 1¾ inches, the squares from ¼-inch to 1¼ inches, and the flats from ½-inch x 1 inch to 1 x 2 inches. L. C. Blancke Co., maker for L. C. Blancke, Heller Bros., or the Atlas Crucible Steel Co., was the lowest bidder on the first class, involving 73,100 pounds at 1.11 cents on all except 11 of the 32 items, the figures on the 11 items ranging from 1.13 cents to 1.17 cents. The Hammond Steel Co. was the lowest bidder on the second class, involving 29,500 pounds, at prices ranging from 14 cents to 17 cents.

Charter Spar Mines

Washington, July 8.—Edward B. McLean and the American Security & Trust Co. have been authorized as trustees of the estate of John R. McLean to proceed with the proposed incorporation of a company to operate the Roseclaire fluorspar mines in Harding county, Illinois. The authorization was given last week by Justice Bailey in the district supreme court here. A company is to be formed in Delaware under the title of the Roseclaire Lead & Fluorspar Mining Co., with a capital stock of $1,800,000. The McLean estate recently compromised two suits with reference to the title to these mines that have been pending since the death of John R. McLean. Mrs. George Dewey, sister of Mr. McLean, and Frederick H. Bugher of New York, his nephew, were each given a one-fourth interest in the property and a suit of Hopkins Louden, of Nashville, Tenn., claiming a half interest in the mines, was settled by the payment of $325,000 by the McLean interest.

Features Honor Roll

The Independence day issue of a semimonthly house organ published by the Cutler-Hammer Mfg. Co., Milwaukee, Wis., was devoted largely to the employes of the company who had been in government service during the war. An honor roll as complete as it could be made included nearly 300 names. A feature of the issue was the great number of halftones of the men in uniform arranged in conjunction with the honor roll.

The Wadsworth Mfg. Co., Detroit, has adopted the so-called "Ford profit-sharing plan," including a 47-hour week and $6-a-day minimum wage.

Britain Fettered by Labor Rule

Highly-Unionized Character of Country and Fundamental Policy of Labor to Restrict Output, Seriously Handicap Employers—Out-of-Work Allowances Cost Government Millions Weekly—Iron and Steel Wages Fixed by Sliding Scale

BY A. O. BACKERT

"IN England it is not a problem of capital and labor, but of labor and labor," is how an official of one of the largest and most powerful unions in Great Britain summed up the labor situation of the United Kingdom. He meant to infer that jurisdictional disputes are the cause of more misunderstandings and strikes than the refusal of the employers to meet the demands of their employes. Practically every worker in Great Britain is a member of some union and it is claimed that those who were not affiliated with labor organizations prior to the war, practically were forced into unions of their craft during the period of hostilities. The Lloyd George regime is characterized as a union labor administration and many of the troubles and labor problems that now are besetting the employers of the United Kingdom are attributed to the policy of Great Britain's premier.

Iron and Steel Workers Organized

The iron and steel crafts, unlike those of the United States, are among the most highly organized in the Kingdom. The union is known as the Iron and Steel Trades Federation, with a membership of about 100,000, and its officials point with pride to the fact that not in 30 years has there been a serious strike in the iron and steel industry. Another powerful union is known as the Blast Furnace Men's Federation, with a membership of about 30,000, which includes practically all of the men employed at the blast furnaces and in the iron mines of England, Scotland and Wales. This organization by including iron ore miners in its membership, overlaps the Iron and Steel Miners' union, thereby affording many opportunities for jurisdictional disputes between the unions such as referred to by the labor leader as quoted. To eliminate collateral labor disputes at iron and steel plants brought about by strikes of bricklayers, machinists, engineers, cranemen, etc., an effort is being made to bring them into the Iron and Steel Trades Federation thereby creating one organization which alone will be responsible to the employers for all of the employes in the iron and steel works of the United Kingdom. In other words, every employe of the iron and steel plants would be affiliated with the Iron and Steel Trades Federation whether or not he is engaged directly in the manufacture of iron and steel.

Europe's Labor Problem

THIS is the second article written by Mr. Backert covering important aspects of commercial conditions abroad as developed during a several months' study by the author in Great Britain and France. In the previous article Mr. Backert discussed the transformation which has taken place in the nationality of the European iron and steel industry and the probable effect in the way of competition upon this country. In this article the labor situation, particularly in Great Britain is described and thoroughly analyzed. The war has saddled upon British industry some onerous burdens discriminatory to labor which in addition to the already severe restrictions upon production imposed by the unions for some years past have confronted the British employer with some very hard problems. Mr. Backert, who is vice president of The Penton Publishing Co. and editor of THE FOUNDRY, *points out these questions and discusses their practical, commercial importance.*

The wages of iron and steel workers are based upon the selling price of the material, quarterly examination of the books of the iron and steel manufacturers being made by expert accountants and adjustments in wages are determined accordingly. English steel manufacturers and labor leaders are unanimous in declaring this system to be preferable to that pursued in the United States where wages are controlled solely by the producers. In England the wages of iron and steel workers are on a par with those prevailing in the United States, due to the high selling prices of iron and steel throughout the period of the war. Today the quotations on most of these products in England are from $10 to $20 per ton higher than those prevailing in the United States and by basing the wages on the selling prices of material it is evident that wages are still on a war-time basis. By this sliding scale arrangement it was not necessary to grant wage advances, bonuses, premiums, etc., during the war period, since the sliding scale method of wage adjustment automatically granted the workmen the necessary increases to compensate for the mounting cost of living. On the other hand, as the selling prices of iron and steel products decline, the proportionate reductions in wages will be effected automatically.

Wages of Steel Smelters Increased

Indicative of the advances in steel smelters' wages during the period of the war is the percentage above the wage basis now paid as compared with the June settlement in 1914. At that time the total percentage above the basis was 11¼, whereas for the quarterly period ending April this year, the percentage above the basis for basic furnace operators was 28½, and 57½ per cent for acid furnace workmen. The settlement of the latter for June, 1914, in contrast was 13¾ per cent below the basis. Indicative of the advances above the basis now paid steel works operators in the United Kingdom, the following figures are quoted:

	Per cent above basis
Northeastern steel works operatives	159
Midland wages board	122½
North of England iron and steel mill men	107½
South Wales and Monmouthshire and blast furnace men and iron and steel workers	106
Scotland puddlers and iron mill men	115
Consent mill men and engine men	82½
Jarroll mill men and engine men	82½
Newburn heaters	70
Newburn engine men	70
Cleveland blast furnace men	107¾
North of England smelters	83¾

The sliding scale for blast furnace workers is based on a net quarterly selling price of No. 3 Cleveland pig

iron and the standard or basis upon which wages are computed is a selling price of 34 shillings for this grade of iron. For each 2.40 penny increase or decrease in the selling price of Cleveland No. 3 pig iron, there is a proportionate increase or decrease of 0.25 per cent above or below the standard. When this iron was selling at 29 shillings, which was incorporated in the agreement entered into on Dec. 16, 1897, the deduction from the standard or basis was 6.25 per cent. The schedule drawn up at that time carried the selling price of No. 3 pig iron to 60 shillings only, which provides for an increase of 35 per cent above the standard. When this agreement was made in 1897, it is apparent that the war prices were not considered possible and for this reason the maximum was placed at 60 shillings, equivalent to $13.80 per ton at our present rate of exchange. It will be noted also that the basis upon which to compute wages for No. 3 pig iron was placed at 34 shillings per ton or slightly less than $8 per ton. Today Cleveland pig iron is selling at 160 shillings or $36.80 per ton, which carries with it an advance above the standard of 107¾ per cent.

Eight-hour Day Inaugurated

By an agreement entered into on Feb. 9, this year, it was decided to inaugurate the 8-hour day by March 30 in all of the iron and steel plants of the United Kingdom, and where it was not feasible to make the change on that date the workmen were to be paid time and one-quarter, or tonnage and one-quarter, until June 29, when time and a half, or tonnage and a half, will apply on the four hours in excess of the eight hours prescribed. The arrangement of working shifts at blast furnaces and iron and steel works generally is from 6 a. m. to 2 p. m.; 2 p. m. to 10 p. m. and 10 p. m. to 6 a. m. At blast furnace plants the first shift or long turn on Sundays, is from 6 a. m. to 10 p. m. and the second shift from 10 p. m. to 6 a. m. In the agreement entered into between the blast furnace operators and their employes is a clause relative to the restriction of output which provides that "all men shall at all times do their best to obtain the maximum output of pig iron from the furnaces. There should be no holding back under the plea that enough work has been done. If from any cause whatever a furnace has been allowed to get down, it shall be the endeavor of every man to get the same filled up as soon as possible."

Since the inauguration of the 8-hour day the output of the blast furnaces, steel works and rolling mills of Great Britain has declined considerably due to the fact that a sufficient number of skilled men is not available to make up the 50 per cent increase in number of employes required to make the change from the 12-hour to the 8-hour day. Many of the works are operating shorthanded and the output necessarily has declined.

Ingenious Plan for Wage Division

For the purpose of providing for the wages of the increased number of employes essential for effecting the change from the 12 to the 8-hour basis, an exceedingly ingenious plan was adopted whereby a part of the wages of the third man is borne by the two employes working the other 16 hours of the day and the remainder is shared by the company. The sliding scale adopted starts with base earnings of 50 shillings per week and since this is considered to be the lowest possible wage that should be earned by an employe in these plants even on an 8-hour basis, the new rate of pay for eight hours' work remains at 50 shillings and no contribution toward the payment of the wage of the man for the third shift is made by the men on the other two shifts, the firm carrying the entire burden of this increased cost of labor. However, for every increase of one shilling in the base earnings per week, namely 50 shillings, the employes contribute 3 pence toward the wages of the man for the third shift and the company the remainder. For example, a man having base earnings of 85 shillings per week on the 12-hour basis, now receives 70 shillings and 10 pence for an 8-hour day and he contributes 14 shillings and 2 pence toward the wages of the man for the third shift. The firm on the other hand contributes 42 shillings and 6 pence. Since two of the employes contribute toward the wages of the third employe working the third shift of the 24-hour day, their combined share is 28 shillings and 4 pence; this amount, added to the firm's contribution, makes the total for the man on the third shift, namely, 70 shillings and 10 pence per week.

As the earnings of the men increase, the contribution of the firm decreases, as shown in the accompanying table, until the base earnings are 120 shillings per week, when the new rate for the 8-hour day is reduced to 80 shillings; the two employes formerly on the 12-hour shift each contributes 40 shillings of his weekly wage, making 80 shillings for the third man while the firm makes no contribution toward the wages of the third man engaged.

As previously pointed out, all the employes in the iron and steel trade are paid on a tonnage basis and therefore they did not participate in the war bonus which now constitutes a part of all of the wages of former employes of munition plants and allied factories, and amounts to 28 shillings 6 pence per week, equal to about $6.55. In addition to this, day workers are being paid a further advance of 12½ per cent which originally was intended only for overseers in machine shops who were not participating in war bonuses, but this additional advance of 12½ per cent had to be paid to the other employes of the shop to prevent strikes and walkouts within a few days after it was paid to the overseers. Aside from the iron and steel trades, the entire wage payment system in practically all of the metal working plants of the United Kingdom is so involved by war bonuses and advances authorized by the government that the workers themselves are unable to figure out their rate of pay.

The 8-hour day has not yet been legalized by parliament although such a measure providing for a maximum 48-hour week is being considered by some members of the house of Commons. However, the draft of a bill of this kind involves many difficulties because of the exceptions that must be incorporated. For example, one exception would have to provide for the long turns in steel plants on Sunday and in addition some trades are working only 44 hours and exceptions would have to be noted also in these cases. This measure is being opposed alike by manufacturers and some labor leaders, although it is probable that a law of some kind legalizing the 8-hour day ultimately will be passed.

Out-of-Work Donations Adopted

For the purpose of aiding workers temporarily thrown out of employment by the readjustment from a war to a peace basis, the government adopted an out-of-work donation plan which provides 29 shillings per week for three weeks unemployment to men and 25 shillings per week for women. In addition, 6 shillings is allowed for the first dependent child under five years and 3 shillings for each additional dependent child. Fourteen shillings 6 pence is donated for boys 15 to 18 years of age, and 12 shillings 6 pence for girls of the same age. Manufacturers consider this one of the most iniquitous measures yet adopted by the government to coddle the working class

since it places a premium on idleness and has so proved to be the case. It is impossible to operate the blast furnaces, steel plants and rolling mills at capacity since the adoption of the 8-hour shift and in London many small industries dependent upon women are unable to get help, yet in spite of this situation, according to figures issued by the government, a total of 1,093,400 men and women were receiving out-of-work donations from the government on May 2 as compared with 1,060,245 on March 28, an increase of 33,155. This total includes 402,105 men and 1316 women demobilized from the army and navy and 689,933 civilians. Of the latter 452,132 were women and girls. These donations are costing the British government more than $5,000,000 per week and while tremendous pressure has been brought to bear on the administration to eliminate this pauperizing feature, nevertheless, it is evident that the wrath of these idle workpeople is feared if their source of charity were suddenly withdrawn. Promises have been made from time to time by the administration to curtail and gradually eliminate this out-of-work donation feature, but nothing has yet been done.

In the iron industry employment is satisfactory, 269 blast furnaces having been in operation on May 1, as compared with 267 in March and 297 a year ago. More furnaces would be in operation today, but for the fact that many are out for relining and much needed repairs because of continuous high-pressure operations throughout the war. Steel works and rolling mills report an actual scarcity of skilled help and in the engineering trades machinists are in good demand although a slight surplus of common labor is reported. In the tin plate trade the state of employment in April showed an increase of 38 per cent, compared with the same month last year. The changes in rates of wages, including war bonuses reported to the labor department of the board of trade which came into operation in April resulted in an increase of nearly $3,000,000 in the weekly wages of approximately 1,300,000 workpeople. The principal change was that affecting the coal miners who obtained an increase under the award of the coal industry commission amounting to 2 shillings per shift or day, for those 16 years of age and 1 shilling per shift or day, for those under 16 years of age.

The wages of common labor throughout the United Kingdom for eight hours' work varies from $2.25 to $2.50 per day. In the foundry trade molders on day work are receiving about $5 per day, but on piece work their wages are in excess of this amount. While there is apparently no restriction of output in the casting plants and machine shops, nevertheless the production per man per day is less than production in the United States at the present time. With the constantly mounting cost of labor throughout Great Britain, employers are being forced to turn toward the more general installation of labor-saving equipment. The same condition also applies to France where the 8-hour day in practically all industrial lines became operative on

Workmen Help to Pay for 8-Hour Day

AN ingenious scheme was evolved in the United Kingdom when effecting the change from the 12-hour to 8-hour day whereby the employes shared with the employer the wages paid to the third man necessitated by this change and which involved an increase in the number of employes at iron and steel plants of 50 per cent. The accompanying table was devised, which on a sliding scale basis, provides for constantly increasing contributions to the wages of the third man by the other two men on the shift and the constantly declining contribution of the firm from base earnings of 50 shillings per week to 120 shillings per week. Figuring the shilling at an exchange value of 23.4 cents, then the earnings of an employe receiving 50 shillings are only $11.70 per week. This is the minimum amount from which the two employes on the 8-hour shifts make no contribution to the wages of the third man while the firm contributes the entire amount. On the other hand, when the earnings reach 120 shillings per week, or $28.08, then each one of the employes on the 8-hour shift contributes 40 shillings from his base earnings to the wages of the third man on the job and the firm makes no contribution as indicated by the table. The new rate of pay for the men on the 8-hour shift then is 80 shillings per week, equivalent to $18.72, carrying with it a reduction of $9.36 per week for each one of the employes. With base earnings in excess of 120 shillings per week the entire wage of the third man on the 8-hour shift is paid by the other two employes on the job.

Base earnings shillings	New rate shillings, pence	Men's contribution shillings, pence	Firm's contribution shillings, pence	Base earnings shillings	New rate shillings, pence	Men's contribution shillings, pence	Firm's contribution shillings, pence
50/–	50/–	...	50/–	86/–	71/3	14/9	41/9
51/–	50/9	3d.	50/3	87/–	71/8	15/4	41/–
52/–	51/6	6d.	50/6	88/–	72/1	15/11	40/3
53/–	52/3	9d.	50/9	89/–	72/6	16/6	39/6
54/–	53/–	1/–	51/–	90/–	72/10	17/2	38/6
55/–	53/8	1/4	51/–	91/–	73/3	17/9	37/9
56/–	54/5	1/7	51/3	92/–	73/7	18/5	36/9
57/–	55/1	1/11	51/3	93/–	73/11	19/1	35/9
58/–	55/9	2/3	51/3	94/–	74/4	19/8	35/–
59/–	56/6	2/6	51/6	95/–	74/8	20/4	34/–
60/–	57/2	2/10	51/6	96/–	75/–	21/–	33/–
61/–	57/10	3/2	51/6	97/–	75/3	21/9	31/9
62/–	58/6	3/6	51/6	98/–	75/7	22/5	30/9
63/–	59/1	3/11	51/3	99/–	75/11	23/1	29/9
64/–	59/9	4/3	51/3	100/–	76/2	23/10	28/6
65/–	60/4	4/8	51/–	101/–	76/6	24/6	27/6
66/–	61/–	5/–	51/–	102/–	76/9	25/3	26/3
67/–	61/7	5/5	50/9	103/–	77/–	26/–	25/–
68/–	62/2	5/10	50/6	104/–	77/3	26/9	23/9
69/–	62/9	6/3	50/3	105/–	77/6	27/6	22/6
70/–	63/4	6/8	50/–	106/–	77/9	28/3	21/3
71/–	63/11	7/1	49/9	107/–	77/11	29/1	20/9
72/–	64/6	7/6	49/6	108/–	78/2	29/10	18/6
73/–	65/1	7/11	49/3	109/–	78/5	30/7	17/3
74/–	65/7	8/5	48/9	110/–	78/7	31/5	15/9
75/–	66/1	8/11	48/3	111/–	78/9	32/3	14/3
76/–	66/7	9/5	47/9	112/–	78/11	33/1	12/9
77/–	67/2	9/10	47/6	113/–	79/1	33/11	11/3
78/–	68/7	10/5	46/9	114/–	79/3	34/9	9/9
79/–	68/1	10/11	46/3	115/–	79/5	35/7	8/3
80/–	68/7	11/5	45/9	116/–	79/7	36/5	6/9
81/–	69/1	11/11	45/3	117/–	79/9	37/3	5/3
82/–	69/6	12/6	44/6	118/–	79/10	38/2	3/6
83/–	70/–	13/–	44/–	119/–	79/11	39/1	1/9
84/–	70/5	13/7	43/3	120/–	80/–	40/–	Nil
85/–	70/10	14/2	42/6				

June 1. In machine shops and foundries the employes now receive the same rate of wages for eight hours' work as was paid previously for 10 hours, and in the iron and steel industry the 8-hour shift has replaced the 12-hour turn insofar as it has been possible to effect this change. The workmen engaged in the iron, steel and foundry industries of France are not highly organized, although in recent months active steps have been taken to effect stronger unions in the metal working lines. In the iron and steel industries the workers are paid on the tonnage basis, similar to that prevailing in England. In the foundries where molding machines are installed, the piecework system largely prevails and in many plants poorly equipped, the workers are demanding labor-saving machinery so that they can increase their earnings by enlarged production. The average wage for unskilled labor in France is from $2 to $2.25 per day and the scale for molders is approximately $5 per day.

When the armistice was signed Great Britain had approximately 5,000,000 men in her army and navy, of which 101,969 officers and 2,688,486 men had been demobilized on May 29. Demobilization continues at a high rate, but in France the return of soldiers and sailors to civil life is not being hastened. To a large extent, however, this is due to the necessity for keeping a large number of men in the service in the occupied territories of Germany and also in Alsace-Lorraine.

Restriction of Output to be Restored

British manufacturers are alarmed over the bill now pending before parliament for the restoration of prewar practices among labor unions, involving the restriction of output provisions which greatly curtailed production per man in England prior to the war and threatened Britain's very industrial existence. For the purpose of speeding-up the production of munitions of war, an agreement was entered into with the government on March 17, 1915, which provided that all labor union regulations that would impede output were to be waived for the period of the war. However, this was done with the understanding that these practices were to be restored after the cessation of hostilities. The labor unions are now clamoring for the restoration of restriction of output provisions, and the measure is being opposed by all the English manufacturers and their associations. The latter contend that if Great Britain is to maintain her position in competition with other industrial nations of the world, it is absolutely necessary for them to operate their manufacturing plants without reference to limit of production.

Coal Production Declines

Probably in no industry of Great Britain is the restriction of output more apparent and effecting more serious results than in that of coal mining. In the report recently submitted by the coal controller to the coal commission, it is stated that the output per man at the mines has been reduced from 19.8 tons per week per man in 1913, to 16.8 tons for the first 20 weeks of this year. At this rate of production it is estimated that the coal output will be reduced to 242,000,000 tons this year as compared with 287,000 tons six years ago. The average number of men employed today in the coal mines of the United Kingdom is 1,111,000, which is the same as for the prewar year. The percentage of absence due to sickness, injuries, etc., increased from an average of 10.7 per cent to 13 per cent during the first 20 weeks of this year. On July 16 the 6-hour day will become operative in these coal mines, when a still further decline in production is expected and it is estimated that the total tonnage mined per annum after July 16 will fall to 214,000,000 tons. For the six weeks ending March 5 the output per man was 4.5 tons and for the four weeks ending May 24 the output had declined to 4.3 tons.

The declining coal production of the United Kingdom and the average output per man per four weeks are given in the following table:

	Average number of persons employed	Output, tons	Average output per man per four weeks, tons
1913.....	1,111,000	287,412,000	19.8
1914.....	1,117,000	265,643,000	18.3
1915.....	952,000	253,179,000	20.4
1916.....	956,000	255,846,000	20.4
1917.....	993,000	248,041,000	19.2
1918.....	961,000	226,557,000	18.1
Estd. output based on 1st 20 weeks of 1919.....	1,111,000	242,000,000	16.8
Estd. annual output aft. July 16		214,000,000	....

The percentage of absenteeism also has grown steadily, as follows:

	Percentage of absenteeism
1913.....	10.7
1914.....	10.3
1915.....	9.9
1916.....	9.7
1917.....	8.9
1918.....	11.0
1919*.....	13.0

*First 20 weeks.

Coal exports also have fallen off from more than 77,000,000 tons in 1913 to 28,000,000 tons last year. The United Kingdom requires about 200,000,000 tons of coal for domestic purposes, so that little will be available for export this year. Domestic consumption and export figures are given below:

	Output, tons	Inland consumption and bunkers, tons	Export, tons
1913.....	287,412,000	210,105,000	77,307,000
1914.....	265,643,000	203,185,000	62,458,000
1915.....	253,179,000	206,857,000	46,322,000
1916.....	255,846,000	213,917,000	41,929,000
1917.....	248,041,000	209,607,000	38,434,000
1918.....	226,557,000	195,937,000	34,420,000
1919 (estd).	230,606,000	198,806,000	28,000,000
July 16, 1919 to July 16, 1920, (estd.)...	217,588,000	194,588,000	23,000,000

On the basis of an average output of 4.3 tons per man per week, the average production at the British mines is 220.6 tons per man per year, compared with 680 tons in the United States and 240 tons in Japan.

Government Control of Coal Mines

The nationalization or government control of the coal mines of Great Britain has been the subject of an investigation by a commission for several months. Mine owners, operators, miners and labor leaders have been examined and a tremendous amount of the testimony has been submitted for and against government operation.

Manufacturers throughout Great Britain and France are convinced that wages permanently will continue on a high level and probably further advances will have to be made because of the constantly increasing cost of food as compared with the prewar levels. In November, 1918, the increase in the cost of food in the United Kingdom as compared with July, 1916, was 133 per cent and in May this had declined only 26 per cent to an increase of 107 per cent. Since 1910 the increase in the cost of food in France is 290 per cent and since the armistice there has been no noticeable decline. The high cost of living in the large industrial centers of France is the basic reason for the feeling of unrest in the ranks of labor. By those who have studied the food situation in Great Britain and France it is the prevailing belief that prices of meats, fats, etc., will continue to advance until the central powers have been supplied. The lifting of the blockade will result in the purchase of a tremendous tonnage of meats and fats from the United States, Australia and Argentine and this will further curtail the available supply for the allied countries which heretofore have divided these available foods.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

THOMAS P. DAVIES has assumed his duties as chief engineer of the Duquesne works of the Carnegie Steel Co., having been named to succeed William Ahlen, who resigned and has returned to his former home in Sweden. Albert Cummins is the successor of Carl Cedarlund as electrical engineer of the Duquesne works. Mr. Cedarlund, who had been with the Carnegie company for the past 15 years, resigned recently to become electrical engineer of the General Electric Co., of Sweden, and recently left this country to assume his new duties.

H. A. Brassert recently was elected chairman of the board of directors of Freyn, Brassert & Co., 645 People's Gas building, Chicago, engineers.

A. B. Seelig, vice president and general manager of the Bristol Brass Corp., Bristol, Conn., has tendered his resignation and it has been accepted. His successor has not been named.

John M. Watson Jr., who has been associated with the Cannonsburg Sheet & Tinplate Co., Cannonsburg, Pa., for the past year, has been appointed assistant general manager of that company.

D. B. Coey has been appointed representative in the Chicago district for the Mansfield Sheet & Tin Plate Co., Mansfield, O. His headquarters will be at 29 South La Salle street, Chicago.

George L. Norris, metallurgical engineer of the American Vanadium Co., Pittsburgh, for many years, has been transferred to the sales department of that company with headquarters at the New York office, 120 Broadway.

G. S. Alston, who for the past three years has been auditor of the Sharon, Pa., plant of the American Steel Foundries, has been transferred to the Alliance, O., plant of that company. A. C. James succeeds Mr. Alston at Sharon.

L. Edward Lortz was elected first vice president of the Fulton Iron Works Co., St. Louis, manufacturer of engines, sugar mills, crushers, etc., at a recent meeting of the board of directors. The following also were elected vice presidents: Henry Hurter, chief engineer; A. J. Thompson, manager for Cuba; F. Edward O'Neil, manager for New York; and O. W. Black, works manager.

A. W. Ransome, formerly of the New York office of the Blaw-Knox Co., Pittsburgh, has been made New England manager in the recently-established office in the Little building, Boylston and Tremont streets, Boston. H. J. Desson has been transferred from Pittsburgh to Detroit to become Michigan district manager, with headquarters in the Owen building.



JOHN A. CAPP
Recently elected president of the American Society for Testing Materials

C. H. Emerick has assumed his duties as general sales agent of the Adrian Furnace Co., Du Bois, Pa., succeeding W. W. Kerr, who resigned a short time ago to accept a position with Reed, Fears & Miller, Inc., pig iron and coke brokers, in the Philadelphia office of the latter company. Mr. Emerick has been connected with the Adrian Furnace Co. for the past 12 years.

Bert H. McCreath, late assistant manager of the *Toronto Star,* has resigned that position to become vice president of the recently-organized Lake Huron Steel Corp., Goderich, Ont. Mr. McCreath was prominent in connection with patriotic movements during the war, being president of the 50,000 club which raised over a million dollars for the patriotic fund.

George W. Way, formerly connected with the Carnegie Steel Co. in the Detroit district, has been appointed Michigan representative for the Erie Crucible Steel Co., Erie, Pa., with offices at 858 Penobscot building, Detroit. Prior to accepting his position in the sales department of the Carnegie Steel Co., Mr. Way was superintendent of the forge and machine shop of the Union Switch & Signal Co., with whom he was connected 14 years.

Sir Charles E. Eillis, G. B. E., K. C. B., who resigned his position as managing director of John Brown & Co., Ltd., Sheffield, England, to take an important position with the ministry of munitions, has been honorably discharged from service and has resumed his former duties with the company. Sir William H. Ellis and Sir Thomas Bell, who have been directors for several years, have been appointed managing directors.

E. C. Douglas, president of the W. & B. Douglas Pump Co., Middletown, Conn., has resigned to accept the superintendency of the foundry department of the Chalmers Motor Co., Detroit. Mr. Douglas has been with the Middletown company since 1897 and has during this time worked in all departments, becoming successively, superintendent, director, vice president and president. He assumed his new duties July 7.

Thomas E. Farrell, who has been in exclusive charge of the metals department of the Ohio Corrugating Co., Warren, O., has resigned to become president and treasurer of the Sheet Metal Mfg. Co., Youngstown, O., a recently-organized corporation which will manufacture and wholesale sheet metals of all description. The company contemplates erecting a large warehouse at Youngstown, which will be completed Aug. 1.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

F. S. EGGLESTON Jr. has been appointed manager of the New England branch of the Keller Pneumatic Tool Co., Chicago, with offices located at 259 Franklin street, Boston. For 14 years, Mr. Eggleston has represented the Chicago Pneumatic Tool Co., in New England, the last four years as manager of that company's branch office in Boston. Mr. Eggleston will also represent the Cincinnati Electric Tool Co., the Gardner Governor Co., the Electro-Magnetic Tool Co., and the Detroit Hoist & Machine Co.

William F. Pollock, manager of the Victor Saw Works, Springfield, Mass., has sailed for England on a business mission.

S. W. Hilt has been appointed by the Camden Forge Co., Camden, N. J., to take charge of its recently-opened district sales office in New York.

H. E. Henry, formerly sales manager for the Fulflo Pump Co., Blanchester, O., has become sales manager for the Michigan Machine Co., Detroit.

W. B. Harris, owner of the Millbury Machine Co. and the Millbury Dobby Chain Co., both of Millbury, Mass., has been elected a director of the Millbury National bank. He recently was elected a trustee of the Millbury Savings bank.

R. S. Hammond, formerly with the American Steel Foundries, has been appointed Pittsburgh representative for the Whiting Foundry Equipment Co., Harvey, Ill. Mr. Hammond, who succeeds F. J. Page, will open an office at 1224 Fulton building.

Samuel F. Joor has become sales engineer for the American Steam Conveyor Corp., Chicago. He has been practicing as consulting engineer in that city, but at one time was western manager and sales engineer of the Jeffrey Mfg. Co., and prior to that was affiliated with the Link Belt Co.

C. A. La Fevre, formerly vice president in charge of the engineering department of the Charles C. Kawin Co., has resigned that position and has become connected with the Troy Laundry Machinery Co., Chicago, as assistant to the president in charge of manufacturing.

Christian Girl, president of the Standard Parts Co., Cleveland, who assembled the standard motor truck for the army while a member of the motor production department of the Motor Transport corporation, has been awarded the distinguished service medal by the war department.

Arthur B. Thorne, who for the past three years has been with the Pratt & Whitney Co., Hartford, Conn., as the representative of Vickers, Ltd., England, in connection with British, Servian and Russian arsenal contracts, returned recently to the home office, after a three-month trip to England.

L. C. Sprague has been made manager of the railroad department of the Chicago Pneumatic Tool Co., Chicago, and C. W. Cross, has been made his assistant. Mr. Sprague has been district manager at New York and Mr. Cross has been acting as special railroad representative at Chicago.

Arthur M. Watkins, New York City, has opened offices at 25 Church street, where he will deal in machine tools. Mr. Watkins formerly served as secretary and treasurer of the Inter-Continental Machine Corp., for three years, and prior to that time was with Manning, Maxwell & Moore for 17 years.

Forrest E. Alexander of the sales department of the Graton & Knight Mfg. Co., Worcester, Mass., has resigned to accept a similar position with the Warren Belting Co. in the same city. Mr. Alexander, who was with the company seven years, served as a lieutenant in the ordnance department during the war.

G. G. Going, superintendent of the Noiseless Typewriter Co., Middletown, Conn., has been made works engineer, and Arthur Jenner, formerly foreman of the tool department, will succeed him in the former position. Mr. Jenner of late has been connected with the Marlin-Rockwell Corp. and the American Can Co., Bridgeport, Conn.

William L. Neilson, Leicester, Eng., European representative of the Norton Co., Worcester, Mass.; Maurice Schmeder, Paris, France, representative, and Otto J. Lof, representative in Germany of the same company, attended the annual sales conference of the Norton Co. and the Norton Grinding Co. at the home office recently.

Franklin G. Smith, president and general manager of the Cleveland Osborn Mfg. Co., Cleveland, manufacturer of molding machines, etc., has been elected president of the Cleveland Y. M. C. A. Mr. Smith previously had served as vice president. Fred W. Ramsey, president of the Cleveland Metal Products Co., Cleveland, was elected vice president of the Y. M. C. A., to succeed Mr. Smith.

Bert Reeves, formerly foreman for the American Machine & Mfg. Co., Atlanta, Ga., and for the past two years connected with the National Steel Casting Co., Montpelier, Ind., has been made superintendent of the steel department of the Lucy Mfg. Corp. of Texas, Houston, Tex., manufacturer of oil-field machinery and equipment. Mr. Reeves' foundry experience covers the past 20 years.

Albert H. Drury, captain in the 161st field artillery, has joined the sales force of the Stanley Works, New Britain, Conn., and has been assigned to the Ohio territory. William A. Schroedel has been assigned as a salesman to New York state territory. The annual conference of the sales force of the Stanley Works will be held the week of July 14 at the home office.

C. C. Hanch has been appointed general manager of all Maxwell-Chalmers interests, according to a recent announcement of the Maxwell Motor Co., recently. Mr. Hanch resigns from the Studebaker Corp. as treasurer, having been affiliated with it since 1915. Prior to that time he was for 19 years treasurer of the Nordyke-Marmon Co., Indianapolis. During the war, he served as chief of the automobile products section of the war industries board. Since the signing of the armistice Mr. Hanch has been in Europe, investigating export conditions for the national automobile chamber of commerce.

Sees Steel Become Giant Industry

Willis L. King, Vice President of Jones & Laughlin Steel Co., Celebrates Fiftieth Anniversary of Notable Business Career

YES, IT is 50 years since I came here as a clerk in the commercial office of this company but the time has sped by so quickly that it does not seem half that long," said Willis L. King, vice president of the Jones & Laughlin Steel Co., when reminded that the fiftieth anniversary of his connection with the company, in whose success he has been a potent factor, was near at hand.

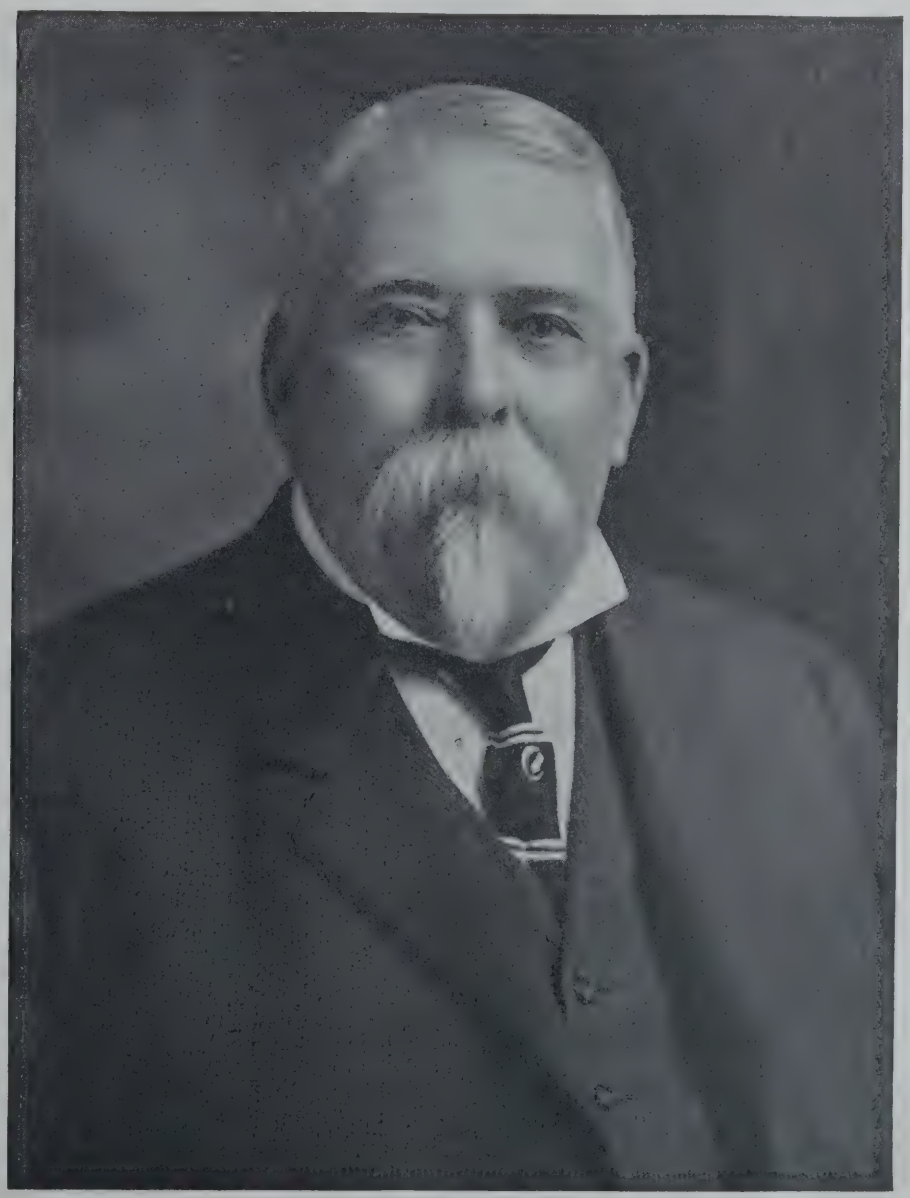
"There were six of us in the office then, and the boss, B. F. Jones Sr., worked just as hard as the rest of us. We all got to work at 7 o'clock in the morning, and quitting time was marked by the completion of our duties and not by the clock. We had 50 puddling furnaces in those days, yielding about two tons of iron each, or a total of 100 tons a day. At present the daily production of the company is about 7000 tons of steel. This is a gain of 7000 per cent, which I think is quite a creditable measure of expansion.

"B. F. Jones Sr. the founder and directing head of the company up until his death in 1903, was a remarkable man, and laid the foundation of the business so wisely and securely that those associated with him found it easy to build a superstructure as fast as the increasing necessities of the country required. In fact, what measure of success I have had I ascribe largely to my good fortune in having had him as a preceptor.

"In this connection, I would like to say a word regarding the old time ironmasters in Pittsburgh. Although quite young, it was my privilege to know such men as William M. Lyon, James I. Bennett, John Graff, A. M. Byers, Henry W. Oliver, and many others. They were a fine type of business men, active, industrious, and capable; but those were the days of unreasonable competition and the results were so disastrous that only two companies bearing the names of Byers and Oliver are in existence today. Certainly in their case unreasonable competition was the death of trade."

Approaching his sixty-ninth year, Mr. King today is mentally and physically vigorous as many younger men, and this notwithstanding that early this year he underwent a severe major operation. His recovery from this operation is a source of great pleasure and gratification to his many friends in the steel industry. "To know him is to love him" might truly have been written of Willis L. King, for, despite the prominent place he has reached in the iron and steel industry, and success that might have turned the head of others, he is quite as approachable and affable as he must have been on July 12, 1869, the day he joined the company as an order clerk. Strangers do not remain strangers after meeting Mr. King for friendliness gleams out of a pair of clear blue eyes. He is a big man in stature and in vision; modest and of simple tastes, and what is better still, enjoys the esteem and affection of every one in the organization, as well as the respect and confidence of his competitors and purchasers of steel products.

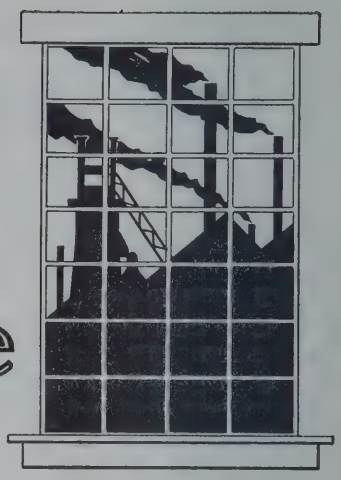
He is vice president of the American Iron and Steel institute and a charter member.



WILLIS L. KING

Little Stories of Business Life





Brightening Business Days

THAT which lies closest to the heart of a man sometimes finds strange and incongruous expression. In the center of Chicago's warehouse district there is a machine tool dealer's building with these unusual features: A dove cote on the roof, a ventilated vault for the storage of trophies of the hunt on the main floor, and a Persian rug lays under a plate glass cover on the general manager's desk.

The district is noisy, dusty and drab but step inside the building and there is the evidence of man's natural desires to get far, far away. The building is that of the Marshall & Husehart Machinery Co., 18 South Jefferson street. A. H. Marshall, the former president who recently retired, has visited more out-of-the-way places of the globe and hunted in further parts, it is said, than the late Colonel Roosevelt. The vault contains a great part of his collection of hides, relics and accoutrement of the hunter and woodsman, according to business acquaintances.

His love of birds led him to have a dove cote placed on the roof of the building, and it is well tenanted, although in that district a dove cote might seem as much out of place as if it were in the desert. The rug was the gift to Mr. Marshall of John Foote, of the Foote Bros. Gear Works, Chicago. Of fine silken texture, it lay on the floor but a few feet from ponderous machines, until it showed evidence of wear, when it was placed beneath a sheet of plate glass on the desk now used by John Roy Porter, the general manager. It is so long that part of it extends over the edge of the desk nearly to the floor. The part beneath the glass is clean and has a glorious glint, while the other part is black with soot, representing the lights and shadows of Chicago.



Speedy Work

THAT not all the speed in getting material ready for export was done in the days of war stress is proved by a recent achievement by a southern producer of pig iron. The Republic Iron & Steel Co. recently was given an order for iron to be shipped to Italy and five days were stipulated in which to deliver it to the ship at New Orleans. Everybody got behind the order and in three days a solid trainload of 37 cars of pig iron was on its way to the lower end of the Mississippi river. The distance was covered in record time and the iron was loaded and on its way without an hour's delay to the ship.



Pig Iron and Shoes

WHERE does all the pig iron go?" asked one man when told that nearly 100,000 tons went to New England consumers during June. And the answer if it could be given in detail would surprise nearly everyone. One large order went to a manufacturer of leather-making machinery which is an industry little thought of by the average man for he seldom comes in direct contact with the machines or with the product of the mainches in the tanneries and leather finishing plants.

When a man buys a new pair of shoes he little thinks that he is helping the sale of pig iron in New England, yet very likely he is doing that for machinery for the leather manufacturer is behind the great shoe industry of Massachusetts and pig iron is behind this machinery.



Zinc Now Zinc

PROSPECTS are that soon the sheet mills may be unable to buy spelter for their galvanizing departments. Now the reader need not be alarmed, this is not a bullish market prediction. The fact is, the members of the zinc producing industry, at their annual meeting in St. Louis recently, decided to do away with the name spelter and call zinc zinc. Heretofore zinc has been concealed under a variety of disguises. The ores have been called jack, blende, mineral, etc.; the smelted product, spelter; the terms galvanizing, sherardizing, etc., have submerged the process of protective coating with zinc. But the institute is going to make a drive to replace these terms with the word zinc and endeavor to get for that material its proper recognition in the family of metals.



X-Reas to Dine

FOR several years past, it has been the custom of Charles S. Rea, vice president of the Ralston Steel Car Co., Columbus, O., on the occasion of his birthday to give a dinner to his friends and business associates, but henceforth he is going to be the guest of his friends instead of the host at such observances. At the last birthday dinner that Mr. Rea tendered at Pittsburgh, an organization which

takes the name of the X-Rea association, was formed and the dinner to Mr. Rea will be given by this association which includes many iron and steel men as well as several professional men in its membership.

To Honor Bessemer

A bust of Sir Henry Bessemer, inventor of the bessemer process, representing the gift of prominent American iron and steel men is to be placed in the McKinley Memorial building at Niles, O., and plans to that end are being made by the National McKinley Birthplace Memorial association of which J. A. Butler Jr. of Youngstown, O., is president. The court of honor in this building contains a marble statue of the martyred president, and surrounding it are various members of his cabinet. In the museum room and corridors of the second floor, are bronze busts of a number of prominent men who were contemporaries of McKinley and who were engaged in the iron and steel industry.

Plans now being formed call for placing the bust of Sir Henry Bessemer among this group which includes Andrew Carnegie, David Tod, C. H. Andrews, Col. John Gordon Battelle, Henry W. Oliver, Judge Elbert H. Gary and others. It is felt that this would be a fitting recognition of the man whose discovery did so much toward promoting the progress of the American iron and steel industry.

Hardware Men to Meet

The twenty-fifth annual convention of the National Hardware Association of the United States will be held at the Marlborough-Blenheim, Atlantic City, N. J., Oct. 14, 15, 16 and 17. The first day of the meeting will be devoted to sessions of the automobile accessories branch. The regular sessions of the convention will open Oct. 15. The metal branch will hold its session Oct. 16.

Entertains Forge Men

A get-together of the leading forge men of the country under the auspices of the Sizer Forge Co., of Buffalo, July 1 was attended by close to 300 representative men of the industry. Following an informal discussion of business in the morning, the guests inspected the new Sizer plant and met in the evening for one of the biggest celebrations any industrial plant in Buffalo has ever given. The entire second floor of the Hotel Iroquois had been leased for the occasion. No one but forge men and their friends were permitted on that floor during that time.

The trip of inspection in the morning completely covered the new plant of the company. The new plant covers six or seven acres and employs 600 men. Its capacity for output is ten times that of the old plant.

"The celebration," said Sales Manager V. B. Schupp, "was in the nature of a get-together for all the big forge men and larger machinery manufacturers of the country. It was designed to create a better feeling among forge men, and to introduce them to our new plant. It was entirely successful."

Among the well-known steel men present were C. W. Heppenstall, president of the Heppenstall Forge & Knife Co., Pittsburgh; R. A. Harmon, Cleveland City Forge; R. E. Christie, Bethlehem Steel Co.; H. N. Taylor, Philadelphia, and others.

To Enlarge Wire Plant

Plans have been completed for the erection of steel capacity at the wire plant of the Black Steel & Wire Co., Kansas City, Mo. The plant will be equipped with two furnaces for the making of steel ingots, together with electrically-driven rolling mills and will have a daily capacity of 100 tons. W. E. Moore & Co., Pittsburgh, are engineers in charge of the project. In connection with the enlarging of the company's plant, it is stated the firm will extend its line of production. Heretofore only steel wire and wire rope was manufactured, but now machinery will be added for the manufacture of woven wire and barbed wire fence. The manufacture of nails also will be taken up. Harry W. Black is president of the company.

Manganese Ore Shipments Set Record

The domestic production of manganese ore in 1918, according to statistics compiled by D. F. Hewett, of the United States geological survey, department of the interior, was greater than in any preceding year. The total shipments of high-grade ore for the year amounted to 304,366 tons, or two and a half times that for 1917, which was the highest previously recorded. The shipments of low-grade material amounted to 898,332 tons containing from 10 to 35 per cent of manganese and 242,585 tons containing from 5 to 10 per cent of manganese. A summary of shipments by states follows:

State	Ore containing manganese as follows: 35 per cent or more gross tons	10 to 35 per cent gross tons	5 to 10 per cent gross tons
Alabama	709	443	.....
Arizona	17,654	6,758	6,082
Arkansas	7,731	9,173	.....
California	24,067	68	.....
Colorado	3,276	*94,603	*
Georgia	6,679	9,430	1,266
Michigan	.....	22,673	.....
Minnesota	.....	630,827	229,869
Montana	199,932	.....	.....
Nevada	19,872	80,354	.....
New Jersey	64	‡146,796	.....
New Mexico	3,126	32,907	400
North Carolina	315	30	.....
Oregon	198	.....	.....
South Carolina	100	850	.....
South Dakota	31	.....	.....
Tennessee	4,162	2,307	51
Texas	380	.....	.....
Utah	5,100	.....	.....
Virginia	10,928	7,859	4,917
Wisconsin	.....	.....	†215,839
Wyoming	42	50	.....
	304,366	898,332	242,585

*Colorado fluxing ore not reported.

†Ore from Wisconsin containing approximately 5 per cent manganese not included in totals.

‡Residuum not included in totals.

Reports received from makers of ferromanganese and spiegeleisen indicate that 35 per cent of the metallic manganese used in the alloys made and imported during 1918 was derived from ores mined in the United States. As the proportion of domestic manganese in such alloys was only 4 per cent in 1913 and 16 per cent in 1916 the domestic miners of manganese made a notable contribution to the nation's independence in mineral supplies in war time. Had the war continued for another year domestic ores would probably have supplied half the manganese in the manganese alloys needed by the country.

Plow Plant Merged

Effective July 1, the Grand Detour Plow Co., Dixon, Ill., has been merged with the J. I. Case Threshing Machine Co., Racine, Wis. The product of the former company has been handled by the Case company for many years, and by the transaction it acquires the Grand Detour company's entire property and assets. No change in the personnel of the Grand Detour company will take place. Col. W. B. Brinton, who has been its head for many years, will remain as president and his son, Maj. Bradford Brinton, and Alfred W. Leland will continue in the manufacturing end of the business at Dixon, in the same capacity as heretofore. Plans for expansion and improvement of the Dixon works are being worked out and it is announced that they will go forward as rapidly as possible.

Readjustment is Passed Easily

First Half of 1919 Closes With None of Drastic Developments in Sight Which Were Foreshadowed Six Months Ago—Important Records Show Fundamental Strength of Country's Business—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

LAST week witnessed the closing of the first half of what history will describe as a most momentous year. To business these initial six months have been replete with surprises. At the beginning of January it will be recalled that the country was in the first throes of reconstruction and the succeeding months were expected to be critical in the extreme. With the passing of the stimulus of war's demand and with the government out of the market as the predominant buyer, it was anticipated that prices would suffer drastic declines, while business failure records mounted, unemployment increased and industry made its way shakily over the thin ice of the readjustment period to the solid ground of peace prosperity.

So certain was the department of commerce that the readjustment of business and prices was going to be severe that it formed the ill-fated industrial board with the sole object of stabilizing prices by artificial means. The immediate cause of its failure was the attitude of the railroad administration, but it would have expired in any event without great delay. It was a remedy designed for an epidemic that never appeared. There have been no price declines. On the contrary prices are moving upward. Business has not been disrupted by the lack of war demand. Instead one by one industries have swung into line, stimulated by peace requirements. The steel industry lagged a little but it is coming back now encouragingly.

Indeed the solemn prophets of six months ago who saw disaster spread before them may well rub their eyes in wonder as they awake to the realization of how easily, and with what lack of disturbance, the country was able to bridge the readjustment period. They may dwell upon the unbelievable wheat crop of 1,250,000,000 bushels in prospect; the great demand for materials to rebuild Europe which doubtless will appear; the huge labor surplus that is threatening already to turn into a labor shortage; and the complete acceptance of the peace terms by Germany with the resumption of international commercial relations, war-bound for five years, in immediate prospect.

The great turn in the tide came with the awakening of the public to the fact that it was futile to expect price declines, in view of the tremendous shortage of goods the world over, creating a "scarcity demand," the huge inflation in currency and circulating credit, occasioned by government financing and the prevailing high wages.

The record of the last six months, suggesting the fundamental strength of conditions and indicating the existing abundance of confidence in the country's future, is vividly pictured by important statistics that came to light last week coincident with the close of the first half of 1919. Possibly most significant of all are the figures showing the number of new charters filed and the aggregate of authorized capital. This record, compiled by the *Journal of Commerce*, New York, shows 708 charters capitalized for over $100,000 were filed involving the enormous total of $1,255,427,500.

The remarkableness of this record is emphasized when it is seen that it is the best since April, 1901, when incorporations amounted to $1,619,650,000, of which $1,100,000,000 was furnished by the United States Steel Corp. The total since January has reached the tremendous sum of $3,706,361,000 or 153 per cent more than for the corresponding period one year ago. The compilation represents not only many new enterprises but a number of large consolidations of separate companies, while other concerns have taken out charters and increased their capitalization to meet steadily expanding business. This exhibit plainly reflects the confidence of organizers in active industrial conditions and forecasts increased competitive conditions in practically every line of industry. This should create a situation tending to satisfy the great need for goods and making eventually for price declines.

Hand in hand with the record of new charters is that of stock and bond listing upon the New York stock exchange, which for the first six months of 1919 aggregated $797,071,920, a large increase over the $133,151,835 for the same period in 1918. The record for listings, however, is held by the first half year of 1917, with the total of $1,965,443,850.

Scarcely less remarkable and significant than the picture of new company organizations is that of business failures for the half year, which in point of number of failures, is the best for the period in 40 years. Of commercial defaults there were only 3463, involving $68,710,886 of liabilities, the numerical showing being the best since 1881 and the indebtedness the best since 1906. Compared with 1915, the showing represents reductions of 72.8 per cent in number and 63.6 per cent in liabilities. Compared with the 5889 defaults for $87,793,562 of the first half of 1918, decreases of 41.2 per cent and 21.7 per cent respectively appear. This record, so radically opposed to what the professional economists predicted, is the direct result of the maintenance of prices. Had prices fallen as many expected, the failure exhibit would have been different, because slumping prices always are accompanied by an increasing volume of bankruptcies.

To Wall street must be given the credit for first foreseeing improvement in industrial conditions. Its six months' record, therefore, is peculiarly interesting. June 30 brought to a close what in many respects was the most amazing period ever witnessed on the stock exchange. Starting on April 7 sales exceeded a million shares for 45 days, excluding Saturdays. Twice the volume of trading went above 2,000,000,000 shares. This was the high record for the exchange. In 1901 there were 44 million-share days in succession. Stock prices soared and soared and enthusiasm ran wild, until it came counter of the edict of the federal reserve board that speculation must not be permitted to lap up the country's credit resources, in preference to the more vital needs of government, export and legitimate domestic

financing. The money stringency prevalent for the last week or so thus far seems to have effectually curbed the unreasonable flight of stocks.

Announces Road Equipment Financing Plan

Thomas DeWitt Cuyler, chairman of the association of railway executives, has announced that the plan for reimbursing the railroad administration for approximately $400,000,000 worth of railroad equipment it purchased and partially allocated to the railroads, calls for the creation of a National Equipment Corp. whose capital stock of $148,000,000 will be all subscribed for by the United States railroad administration and which will issue $280,000,000 of equipment plus certificates for public sale.

The $148,000,000 is to be invested in 4½ per cent cumulative stock while the $280,000,000 in equipment trust certificates, will bear a rate of interest to be determined later, and will mature in equal installments over the 15-year period during which the $148,000,000 worth of 4½ per cent cumulative stock is to be liquidated. The railroad equipment purchased by the railroad administration, involving approximately $400,000,000 will be acquired by the federal corporation and sold conditionally by it to the railroads to whom it had been allocated, at the purchase price, which will be paid in 15 equal installments together with 6 per cent a year, payable semiannually, on the unpaid balance. At the end of the 15-year period the equipment will become the property of the railroads, and the federal corporation will be liquidated.

The $280,000,000 equipment trust certificate will be a direct obligation of the National Equipment Corp., a federal corporation, and it is proposed that they be secured by pledge under a trust agreement with a trustee of the sales agreements of the railroad, and by a reserve fund to be created out of the proceeds of the sale of the federal company's capital stock. The plan has been submitted to the railroad administration for approval. Some action by congress may be necessary.

Welsh Tin Mills Merge

With a view of establishing a central selling agency for the entire Welsh tinplate trade to control sales, distribute orders effectively, and maintain more uniform prices a number of leading producers have begun the creation of a great amalgamation, according to information from that country. As a nucleus, the biggest steel and tinplate deal for many years in that country has been completed, Messrs. Lewis & Sons' Sheet & Tinplate Works, Gorseinon; Bryngwyn Steel Works, Gorseinon; and Cambria Tinplate Works, Pontadulas, passing over to Grovesend Steel & Tinplate Co. at a cost of just under £500,000. This combination comprises 20 per cent of the tin mills, and it is understood that other plants will later be acquired. Reports of Welsh companies show that they are maintaining a good share of their war prosperity. The Tredegar Iron & Coal Co., Ltd., pay 15 per cent in dividend and bonus, and Messrs. William Cooke & Co., Ltd., distribute 10 per cent, both being free from income taxes.

Shows Reduced Profits

Hamilton, Ont.—Lower earnings were made by the Steel Co., of Canada, in 1918 but the annual statement shows the company to be in a strong financial position. Gross profits for the year were $5,363,120 as compared with $6,040,318 for 1917. After deductions for fire insurance reserve, pension fund, etc., there remains available for dividends on $11,500,000 of common stock outstanding the sum of $1,815,017. "After the signing of the armistice," says President Robert Hobson, "there was a decided slump in the value of raw material and manufactured products, and at the date of writing this report the United States government is further regulating prices. It is needless to say that the effects of any drop in prices in the United States are immediately reflected in Canada. We are, therefore, compelled to carefully scrutinize every sale, and we have placed what we consider a sound and proper value on each item of our inventory." The company's assets now stand at over $45,652,831. Current assets amount to $15,928,368 and current liabilities to $3,706,154.

Motor Companies Merge

A new corporation shortly is to be organized under the laws of Delaware with an authorized capital of 130,000 shares of no par value to take over all issues and outstanding stock of the Bethlehem Motors Corp., of Allentown, Pa., and the North American Motors Co., Pottstown, Pa. The name of the new company has not been made public. Officers are to be: President, A. T. Murray; vice presidents, D. G. Dery, S. C. Potter and H. B. Hall; treasurer, Martin E. Kern; secretary, M. H. Beary. Among the directors are George R. Bidwell, Allan A. Ryan, D. A. Holmes, Charles S. Martin and Robert E. J. Corcoran.

Lower Price

In Naphthalin is Probable—Sulphate of Ammonia Also Weak

New York, July 7.—Naphthalin is tending downward and it is likely a reduction will go into effect within the near future. With the drug trade displaying little interest, demand is now relatively dull, with the result that the market is weak. At the present time, prices are around 8½ and 9½ cents per pound in flakes, and 10½ to 11½ cents in balls, applying to either spot or contract business.

Weakness also continues in sulphate of ammonia, and there is so little domestic trading that the market is nominal. In the foreign market, there is also little activity, although prices are better defined. Export orders are being booked at approximately $4.60 for material in double bags at the seaboard. This price is well under the level quoted recently. Despite this situation, however, sentiment remains fairly strong, as it is believed the fertilizer industry will again be in the market shortly.

Motor benzol remains active, with spot material practically out of the question. The heavy movement of this material is a big factor for strength in pure benzol, toluol and solvent naphtha, although there is a good demand for virtually all of these latter products also. Pure benzol, on either spot or contract basis, is holding at 24 to 28 cents per gallon and 90 per cent benzol is being quoted at 23½ to 27 cents. Toluol is quoted at 25 to 35 cents, and solvent naphtha at 23 to 27 cents. The market on phenol continues tight, there being little spot material available. The spot and contract market nominally is 10½ cents.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	0.09½ to .10½
Naphthalin, flake	0.08½ to .09½
Naphthalin, balls	.10½ to .11½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Contract

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	$0.09½ to .10½
Naphthalin, flake	0.08½ to .09½
Naphthalin, balls	.10½ to .11½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	nominal

Machine Tool Outlook is Good

Present Orders Are Small But Dealers Believe They Indicate a Growing Volume of Business—Sale of Army Tools in Belgium is Reported—Shapes Prices Are Advanced—Large Lists Lacking

ALTHOUGH the sale of machine tools throughout the various districts during the past week was not extensive, and no large lists have appeared, dealers are marking time and gathering in a considerable number of small orders. The large manufacturers are not buying in any quantity, only purchasing such machinery as they must have to fill their immediate requirements. Despite this dealers state that when manufacturers are convinced there will be no lowering of prices, larger lists will be issued, and the market will be filled with orders.

Of especial interest to the trade is the report from Brussels, stating that La Construction Metallieue de Belgique has purchased from the United States army all the machine tools it used in France. The tools will be sold at a 55-per cent increase over those for 1914. The buyers will have credit for three years at a moderate rate of interest, but these terms will apply only to goods used to replace equipment taken by the Germans.

In the eastern market, a fair amount of used equipment continued to be offered, and it is understood that the outfit of one large plant has been sold. During the war this plant was engaged in the manufacture of time-fuses for 75-millimeter shells. The market for cranes in the east appears to be fair, a number of large inquiries being received by dealers in the district.

Of especial significance is the report from Chicago, which states that a leading maker of shapers has issued a new list in which prices are marked up 8 per cent. Another report of interest is that a manufacturer of boring machines, who several weeks ago offered immediate delivery, now states that delivery cannot be made short of 30 or 60 days.

Small orders in the Pittsburgh district have been coming in steadily and dealers there expect large users of tools will open with large lists shortly. The past week has not been marked by anything of especial significance.

In the Cleveland district the situation remains unchanged, dealers reporting they are doing a fair amount of business, while indications are promising. Meanwhile building projects in the district are on the increase and many large orders are expected to be developed through these. The automobile trade is still actively purchasing necessary equipment here and there, while indications point to a much larger demand from this source before the end of the summer. An increase in price is expected by several dealers shortly. Therefore they are warning manufacturers to buy necessary machinery now. As yet no large lists have appeared from the railroads.

Business Dull in Eastern Tool Market

THE holiday spirit which prevailed throughout the eastern machine tool market during the past week did much to accentuate the dullness that recently has existed. Virtually no business of consequence has been placed, and only a relatively few new inquiries have been current. Indicative of the character of present trading, is the order of the American Can Co., Newark, N. J., calling for a few tools, including one or two lathes, and that of the Singer Mfg. Co., Elizabeth, N. J., which is said to have also closed a small list of tools. Included in the run of new business is the inquiry of the International Petroleum Co. Ltd., 26 Broadway, New York, calling for one screw cutting lathe and one well drill grinder.

The eastern machine tool trade has been interested in the recent Brussels dispatch, stating that La Construction Metallieue de Belgique has bought from the United States army all the machine tools it used in France. The prices will be sold at a 55 per cent increase over those for 1914. The buyers, it is stated, will have credit for three years at a moderate rate of interest. However, these terms will apply only to goods used to replace those taken by the Germans during their occupation of the country.

A fair amount of second-hand machine tools continues to be placed on the market, and it is now understood that the plant of the International Arms & Fuse Co., of Bloomfield, N. J., will be placed on sale by Joseph P. Day, New York City. Some of the equipment of this plant has already been sold through Carpenter & Woodward, Woolworth building, New York City. During the war the company was engaged principally in the manufacture of time fuses for 75-millimeter shells.

Perhaps the largest inquiry before the eastern crane market at this time is that of the Wern Machinery & Engineering Co., 30 Church street, New York City, which is in the market for 10 overhead cranes for the Swedish Royal railways. It is expected that bids will be closed shortly and will then be sent to Stockholm for approval. The list calls for two 5-ton cranes, 55-foot span; one 5-ton crane, 54-foot span; one 5-ton crane, 39-foot span; one 6-ton crane, 46-foot span; one 6-ton crane, 17-foot span; one 25-foot crane, 19-foot span; one 40-ton crane, 59-foot span; one 30-ton crane, 63-foot span; and one 8-ton crane, 59-foot span. Double trolleys will be required for the two largest cranes. Anthony Gibbs, 61 Broadway, New York, is inquiring for one 30-ton and two 10-ton


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the Little Acorn
Our growth has not been due to unusual outside conditions. Not in a day—not in a week—but in the course of 65 years have we become the "mighty oak" of the Tool Steel World. A good, healthy growth, backed by over four thousand well satisfied re-order customers.
Ludlum Steel—
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Prompt shipments from warehouse stock at Watervliet, N.Y., Detroit, Mich., Cambridge, Mass., Chicago, Ill.— handled through our District Offices.
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Branch Offices
New York City Philadelphia Cambridge Cleveland
Cincinnati Detroit Chicago Buffalo

gantry cranes and two special cranes for French railroads.

Another large export inquiry now pending is that of Viele, Blackwell & Buck, 49 Wall street, New York City, this latter list involving seven 5-ton gantry cranes and one 10-ton crane. Of interest to eastern crane trade is the request of the Pan-American Terminal & Dock Co. for the city of New York to build two double-deck cargo handling piers on Staten island. Monberg & Thursen, Woolworth building, New York City, have completed plans for this project, for which a number of gantry cranes will be required. H. J. Horner & Son, Newark, N. J., have placed a 5-ton electric crane, with 60-foot span, with Pawling & Harnischfeger. Day & Zimmerman, Philadelphia, are expected to close shortly on one 5-ton and two 3-ton electric cranes for a plant in West Virginia. The Humble Iron Co., a subsidiary of the Standard Oil Co., is in the market for a 5-ton hand power crane, with 13-foot span.

The Bethlehem Steel Co. has again come into the market with a large list of overhead cranes. This inquiry calls for one 40-ton crane with 10-ton auxiliary and a 66½-foot span; one 40-ton with a 10-ton auxiliary and a 76-foot span; two 15-ton cranes, with a 77-foot span; one 15-ton crane, 86½foot span; one 10-ton, 27-foot span, and one 10-ton crane, with 19-foot span. The Bethlehem Steel Co.'s previous inquiry called for four 10-ton cranes, with 84-foot span; one 15-ton crane, with 100-foot span, and one 10-ton crane, with a 26-foot span. It is not clear whether the inquiry just issued has involved any of the cranes noted in the earlier list. The general belief prevails, however, that it is an entirely new and separate inquiry. Another list on which bids will likely be closed shortly is that of the American Tube & Stamping Co., Bridgeport, Conn., calling for two 5-ton overhead cranes.

Prices Marked Up in Chicago

A LEADING maker of shapers has just issued a new list in which prices are marked up approximately 8 per cent, while a manufacturer of boring machines, who six weeks ago offered immediate delivery now announces that shipments cannot be made short of 30 or 60 days. The advance in the price of shapers is expected to be put in effect by most manufacturers by Sept. 1. It represents about one-half the reduction made several months ago, and indicates the proportionate strength of present demand.

Radial tool manufacturers say they are booking many orders and are notifying dealers to act promptly to insure early delivery. Dealers report an excellent demand for turret lathes and at present there is in Chicago an unusual demand for punch presses. A metal gasket manufacturer who last week purchased 10 presses has doubled his order. The Whitman & Barnes Mfg. Co., Chicago, is in the market for eight 6000 to 8000-pound steam forge hammers. Bids of the Rock Island arsenal equipment have been opened, but awards have not yet been made. Ernst Bros. Co., Ltd., Mount Forest, Ont., is in the market for one 2-ton cupola, punch shears, milling machine, lathes, planer and woodworking equipment.

Business continues good, but consists mostly of sales of small numbers to individual buyers, the total amounting to more than at any previous period this year. The Liberty Planer Co., Hamilton, O., is now working on three shifts

Extensive Building Operations Planned

WHILE business in tools is fairly active and reaches rather generous proportions in the aggregate, no particularly large lists are being placed in the Pittsburgh district. In heavy lines, a great number of inquiries still remain to be closed. Most of the steel manufacturers in this district are figuring on plant extensions, involving the addition of much machinery or at least the replacement of old equipment. If all the inquiries against which manufacturers have quoted were to be placed, it would mean several months' capacity operations, but apparently, buyers want to be positive that lower prices than have been named will not be reached before awarding the business. It is understood that the Weirton Steel Co., Weirton, W.

Emergency Fleet to Offer Millions in Equipment

WASHINGTON, July 8.—Heavy lots of steel, machinery, machine tools, and general marine equipment are included in the sales of surplus and salvage material to be made by the United States Shipping Board Emergency Fleet Corp., according to its announced policy, made public yesterday. Manufacturing plants, shipyards, drydocks, ships, complete, or half built, and all other items down to scrap metal, represent units and items to be sold, their value running into many millions of dollars. Surplus and salvage material, such as steel, scrap, marine boilers, machinery and machine tools, according to testimony given recently before the senate committee on commerce by Chairman Edward N. Hurley of the shipping board, will represent a value of approximately $50,000,000. The sales are to be public and will be conducted with a view not to unload the material on either the local or general market. Foreign sales will be handled until Sept. 1 by the American Steel Exports Co., New York.

The determination of the Fleet corporation to engage in the wholesale disposal of this property is said to be due to the restricted shipbuilding program. No specific statement has been made as to just what manufacturing plants and shipyards are to be sold, but it is assumed they will include those which will be of no use to the shipping board in times of peace, even if it continues in the shipbuilding business, and which have not proven to be "going" concerns. Other yards, it is understood, will be maintained at least until congress defines a merchant marine program.

The sales are to be made at such times and at such places and in such manner as may be deemed to be the best interests of the corporation and the nation. Materials to be sold, it is announced, comprise an accumulation as a result of extensive war activities, and are to be disposed of now only because of the adoption of the restricted shipbuilding program. Industries which may be especially interested in the sales are chiefly the shipbuilding, steel, railroad, structural and general manufacturing concerns.

Upon the sales list are marine railroads, housing and transportation projects, numerous allotments of machinery, equipment, and supplies, including woodworking machinery, machine tools and fixtures, electrical machinery, boiler and forge shop equipment, marine equipment and accessories, air compressor equipment, contractors' equipment and supplies, bridge and gantry cranes, steel plates, shapes, and bars, pumping machinery, scrap metals, lumber, deck equipment, galley equipment, hospital and commissary supplies, etc.

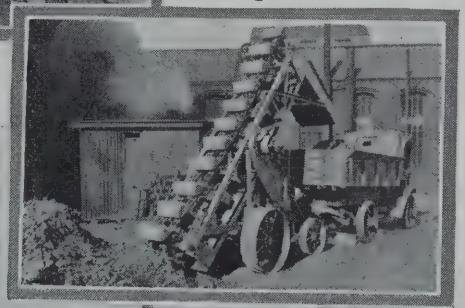


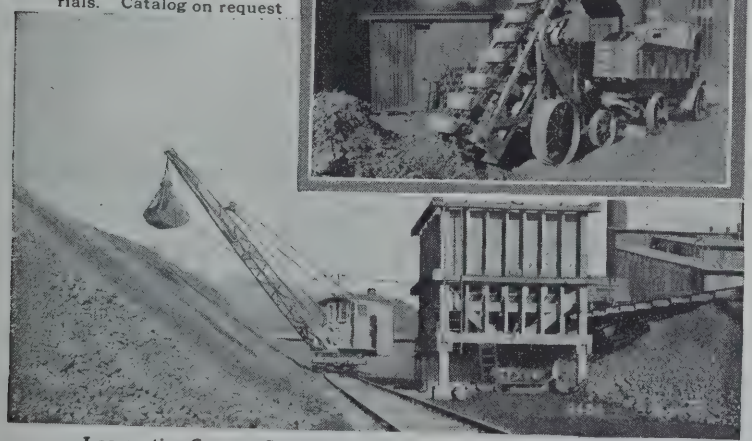


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WHENEVER you permit a crew of men to handle material that could be better handled by machinery, you are robbing yourself of profits that should be yours.

Not only is the time of the men wasted, but also the time of the operator and machine which is waiting for the work.

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Va., soon will close for the mill drives and motors for its new steel plant, foundations for which practically are completed. A Pittsburgh company has secured two blowing engines from the Cambria Steel Co., Johnstown, Pa.

Tool Market Future Looks Bright

DESPITE the fact large users of machine tools are not inquiring for machinery in large lots, dealers in the Cleveland district are viewing the situation with optimism, feeling that the usual dull summer months experienced in other years, will not be repeated this year, due to number of inquiries coming for single machines. Dealers point out that inquiries in small lots show users are in need of machine tools, but are purchasing only those which they must have. This no doubt is due to the uncertainty in prices, buyers feeling they will drop, despite advice from dealers that there will be no drop in prices.

Many manufacturers according to dealers are purchasing used machinery for temporary use, all of which probably will have to eventually be replaced with new equipment. On the other hand some manufacturers are disposing of their old equipment and purchasing new, but this is being done on a small scale. An instance is that of the Peerless Motor Car Co., Cleveland, which sold a 4-spindle used boring machine to a Cleveland dealer, who subsequently disposed of it in Chicago.

The automobile trade is still active. A great many of the inquiries come from this line of business, which not only includes the automobile but also the accessory trade. The Torbensen Axle Co., Cleveland, and the Firestone Steel Products Co., Akron, O., are still reported in the market for equipment, as is the Dow Chemical Co., Midland, Mich., which wants boiler plate rolls and plate bending rolls. The Menasha Boiler Works, Menasha, Wis., is reported in the market for a traveling crane, ranging from 3 to 5-ton capacity. Williams & Williams, Ltd., 248 Elgin street, Ottawa, Ont., is inquiring in the district for horizontal boring mills, drilling and milling machines. It will consider used equipment. The Cumberland & Manchester railroad, Barbourville, Ky., has issued an inquiry for a number of lathes. The Defiance Screw Machine Products Co., Defiance, O., which issued an inquiry for an all-geared drill, more than a week ago, has not closed on its inquiry as yet. An inquiry for a 14-inch Gisholt turret lathe has been received by a Cleveland dealer from the D. Nast Machinery Co., Philadelphia. The Bower Products Co., Detroit, wants a ¾ to 1¼-inch Gridley automatic screw machine, says one dealer.

Building operations in the district are on the increase and are expected to develop a demand for a large amount of equipment. Among the companies building is the Allen Motor Co., which recently moved its plant from Fostoria, O., to Columbus, O. This company has increased its capital from $1,500,000 to $3,000,000 and plans to enlarge its plant. It has already purchased upwards of $50,000 worth of machinery, but states it will shortly purchase about the same amount. The Standard Steel Corp., Milwaukee, is about to let a contract for the erection of a 6-story building, and is in the market for a complete line of sheet metalworking machines, end flanging machines, etc., as well as a complete line of machinery equipment.

Other building projects in the district include the Timken-Detroit Axle Co., which has let a contract to the Austin Co., Cleveland, for a building, 60 x 120 feet, to be used for heat treating purposes. It is expected the company will be in the market for equipment shortly. The Van Auken Machine Co., Pontiac, Mich., has let a contract to the Austin Co. for a building, and is also expected to issue a list. The Cuyahoga Spring Co., Cleveland, which has let a contract for a building to be devoted to the manufacture of springs, as yet has not issued a list, but is expected to shortly. The Colson Co., Elyria, O., has started on the erection of a $100,000 addition to its metalworking plant. The Hamilton Caster & Mfg. Co., Hamilton, O., metal specialties, will erect a building 54 x 200 feet. The Linograph Co., Davenport, Iowa, will build a plant, 60 x 150 feet, which will be equipped chiefly with medium sized or light metal working machinery.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

CALAIS, ME.—The International Power Co. has been incorporated with $100,000 capital by George A. Curran and Ben Y. Curran.

PORTLAND, ME.—The Portland Iron & Metal Co. has been incorporated with $10,000 capital by Harris Shimelovich and Augustus F. Moulton.

PORTLAND, ME.—The American Can Co., 120 Broadway, New York, is reported contemplating a plant at an estimated cost of $300,000.

BOSTON.—Levering & Garrigues, New York, are low bidders for the erection of additions and alterations to the structural shop at the navy yard.

BOSTON.—The Monarch Can Mfg. Co. has been incorporated with $235,000 capital by Harry Sebell, Leon Mitchell and E. D. Mackenzie.

BOSTON.—The Standard Saw & Tool Mfg. Co. Inc., has been incorporated with $50,000 capital by Harry E. Richards, D. F. W. Douglas and J. Edward Fuller, Worcester, Mass.

BOSTON.—The George H. Adams Co. has been incorporated to make knitting needles with $350,000 capital by David J. Donahue, Charles Leroy Boyer, Cambridge, Mass., and Fred C. Fernald.

BOSTON.—The Keystone Mfg. Co. has been incorporated to build machines, etc., with $20,000 capital by Edward M. Swartz, J. M. Weisman, Isidore Marks and Benjamin Marks.

CAMBRIDGE, MASS.—Bids have closed for a 1-story machine shop for the F. S. Payne Co., manufacturer of elevators and elevator fixtures.

CAMBRIDGE, MASS.—Bids have closed for a 1-story, 100 x 100-foot factory for Dewey & Almy, chemicals, in North Cambridge, Mass.

EVERETT, MASS.—Plans are being drawn for a $1,250,000 oil plant for the Beacon Oil Co., Boston, to include an office building, reinforced concrete tanks, railroad tracks, power house, garage and machine shop.

FALMOUTH, MASS.—The Bay State Airplane Co. has been incorporated with $2000 capital by James D. Howard, Franklin N. Smith, Boston, and T. L. Bronkhorst.

LEXINGTON, MASS.—The Jefferson Union Co. has been incorporated to make pipe fittings, etc., with $275,000 capital by Charles H. Stebbins, Arthur W. Freeman and Daniel T. Groff.

LOWELL, MASS.—The Churchill Mfg. Co. has been incorporated with $40,000 capital by Charles N. Dyer, Charles W. Churchill and H. W. Coburn.

LYNN, MASS.—The Graywood Mfg. Co. has been incorporated to build machinery with $25,000 capital



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You can never substitute a counterfeit or "just-as-good" article for the real thing—however extravagant the claims may be for it—and receive the 100% service you would naturally expect from the original.

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It is certainly true in flooring material.

The original, perfected wood block floor was KREODONE and today it is the acknowledged leader in the field—**showing conclusively that wood blocks for floors must be of long leaf yellow pine, treated with pure unadulterated creosote oil.**

KREODONE floors after years of hard service show no signs of the beginnings of disintegration.

Set in pitch to make *one unit*, a KREODONE Wood Block Floor will outlast any man's lifetime.

It does not bleed, is not smudgy, is waterproof, and oils or acids will not impair it. It outwears steel. It is the ideal factory floor and has no satisfactory substitute.

For 20 years KREODONE floor blocks have been made from nothing but selected long leaf yellow pine timber and treated with pure, unadulterated creosote oil—an unbeatable combination.

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Get the *Genuine KREODONE* Blocks. Watch that Spelling—it means Service

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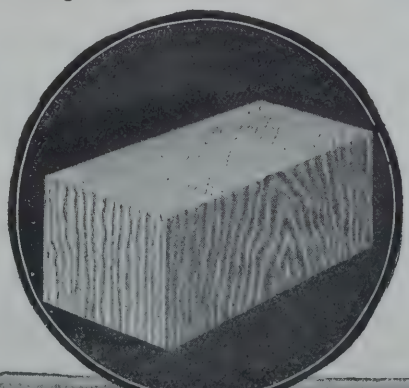
315 Peoples Gas Bldg.
Chicago

206 Erie County Bank Bldg.
Buffalo

152 Bay Street
Toronto, Canada

Berkley Wark
Norfolk

222 Society for Savings Bldg.
Cleveland



Branch Offices:

31 Transportation Bldg.
Philadelphia

828 Plymouth Bldg.
Minneapolis

445 Central Bldg.
Seattle

Masonic Temple
Mobile

211 Hammond Bldg.
Detroit

by Elmer E. Gray, Harry W. Woodward and E. Sylva.

MEDFORD, MASS.—The American Radio & Research corp. will build a 3-story and basement, 72 x 24-foot and a 2-story, 20 x 36-foot addition to its factory to cost $250,000.

NEWTONVILLE, MASS.—The Collins Development Co., Inc., has been incorporated to build machinery with $100,000 capital by Roy V. Collins, W. Lloyd Allen and K. E. Flynn.

WILLIMANSETT, MASS.—The Papermakers' Chemical Co., Holyoke, Mass., has let the contract for a 1-story, 66 x 206-foot mill, 30 x 38-foot office and laboratory building and a 26 x 36-foot garage to cost $75,000.

WORCESTER, MASS.—The Worcester Wire Works, Inc., has been incorporated to make high grade fine steel wire with $150,000 capital by Charles O. Johnson, Nils Bjork and Victor E. Runo. It succeeds C. O. Johnson & Sons and will do business in a new plant on Ludlow street.

CENTRAL FALLS, R. I.—The Hemphill Mfg. Co., builder of automatic hosiery machines, has let the contract for a 2-story, 35 x 125-foot addition to its machine shop, and a 35 x 125-foot with a 25 x 45-foot wing forge shop.

NEWPORT, R. I.—The navy department has let the contract for a wharf and bridge at Coddington point to cost $171,000.

ANSONIA, CONN.—Plans are in preparation for a 1-story, 60 x 250-foot plant for H. C. Cook, metal novelties.

NEW BRITAIN, CONN.—The Berlin Construction Co., Berlin, Conn., has the contract for a steel, 1-story, 160 x 160-foot building for the Stanley Works, to cost $30,000.

PORTLAND, CONN. — The Lindquist Engineering Works has been incorporated to make micrometers with $25,000 capital by Eric A. Lindquist, Middletown, Conn.; John C. Barry, George G. Brainerd, F. R. Goodrich and Frank J. Brainerd.

TORRINGTON, CONN.—The Borgeson Mfg. Co. has been incorporated to make universal joints with $50,000 capital by John Kennedy, James L. Green, Richard J. Kennedy and James J. Green.

WATERBURY, CONN.—The Waterbury Wire Die Co. has been incorporated with $5000 capital by Irving C. Spiers, John P. Wall, William H. Mahoney and Bartholomew J. Collins.

North Atlantic States

ALBANY, N. Y.—The Capital City Plating Co., Joseph Bertram, manager, is reported planning a plant, 1-story, 80 x 80 feet, to cost $20,000.

BROOKLYN, N. Y.—The Mergenthaler Linotype Co., 24 Ryerson street, contemplates making extensive alterations.

BROOKLYN, N. Y.—The Mohegan Tube Co., Scott avenue, is reported planning to build a 2-story plant addition estimated to cost $25,000.

BROOKLYN, N. Y. — The Berggren Engineering Corp. has been incorporated with $20,000 capital to make and repair machinery, by G. Berggren, J. Edwards and R. M. Cohen, 1930 Sixty-second street.

BUFFALO.—Levering Bros., Baltimore, is finishing plans for alterations to a plant which it has purchased here.

BUFFALO.—The Irving Air Chute Co. has been incorporated with $250,000 capital, by George Waite and George L. Grobe, Ellicott Square building.

BUFFALO.—W. F. X. Senftle, 129 College street, and others, have organized the Car Parts Co. with a capital of $40,000 and will fit up a plant.

BUFFALO. — The Robertson-Cataract Electric Co. will build a plant in Newark, N. J., 6-stories, 45 x 115-feet and will be erected by the Turner Construction Co. R. C. Fayfield is architect.

BUFFALO.—The Kan-Kleber-Veatch Co. has been incorporated with $25,000 capital, by J. A. Kan, G. A. Kleber and L. R. Veatch to engage in the manufacture of metal conveyors, etc.

DANSVILLE, N. Y.—The Power Specialty Co., manufacturer of power plant apparatus, is reported planning a 2-story addition, to cost $25,000.

ELMIRA, N. Y.—The Aluminum Ware Mfg. Co., East Clinton street, has started on an addition, 90 x 155 feet with an extension, 86 x 90 feet.

MASPETH, L. I., N. Y.—The Guild Construction Co., 233 Broadway, New York, is reported contemplating a structural shop.

NEW YORK.—The John Simmons Co., 110 Centre street, manufacturer of pipe, etc., has awarded a contract for a forge and blacksmith shop.

NEW YORK.—The Presto Metal Stamping Corp. has been incorporated with $9000 capital, by N. Turok, L. Holtzman and L. Offerman, 833 East 170th street.

NEW YORK.—The Masback Hardware Co., 82 Warren street, has been incorporated with $500,000 capital, by E. L. Steckler, E. R. and R. J. Masback, 325 West End avenue.

NEW YORK.—The Fassler & Klein Iron Works, Inc., recently was incorporated with $15,000 capital, by H. Fassler, B. D. Klein and O. Frankl, 971 Kelly street.

NEW YORK.—Oscar M. Carter, Inc., has been incorporated with $50,000 capital to manufacture hardware, agricultural implements, etc., by R. C. Perlman, A. P. Saas and M. Berger, 600 Berch terrace.

NEW YORK.—The Tripke Household Improvement Corp. recently was incorporated with $100,000 capital to make kitchen devices and utensils, by P. Staib, C. E. Wicke and P. Tripke, 316 East 156th street.

NEW YORK.—The United States Freezer & Machine Corp. has been incorporated with $60,000 capital, by E. W. Eppenbach, College Point, N. Y.; A. T. Light, 1266 Morris avenue and L. F. McGrath, 1783 Webster avenue.

OGDENSBURG, N. Y.—The Handley-Page, Inc., has been incorporated with $5,000,000 capital to manufacture airplanes, parts, etc., by W. H. Workman, J. Frank and S. L. Dawley, 14 Caroline street.

POUGHKEEPSIE, N. Y.—The Hoe Mfg. Co. recently was incorporated with $50,000 capital to manufacture structural iron and steel, by R. Hoe, A. Gregory and M. G. Latimer, 265 Ocean avenue.

RICHMOND HILL, N. Y.—Dudley's Iron Works has been incorporated with $20,000 capital, by H. Chandless, W. C. Bates and T. Dudley, 142 West Tenth street.

SYRACUSE, N. Y.—The B. G. H. Metal Mfg. Co., 106 South State street, is reported planning the construction of a 3-story plant to cost $25,000.

SYRACUSE, N. Y.—The Pioneer Welding Co. has been incorporated with $10,000 capital, by C. J. Ryan, J. A. Brown and W. J. Lowery, to operate a machine and welding works.

BANGOR, PA.—The Reichard Mfg. Co., manufacturer of agricultural implements, etc., has started the erection of a 2-story addition, 45 x 104 feet, to cost $12,000.

CHESTER, PA.—The Baldt Anchor Co., Sixth and Butler streets, has broken ground for a 1-story addition, 52 x 120 feet.

FRANKLIN, PA.—The Colburn Machine Tool Co. is expected to place a contract shortly for a plant in Cleveland.

FREEPORT, PA.—The Freeport Water Co. has taken bids for a waterworks plant here. J. R. Taylor is manager.

PHILADELPHIA.—The Empire Galvanizing Co., Inc., 2507 East Cumberland street, contemplates a 1-story addition, 48 x 75 feet.

PHILADELPHIA.—The American Manganese Bronze Co., Rhawn and Hegerman streets, contemplates a 1-story addition, 21 x 65 feet.

PHILADELPHIA.—A $16,000 foundry, 70 x 160 feet, will be erected here by the Philadelphia Sash Weight Works.

PHILADELPHIA.—The General Machine Co. is about ready to start on an addition, 2-stories, 50 x 147 feet, to cost $10,000.

PHILADELPHIA.—M. L. Bastian, 425 Duncannon street, manufacturer of air pumps, etc., has plans for a 1-story machine shop and office building, 20 x 40 feet and 23 x 60 feet.

PHILADELPHIA.—Contracts have been awarded by the Wright Roller Bearing Co. for a $12,000 factory addition, 2 stories, 27 x 61 feet. John R. Wiggins, Inc., will be in charge of construction.

PITTSBURGH.—The Walker Chemical Co., 810 House building, has let the contract to the Truscum Steel Co., Youngstown, O., for a plant 30 x 50, 40 x 50 and 50 x 50 feet.

YORK HAVEN, PA.—The York Haven Water & Power Co. is having plans drawn for a 1-story machine shop, 45 x 65 feet, to cost $25,000.

BOUND BROOK, N. J.—The Atlas Engineering Co. has been incorporated with $10,000 capital, by Karl G. Walker, George L. Wirtz and M. T. Otto, to engage in the manufacture of forgings, etc.

ELIZABETH, N. J.—Contracts have been awarded by the Singer Mfg. Co. for a 176 x 252-foot foundry building. The Turner Construction Co. has the contract.

IRVINGTON, N. J.—Jennings Silver Co. Nye avenue, has plans by W. E. Lehman for factory building, 40 x 100 feet to cost $20,000.

KANE, PA.—The Hollingsworth Knife Co., H. Hollingsworth, president, is having plans drawn for a plant addition, 2 stories, 40 x 80 feet, to cost $20,000.

LYNDHURST, N. J.—The T. C. Wagon Co. has established a machine shop here.

NEWARK, N. J.—The Hay Foundry & Iron Works, Plum Point lane, will erect a 3-story brick and steel office to cost $47,000.

NEWARK, N. J.—The Arrow Motor & Machine Co., 397 Market street, has filed notice of organization and will operate a general machine shop.

NEWARK, N. J.—The Newark Auto Body Co., 196 Newark avenue, has been organized by Stanislaw Mankowski and others.

NEWARK, N. J.—The H. E. Rainaud Co., manufacturer of electric lamps, contemplates moving its works to Meriden, Conn., where it will occupy the former plant of the J. D. Bergen Co.

NEWARK, N. J.—Plans are being prepared by Helmie & Corbett, Brooklyn, for the proposed fountain pen plant of the L. E. Waterman Co. in this city. The main structure will be 260 x 275 feet.

NEWARK, N. J.—Modern Drop Forge Co. has been incorporated with $50,000 capital to operate a foundry, etc. John G. McKaig, of East Orange; A. R. McClot, of Newark, and P. J. Hannigan, of Newark, are the incorporators.

NEWARK, N. J.—Newark Electric Repair Co. will manufacture electric machinery, having been incorporated with $50,000 capital by P. H. Jaehnig and L. W. Jaehnig, of Newark, and F. H. Walsh, of East Orange.

ORANGE, N. J.—Wethling-Bakely Co., Inc., have been incorporated with $100,000 capital to manufacture electrical appliances. Edward Bakely, of Liv-



Say you saw it in THE IRON TRADE REVIEW

ingston and H. D. Wothling and A. B. Seymour, of Orange, are incorporators.

PATERSON, N. J.—The American Shell Co. is having plans drawn for a foundry, 120 x 240 feet, to cost $200,000. James T. Gordon is in charge.

STROUDSBURG, PA.—Bennett Guyer, care of William Bennett, Record building, is taking bids for an automobile factory, 1-story, 74 x 150 feet, to cost $15,000.

TRENTON, N. J.—C. V. Hill Refrigerator Co., 356 Pennington avenue, is building three factory additions to cost $50,000.

TRENTON, N. J.—City commission contemplates erecting new sewage disposal plant. Abram Swan, city hall, is engineer.

BALTIMORE.—The Standard Oil Co. will build a 1-story machine shop here soon.

BRUNSWICK, MD.—This city has sold $50,000 worth of waterworks bonds and will make improvements to its plant in the near future.

BALTIMORE.—Frank M. Krasmer, Dalphin street, will take bids shortly for an automobile repair shop, 2-stories, 26 x 78 feet.

HAGERSTOWN, MD.—The Negley Metal Co., Negley building, has been incorporated by Samuel M. and Frank G. Wagaman and Herbert L. Kneisley.

Central States Activity

APPLETON, WIS.—The Reliance Motor Truck Co. has increased its capital from $500,000 to $1,000,000 to finance the general expansion of its business. Plans are being prepared for a 4-story plant addition, 70 x 300 feet, costing about $160,000.

APPLETON, WIS.—Work will begin July 10 on the first unit of a tractor, gas engine and power farm machinery industry to be established at Appleton, Wis., by the Fox River Tractor Co., organized with $200,000 capital by Frank and Oscar Saiberlich.

BLACK RIVER FALLS, WIS.—This city is having plans drawn for improvements to its power plant, to cost $25,000.

HARTFORD, WIS.—The Leach-Christenson Auto Co. has started work on a 1-story brick shop addition, 50 x 80 feet.

EAU CLAIRE, WIS.—The Eau Claire Trunk Co. has sold its factory to the Multitone Mfg. Co., reproducing instruments, which will spend about $30,000 in remodeling and retooling the plant for phonograph manufacture. E. J. Sailstad is president and general manager.

JANESVILLE, WIS.—A new machine and boiler shop has been opened at 111 North Jackson street by Schlueter & Kakuske.

MADISON, WIS.—The joint building committee of the board of education and vocational training board has adopted sketches for the proposed $300,000 combination high school and industrial training institute.

MARINETTE, WIS.—The George Bishoff Sheet Metal Works has moved to a larger building on Vine street, where an increase of 50 per cent in capacity is made possible.

MILWAUKEE.—The Vilter Mfg. Co. is having plans drawn for the installation of a sand conveying system.

MILWAUKEE.—The Sivyer Steel Castings Co., Thirty-seventh avenue, will build a 2-story addition at a cost of $45,000.

MILWAUKEE.—The Francis Vaughn Mfg. Co., capitalized at $150,000, has been chartered to manufacture electrical instruments by Francis Vaughn, 271 Thirty-first street.

MILWAUKEE.—The Ogren Motor Car Co., capitalized at $50,000, has been chartered to manufacture motors, engines and parts by M. Landeck, E. Patek and Harry Kuntz.

MILWAUKEE.—Architect Herman J. Esser, Camp building, has taken bids for the erection of a 6-story manufacturing addition, 60 x 175 feet, and a new office building for the Briggs & Stratton Co., 1047 Louis avenue, automobile ignition specialties and general motor accessories.

MILWAUKEE.—The Motor Castings Co., 86 Michigan street, awarded following contracts for a gray iron and semi-steel casting shop, 111 x 180 feet. General contract, Riesen Bros. Co., 425 East Water street; steel sash, Truscon Steel Co.; plumbing and heating, A. Bantelmann. The initial installation will be one cupola with a capacity of 10 to 12 tons a day. Gustave Anderson is general manager.

MENASHA, WIS.—The Menasha Boiler Works, recently organized with $100,000 capital, will built a 1-story shop, 90 x 100 feet. William J. Hess is head of the company.

PARK FALLS, WIS.—The Flambeau Paper Co. will make improvements costing $250,000 in its plant and mill, including the installation of a new turbine steam generating unit, a large machine shop addition, new digester house, additional acid and storage tanks, etc. E. P. Sherry, 120 Wisconsin street, Milwaukee, is president.

RACINE, WIS.—The Webster Electric Co., manufacturer of electric appliances, is building a 2-story addition, 40 x 92 feet, costing $20,000.

RIPON, WIS.—The Barlow & Seelig Mfg. Co., domestic washing machines, has let the contract to the Immel Construction Co., Fond du Lac, Wis., for its new factory, 50 x 130 feet, costing $30,000.

SCHLEISINGERVILLE, WIS.—The Troy Mfg. Co. contemplates the erection of a plant, 3-stories, 46 x 100 feet.

WAUSAU, WIS.—The Wausau Foundry & Machine Co. has been reorganized, the holdings of the Kraatz estate and of Louis and Karl Kraatz having been acquired by other stockholders. The capital stock has been increased from $15,000 to $30,000 and extensions of foundry and machine shop facilities are contemplated.

WEST ALLIS, WIS.—The Motor Casting Co. is taking bids for a foundry, 111 x 160 feet, to cost $50,000.

ANN ARBOR, MICH.—The Ann Arbor Machine Co. has been purchased by Detroit interests and will be known as the Production Casting Co.

BATTLE CREEK, MICH.—Nichols & Shepard are reported contemplating a foundry estimated to cost $25,000.

COLDWATER, MICH.—The Homer Furnace Co. will start work shortly on a plant, 1-story, 150 x 500 feet.

DETROIT.—The Western Gear Mfg. Co., O. A. Palm, president, has had plans drawn for a plant addition, 1-story, 50 x 90 feet, to cost $10,000.

DETROIT.—The Liberty Starter Co., 702 West Jefferson avenue, contemplates the erection of a plant addition, 47 x 119 feet.

DETROIT.—The Shuler Axle Co. is reported to be contemplating a new plant. The company recently increased its capital from $200,000 to $500,000.

DETROIT.—The Columbia Car Co., 1256 Jefferson avenue, E., will build a plant containing 150,000 square feet. A. F. O'Connor is secretary.

GRAND RAPIDS, MICH.—The National Spring & Wire Co. has started a 3-story plant, 85 x 500 feet, to cost $185,000.

HAMTRAMCK, MICH.—The Briggs Mfg. Co., M. L. Briggs, secretary, contemplates a power plant.

HIGHLAND PARK, MICH.—The Ford Motor Co. plans the erection of dry kilns.

LANSING, MICH.—This city is contemplating extensions to its light plant.

MUSKEGON, MICH.—The Brunswick Balke Collender Co., F. J. Leow, manager, is taking bids for a power plant, 1-story, 65 x 100 feet.

OWOSSO, MICH.—The Owosso Bronze Bearing Co. contemplates the erction of a foundry and machine shop.

PONTIAC, MICH.—The Pontiac Spring Works is expected soon to start a plant, 100 x 186 feet, to cost $100,000.

ST. JOHNS, MICH.—The Triangle Motor Truck Co. recently increased its capital from $100,000 to $200,000 and is reported planning to build an addition.

ST. JOSEPH, MICH.—The Mathieu Foundry Co., William Mathieu, in charge, is reported planning a foundry, 50 x 130 feet.

ST. JOSEPH, MICH.—The Auto Specialties Co., J. W. Tiscornia, president, will take bids soon for a machine shop, 1-story, 80 x 400 feet, estimated to cost $75,000.

CHICAGO.—The Crowe Name Plate & Engraving Co. will build a 1-story addition, 87 x 107 feet and 50 x 56 feet, to cost $50,000.

CHICAGO.—Sam H. Rosenthal, 2909 Indiana avenue, contemplates a 1-story machine shop, 70 x 190 feet.

CHICAGO.—The Seng Co. is having plans prepared for a plant. Davidson & Weiss, 53 West Jackson boulevard, are the architects.

CHICAGO.—The American Wire Fabrics Co., Continental & Commercial National Bank building, is reported contemplating a plant at Blue Island, Ill.

CHICAGO.—Montgomery Ward & Co. is reported planning to erect a plant at Springfield, Ill., for the manufacture of gas engines.

CHICAGO.—The Pratt Automatic Machine Co., 2022 Lawrence avenue, capitalized at $25,000, has been chartered by Charles M. Haft, Raymond C. Pratt and E. Falch.

CHICAGO.—The Crawford Tool & Mfg. Co., 4810 West Twenty-second street, is reported contemplating a machine shop addition, 2-stories, 28 x 120 feet, to cost $20,000.

CHICAGO.—Plans are being drawn for a foundry, 100 x 300 feet, to cost $60,000. The owner can be reached through Mr. Sharp, purchasing agent, 122 South Michigan avenue.

CHICAGO.—The Steel Cushion Wheel Co., capitalized at $5000, has been chartered by Bernard Thiess, Willard L. Pollard of Evanston, and Norton M. Files, 1417 Berwyn avenue.

CHICAGO.—The Gill Piston Ring Co., capitalized at $200,000, has been chartered by W. J. Ford, J. A. Cavanagh and John A. Castagino, 29 South La Salle street.

CHICAGO.—The Ilg Ventilating Co., 154 Whiting street, is having plans prepared by A. B. Alschuler, 28 East Jackson boulevard, for a plant consisting of a 4-story main building and several smaller structures, equipped with automatic machinery, at a cost of about $700,000.

CRYSTALL LAKE, ILL.—The Express Body Corp., 3204 Shields avenue, is having plans prepared for a plant, 1-story, 100 x 200 feet, to cost $75,000.

EAST MOLINE, ILL.—The Moline Plow Co., 1420 Third avenue, will build a foundry building, 120 x 380 feet, costing $275,000.

FREEPORT, ILL.—The Duncan Mfg. Co. has been organized with $300,000 capital to manufacture canning and preserving machinery.

STERLING, ILL.—The Sterling Stamping Co., capitalized at $12,000, has been chartered by S. L. Maier and F. X. Maier.

ELKHART, IND.—The Huffman Motor Co. has pur-

chased property on which it is reported planning to erect extensions.

ELKHART, IND.—The Godfrey Conveyor Co., capitalized at $1,000,000, has been chartered by John F. Godfrey, J. S. Kirk and Irvin D. Landis.

EVANSVILLE, IND.—The American Lamp & Specialty Co., capitalized at $25,000, has been chartered to manufacture lamps and other specialties by Patrick Hughes, James H. Powers and Charles Martin.

EVANSVILLE, IND.—The Evansville Enameling Co. is now erecting the first unit of its plant and will be 80 x 132 feet. All machinery will be motor driven. For the present, the company is not in the market for additional machinery, according to N. J. Karges, president.

FLORA, IND.—A recent incorporation is that of the W. L. Butcher Fence Protector Co., which is capitalized at $15,000. The incorporators are W. L. Butcher, William O. and William M. Harmon.

GARY, IND.—The United Automatic Water Heater Co. has been organized with $100,000 capital, by James H. Daniels, F. F. Southern and C. C. Weaver.

GARY, IND.—The Edwards Engineering Co., incorporated to manufacture dehydrating plants, mechanical devices, etc., is seeking a location here. It is reported the company plans a $1,000,000 plant.

HARTFORD CITY, IND.—The August Bowser Pump Co. will build a large pump plant and later a large tank factory. The company recently took over the plant of the Montpelier Mfg. Co.

HAMMOND, IND.—The Liberty Car Wheel Co., capitalized at $50,000, has been chartered by Charles E. Clark, Charles Aaron and Franklin Laber.

INDIANAPOLIS.—Work will start shortly on $2,000,000 sewage disposal plant. Charles H. Hurd is consulting engineer.

INDIANAPOLIS.—The Steam Automotive Co., capitalized at $50,000, has been chartered to manufacture automobiles and tractors by John A. Whited, W. H. Witaker and William G. Higgins.

INDIANAPOLIS.—The Van Briggle Motor Device Co., L. H. Van Briggle, president, 429 North Capitol street, is having plans drawn for a plant, 108 x 208 feet, to cost $100,000.

INDIANAPOLIS, IND.—The Barth-Keith Motor Car Co., capitalized at $600,000, has taken out a Delaware charter to manufacture motor cars. Charles A. Barth, Jacob S. Barth and J. Ellis Keith are the incorporators.

INDIANAPOLIS.—The Stutz High-Duty Fire Engine Co. recently was incorporated, with $250,000 capital, and plans are now being prepared for a plant. Harry C. Stutz of the Stutz Motor Car Co., is president.

INDIANAPOLIS.—The Home Elevator Co. will build a new plant at an estimated cost of $20,000. An electric crane will be installed. The building will be 1-story, 100 x 150 feet. August Hoffman is secretary.

KOKOMO, IND.—The Hess Mercury Carburetor Mfg. Co., capitalized at $50,000, has been chartered to manufacture automobile accessories by Willis C. Hess, Perl Rector and M. E. Talbert.

LOGANSPORT, IND.—The Logansport Machine Co. is reported planning to build a new plant estimated to cost $25,000.

MARION, IND.—The Indiana Airplane Co. recently was incorporated with $10,000 capital.

MARION, IND. — The Marion Foundry Corp., through L. Leroy Close, general manager, recently stated it would not consider building plans until next year.

MUNCIE, IND.—Work has started on a plant for the Muncie Wheel Co.

PERU, IND.—The Lake Erie & Western railroad plans to erect a power house, machine shop and 10 additional engine stalls here.

SOUTH BEND, IND.—The Electrical Equipment Co., capitalized at $30,000, has been chartered to manufacture electrical goods by E. L. Burch, A. G. Graham and Albert J. Weger.

SOUTH BEND, IND.—The largest building permit ever issued by the South Bend building department was granted the Studebaker Corp. The building will cost about $700,000 and will be 192 x 504 feet.

TERRE HAUTE, IND.—The Auto Jack Co., capitalized at $10,000, has been chartered by Clarence Randberger, Henry Streaker and William E. Lindley.

AKRON, O.—Paul Shafer of the Lau Iron Works, Youngstown, O., is reported negotiating for a site for a branch plant for the company in this city.

CANTON, O.—The Canton Foundry & Machine Co. is in the market for a small amount of equipment, according to a report.

CINCINNATI.—The John Douglas Plumbing Fixture Co. is taking bids for a plant addition, 2-stories, 141 x 250 feet, to cost $12,000.

CLEVELAND. — The Atlantic Brass & Aluminum Foundry Co. has been incorporated with $10,000 capital, by Oliver L. Mitchell and others.

COLUMBIANA, O.—The Banner Machine Co. will enlarge its foundry.

CONNEAUT, O.—The General Equipment Co., Charles Lovring, manager, is reported planning to construct a foundry, plans for which were drawn some time ago.

DAYTON, O.—The Dayton Sheet Metal & Lamp Co. is reported planning to erect a repair shop.

Dayton, O.—The Dayton Forging & Heat Treating Co. has been incorporated with $50,000 capital, by William H. Hewitt and others.

HAMILTON, O.—The American Frog & Switch Co. has started work on an addition to be used for pattern storage purposes.

HAMILTON, O.—The Hamilton Castor Co. contemplates a plant, 1-story, 54 x 200 feet, estimated to cost $20,000.

HAMILTON, O.—The Moclane Mfg. Co., recently incorporated under the laws of Delaware, is reported planning to establish a plant here for the manufacture of refrigerating machinery. Allan W. Marks is president of the company.

MARION, O.—The American Malleable Casting Co. is taking bids for an addition to its foundry, 60 x 70 feet, to cost $50,000.

TOLEDO, O.—The Railway Brake Specialties Co. has been incorporated with $25,000 capital, by F. M. De Lano and others.

TROY, O.—The Star Foundry Co. is reported planning to double the capacity of its plant by the erection of several additions. W. T. Anglemeyer is president of the company.

YOUNGSTOWN, O.—The Edwin Davis Co., roofing, sheet metalworking, etc., has been incorporated with $5000 capital, by Edwin Davis, Benjamin Davis, P. R. Davis and others.

LOUISVILLE, KY.—The Perfect Sleeve Ironer Mfg. Co. has been organized by A .A. Myer, C. H. Boyuls and others.

LOUISVILLE, KY.—The Laird Mfg. Co., machinery, recently was incorporated with $75,000 capital, by J. H. Laird Jr. and others.

LOUISVILLE, KY.—The Louisville Specialty Products Co. recently was incorporated with $5000 capital, by Allen B. Gwin, Julius B. Wille and John Helfrisch.

CHARLESTON, W. VA.—The Safety Mail Train Co., Charleston National Bank building, will fit up a plant.

FAIRMONT, W. VA.—The American Valve & Tank Co., recently organized, plans to reopen its plant immediately.

FAIRMONT, W. VA.—The West Virginia Metal Products Corp., capitalized at $2,500,000, is reported planning to build a brass rolling mill. J. E. Watson is president of the company.

MARTINSBURG, W. VA.—The Rosemont Co. will make improvements to its waterworks here. George M. Bowers is president.

MARTINSBURG, W. VA.—The Garrett Electric Co. has let the contract for a 2-story machine shop 100 x 145 feet, to cost $20,000.

PARKERSBURG, W. VA.—The Parkersburg Development Co. will spend $50,000 for a vitrolite plant here.

PARKERSBURG, W. VA.—Large boiler and machine shops are being built here by High Donovan Jr. and associates.

PARKERSBURG, W. VA.—Engineers Day & Zimmermann, 611 Chestnut street, Philadelphia, are preparing plans for a foundry, 100 x 220 feet, to cost $200,000. The name of the owner has been withheld.

WARWOOD, W. VA.—The Highglow District Electric Sign Co. plans to convert an aircraft plant into an electric sign factory.

WESTON, W. VA.—Charles E. Collins, Drexel building, Philadelphia, has the contract for a sewerage disposal plant to cost $45,000.

WHEELING, W. VA.—The James Maher Tongs & Wrench Co., Delaware, O., will built a plant.

Throughout the West

BROOKSTON, MINN.—Bids will be received until July 15 by W. Acton, county engineer of St. Louis county, for a 300-foot steel bridge over St. Louis river, costing $15,000.

DAVENPORT, IOWA. — The Bolte Tractor Works recently was incorporated with $500,000 capital, by Joseph C. Bolte, Maude Bolte and A. E. Ballou, all of this city.

KANSAS CITY, MO.—The W. S. Brown Mfg. Co., brass goods, care of the Liquid Carbonic Co., 2000 Baltimore avenue, will erect a 3-story plant, 75 x 110 feet.

SPRINGFIELD, MO.—The Springfield Gas & Electric Co. is reported planning an eletcric power plant.

ST. LOUIS.—The Blackman-Hill-McKee Machinery Co., capitalized at $5000, has been incorporated by George H. Blackman and others.

ST. LOUIS.—The United States Auto Repair Co. has been incorporated with $10,000 capital, by Henry Obermeyer and others.

BLYTHEVILLE, ARK.—O. J. Southworth and others are reported planning a machinery plant, 25 x 100 feet.

FT. SMITH, ARK.—The Federal Truck & Motor Co. has been incorporated with $50,000 capital, by J. H. Parker, T. B. Weaver and others.

LITTLE ROCK, ARK.—The Economy Gas Burner Co. recently was incorporated with $6000 capital, by Jerry Lewis and others.

SPRINGDALE, ARK.—This city contemplates an electric light plant, waterworks and sewer system. The contract has been let to Frank Wilcox, engineer, St. Louis.

BRECKENRIDGE, TEX.—The Texas Power & Light Co. will install new equipment.

DALLAS, TEX.—The Standard Farm Tractor Co. has been organized and will erect a plant here with a capacity of 1000 tractors a year. The company has opened offices in the American Exchange National Bank building.

FT. WORTH, TEX.—An election will be held July 26 on the issuance of $3,450,000 in bonds for bridge and road construction.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.35c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.35c
Iron bars, New York	3.37c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.45c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.65c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10, blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.37c
No. 28 black sheets, New York	5.37c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.33c
No. 28 black sheets, St. Louis	5.30c
No. 28 black sheets, St. Paul	5.595c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.72c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.68c
No. 28 galv. sheets, St. Louis	6.79c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, New York	6.50c
Bands, Boston	4.70c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

	Black	Galvanized
Butt Weld		
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

	Black	Galvanized
Butt Weld		
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED
Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

	Black	Galvanized
Butt Weld		
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Eastern Pennsylvania, railroad	19.00 to 20.00
Chicago	18.00 to 18.50
Eastern Pennsylvania	19.00 to 20.00
Cleveland	18.50 to 19.00
St. Louis	18.00 to 18.50
Buffalo	16.50 to 17.00
New York (dealers' prices)	14.75 to 15.25
New Jersey points	14.00 to 14.50
Cincinnati	16.00 to 16.50
Birmingham	15.00 to 16.00
Valleys	16.50 to 17.50
Boston (dealers)	13.00 to 13.50

BUNDLED SHEETS

Pittsburgh	$14.50 to 15.00
Eastern Pennsylvania	13.50 to 14.50
Cleveland	14.00 to 14.50
Buffalo	12.00 to 13.00
Cincinnati	12.00 to 12.50

STEEL RAILS, SHORT

Chicago	$20.50 to 21.00
Cleveland	20.50 to 21.00
Boston (Dealers)	11.50 to 11.75
St. Louis	17.50 to 18.00
Birmingham	16.00 to 18.00
Cincinnati	15.50 to 16.00

STOVE PLATE

Pittsburgh	$17.00 to 18.00
Chicago	19.50 to 20.00
Eastern Pennsylvania	18.00 to 19.00
Cleveland	20.00 to 21.00
St. Louis	18.00 to 18.50
Buffalo	19.00 to 20.00
New Jersey points	17.25 to 18.25
Cincinnati	16.00 to 16.50
Birmingham	18.00 to 20.00
Boston (consumers)	17.50 to 18.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops.	$22.00 to 23.00
Chicago, billet and bloom crops	21.00 to 22.00
Eastern Pennsylvania unguaranteed.	18.75
Eastern Penna. (guaranteed)	23.00 to 23.50
Buffalo	21.00 to 22.00

SHOVELING STEEL

Chicago	$17.00 to 17.50
St. Louis	15.50 to 16.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$19.50 to 20.00
Chicago	20.00 to 20.50
St. Louis	17.00 to 17.50

BALED SHEETS

Pittsburgh	$17.50 to 18.00
Chicago	14.50 to 15.00

FROGS, SWITCHES, GUARDS

Chicago	$18.50 to 19.00
St. Louis	18.00 to 18.50
Eastern Pennsylvania	19.00 to 20.00

BOILER PLATE, CUT

Chicago, No. 1	$16.00 to 16.50
St. Louis, No. 1	15.00 to 15.50

ANGLE BARS—STEEL

Chicago	$19.50 to 20.00
St. Louis	18.00 to 18.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$19.00 to 20.00
Pittsburgh, No. 2	18.00 to 19.00
Chicago, No. 1	20.00 to 20.50
Chicago, No. 2	19.00 to 19.50
Eastern Pennsylvania, No. 1	25.00 to 26.00
Cleveland, No. 1	20.00 to 21.00
St. Louis, No. 1	19.00 to 19.50
St. Louis, No. 2	18.00 to 18.50
Buffalo, No. 1	20.00 to 20.50
Cincinnati, No. 1	18.75 to 19.25
Birmingham, No. 1	15.00 to 16.00
New York No. 1 (dealers' price)	20.50 to 21.50
Valleys No. 1	18.00 to 19.00
Boston (dealers)	17.00 to 17.50

WROUGHT PIPE

Eastern Pennsylvania	$18.50 to 19.50
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	15.00 to 16.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	14.50 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$21.00 to 22.00

CITY WROUGHT

New York, long (dealers' price)	$17.00 to 17.50
New York, special	14.50 to 14.75

BUSHELING

Chicago, No. 1	$18.50 to 19.00
Chicago, No. 2	13.50 to 14.00
Cleveland, No. 1	18.00 to 19.00
Cleveland, No. 2	15.75 to 16.25
St. Louis, No. 1	16.50 to 17.00
Buffalo, No. 1	14.00 to 15.00
Cincinnati, No. 1	14.75 to 15.25
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$11.50 to 12.00
Chicago	8.50 to 9.00
Eastern Pennsylvania	13.00 to 13.50
Eastern Pennsylvania (blast furn.)	12.00 to 13.00
Cleveland	10.50 to 11.00
Buffalo	8.00 to 9.00
New York (dealers' price)	8.50 to 9.00
St. Louis	11.50 to 12.00
Cincinnati	7.50 to 8.00
Birmingham	11.00 to 12.00
Valleys	11.00 to 11.50
Boston (dealers)	6.50 to 7.00
Boston (blast furnace) (dealers)	7.00 to 7.50

CAST IRON BORINGS

Pittsburgh	$13.00 to 13.50
Chicago	12.00 to 12.50
Eastern Pennsylvania	13.50 to 14.50
Cleveland	12.50 to 13.00
St. Louis	10.50 to 11.00
Buffalo	11.50 to 12.50
New York (dealers' price)	10.50 to 11.00
Cincinnati	9.00 to 9.50
Birmingham	11.00 to 12.00
Valleys	11.50 to 12.00
Boston (dealers)	8.50 to 9.00
Boston (blast furnace)	8.00 to 8.50

IRON AXLES

Pittsburgh	$29.00 to 30.00
Chicago	31.50 to 32.50
Eastern Pennsylvania	28.00 to 30.00
Cleveland	29.00 to 31.00
St. Louis	31.50 to 32.00
Buffalo	26.00 to 27.00
Cincinnati	26.00 to 26.50

IRON RAILS

Chicago	$22.00 to 23.00
Cleveland	24.00 to 25.00
St. Louis	22.50 to 23.00
Buffalo	23.00 to 24.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$17.00 to 17.50
Cleveland	15.50 to 16.00
St. Louis	16.00 to 16.50
Cincinnati	14.00 to 14.50

GRATE BARS

Chicago	$19.00 to 19.50
Cleveland	19.00 to 20.50
Buffalo	19.00 to 20.00
New Jersey points	16.25 to 17.00
Eastern Pennsylvania	17.00 to 18.00

FORGE FLASHINGS

Cleveland, large	$14.00 to 15.00
Cleveland, small	15.75 to 16.25
Chicago, small	15.00 to 15.50
Boston (dealers)	10.00 to 10.50

FORGE SCRAP

Chicago	$18.50 to 19.00
Eastern Pennsylvania, No. 1	14.00 to 15.00

ARCH BARS AND TRANSOMS

Chicago	26.00 to 27.00
St. Louis	23.50 to 24.00

ANGLE BARS—IRON

Chicago	$23.50 to 24.50
St. Louis	20.50 to 21.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$15.50 to 16.00
Eastern Pennsylvania	12.50 to 13.50
Boston (dealers)	7.00 to 8.00
Cleveland	15.00 to 15.50
Buffalo	13.00 to 14.00
Chicago	13.50 to 14.00

STEEL CAR AXLES

Pittsburgh	$25.00 to 26.00
Eastern Pennsylvania	28.00 to 30.00
Cleveland	28.50 to 30.00
St. Louis	28.50 to 29.00
Buffalo	26.00 to 27.00
Chicago	28.00 to 28.50
New York (dealers' price)	21.25 to 22.25
Birmingham	20.00 to 23.00
Boston (dealers)	19.00 to 20.00

SHAFTING

Eastern Pennsylvania	$25.00 to 27.00
St. Louis	26.00 to 26.50
New York (dealers' price)	19.75 to 20.75
Chicago	24.00 to 25.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh iron	$22.00 to 23.00
Pittsburgh, steel	19.50 to 20.00
Chicago, iron	23.00 to 23.50
Eastern Pennsylvania, iron	23.00 to 24.00
Cleveland, iron	23.00 to 24.00
St. Louis, iron	23.50 to 24.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	20.00 to 22.00
Boston	23.00 to 24.00
Cincinnati	19.00 to 19.50

NO. 1 CAST SCRAP

Pittsburgh, cupola	$21.00 to 22.00
Chicago, cupola	24.50 to 25.00
Eastern Pennsylvania, cupola	23.00 to 24.00
Cleveland, cupola	23.00 to 24.00
New York, cupola (dealers' price)	19.50 to 20.50
Cincinnati, No. 1, cupola	22.00 to 22.50
Birmingham, cupola	22.00 to 23.00
St. Louis, railroad	25.00 to 25.50
St. Louis, agricultural	24.00 to 24.50
Buffalo	22.50 to 23.00
Boston	23.50 to 24.50

HEAVY CAST

New York (dealers' price)	$19.50 to 20.50
Buffalo	21.00 to 22.00
Pittsburgh	19.50 to 20.50
Eastern Pennsylvania	21.00 to 21.50
Cleveland	19.00 to 20.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$16.50 to 17.00
Pittsburgh, agricultural	15.50 to 16.00
Chicago, railroad	19.50 to 20.00
Chicago, agricultural	18.50 to 19.00
Eastern Pennsylvania, No. 1 cupola	18.00
Cleveland, railroad	19.00 to 20.00
Cleveland, agricultural	16.00 to 16.50
St. Louis, railroad	16.00 to 16.50
St. Louis, agricultural	15.00 to 15.50
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	12.00 to 12.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$24.00 to 25.00
Chicago	22.00 to 23.00
Eastern Pennsylvania	21.00 to 22.00
Cleveland	18.50 to 19.50
St. Louis	19.50 to 20.00
Birmingham	15.00 to 16.00
Boston (dealers)	13.50 to 13.75

LOCOMOTIVE TIRES

Chicago	$21.00 to 21.50
St. Louis	18.50 to 19.00

BOILER PUNCHINGS

Chicago	$20.50 to 21.00
Eastern Pennsylvania	21.00 to 22.00

Announcement

to Buyers and Sellers of Scrap

Whatever your connection in handling Scrap, you expect these things:

Right Price
Quick Action
Courteous Treatment

Established over five years, with a complete and able staff of experienced Scrap men, our organization is ready to serve you.

— The James S. Miller Co
McCormick Building
Chicago

We can give especially efficient service to

— Steel Foundries { Open Hearth and Electric
— Rolling Mills
— Blast Furnaces
— Iron Foundries { Gray and Malleable

CENTRALIA, WASH.—Plans for the foundry and machine shop for the Kane Pneumatic Shock Absorber Co. have been completed.

KELSO, WASH.—The Kelso Machine Works recently was organized by Woods & Wells. A plant will be equipped shortly.

OLYMPIA, WASH.—Bids will be taken at the office of the Washington State Highway Commission, until July 7, for the erection of a steel bridge across the Chehalis river.

OROVILLE, WASH.—The Okanogan Valley Power Co. is reported planning to build a power plant at an estimated cost of $150,000.

SEATTLE.—The American Can Co. is reported planning to enlarge its plant.

SEATTLE.—The Universal Tractor Attachment Co. has been incorporated with $500,000 capital, by Samuel Glenn and others.

Business in Canada

BEAVER RIVER, N. S.—Construction has been started on the erection of a pulp mill, sawmill, machine shop, etc., for Clarke Bros., Ltd.

MONTREAL, QUE.—The Booth-Coulter Coppersmithing Co., Ltd., has been incorporated to carry on a general foundry and machine shop business, with $100,000 capital, by Gerald A. Coughlin, Francis G. Bush, George R. Drennan and others.

SOREL, QUE.—The Leclair Shipbuilding Co. will start work immediately on the construction of a floating drydock to have a capacity for vessels up to 7000 tons.

ST. COLOMB DE SILLERY, QUE.—Plans have been prepared for the waterworks system for the municipal council. Edouard Hamel Co., 51 St. Peter street, Quebec, Que., is engineer.

ST. HONORE, QUE.—The municipal council is having plans prepared for a waterworks system. J. F. Brenon, Chicoutimi, Que., is engineer.

MONTREAL, QUE.—Theophile Constantine, 2332 St. Denis street, will build an auto repair shop.

ACTION, ONT.—Plans are being prepared by James, Loudon & Hertzberg, Excelsior Life building, Toronto, Ont., for water and sewage systems for the town council.

ARNPRIOR, ONT.—The Arnprior Cabinet Co., Ltd., Havey street, will build an addition at a cost of $40,000 and new machinery will be installed.

BRANTFORD, ONT.—The Electric Tin Products Co., operating under a Dominion charter has a site here and will start work on the erection of a smelter.

COLLINGWOOD, ONT.—The plant of the Imperial Steel & Wire Co., which was recently damaged by fire will be rebuilt immediately. The new plant will include buildings for the manufacture of cold drawn steel, wire rods, fine and coarse wire, wire nails, wire netting, staples, fencing, etc. A galvanizing plant, tinning plant and annealing plants will also be included.

GUELPH, ONT.—The Lang Mfg. Co., Ltd., has been incorporated to manufacture iron, steel, machinery, tools, etc., with $40,000 capital by Charles L. Dunbar, Leo W. Goetz, John Sutherland and others.

GUELPH, ONT.—The National Standard Co. of Canada, Ltd., has been incorporated to manufacture metals, wire, nails, cables, machinery, etc., with $30,000 capital by Charles H. C. Leggott, 116 Arundel avenue, Walter W. Perry, Scarboro Junction and others.

LONDON, ONT.—Plans are being prepared for a plant here for the Republic Motor Co., Alma, Mich., to cost $500,000. A. C. Smith, 1502 Royal Bank building, Toronto, Ont., is general manager.

NIAGARA FALLS, ONT.—The city proposes to make improvements and additions to the electric light plant and system to cost $18,000.

NIAGARA FALLS, ONT.—The Niagara Wire Weaving Co., Ltd., has been incorporated to manufacture wire, machinery, tools, etc., with $220,000 capital, by Hamilton Lindsay, Alexander Winton, George H. Brown and others of Cleveland.

OSHAWA, ONT.—The Ontario Steel Products Co. has completed arrangements to establish a new motor spring plant here, the main building to be 80 x 360 feet. The works will be known as the Central Spring Co.

PORT COLBORNE, ONT.—The town council is making arrangements for the construction of waterworks plant to cost $100,000. David A. Lair is clerk.

SARNIA, ONT.—The Pressed Metals Co., Ltd., 112 Adelaide street, Toronto, Ont., will erect a manufacturing plant here.

SARNIA, ONT.—C. Harold Wills, care of the Chamber of Commerce, is making arrangements for an automobile factory here to cost $200,000.

STRATFORD, ONT.—The Kindel Bed Co., 552 Ontario street, is having plans prepared for a plant addition to cost $100,000. James Russell, Downie street, is architect.

TORONTO, ONT.—The Anthracite Briquette Co. has a site here and will erect a plant for the manufacture of compressed anthracite briquettes.

Business Changes Recently Announced

EFFECTIVE Aug. 1, the Oliver Iron & Steel Co., Pittsburgh, will establish a Pacific coast sales office in the Monadock building, San Francisco, in charge of E. W. Kratzer. On and after that date, all business in Pacific coast territory will be handled through that office which is being established to give the trade more prompt and efficient service.

* * *

The Camden Forge Co., Camden, N. J., has opened district sales offices in New York and Pittsburgh, in charge of S. W. Hilt and John H. Schuler, respectively.

* * *

General offices of the Bull Tractor Co. are being moved from Minneapolis to Anderson, Ind., and will become a part of the Bull Tractor-Madison Motor Corp., Anderson.

* * *

The corporate name of Lewis F. Shoemaker & Co., Pottstown, Pa., fabricators and erectors of steel bridges and buildings, was changed, effective July 1. The new name will be the Shoemaker-Satterthwait Bridge Co. The change is made only in the title, the management and personnel remaining the same, Lewis F. Shoemaker being president and Thomas C. Satterthwait secretary and treasurer. The company carries on a structural steel and fabrication business with a plant at Pottstown, with offices at No. 2 South Fifteenth street, Philadelphia, and No. 256 Broadway, New York.

* * *

The Thomas H. Hart Co., 364 Atlantic avenue, Boston builder of special machinery, tools, dies, gages, stamping and specialties, has changed ownership and will hereafter be known as the Hart Machine & Tool Co. R. S. Diaz is manager.

The Norton Co., Worcester, Mass., has opened an office and salesroom at 73-75 West Congress street, Detroit, in charge of Charles W. Jinnette, district manager.

* * *

The Ideal Machine Co., Plainville, Conn., is the new name of the Ideal Switch & Machinery Co.

* * *

The Metal Production Equipment Co., Springfield, Mass., has been purchased by the Baush Machine Tool Co. of that city, and the business will be continued under the name of the Baush Machine Tool Co., metals division.

* * *

The Massachusetts Machine Shop, Inc., Worcester, Mass., sheet metal stampings and metal small wares, has removed to 817 Albany street, Boston, where enlarged quarters and equipment have been provided.

* * *

The Blaw-Knox Co., Pittsburgh, structural steel, etc., has opened branch offices in the Little building, Boston, and the Owen building, Detroit, in charge of A. W. Ransome and H. J. Desson, respectively.

* * *

The Niagara Brass Mfg. Co., Inc., founders and machinists, has announced the removal of its foundry and machine shop from Buffalo to Lockport, N. Y.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, July 17, 1919 *No. 3*

Hold Back on Price Advances

Conservative Policies Prevail With Mills as Rush of Shipping Demands Brings Growing Congestion in Some Lines—Action of One Producer in Raising Pipe Not Followed—Labor is Factor—Market Generally Active

AS steel tonnage accumulates more rapidly on mill books, there is increasing talk of price advances in certain lines but producers are adhering to a very conservative course in adopting higher schedules. The action of one independent interest this week in raising tubular products $5 to $10 per ton has not been followed by other manufacturers of this material. This attitude of producers is influenced considerably by the spotty character of the demand which leaves some of the heavier products still lagging behind and militates against well-balanced operations. It is indicated also that labor considerations are a factor of restraint. The price situation in steel offers a considerable contrast to the action of the copper market. That metal under the most vigorous domestic and foreign buying in many months has risen almost 2 cents per pound within the week and 4 cents within the month.

Production in some finished steel lines appears to be nearing the maximum point permitted by the supply of labor. As there is a rush of shipping demands, mill books are becoming increasingly congested and deliveries are lengthening. This is notably the case in sheets, wire and lapweld pipe. Liquid tonnage in sheets placed with the American Sheet & Tin Plate Co. in the week of July 12 broke all records. Total orders entered in sheets and tin plate were exceeded by only one similar period in history, or in April, 1918, and in that instance heavy tin plate specifications were the cause. Inquiries for oil and gas pipe are heavy and not a little of this business virtually is going begging. Wire producers are picking new business with care. Some of the heavy tonnages representing 12 months' requirements of prominent automobile builders in the central west, virtually have been closed.

Armor Plate Awarded

The navy department has awarded to the Bethlehem, Carnegie and Midvale companies equal portions of a combined requirement of 50,000 tons of armor plate for six battleships now under construction. The price of $520 per ton for Class A armor, represents a modification of the bids submitted privately by the makers. The price as finally determined is really an agreed one.

Big Tonnage In Sight

Now that the trade ban on Germany is being lifted, there is much interest to see what she may be able to do as a contender for international business in iron and steel. This is especially pertinent for American producers, in view of the tremendous ship steel requirements that are looming up for France and Italy. In some well-informed quarters, these demands for the construction work which these countries have in mind, are estimated as high as 1,000,000 tons, and depending upon the financing arrangements, some action is expected in 30 to 60 days. The position of the British mills for export competition is growing progressively worse as new advances are being made. A higher schedule inaugurated this month puts ship plates at $88.60 Scotch ports as against the American price of $53 Pittsburgh. Other products for both foreign and domestic delivery have been raised accordingly, the amount ranging from $2.40 to $7.20 per ton. The Canadian government has renewed a war contract for 250,000 tons of ship plates with the Dominion Steel Corp. at a reduction in the price from 4.15c to 3.65c.

Iron Prices Stronger

Though in considerably smaller amount than in June, pig iron sales continue to aggregate a very comfortable tonnage. At the same time shipments are increasing. The inquiry for 1920 delivery is growing but the uncertainty of costs makes the producers reluctant at this time to obligate themselves for that period. The General Motors Corp. has closed for 11,000 tons of foundry and malleable for Flint, Mich., for last half.

Export bookings by American mills are on the increase. France placed 535 tons of ship plates with an eastern mill at 2.55c. Pittsburgh and 5000 tons were recently sold at 2.60c Pittsburgh. Sales to England this week include 1000 tons of pipe, 1000 tons of steel bars, 1000 tons of iron bars, 500 tons of hoops, some light rails and miscellaneous orders.

JULY 17, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
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BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Where is That Co-operative Spirit?

RECENT developments in the American metal markets seem to prove that the great movement of co-operation and co-ordination, built up during the war and out of which such a great change in business methods during peace was expected to result, is not functioning in the way it had been hoped. Furthermore it is apparent that these commodities are more intrenched in international trade than ever before and the actions and reactions of international politics are being reflected in their market movements.

Our market is reflective of political conditions throughout the world. There is the instance of copper which has advanced 20 cents. This advance is due to strong domestic demand and the heavy purchases of Japan. Already an important English journal is asking whether such foreign purchases suggests the possibility of another war. Japan not only has been a heavy purchaser of copper but of other metals needed for munitions.

The French government lifts her import embargo, we receive a flood of inquiries and immediately the price concessions which have been allowed exporters are withdrawn. Only recently it was advertised to the world that the railroad administration had settled its differences with the steel producers and would purchase rails. Immediately substantial orders from abroad are received but when the railroad administration fails to make its rail purchases the foreign sales of that commodity cease. Now with the peace treaty signed and commercial intercourse with Germany restored, a great many of the inquiries which recently were presented on this side are repeated in Germany, and this country is faced with the prospect of relinquishing much potential business in Europe.

All this goes to show that trade largely is a matter of price and its course, while it may be influenced, cannot be controlled either by sentiment or co-operative agreement. Just now conditions of exchange and the premium of the dollar is another factor tending to favor foreign competitors of this country. As events are portending, an early resumption of iron and steel trading between France and Germany is more than likely. The busy world is prone to quickly forget many things where questions of commercial advantage are involved.

Immigration and Living Prices

THE passage of a resolution at the recent convention of the American Federation of Labor at Atlantic City, calling for the prohibition of immigration from Europe and Mexico for four years, nearly resulted in a serious disagreement between the delegates at the Pan-American Federation of Labor just held in New York. The resolution of the American Federation of Labor was regarded by the Mexican labor delegate as an unjust discrimination. The reply of Samuel Gompers, president of the American federation, to the complaint served to mollify the Mexican, and, incidentally, revealed that the American Federation of Labor has no intention of fostering a return to conditions which will permit a resumption of immigration to this country in volume sufficient to relieve the present scarcity of labor.

The whole point of Mr. Gompers reply was embodied in this excerpt: "The standards which we have raised and established for the American workers are high and we are not going to give them up to the greed and rapacity of the employing class and we are not going to have them undermined by large immigration which would wipe them out."

It is to be hoped that Mr. Gompers and some other people who have advocated the prohibition of immigration for a period of years will remember that the scarcity of labor is just as bad for the laborer as for the employer, and, consequently, for the country as a whole. The price of the food, clothing, etc., which the workman consumes, and the general expenses of living, are determined by the cost. That cost bears a very exact ratio to the wages paid the workers producing and transporting

these materials. The continuous scarcity of labor undoubtedly will lead to a sustained upward tendency in wages and Mr. Gompers should remember that the burden of paying the resulting higher prices for the necessities of life will react upon the workers as well as upon employers throughout the country. In the end, it is doubtful whether they will be better off in the matter of savings.

Making Violators Pay the Bill

A DECISION of far-reaching importance dealing with legal liability of a labor union for the destructive acts of its members has been rendered in the United States circuit court of appeals for the eighth district. The court in its finding held that the defendant, the United Mine Workers of America, was answerable for damages under the Sherman anti-trust law where its members had been guilty of injury to or destruction of property of another. It was declared that the organization is charged with responsibility as a principal for any lawlessness on the part of its district and local branches, their officers and members, and especially so where it takes no steps to control or discipline its officers or members for overt acts. Damages to the amount of $625,000 representing treble the amount of the destruction were assessed.

This decision represents a forward step of enlightened justice. If its doctrine is sustained by the higher courts, it should take rank in the principles of equity laid down, with the famous Danbury hatters' case which has had a chastening effect upon the use of the boycott by labor unions. If the organized heads of labor organizations can be impelled to use adequate methods to limit violence as a weapon in disputes, under penalty of damages against the whole organization, it should materially help to bring about an end most to be desired. Finally the just cause of labor would be benefited, by assuring itself of the weight of public opinion.

Demand Keeps Up With Capacity

INGOT production statistics now available further demonstrate the fact that June was the pivotal month in the recovery of iron and steel operations after a period of successive monthly declines. The steel output in June is shown to have been substantially 20 per cent heavier than in May and to have run at the annual rate of approximately 32,430,000 tons. How far down the steel works activities had slipped during the past six or seven months of retarded buying is indicated by the spread between June and the record month of output, October, 1918, when production was on the scale of 45,359,000 tons annually. Taking October as the month of highest practical operating capacity, the steel industry in June was 71.6 per cent of normal. Expressed on the favorable side, the June rate of output was more than 5,000,000 tons annually in excess of that of May.

There is every reason to believe that July will make an even better showing than June, notwithstanding the usual disturbances of the weather. This is because specifications with the mills have been coming along in an increased volume, permitting a better scheduling of finished mill operations and providing a heavier demand upon steel works. It is reasonable to expect that the present month will show a rate of output around 75 per cent or more of the practical maximum yield of last October. When it is taken into account that railroad buying, the largest single item of a normal steel market, is at minimum proportions, this showing is exceedingly favorable and it suggests that the increased steelmaking capacity provided during the war period is not much out of line with the regular demands of an industrial situation that is readjusting itself after several years of abnormal conditions.

Call Them By Their Right Names

IN Gary, Ind., recently evidence of considerable labor unrest came to the surface. "Bolshevists are busy!" cried the daily press, insisting from the start that the commotion among the working men was caused by fanatics of the Russian type. But the company which controls the fortunes of the great mills and furnaces of that industrial city knew better. It knew that bolshevists had nothing to do with the trouble but that it was being fostered by trades union agitators. A large share of the public in Gary and elsewhere, however, got the mistaken impression that bolshevists had begun a campaign of disorder in that city, when, as a matter of fact, it was the followers of Mr. Gompers and not those of Lenine and Trotzky who were seeking to create discord.

This little lesson from Gary suggests that there is danger in confusing the work of trade unionist propagandists and that of bolshevists. It is a common practice to refer to all labor agitators as bolshevists. As a consequence the public has received the impression that only bolshevists are to blame for acts of injustice and violence, while the federation of labor and its allied branches are something wholly apart, holy and righteous.

Americans should keep the identification in mind. If trades union agitators under cover attempt to put on a little show of their own they should be identified and exposed. The haphazard, meaningless reference to all agitators as "bolshevists" is helping the cause of those federation of labor agitators who would not hesitate to seize any advantage to promote their aims.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 200 AND 202

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	26.50 to 27.00
Basic, Buffalo, furnace	25.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25
Malleable, delivered eastern Pa.	28.35 to 31.15

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No 2 Southern	2.25 to 2.75
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X eastern	2.75 and up
No. 1, Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25
No. 1X, eastern delivered Phila.	$30.00 to 31.60
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 27.00
No. 2 foundry, Cleveland furnace	26.75
No. 2 foundry, Ironton furnace	26.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	29.00 to 30.60
No. 2X, eastern, N. J. tidewater	28.90 to 30.90
No. 2X eastern, Boston	30.90
No. 2X foundry, Buffalo furnace	28.00
No. 2 foundry, del. Philadelphia	28.00 to 29.60
No. 2 foundry, N. J. tidewater	28.40 to 29.90
No. 2 southern, Birmingham	25.00
No. 2 southern, Cincinnati	28.60 to 28.85
No. 2 southern, Chicago	30.00
No. 2 southern, Phila.	31.50
No. 2 southern, Cleveland	30.00
No. 2 southern, Boston	33.50 to 34.50
No. 2 southern, St. Louis	29.00
Virginia, No. 2X, furnace	26.50
Virginia, No. 2X, Philadelphia	30.60
Virginia, No. 2X, Jersey City	31.90
Virginia, No. 2X, Boston	31.20
Gray forge, valley, Pittsburgh	27.15
Gray forge Buffalo	25.75 to 26.00
Gray forge, eastern Pa.	27.50 to 28.50
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	41.50 to 42.00
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	40.00
Charcoal, Superior, Chgo., last half	31.45

Coke

(At the ovens)

Connellsville furnace	$4.00 to 4.50
Connellsville foundry	5.00 to 5.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00 to 115.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports.	115.00
Spiegel, 16 to 20 per cent furnace, spot	30.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.15 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's plant	32 to 34 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$36.50 to 38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Youngstown	36.50 to 38.50
Bessemer, Pittsburgh	36.50 to 38.50
Bessemer, Youngstown	36.50 to 38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-hearth, Pittsburgh	$40.00 to 42.00
Open-hearth, Youngstown	$40.00 to 42.00
Bessemer, Pittsburgh	40.00 to 42.00
Bessemer, Youngstown	40.00 to 42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, refined, Phila.	2.595c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, refined, New York	2.62c
Bar iron, extra refined, Pittsburgh	2.75c
Hard steel bars, Chicago	2.45c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	35.00 to 38.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.35c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c
Plain wire, Pittsburgh	3.00c
Galvanized wire, Pittsburgh	3.70c
Barb wire, painted, Pitts.	3.40c
Barb wire, galvanized, Pitts.	4.10c
Cut nails, Pittsburgh	4.445c
Coated nails per count keg, Pitts.	$2.75 to 2.85
Polished staples, Pittsburgh	3.40c
Galvanized staples, Pittsburgh	4.10c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.50c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1588.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1588.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Full tube schedule page 1588.

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	$54.80
Six-inch and over, Chicago	51.80
Four-inch, New York	55.70
Six-inch and over, N. Y.	52.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.05c to 3.30c
Shafting, Pitts., carloads	28 off list

Cotton ties, lots of 1000 to 3000 bundles, $1.73½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.71½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.70c
Boiler rivets, Pittsburgh	3.80c
Rivets ⅞ in. and smaller Pitts.	60–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10–10 off
Cut thread	50–10 off
Larger and longer	45–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60–10 off
Cut thread	50–10–10 off
Larger and longer	50–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	80 off
Gimlet and cone point lag screws	65 off

NUTS

Hot pressed, square blank	3.10c off
Hot pressed, square tapped	2.85c off
Hot pressed, hexagon blank	3.10c off
Hot pressed, hexagon tapped	2.85c off
Cold pressed, square tapped	2.85c off
Cold pressed, square blank	3.10c off
Cold pressed, hexagon blank	3.10c off
Cold pressed, hexagon tapped	2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices July 16, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	31.45	31.45	33.25	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
**Southern, No. 2, Birmingham	25.50	25.25	28.00	33.50
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa.	26.50	25.50	29.65	32.00
**No. 2X Virginia, furnace	26.50	26.50	28.45	33.50
**No. 2X, eastern del., Philadelphia	29.50	29.60	31.90	34.50
Ferromanganese, 80 per cent, delivered	110.00	114.00	130.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.00	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	38.00	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73

	Prices July 16, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Iron bars, Cleveland	$2.52	2.52	2.52	3.64
Iron bars, Chicago mill	2.62	2.53	2.58	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.30	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.50	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.65	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.00	3.90	3.80	6.00
Connellsville foundry coke	5.25	4.65	4.55	7.00
Heavy melting steel, Pittsburgh	20.00	17.25	15.75	29.00
Heavy melting steel, eastern Pa.	19.50	16.15	15.90	28.50
Heavy melting steel, Chicago	18.50	16.75	16.40	29.00
No. 1 wrought, eastern Pennsylvania	25.50	22.50	21.50	34.00
No. 1 wrought, Chicago	20.00	18.70	18.50	33.50
Rerolling rails, Chicago	21.50	19.25	17.95	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Iron Prices Show Stronger Trend

Southern Makers Less Willing to Absorb Freight and Various Eastern Furnaces Are Quoting Higher—New Selling Keeps to Fair Volume—General Motors Corp. Buys 11,000 Tons—10,000 Ton Basic Inquiry at St. Louis

Pittsburgh, July 15.—While demands for pig iron from nonintegrated steel plants still are extremely limited, other consumers quietly are covering their requirements for the remainder of this year. Excluding basic, some business has been done in all grades with the total making a fairly good comparison with that of last week. Total sales for the week reached an aggregate of approximately 20,000 tons and all was done at full market prices. It is reported that 500 tons of bessemer recently changed hands at $28 delivered, Pittsburgh, but no confirmation is obtainable and some doubt exists that it was made in view of the fact that brokers have been carefully canvassing producers in the hope of picking up some tonnage of this grade. The foundries using bessemer iron have been pretty good buyers recently and sales aggregating 5000 tons in lots of from a carload to 1000 tons have been made at the full market price of $27.95 furnace. An inquiry for 1000 tons of bessemer is before makers from a Pittsburgh district consumer. Several good sized lots of forge iron have been sold recently, among them one for 3000 tons, all at $27.15, Pittsburgh. In addition to small sales there was one transfer of 2000 tons of No. 2 foundry (1.75 to 2.25 silicon), all business being at $26.75 furnace, while one inquiry for 1500 tons of No. 2 foundry and another for 1000 tons of the same grade are before makers. Although nothing beyond carload sales of basic have been made, the market is firm at $25.75 furnace on this grade. Producing costs are no less and in view of the growing scarcity of labor, a strong possibility exists for an increase. Little hope now prevails among blast furnace interests that ore will be bought at any lower prices and while the spot market for coke is rather weak, the signs are against the possibility of materially lower prices for the remainder of the year. Steel manufacturers making their own iron are increasing production. The Carnegie Steel Co. has added two furnaces to its active list, making 36 in blast and expects to blow in two more at its Columbus, O., works next week. It is expected that more than 40 of the 59 stacks of this company will be active by Aug. 1. The Jones & Laughlin Steel Co. will blow in an additional stack this week. The new stack at the Weirton Steel Co., Weirton, W. Va., which for a time will be a merchant stack, goes in next Monday and the stack of M. A. Hanna & Co., Canal Dover, O., will be blown in Aug. 1. It is expected that the Alice furnace of the Valley Mold & Iron Corp., Sharpsville, Pa., soon will be started but the Clinton stack and the Cherry Valley furnace of the M. A. Hanna soon will go out for relining.

Small Sales Are Rule

Boston, July 14.—The lull in pig iron trading continued throughout the past week with all sales small but with the aggregate about equal to that of the previous week. Prices from all districts are reported firm with a tendency toward a higher level for fourth quarter. Nearly all furnaces seem reluctant to place any but immediate business—several have refused to quote beyond 60 days and no quotation for next year has been reported. The Virginia Iron, Coal & Coke Co. is still out of the market for 1919 business, except in some limited stocks of high silicon iron. A Pennsylvania furnace in changing from low phosphorus to foundry iron is reported to have made some unusual concessions in order to obtain back log orders. Sales by this furnace have not been large however. Connecticut foundries have been the heaviest buyers during the past week and business among textile machine and machine toolmakers appears to be decidedly active. One foundry which had placed orders two weeks ago covering last half now has made additional purchases of sizable lots. In spite of the high freight rates southern iron is holding its own in the local market and good orders for last week and also for this week are reported by one agent. The prices on some southern grades has advanced about $1 and a similar advance is reported for one northern furnace. Most sales of northern iron have been made on the basis of $30.90 delivered for 2.25 to 2.75 silicon. It is estimated that the aggregate of sales in New England including Connecticut during the past week, was 6500 tons. Few inquiries are out and none for large tonnages. A Massachusetts manufacturer of machinery wants 400 tons of No. 2X Virginia (2.25 to 2.75 silicon) and 200 tons of northern of the same content for fourth quarter. Another inquiry from a local foundry is for 500 tons for last half.

Sell Iron for 1920

New York, July 14.—Growing improvement in the outlook for export business, and an increasing demand for the first half of 1920, featured the pig-iron market in this district during the past week. Inquiries from abroad are more numerous and there now seems to be more disposition to close them. Among sales actually consummated during the

past week was one of 3000 tons of Alabama foundry for a European destination. Incidentally, it is learned that delivered prices on American basic for England do not compare unfavorably with the prices quoted by Luxemburg furnaces. Sales of iron to domestic consumers for 1920 so far involve several thousand tons. A Buffalo stack sold 600 tons of No. 2 (2.25 to 2.75 per cent silicon) for first half at $28, Buffalo. Approximately 2500 tons of central Pennsylvania foundry iron have been sold at prices varying from $28.50 to $29.50, furnace, for 2.25 to 2.75 per cent silicon for first quarter and first half delivery. Several lots of malleable also have been sold for first quarter and first half delivery, but the prices are not known. Business during the past week for this year's delivery to domestic consumers has not been especially heavy. It embraced mainly foundry tonnages of moderate size. The only notable inquiry which is out for foundry at this time is for several hundred tons for last quarter. Approximately 1200 tons of basic were sold in this district during the past week for nearby shipment around $26.25 eastern Pennsylvania furnace, equivalent to approximately $27 delivered in eastern Pennsylvania. This same figure was done on two other sales of about the same size made in this district during the past two weeks. An inquiry is now out for about 1000 tons of spot basic. Witherbee, Sherman & Co. are expected to blow in their furnace at Port Henry, N. Y., on foundry iron about the end of July.

Sellers Avoid New Bookings

Buffalo, July 15.—Two pig iron selling interests here are practically out of the market for the rest of this year. One furnace definitely has withdrawn from the market and the other is not interested in taking on any more bookings until it is ready to quote on 1920 delivery. No interest is shown by makers at this time in 1920 business, as they prefer to wait in selling so far ahead. Melters are displaying a rather belated activity, many of them now clamoring for tonnage to carry them over to Jan. 1. The tonnage could very easily have been secured a month ago but at this time, it is difficult to obtain. There is considerable inquiry for special irons. There is a good specification against contracts recently made, indicating that business with melters is good. Many buyers have specified rush shipments. The iron sold in the district during the week has not been heavy. It is believed that 30,000 tons would cover it easily. One interest reports sales of 6000 tons of malleable and 6000 tons of foundry in several sales at the regular schedule. There is an inquiry out for 5500 tons of foundry and one for between 2000 and 3000 tons of malleable. One interest sold a small tonnage of high sulphur off-iron at a 50 cent reduction, but has done no other price cutting.

Auto Plant Buys 11,000 Tons

Cleveland, July 15.—New sales of pig iron have run in lighter volume the past week and the inquiry also has dropped off with most producers though some interests report it is still lively. It is pointed out that a good proportion of the consuming trade now is under contract for its requirements up to Jan. 1 and producers are not willing to sell freely for 1920 for which there is some inquiry coming out. Furthermore while consumption is increasing, it has been more marked in some lines than others and certain melters have on hand or under contract considerable iron originally purchased for the first half which will carry them through for an indefinite period in the second half. At the same time some fair sales continue to be made, the largest of which is 11,000 tons, including 7000 tons of foundry and 4000 tons of malleable for the Buick Motor plant at Flint, Mich., for last half which went to lake furnaces. Another sale of 5000 tons of foundry iron for last half was closed. The bookings of one large Cleveland seller in the week amounted to about 20,000 tons and of another to about 27,000 tons. There is still a lack of interest in steelmaking irons. The J. C. Cromwell Steel Co. which is resuming operations at its open-hearth plant at Lorain, O., may be a buyer of basic shortly although it has some stock on hand. This consumer has been figuring in the market for some time. The general report of the furnaces is that they are now shipping more than their current output and the result is a moderate reduction of the stocks which they had been piling over a period of some weeks. The C stack of the Buffalo-Union Furnace Co., Buffalo, has gone out for repairs. The McKinney Steel Co. has blown in a third furnace in this city.

Southern Makers Drop Concessions

Chicago, July 15.—Southern furnaces have discontinued meeting the northern freight differential, and are now selling at full schedule price, f.o.b. Birmingham. In some instances, the southern interests absorbed as much as $4.50 of the freight charge to Chicago, making the price $30.25, delivered in the Chicago territory, and netting the furnaces $25.25 a ton. Business has so far improved, however, that they are now quoting $29.75 on No. 1 southern (silicon 2.75 to 3.25) f.o.b. Birmingham. As the freight charge to Chicago is $5, buyers in this territory would now be required to pay $34.75 a ton for this grade which removes the southern interests from this market. These interests have been reducing the amount of the freight absorption as business has improved, and the Republic Iron & Steel Co. practically ceased to allow the concession some few days ago. Now, however, both the Republic company and the Woodward Iron Co. announce no allowances whatever will be made. Sales continue on the upgrade, those in this district approximating 90,000 tons of foundry and malleable during the first half of July. Basic is still quiet, but there are many inquiries for 500 and 1000-ton lots of foundry and malleable for last-half delivery and business is speedily closed. One inquiry is out for 4000 tons of foundry iron, and another for 500 tons of foundry for delivery in 1920, but furnaces are not quoting. Selling agencies report that in the face of increased demand production is not as good as it might be, shipments are beginning to get slow, and these circumstances indicate a shortage of pig iron in the near future. Only one furnace is quoting on silveries. The Jackson county, O., furnaces are still affected by a strike, and the only Tennessee furnace quoting is asking the full schedule price, f.o.b. Birmingham.

Prices Become Firmer

Cincinnati, July 15.—Low-priced iron for third quarter shipment both in the South and in southern Ohio appears to have been absorbed almost in its entirety. Southern furnaces which have been taking orders around $25 to $25.50, Birmingham basis, for iron analyzing 2.25 to 2.75 per cent silicon, evidently have sold all of this metal that they care to dispose of at the present time. Southern iron containing 1.75 to 2.25 silicon now is quoted at $26 Birmingham. Two furnaces located in the southern Ohio district, have sold all of their prospective output of foundry iron. No. 2 foundry (1.75 to 2.25 silicon) is held at $26.75 Ironton by all of the furnaces in the Hanging Rock district. Reports that Virginia iron were invading this territory are without any foundation, but a small tonnage of foundry was sold to a nearby point.

Books for 1919 Well Filled

St. Louis, July 12.—A fair volume of scattering inquiries and actual orders marked trading in pig iron here during the week. The slowing down at the moment is attributed to the fact that users needing iron have covered on their requirements. Another factor is that furnace interests have their books fairly well filled for the balance of this year, and are not willing to take on any business for delivery after Dec. 31. It is undoubtedly a fact that melters in this region are pretty well supplied for the balance of this year, and buying of a big scale, and of a permanent character, can hardly be expected before the makers open their books for 1920 business. Shipments from all directions are coming along with regularity, and in goodly tonnages, with the industries willingly accepting their several quotas. A feature during the past few days has been the relative activity of irons with higher silicon content, though a large number of small lots of other grades have also been placed. One sale of No. 2 Southern foundry, 1.75 to 2.25 per cent silicon, of 500 tons to an east side melter for prompt delivery was reported today. The most important inquiry before the market is for 10,000 tons of basic by a steelmaking interest in the St. Louis district.

Prices Taking on Strength

Birmingham, Ala., July 15.—Pig iron prices in the South continue to take on strength and the furnaces are not willing to sell for fourth quarter delivery except at their own prices. Iron of 1.75 to 2.25 per cent silicon is being held for $26.75. If shading is being done, to absorb freight, very little is being said about it. Two or three makers are out of the market completely for the third quarter and one of the larger com-

panies has announced it is out of the market for last half. Sales have been consummated for iron of 2.25 to 2.75 per cent silicon as high as $28 Birmingham. Production will have to be increased shortly, if the demand is going to be met. Southern furnace companies have not sold yet for 1920 delivery, so far as can be learned. A number of inquiries have come out for next year but reiteration is heard of the belief among producers that higher prices will have to be paid by consumers. Until a considerable advance is obtainable, makers are reluctant to sell for next year. Some export business is looked for shortly, ship room being the principal difficulty.

Eastern Prices Moving Up

Philadelphia, July 15.—Sellers of pig iron in this district declare that their sales so far this month equal their total business in June. While sales of foundry iron continue to be made at $27 and $28 eastern Pennsylvania furnaces for No. 2 plain (1.75 to 2.25 silicon) and No. 2 X (2.25 to 2.75 silicon) respectively, there is a pronounced tendency for prices to move upward. In fact the range indicated is exceptionally low and most furnaces are 50 cents to $1.50 higher. A large portion of the week's business was done at the higher prices. Most furnaces now are well fortified with orders and are in the position to better enforce their asking prices. A Virginia maker who has been selling at $25.50, $26.50 and $27.50 now is quoting $26.50 on No. 2 plain (1.75 to 2.25 silicon) as well as on No 2 X (2.25 to 2.75 silicon). The estimated week's business here in foundry iron was at least 20,000 tons. Basic orders were comprised of 1200 tons at $26 furnace but it is unlikely that this price could be repeated. Current inquiry includes 2000 tons of this grade. Some malleable tonnage has been taken at $28 eastern Pennsylvania furnace. Sales of the week included 1000 tons of forge at $28.50 delivered. The only development in low phosphorus is the award of the tonnage at Burnham, Pa., by the government to F. R. Phillips and Frank Samuel.

Sales Lag

Iron Ore Selling Shows Little Increase in Volume

Cleveland, July 15.—Ore buyers continue to follow the policy of conservative purchases. Some sales of iron ore have been made during the past few days, but the total volume is small. This condition has prevailed for weeks and reflects the slowness which has marked the ore-buying movement so far this year.

Difficulty is found in estimating the approximate degree to which ore consumers are covered by purchase on their requirements up to the opening of the 1920 navigation season. The tonnage sold has been comparatively light contrasted with previous years and ore sellers expect a heightened demand toward the close of the year when most of the lake fleet will be busy handling the heavy grain movement.

Supply Exceeds Demand

Week's Coke Sales Show Furnace Not Above $4 Connellsville—Increased Output in Expectation of Short Supply Produces Weakness

Pittsburgh, July 15.—No basis in sales exists for a price of higher than $4 ovens for standard Connellsville coke on spot this week. In fact, supplies are considerably in excess of demand and it is possible that with as little shopping, consumers might be able even to better that price. A producer located outside of the Connellsville region, reported sales involving about 4000 tons at $4.25 ovens. It is understood that this tonnage was for shipment east and since the producer in question has a freight advantage of 20 cents a ton over the Connellsville operators, this makes a price equivalent to $4.05 Connellsville. The blast furnaces now in operation are so well protected against their fuel requirements by contract that they have no occasion to seek spot lots. This coupled with the fact that several of the Connellsville operators lighted their ovens recently in expectation of a short and strong market over the Fourth of July and produced coke for which no demand developed, has brought about the weakness in the current market. While several merchant blast furnaces are likely to be blown in within the next 30 days, these owners are not seeking coke supplies. Consequently, little new contract business has been completed recently and the market may still be quoted at from $4.12 to $4.50 ovens, including both sliding scale and fixed price contracts. The spot demand for foundry fuel is no more active than that for furnace coke but producers quite generally are comfortably fixed with last half contracts and consequently are indifferent about spot sales except at rather stiff prices. Most of them are quoting $5.50 against current inquiries and it is claimed that sales have been made at that figure. All operators, however, are not so well off and those having free supplies and are seeking to place them are not doing much better than $5 ovens. Foundry coke is moving on contracts at from $5 to $5.50 ovens. Most of the business has been booked at from $5 to $5.25 ovens. Production of coke from the Connellsville region for the week ending July 5 is estimated by the *Connellsville Courier* at 130,790 tons as compared with 138,633 tons the previous week.

Far-West Figures in Market

St. Louis, July 12.—Producers and selling agencies report fairly active conditions and steady to firm prices on coke. Some good inquiries have appeared, and the volume of minor transactions since the holidays has been quite heavy. Inquiries from the west and southwest have picked up, and some actual sales have been made to that general region. California purchased a fair tonnage from a leading interest here, and there have been heavy shipments to water gas companies of the northwest. One sale of 5000 tons of furnace coke to a St. Louis interest was reported, delivery through last half. The Pioneer Coal & Coke Co. reported the sale of 400 tons of selected 72-hour foundry coke to an interest in the Hawaiian islands. This coke will be loaded on vessel at San Francisco. The leading by-product interest is still running at capacity, and reports an easy disposition of its entire product, except small tonnages of domestic grades, which usually accumulate at this season.

Sales Active in New England

Boston, July 14.—The large pig iron sales throughout New England during June are now being reflected in the activity in foundry coke. Most of the larger foundries are covering for the balance of year, and it is probable that the coke sold in New England during the past week equaled that of any previous week during the year. The New England Coal & Coke Co. is running the greater portion of its 400 ovens on foundry coke and is shipping the entire product. The Providence Gas Co., though forced to shut down last week as the result of the walkout of practically all of its employes, reports excellent business prospects. Its labor difficulties are expected to be adjusted soon. One producer says that New England already is independent of Connellsville in its coke price fixing and that the new contracts are worded without reference to Southern interests. Foundry coke is expected to be $10.40 in August and one contract is known to have been placed already at that figure covering last half delivery.

Prices Take Sharp Advance

Cincinnati, July 15.—A selling agency for Wise county coke reports a booking of some foundry coke business for this year's shipment at $7.50 ovens. Some New River foundry coke has been sold at $8. There is an increasing demand for both furnace and foundry coke. Connellsville furnace coke is now quoted at $4.25 minimum for nearby shipment, but some of the operators will not accept business below $4.50. Foundry coke averages around $5.50. Pocahontas foundry coke remains around $6.50 to $7, ovens.

Foundry Coke in Strong Demand

Birmingham, Ala., July 15.—Coke producers are enjoying a better demand for their product, foundry coke in particular being sought. Prospects are good for furnace coke. There is some accumulation of coke by the furnace companies. Coal production in Alabama is far from being satisfactory. The demand for domestic coal continues good but there is need of orders for steam and bunker coal. Shipments of bunker coal are being made down the Warrior river.

The National Acme Co., Cleveland, reports for the quarter ended March 31 sales of $2,700,684 compared with $3,483,788 the previous year. Net profits were $756,620 and dividends paid amounted to $375,000.

Scrap Users in Market

Consumers Are More Important Factor in Stimulating Further Price Advance—Steel Brings $20.50 in Valleys and at Pittsburgh

FOR COMPLETE SCRAP PRICES SEE PAGE 202

Chicago, July 15.—Practically all grades of scrap have been marked up from 50 cents to $2 per ton, the market being exceptionally strong. Even at the advanced prices, dealers declare they are not anxious to sell and look for further rises within the next few weeks. A feature of the market is the demand for all grades, the steel mills coming in during the past week with larger orders. Malleable and cast iron scrap also are now being bought freely. Miscellaneous steel rails which were selling at $18.50 to $19, rerolling rails which were $22 and $23, railroad malleable which was quoted at $19.50 and $20, and agricultural malleable which carried a price of $18.50 and $19, all have been advanced $2 while steel angle bars, compressed scrap, shoveling steel, steel rails, stove plate, low phos billet and bloom butts, cut forge, iron angle bars, machine shop turnings, shafting and No. 1 cast have been marked up $1. Boiler punchings were sent up $1.50. All of the other grades were marked up 50 cents. Railroads are offering some large tonnages. The Chicago, Milwaukee & St. Paul has issued a list of 16 carloads of cast iron borings, steel turnings, heavy wrought and steel forgings and wheels. The railroad administration is offering a miscellaneous list at the plant of the Pullman Co., Pullman, Ill., including approximately 5000 tons. It is offering three carloads at the Lenoir Car Works, Lenoir, Tenn., and five carloads at Kansas City. The Southern railroad is offering 500 tons and the Chicago & St. Paul also is out with a sizable list. The Chicago district salvage board is offering 550 tons.

Prices Moving Upward

New York, July 14.—The continued hesitancy of the yardmen and other collectors of scrap to part with their supplies is forcing the local market upward. No material advance, however, has been noted in heavy melting steel. The prices of machine-shop turnings, No. 1 cast, stove plate and grate bars, have advanced. The tonnage now moving is not large.

New England Market Quieter

Boston, June 14.—Stove foundries are continuing to buy the usual quantities of scrap and their business at this time of the year is always active. As a result there is a local demand for this class of scrap. The scrap market generally, however, is dull. Prices of all grades have remained practically stationary. Heavy melting steel has sold in small lots as high as $16 delivered to dealers' yards; but this is considered the exception rather than the market. Machine tool interests have been the largest local purchasers of scrap during the past week with stove foundries next. For many weeks western steel plants have been out of the market, only buying small quantities for special purposes. The local dealers, howeevr, have kept up good buying for speculative purposes, but now for some reason, even this has fallen off. Some No. 1 cast scrap is moving and while slight concessions in this grade are reported by one dealer, others declare there is a scarcity.

Eastern Prices Still Rising

Philadelphia, July 15.—Activity in the scrap market in the eastern Pennsylvania district during the past week has been restricted to small sales. Prices continue to mount. The Cambria Steel Co. paid $13, Johnstown, for blast furnace turnings. Eastern dealers have been selling heavy cast scrap to plants in the Pittsburgh district. Heavy melting steel delivered eastern Pennsylvania now is quoted at $19 to $20 and guaranteed low phosphorus at $24 to $25.

Prices Still Tend Upward

Pittsburgh, July 15.—Steel manufacturers are coming into the scrap iron and steel market and making fairly large and frequent purchases with the result that the trend of prices still is toward higher levels. One sale of 3000 tons of heavy melting steel recently was made to a Pittsburgh steel manufacturer at $20 delivered and another steel manufacturer this week paid $20.50 for a moderate-sized tonnage. The market on this grade now is quotable from $20 to $20.50 delivered with dealers generally asking $21. Compressed sheets are bringing $16 freely while the market has been established by sales at $15 to $16 on bundled sheet scrap. Sheet scrap reflects the trend in heavy melting steel as the users are practically the same. Heavy turnings recently have brought from $15.50 to $16 and better than $13 has ben paid on some fair-sized sales of machine shop turnings. Foundry scrap relatively is not active. Offerings of all kinds of scrap steel are moderate, although consumers report that the recent appreciation in prices has resulted in somewhat larger offerings. A marked scarcity of rerolling rails still is noted and it is reported some users of this grade seriously are considering turning to shell steel. Although the latter grade commands considerable premium over the former, it is claimed that loss in rerolling is less. A great number of rejections are reported at steel plants on recent shipments of scrap. At one Pittsburgh district plant, no less than 28 cars shipped in as heavy melting steel, were rejected because they were not up to specification.

Consumers More Interested

Buffalo, July 15.—With local steel mills now 75 per cent active, the demand for heavy melting steel is picking up. Local mills are showing a greater degree of interest than last week and it is believed this is the logical sequence of low stocks coupled with the fact that the scrap market is growing stronger each day. A local steelmaker is understood to have bought a small tonnage at $18 and a valley plant is said to have purchased here at $20.50 delivered equivalent to $18.10 or $18.15 Buffalo. Dealers are declining to sell heavy melting steel in quantity. At the same time dealers' stocks are not as large as they would like them to be. They are selling just enough to keep the market lively. There is a good dmand for all grades this week. Cast scrap is as strong as other grades. Foundries appear to have stocked heavily or else believe the market will not rise.

Crops Take Advance

Youngstown, O., July 15.—An inquiry for 300 tons of crops, which has been before a dealer here for several days, has been satisfied between $24 and $25 per ton. This is an advance of $3 over last week's quotation for this grade of scrap.

Rejects $21 for Steel

Cleveland, July 15.—A local scrap dealer has turned down an offer of $21, delivered, for a fair sized tonnage of heavy melting steel, made by a consumer in central Ohio. This indicates the strength of the market, a strength that appears to be growing daily, while most consumers hold off buying. Consumers appear to be following dealers' prices on the uptrend, but at a distance of $1 to $1.50 to the rear. Dealers, short on odd lots, find they must pay $3 and $4 more a ton for material than they contracted to sell it. One big yard interest is reported ready to sell at $25 the heavy melting steel it has thrown down. A shortage of scrap is looked for by dealers, as some of the larger melters have bare yards, and material is by no means plentiful. Prices on most grades have advanced, and not a great deal of scrap is to be had at the present level.

Certain Grades Take Advance

Cincinnati, July 14.—Yard stocks are being diminished because of the steady drain on them from melters of scrap. However, there is comparatively little contracting for material to be shipped beyond Dec. 31. The supply of some grades of scrap is low. Dealers are making an effort to replenish their stocks. Prices have advanced from 25 cents to $1 a ton on some grades. Cast borings and steel turnings have been marked up 50 cents. The demand for this class of scrap is increasing.

St. Louis Dealers Lay in Stocks

St. Louis, July 12.—Since the holidays the market for iron and steel scrap has experienced activity of boom dimensions. Dealers have joined in a veritable scramble to acquire everything and anything offered. Prices throughout the entire list have been marked up from $1.50 to $2 a ton, and further advances before the end of the month are confidently looked for. For the most part the material acquired is being unloaded in yards, there to await higher prices. This flurry of buying, however, has failed utterly to interest

consumers, who continue to display the greatest indifference toward the market.

Offerings are not particularly large. The Frisco railroad offered 16 cars and the Missouri, Kansas & Texas 22 cars during the week. The Mobile & Ohio sold 1700 tons, for all of which top prices were secured. The 1300 wheels recently sold by the Wabash brought $25 a ton, East St. Louis. On July 17 the St. Louis district ordnance office will sell 382 tons of ingots for forging 9.5-inch steel shells, located at the American Steel Foundries plant in East St. Louis.

For the second time in the history of this center, agricultural malleable is selling higher than railroad malleable. Heavy melting steel is up $1 to $19, while a range of $17.50 to $18 is quoted on heavy shoveling steel. The most drastic marking up of the week was on old steel rails, long, which were advanced from $17.50 to $18 to $21 to $21.50.

Southern Market Erratic

Birmingham, Ala., July 15.—Scrap dealers in the Birmingham district report both active and inactive days for the market. Inquiries are coming in steadily and consumers looking to this district for their needs in scrap, are indicating a need for a large tonnage before long. Cast and soil pipe foundries are all becoming more active. Quotations show no important changes. Heavy melting steel consumers are still willing to buy at their prices.

Weighing Orders

In Wire Products Because of Demand —Specifications Exceed Output

Pittsburgh, July 15.—So heavily committed are some of the manufacturers of wire and wire products that they have sent instructions to branch sales offices that further business is not to be accepted without first being submitted. These companies are refusing as much business as they are accepting. While some manufacturers are not averse to making contracts covering the remainder of the year, the more general disposition is to accept business only to the end of the third quarter. Those confining their bookings to that period practically are sold up and such tonnage as is available they are inclined to hold for the protection of their regular customers. Prices are firmly maintained and it is reported one company which recently marked up its export quotations on wire and nails could have obtained the advance if it had the tonange available.

Jobbers Placing Orders

CHICAGO, July 14.—Jobbers are placing heavy orders for wire and nails and all indications point to a large fall trade. Only in barb wire is there noticed any particular slackness in demand. This is but natural for this season of the year, since the agricultural districts are the largest consumers, and the farmers are engaged at present in harvesting crops. No increase in prices has been announced.

Sheet Buyers Rushing In

Specifications With Largest Producers Are at High Record Point—Deliveries Are Lengthening—Later Prorating of Tonnage May Result

Pittsburgh, July 15.—The first two weeks of July have been marked by a continuation of the activity in sheets which began to develop early in June. Business during this period actually has been heavier than it was last month and it probably is no exaggeration to say that specifications and orders during the past week have averaged well above 20,000 tons a day. The week ending July 12, established a record for the American Sheet & Tin Plate Co. whose liquid business in sheets and tin plate only once before was exceeded in any one week. In April, 1918, specifications by the American Can Co., the Continental Can Co. and the Standard Oil Co. for tin plate brought that week's business to the highest total in the history of the company. That week, however, included only a small tonnage of sheets while last week the specifications and orders were about equally divided between the two products of the company. Users of sheets now are sending in orders which should have been placed during the second quarter and they also are seeking to cover for the third and fourth quarters. Because of the warm weather and the none-too-generous supply of labor, it has not been possible for all plants to materially increase operating schedules. As a result of those conditions, coupled with the rush of orders, manufacturers generally are even further behind in deliveries. For an average they are from six to eight weeks behind as compared with about three to four weeks at the beginning of the month. The danger looms that manufacturers of sheets later in the year may be obliged to resort to a prorating of shipments for with most of them heavily committed on specialties, such as automobile sheets, it is manifestly impossible without new capacity to bring up the production of other kinds of stock. It is stated buyers may consider themselves fortunate if they get 100 per cent shipments on recent commitments.

Buying is Good

New York, July 14.—Demand for sheets in this district has been brisk lately. There has been good contracting for third quarter and considerable buying for spot and nearby.

Mills Are Well Booked

Youngstown, O., July 15.—Practically a one month's rolling schedule is assured the majority of sheet plants in this territory operations of which at present are on an 80 per cent basis. A good volume of business for all grades of sheets is coming out right along and this is being taken on at prevailing market prices. Export inquiries are increasing in volume somewhat and many makers here have bookings from this source. Several of these inquiries call for 30-gage black. Most makers are booked with specifications which are easier handled at this time of the year than this inquiry calls for and hence are not anxious to quote. One maker states, however, that he intends to take on some 30-gage business about Aug. 1. Domestic inquiry is strong for all grades of sheets.

Demand Urgent in West

Chicago, July 14.—Leading interests here report that among all finished steel products sheets are in the most urgent demand. Bookings are so heavy, that with a shortage of skilled labor and a spell of hot weather to interfere with mill operations, the mills are far behind their orders.

Some Shading in East

Philadelphia, July 15.—Shading again has become a fact in the eastern sheet markets. Ohio makers are taking black, blue annealed and galvanized tonnage at concessions of $2 and $3 per ton. While such shading has been done in a number of cases most of the current business has been going at the full price. Sheet demand is good but somewhat less than in recent weeks. Eastern production is at about 70 per cent.

Heavy Orders

Continue to Run in Tin Plate—Export Concessions Persist

Pittsburgh, July 15.—Demands upon the tin plate manufacturers still are on a large scale and the mills maintain operating schedules averaging close to 90 per cent of capacity. It seems likely that the belated and hurried demands made by the container manufacturers serving the Pacific coast packers will be met, but in doing so the tin plate mills must be kept going at a heavy rate for the next few weeks at least. Export demands for tin plate bulk fairly large, although only a few large individual orders are being placed. As low as $6.50, base Pittsburgh, was done on tin plate for export a short time ago but it is doubtful if makers would consider that price today, although the export quotation is not yet back to the domestic level of $7 per base box, Pittsburgh. Stock items still are selling at 25 to 50 cents per base box below the base quotation.

Tin Mill By-Product Offered

Youngstown, O., July 15.—Operation of the tin plate mills in this territory is close to 80 per cent. Plenty of business is booked to warrant an operating schedule on this basis for several weeks. The Weirton Steel Co. is offering one mixed carload of coke tin-plate clippings and cobbles, bundled; one carload of coke tin-plate strips, boxed, 1½ to 2½ inches wide, and 10,000 to 20,000 pounds of cold-rolled tin-plate cobbles, boxed and unassorted as to sizes and base weights.

Big Bar Orders Pending

Automobile and Implement Interests Actively in Market—15,000 Tons Placed at Chicago—Rerolled Steel Sells Higher

Pittsburgh, July 15.—Heavy demands from the automobile manufacturers are providing bar mills with a large amount of business at present. Not only has the General Motors Corp. closed for its requirements for the year ending July 1, 1920, but an Ohio manufacturer of medium and low price cars, has virtually closed for a year's tonnage. The Ford Motor Co. is expected shortly to conclude negotiations for its steel requirements for the year ending July 1, next. Not much business is coming from makers of agricultural implements but some big orders are anticipated as soon as stock taking now is progress, is completed. The price of merchant steel bars is firmer in that there is practically no shading of 2.35c Pittsburgh. Reinforcing concrete bars are being freely inquired for and while sales as a rule are small individually, the aggregate is much more satisfactory. Prices on both bars rolled from new billets and from old rails are stronger. There are as many prices for iron bars as there are makers, and reports as to the demand also show considerable variation. Those manufacturers catering to the railroads are finding material extremely flat, but those doing a diversified business are fairly busy. Muck bars are in good demand from pipe interests. A base of 2.50c is quoted on common bar by one On refined iron 2.75c is quoted by one company while another names 3.75c. It is probable that the maker naming 2.75c will this week raise his quotation.

Best Orders Since Armistice

Philadelphia, July 15.—New business in finished steel of the past week is reported by large eastern producers to have been the best sinc the armistice and this is particularly true of steel bars. Specifications for bars are coming in heavily from the manufacturing trade and particularly from the cold rolled interests. In addition there are a number of good orders for spot shipment. For iron business continues at a minimum due in some measure to the strike of puddlers which keeps the mills out of the market. The demand for nuts, bolts and rivets is slowing down.

Big Negotiations Continue

Cleveland, July 15.—Active specifications against steel bar contracts are reported by all selling agencies in this district. Further contracts for the last half are being made. Some large negotiations of this character, the most prominent of which are with leading automobile interests in this territory are under way. These involve a heavy tonnage for 12 months delivery. Makers of rerolled bars generally have adopted the 2.35c mill price which was quoted by one or two makers a week ago.

Implement Tonnage is Large

Chicago, July 14.—Leading steel bar makers in the Chicago terrtiory report a surprisingly large demand from agricultural implement and automobile manufacturers. While structural shapes continue as a weak feature of the finished steel market in this district, heavy buying of reinforcing bars for building purposes continues. A few contracts for bar iron aggregating 15,000 tons have been placed by implement manufacturers for third and fourth quarter delivery, and makers report a volume of inquiries from the same source.

Rolling Schedules Tightening

Youngstown, O., July 15.—Producers in this territory report buyers are extremely active in the steel bar market. Toward the last of June deliveries could be had in three or four days but at present practically no shipments under four weeks are available. Several good sized orders for rerolled bars from implement makers were booked recently. An inquiry from New York for 300 tons of hot-forging iron bars is current. The specifications call for ½ to 1½-inch stock.

Mills Are Quite Busy

Philadelphia, July 15.—As the result of large sales of bands to the makers of automobile accesories and parts, in addition to the fact that cotton ties now are being rolled freely and also a good demand for narrow widths hoop and band mills in this district are quite busy. Cooperage interests are not especially heavy buyers. Some uncertainty exists as to the real price of hoops and bands for while the published quotation is 3.05c Pittsburgh, it is reported some mills have resorted to the prewar plan of using the bar base and adding the rolling charges.

Bookings Gain Steadily

Pittsburgh, July 15.—Makers of cold-rolled shafting here report a further expansion in both specifications and orders and while the principal demand still is coming from the automobile manufacturers, it is noted that demand for screw stock shows as marked improvement as in the larger sizes. Not only are buyers ordering and specifying quite freely but most of them are seeking contracts covering the third and fourth quarters. Mill operations, which recently were close to 40 per cent, now are averaging better than 50 per cent. The quotation of 28 per cent off list is being more uniformly observed.

Advance Brings Rush of Orders

Pittsburgh, July 15.—Announcement last week of an increase of 5 per cent in prices of nuts, bolts and rivets by the leading manufacturers has been followed by a veritable flood of orders from both consumers and jobbers anxious to be covered before the advance becomes fully effective. The new list of discounts shows no change in the prices of structural and boiler rivets but small rivets, previously quoted at a discount of 65-10-5 off, now are rated at 60-10-5 off with a few of the makers quoting 65-5 off. Machine and carriage bolts run 5 per cent higher but the former discounts on cold pressed semifinished hexagon nuts are retained in the new list.

Larger Inquiries Appearing

Cleveland, July 15.—Indications of greatly improved conditions shortly is forecasted by the number of inquiries for nuts, bolts and rivets, received in this district during the past week. Although the automobile trade has not slackened on its demand for these products, the major inquiries are not coming from this industry, as manufacturers of other products are now appearing freely in the market. Foreign inquiries are on the increase. Despite the advance in price which went into effect a week ago, the domestic market is getting stronger. Manufacturers report that both dealers and jobbers are ordering much larger tonnages than they have been for the past few months.

Ferro at $115

Sales Show Market Around That Figure—First Russian Ore Here

New York, July 14.—Ferromanganese of 80 per cent quality has been offered by domestic producers during the past week at $115, delivered. It is said that this now is the firm minimum but it is known that no less than a week ago 80 per cent ferromanganese still was obtainable at $110 and it is considered as not improbable that this figure still might be done. On 80 per cent metal from England, the asking price still is $115 c.i.f. Atlantic tidewater, but no sales are reported, and in some cases consumers have advised the importers that in order to be attractive they must offer lower prices than the domestic makers are willing to accept.

The spiegeleisen market was characterized by more activity during the past week. About 2000 tons of 18 to 22 per cent metal have been sold at $30, furnace. This price now is the minimum on large quantities. Sales of carloads have been made during the past week at $35, furnace.

Some 50 per cent ferrosilicon was turned over at resale last week at a shade under $80 a ton delivered. Makers generally are quoting above this price, some asking $90 to $95. Inquiry remains light.

English ferrotungsten has been offering for prompt shipment at $1.05 a pound contained 80 per cent alloy, c.i.f. New York, duty paid. This compares with quotations of American makers ranging from $1.15 to $1.30, there being one seller at the lower level. Despite the English competition sales of American ferrotungsten have been made both in Scandinavian countries and Japan within recent weeks.

Ferrovanadium is lower, due to the cautious attitude of buyers. Both spot and future business has been done recently at $6.50 to $7 a pound contained, 35 to 40 per cent alloy.

The demand for ferrochrome for tool steel purposes continues slack. Makers of automobile steels are tak-

ing some lots and prices are being maintained at 32c a pound contained for large lots, based on 6 to 8 per cent carbon.

Russian Ore Arrives

New York, July 14.—The first direct shipment of Caucasion manganese ore since the war began has arrived in New York. This ore amounted to between 500 and 600 tons and analyzed 80 per cent manganese dioxide with less than 1 per cent iron, thus being suitable for chemical purposes. The ore was sold at about $80 a ton. Some Nova Scotian manganese dioxide ore is enroute to this country.

Price Still Uncertain

Pittsburgh, July 15.—Considerable uncertainty has existed among agents here of the domestic makers of ferromanganese as to the actual price of that material. Although publicly quoting 80 per cent material in New York and Philadelphia at $115 to $120, delivered, during the early part of last week, it was not until late Friday afternoon local sales offices were notified to make any change from the previous quotation of $125. On an inquiry from a local steel manufacturer for two carloads it was discovered that $115 had been quoted. It is understood that the lot was placed at $115, delivered. The English quotation of $115 c.i.f. Atlantic ports, or about $119, delivered Pittsburgh, for 80 per cent material, apparently has rendered it impossible for domestic consumers to make sales at $125, the price they recently sought. An inquiry for 250 tons of 80 per cent ferromanganese is before makers.

The Crucible Steel Co. has closed on its recent inquiry for 500 tons of 50 per cent ferrosilicon. While the price has not been made public, it is understood to have been not less than $80, furnace, freight allowed. This business appears to have cleaned up the low-priced offerings and while no basis exists for a price of more than $85 on sales, it is doubtful if any maker would accept less than that today. Some are quoting $90 to $100.

Want Round Tonnage

Philadelphia, July 15.—The Midvale Steel Ordnance Co. has out an inquiry for 5000 of 80 per cent ferromanganese of which 400 tons is for August, 600 tons for September and 1000 tons each for October, November, December and January. Other inquiries are small. The market now is at $115 delivered. Current spiegeleisen inquiry includes one lot of 1000 tons. Spiegeleisen is strong and the price is tending toward $35 furnace for 18 to 22 per cent stock.

Some Sales at Chicago

Chicago, July 15.—The price of ferromanganese, which recently was advanced to $125, has gone back again to $115 for 78 to 82 per cent ferromanganese, freight allowed. Fair-size tonnages have been booked at the reduced figure, and furnaces again are establishing a backlog. Spiegeleisen is quoted all the way from $30 to $35, f..ob. eastern furnace, and a number of sales of 500 and 1000-ton lots have been made at this figure.

Plate Inquiry is Better

Export Demand More Liberal and Sales Made at 2.55 and 2.60—Chicago Car Builders in Market—Price Shading Continues

New York, July 14.—Of the various plate inquiries mentioned in last week's report only one has been closed, this involving 535 tons of ship steel for France, which are to be furnished by an eastern mill at 2.55c, Pittsburgh. The mill granted a 10 days' extension of credit and put itself under bond to make shipment within seven days. Many new export inquiries now are out and a few are regarded as sure to be placed in the near future. The most promising call for 7000 tons of ship plates for Norway, 5000 tons for Italy, 2300 tons—which may be doubled to 4600 tons—for France, and several hundred tons for China. Recent sales of ship plates include a lot of 5000 tons for export at 2.60c, Pittsburgh. An eastern platemaker about 10 days ago booked several hundred tons for export at 2.50c, Pittsburgh. As shown by these transactions, the market on plates for export may be quoted at 2.50c to 2.60c, Pittsburgh.

One large domestic consumer has bought a round tonnage of ship plates at 2.50c, Pittsburgh. How generally this quotation might be done is not known. One large user says he could buy from no fewer than four mills at 2.50c but admits that he has not yet made any purchases on this basis. In some cases, sellers say that they have no doubt that if a good-sized plate tonnage were offered, it could be placed at 2.50c. Small transactions which comprise the current domestic business, however, appear to be going mostly at 2.65c. One eastern mill is quoting nothing less than 2.75c, and is getting small tonnages at this figure. The biggest single lot in sight is approximately 7000 tons for section 2 of the Jersey City pipe line, but there is nothing definite as to when this order will be placed. Included in current inquiries are a number from eastern railroads for third quarter shipment but definite tonnages have not been given. It is not believed these requirements will be heavy.

Shaded Prices Are Reported

Cleveland, July 15.—Consumers of plates in this and nearby territory are repeating declarations to the effect that they can buy this product from certain mills on an attractive specification as low as 2.50c, Pittsburgh. The larger producers, however, seem to be holding the 2.65c price firmly. The principal activity in plates appears to be in tank work for oil field purposes. Local fabricators are figuring on a number of gas coolers which will require 400 to 500 tons of plates and 6350 boiler tubes representing about 250 tons.

Demand Somewhat Better

Pittsburgh, July 15.—Although domestic demands for plates do not amount to much outside of the tonnages for oil tanks and for the larger sizes of line pipe, a little more interest is apparent upon the part of the ship and car builders. Quite a few export inquiries also lately have been received for ship plates. Among the latter was one for 5100 tons for Japan and 6000 tons for Italy. Although the mills are not heavily crowded with orders, at least one company here did not quote on the Japanese inquiry on the ground that improvement is not far off in the general demand for plates and does not want to be too heavily committed. As a general rule prices are firm at 2.65c, Pittsburgh, for tank plates but less is being accepted by a few of the smaller companies.

Car Builders Seek Tonnage

Chicago, July 14.—Three car building companies in the Chicago territory have inquiries out for large tonnages of plates. The Ryan Car Co. is asking for prices on approximately 3000 tons, while the Liberty Car & Equipment Co. is in the market for about 2000 tons. Another interest is seeking several hundred tons. These are the largest inquiries to have developed here during the past week. Tank and ship builders are continuing to take large tonnages.

Little Better in East

Phildelphia, July 15.—Plate orders are better but they still are not sufficient to sustain the operations of eastern makers at more than 30 to 40 per cent capacity. Some fair orders are originating in the requirements of the oil districts. One consumer placed the plates for 115 boilers for operating oil drills. The largest order said to have been placed here was for more than 400 tons for the Chester shipyard. Reports of shading in other districts have an echo here. An Ohio maker weighed the scrap extra on a recent sale to the government. Export inquiries include the steel for 25 locomotives each requiring 40 tons of plates.

Adopt New Schedule

New York, July 14.—Effective today, leading warehouse interests in the east have adopted a price equalization schedule, similar to that now employed in the middle west. By this schedule, the jobbers will equalize their prices with the different warehouse centers located on the Atlantic seaboard, consisting of New York, Boston, Philadelphia and Baltimore. This change will enable consumers located outside of these districts to have the advantage of using these markets on an equality basis. Trading in warehouse materials throughout the east continues somewhat restricted. Jobbers report that demand still is rather light, and that the mills, with their prevailing good deliveries, are affording formidable competition.

Shape Outlook Brightens

Miscellaneous Building Work Appears in Steady Volume—Moderate Sized Jobs Numerous at Chicago and in East

Chicago, July 15.—A large number of small structural tonnages are being placed or figured in the Chicago territory, but business in the aggregate does not seem to be improving to any great degree. The general run of fabricating shops are operating around 50 per cent of capacity and while prices are strengthening and healthy improvement is in sight, the market continues comparatively dull. The Ryan Car Co., the Liberty Car & Equipment Co., and another car company in this territory are in the market for several thousand tons of shapes for car construction. In the building line, the largest inquiries before the local market come from Massachusetts, the Nelson Corp., Cambridge, taking bids on 2600 tons for a new manufacturing plant, while the Leonard Construction Co., of Chicago, is taking bids on 420 tons for a 500,000-cubic foot gas tank for the Beacon Oil Co., Everett, Mass. A great amount of construction work is under way at the latter plant, including the building of agitators, stills and vats, which will require in the aggregate 3000 tons of structural steel.

Eastern Busines Unsatisfactory

Philadelphia, July 15.—Although there is some improvement in the shape demand here it is considered far from satisfactory and producers are beginning to view somewhat pessimistically the outlook for the rest of the year. Not one sizable, structural job was let the past week and no early developments are promised in the large number of projects of which bids have been taken. Sears-Roebuck & Co. will build a large warehouse here but it is not known whether it will be of steel or concrete.

Situation is Looking Better

Pittsburgh, July 15.—Although the shape mills in this district are not crowded with business, inquiries are coming along more freely. In view of the more cheerful reports as to building activities and the possibilities of a greater demand at no distant date from the shipyards, in connection with the reconstruction work in France and Belgium, the trade is more optimistic. Structural lettings are fairly frequent and are running into fair sized tonnages, with the fabricating shops busier now than they have been in some time.

Fair Activity Continues

Cleveland, July 15.—Although the award has not been made on the fabricated steel for the Hanna building in this city, it is reported that the Fort Pitt Bridge Co. is the low bidder. The tonnage involved is about 7500 tons. It is also reported that the contract may not be placed immediately as material costs for the building are running higher than anticipated by the builders. Structural business continues active with numerous inquiries coming into the market and a satisfactory number of awards being made. Some company representatives report that they have sufficient business on hand to make them disinclined to press for further contracts at present prices. The Detroit-Edison Co., Detroit, is inquiring for 2000 tons for a service station.

Miscellaneous Work Increases

New York, July 15.—Activity in the local structural market is steadily increasing. At the moment no particularly large tonnages are up but there are numerous miscellaneous projects afloat requiring sizable lots. A number of school buildings are being figured upon involving from 100 to 200 tons each. In addition there are various commercial buildings and also several new theaters. At least two theaters are projected for Brooklyn.

CONTRACTS AWARDED

Plant extension, Edison Electric Appliance Co., Chicago, 454 tons; to Milwaukee Bridge Co.

Forge shop, Whitman & Barnes Mfg. Co., West Pullman, Ill., 601 tons; to American Bridge Co.

Building for U. S. Food Products Corp., Peoria, Ill., 400 tons; to Lucas Iron Works, Peoria.

Building for National Improvement Co., Kansas City, Mo., 162 tons; to American Bridge Co.

Building for Northwestern Telephone Exchange Co., Minneapolis, Minn., 1214 tons; to Minneapolis Steel & Machinery Co.

Building for Eggers Veneer Seating Co., Two Rivers, Wis., 175 tons; to Milwaukee Structural Steel Company.

Machine shop Colborne Machine Co., Cleveland, 450 tons to the McClintic-Marshall Co.

Building for the Vlchek Tool Co., Cleveland, 200 tons for the McClintic-Marshall Co.

Building for the Wyckoff Steel Co., Economy, Pa., 300 tons with the McClintic-Marshall Co.

Extension to plant of Alberger Pump & Condenser Co., Newburg, N. Y., 100 tons to the John W. Cowper Construction Co.

Rudolph Wurlitzer Co. building, Thirty-first street, New York City, 2700 tons, to Levering & Garrigues.

Stables for B. Altman & Co., New York City, 900 tons, to Post & McCord, and expected to be fabricated by American Bridge Co.

Marlan-Rockwell office building, New York City, 900 tons, to Hedden Iron Construction Co.

Two garages, Fifty-fourth street, New York City, 300 tons each, to Hay Foundry & Iron Works.

Office building for American Law Book Co., Brooklyn, 200 tons, to Hay Foundry & Iron Works.

Addition to stock exchange, New York City, 500 tons, to Levering & Garrigues.

Government warehouse, at Quantico, Va., 500 tons, to McClintic-Marshall Co.

Addition to Vanity Fair Silk Mills, Reading, Pa., 400 tons, to Shoemaker-Satterthwait Bridge Co.

Loft building in New York City, 650 tons, awarded to the George A. Just Co.

CONTRACTS PENDING

Machine shop for George B. Lambert, East Chicago, Ind., 350 tons, bids being taken.

Manufacturing plant for Nelson Corp., Cambridge, Mass., 2600 tons, bids being taken.

Factory building for Hill Pump & Valve Co., Chicago, 300 tons, bids being taken.

Building for Montgomery, Ward & Co., Springfield, Ill., 400 tons, bids being taken.

Shop building for Vitrolite Co., Parkersburg, W. Va., 450 tons, bids being taken.

Boiler house for Whitman & Barnes Mfg. Co., West Pullman, Ill., 310tons, bids being taken.

Truss and girder spans for Missouri, Pacific railroad, 310 tons, bids being taken.

Grain elevator for Southwestern Milling Co., Kansas City, Mo., 461 tons, bids being taken.

Gas tank for Beacon Oil Co., Everett, Mass., 420 tons, bids being taken.

Service building for Detroit-Edison Co., Detroit, 2000 tons. Award soon.

Addition to factory, Maumee Malleable Castings Co., Maumee, O., 200 tons. Bids asked.

Keith's Theater, Bronx, New York City, 500 tons. Bids being taken.

Addition to Warren Cotton Mills, Massachusetts, 500 tons, bids being taken.

Y. M. C. A. at Bayonne, N. J., 500 tons, bids being taken.

Theater building at Philadelphia, 450 tons, bids being asked.

Light Rails

In Better Demand and Low Seller Withdraws—Other Buying Slow

Chicago, July 14.—Demand for light rails is improving a few contracts having been placed with one mill in the Chicago terrtiory from three to six months ahead. Coal mines are taking most of the rails in anticipation of heavier operations this fall. Quotations are unchanged, although leading interests intimate higher prices may be expected in the near future, and some rerolling mills already are understood to be asking more. A few sales of small tonnages of heavy rails have been made but business in this line is still of an inconsequential nature.

More Demand for Light Sections

Pittsburgh, July 15.—One of the interesting developments in the market for track material is a decided improvement in the demand for light sections and a slight firming up in prices. Coal mine development is being prosecuted on a heavier scale and greater industrial activity also accounts in part for the larger demand. Quite a few export inquiries also have been received lately. One sale of 80 tons of 40-pound rails for a coal operation at the full price of 2.45c, Pittsburgh, is noted. It is doubtful if this price now would be shaded on rails running 20 pounds and over and the lower quotation even elsewhere refers to sections below 20 pounds. Makers of standard rails still are looking forward to additional orders from the railroad administration before the roads are turned back to private ownership. Such domestic orders as now are coming in are chiefly in small lots for repair work. A fair amount of export business in standard rails is coming to the Carnegie Steel Co. but details as to tonnages are not available here. Small spikes are being ordered quite freely by the jobbers but not much activity is observed in standard spikes.

Withdraws Low Rail Price

Cleveland, July 15.—Some producers of light rails who were selling this product rolled from shell steel as low as 2.05c, Pittsburgh, for 45-pound sections, now have withdrawn this low price. It is understood, however, some mills still will accept business at 2.25c, mill.

Pipe Orders Go Begging

Buyers Split up Tonnages of Lapweld in Effort to Get Mill Position—Wheeling Advances Prices—Cast Product Improving

Pittsburgh, July 15.—No material let down is observed in the demand upon pipe manufacturers for lapweld sizes. As a matter of fact, several 100 miles of line pipe still are seeking the manufacturers. Pipe line companies having failed to get makers to bid on their individual requirements in many cases have split the tonnages into small parts in an effort to get these placed. Even this means of placing business has not succeeded for manufacturers without exception are booked as far ahead as they care to be. The Wheeling Steel & Iron Co. has announced an increase recently of 2½ points on buttweld and 5 points on lapweld pipe which in the failure of other companies to follow, merely amounts to a withdrawal from the market of that company. Demands for buttweld pipe steadily are gaining and as has been the case recently, shipments are running considerably in excess of production which would point to an early increase in buttweld furnace operations. The National Tube Co. has not yet put its Riverside plant, Benwood, W. Va., in operation, but it is understood that these works are ready for resumption at short notice. Further expansion of the merchant pipe demand is likely to be followed at the reopening of the works. Demand for boiler tubes has increased considerably and some makers are not promising shipments at better than three weeks.

Advance Not Yet Followed

New York, July 14.—The Wheeling Steel & Iron Co.'s issuance of a new card July 11, advancing lapweld pipe by 5 points, or $10 a ton, and buttweld pipe by 2½ points, or $5 a ton, effective immediately, has not yet brought forth any action on the part of other makers. No decided views favoring the general adoption of the advance are heard, and one maker thinks that a general advance to the higher level at this time would be premature. In the meantime, the pipe market continues very satisfactory. Demand for lapweld for the various oil districts continues active but the mills have so much of this business on their books that they are chary about adding more. Demand for buttweld, which for some time showed a lagging tendency, has been improving greatly of late. In fact, it now is considered likely that unfilled tonnage within another month will have reached such proportions as to make it difficult to place orders for prompt shipment.

Eastern Market is Dull

New York, July 14.—Municipal inquiry is still lacking in the eastern cast iron pipe market. There are a few tonnages afloat, but all are relatively small. Included in the small municipal lots to be placed of late is that of the city of Providence, R. I., involving about 90 tons of 4 and 6-inch pipe. This business went to the United States Cast Iron Pipe & Foundry Co. on a bid of $58.10 for the 6-inch and $61.10 for the 4-inch. Private inquiry continues to hold up well, with the result that a fairly good amount of business is being done.

Mills Running Heavily

Youngstown, O., July 15.—A maker of lapweld pipe in this district is refusing to quote on further business. Most shipments from this territory are going into the oil country. Standard size pipe is opening up and a good business is being done.

Demand Continues Strong

Chicago, July 15.—Continued strong demand is noted in the cast-iron pipe trade. The leading interest reports that demand at present is in excess of production. This producer is unable to obtain sufficient number of men to operate at capacity, owing to the hot weather. No price changes have been made, competition in a number of fairly large jobs being keen. The United States Cast Iron Pipe & Foundry Co. has been awarded 1200 tons of 24-inch by Springfield, Ill. Denver, Col. will take bids July 22 on 3070 tons, ranging from 6 to 8 inches and specials. Among other inquiries out are the following: Minneapolis, 500 tons of 6, 8 and 12-inch; Lakewood, O., 250 tons of 10-inch; Ashland, 650 tons of 16 and 24-inch; Ashland, O., 650 tons of 16 and 24-inch; Ash-Clarinda, Iowa, 212 tons of 4 and 10-inch; Great Falls, Mont., 150 tons of 6 and 12-inch, and Sandusky, O., 75 tons of 6 and 8-inch.

Southern Plants More Active

Birmingham, Ala., July 15.—All kinds of cast iron pipe is in demand now and soil pipe plants in particular are working to full capacity with some tightness appearing in the labor situation. Purchase of pig iron and scrap by local manufacturers of cast iron pipe indicate a stronger faith in the future.

Tie Specifications Good

Pittsburgh, July 15.—Makers of cotton ties are getting good specifications against sales which were largely concluded last month on a basis of $1.70 per bundle of 45 pounds in lots of 3000 bundles or more. The carrying charge of 1½ cents per bundle per month added on to the June price means $1.71½ for July shipments. Production of ties is based on a probable cotton crop of between 12,500,000 and 13,000,000 bales of cotton and as there is a possibility of a larger yield, additional bookings may be necessary.

The Nonferrous Metals

	Copper	Future Straits N. Y.*	‡Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony
July 9	20.12½	51.50	5.40	7.25	33.00	8.50
July 10	20.25	51.37½	5.40	7.45	33.00	8.50
July 11	20.25	51.25	5.40	7.50	33.00	8.50
July 14	21.00	51.37½	5.50	7.55	33.00	8.50
July 15	21.75	52.25	5.50	7.625	33.00	8.50

‡American Smelting & Refining Co.'s price.
*July shipment from Singapore, c.i.f. New York.

NEW YORK, JULY 15.—Having overdiscounted after war transition to peace conditions, the metal markets have been hurrying to put back metal prices in their proper position relative to other commodity values. The recent rising markets in copper, lead and zinc have been accompanied by a good demand, both domestic and export. Japan has been a heavy buyer of copper, zinc and lead. Her copper purchases are estimated to exceed 16,000 tons, while she has also taken thousands of tons of lead, zinc and other metals. The copper market has advanced to about 22c for spot and nearby delivery, as compared with prices of below 15c done a few months ago. Zinc has advanced from 6c to 7.65c; lead from 5c to 5.50c. Labor troubles and unrest at mines and smelters are one cause for the rising market. Another cause is the German ratification of the peace treaty, which is expected to be followed by negotiations for raw materials shortly, although Germany has not been a direct buyer in this market yet.

Wire mills and brass makers have been buying copper, covering August and September requirements, although the large producers generally are not taking orders for September. Copper and brass products prices were advanced one cent a pound last week, bringing the total advance to 4c a pound in about two weeks. Sheet copper at 29.50c a pound base is based on 20.50c electrolytic copper, whereas the copper market passed 21c on Monday, leading to expectation of a further advance in products prices quickly.

Although it had been expected that the lifting of restrictions on trading in tin, consumers having tin for resale would unload some of this metal, it develops such consumers do not feel disposed to do so, not having more than a comfortable surplus on hand. The disparity between the American and world markets continues, spot Straits tin being quoted 71c in this market, as against 52c in London and 52.25c for July shipment from the Straits; domestic 99 per cent tin is quoted 68c, as against 52c quoted on English Lamb & Flagg tin quoted for August arrival in this country.

The antimony market is higher with better demand, business having been done at 8.50c, duty paid, New York, both on spot and future shipment.

The American Smelting & Refining Co. July 14 increased its lead price $2 a ton, to 5.50c a pound, New York. Demand for lead has been good and outside sellers have been obtaining substantial premiums over the leading interest.

British Steel Prices Still Rising

English and Scotch Makers Put up Schedules $2.40 to $7.20 Further—Propose Boycott of Supplies to Buyers of American Material—Belgian Offers Suspected of German Origin—Pig Iron Also Higher

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 27.

IN spite of the concern as to foreign competition British steel prices are rapidly rising. Several advances have been declared this week, as steelmakers have been in conference and have decided to put up prices. Steel plates, angles and sections have been advanced 15s ($3.60), joists 10s ($2.40) and heavy steel rails £1 ($4.80). It has already been pointed out that a foreign railway has bought American steel rails at $47 or under £10 ($48) per ton, and the obvious inference is that the extensive appropriation of the foreign rail business by America will receive a new impetus. As the result of several meetings held last week, Scotch steelmakers have issued new price lists showing an advance of from 15s ($3.60) to 30s ($7.20) for materials for delivery in July. This makes boiler plates £21 ($100.80), ship plates £18 5s ($87.60), angles, etc., £17 15s ($85.20), small flats, rounds and squares £20 5s ($97.20), and forging blooms and slabs £19 15s ($94.80), all net for Clyde delivery. Export prices for July are as follows: Boiler plates £21 ($100.80), ship plates £18 10s ($88.80), angles, etc. £17 15s ($85.20) and small rounds, flats and squares £20 5s ($97.20), net cash f.o.b. Scottish port and subject to revised list of extras on the basis of May 1. There is a strong demand for steel plates for home use and export, and the mills are behind in their deliveries. The case, however, is rather different with steel sheets, orders for which are keenly sought.

American Competition Not Liked

The formidable American competition is naturally attracting a good deal of attention, and has provoked some little resentment. The British makers are not very well pleased that our allies in the war should have so quickly become strenuous competitors for the world's business, and especially in the home market. The iron and steel trades now are better organized than they have ever been, and they are not inclined to take this competition lying down. A policy which has been introduced and which appears to find favor is that of imposing a boycott on all who buy foreign steel. It is suggested that purchasers of American or other foreign material shall be warned that if they buy abroad they must look to the foreigner for the whole of their supplies.

Germany Seeks British Orders?

Among the most remarkable of foreign offers which has reached a well known Birmingham merchant is a letter received this week from a Belgian exporter, who did an active business in prewar times in shipping to this country continental steel, both finished and unfinished. The writer signified his ability to supply bars, rods, hoops, galvanized wire, rods in coils and steel joists. For bars delivered in the district £18 19s ($91) was quoted, and for thin hoops ½ up to 3 inches in width by $\frac{1}{18}$-inch in thickness a general quotation of £24 17s 6d ($107.40) was given. In view of the extensive destruction of Belgian works and the enormous requirements of that country for some time to come this quotation, to put it mildly, was unexpected, and is regarded with no little suspicion because this exporter, before the war, sent here a large quantity of German as well as Belgian material. Very little doubt is entertained by the recipient of the offer that the steel for which quotation is given has its origin in Germany.

A well-known Birmingham ironmaster who has just returned from Brussels states that a number of the Belgian works have restarted and the restoration of others is being pushed forward as rapidly as possible. He was informed that a lot of steel had been ordered from America but, like British buyers, the Belgians are finding American deliveries very slow.

Labor troubles here are not quite so serious as they were. The ironworkers appear to be in a somewhat more reasonable frame of mind and at one large works where they had given notice to cease work, in direct defiance of the well known rules of the wages board, they have now expressed their willingness to accept the ruling of the board and a compromise is in course of arrangement.

All pig irons are dearer this week, the most important advance being a rise of £1 ($4.80) in hematites which brings the East coast hematite up to £10 10s ($50.40) for home consumption. This followed an important advance in finished steel prices. The supply of steelmaking irons is so deficient that the steel works can only maintain their output by the extensive use of scrap, which is fairly plentiful. Makers are very careful about accepting orders for forward delivery. The position has been eased a little by a better supply of rolling stock and an improved output of ore, but the latter still is not up to requirements. At the Barrow furnaces the pressure is very great for low phosphorous qualities, and it is believed that the production of half a dozen more furnaces could be readily absorbed if they could be started. Efforts are being made to speed up ore production by improving the wages of the men, but unfortunately high wages for all work connected with mines have usually had the opposite effect. It is possible that the demand for high qualities may be partially met by reducing the make of ordinary irons but this would be a very defective remedy, since all the ordinary grades now produced is urgently wanted.

Pig Iron Prices Higher

The Midland irons sold on the Birmingham market are all dearer with increases ranging from 2s 6d (60c) to 5s ($1.20) per ton. The makers justify this by the important increase in the cost of production resulting from higher wages and by the keenness of the demand from all their customers. It is quite likely that a definite advance possibly of a substantial character would be declared between now and quarter day, which is due on July 10.

The shortage of foundry iron is becoming serious in view of the enormous demand for engineering of all kinds, the navy and mercantile marine still being very good customers. Prices of ore are advancing largely on account of freight increases. The general expectation is that further advances are to be looked for when coal prices are definitely fixed for the autumn. There is every probability that coal will be scarce and dear for the next 12 months.

Exporters Make Sales to Europe

Increased Interest Shown in France as Many New Inquiries are Received — Business With Occident Rivals Trade With Orient—South American Opportunities Are Decreasing—Large Credits are Arranged

NEW YORK, July 14.—Exporters now are finding it difficult to obtain any of the concessions in iron and steel prices which were granted readily during the past few months. This is the first tangible indication of a strengthening of prices. Ever since the signing of the peace treaty price concessions have been gradually diminishing. While this shift in quotations is in progress it is increasingly difficult to sign up foreign business. By the time cables under prevailing delays are exchanged the prices are altered, thereby necessitating the reopening of the negotiations.

Inquiries are being received from nearly all markets and for products of all descriptions. With the abandonment of the import prohibitions, new French inquiries appear to predominate. It is too early, however, to forecast the probable outcome of these. France has purchased 535 tons of ship plates and has made inquiry for 2300 tons more. The French inquiries, which have been released, are for the most part in small tonnages, but they cover nearly all materials. One inquiry calls for 500 tons of plates, 500 tons of sheets, 200 tons of pipe, 100 tons of boiler tubes, 100 tons of galvanized wire, 50 tons of bolts and nuts and 100 tons of angles. A sale of 5000 tons of rails to France was probably the largest order recently obtained. Exporters are of the opinion that the opportunities for selling electrical goods in France are excellent. Some electrical material has been sold to England. A sale of 3000 tons of Alabama foundry pig iron was made during the past week for European destination.

English sales are in greater tonnage than the French prospects. Among the sales made to England in the past week were 1000 tons of pipe, 1000 tons of steel bars, 1000 tons of iron bars, 500 tons of hoops and many small orders for miscellaneous material. England also purchased 300 tons of light rails.

Italy has purchased 2000 tons of billets and has inquired for 500 tons of ship plates. Norway has sent in an inquiry for 700 tons of the latter material. Various small orders are being filled with North Africa. Greece is inquiring for bars, etc. Sales to the Leviant are matters for the future. North Africa has recently sent in an inquiry for nails.

Large Trade With Orient

American business is still able to reach out into what was formerly British markets. Some bars and semifinished material have been sold to India, and Australia has purchased structural steel. A sale of 30 tons of copper sheets to Australia was reported by one house. India has purchased 1000 tons of bars, and is now inquiring for various quantities of rivets, bolts, nuts, and structurals. A sale of approximately 3000 tons of material was made to Japan within the past week. This included plates, bars, sheets, and wire. The largest of the individual orders was around 500 tons. An inquiry from Japan calls for 100 tons of copper ingots. One house now is closing with Japan on 15,000 cases of tin plate. Several sales in lots of 1000 cases were reported. Japan also purchased approximately 1000 tons of rails, and has let a number of orders for plates in tonnages not exceeding 200 tons each. There are many Japanese inquiries for shipbuilding material in the market but these are not new by any means.

That China has developed into a good customer of American iron and steel is attested to by the compilation of imports for the year 1918. These figures show that China purchased 31 per cent of her galvanized sheets from the United States, 38.5 per cent of her iron and milled steel, 45.5 per cent of her nails and rivets, 15 per cent of her railway material, 54 per cent of her sheets and plates, and 61 per cent of her tinned plates. There was a temporary check to foreign orders following the armistice, but the purchasing movement has been reinitiated in China. Some semifinished steel was sold to China during the past week. That country also purchased 3500 cases of tin plate, 2000 kegs of nails, 100 tons of shafting and a small lot of sheets. Several orders of 1000 cases each of tin plate were filled. There has been other scattering business. Among the new Chinese inquiries are noted 500 tons of copper ingots, 500 tons of foundry pig iron and several hundred tons of ship plates.

Probably the most important rail business signed up during the past few days was a sale of 2500 tons to the Philippine islands. Included in this order was 50 tons of spikes and 300 tons of accessories. One house received an inquiry from the Philippines for 750 tons of rails.

South America appears to be selling off, but the reason for this is not generally understood. In the opinion of some this has been caused by the hope of the Latin-Americans for more aggressive competition from Europe, although it is believed that the necessities for financing has something to do with it. A number of South American inquiries, however, are in the market for railroad material, rolling stock, and for various iron and steel products. A sale of 100 tons of galvanized sheets was consummated by one agent. Brazil has purchased galvanized sheets, galvanized wire, plain sheets and tin plate. A sale of 200 tons of shapes was made to Uruguay. Colombia has purchased barbed wire, staples and horseshoe nails.

One house sold approximately 1000 tons of concrete bars to the Dutch East Indies during the past month and is in receipt of more inquiries from the same source.

Mexico has made inquiry for 15,000 tons of rails, a number of standard gage locomotives and narrow gage cars. The inquiry is not creating any great interest owing to the political unrest in that country.

Other producers are now said to be following the lead of Jones & Laughlin Steel Co. and quoting an advance of 10 cents on wire and 25 cents on nails, making the Pittsburgh base price $3.80 on galvanized wire, $3.10 on plain wire, and $3.50 on nails. In addition to the tightening up of prices exporters now declare that it is difficult to obtain prompt deliveries. Another indication of the growth of business is found in the refusal of the mills to ship nails in packages. They insist that orders must be filled in standard kegs only. Heretofore they have been

willing to pack as the purchaser wished.

A bankers' credit of $10,000,000 has been extended to Czechoslovakia. It is understood that this is to bear 7 per cent interest. Applications are pending in the market for credits and loans to a number of other European countries which in the aggregate amount to approximately $100,000,000. These include a number of French industrial credits and loans to Denmark, Finland, Poland and other countries. American bankers are endeavoring to embrace all these loan applications in some general scheme of financing.

The continued high costs abroad coupled with the scarcity of supplies are the direct cause of the breaking down of many of the projected rehabilitation plans of the European governments. The impatience of the Italian public has already made a public demonstration and the French have been compelled to remove most of their import prohibitions in order to let in foreign supplies and thereby reduce the cost of living.

Open All Basing Prices

Action On Pittsburgh Base Against Steelmakers by Western Consumers Before Federal Trade Commission Will be Far-reaching

WASHINGTON, July 15.—Whether the trade custom of freight equalization on Pittsburgh is warranted from a material economic point of view is to be determined by the federal trade commission in acting upon an application for a complaint to be made against the United States Steel corporation by the Western Association of Rolled Steel Consumers. This case is expected to be one of the most far-reaching and important ever before the commission and it is estimated fully a year will pass before the commission will be in a position to settle the matter finally.

While the case which is to be filed at any time now by John S. Miller, attorney for the association, will ask for establishment of a Chicago basing point on all rolled products it actually will apply to every steel producer, consumer and interested community in the country. It is even contemplated the question will be handled in such a broad manner as to take in all metals and other products sold on the freight equalization principle. The association's application will have the form of a regular federal trade commission suit but in reality it will be a friendly test case, this being the understanding of Mr. Miller, his clients, the commission and steel officials.

The test case is the result of a conference here last Wednesday when E. H. Gary, chairman of the United States Steel Corp., appeared with Mr. Miller before the members of the commission to arrange for the full consideration of the subject of which the Chicago, Duluth and other complaints form only integral parts. The meeting was entirely informal and the minutes were kept solely for the purpose of guiding the commissioners, Judge Gary and Mr. Miller in getting the actual case under way.

Mr. Miller, upon invitation of Victor Murdock, acting chairman of the commission, opened the discussion by stating briefly the case of the fabricators in the association he represented. He was accompanied by H. A. Wagner, president of the Wisconsin Bridge & Iron Co., who, at times, gave specific instances how he and his associates are discriminated against in competition with eastern fabricators.

Judge Gary insisted before the commission that when the Chicago complaint reached it, the case should be so handled as to permit all producers, consumers and communities to take part in it and have equal opportunity to be heard and to present their views and arguments. Mr. Miller stated his only interest was to have his clients satisfied, but agreed to not force the issue until, as Judge Gary stated, the question could be settled once and for all.

Will File This Week

Chicago, July 14.—John S. Miller, attorney for the Western Association of Rolled Steel Consumers, announced today that a formal complaint will be filed with the federal trade commission this week alleging that steel producers are dealing unfairly with steel users in the west by insisting on selling material produced at South Chicago and Gary, Ind., on the Pittsburgh base plan.

Will Erect Furnace

New York, July 15.—Plans are being developed it is learned, for the erection of a new blast furnace in the eastern part of New York state. Full details are not yet ready for announcement.

War Orders

Allocated by Institute Are Being Reviewed by Contract Board

Washington, July 15.—The system used by the war industries board and the American Iron and Steel institute in the allocation of steel and of pig iron for the production of steel during the war is being reviewed by the board of contract adjustment of the war department before which are now pending many claims of contractors who seek damages for steel or pig iron manufactured on contracted for informally under the operations of the allocation method. To help clear up the point the adjustment board last week heard J. Leonard Replogle, director of steel supply of the war industries board; W. J. Gruss, assistant to H. G. Dalton, chairman of the institutes subcommittee on pig iron, iron ore and lake transportation and Maj. W. W. MacCleary, representing the army ordnance department in the steel commodities section of the war industries board. Today's witnesses included James B. Bonner, vice chairman of the subcommittee on steel distribution and the institute's representative here during the war.

The contract adjustment board has not reached a decision in the matter but may soon and will use its findings as a guide to the settlement of pending cases.

To Add Sheet Mills

The American Rolling Mill Co. has decided to build additional sheet and jobbing mills to take care of the increased business along this line. The mills will be installed in the Middletown, O., plant at an expenditure of approximately $5,000,000. This expansion reflects the renewed activity in sheet and jobbing mill business which has shown a decided expansion during the last two months.

Report Band Concessions

Pittsburgh, July 16.—It is reported that a number of manufacturers have resorted to the old 1916 bar card in quoting prices for hoops and bands. Although this practice involves only material of No. 12 gauge and lighter, its effect is considerable, inasmuch as it means a concession of from $10 to $11 per ton under current prices. However, the rate of 3.05c, Pittsburgh, has not yet felt the influence of the reported price cutting.

Making High-Grade Tool Steel

Extreme Care is Exercised in Cooling the Ingots After They Are Stripped—Large Steam-Hydraulic Press Kneads the Steel Into Billets—Importance of the Annealing and Hardening Processes

BY JOHN D. KNOX

HIGH-GRADE tool and alloy steelmaking demands accurate control of each operation through which the steel passes, and at every step advantage should be taken of the latest scientific methods. Even with this control, a large personal factor is involved, the steel seeming almost to absorb the personality of the workman through whose hands it passes. This can probably be accounted for by the old saying, "It is the mastery of details that makes perfection." Fully realizing these vital points, which are the result of long experience and high development of the art, many tool and alloy-steel makers, including the Hammond Steel Co., Syracuse, N. Y., have carefully developed their shop and metallurgical personnel. As an incentive for maintaining the workman's interest in company affairs, the policy followed by the officials of the Hammond company is to make the employe a stockholder as soon as he becomes efficient at his occupation.

Since the establishment of the Hammond Steel Co., in 1911, when the plant consisted of a shed and one steam hammer, the policy has been to manufacture various grades of steel on a quality basis. The alloy steels made at this plant include chrome-bearing nickel, chrome-nickel and chrome vanadium. The high-carbon chrome steel is used for making ball, roller and thrust bearings; a steel containing from 3.35 to 5 per cent nickel is used for making transmission and driving shafts, cap screws, piston rods, rams, axles, etc.; chrome-nickel steel is used for making gears and driving shafts; and the chrome-vanadium grade is used for making clash gears, axles, steering knuckles, etc.

Adheres to Electric Practice

The officials of this company are firm believers that steel made in the electric furnace will be freer from inclusions, have a wider hardening range and still give the proper grain refinement with a minimum of brittleness and consequently a maximum of toughness, than steels made by any other process. Consequently the electric furnace is used to make the steel at this plant. The furnace is located on the western end of the melting building which also houses the pressing and tempering departments.

Scrap and pig iron are brought into the plant at the western end and are weighed on a platform scale prior to unloading into concrete bins. Six bins are installed and these afford a storage capacity of approximately 600 tons. They are located near the electric furnace. The material is transferred from the bins to the charging floor by means of an electric magnet which is suspended from a 10-ton crane. The latter was built by the Pawling & Harnischfeger Co., Milwaukee. The furnace charge usually includes Swedish or American iron or both and the best quality of scrap. These materials are weighed on a platform scale prior to being charged into the furnace.

The electric furnace has a capacity



FIG. 1—1000-TON PRESS WHICH IS USED FOR COGGING THE INGOTS INTO BILLETS OR FOR PRESSING INGOTS INTO SPECIAL SHAPES. IN THIS INSTANCE A LARGE SHAFT IS BEING FORMED



FIG. 2—TAPPING A HEAT OF STEEL FROM A 10-TON ELECTRIC FURNACE

for melting 10 tons per heat. Throughout the melting operation, samples of the metal are taken to the chemical laboratory which is housed in a lean-to just off the melting department, and analyzed. When the steel is brought up to the desired analysis it is tapped from the furnace either into a 10-ton or two 5-ton ladles. Fig. 2 shows a heat of steel being tapped. An oil blast is used for drying the newly-lined ladles and for preheating all ladles prior to their being put into service. When the heat of steel has been tapped from the furnace, the ladle and its contents are hoisted by means of a crane and placed on a ladle carriage. The latter is similar to those used in crucible plants. It consists of a cradle mounted on four wheels which operate on steel rails. The ingot molds are set in a pit between the rails and by positioning the tap hole of the ladle over the various molds, the entire heat of steel is poured into ingots. The pouring operation is shown in Fig. 3.



FIG. 3—POURING A HEAT OF STEEL FROM A LADLE INTO A CAST-IRON MOLD

Various sizes of ingots, from 9 x 9-inch, weighing 800 pounds, to 30 x 30-inch and 30-inch fluted weighing 4 to 5 tons, are molded, hot tops being provided on all molds for the purpose of eliminating pipes. The practice followed at this plant is to pour the steel into the molds which are placed with the small end down. By means of this arrangement the solidification of the ingot is from the bottom up. If the metal contains any impurities they will gradually work their way up to the top of the ingot where the metal remains molten the longest. After solidification is completed, the molds are removed and the ingots are allowed to stand in the air until almost black. They are then placed in a pit equipped with a cover where they remain until cold. Considerable care is exercised in cooling the ingots slowly because much depends upon this particular stage of steelmaking in cases where quality production is desired.

Ingots Cogged Under Press

Practically all the ingots made at this plant are worked under a press, the Hammond officials contending that the structure of the metal is more thoroughly kneaded than by other methods. Prior to breaking down, the ingots are charged cold into a coal-fired furnace which is practically cold itself. Four double-door furnaces are provided. Heating the ingot slowly tends to prevent any uneven expansion and consequently internal bursts. When the ingot is brought up to the desired temperature, it is balanced on a heavy steel bar suspended from a crane and transferred to a 1000-ton steam-hydraulic press. The latter, which is shown in Fig. 1, was built by the United Engineering & Foundry Co., Pittsburgh. The crane which serves the press, is equipped with a 10-ton hoist and a 3-ton auxiliary. Suspended from the latter is a manipulator which was built by the Brown Hoisting Machinery Co., Cleveland. During the process of breaking down, the scale is blown from the surface of the steel by means of compressed air, this being the sole duty of one workman.

After the ingot is broken down sufficiently, the resultant bloom or billet, as the case may be, is transferred to the chipping department where any surface imperfections, such as seams, scale pits, etc., are removed by means of air-operated hammers. Just off from this department is the grinding department which is equipped with six electrically-driven grinders

of the swing type. Where a highly-finished material is specified, such as high-carbon chrome steel, the billets, before being ground, are pickled in a 7 per cent solution of sulphuric acid and washed in order to remove any scale. The pickling process brings out any scratches on the surface of the steel, which in some cases are only 0.064-inch deep. The billets or ingots, after the grinding and chipping operation, either are removed to the stock yard to apply on orders or they are taken to the hammer shop for further working.

The stock yard, as shown in Fig. 7, is equipped with two industrial tracks and hand-operated cranes. These tracks connect the steel-melting and hammer shops and are a combination of the industrial track system installed throughout the works. This system is used extensively as a means of transferring the steel, during the process of manufacture, from one department to the other. Prior to forging the steel into the shape desired, the ingots or billets are reheated in coal-fired furnaces near the hammers. A monorail system built by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., is used for transferring the coal from the storage pile to the individual hammer furnaces and boiler house, and for transporting steel through the plant at several points. The plant was built under the direct supervision of the T. W. Price Engineering Co., New York. It covers about 14 acres.

In reheating tool-steel billets prior to forging, the policy of the Hammond company is to maintain a clean, even-burning fire in order that the steel may be heated uniformly inside and outside. If the interior is cold the metal is liable to crack during the forging process or at least to have severe strains set up, while if the metal is cold on the surface, small cracks are liable to develop. When the forging temperature is reached, the steel is not allowed to soak but is removed from the furnace, because at this temperature a large grain structure forms and surface decarbonization increases. The steel is then placed under a hammer and reduced to the shape and size specified. Eight steam-operated hammers, ranging from 500 pounds to 4 tons capacity, are installed in the forge department. The 4-ton hammer is shown in Fig. 4. Rounds up to 8 inches are finished under the hammer while larger sizes are finished under the press.

Soft Texture is Given Steel

Adjoining the hammer shop in a separate building is the annealing department. Four double-door, coal-fired annealing furnaces are provided. The temperature of each furnace is controlled by means of pyrometers. The object of annealing is to remove all strains imparted to the steel during the forging process and to give the metal free machining qualities and the correct grain structure for hardening. The correct annealing temperature for steels is slightly in excess of their respective critical points. To obtain the best results, the steel should be heated slowly to just above its critical point, afterward burying the steel in fine ashes, sawdust, charcoal or dry lime. The annealing department of the Hammond Steel Co. is laid out for either box or pipe annealing. The bars, rings, disks, etc., are packed in the boxes or pipes filled with charcoal, and the covers tightly sealed. They are placed inside the furnace and heated to the desired annealing temperature for the particular grade of steel, held at that temperature for the proper length of time and cooled in the furnace. This removes the scale from the steel, reduces surface carburization to a minimum and gives good machining qualities. From 6 to 12 tons of steel are annealed at one charge, depending on the size, the time required for the anneal being from four to seven days.

After the anneal, the bars or other products are either transferred to the stockroom, to apply on orders, or to the heat-treating department for further treatment. The latter department is located in the melting building near the press. It is equipped with three car-type, heat-treating and hardening furnaces which are gas fired. These are shown in Fig. 5. The products made by the Hammond company are too diversified to warrant a description of each hardening procedure. In general, however, the

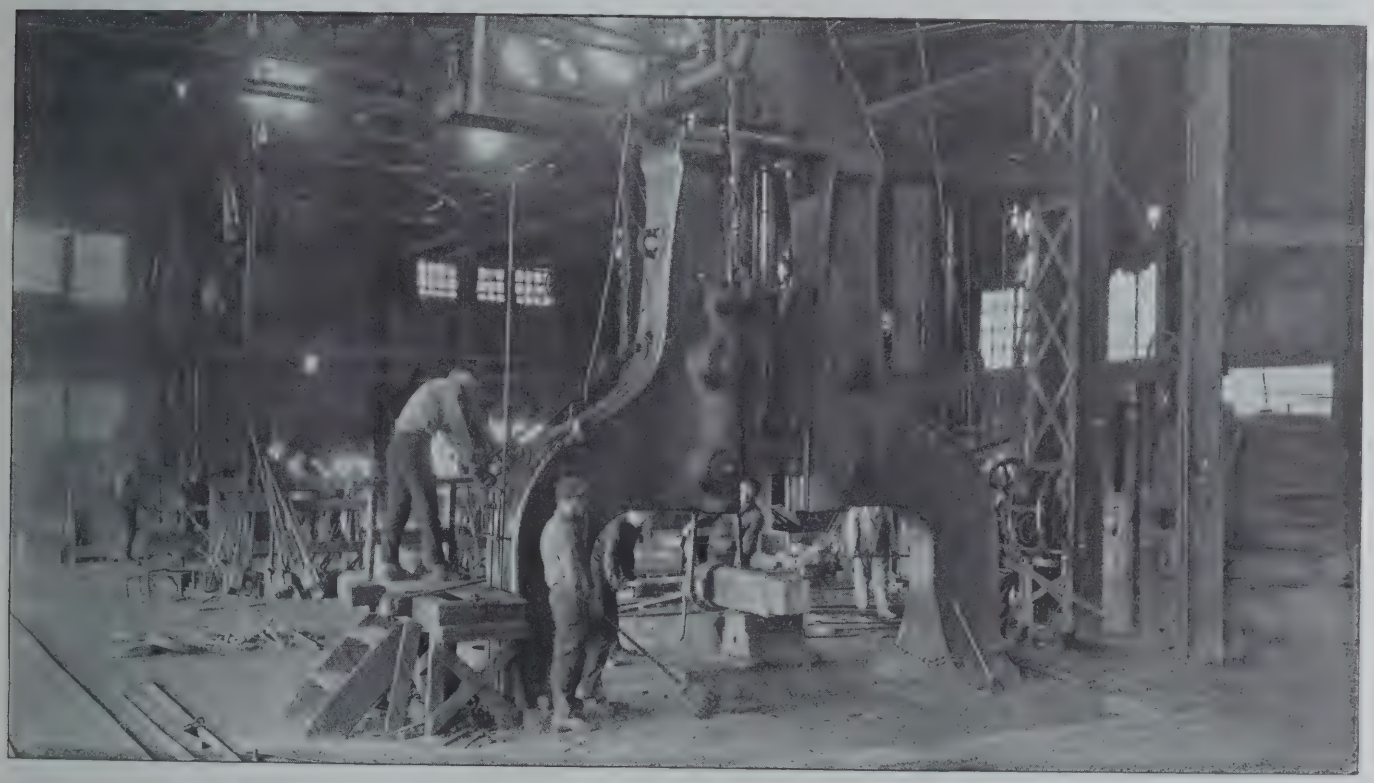


FIG. 4—THIS HAMMER IS USED FOR FORGING HEAVY PIECES OF STEEL. THE HAMMER SHOP OF THE HAMMOND STEEL CO. INCLUDES EIGHT UNITS

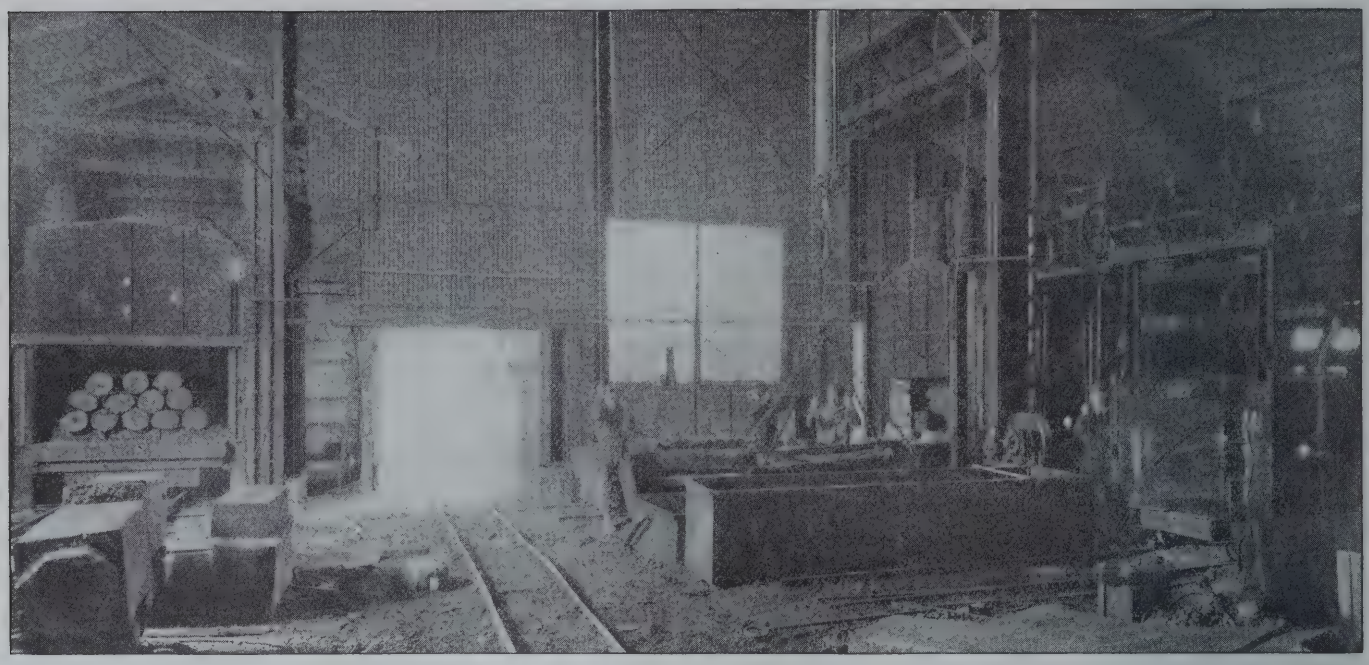


FIG. 5—HEAT-TREATING FURNACES IN THE HARDENING DEPARTMENT. THE INGOT SHOWN AT THE RIGHT BEARS THE MARKS OF THE CHIPPING HAMMERS

steel to be hardened is preliminarily heated. The temperature to which the steel is heated is the lowest temperature at which the piece has the power to harden. This temperature gives the greatest toughness, the maximum grain refinement and a minimum of bursting strains. It has been found that increasing this quenching temperature does not increase the hardness materially, but tends to increase brittleness and grain growth to a dangerous degree. Individual problems, which called for special attention, arose so often that the Hammond company recently installed a fully equipped physical laboratory. Competent metallurgists are in charge. They supervise the hardening of the steel.

Precautions in Hardening

Carefully conducted experiments reveal that pieces with considerable variation in section are best quenched in cottonseed or any good quality of light oil. In order to prevent a sharp junction of the hard and soft sections, steels, which are hardened partially, are kept in motion in the quenching bath. The quench at this plant is made always on the up heat, the steel being heated carefully and slowly in order that the corners of the piece will not be heated too rapidly. After the steel is removed from the quenching medium, the steel is drawn immediately, either by comparison with standard colors or in hot oil to a temperature which will give the properties most suited to the particular grade of steel. The

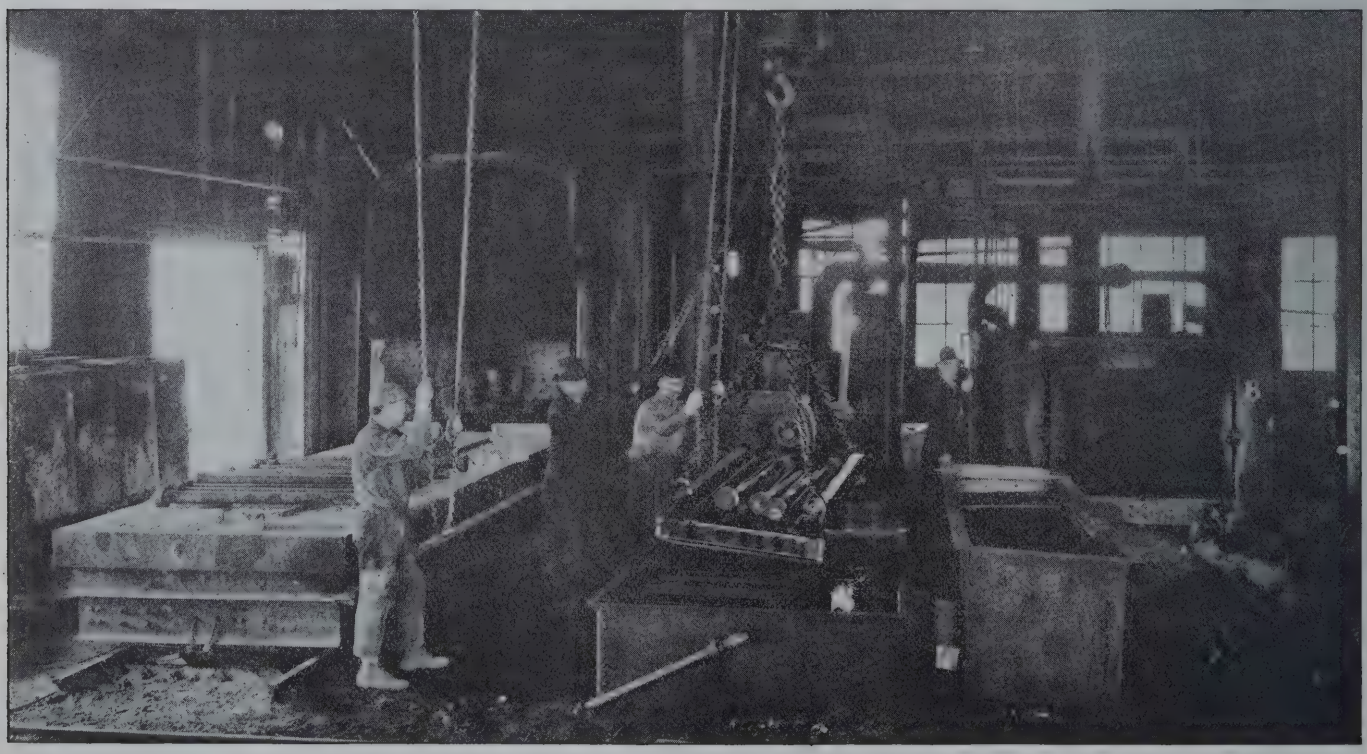


FIG. 6—CAR-TYPE, GAS-FIRED, HEAT-TREATING FURNACES USED TO HEAT STEEL FORGINGS TO THE PROPER TEMPERATURE FOR QUENCHING

quenching tanks are shown in Fig. 6.

The urgent demand made by users of die blocks aroused the company's interest some years ago, and with the co-operation of several users, the company set out to manufacture steels specially for drop-forge dies. A special department is given over to die-block making. In preparing the die blocks for the trade, the ingot is first cogged under the 1000-ton press into a billet. The latter is chipped to remove any surface imperfections and then forged to specifications either under the press or hammers, depending upon the size of the block. The blocks are annealed and then are either shipped or transferred to the heat-treating department for hardening according to the customer's desires.

Other grades of steel made by the Hammond company are used for making shear blades, chisels, spindles, hammers, drills, dies, reamers, knives, punches, taps, milling cutters, piston rods, axles, rams, drive shafts, gear, cap screws, automobile springs, etc. The company is also in a position to forge arbors, axles, shafts, connecting rods, crank pins, spindles, gear and pinion blanks, rolls, etc.

The officials of the Hammond Steel Co. are as follows: F. B. Scott, president; Alexander MacInnes, vice president and sales manager; W. W. Scott, treasurer and general manager; Maxwell Grace, secretary and production manager; Henry Thompson, mill superintendent, and Russell Gebert, chief metallurgist.

New Types of Tanks Are Built By Americans

Two new types of tanks were developed during the war by American engineers, while a third on which production was the largest, was worked out in conjunction with British designers, according to the war department's review of what this nation accomplished in the manufacture of tanks. An outlay of $175,000,000 was contemplated in the tank program but this was greatly reduced on the signing of the armistice. The war department says:

"The large British tank had been successful in its operations on the battle front, but its very decided limitations, recognized by British authorities, caused our officers to think it best to redesign the large tank in preference to copying.

"General 'fighting' specifications for the big tank were laid down by the British general staff at the conference at British headquarters, at which American officers were present. It was agreed that this big tank, known as the Mark VIII, would be of Anglo-American design and construction. Arrangements were made for producing 1500 of this type. To do this, Great Britain and the United States entered into a working agreement that provided for England to furnish the hulls, guns, and ammunition, while the United States was to furnish the power plant and driving details of the monster. Roughly speaking, the tank would cost about $35,000, of which $15,000 represented the American part of the job, on which some 72 contractors were at once engaged. About 50 per cent of the work on these tanks had been completed when the armistice was signed, and the first units were undergoing trials.

"While these Anglo-American tanks were in the process of construction there were also being built here 1450 all-American tanks of the large English type, and for this all-American tank 50 per cent of the work had also been done at the signing of the armistice.

"During the summer and fall of 1918 our tank program had been augmented by the development of two entirely new types of tanks. One was a two-man tank weighing three tons, costing in the neighborhood of $4000 each. This tank, mounting one machine gun, has a speed of about eight miles an hour. Of this type 15 had been built and, up to Jan. 1, 1919, 500 were to have been finished, after which they were to have been turned out at the rate of 100 a day.



FIG. 7—STOCK YARD OF THE HAMMOND STEEL CO., LOOKING TOWARD THE HAMMER-SHOP BUILDING. THE INDUSTRIAL-TRACK SYSTEM CONNECTS THE HAMMER SHOP AND THE MELTING DEPARTMENT

The cement industry in California consumes 1,700,000 barrels of fuel oil per annum. If California low-grade lignites and subbituminous coals were pulverized and utilized as fuel to serve this industry, approximately 350,000 tons of coal in the pulverized state, would release for vessel fuel 1,700,000 barrels of fuel oil now being burned.

Treaty Strips Huns of Plants

Germany Loses 74 Per Cent of Her Iron Ore Output, 32 Per Cent of Her Coal, 118 Blast Furnaces and 141 Foundries, According to Official British Figures—Raise Doubt as to Her Ability to Pay

BY JOSEPH HORTON

British Correspondent of The Iron Trade Review

FIGURES emanating from a member of the British financial commission relative to the effect of the blow inflicted upon Germany by her loss of territory under the peace treaty will be of great interest to American industry. The loss of Alsace and Lorraine involves a deprivation out of all proportion to the geographical area and must have a great effect on Germany's position in the future as an exporter of iron, steel and machinery.

By losing Upper Silesia and Alsace-Lorraine, Germany loses 32.7 per cent of her coal output as it was in 1912; 72.4 per cent of her iron ore output as of 1912; 74.7 of her zinc, and 37.8 of her blast furnaces. It has been estimated that the cession of territory in France, apart from the loss of Upper Silesia, will reduce Germany's annual prewar productions of steel ingots from 20,000,000 to 14,000,000 tons, and increase France's capacity from 5,000,000 to 11,000,000 tons.

Out of a total output of zinc of 301,521 tons in 1912, 225,175 tons came from Upper Silesia, and this loss is equally important from the point of view of manufacturers. The number of blast furnaces in Saar and Lorraine in 1911 was 81, and in Upper Silesia, 37, the total representing a loss of 118 out of 312 in the former empire. The loss of iron and steel foundries will be 141 lost out of 1489. In 1913 the German export of iron products, including tinplates, etc., was over £66,000,000 ($316,800,000), equal to 13.2 per cent of her total exports; and the export of machinery and parts, including motor cars, was over £37,500,000 ($180,000,000), equal to 7.5 per cent of her total exports. Coal, coke and briquettes formed 7 per cent of her exports, woolen goods about 3.9, and cotton goods, 5.6 per cent.

Germany will still be able to import iron ore from Alsace-Lorraine and Upper Silesia, but her position will be very different. In addition to her own supplies she imported for manufacture in 1913 over £11,000,000 ($52,800,000) worth of iron ore, equal to 2.1 per cent of her total imports, and it was from Great Britain she obtained the largest share of her imports.

The figures relating to British exports and imports in 1913 follow: To Germany, £43,750,000 ($210,000,000), from Germany, £71,800,000 ($344,640,000). Great Britain was both the largest exporter and the largest importer. Her exports to Germany amounted to 8.1 per cent of her total, and her imports from Germany 14.2 per cent of the total. Germany's exports to the British Empire amounted to 18 per cent of the total.

Naturally there will be a great deal of curiosity to see how this balance of trade is affected, and reports which are expected soon to be made public, may give some indication of the relative position of the two countries in the future. There will be many gaps left by Germany in the world's markets to be filled up, and it seems likely that America must take a large share of this business.

Germany's overseas trade would have to be expanded to not less than two or three times its previous scale to obtain an annual payment of, say, £500,000,000 ($2,400,000,000), proposed as a peace condition, and it is impossible to name the commodities in which this large trade expansion could take place without including those in which there is competition with Great Britain.

The accompanying table shows in detail the losses in coal and iron ore and of blast furnaces and iron foundries which Germany will suffer under the peace treaty.

Losses in Output Germany Will Suffer Under Treaty

	Alsace-Lorraine	Silesia	German empire	Percentage lost by Germany
Iron ore (tons, 1912)	20,083,236	188,286	27,199,944	74.5
Metallic iron content	6,076,629	57,832	8,474,360	72.4
Blast furnaces (1911)	81*	37	312	37.8
Iron and steel foundries (1911)	38	103	1,489	9.5
Hard coal (tons, 1912)	16,173,013†	41,074,632	174,875,297	32.7

*In Saar and Lorraine. †In Saar.

France May Deny Material to Germans

BY FRANCIS MILTOUN

Paris Correspondent of The Iron Trade Review

HAS France bitten off more than she can digest? That is what many economists in industrial France are asking today. Alsace and Lorraine were bound to become French again, but with the reincorporation of Alsace into the French fold has arisen a remarkable state of economics which was quite unforeseen.

Alsace, with Mulhouse as the head center, will practically dominate certain of the lines most prominent in the cotton trade, and this to the detriment of the manufacturers of the northern, invaded provinces. To be sure the factories do not exist today, but they did exist, and in former days the cottonades of Alsace, the famous *toile d'Alsace,* paid a duty to come into France. The cotton industry of northern France was thus protected. It is

so no longer. And not being protected, will it be possible to reconstruct it? This is one of the grave questions in regard to Alsace.

With respect to Lorraine it is a question of iron and steel. With the absorption of the iron fields of Lorraine, France is destined to become the greatest of iron and steel producing countries of Europe. This will be possible by reason of her control over the basin of the Saar, which is contiguous and can furnish the necessary coal for coking. This is a great advantage, for the supply of coal is practically unlimited, although it is said that it is not of the best for the purpose, and by no means the equal of that of the Westphalian fields, which still remain German, while guarded by the army of occupation for a period of five years from the signing of peace. At all events, France now has an abundance of raw materials.

There also is the labor question. France has taken over unseen difficulties in her occupation of the Saar. Not only is a question of labor involved, but one of politics. This is a formidable combination to deal with in a time of reconstruction, but Europe will be working under similar circumstances for the next decade or generation.

France May Withhold Ore

Here is the situation as it focuses itself at Bons in the Saar, where the famous Manessmann brothers have their steel works. It is commonly said that a complete customs reciprocity between the Saar valley and France will entail complete ruin for the former. Its situation up to the present has been highly favored, with its raw material as a medium of exchange, both with the German metropole and with France. Coal is almost on the surface, and scarce 20 miles away are the Minette fields of Lorraine. Today France is master of the coal fields of the Saar and the product will be used entirely for French account, that shipped to Lorraine paying no export tax and that going to Alsace also being exempt from duty to the detriment of the Saar producer. France, in case of need for her own industries of Lorraine, North France and Alsace, may refuse to furnish any coal or iron ore to the contiguous industries of Westphalia, the Palitinate or the German steel works of the same districts, particularly those of the valley of the Ruhr. Without this ore the German iron and steel industry of the bordering regions will dwindle. It is for this reason that the people of the Saar, the operators and manufacturers at least, refuse to accept the idea of annexation with good grace.

The indifference among the workmen of the Saar is nearly universal. Many care little for France or the French. They do not hate them; they ignore them. But they hate the Prussians and the Prussian regime. And the greatest of this undisguised hate for a regime which has ever oppressed them is among the demobilized soldiery.

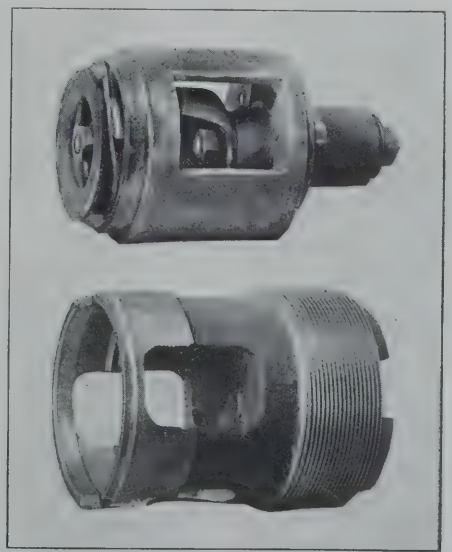
Politics enter into the situation still further. The Saar region has ever been exploited under a regime far less favorable than that which was extended to the Ruhr, and production in the Saar was curtailed to the point that it might remain at a stationary figure, thereby curtailing the workers' wage. Between 1905 and 1912 production might well have been increased 40 per cent. In 1913 it was 13,000,000 tons when it could easily have approached 18,000,000.

It is for the reasons just cited that it appears that the people of the Saar are by no means disposed to quarrel with the new regime, as compared with that under which they lived since Rochambeau recruited his famous Regiment des Deux Ponts, sent to the aid of the struggling American colonies a century and a quarter ago.

The Saar is to play an important part in the revival of industrial France. Without it, and a free hand, France would be doomed. She has the free hand and the people, barring only the get-rich-quick operators and financiers, who are all for France or at least against Germany; although it is an axiom that all nations, big or little, are egoist nations. This is something that the peace negotiators seem to have ignored.

New Compressor Valve Is Light and Compact

A new air compressor air valve recently designed by the Sullivan Machinery Co., at Claremont, N. H., is small, compact and light in weight. The valve seats in a cage arranged radially to the cylinder axis and close to the cylinder ends, the inlet at the bottom and the discharge at the top. As shown in the accompanying illustration, the valve is held in its seat by a flat annular spring of tempered spring steel, the same material of which the valve is made. To give a wide port opening with a minimum of clearance volume without restricting the passage of air to or from the cylinder, the valve opens against a specially designed guard plate. This guard as well as the spring is accessible after the removal of a screw plug.



VALVE SHOWING THE ANNULAR SEATING SPRING AND THE GUARD PLATE

The construction allows this valve to be placed close to the bore of the cylinder, thus resulting in a corresponding reduction of clearance loss. It is claimed that the light weight and the material used in the valve tends to give a long life. Repair work is simplified by the feature that the same type and size of guards and springs are used for the inlet and discharge valves.

Unloading with this style of valve is essentially the same as with the automatic poppet valve. An air pipe connection from the receiver is controlled by a pilot valve at the side of the cylinder which admits air at the unloading limit to small plunger pistons in the valve plugs. The other end of the piston carries a three-pronged extension which raises the inlet valve from its seat until the pressure in the receiver is reduced and the plunger piston falls, the compressor resuming its operation with the valve seated. When the valve is raised and the unloader is in action, no air is compressed for the piston is simply forcing air through the cylinder and open valves at atmospheric pressure.

A valve of this type has been in use for some time on high-pressure compressors furnished by the Sullivan Machinery Co. to the navy for charging torpedoes up to 2500 pounds per square inch.

The smallest mineral output since 1914 was recorded from Alaska for 1918. The total mineral output for the year was valued at $28,900,000, a decrease of about $12,000,000 compared with 1917. The decrease was chiefly in copper and gold and was due, according to a bulletin of the United States geological survey, to the shortage of labor and ships, and to the high cost of mining. There was an increase of almost 60 per cent in the production of mineral fuels, and a slight increase in the production of chrome ore. The only new item among Alaskan mineral products in 1918 is palladium.

Need World Control of Minerals

Peace League May Require System of International Allocations of Minerals for Effectiveness, But United States' Interests Do Not Demand it— Government Expert Reviews Important Proposal

BY DR. C. K. LEITH

THE annual world production of minerals approximates 1,700,000,000 tons, over 90 per cent of which consists of coal and iron. Of this amount about two-thirds is used within the countries where the minerals are produced and one-third is shipped to other countries. The mineral production of the United States amounts to about one-third of the total.

In the discussion of mineral resources in their international aspects we are concerned primarily with the 33 per cent of the mineral output which moves between countries. It may be assumed that the consumption within the countries of origin is a matter of national rather than international concern.

One of the several interesting facts in this world movement of minerals is that the movement of most of them shows a rather remarkable concentration. For instance, manganese moves from three principal sources and converges at four or five consuming centers. Chromite moves from two principal sources; tungsten also from two.

Even for certain commodities which are widely distributed and move in large amounts the concentration of movements is rather marked. For instance, the world movement of coal is controlled by the United States, England and Germany. In other words, although the world movement of mineral commodities is widespread and exhibits many complex features, most of the individual minerals follow two or three salient lines of movement. This means in general that for each mineral there are certain sources of limited geographic extent, which, because of location, grade, relation to transportation, cost, in short, all the factors that enter into availability, are drawn upon heavily for the world's chief demands. The convergence of these materials toward a few consuming centers indicates generally concentration of coal production necessary to smelting, high development of manufacturing, large per capita use, concentration of facilities, strong financial control and a large element of enterprise which has taken advantage of more or less favorable conditions.

Another significant fact which emphasizes the interdependence of nations and the importance of international considerations is that no country is entirely self-sustaining in its mineral requirements.

Reasons for International Control

We face the immediate and pressing question whether the centralized international control required by the war shall be retained or extended as a means of furthering the aims of a league of nations. When such a league was first proposed emphasis was placed mainly on political and military considerations. It now seems to be recognized that these are so closely interlocked with economic considerations that any league of nations, to be effective as a means of minimizing future international discord, must make provision for some degree of international or supernational control of business. Recent statements by officials of Great Britain and France seem to indicate a definite purpose to urge such control.

Some of the reasons which have been urged for the international control of the movements of minerals are as follows:

To insure equitable distribution of certain minerals, such as tungsten, vanadium, platinum and gold, of which there may be a world shortage.

To mitigate a world shortage of ships by international allocation of ship space, which would entail limitations on the movement of minerals.

To prevent nations which are more advantageously situated in regard to finance, location and general control of trade from monopolizing the business in any commodity at the expense of other nations, in other words, to insure equality of opportunity in regard to basic raw materials. The control of many mineral commodities now approaches national monopoly.

To reach some agreement as to division of markets for commodities such as iron, steel and coal, which are available in so great abundance that several of the larger nations have considerable exportable surplus, in order to prevent international difficulties due to unrestricted competition.

To maintain equilibrium of price.

To insure common and equitable contribution of supplies for rehabilitation of the devastated countries.

To serve as a means of disciplining any nation that will not conform to any code or control established by a league of nations.

In general to prevent economic friction that might vitiate any world political agreements.

To replace the crude and cumbersome arrangements for international control through complex treaties and tariffs by a more centralized system.

The foregoing is merely a list of suggestions that have been made; it is not a unit statement of the requirements of the situation.

The United States is more nearly self-sustaining in regard to mineral commodities as a whole than any other country on the globe. The following statement summarizes qualitatively our position:

FIRST:—Minerals of which there is an adequate supply or exportable surplus in the United States: (A) Minerals of which our exportable surplus dominates the world situation: Copper, petroleum. (B) Minerals of which our exportable surplus constitutes an important but not a dominant factor in the world trade: Sulphur, phosphates, silver, iron and steel, coal, cement, uranium and radium. (C) Minerals of which our exportable surplus is not an important factor in world trade. Small amounts of most of these minerals have been and will doubtless continue to be imported because of special grades, backhaul, or cheaper sources of foreign supply, but these imports are for the most part incidental: Lead, zinc, aluminum and bauxite, gold, tungsten, molybdenum, asphalt and bitumen, pyrite, barite, fluorspar, building stone (except Italian marble), cadmium, gypsum, lime, tripoli and diatomaceous earth, mineral paints (except umber, sienna, and ocher from France and Spain), pumice, garnet, salt (except special classes), talc, arsenic, bismuth, bro-

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The author of this paper, C. K. Leith, is associated with the United States geological survey and was mineral adviser to the war industries and shipping boards. Dr. Leith, for years connected with the University of Wisconsin and associated with the firm of Longyear & Bennett, Minneapolis, is one of the most widely known iron ore experts in the world.

mine, artificial abrasives, corundum and emery (except Naxos emery), fuller's earth, mercury.

SECOND:—Minerals for which the United States demand must continue to be met by imports: (A) Minerals for which the United States must depend almost entirely on other countries: Tin, nickel, platinum and metals of the platinum group. (B) Minerals for which the United States will depend on foreign sources for a considerable fraction of the supply: Antimony, vanadium, zirconium, mica, monazite, graphite, asbestos, ball clay and kaolin, chalk, cobalt, naxos emery, grinding pebbles.

THIRD:—Minerals normally imported into the United States which in future can be largely produced from domestic sources if it seems desirable: Nitrates (except potassium nitrate), potash, manganese, chromite, magnesite.

Little Advantage for This Country

It is clear that a league of nations offers but little advantage as a means of insuring adequate supplies for the United States and that the limitations on the distribution of exportable mineral supplies would probably weigh more heavily on the United States than on any other country. The few minerals for which the United States is dependent on foreign countries are offset by so many in which we have a dominance of supply, and our financial position is so strong that it appears certain that the United States does not need the aid of a league of nations to insure adequate supplies even of those few minerals. In short, in this respect our entrance into a league of nations would not be based on self-interest. We would sacrifice to some extent an independent and dominant position.

In our dealings with other nations this fact should give weight to whatever emphasis the United States may wish to put on the desirability of international control of minerals. At the same time it imposes a hard task on the United States to arouse the mineral interests to the support of a measure that involves so much self-sacrifice. The value of our annual potential exportable surplus of minerals approximates a billion dollars; that of our necessary mineral imports about $175,000,000. Our active allies, Great Britain, France and Italy, together have a maximum annual exportable surplus worth perhaps $325,000,000, and their necessary imports amount to $265,000,000.

It seems clear that our effort to make this country entirely self-sustaining in regard to raw materials, which has been especially marked during the war, will need to be modified if we are to adapt ourselves to conditions of international control. Although we may be able to become self-sustaining in respect to essential commodities like manganese, chromite and potash, by so doing we are cutting off the export market of other countries where these commodities exist in such quantities and grades that they would be, under conditions of free trade, our principal sources of supply. By drawing on such sources we not only get a cheaper and higher grade of product, but we develop a return market for the products in respect to which our natural advantages entitle us to a share in the export trade.

The potash situation will illustrate the problem. The war cut off German supplies. We made every possible effort to meet the deficiency. Prices rose tenfold. Now, are we to continue this effort at high cost?

If all countries take the stand that they must be self-sustaining in regard to natural resources, they can accomplish their purpose only by high artificial barriers to offset inequalities in the factors which determine the availability of the several commodities, with the result that the world movement of raw materials will be greatly lessened. Instead of free circulation of essential basic commodities vitalizing any world agreement there will be a series of compartments in which trade is maintained at different levels, under different pressures and conditions, a situation difficult to maintain and inimical to world agreements based on mutual concessions. It is clear that if each of the states of the United States should adopt the principle of making the state self-sustaining in minerals so far as possible, the result would be to increase largely the chances of interstate friction and to lower efficiency in the United States.

The interests of conservation clearly call for an international viewpoint in the handling of our mineral resources. The deposits of most minerals are so highly concentrated in their distribution and general availability that the principal sources for the world are in comparatively few places. When all factors of conservation are taken into consideration, including labor and efficient use of the product, it would seem that the minerals should be drawn from those natural sources of supply.

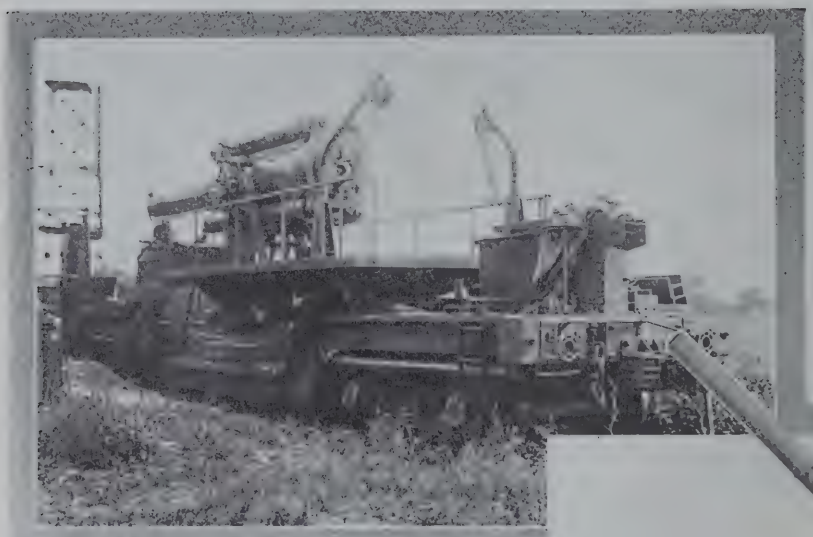
There is, perhaps, as much need of specializing in mineral output as there is of specializing in manufacturing. The thought that every country on the globe should be self-sustaining in regard to mineral supplies is of somewhat the same order as the thought that every family should produce all its own raw materials rather than take advantage of the more favorable conditions existing elsewhere, and so specialize in human effort. If for a certain amount of capital and labor we can produce copper more cheaply than any other country and thus dominate the world's markets, it is not economy to divert this capital and labor to the production of ores of manganese or chromite, which, because of natural conditions can be produced much more cheaply elsewhere.

Extension of international control of minerals seems to offer possibilities of loss and gain, loss through a considerable sacrifice of national trade and a narrowing of the field for private initiative in trade; gain through the possibility of attaining certain ends which are attainable only by international agreement, such as an allocation of supplies which will be to the advantage of the greater number of nations rather than to the advantage of the few that are strong enough to dominate the situation and which will in general prevent economic friction from endangering a league of nations based on political and policing considerations.

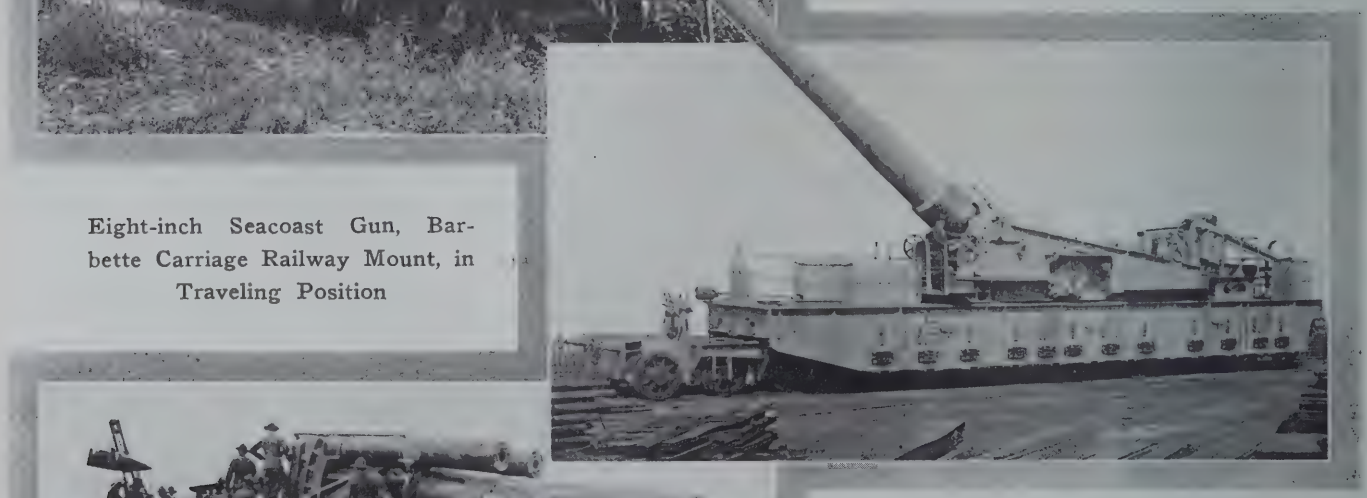
In a world governed by good will the effective internationalization of trade might well be gained by leaving trade unrestricted. In proportion as the actual condition may depart from this ideal condition some sort of international agreement as to control seems justified. Such control would by no means eliminate international rivalries and jealousies; it would transfer them to the international governing body. The duties of such a body would be onerous and perplexing. It might even be supposed that nationalistic aspirations might be so strenuously presented and so firmly backed by national steps in the way of embargoes and protective tariffs that the international control would amount to little. But it may be further supposed that a league of nations whose members enter into it voluntarily and with mutual good faith might control the situation sufficiently to bring recalcitrant members into line.

The demobilizing department of the German government has a subdepartment, known as the chemistry group, to look after the interests of the large number of practical chemists called up for war work at home and in the field. In the work of this section, which is under the direction of Dr. Fritz Haber, the replacing of these men, so necessary to the re-establishing of the great industries of Germany, will be made the first care.

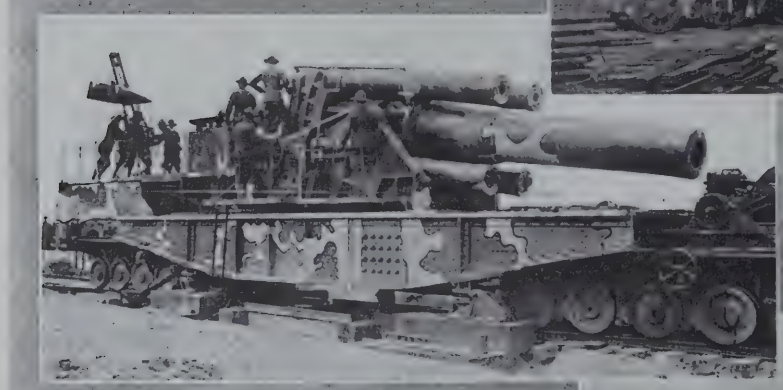
Modern Railway Batteries Used in France



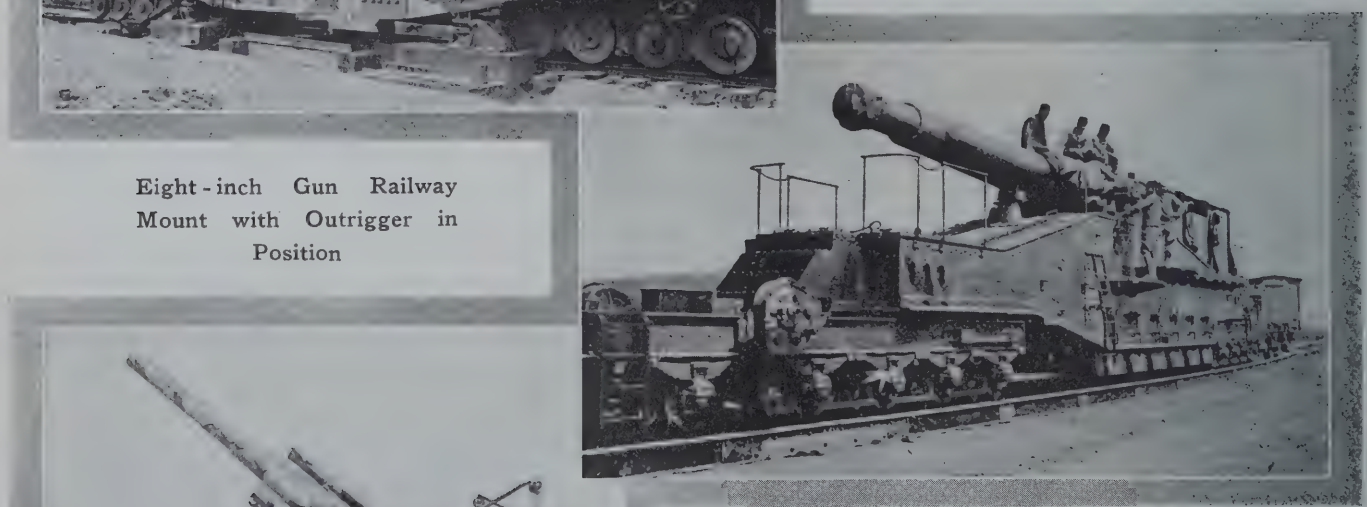
Railway Mount, Model 1918, for 10 and 12-inch Guns. Gun is Shown in Firing Position



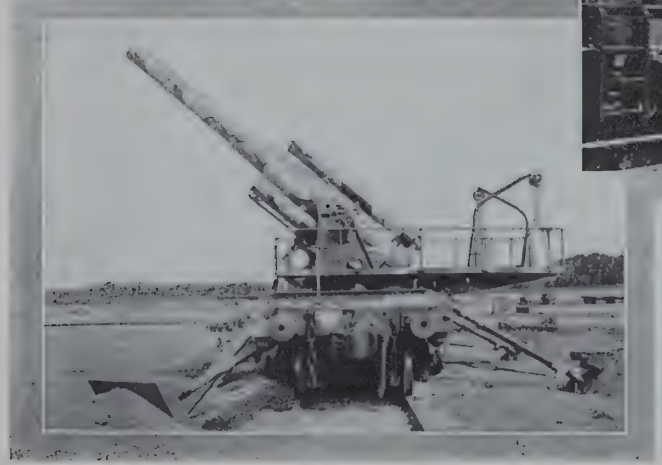
Eight-inch Seacoast Gun, Barbette Carriage Railway Mount, in Traveling Position



Loading 16-inch Howitzer, Railway Mount on Emplacement

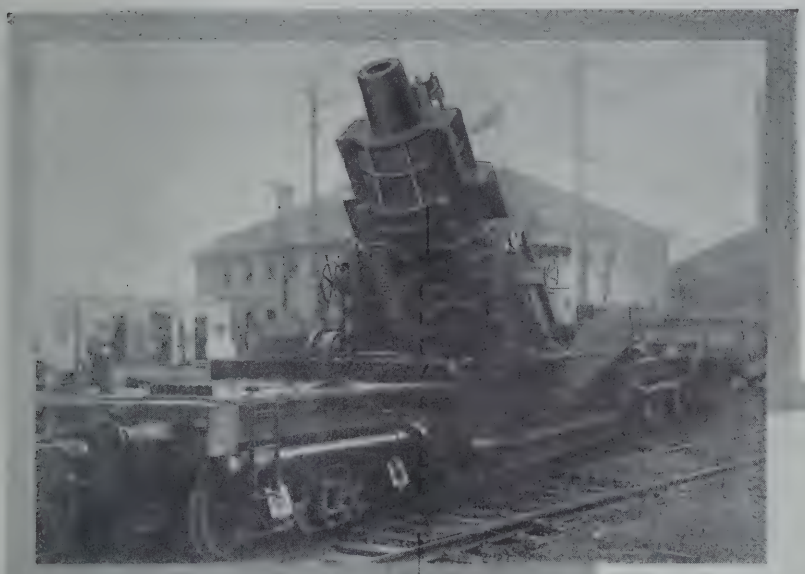


Eight-inch Gun Railway Mount with Outrigger in Position

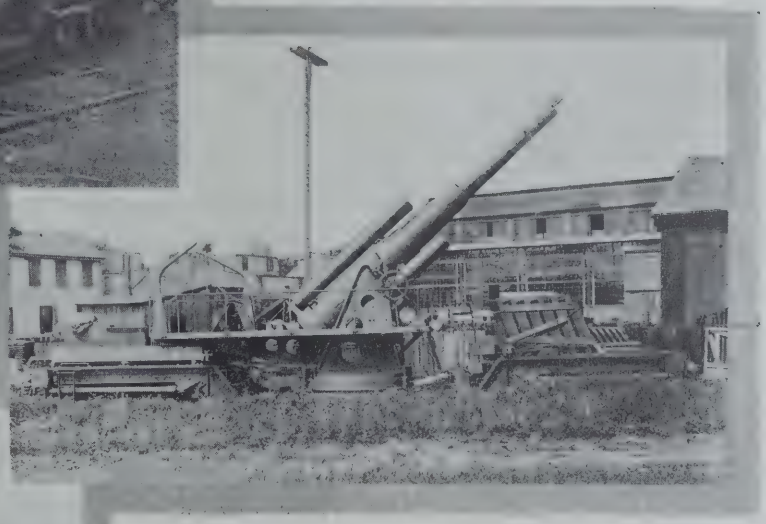


305-Millimeter Schneider Railway Mount, French Type of Railway Mount Used for 10-inch Guns Made in United States

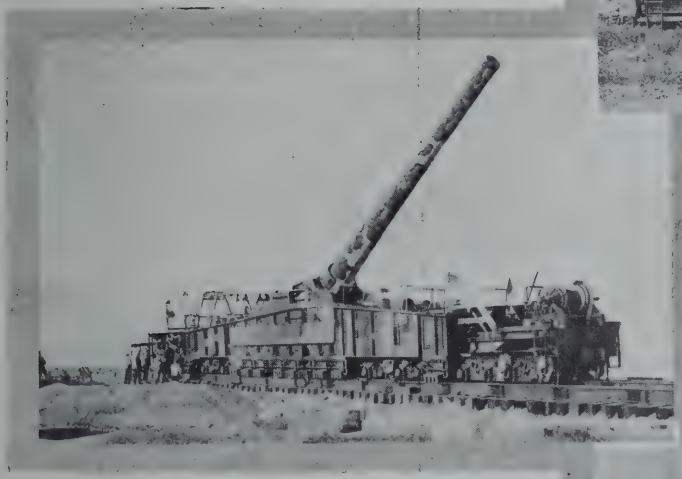
U. S. Engineers Developed Mobile Mounts



Eight-inch Seacoast Gun, Barbette Carriage Railway Mount, at Maximum Elevation



Twelve-inch Mortar on Railway Mount



Eight-inch Gun Car, Model 1918, on Narrow-gage Trucks, with 200-Horsepower Locomotives



Twelve and 14-inch Sliding Railway Mount, Model 1918, with 12-inch Gun, Model 1918, Made in United States



Sixteen howitzer railway mount. Practically all of the railway batteries used in France were camouflaged.

Time is Factor in Tests on Steel

Experiments on Medium-Carbon Steel Show That Factors of Time and Temperature Influence Physical Properties—Ductility as Expressed by Elongation is Increased by Resting Test Bars

BY G. A. REINHARDT AND H. L. CUTLER

EXPERIMENTAL work carried on in the laboratories of the Youngstown Sheet & Tube Co., Youngstown, has indicated that specimens of medium-carbon steel show widely varying tensile strengths which are influenced by the temperature of the material when tested and the time elapsing between the moment the metal is tested and the time it is machined. That the physical properties are affected by these factors was discovered while the company was making a large tonnage of forging steel containing from 0.35 to 0.45 carbon, the acceptance of which was based on the physical properties of test specimens obtained by forging the original 5¾-inch square bloom to a ¾-inch round. The test bars were annealed by heating from 900 to 950 degrees Cent. and slowly cooling in mica, and were tempered by heating to from 825 to 875 degrees Cent., quenching in water, and drawing to from 515 to 535 degrees Cent. Immediately after heat treatment, the test pieces were machined to a diameter of 0.534 inches and tested. No difficulty was experienced in meeting the specifications which called for an ultimate strength of from 78,230 to 92,450 pounds per square inch in the case of the annealed specimen, and 120,000 to 149,350 per square inch in the case of the tempered specimen.

Met Specifications With Difficulty

Later the company began to make a slightly higher carbon forging steel. In testing this material the test blooms were either normalized or annealed. The normalizing consisted in heating to from 850 to 900 degrees Cent. and cooling in still air; the annealing in heating to from 850 to 900 degrees Cent. and cooling in the furnace or in mica. The test pieces were taken from the treated bloom either by core drilling or by sawing from points midway between the edges and the intersection of the diagonals. The cores or blocks were turned to a standard 2-inch test piece with a diameter of 0.564 inches and tested without further treatment. Considerable difficulty was encountered in meeting the physical requirements of the test pieces which called for a minimum yield point of 44,800 pounds per square inch; an ultimate strength of 89,600 to 112,000 pounds per square inch, and an elongation in 2 inches of not less than 17 per cent.

Tests Varied Considerably

Steel of very good chemical analysis was produced and great care was taken during the heating and rolling. A muffle furnace was equipped with rare-metal pyrometers to secure accurate heat treatment. The test pieces were turned with care so that in testing a straight pull was obtained. None of these precautions seemed to produce the desired results, although occasionally the results were very good. A careful examination disclosed the fact that invariably these occasional results were obtained from test pieces that had been machined the day before they were tested.

I. C. Mackie, chief chemist of the Dominion Iron & Steel Co., said that he had encountered similar conditions with rail steel so that a practice had been developed to rest all rail steel test specimens for a period of at least 12 hours before testing. An employe of the metallurgical department of the Youngstown Sheet & Tube Co., who previously had been in charge of a rail mill, reported a similar experience with rail steel. As a result of these experiences and suggestions, all test pieces were rested over night and tested the following day. With this practice no difficulty was experienced in meeting the elongation requirement of the specification. Frequently it was not convenient to hold a shipment long enough to afford a 24-hour rest for the test pieces; consequently experiments were made which led to the discovery that a rest of a few hours at about 120 degrees Cent. was equal to a rest of 24 hours at room temperature.

A series of tests was then made to determine the cause for the great difference in elongation and reduction of area shown by core tests made directly after drilling and machining, and core tests made on material that had rested after drilling and machining. This cause was not found, but interesting data was collected before it was necessary to discontinue the investigation.

In the first series of tests, four cores were drilled from each of six untreated blooms. Two cores from each bloom, after machining were rested two days at room temperature before testing. The two duplicate cores after machining were rested two days on top of a Hoskins hairpin-type electric furnace where the temperature was about 120 degrees Cent. The physical properties of a core from an adjacent piece of the same bloom which had received the heat treatment shown also is reported. The machined test piece rested approximately 12 hours on top of the furnace. The results are given in Table IV.

A second series of tests was made in identically the same manner except that, after machining, a rest of four days was given the test pieces before testing. The results are given in Table III.

These two series of tests showed that a slight increase in temperature resulted in a great improvement of elongation and reduction of area. There is a general increase in the tensile strength, which, however, was greater in the case of a two days' rest than in the case of a four days' rest.

Rate of Machining is Not Factor

From adjacent blocks of one bloom, eight core tests were taken and machined at different rates to determine the effect of the speed of machining. Four of the cores were machined at the usual rate and four with very light cuts and very low speed. Two of the cores machined as usual and two of the cores machined very slowly were pulled im-

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From a paper to be presented at the annual meeting of the American Institute of Mining and Metallurgical Engineers to be held at Chicago Sept. 22-26, 1919. The authors, G. A. Reinhardt and H. L. Cutler, are metallurgist and assistant metallurgist, respectively, of the Youngstown Sheet & Tube Co., Youngstown.

mediately after the machining operation. The four other cores were rested 24 hours on top of the electric furnace and then tested. The results, given in Table V, show no difference in elongation, reduction of area, and tensile strength, between the pieces that were machined as usual and those that were very slowly machined. This indicates that the rate of machining exerts practically no influence on the physical properties.

Sixteen core tests were taken from four adjacent blocks of one bloom. Six cores were machined immediately after core drilling. Two of these six cores were tested immediately after machining; two were rested on the furnace 24 hours before testing, and two were rested 100 hours on the furnace before testing. Two rough cores were held four days, then heated for 2 hours in a tin bath at from 490 to 500 degrees Cent. They were then machined and tested immediately after machining. Four rough cores were held at room temperature for 16 days. Two of the cores were then machined and tested immediately after machining. The other two cores were heated in the tin bath at 595 to 605 degrees Cent. for 2 hours and then machined and tested immediately after machining. Four rough cores were heated to 900 degrees Cent., held 45 minutes, cooled in thin mica, and then machined. Two were tested immediately after machining and the other two

Table I

Effect of Time of Rest

(Analysis: Carbon, 0.48; Manganese, 0.66; Sulphur, 0.042; Phosphorus, 0.028)

Yield point lb. per sq. in.	Ultimate strength, lb. per sq. in.	Elongation, per cent in 2 in.	Treatment
50,300	95,600	14.5	Cores machined immediately, tested immediately after machining.
51,790	96,840	21.0	Cores machined immediately, tested after resting on furnace 25 hours.
53,970	93,300	23.0	Cores machined immediately, tested after resting on furnace 100 hours.
58,400	94,990	19.75	Cores held 4 days, heated in tin pot 490-500 degrees Cent. 2 hours, machined, and tested immediately.
49,440	94,180	21.35	Cores held 16 days, machined, and tested immediately.
50,840	94,600	20.25	Cores held 16 days, heated in tin pot 595-605 degrees Cent. 2 hours, machined, and tested immediately.
47,650	90,850	22.25	Core annealed 900 degrees Cent., 45 minutes. Cooled in thin mica, tested immediately after machining.
48,550	90,260	23.5	Core annealed 900 degrees Cent., 45 minutes, machined, rested 25 hours on furnace.

Table II

Tests on Cores 207 Days Old

—Cores Rested, Then Machined and— Tested Immediately				Test Made Shortly After Drilling and Machining	
Yield point, lb. per sq. in.	Ultimate strength, lb. per sq. in.	Elongation, per cent in 2 in.	Number of days machined bar rested	Ultimate strength lb. per sq. in.	Elongation, per cent in 2 in.
52,320	102,600	19.0	208	101,100	13.5
54,480	102,600	19.0	208	99,900	13.5
.....	103,300	19.0	208	101,900	14.0
54,640	101,300	21.5	207	101,300	16.5
54,720	101,600	21.5	207	102,600	15.0

Table III

Second Series of Tests

Yield point lb. per sq. in.	Ultimate strength, lb. per sq. in.	Elongation, per cent in 2 in.	Analysis See note	Treatment
50,970	101,250	10.0	[1]	Rested 4 days at room temperature
51,590	103,200	17.0	[1]	Rested 4 days on furnace (120 degrees Cent.)
49,720	97,000	22.5	[1]	Heated at 850 degrees Cent.; 1½ hours cooled in air.
51,400	93,320	16.0	[2]	Rested 4 days at room temperature
49,340	93,720	20.5	[2]	Rested 4 days on furnace (120 degrees Cent.)
49,280	93,260	23.5	[2]	Heated at 850 degrees Cent.; 1½ hours, cooled in air.
51,660	97,410	11.75	[3]	Rested 4 days at room temperature
50,220	99,010	16.75	[3]	Rested 4 days on furnace (120 degrees Cent.)
48,640	94,760	24.0	[3]	Heated at 850 degrees Cent.; 1½ hours, cooled in air.
50,360	96,660	11.5	[4]	Rested 4 days at room temperature
52,020	98,440	16.75	[4]	Rested 4 days on furnace (120 degrees Cent.)
53,050	92,500	25.0	[4]	Heated at 850 degrees Cent.; 1½ hours, cooled in air.

NOTE: Analysis [1] is carbon, 0.50; manganese, 0.67; sulphur, 0.040; phosphorus, 0.023.
[2] is carbon, 0.49; manganese, 0.55; sulphur, 0.037; phosphorus, 0.017.
[3] is carbon, 0.50; manganese, 0.64; sulphur, 0.037; phosphorus, 0.018.
[4] is carbon, 0.49; manganese, 0.60; sulphur, 0.039; phosphorus, 0.018.

Table IV

First Series of Tests

Yield point lb. per sq. in.	Ultimate strength, lb. per sq. in.	Elongation, per cent in 2 in.	Analysis See note	Treatement
60,140	106,350	10.5	[1]	Rested 2 days at room temperature
55,310	109,050	16.25	[1]	Rested 2 days on furnace (120 degrees Cent.)
46,720	88,120	21.0	[1]	Heated at 850 degrees Cent.; 2 hours, cooled in mica.
57,150	103,050	11.0	[2]	Rested 2 days at room temperature
59,940	106,100	15.25	[2]	Rested 2 days on furnace (120 degrees Cent.)
45,520	86,550	21.5	[2]	Heated at 850 degrees Cent.; 1½ hours, cooled in mica.
55,480	95,820	14.25	[3]	Rested 2 days at room temperature
51,000	99,120	19.0	[3]	Rested 2 days on furnace (120 degrees Cent.)
50,720	94,000	24.0	[3]	Heated at 850 degrees Cent.; 1½ hours, cooled under cover.
54,420	95,660	13.5	[4]	Rested 2 days at room temperature
57,880	100,000	18.75	[4]	Rested 2 days on furnace (120 degrees Cent.)
50,250	94,160	24.0	[4]	Heated at 850 degrees Cent.; 1½ hours, cooled under cover.
56,540	104,750	7.75	[5]	Rested 2 days at room temperature
58,810	107,400	13.0	[5]	Rested 2 days on furnace (120 degrees Cent.)
46,450	89,760	17.0	[5]	Heated at 870 degrees Cent.; 1¾ hours, cooled in mica.

NOTE: Analysis [1] is carbon, 0.53; manganese, 0.75; sulphur, 0.034; phosphorus, 0.050.
[2] is carbon, 0.58; manganese, 0.58; sulphur, 0.033; phosphorus, 0.030.
[3] is carbon, 0.49; manganese, 0.69; sulphur, 0.032; phosphorus, 0.011.
[4] is carbon, 0.50; manganese, 0.66; sulphur, 0.036; phosphorus, 0.039.
[5] is carbon, 0.55; manganese, 0.75; sulphur, 0.031; phosphorus, 0.009.

Table V

Effect of Rate of Machining

(Analysis: Carbon, 0.49; Manganese, 0.66; Sulphur, 0.041; Phosphorus, 0.014)

Yield point lb. per sq. in.	Ultimate strength, lb. per sq. in.	Elongation, per cent in 2 in.	Treatment
53,950	93,850	18.5	Machined as usual, tested immediately.
54,030	93,940	23.5	Machined as usual, rested on furnace 20 hours.
55,050	93,900	18.75	Machined slowly, tested immediately.
54,040	92,950	23.75	Machined slowly, rested on furnace 20 hours.

Table VI

Tests on Cores 30 to 60 Days Old

Cores Machined Immediately After Drilling, Tested After Resting at Room Temperature				Test Made Shortly After Drilling and Machining	
Yield point, lb. per sq. in.	Ultimate strength, lb. per sq. in.	Elongation, per cent in 2 in.	Number of days machined bar rested	Ultimate strength lb. per sq. in.	Elongation, per cent in 2 in.
51,420	106,700	21.0	68	101,840	11.0
52,320	96,720	20.5	47	93,850	18.0
50,550	93,010	23.0	50	92,350	16.0
51,880	96,960	21.0	41	96,640	15.0
57,160	91,030	25.5	41	90,760	20.0
52,960	94,600	25.0	41	89,720	17.0
52,840	89,480	25.5	36	91,810	21.0
51,920	88,600	25.0	41	92,000	21.5
56,540	96,270	23.0	40	94,500	16.0
49,780	89,240	24.0	50	87,750	21.0
53,720	94,540	22.0	62	94,040	14.5

were rested 25 hours on the furnace before testing.

The results of the tests made on these 16 cores, given in Table I, show that the elongation increased with increased length of rest at the temperature of the top of the furnace. A rest of 16 days at room temperature increased the elongation and reduction of area about the same extent as a rest of 25 hours on the electric furnace. This comparison is not entirely accurate, for the tests that were rested 16 days were machined after the rest while the tests that were rested 25 hours had been machined before the rest. Previously reported tests have indicated, however, that the effect of the machining operation is slight, so the comparison is justified. The tests that were heated to 500 and 600 degrees Cent. after rests of 4 and 16 days, respectively, and then tested immediately after machining, gave lower elongation and reduction of area values than tests that had been rested at lower temperatures. This is difficult to explain, as it is not considered that stresses are induced in the test piece by the air-cooling from temperatures as low as 500 and 600 degrees Cent. The tests on the annealed cores that were rested on the furnace for 25 hours after machining gave slightly better elongation values than the tests pulled immediately after machining.

Five cores that had remained in the laboratory for 207 and 208 days at normal room temperature were machined and tested immediately after machining. The results obtained from these tests are compared with the results obtained on cores from the same blooms that had been tested soon after core drilling and machining. These results, given in Table II, show a decided improvement in elongation and reduction of area.

A number of machined test pieces had remained in the laboratory from 36 to 68 days. These test pieces were tested and the results were compared with the results of tests from the same blooms that had been tested soon after the drilling and machining operations. The exact data on earlier tests were not available, as the tests were a part of the routine testing and the times drilled, machined, and pulled were not recorded. These results given in Table VI also indicatee a considerable improvement in the elongation for the rested test pieces.

Ingots of the same size and chemical composition as those used in the foregoing tests were rolled on the blooming mill and immediately rolled on the continuous mill to 1⅞-inch square billets. From these billets standard test pieces were turned. Some specimens were tested immediately after machining operation, others were tested after resting for different lengths of time at room temperature, still other duplicate sets were tested after resting at slightly elevated temperatures for the same lengths of time as those at room temperature. Identical results were obtained from the three sets of tests. The average result of tests pulled immediately after machining, the average result of tests pulled after different lengths of rest at room temperature, and the average result of tests pulled after different lengths of rests of slightly elevated temperatures were in close agreement.

Anneals Tool Steel By Special Packing

A UNIQUE method of annealing tool steel is employed by the Ludlum Steel Co., Watervliet, N. Y., with results which are claimed to be better than those obtained from former methods. The method offers ample facility for heat treatment of any duration and at the same time prevents scale from forming on the rods due to the treatment.

Special steel pipes about 14 inches in diameter and approximately 10 feet in length are used as containers for the tool steel to be annealed. These pipes, as shown in the accompanying illustration, are placed in a trench arrangement built into the floor of the shop so that they stand on an angle of



TOOL STEEL RODS TO BE ANNEALED ARE PLACED IN TUBES AND A PACKING FILLED AROUND THEM

about 45 degrees, extending about four feet above the floor level. This position permits the workmen to place the bars and rods of tools steel into the containers with comparative ease and at the same time permits the eye to direct the placing of each piece. A special packing material is then carefully packed in the tubes around the steel before sending the tubes to the furnace.

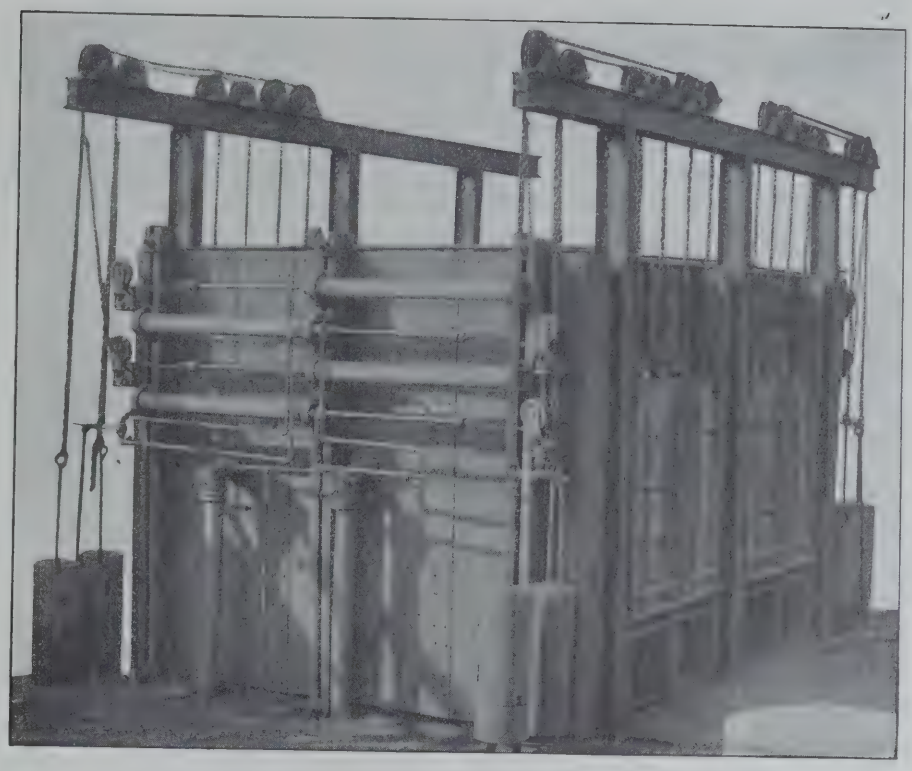
The annealing furnace is so designed that the hearth is removable, thus an entire lot of steel may be placed in the furnace at one operation. With the packing process completed, the pipes are arranged on the hearth and pushed into the furnace. By this means heat is not wasted and the destruction on the furnace arches is minimized due to the bricks remaining hot and partially expanded from the preceding annealing heat. When the furnaces are allowed to cool down entirely, fallen arches frequently result due to the contraction of the bricks. Upon the completion of the heat treatment, the hearth is removed and another hearth with a fresh charge is introduced.

The usual practice of annealing is by the coal-fired furnace, which although it gives a very soft heat, gives also an oxidizing heat. In this type of furnace, heat control is difficult, thereby making it undesirable for annealing purposes. After a number of experiments with under-fired and over-fired furnaces, the Ludlum company found the oil-burning furnace to give the best results and consequently has installed six of this type. Each furnace contains eight burners and has a capacity of 10 to 15 tons depending upon the size of the bars. The temperature may be regulated to within 10 degrees of any desired value.

Builds Heating Furnace For Navy Yard

A billet-heating furnace recently was built for the United States navy yard at Pearl Harbor, Hawaii, by the Denver Fire Clay Co., Denver, Col. The furnace was designed for use in connection with a 500-ton hydraulic forging press and 6000-pound steam forging hammer.

The heating chamber is 8 x 12 feet and 40 inches high at the spring of the arch. Fuel oil is conducted to the burners at a pressure of from 30 to 50 pounds and mixes with air supplied at a pressure of 10 ounces. The burners can handle Mexican oil as heavy as 15 degrees Be. at 60 degrees Fahr. The flame enters through the side walls and is distributed evenly over the surface of the arch by means of baffles. The blower is electrically driven by a 3-phase, 60-cycle, alternating current motor using current at 220 volts.



OIL-FIRED BILLET-HEATING FURNACE FOR PEARL HARBOR NAVY YARD

There are four working openings on the front and back of the furnace. The doors are divided into sections, each of which can be opened independently to allow passage of smaller material. Each section is separately counterbalanced and is raised or lowered by a small air cylinder and piston. The furnace has vents at the sides connecting into cross flues under the hearth leading to the top of the furnace. This arrangement eliminates the use of dampers and a stack. The walls are 18 inches thick; the arch is 13½ inches thick; and the hearth 17½ inches thick. One course of insulating brick lies between the fire brick and steel plate casing. The furnace is divided in the middle by a wall 13½ inches thick and 20 inches high which minimizes the cooling on one side when a door on the other side is open.

Foundry Costs Increase

While it is difficult to quote the market due to lack of definite classifications, it can be said that quotations on heavy and medium weight machinery castings in the northern New Jersey district range, on the average, from 5c to 8c a pound. From the standpoint of costs, 5c is regarded as the minimum for machinery castings, while for lighter machinery castings, and for castings having special requirements, the prices now current run all the way up to 15c and 20c.

An investigation of books shows that it now costs 75 to 100 per cent more to produce castings in this district than it did in the first half of 1914. The minimum rate for molders and coremakers now is $5.80 for an 8-hour day, or 72½ cents an hour. However, this basis is strictly minimum, and as a matter of fact, molders are being paid considerably higher. They are averaging $35 to $40 a week, while in numerous instances the men are getting $45 and $50. In 1914 the minimum rate for molders and coremakers was $3.50 for a nine-hour day or 38 8/9 cents an hour; thus, the increase since that time has been not much less than 100 per cent. The increase in the cost of unskilled labor has been greater; in 1914, the common foundry laborers were being paid 17½ cents an hour and now they are getting $4 a day of nine hours, or 44 4/9 cents an hour.

Sharp competition for business is being waged by some foundrymen in this district and in some cases it is believed figures slightly below cost of production have been quoted. It is reported that one foundry took an order for castings at 3c a pound.

It is reported that the Sinai Mining Co., with mines southwest of the peninsula of Sinai, about 15 miles from the Gulf of Suez, which was compelled to cease operations during the war, is resuming the production of manganese ore.

Disease and Accident Liability

Courts Hold Employer Must Pay Damages When Disease Results From Injury, Also When Injury Hastens Fatal Consequence of Disease—Occupational Diseases Only Compensable Where Statute So Provides

BY CHESLA C. SHERLOCK

THE employer is charged with the payment of compensation under the workmen's compensation acts for incapacity caused by accidents arising out of and in the course of the employment. It will be seen that the liability is expressly limited, first, to accidental injury, and, second, to injuries caused by accidents in the course of employment. The latter situation has already been discussed in these columns.

The basis of all compensation liability resting as it does upon accidental injuries causing incapacity, it is necessary to determine in the first instance just what occurrences are "accidents" within the meaning of the law. If the employer is acquainted with this phase of compensation liability he will be fairly well versed in the entire field of compensation law.

The Indiana court has said that an accident "is generally defined as any unlooked for mishap or untoward event, not expected or designed, and is not to be taken in any technical sense, but is to be given a popular meaning."

This is the general meaning given by the courts and commissions as to the term "accidents." It simply means that the term does not have a technical legal meaning but that an accident within the meaning of the compensation acts is anything that would be considered an accident in ordinary, everyday language.

If it were possible to stop here such matters would be easy of disposal, but unfortunately many cases arise in the average relations of business and industrial life every day which cannot be classified so readily. For instance, a matter which has troubled the courts and employers for a long time is whether or not disease is an accident such as would entitle to compensation a workman who has been incapacitated and rendered unable to continue his work.

Thousands of cases have been litigated on this subject in both the United States and the British empire and out of them have grown a rule of law which is universal in its application with one or two exceptions.

It is held by the weight of legal authority that an ordinary disease is not an accident such as to entitle a workman to compensation under ordinary circumstances. While a disease may properly be considered an accident in some sense, it does not rise out of the employment if contracted in a perfectly natural way. But there are exceptions to this rule and they should be carefully considered by employers.

The same courts say that if a disease is the result of an accidental injury that the employer is liable for the payment of compensation, not for the disease, but because it is a natural result or outgrowth of the original accident.

So it has come to be a settled rule of the compensation practice that if a disease is the result of trauma, or if it is what is called a traumatic disease it is compensable and the employer will be liable. In order to make the matter clear, traumatic diseases are those which have their origin in a physical hurt or injury. For instance, the Wisconsin court has said:

"A finding that pneumonia resulted from an accident will be sustained, where the accident itself was admitted and there was evidence in addition to expert testimony of doctors tending to show discoloration on parts of the employe's body, pain and suffering, headache and restlessness, indicating that the trauma caused by the fall was likely to result in pneumonia."

In Michigan it was shown that diabetes resulted from an injury, and although the incapacity was caused only indirectly by the accidental injury the court said that compensation should be paid.

It is impossible to consider all of the cases cited as authority upon this or any other specific point but a few are given to illustrate the rules announced. Suffice it to say that each rule announced herein is authoritative, subject to the exceptions or limitations noted.

Another question arising and closely akin to whether or not diseases are compensable as accidents is whether or not an accident causing an aggravation of a pre-existing disease is to be considered as a compensable injury under the compensation acts.

All workmen are not able-bodied and in perfect health. Many men are employed who are suffering from some incurable disease, and which sooner or later will cause death. Should these men be entitled to the same relief in case an accident aggravates their pre-existing condition to such an extent that it causes incapacity?

An accident not sufficient to injure an able-bodied man so as to cause incapacity may be sufficient to cause the death of a man suffering from a pre existing disease. This is frequently the case in heart failure.

The courts have said that the test is not whether the man was able-bodied or not at the time of the injury, but whether or not he was capable of carrying on the duties of his employment. If he was able to do this to a degree sufficient to meet his employer's requirements, then there is no ground at law to take his pre-existing condition into consideration. Said one court:

"The fact that an employe injured in performing services arising out of and incidental to his employment, in the course of his employers' occupation, was already afflicted with a dormant disease that might some day have produced physical disability, is no reason why the employe should not be allowed compensation for the injury which, added to the disease, superinduced physical disability."

Therefore, it is not possible for the employer to escape payment of compensation for an injury aggravating a pre-existing disease or condition. The New York court has said:

"If an employe has a disease, and having the same, receives an injury 'arising out of and in the course of the employment,' which accelerates the disease and causes his death, such death results from such injury, and the right to compensation is secured even though the disease itself may not have resulted from the injury."

In Indiana, the court said: "Assuming that decedent was afflicted with a fatal malady certain to result in his decease sooner or later and that such malady was a cause of the decedent's death here, these facts alone are not sufficient to defeat the appellee's claim. Such result would follow only in case his disease was the result of his ailment, progressing naturally, and dissociated from any injury that he may have suffered by accident arising out of and in the course of his employment. If there was such an injury, and it occurred with the ailment in hastening the latter to a fatal conclusion, then the right to an award exists."

This rule is supported by such a long list of authoritative cases that it seems to be universally recognized in its application.

Still another question arising as to what are compensable accidents is found in cases where two accidents follow each other close enough to raise some doubt

as to which one is to be considered as the compensable one. One authority solves this problem in the following manner:

"Incapacity which is caused or aggravated by a second injury, received while employe is suffering from another injury which he had received in his employment, is the result of the first injury, according to a great weight of authority, and consequently compensation may be recovered therefor."

It seems, then, that an employer cannot escape liability for the payment of compensation by saying that the second accident was responsible for the incapacity when the workman was still suffering from the effect of a prior accident occurring in the employment.

Occupational diseases have also called for a great deal of consideration at the hands of the courts as to whether they may be treated as accidents. The weight of authority is to the effect that no employer is liable for the payment of compensation for occupational diseases, unless the statute expressly places this obligation upon him.

An occupational disease is one peculiar to the employment, such as lead poisoning, copper poisoning, and the like. They are not accidents in the opinion of the majority of the courts althought they are compensable in those states allowing compensation for "personal injuries" rather than for accidental injuries. The Michigan court has said:

"If the injury to the claimant occurred by reason of the character of his work he is precluded from recovery because the act does not provide compensation for those suffering injury from occupational diseases. The testimony seems to indicate that those engaged in dyeing furniture with mahogany stain frequently suffer with sore hands. If, however, the claimant's injury is due not to the general character of his occupation but to some accidental occurrence then the record is entirely barren of any evidence of an accident. If the claimant suffered a scratch or abrasion through which the germ entered the record is silent as to when and how he sustained the accident."

The question of whether or not hernia is an accident has also called for some difference of opinion. Formerly, it was held by practically all of the courts that hernia was an accident, but this finding is coming to be changed. Indeed, even the medical profession has not agreed as to just what hernia is, as to whether it is the result of an accidental injury, or whether it is a disease. Many authorities among medical men contend that hernia is not and never can be the result of an injury except under inconceivable circumstances, but that it is the result of a disease. If this latter belief is true then it is obvious that hernia is not an accident and hence employers would not be liable for the payment of compensation where injuries of this kind result. The courts are divided and a great many of them are "on the fence." It is, however, quite uniformly held that in order for a hernia to be compensable as an accident it is necessary to show that it was the result of an accidental injury, some authorities saying, of traumatic origin.

The claimant must show the time, place and origin of the hernia and there must be evidence tending to show that it had a traumatic origin. The mere presence of a hernia which was not there before and which was noticed only at the close of the day's work will not be a sufficient showing to entitle the workman to compensation.

The question also arises sooner or later as to whether infections are to be treated as accidents within the meaning of the compensation acts. The Kansas court has said, in this connection:

"The infection of an existing wound by contact with foreign matter seems to be within the ordinary meaning of the term 'an unlooked for and untoward event which is not expected or designed.'"

But this caution must be observed in connection with infections: They should be established as coming out of the employment and not from other sources. No employer should be made to pay for infections incurred at home or in other places, but where there is a doubt it is generally resolved in favor of the workman.

A Word With the Editor

Editor, The Iron Trade Review:

We have before us literature sent out by a society which again is advocating the adoption of the metric system, asking us to use our influence to help bring about legislation to this effect. We have written them stating that we are heartily in favor of a decimal system, but cannot endorse the old metric system in full and particularly the meter, the metric unit of lineal measurement, on account of its inadaptability to a vast number of applications.

We suggested the taking of our standard inch and decimalizing it, the fractional parts of which are already decimalized, viz.: 0.1, 0.01, 0.001 and for which we have measuring instruments; such as micrometers and gages also flat scales and rules that are graduated with tenths and hundredths.

Since the fractional parts are decimally established, why not establish divisions above 1 inch also on a decimal basis. This easily could be done by having 10 inches equal a certain named length and 10 of these lengths equal another named length, etc. By doing this our present measuring system would not be greatly revolutionized and would not affect lead screws and graduations on our many machine tools and small tools.

In the United States, in Great Britain and in other countries there are perhaps billions of dollars worth of machine tools and gages built and graduated on the inch basis, and millions of dollars worth more of jigs and special fixtures in machine tool and tool builders factories used to build standard tools which are all made to the inch standard. It would mean a tremendous loss and cost to manufacturers to abandon all these tools and build up a new standard. It would be a most impractical thing to do. By decimalizing our inch we could quickly arrive at a decimal basis with little cost and inconvenience and obtain a more practical lineal measuring system than the meter system would be.

The great opposition which the majority of manufacturers have against the metric system is not against the principle of decimalization but against the "meter unit" which is so difficult to change into inches. There is no great hesitancy in abandoning our feet, yards, rods, etc., but we must not, dare not, and cannot abandon our inches.

The inch seems to be one of the most ancient units of lineal measurements. According to various authorities it is claimed that the unit of measurement used in the construction of the great pyramid, the oldest of the pyramids in Egypt was a unit one thousandth of an inch longer than our present English inch. However, be this as it may, we manufacturers look at this from a practical and commonsense viewpoint and are desirous of getting the greatest convenience with the least cost and inconvenience.

To decimalize the standard inch would revolutionize present measuring instruments but little and it would not affect lead screws and graduations on machine tools. It would only mean the abandonment of present ¼ths, ⅛ths, 1/16ths, 1/32nds and

1/64ths and to this we feel sure few would object.

To use the metric nomenclature we would suggest a table of lineal measurements as follows, the names of which, however, may be simplified or changed altogether.

10 micrin (mon) equals 1 milin equals	.001
10 milin (mn) equals 1 centin equals	.01
10 centin (cn) equals 1 decin equals	.1
10 decin (dn) equals 1 inch	1.
10 inches (in) equals 1 dekin equals	10.
10 dekin (dkn) equals 1 hectin equals	100.
10 hectin (hn) equals 1 kiloin equals	1000.
10 kiloin (kn) equals 1 myrin equals	10000.
10 myrin (myn) equals 1 tele equals	100000.

We submit the foregoing in the hope that it may help to prevent any serious movement to legalize the meter as a standard unit of lineal measurement.

Very truly yours,

MUMMERT-DIXON Co.,

E. S. Mummert, President and General Manager.

Hanover, Pa.

Iron Supply

Assured Otis Steel Co. by Merger With Cleveland Furnace Co.

Because of the interests involved an event of unusual significance in the iron and steel trade in the Cleveland district was terminated late last week in the consolidation of the Otis Steel Co. and the Cleveland Furnace Co., with total combined assets of $25,000,000. The merger unites a raw material maker with a finished steel producer and brings to a close weeks of negotiations begun last spring when William Salomon & Co., New York investment bankers, representing Cleveland and New York financial interests, arranged the purchase of the controlling interest of the Otis Steel Co. from British holders.

Substantial oversubscription for the interim certificates representing new common stock to be issued, was reported within 24 hours after the offering last Friday. About half of the total proposed issue of 411,668 shares, or 227,000 shares were offered at $39.50.

The new company will have as its president, George Bartol, president of the existing Otis Steel Co. William G. Mather, president of the Cleveland Cliffs Co., will be chairman of the board of directors. Other officials will be announced following the formal organization later. John Sherwin, president of the First National bank, was active in the syndicate which financed the purchase of the controlling interest of the Otis Steel Co. from English owners and he will be one of the directors. Other members of the board will be D. T. Croxton, president of the Cleveland Furnace Co.; H. F. Deverell, secretary of the Otis Steel Co.; S. Livingston Mather, secretary of the Cleveland Cliffs Co.; H. A. Raymond, of the Cleveland Cliffs Co.; William B. Sanders, of Squire, Sanders & Dempsey, Cleveland attorneys; Elisha Walker, of William Salomon & Co.; and E. R. Tinker, vice president of the Chase National bank, New York.

The capital stock of the new company will consist of $4,850,000 of 7 per cent cumulative preferred shares, besides the common issue. The Otis Steel Co. proposes to retire its existing $2,373,000 outstanding preferred stock; to create a new issue of preferred; to readjust its outstanding common stock and to enlarge its manufacturing facilities by acquiring the assets and business or not less than 75 per cent of the capital stock of the Cleveland Furnace Co. The shares of the new company will be exchanged for the outstanding shares of the present companies.

The new company will be free of funded or mortgage debts. The exhibit of the combined financial position shows fixed assets of $13,654,981; investments in other companies of $599,347; current assets $10,872,394; and deferred assets of $40,369, making total assets of $25,167,091. The excess of assets over liabilities is $19,920,714.

The Otis Steel Co. has had plants in operation since 1873. Since 1889 its control was in the hands of British stockholders. The company has two plants in Cleveland, one with an annual capacity of 20,000 tons of acid and 90,000 tons of open-hearth ingots, 25,000 tons of steel castings, 70,000 tons of sheared plates and 5000 tons of forgings and the other with annual capacity of 65,000 tons of light plates and 35,000 tons of sheets. The company heretofore has bought its pig iron in the open market.

Baldwins, Ltd., one of the most important European steel firms, have arranged for the purchase of the plant of the British Forgings, Ltd., whose extensive works on Ashbridges bay, Toronto, were erected by the imperial munitions board of Canada for the production of high grade steel. The plant of the British Forgings was one of the largest electric steel plants in America.

Production Recovers

Ingot Output Reaches 71.6 Per Cent of the 1918 Record

Steel ingot production recovered in June after the decided decline during the previous month. According to the figures of the American Iron and Steel institute 30 companies which in 1918 made 84.03 per cent of the total steel of the country, produced in June, 2,219,219 gross tons, an increase of 290,195 tons over the May total of 1,929,024 tons. Open-hearth steel totaled 1,692,257 tons compared with 1,506,015 tons in May, an increase of 186,242 tons. Bessemer steel with a total of 521,634 tons represented an increase of 107,242 tons over the 414,392-ton output of May. Production of all other steel, however, fell from 8617 tons in May to 5328 tons in June.

Following are the institute's production figures from January, 1918, to June, 1919:

Months	Open hearth, gross tons	Bessemer, gross tons	All other, gross tons	Total, gross tons
Jan., 1918	1,763,356	429,588	10,901	2,203,845
Feb.	1,805,233	454,457	14,051	2,273,741
Mar.	2,331,048	763,255	16,078	3,110,381
Apr.	2,377,974	769,249	16,187	3,163,410
May	2,475,131	796,244	15,858	3,287,233
June	2,281,718	786,380	15,348	3,083,446
July	2,311,545	784,997	17,093	3,113,635
Aug.	2,299,177	766,860	17,643	3,083,680
Sep.	2,407,993	772,863	16,802	3,197,658
Oct.	2,527,776	807,043	17,377	3,352,196
Nov.	2,291,720	753,409	15,631	3,060,760
Dec.	2,273,189	706,844	12,273	2,992,306
Total 1918.	27,145,860	8,591,189	185,242	35,922,291
Jan., 1919	2,351,153	749,346	7,279	3,107,778
February	2,043,635	655,206	5,842	2,704,683
March	2,100,528	555,332	6,405	2,662,265
April	1,732,447	500,770	6,494	2,239,711
May	1,506,015	414,392	8,617	1,928,024
June	1,692,257	521,634	5,328	2,219,219
Total for 6 months	10,426,035	3,396,590	39,965	14,862,680

The total daily average for the 30 companies during June was 88,768 tons or 105,638 tons for the whole industry. The corresponding figures for the previous month were 74,193 tons and 88,293 tons. At the rate of the daily production, June production was at the scale of 32,430,866 tons annually. May production was at the rate of only 27,106,094 tons annually. Since July, 1917, when the institute started to compile the figures, the highest production was in October, 1918, when the output was at the rate of 45,359,250 annually. Thus compared to this figure as a high point in production, the June rate amounted to 71.6 per cent. June, ending the first half of the year, the production amounted to 14,862,680 tons, or 2,259,376 tons behind the total of 17,122,056 tons for the same period last year. The production so far this year is 86.8 per cent of that for last year.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE oldest continuous partnership in the city of Buffalo, that of Beals, McCarthy & Rogers, iron, steel and hardware, went out of existence several days ago, when the company was incorporated with $1,000,000 capital, as Beals, McCarthy & Rogers, Inc., the name assumed two years ago when it was changed from Beals & Co., as the partnership had been known for 26 years. Officials of the company have perfected arrangements whereby department heads and principal employes can acquire an interest in the company by buying stock. The firm was organized in 1826 by Samuel F. Pratt and Edward P. Beals, as Pratt & Co. From that time the firm's growth has kept pace with the growth of the city and now is one of the largest iron, steel and hardware supply houses in the country. The officers of the company are Eugene J. McCarthy, president, Charles P. Rogers, secretary and treasurer and Pascal P. Beals.

* * *

THE Vulcan Engineering Sales Co., Chicago, sales agent for the Hanna Engineering Works, the Mumford Molding Machine Co., the J. C. Busch Co. and others, has been dissolved as of June 30, and all business formerly done by it is being transacted by the Hanna Engineering Works.

* * *

THE Evansville Enameling Co., Evansville, Ind., has been incorporated by five stove manufacturers in that city, with Henry Karges as president, and will build a co-operative enameling plant to furnish enameled specialties for stoves turned out by all these manufacturers. Plans are being drawn by Gilbert Karges, architect, Furniture building, Evansville.

* * *

THE business conducted by M. B. Hill as an individual and known as the M. B. Hill Mfg. Co. has been incorporated under the laws of Massachusetts, with the same firm name. The company was formed to develop a business started by M. B. Hill, in the manufacture of drilling jigs, parallel clamps, test indicators and tool holders. A new plant will not be built, but the business will be conducted in a building rented at 10 Edin street, Worcester, Mass. The company has a paid in capital of $5000. Officers are, William Arter, M. B. Hill and Harold Tattersall, who also constitute the board of directors.

* * *

THE manufacture and sale of Lundie tie plates, formerly handled by John Lundie, 52 Broadway, New York, has been taken over by the Lundie Engineering Corp. The Chicago office at 30 North LaSalle street, is in charge of C. Z. Moore, manager of sales.

* * *

HENRY F. MIDGLEY, New York, president of Midgley & Prentice, Inc., New York and Worcester, Mass., steel and iron scrap, and his brother Frank L. Midgley, recently purchased the Prentice interests in the company. Robert L. Prentice, who died Oct. 16, 1918, was an active member of the company, and since his death his widow, Mrs. Helena M. Prentice, Worcester, has been its treasurer.

* * *

TITLE to the old plant of the General Chemical Co. recently was taken by the Pittsburgh Malleable Iron Co., Pittsburgh, which after making several improvements will occupy the plant. The chemical company plant has been idle for several years and contains a number of substantial manufacturing buildings and an office building on a site of more than seven acres. At a recent meeting of stockholders the Pittsburgh Malleable Iron Co. increased its capital from $300,000 to $1,000,000.

* * *

TOPICS of interest to them in their business were discussed at the mid-summer meeting of representatives of the Buffalo Forge Co., Buffalo, Steam Pump Co., and Carrier Air Conditioning Co., all of Buffalo, at the summer home of Henry W. Wendt, treasurer of the first mentioned company, Crystal Beach, Ont., held recently. Between 50 and 60 managers, sales engineers, etc., attended the various sessions, at which addresses were delivered by company officials and employes, dealing with various phases of their work and problems encountered.

* * *

A LABORATORY at the Cumberland, Md., steel plant of the N. & G. Taylor Co., Philadelphia, is being equipped for physical tests and research work along microscopic lines. This laboratory will supervise tests and experiments of the various grades of steel produced by the company, for use in the manufacture of tinplate and heat-treated forgings. It will be in charge of Isaac Berman, a graduate of the laboratory of Sauveur & Boylston, Boston, under the direction of R. C. Drinker, the company's consulting metallurgist.

* * *

GEORGE W. PRENTISS & CO., Holyoke, Mass., manufacturers of iron and steel wire, have purchased the plant of the G. Haarmann & Co., Inc., iron and steel work, in that city and will transfer their annealing furnaces from their Dwight street mill to the newly purchased shop which will allow further expansion of the other departments. Haarmann & Co. will take over from the Holyoke Water Power Co. the old league ball park on Berkshire street, where a new plant, double the size of the present one, will be erected at once.

* * *

BECAUSE of its rapidly-expanding business, the Reliable Engine Co., Portsmouth, O., has changed its name to the Reliable Tractor & Engine Co., and has incorporated with an increased capital of $2,000,000. New interests have been taken in and the incorporators are: C. Heer, F. E. Adams, George W. Platt, F. N. Tynes and M. Heer. The company's plant at Spring Lane and the N. & W. railroad, covers about three acres and alterations and extensions are to be made as rapidly as the business continues to fulfill expectations of growth.

* * *

THE Foss & Bump Co., Inc., Springfield, Mass., which has been incorporated under the laws of that state with $100,000 capital to make leather belting, has obtained a factory at Dwight and Taylor streets in that city and expects to begin operations at once. The officers of the company are: President, W. J. Foss; vice president, Harry J. Foss, both of Pittsfield, Mass.; treasurer, Charles H. Bump Jr., and secretary, D. R. Johnson, both of Springfield. Charles S. O'Brien, for several years superintendent for the J. F. & W. H. Warren Co., Worcester, Mass., will be superintendent.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

CAPITALIZATION of the Perry, Buxton, Doane Co., of Boston and Philadelphia, recently was increased to $2,000,000 and the company's nine branches have been increased by the opening of additional offices in New York and Milan, Italy. W. Vernon Phillips, former chief of the iron and steel scrap section of the war industries board, has been elected chairman of the board of directors, and C. A. Barnes, former secretary of the committee on iron and steel scrap of the American Iron and Steel institute, has been appointed second vice president of the company. The other officers of the company continue as heretofore.

* * *

HENRY C. FRICK has purchased the portrait of Col. Raynel C. Bolling, in the collection of 12 portrait drawings by John Elliott, of distinguished Americans who sacrified their lives during the war. Colonel Bolling, who died at the front near Amiens, on March 27, 1918, refusing to surrender after being surrounded, was general solicitor of the United States Steel Corp. It is understood to be Mr. Frick's intention to present the drawing to that corporation.

* * *

HOW Thermit Healed My Broken Jaw" is the title of a folder just issued by the Metal & Thermit Corp., 120 Broadway, New York. This folder describes the operations involved in making a thermit weld on the 13½-ton broken upper jaw of an alligator shear used by Joseph Josephs & Bros., Modena, Pa. The break welded was 80 inches long and varied from 4½ to 23 inches in thickness.

* * *

THE GRIP NUT CO., which now has works in South Whitney, Ind., and Columbus, O., has purchased land in the southwestern part of Chicago for the erection of a new plant. The tract is 250 x 900 feet, and the building will be 100 x 750 feet, of reinforced concrete, the first unit of which will be built in about 90 days. It will have a traveling crane extending the full length of the building and over the switch tracks which are being installed to connect with the Baltimore & Ohio Terminal railroad. The total investment in ground and buildings will approximate $500,000.

* * *

TO provide working capital to increase its plant, the Fairmount Tool & Forging Co., 10611 Quincy avenue, Cleveland, has increased its capitalization from $100,000 to $500,000. Its principal product is assembled tool kits for automobile manufacturers, as well as tools of other sorts. At present the company is lining up its machine tool requirements which will comprise principally drop forging equipment, together with milling machines and other tools to turn out finished products. A 2-story factory building of brick and steel construction has just been completed and additional buildings are under contemplation.

* * *

AT the annual meeting of stockholders of the Rickert-Shafer Co., Erie, Pa., manufacturer of machinery and tools, July 2, the management reported that business for the first six months of the year, equaled sales for the corresponding period during 1918. Various policies of the company were discussed, and due to the heavy demand for the company's products, it was decided to enlarge the plant by the erection of an addition, 2 stories, 33 x 150 feet. The company has placed orders for a number of new machine tools, but will not order the bulk of its machine tool requirements until its proposed addition is completed. August Rickert is treasurer.

* * *

THE Root & Van Dervoort Engineering Co., East Moline, Ill., manufacturer of automobile and tractor engines, has increased its capitalization from $1,346,200 to $7,500,000. Manufacturing facilities and production will be increased. W. H. Van Dervoort is president and general manager, O. J. Root, vice president and assistant general manager and Rufus Walker Jr., vice president. A tract of 61 acres was bought recently adjoining the plant to provide for expansion. The business was established in 1898 at Champaign, Ill., and in 1901 it was removed to East Moline. Mr. Van Dervoort was professor of mechanical engineering at the University of Illinois when he founded the present business.

* * *

SEVERAL representatives have been appointed by the Ohio Electric & Controller Co., 5800 Maurice avenue, Cleveland. These include the Iron & Steel Equipment Co., 1502 First National Bank building, Pittsburgh; Williams, Beasley Co., 343 South Dearborn street, Chicago; Linn O. Morrow, 707 Franklin Trust building, Philadelphia; J. W. Dopp & Co., 18 Columbia street, Detroit; Kelly, Powell, Ltd., 403 McArthur building, Winnipeg, Canada; Wonham, Bates & Goode, Inc., Dominion Express building, Montreal; Shook & Fletcher Supply Co., Birmingham, Ala. Exporting representatives include: Wonham, Bates & Goode, Inc., 17 Battery place, New York, covering London, Paris, Havana, Rio de Janeiro; Mitsui & Co., 65 Broadway, New York, for Japan, China, Philippine islands and Honolulu; and Gustav Neilson, A/S Christiania, Norway, Sweden and Denmark.

* * *

THE Kidwell Boiler & Engineering Co., incorporated with $1,000,000 capital, will engage in the manufacture of high pressure steam boilers, with headquarters in Milwaukee. Officers are: President, John F. Jackson, formerly vice president, Wisconsin Bridge & Iron Co.; vice president, R. W. Campbell, formerly of the Stirling Consolidated Boiler Co., and Babcock & Wilcox Co.; secretary and treasurer, Stuart H. Markham, president of the Markham & May Co., First National Bank building, Milwaukee. The corporation takes its name from Dr. Edgar Kidwell, for eight years professor of mechanical engineering at the Michigan College of Mines, Houghton. Dr. Kidwell will be general manager. He has served as general superintendent of the Arcadian Copper Co., and later was Pacific coast manager of the Stirling Co., Stirling Consolidated Boiler Co., and the Babcock & Wilcox Co. The company will manufacture all-steel boilers suitable for pressures of 300 pounds and higher. They will be designed for use with triple and quadruple expansion engines and a number will be manufactured under contract.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

W. T. HERSHER, for several years superintendent of the Bridgeport Malleable Iron Works of the Eastern Malleable Iron Co., Bridgeport, Conn., and who more recently was superintendent of the malleable foundry operated by the Chain Belt Co., Milwaukee, has organized a new foundry which he heads. The new plant will be known as the Great Lakes Malleable Co. and will occupy a plant formerly used by the Maynard Steel Co., Milwaukee. The incorporators of the new company, which is capitalized at $100,000, are W. T. Hersher, F. J. Vea, president of the Stoughton Wagon Co., Stoughton, Wis., and R. F. Eithier, formerly assistant sales manager of the Chain Belt Co.

S. M. Marshall, member of the firm, Perin & Marshall, New York, consulting engineers, sailed recently for England.

Edward R. Stettinius, former assistant secretary of war, has been made a commander of the Legion of Honor, according to a cable from France.

John Jeppson, superintendent of the Norton Co., Worcester, Mass., since its organization in 1886, recently celebrated his seventy-fifth birthday.

Richard Jones Jr., general counsel of the Republic Iron & Steel Co., Youngstown, O., recently was elected vice president of the Harvard Alumni association.

George M. Covey, who was formerly with the Hook Foundry Co., Marcus Hook, Pa., has taken charge of the Fairbury Windmill Co., Fairbury, Nebr.

J. P. Davis, purchasing agent of the Belden Mfg. Co., Chicago, has been elected second vice president of the Purchasing Agents' association of that city.

Frank Tod recently was appointed assistant to Vice President George F. Alderdice, the Brier Hill Steel Co., Youngstown, O. Mr. Tod formerly was assistant general manager of sales.

Maj. T. E. Ryder, who recently returned after four years military service abroad, has been appointed general manager of the Rudel-Belnap Machinery Co., Ltd., with offices at Montreal, Que. Before he enlisted in the army he was manager of the Canadian-Fairbanks-Morse Co.

James Whitehead has resigned his position as foreman of the St. Louis Malleable Casting Co. to become superintendent of the pattern department at the Buffalo plant of the American Radiator Co.

Dr. Epitacio Pessoa, president-elect of Brazil, visited the Bethlehem plants of the Bethlehem Steel Co. July 3, as the guest of Charles M. Schwab. The trip from New York to Bethlehem was made in Mr. Schwab's private car.

Capt. W. Harry Brown, well known coal and coke operator of Pittsburgh, is back at his desk once more, having fully recovered from a major operation which he underwent recently.

Hon. George M. Wright, chairman of the board of directors of the Clinton-Wright Wire Co., Worcester, Mass., has been elected president of the Eastern Hampden Agricultural society, Palmer, Mass.

J. T. Morris has been appointed acting dean of the school of applied industries, Carnegie Institute of Technology, to serve during the absence of Dean Clifford B. Connelley, who is on leave, having been appointed state secretary of labor and industries.

Van H. Manning, Washington, director of the bureau of mines, department of the interior, received the honorary degree of doctor of engineering at the recent commencement of the University of Pittsburgh. The degree was conferred in special recognition of Dr. Manning's activities in aiding in winning the war.

Arnold Rees, for four years foreman of the Goyne Steam Pump Co., Ashland, Pa., and more recently with the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., has purchased an interest in a foundry in Gouverneur, N. Y., which will be known as the Millard & Rees Iron & Brass Foundry.

C. W. Jinnette, Detroit, representative of the Norton Co., Worcester, Mass., has been appointed manager of the company's branch house.

C. R. Mabley has been appointed Michigan sales manager for the S. K. F. Industries, Inc., with headquarters in Detroit.

Frederick L. Jewett has been elected first vice president and Thomas Bradley, vice president in charge of purchasing, by the stockholders of the Paige-Detroit Motor Co., Detroit.

D. McWhite, former chief engineer of the Cadillac Motor Car Co., has opened offices at 8 Warren avenue west, Detroit, where he is designing a new passenger car to be placed on the market shortly.

C. C. Hanch, former treasurer of the Studebaker Corp. and for 19 years with the Nordyke-Marmon Co., Indianapolis, has been appointed general manager of the reorganized Maxwell-Chalmers Co., Detroit. During the war he was chief of the automobile products section of the war industries board.

Hon. William J. Shaughnessy has been elected a director of the Canadian Pacific railway to fill the vacancy caused by the resignation of Hon. James Dunsmuir of Victoria, B. C. He is a son of Lord Shaughnessy, former president of the company, and enlisted as a captain for service overseas from which he recently returned.

Capt. Charles S. Pillsbury, who was assistant sales manager of the Chicago Bridge & Iron Works, Chicago, prior to his entrance into military service, recently was promoted to the rank of major and decorated with the French legion of honor cross. Major Pillsbury is in the construction division of the United States army in France.

E. S. Stemler, William J. Harvey and Alexander M. Rae, who volunteered for the army shortly after this country entered the war, and who have been through much fighting in France, have been discharged from the twenty-eighth division, 103rd engineers, and have resumed their connections as salesmen attached to the Philadelphia office of the Jones & Laughlin Steel Co.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

EDWARD N. HURLEY, chairman of the United States Emergency Fleet corporation, whose resignation has been accepted by President Wilson, effective Aug. 1, was one of the creators of the pneumatic machine and tool industry of the United States and Europe. He began life as a machinist, made good as a railway shop workman and engineer, and then turned salesman. Later he joined partnership with a man who had invented a pneumatic boring machine, and started business in an old barn in Chicago. Five years later he sold his interest in the firm and became active in several corporations and visited the Latin-American republics to develop trade. He was organizer and president of the Hurley Machine Co. and later became chairman of the federal trade commission. He was recalled to public life at the outbreak of the war, first with the Red Cross, later on the newly-organized war trade board and two years ago to the chairmanship of the shipping board. He is expected to return to private life to engage in a private business enterprise.

John Barton Payne, Elmhurst, Ill., counsel for the United States railroad administration and former counsel for the shipping board, has been appointed to succeed Mr. Hurley.

T. L. Lewis, who recently tendered his resignation as sales manager of the A. M. Byers Co., Pittsburgh, has withdrawn his resignation and continues in that position with the Byers company.

R. B. Oliver was elected president of the William J. Oliver Mfg. Co., Knoxville, Tenn. ,at a recent meeting of stockholders. He succeeds William J. Oliver, who was injured in an accident several months ago.

D. C. Schultz Sr. has assumed his duties as sales manager of the Pittsburgh Crane & Equipment Co., Sharpsburg, Pa. He has had wide experience in the design and sales of cranes for other companies.

T. J. L. Crane, of the Wales Advertising Co., 110 West Fortieth street, New York, on July 1 sailed for England. He will remain abroad for some time in the interests of clients of the Wales agency. Mr. Crane is an Englishman and during the war served in the Royal Flying Corps of Canada.

E. J. Good, assistant purchasing agent for the American Steel Export Co. of New York, recently sailed for China where he will make a survey of conditions in the far east in the interests of his company.



EDWARD N. HURLEY

Roy M. Wolvin, president and managing director of the Montreal Transportation Co., and vice president and managing director of Halifax Shipyards, Ltd., has been elected a director of the Dominion Steel Corp.

E. H. Roelofs has resigned as assistant superintendent of motive power of the Philadelphia & Reading railroad, to become assistant to the vice president in charge of foreign sales of the Baldwin Locomotive Works, Philadelphia.

H. S. Kinsley, who has been placed in charge of the recently opened Detroit office of the Cutler-Hammer Mfg. Co., Milwaukee, recently was mustered out of military service. He formerly was connected with the engineering department of the company.

Leonard W. Williams of Park & Williams, Real Estate Trust building, Philadelphia, has returned after an extensive trip to Europe, which he made in the interests of the export pig iron business of F. R. Phillips & Son Co., in an association with Park & Williams.

H. B. May, who for the past two years has been connected with the Youngstown Sheet & Tube Co., Youngstown, O., in the capacity of efficiency engineer, with the exception of six months in the army air service, has joined the staff of C. E. Knoeppel & Co., Inc., New York, industrial engineers.

Isaac Berman, a graduate of the laboratory of Sauveur & Boylston, Boston, is to be placed in charge of the new laboratory being equipped at its Cumberland, Md., plant by the N. & G. Taylor Co., Inc., Philadelphia. He will be under the direction of R. C. Drinker, the company's consulting metallurgist.

L. F. Lemme, until recently superintendent of the A. Plamondon Mfg. Co., Chicago, has been made foundry superintendent of the Michigan City Foundry & Machine Co., Michigan City, Ind. George H. Gould has been appointed assistant superintendent of the plant and will supervise coremaking and foundry detail.

Roger H. Williams, banker and lawyer, has been elected vice president of the National Bank of Commerce, New York City, retiring from the law firm of Williams, Glover & Washburn, New York City, of which he was head. At one time he held an executive position with the Crane Valve Co., Bridgeport, Conn.

Fred Vaill Larkin has resigned as assistant superintendent of the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., to become professor of mechanical engineering at Lehigh university. Mr. Larkin is a graduate of the University of Wisconsin with the bachelor of science and mechanical engineer degrees, and has had considerable industrial experience. He has served with the Telluride Power Co., the Terry & Tench Co., New York, and other companies. He was superintendent of construction of a section of the New York state barge canal.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WILLIAM SCHOUP, formerly assistant superintendent of No. 3 open-hearth department at the Homestead works of the Carnegie Steel Co., has been appointed superintendent at the Franklin open-hearth department of the Cambria Steel Co., Johnstown, Pa. He has entered upon his new duties. Mr. Schoup was with the Carnegie Steel Co. since 1899 and advanced through various positions in the open-hearth plants of the works to the position he has just been promoted from. He has been succeeded at the Homestead works by Allison R. Maxwell who has been with the Carnegie company for about eight years and until recently assistant metallurgist at the Homestead works.

H. H. Farr, who received his release as captain in the ordnance in February and accepted a position with the Woodward Iron Co., Woodward, Ala., recently was made assistant foundry superintendent for the Kanawha Mfg. Co., Charleston, W. Va.

William A. Nugent who recently received his discharge from the Twenty-first Engineers with which unit he served in France has resumed his position as Indiana sales representative with the Independent Pneumatic Tool Co., Chicago.

Charles G. Du Bois, controller of the American Telephone & Telegraph Co., New York, recently was elected president of the Western Electric Co., succeeding H. B. Thayer, who was made chairman of the board. Mr. Thayer resigned after 38 years' service to assume the presidency of the American Telephone & Telegraph Co.

T. S. Disler, traffic manager of the Fort Pitt Steel Casting Co., McKeesport, Pa., now also is purchasing agent of that company. H. H. Nicholson, auditor of the company, hitherto has taken direct charge of purchases. Mr. Disler before becoming identified with the Fort Pitt Steel Casting Co. was a traveling freight agent for the Baltimore & Ohio railroad.

L. C. Murray has been appointed to the Blaw-Knox Co.'s corps of engineer-salesmen. He is a graduate of Penn State university and for a number of years was connected with the Carnegie Steel Co., both at the Edgar Thomson works, Bessemer, Pa., and in the sales department. His activities in his new position will be devoted to the steel plants in the Pittsburgh district.

Louis Marshal Ream, Thompson, Conn., who is connected with the office of the district manager of the American Steel & Wire Co., in Worcester, Mass., has been offered the position of sales manager of the Steel corporation in Johannesburg, South Africa, of which his father was a director until his death. If he accepts the position which he will decide in about a month, Mr. Ream will specialize in steel and wire rope and cable.



JOHN B. PAYNE
Who succeeds Edward N. Hurley as chairman of the Shipping Board

William E. Corey, chairman of the Midvale Steel & Ordnance Co., Philadelphia, has been elected a director of the Sinclair Consolidated Oil Corp.

A. S. Fawcett has been appointed purchasing agent for the Pittsburgh Steamship Co., Cleveland, to succeed the late Louis Hausheer. Mr. Fawcett has been with the company for 15 years, and most of the time was private secretary to Harry Coulby, president of the company. He was formerly with Pickands, Mather & Co.

L. G. Knight, who early this year became manager of sales in the eastern territory for the Pacific Coast Steel Co., San Francisco, with headquarters at 52 Broadway, New York City, is to be transferred to the Seattle works of the company. W. W. Truesdale will succeed him at New York. Mr. Truesdale recently returned from France, where he saw active service with the engineer department of the army. Prior to that he was affiliated with the Pacific Car & Foundry Co., Seattle, and with the Seattle works of the Pacific Coast Steel Co.

Lieut. Col. Elmer K. Hiles, of the engineering department of the American expeditionary forces, who went overseas as a captain in the Fifteenth engineers, has just returned after two years service in France. On July 15, he became affiliated with the Pittsburgh Testing Laboratory, 612-620 Grant street, Pittsburgh, engineers and chemists, as manager of laboratories, with headquarters in Pittsburgh. The company operates six branch chemical and physical laboratories and 14 cement laboratories in addition to offices in 11 principal cities.

George K. Hamfeldt, who was superintendent of the Carrie furnaces of the Carnegie Steel Co., and in 1905 supervised the construction of the blast furnaces and coke ovens of what was then the Midland Steel Co., Midland, Pa., subsequently taken over by the Crucible Steel Co., has been visiting in Pittsburgh. Mr. Hamfeldt left the country about a dozen years ago and spent about four years in an executive position with a large German steel company in Lorraine. He then went to his native country, Sweden, and in association with P. T. Berg, an old Carnegie Steel Co. man and engineering and sales representative for that company in Europe formed the Oxelosunds Iron Works, at Oxelosund, Sweden. Mr. Hamfeldt, who is president of the company, now is in America seeking to build up reserve stocks of coal and machinery.

Put Pension System Into Effect

Midvale and Subsidiary Companies Pay Workmen of 25 Years Service $30 Per Month After Retirement — Loan 90 Per Cent of Cost of Homes to Employes — Important Discussion On Union Liability

FOLLOWING the plan of representation of employes inaugurated by the Midvale Steel & Ordnance Co., Cambria Steel Co. and subsidiaries companies on Aug. 1, 1918, these companies on July 1, 1919, put into effect a pension system and a home-building plan for employes. The plan of representation of employes is designed to establish a representative system to provide a regular means of communication and conference between the officials and the employes of the Midvale companies. Each plant is divided into divisions on the basis of one representative for each 300 men. If any division has 150 men in excess of 300 or a multiple of 300, it is entitled to a representative for such fraction. In case the fraction is less than 150, it is not counted unless merged with a similar fraction from another division. The representatives are elected annually on the second Monday of January. During the nine months that this plan has been in effect, the division representatives have successfully handled grievances and other matters that have been directed to their attention.

The employes' pension plan was authorized at a meeting of the board of directors of the Midvale Steel & Ordnance Co., May 7, 1919. The pension system is administered by a committee appointed by the president of the company, and all of the funds required are provided by the company. All employes who, on July 1, 1919, had been 25 years or longer in the service and had reached the age of 70 years or over, were retired and pensioned. All employes, who on that date were 65 years or over and who had completed 25 years of service, are eligible to receive pensions. After July 1, 1919, all employes will be retired and pensioned upon reaching the age of 70 years provided they have previously completed 25 years of service. All male employes will be eligible for pensions when they reach the age of 65 years provided they have previously completed 25 years of service; and all employes who, after attaining the age of 65 years, and before attaining the age of 70 years, complete 25 years of service, will be eligible for pensions on completing 25 years of service and may be retired with pensions either at their request or the request of the employing officers. All women employes who have completed 25 years of service will be eligible for pensions when they reach the age of 55 years. A uniform pension of $30 per month is paid to each employe eligible for a pension, regardless of the position, wages, or salary prior to retirement.

The home-building plan for employes was authorized by the board of directors at a meeting held June 4, 1919, when a fund of $2,500,000 was provided. Employes are required to provide at least 10 per cent of the total value of the property when completed, and the remaining 90 per cent is loaned by the company. No loan in excess of $8000 will be made. The interest charged upon deferred payments is at the rate of 5 per cent per annum. In the event of permanent incapacity of the purchasers, through illness or accident while an employe of the company, or the death while still employed, he or his legal representative may continue the payments under the contract or cease payment of installments, in which event the total or principal sum which has been paid on account of the loan, is returned to the purchaser. When the purchaser ceases to be an employe of the company he may, within 60 days, complete the payment of all deferred installments and interest charges, and thus secure a clear title to the property; otherwise, the company will return the money paid.

Unemployment Statistics Are Dropped

WASHINGTON, July 15.—Forced to economize at every turn in order to continue with less than half its former field and office staff, the United States employment service, with the publication of its unemployment report for the week ending July 5, has decided to abandon this feature of its service. Other curtailments will have to be made in addition to those already in effect, but in the passing of the surplus labor statements the service dismisses one of the causes of its unfavorable standing among manufacturers and business men. In noting the last report as concluding the series begun after the signing of the armistice, John B. Densmore, director general of the service, stated the feature has been misunderstood. The report for the week covering the end of the fiscal year is accompanied by a plea that congress create a permanent national employment service and that the weekly statements be "resumed and made more complete and authoritative." Only a day or two before issuance of the report Royal C. Meeker, commissioner of labor statistics, Lewis T. Bryant, labor commissioner of New Jersey and director of the federal service in that state, and Director General Densmore appeared before the joint committee on labor of the senate and the house at a hearing on the Nolan-Kenyon permanent employment service bill and urged enactment of the measure. The administration is intent on having the service created as a permanent government bureau from all indications.

The final employment report shows that in 80 cities in the United States there was an aggregate surplus of 177,392, as compared with a surplus of 211,290 in 196 cities in the week ending June 28. The statement says the "figures indicate that while the surplus of labor is about unchanged the shortage has shown a rather material increase." Despite this interpretation, however, prorated surpluses in the two comparative periods show that actually there was an increase in the aggregate surplus. The statement is made that of the 80 cities reporting, 16 report a shortage, 26 an equality of supply and demand, and 38 a surplus. Of the 38 states represented in the report, 20 report surplus, 19 indicate an equality and eight

a shortage of unemployed workmen.

"The curtailment of the funds and field organization of the employment service makes it impossible to continue the gathering of these reports," Director General Densmore said. "They were begun a week after the signing of the armistice in order to provide the war department and the war industries board with a barometer for gaging industrial demobilization. They also have been of value in indicating to the country generally the labor situation week by week.

"The reports have not been complete and they frequently have been misunderstood and supposed to give the total unemployed in the country. The reports never attempted to do that. What was done was to cover representative centers and representative industries in those centers, the reports furnishing an indication of the situation generally. It is to be hoped that if congress acts favorably on the bills for a permanent national employment service these 'weather reports' of labor and unemployment conditions may be resumed and made more complete and authoritative for they can be of great value."

In testifying in behalf of the Nolan-Kenyon bill, which would establish this national bureau, Commissioner Meeker of the labor department's statistics service declared "Germany would have won the war in four months if it had not been for England's national employment service." He repeated the oft-expressed argument that "the United States is the only large industrial nation that has not a permanent, comprehensive employment system." Labor Commissioner Bryant of New Jersey said:

"Nearly all of the protests against the proposed national service are made by members of employers' organizations and are organized propaganda. Manufacturers send letters of protest at the request of their national associations regardless of whether they individually know anything at all of the service or its merits. Large employers, friends of mine, have admitted to me that they have protested at the suggestion of their organizations, although they themselves had no complaint to make."

Says Unions are Liable for Members' Acts

That a labor union is liable for the acts of its members is the opinion rendered recently by the United States circuit court of appeals for the eighth district, in imposing against the United Mine Workers of America, damages to the amount of $625,000 for violation of the Sherman anti-trust act. This is one of the most important decisions affecting the responsibility of labor unions and is the first instance in the United States where a labor union has been held liable for an act of its members.

The essential principles established by the decision are that a labor union is responsible under the Sherman anti-trust act for treble damages for injury or destruction of property by its members; that the organization is responsible as a principal for the acts of its district and local branches, their officers and members, and that the organization is responsible when it takes no steps to control or discipline its officers and members for acts of violence.

So far as known no other decision has been rendered in this country which so strongly hits the malicious destruction of property by striking workmen, who heretofore have done considerable damage and escaped without punishment. If this decision is upheld plant owners can compel unions to enforce law and order among its members, under penalty of being liable for their acts.

Labor Commission Favors 8-Hour Day

Toronto, Canada, July 14.—The Canadian commission on industrial relations appointed to investigate labor conditions recently in its report makes some sweeping suggestions for legislation. It recommends the establishment of an 8-hour workday, with a weekly rest of at least 24 hours; a minimum wage law especially for women, girls and unskilled labor; state insurance for those unable to work, proportional representation by grouped constituencies and restoration of the freedom of speech and publication. The commission found that one of the chief causes of labor unrest was the high cost of living and that there is a great reluctance to risk unemployed capital in new enterprises. The principle of collective bargaining is approved, the report pointing out that it does not necessarily mean recognition of the closed shop.

The report outlines and gives suggestions regarding various types of joint industrial councils. The essential feature of all these systems is that the human factor in industry is regarded as of first importance. The commission believes that a beginning should be made with joint plant councils and more extensive organizations of district and national councils evolved therefrom as necessity arises. Every council must be the result of the unfettered choice of both employes and employers and some machinery should be established to bring the parties together. It was recommended that a bureau be established under the minister of labor to compile available information and statistics.

Plate Contract

For 250,000 Tons Renewed by Canadian Government at 3.65c

Toronto, Ont., July 15.—C. C. Ballantyne, minister of marine, has announced that a new contract has been entered into between the Dominion government and the Dominion Steel Corp., Sydney, N. S., for the delivery within a five-year period of 250,000 tons of ship plates at the price of $3.65 per 100 pounds. The original contract made in 1918 between the government and the company called for the delivery of 50,000 tons of ship plates per year for a period of five years, at $4.15 per 100 pounds. The minister of marine stated that after extended negotiations with Mark Workman, president of the Dominion Steel Corp., an amicable arrangement has been arrived at, Mr. Workman having agreed to reduce the price by 50 cents per 100 pounds. "Pending the outcome of the recent negotiations," said Mr. Workman, "the government requested us last spring to discontinue building operations, which was instantly done. Now that the matter is settled definitely, we will rush the plate mill to completion, and I expect that we shall be rolling by Jan. 1 next."

The new mill will represent an expenditure of approximately $5,000,000. It is the first mill of this character to be erected in Canada.

The Canadian government has received tenders for the construction of 40 steel cars for the Canadian National railways. It is stated that the bids were 50 per cent higher than the estimate of the railway officials, and that it has not as yet been decided whether any of the tenders will be accepted. Deliveries are now being made of 150 steel colonist cars under order for the Canadian National railways, of which 100 were ordered from the Canadian Car & Foundry Co., Montreal, and 50 from the Pullman Co., Chicago. The National Steel Car Co. of Hamilton, Ont., is making delivery of 750 box cars to the Canadian National railways. The company is also delivering rolling stock material to the Federated Malay states government, and forgings for the Paris, Lyons & Mediterranean railway and the Midi railway of France.

John Coughlan, shipbuilder of Vancouver, B. C., recently placed a large order for steel plates with the Dominion Steel Co., Sydney, N. S. The shipbuilding industry on the whole, however, is quiet, owing partly to the metal workers' strike.

May Bring Home War Material

France Offers $300,000,000 For Equipment Costing $1,500,000,000 and Army Sales Department Head Declares Property Will Not be Sacrificed—Reduction of Size of Army to Result in Increased Offering of Scrap

WASHINGTON, July 15.—Rather than sacrifice it at the extremely low prices bid by foreign nations for it, Director of Sales C. W. Hare has announced that much of the war department material in Europe will be shipped back to this country. This statement was made by Mr. Hare last week in the course of testimony given by him before the special house committee which is investigating war expenditures.

Mr. Hare said a sales organization will be formed and maintained throughout Europe, but if better prices cannot be obtained for the surplus over there than those bid much of it will be returned to this country. Mr. Hare and a small party was to have sailed last Saturday for Europe, but the trip has been delayed upon receipt by Secretary of War Baker of a cablegram from Assistant Secretary Crowell, saying he was to sail on the day named for the United States and suggesting that Mr. Hare and his party remain here until he held a conference with them. Apparently the conference is to relate to the new sales policy abroad.

Mr. Hare, when before the house committee, said that neither he nor anyone else on his staff would supersede anyone who has proven himself efficient. It is understood however that the mission will, so far as sales of surplus materials are concerned, supersede the liquidation commission in Europe which is headed by Judge Edwin B. Parker. It has been pointed out that the liquidation commission has a vast amount of other work to do and that, morever, experts are required to sell the various lines represented in the surplus materials abroad. While it has not been announced who will have immediate charge of the sale of machinery and machine tools abroad, it is known that Lieut. Col. A. LeMar of the machine tool section, who recently returned from France, will sail with the party back to Europe and probably will have a prominent part in the sale of machine tools there, if satisfactory prices can be obtained. Mr. Hare said sales of machinery and machine tools worth $20,000,000 to $30,000,000 to Belgium are planned. Belgium will have no difficulty in arranging for credits. That country, as a matter of fact, has a better standing in this direction than other allied belligerent nations because it has been given precedence in recovering indemnities from Germany.

Mr. Hare told that committee that the French government had offered only $300,000,000 for American army equipment in France costing $1,500,000,000. The offer was made to Chairman Parker of the liquidation commission and included ship docks, railroad works and equipment, automobiles, and other materials.

"If France will not pay a fair figure," said Mr. Hare, "we will take the stuff out of that country and sell it elsewhere."

It was declared by Mr. Hare that it was the policy of the war department not to preserve high prices for the benefit of manufacturers, but to prevent unnecessary industrial disturbance and sacrifice in prices that would result from "dumping all surplus goods on the market."

Reduction by congress in the size of the army will result in the war department throwing larger supplies of steel on the market. A large portion of the supplies sold and held for sale, while not actually scrap, has been classified as such, largely because much of it is high in carbon, such as bar steel and screw stock, and shell forgings, and is not readily suitable for commercial manufacture. About three weeks ago an inventory showed that there was a surplus of approximately 492,000 tons of scrap held by the war department, while 79,000 tons were sold during June. While it is not possible to say just how much the department now has on hand, because inventories fluctuate and have not been completed in all cases, it is understood that the additional supplies to be put on the market will bring the surplus scrap tonnage up to at least 800,000 tons.

This material is in various stages of manufacture and the increased tonnage to be offered for sale represents that portion which had been placed in reserve ready for completion of manufacture whenever necessary. Now that the size of the army has been reduced, however, it will be taken out of stock and sold.

The department does not propose to dump this material any more than it has done with other steel supplies. On the contrary it is closely watching the market, and, realizing its upward trend, arranges schedules for bids so that it may benefit from stronger market conditions. As an instance of the improvement in the market, there was sold last week to a Cleveland consumer 3500 tons of shells forgings as scrap at $23.30. The same kind of tonnage had been sold by the war department a week previous at $19.60 a gross ton. There also have been some sizable sales of hard bar steel stock to a prominent scrap dealer in Pittsburgh recently, who disposed of them to a large independent steelmaker and a prominent maker of steel castings in that district as high as $30 a ton. Some of this class of stock had sold for $18.

Plan to Resume Trade With Germany

WASHINGTON, July 15.—Lifting of the blockade of Germany does not give promise of developing any important movement of iron and steel or raw materials for their manufacture from the United States to that country. This at least seems improbable for the present and so far as blast furnace, semifinished and finished products are concerned indications are that Germany will do everything in its power to use its undamaged furnaces and mills to supply her own needs and perhaps establish prices so low that will prevent American competition. While it is also unlikely that raw materials may be exported to any great extent, it is thought there may be some shipments of coal, if not of small quantities of ore, partly due

to the depriving of Germany by the peace treaty of some of her ore and coal fields. In the case of ore, it is pointed out that, even if Germany cannot supply her own immediate needs, she has nearby countries to draw from, such as Sweden and Spain. In the line of metals, the largest exportation from this country to Germany will be copper. It is understood that Germany is in need of large supplies of this nonferrous product.

It also is explained that Germany will have to establish credits before it can trade freely with other countries and that those European countries associated in the war with the United States will be given precedence in this direction. Doing business on a basis of exchange of goods is not probable to any great extent for the present because of the lack of supplies that country has on hand and also because of the shortage of shipping. However, Germany may be in a position to carry on sizable trade with nearby neutral countries, such as Norway, Sweden, Denmark, Switzerland, Holland, and other countries.

Chairman Hurley, following the announcement of the state department that the German blockade would be removed, said shipping facilities were ready to handle cargoes to Germany, and that tonnage would be allocated to north Atlantic and south Atlantic and gulf ports as rapidly as shippers indicated the need of them. One of the first lines to Germany to be authorized by the shipping board is the Philadelphia and Hamburg line of Philadelphia to be operated by Halstead & Sons.

Acting Secretary of State Polk said that trade with Germany will be resumed through the issuance by the state department of blanket licenses covering all commodities, except dyestuffs, potash and chemicals, restrictions having been placed upon the German export of these articles by the peace treaty. The blanket license will otherwise give complete freedom to trade and communication with Germany. The object of the exceptions of dyestuffs, potash and chemicals is to protect the infant industries created in the United States and allied countries during the war.

Emphasis has been laid on the fact that the lifting of the trade ban applied only to Germany and that the action announced by the state department is in conformity with the treaty of peace.

Official announcement also was made at the state department that American consular officers will not be immediately returned to Germany, although special agents may be sent there to look after American interests in the country.

The shipping board has announced that, effective Monday, all restrictions heretofore exercised in connection with the approval of charters and voyages for merchant ships will be discontinued. This is in line with the previous announcement that control over ocean freight rates had been discontinued.

"While charters must still be submitted to the chartering executive of the board at New York for formal approval," it was announced by the board, "the effect of the new ruling will be that owners or charterers will no longer be required to observe maximum or minimum rates either on charters or on berth business."

Hurley's Resignation is Surprise

WASHINGTON, July 15.—While surprise was created by the resignation of Edward N. Hurley as chairman of the shipping board, effective Aug. 1, the latter insists that it is based on a long-expressed anxiety to return to his family and private work. Mr. Hurley declares he wants to rest a time at his home in Wheaton, Ill., and then will establish offices in Chicago, and later in Philadelphia and New York, as a business adviser of small manufacturing concerns. President Wilson has appointed John Barton Payne, Elmhurst, Ill., as successor to Mr. Hurley. Mr. Payne at present is counsel for the United States railroad administration and formerly acted in a similar capacity for the shipping board.

Various reports have been heard as to the cause of the resignation of Mr. Hurley, and he has taken occasion to deny each of them. That any discord existed between the President and Mr. Hurley is denied by the latter by referring to the cordial tone of the letter of the President in reply to the letter of resignation written by Mr. Hurley on May 28. Claims that he had grown tired of being quizzed by the senate committee on commerce and house committee on merchant marine and fisheries were replied to by Mr. Hurley that he had been treated "royally" by both.

"If the President fired me," said Mr. Hurley, with a smile, "it took him a long while to perform the job. You will notice that my letter of resignation was written on May 28, and it is hardly conceivable that we would have waited until July 10, the day he acknowledged my resignation, to 'fire' me. I also believe the cordial tone of the letter of the President to me will hardly justify the report that I was 'fired.'" Mr. Hurley denied emphatically that he resigned because of any antagonism toward him by congress.

Mr. Hurley was told that in some quarters it was felt that now was a particularly inopportune time for him to resign inasmuch as he had only recently laid the merchant marine policy of the board before congress, and it was about to be taken up. Mr. Hurley said that he had appeared before the legislative committees and

Status of Shipbuilding Program June 30, 1919

Total Tons in Program—17,393,061 Tons Canceled—3,797,895

Contracts	Total Program	Delivered	Launched and Fitting Out	On Berths	Canceled	Not Started
Steel	1676	460	198	391	325	302
Wood	1030	361	193	88	385	3
Concrete	42	...	7	7	28	...
Total	2748	821	398	486	738	305
Requisitioned	400	334	17	20	16	13
Grand Total	3148	1155	415	506	754	318
Estimated Status on December 31, 1919	3148	1832	209	222	754	131
Estimated Status on March 31, 1920	3148	2016	163	127	754	88
Estimated Status on June 30, 1920	3148	2179	80	100	754	35

had gladly answered their inquiries, that he still will be available to them if they want him, and that he could only recommend a policy on behalf of the shipping board. It remained for congress to accept or reject the program, or revise it, he said. No dissension of any character exists within the shipping board, according to Mr. Hurley.

Mr. Hurley said he had retired. About two years ago, he said, the President asked him to head the shipping board, but that at first he declined the position. When the President said, however, that it was a personal matter, Mr. Hurley explained, he felt obliged to take the position and had enjoyed the work. Until Aug. 1, Mr. Hurley will remain in Washington actively directing the board's present program of selling to private owners the ships built by the government.

It is reported that Mr. Hurley's departure will forecast a radical change in the method of government shipping control. At present the shipping board consists of five members and is considered an unwieldy body. There are indications that legislation to make it either a one-man organization or place control of shipping under an existing government department will be urged. Mr. Hurley is said to favor one-man control, along the lines proposed in the bill of Representative Joseph Walsh, of Massachusetts, which would create another cabinet office to be known as the department of the marine.

Contract Liquidation is Proceeding Rapidly

Washington, July 15.—Valued at $1,385,300,000, uncompleted portions of suspended contracts of the war department had been liquidated to June 21. This is 39 per cent of the total suspensions of $3,549,200,000, as shown by incomplete reports. Inasmuch as the munitions board, Toronto district, and the director of explosives have suspended a number of contracts whose value has not been reported, the latter figure is expected to be increased slightly. The number of contracts liquidated to June 21 is 17,764, and $188,614,000 has been paid to contractors in settlement, the savings effected being $1,196,731,000 or 86.4 per cent of the value of uncompleted portions.

Of the contracts and agreements to the value of $1,385,300,000 reported liquidated to June 21, $471,300,000 or 34 per cent, represents informal agreements adjusted. Settlement costs for these agreements average 11 per cent of what it would have cost to complete them, against 15 per cent for the formal contracts.

More than 4200 suspended contracts, of which the value of the uncompleted portions is estimated to be $1,824,000,000, are being liquidated by the ordnance department claims board. During the week ended June 21 nearly $50,000,000 worth of these contracts were liquidated, as compared with $29,000,000 the previous week. The rate of saving for the week was 91 per cent, as compared with a rate for contracts previously liquidated of 81 per cent.

Will Reorganize Bureau of Foreign Commerce

Washington, July 15.—Announcement of the resignations of Burwell S. Cutler, chief, and Grosvenor M. Jones, first assistant chief, of the bureau of foreign and domestic commerce, indicates a complete reorganization of the bureau of the government but is not regarded as expected to change the bureau's foreign trade policy or otherwise disturb the operations of the department. Better personal opportunities and not dissatisfaction are said to have caused the departure of the first officers of the bureau.

Prior to the statement Mr. Cutler was to leave, announcement was made Mr. Jones had quit to become assistant manager of the Mercantile Bank of the Americas, New York City. At that time it was said Mr. Cutler would go to Europe to study the economic situation and the bureau's work there in connection with American foreign trade. Now that his resignation also has been announced, it is stated he will make the European trip before retiring to his private affairs as president of Cutler Mfg. Co.

Phillip S. Kennedy, commercial attache at London, former professor of economics at Harvard and New York universities, will, it is expected, be nominated by the President to succeed Mr. Cutler. Mr. Kennedy was a commercial attache in Australia before going to London and for several years has been in the bureau. Who will succeed Mr. Kennedy has not been determined, but Mr. Jones' successor will be Roy S. McElwee, second assistant chief of the bureau, and Herman G. Brock will succeed Mr. McElwee.

The F. J. Greene Engineering Works, Racine, Wis., has engaged Architect Edmund B. Funston of Racine to prepare plans for a one-story brick and steel shop addition, 100 x 123 feet in size, costing about $50,000.

Fair Demands

Are Current in Refractories and Makers Cheerful

Pittsburgh, July 15.—While demands for brick for blast and open-hearth furnaces could increase considerably and still provide no tax on capacity, current requirements are of fair size and manufacturers are quite cheerful. It is believed that stocks of the various kinds of brick on the hands of the steel and iron producers at the beginning of the year now are pretty well exhausted and that the recent improvement in the demand for iron and steel must soon be reflected in a better demand for refractories. Iron and steel plant stocks of brick at the signing of the armistice last November are said to have been sufficient to meet about four months' requirements on 100 per cent operations of the works. With operations on a considerably smaller scale the stock of bricks has been prolonged, but it is generally believed that they must now be pretty well depleted.

No particular change is noted in prices but the market relatively is stronger on magnesite and chrome brick than on fire clay and silica brick. Magnesite has become extremely scarce, due to the absence of imports and the fact that operations at the Washington and California mines largely have been suspended since the war ended. Nothing has developed in connection with the proposed tariff on magnesite, ore and brick.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 38.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

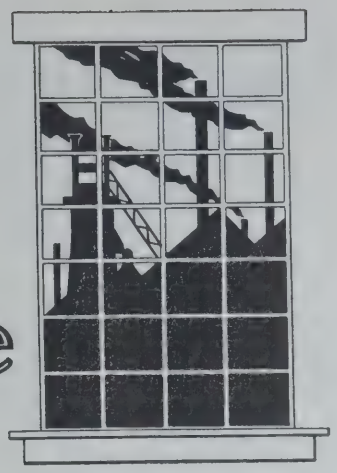
9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent	$ 40.00 base
76 per cent	100.00 base

Little Stories of Business Life





Enthusiasm of Youth

A PARTY of young engineering students went through the plant of the Illinois Steel Co., at Gary, Ind., the other day. Each member of the party had a note book and pencil, asked many questions and made a memorandum of what he saw and heard. "How many buildings are there?" asked one student as he entered the works. "How many square feet does the plant cover?" asked another. "Have you ever thought of putting smoke consumers on those stacks?" inquired one, gazing aloft intently. The guide was hoarse before he emerged from the rail mill, one of the first mills entered by sight seers on their round of the plant. He kept a few paces ahead of the party so that he could not hear all the questions, and he doubled his pace. He took the students close to the soaking pits and the open hearths in hope that some of their enthusiasm would wilt and he walked them fast over the hot sands and cinders. At length they emerged from the plant.

"The greatest sight I ever saw since I saw Niagara Falls," said one.

"Beats going through the jail," remarked another student.

And then a dapper boy stepped forward with a swagger of importance.

"You will kindly extend to Judge Gary my hearty thanks," he said.



Corrected Teddy

TO dispute the word of the late Colonel Roosevelt and not only get away with it without being presented a membership card in the Ananias club but actually to be thanked by the doughty colonel is the unique experience of William Thum who died a few days ago at Hammond, Ind. Mr. Thum's lifework was that of metallurgist and he was head of the United States Metals Refining Co., East Chicago, Ind. But he was a hunter as well and had trailed big game in Africa before Colonel Roosevelt made his memorable trip there. Mr. Thum corrected some statements of the latter and received a cordial acknowledgment and thanks for setting the matter right.



Needs the Money

THE watchful eye of the government on its purse strings is illustrated by the experience of a member of a rate investigating committee who has recently returned to private life. At the time he left government service his last expense check, although paid, had not been checked through the auditing department. Now he receives the following letter: "Please refund 60 cents to the government as it is held the item of that amount covering taxi fare cannot be allowed. The arriving time of your train in Buffalo has been checked and found to be after business hours. Evidently the taxi was hired for the purpose of going for dinner and as there is a good restaurant at the station, it is thought the 60 cents was an unnecessary expense."



Skill is Rewarded

MEMBERS of the National Founders' association, with headquarters in Chicago, tell this little story on the railroad administration:

"Down on the Wabash line a water tank was operated by electricity which was tended by a nearby farmer. He turned on the switch in the morning, went about his own business, came back about 6 o'clock and turned it off. For this service of a few minutes each day he received about $20 a month. When the railroad administration took hold, those classifying employes rated this farmer as an electrician. They figured his time for the entire day and allowed him about $300 a month, without, however, requiring any additional work from him. Furthermore, he was given back pay to the amount of $2500 or $3000."



Earning the Increment

LIFTING oneself over the fence by the bootstraps ever has been classed with the search for perpetual motion, but maybe it can be done. Likewise the unearned increment on real estate seldom goes to the interest most instrumental in putting the value into the land, probably the reason for calling it "unearned." But when a great steel company decides to locate a plant on a tract of sand that for miles possesses almost no value, buying a tract many times as large as it needs for itself, it may cause an increase in values that comes back in sales of the excess acreage. It has been thought that one immense steel plant in the west paid for itself in full as a result of this method of procedure and added profits have been coming in ever since. This is such a legitimate a profit, though outside the company's regular line of business, that it admits of no reasonable criticism.

Lackawanna Report Not Typical

Company Reports Deficit for Second Quarter—Makes Heavy Products for Which Sales Lag Because of Lack of Railroad Buying—Trade With Germany Resumed and Credit Problem Looms—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

SECOND quarter earnings of the Lackawanna Steel Co. disclosing a deficit of $233,086 for April-June operations might have come as a disconcerting shock had it not been for developments covering the more recent period such as the Steel corporation's gain in unfilled orders, and other important considerations relating specifically to the general steel business which served to nullify the significance of the report as an index to conditions in the whole industry. While the report reflected the trade paralysis that paralleled the unfortunate controversy over prices between the railroad administration and the industrial board set up by the department of commerce, it also reflects the fact that the nature of the Lackawanna products had an important effect upon the earnings statement.

The company's output is confined largely to heavy steel products, including rails, merchant bars, structural shapes, plates, etc., most of which lines have not shared in the recovery in activity that has been enjoyed by the lighter products. As a producer of rails, plates and other material heavily consumed by railroads and the manufacture of road equipment the company is a conspicuous sufferer from the lack of railroad buying.

Even so, the earnings record presented by the company for the second quarter does not exactly indicate the state of the company's position at the present. The greater share of the deficit doubtless was accumulated during April and May, when operations were around 25 per cent of capacity. Recently the company was allotted one-fifth of the 200,000 rail order placed by the railroad administration and operations now approach 75 per cent of capacity with new business flowing in encouragingly.

Low Earning Point Passed

Speaking for the industry as a whole evidence abounds that the low point in earnings has been passed. As the time approaches for the appearance of the Steel corporation's June 30 report conjecture respecting the exhibit it will make, is increasing. Owing to the wide diversification of the corporation's products and the fact that the unfilled tonnage report for the end of June indicates the tide turned during that month, a fair showing is anticipated.

Announcement that the trading-with-the-enemy act, which is to remain a law until peace is ratified by this government, will not be permitted to prevent the resumption of commercial relations between America and Germany has been made by the state department. Save in respect to dyes, chemicals and potash, trading will be possible by means of blanket licenses issued for all other commodities. Ships have been made available and routes will be established to former enemy ports as soon as desired by shippers. This is a development of tremendous importance as it signalizes the sweeping away of the hampering government regulations upon trade and the resumption of normal international relations, war-bound for five years. In connection with the beginning of the commerce with the still-technical enemy, there is raised a problem of exceptional proportions. It is that of supplying Germany with credits.

If the allies in Europe need credits to enable them to buy goods and materials in America, the need of Germany must be even greater. Her financial position is worse in comparison than that of the nations she fought. Germany has been stripped of territory and resources and must pay enormous indemnities, which the other nations will receive and may use as bases for credits. It is said now that the credit requirements for Europe will not be so great as was estimated previously, the total being placed at $2,000,000,000 as compared with the $5,000,000,000 and upwards suggested some weeks ago. Of this sum Germany is understood to want $500,000,000, which will mean that she expects to make purchases of raw materials, chiefly cotton and copper, to this extent in America.

While the problem of extending credits to the allies is being satisfactorily worked out some difficulty may be experienced in regard to Germany. The prejudice against the Germans, the fact that they have but $4,000,000 of American securities to put up as security, and the undermining of her credit will combine to make the problem a serious one. It is suggested however that German concerns formerly with good credit standing in this country will not find it impossible to resume business relations here. It would seem that it will be necessary both for this country to sell raw materials to Germany on credit as well as to buy reasonable amounts of the finished products from Germany, if the old enemy is going to be able to pay the debts assessed by the victors. It may not strike some as just that a country which has wrought such cruel wrongs upon humanity should be given encouragement in regaining prosperity. But the cold economic fact remains that unless the Germans prosper they cannot meet their obligations and unless the margin of profit left for themselves is sufficient to serve as an incentive to work, they will not even strive to re-establish themselves. In other words it is in the interest of the allies to see that Germany has every opportunity to get on her feet again in a business way, which means the allies must buy from the Germans, else hope of collecting the indemnity must be given up. There is every evidence that France and other European countries are ready to resume relations with the former enemy, the more so because the discount of the German mark makes it cheaper to buy in Germany than anywhere else, especially the United States where the dollar is at a premium.

Lackawanna Report Shows Quarterly Deficit

In its report for the three months ending June 30 the Lackawanna Steel Co. shows a deficit of $233,086, after provision for all charges and war taxes. Not only does the record for the second quarter suffer tremendously in comparison with the profit of $3,830,408 earned for the corresponding period of 1918 but it also is far below the showing of $1,207,109 earned for the first quarter of the present year. The income account for the six months of this year shows profits of

$974,022 or the equivalent of $2.77 a share, as compared with profits of $6,782,833 for the same period last year, or $19.32 a share. The falling off is nearly $600,000.

The present six months profit of slightly less than $1,000,000 is a decline of more than $12,000,000 from the figures reported for the first half of 1917. The report has attracted great interest in the industry because it is the first showing of a large steel company for the second quarter period to appear.

A decline in tonnage in unfilled tonnage is also exhibited by the company. Unfilled order on June 30 amounted to only 122,399 tons as against 656,207 tons on the corresponding date last year. The comparative income account follows:

	1919	1918
Net earnings after taxes and expenses	$446,757	$4,690,842
Interest Lackawanna Steel bonds and other obligations	227,668	233,157
Subsidiary bond int.	41,092	43,400
Balance	177,977	4,414,285
Extinguishment mines and min. invest	63,956	101,385
Depreciation, renewals	347,127	482,412
Profit for second quarter	*233,086	3,830,488
Unfilled orders	122,399	556,207

*Deficit.

Finance Furnace Plans

Birmingham, Ala., July 15.—Electrification of mines, improvement of furnaces and other properties, financing of the by-product coke oven plant nearing completion and meeting of a $2,000,000 first mortgage 6 per cent loan due on Feb. 1, 1920, are said to be the objects of an issue of $6,000,000, 10 years, 6 per cent notes by the Sloss-Sheffield Steel & Iron Co. J. W. McQueen, president of the company, has been in the east for the past three weeks in conference with members of the board of directors on the subject and on his return the latter part of the week it is believed full statement of the proposed betterments will be announced. The company has in operation two out of seven blast furnaces and its sales have been equal to the output of the two stacks. Two other furnaces are in shape to go in blast on short notice.

British Pay Dividends

Ample evidence that British steel companies continue to show satisfactory returns, despite the falling off of war orders, is to be found in the dividend disbursements announced by a number of concerns. The Edgar Allen Steel Works are able to pay for the second year in succession a dividend of 17½ per cent, according to advices from the British staff correspondent of THE IRON TRADE REVIEW. This concern may claim to have been consistently successful. For the seven years preceding 1913 the average was 10½ per cent on ordinary shares, for the next two years 12½ per cent, for the following two years 15 per cent and now for the second time 17½ per cent. The Rhymney Iron Co., which is unable to declare its final dividend owing to its returns not being quite complete, pays a 6 per cent dividend. Messrs. Davy Brothers report a greater output than ever, and large extensions are being planned. The concern has a very full order book, and claims that its rolling mills are in advance of the usual practice either in England or America. The firm pay 10 per cent dividend and the shareholders have sanctioned a substantial increase of capital.

Report One Hill Lease

Trustees of the Great Northern Iron Ore properties report the leasing during 1918 of only one parcel of ore lands. The Cleveland-Cliffs Iron Co. and the Struthers Furnace Co. leased the Wade mine, which adjoins the Deacon near Buhl, Minn. This property carries a royalty of from $1.10 to 70 cents, shipments in 1918 amounting to 67,577 tons with a minimum shipment this year of 80,000 tons. The small Langdon & Warren mine was exhausted in December, 1918.

The annual report, which has just been issued, shows total receipts from the proprietary companies of $4,557,000. Miscellaneous receipts and disbursements together with a dividend distribution of $6,000,000, accounted for an excess of disbursements over receipts of $1,477,496. The undistributed receipts accordingly were reduced from $2,079,775 to $602,279.

Ore shipments in 1918 from the "old leases," which include the Mahoning, Stevenson, Leetonia and Utica mines, were 2,734,678 tons. The report shows shipments from stockpiles by the Arthur Iron Mining Co. of 633,914 tons. Shipments under leases made in 1913 and following years, aggregated 3,136,750 tons. Stockpiles at the end of 1918 held 236,712 tons against 651,409 tons at the close of 1917.

The Leader Iron Works, Decatur, Ill., has been consolidated with the Trahern Pump Co., Rockford, Ill. The Decatur concern will be continued in that city for the present but eventually it probably will be removed to Rockford.

Much Phenol

Will be Released by Government—Naphthalin Market Lowered

New York, July 14.—The release of 27,000,000 pounds of government phenol in the near future is being strongly anticipated by consumers of this product. For some time past the shortage of phenol has been most pronounced, spot shipments being almost impossible. The government stocks will be released through trade sources, so as not to unduly disturb the market, and the price will be fixed by the government. No assurance is forthcoming at this time as to what the price will be, but it is thought in authoritative quarters that the figure will be around 12 cents. Two large producers of phenol, it is further believed, will handle these supplies. At present, the market is largely nominal.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Contract

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.08½ to .09½
Naphthalin, balls	.10½ to .11½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	nominal

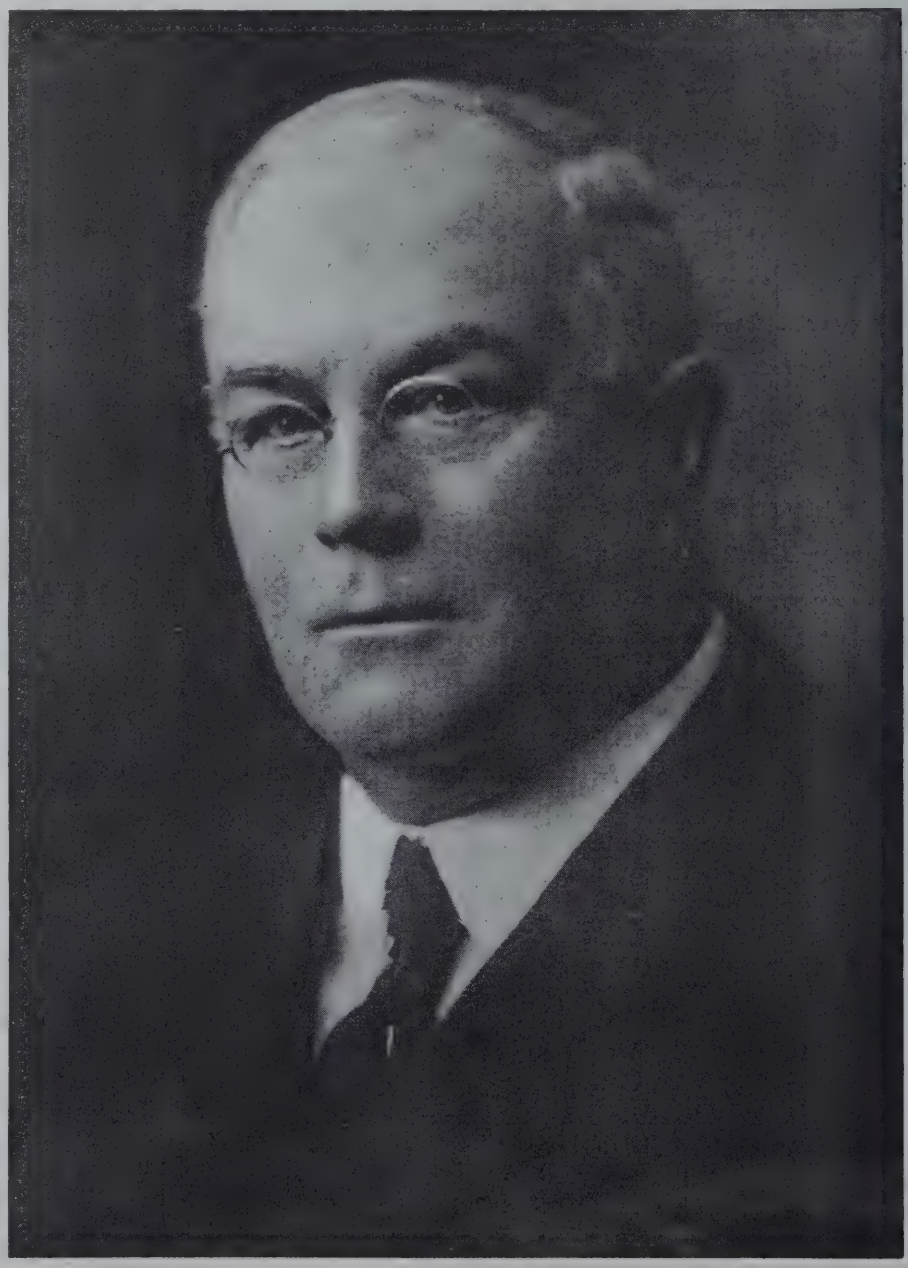
Naphthalin has undergone a decline, the market now holding at 6½ cents to 7½ cents for flakes, and 8½ cents to 9½ cents for balls. This is a drop of approximately 2 cents, and follows several weeks of relative inactivity. Although weakness continues in sulphate of ammonia, it is believed that the time is not far off when buying by the fertilizer industry will set in. At the present time so little domestic business is going that the market is virtually impossible to define on this class of trading. Export buying, it seems, comprises the bulk of current business in sulphate of ammonia, and the aggregate of this trading is small. Prices on export business, however, are fairly well settled at around $4.60 for ammonia in double bags at eastern seaboard.

Samuel Thomas Wellman

Feb. 5, 1847—July 11, 1919

SAMUEL THOMAS WELLMAN, Cleveland inventor, engineer and manufacturer and one of the outstanding figures in the development of modern iron and steel manufacture, died at Stratton, Me., July 11, at the age of 72. For more than half a century Mr. Wellman has been closely identified with the improvement of equipment used in the making of steel and during that time has contributed a number of inventions that virtually revolutionized the industry. The electric charging machine and the handling of materials by the electric magnet introduced by Mr. Wellman have sprung into widespread use in practically every civilized country where steel is made. These inventions, while greatly lowering the cost of making steel, have eliminated numerous operations once performed laboriously by hand. Through his genius Mr. Wellman saved millions of dollars for manufacturers and contributed an invaluable service to humanity in promoting safety in steel works. Like many other men who have risen to prominence in the industrial world, Mr. Wellman received his early training in New England. He was born Feb. 5, 1847, at Wareham, Mass., and shortly afterwards went to Nashua, N. H., where his father, Samuel K. Wellman was superintendent of the Nashua Iron Co., a small concern engaged in rolling locomotive tires from hammered steel blooms imported from England. Mr. Wellman secured a common school education at Nashua and later attended Norwich university, Norwich, Vt., where he received the degree of bachelor of science and later in life was given an honorary degree in civil engineering. In 1864-65 he served in the Civil war as corporal, Company F, First New Hampshire heavy artillery.

Early in life Mr. Wellman displayed an interest in the iron works at Nashua. He became familiar with the various operations which changed the blooms to finished tires and in the early sixties, when the company decided to install a regenerative gas furnace to heat the blooms, young Wellman was handed the drawings for the new furnace and directed to build it according to the plans. C. W. Siemens, English designer of the furnace, had arranged to send an engineer from England to erect the furnace but when he arrived at the plant, he found that the junior Wellman had already built it. The engineer went over the installation with Mr. Wellman, and after carefully checking it with the drawings, pronounced it a very good job. The furnace already had been dried out, and therefore the gas producers were started and the furnace given its initial test. It was entirely satisfactory. The Siemens engineer was so pleased with Mr. Wellman's work that he took him to Pittsburgh to assist him in starting a crucible steel melting furnace that had just been completed. Mr. Wellman remained in the Pennsylvania city through part of 1867 and 1868, spending about three months at the works of Anderson Cook & Co. Here he operated the first crucible steel melting furnace in America, using about 1000 pounds of cheap nut coal to melt a ton of steel which in the old-fashioned coke furnaces had re-



SAMUEL THOMAS WELLMAN

Pioneers Who Revolutionized the Manufacture of Steel



AMBROSE SWASEY, JOHN FRITZ AND SAMUEL T. WELLMAN—PAST PRESIDENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

AMERICA is indebted to Samuel T. Wellman and John Fritz, more than to any other men, for the rapid development of the iron and steel industry during the last half century. John Fritz, who died Feb. 13, 1913, invented the three-high rolling mill and placed the manufacture of rolled steel on a practical basis. Mr. Wellman accomplished for the melting what Mr. Fritz achieved for the rolling of steel. His tilting open-hearth furnace and his charging machine enabled manufacturers to produce ingots on a quantity basis. The inventions of these two men were necessary, each to the other. Without the facilities for shaping the ingots into finished forms, introduced by Mr. Fritz, Mr. Wellman's inventions would have been relatively unimportant. If Mr. Wellman had not found a way to melt and handle steel in large quantities, there would have been no need for Mr. Fritz's efficient mills. The names of Fritz and Wellman must always be linked together as benefactors of the industry.

quired three tons of expensive coke. While in Pittsburgh he also built two crucible furnaces for Singer, Nimick & Co., and later went to Boston in the offices of the Siemens agents. He built a furnace for the Chrome Steel Works, Brooklyn, N. Y., and for other concerns throughout the country.

Mr. Wellman then left the Siemens interests and in 1870 built an open-hearth furnace at the Bay State Iron Works, South Boston, Mass., which proved to be the first installation of its kind in this country to meet with commercial success. The furnace produced a higher quality of steel than previously had been attained and the product was used chiefly for locomotive fire boxes. From Boston, Mr. Wellman returned to his father's plant at Nashua, where he built an open-hearth furnace, and a plate and bar mill.

In 1873 Mr. Wellman went to Cleveland to design and build the plant of the Otis Steel Co. He remained with this company for a period of 16 years as engineer and superintendent. During this time he developed the open-hearth charging machine and introduced the electromagnet for handling pig iron and scrap steel. The first charging machine was operated by hydraulic power, and although it was not entirely satisfactory, it performed the work fairly well and encouraged its inventor to build another one which was driven by electric motors. This proved to be more satisfactory, and was installed in the plant of the Wellman Steel Co., Thurlow, Pa., a company organized by Mr. Wellman in 1890. A second electric machine was installed in the plant of the Standard Steel Works, Burnham, Pa. The machines at Thurlow and Burnham were of the low type. In 1895 four high type machines were built for the Homestead works of the Carnegie Steel Co., and from that time the development and use of electric charging machines has been rapid. Charles M. Schwab once stated that he believed that the open-hearth charging machine effects a saving of 50 cents per ton of steel. Inasmuch as upwards of 300,000,000 tons of open-hearth steel have been manufactured since the conception of the charging machine, it is apparent that Mr. Wellman's invention has been an important factor in the industry.

In 1896 Mr. Wellman organized the Wellman, Seaver Engineering Co. in which his brother, Charles H. Wellman, and John W. Seaver were associated. Later this company was consolidated with the Webster, Camp & Lane Co., Akron, O., forming the Wellman-Seaver-Morgan Co. This company retains the name at the present time, although Samuel T. Wellman retired from active participa-

tion in the firm in the year 1900.

Mr. Wellman was interested in many problems confronting the iron and steel industry and was ever eager to learn more of steelmaking. On one occasion about two years ago he said, "It is 50 years since I left my home among the hills of New Hampshire and started for Pittsburgh to get my first insight into the steel business. I have been trying to learn all about it ever since, but what I don't know would still fill a big book."

He was a member of many engineering and scientific societies including the American Society of Mechanical Engineers, of which he was president in 1901; American Institute of Mining and Metallurgical Engineers; Iron and Steel institute of England; American Iron and Steel institute; Cleveland Engineering society, of which he was an honorary member; and various other organizations.

He is survived by two daughters and three sons, of the latter all living in Cleveland, W. S. Wellman is president of Wellman Products Co., and M. C. and F. S. Wellman are connected with the Wellman Bronze Co.

The funeral services held Monday afternoon at the Euclid Avenue Congregational church, Cleveland, were attended by many prominent engineers, manufacturers and business men. Robert W. Hunt and Ambrose Swasey represented the American Society of Mechanical Engineers. Members of the Cleveland Engineering society and delegations from the Wellman-Seaver-Morgan Co. and Wellman Bronze Co. were present. The pall bearers were Frank A. Scott, E. S. Church, C. C. Smith, L. L. Pope, E. H. Whitlock and John A. Penton, of the Penton Publishing Co.

Obituaries

DAVID S. KENNEDY, superintendent of the structural mill of the Homestead works of the Carnegie Steel Co., died at his summer home in Pulaski, Pa., July 10. He was born in Youngstown, O., 58 years ago and came to Homestead in 1887. He took an active part in the civic and business affairs of the community, having been a burgess of Munhall borough and for several terms a member of the borough council. He was president of the county selective service board of Homestead and the strain and exertion of duties in connection with that service are believed to have directly caused his decline in health.

Elwyn A. Mallory Sr., superintendent of the Milwaukee Corrugating Co., Milwaukee, died at his home recently. He was 66 years of age.

Michael J. Reilly, president of the Reilly Machine Co., Chicago, died suddenly on a street car in Chicago, July 10. He was 50 years old and is survived by his widow and two daughters.

Gen. William Emil Doster, for 35 years counsel for the Bethlehem Steel Co. and its predecessor, the Bethlehem Iron Co., and connected with or interested in many other corporations, died at his home in Bethlehem, Pa., July 2, aged 82 years.

John Burnham Pevear, who for a number of years was western district manager for the General Electric Co., died at his home in Braintree, Mass., recently. He was 51 years of age, and was the son of the late Henry Pevear, president of the Thompson-Houston Electric Co., Lynn, Mass., which was consolidated with the General Electric Co.

William Thum, president of the U. S. Metals Refining Co., East Chicago, Ind., died at his home in Hammond, Ind., recently, of pneumonia. He was connected with the Balback metals refinery at Newark, N. J., for 20 years and built the plant at East Chicago. During the war he perfected a process for safety in handling explosives which was adopted by the government.

George Carpenter, former general manager of the DeLaval Steam Turbine Co., Trenton, N. J., and at one time superintendent of the Standard Roller Co., Philadelphia, was drowned July 6, while bathing in Sanhican creek, Trenton, N. J. It is believed he suffered an attack of heart failure while in the water. He recently resigned from his position at the turbine company.

George G. Lockwood, general manager of the Bryan-Marsh division of the National Lamp works of the General Electric Co., Central Falls, R. I., died June 26 at Association Island, O., at the age of 47. He was taken ill while attending a business meeting in Cleveland, and was taken to Association Island, where an operation was performed, from which he rallied, later suffering a relapse. Most of his business life was passed in New York.

William Gibson Sharp, president of the United States Smelting, Refining & Mining Co., died unexpectedly at his home in Wenham, Mass., July 1. After graduating from the Rensselaer Polytechnic institute in 1879, he was for a number of years connected with the United States geological survey. Later he was superintendent of the Utah Fuel Co., going from there to the Consolidation Coal Co., where he was manager of its mines in the Fairmount district.

Fred S. Sayre, aged 55, secretary and general manager of the Positive Lock Washer Co., Newark, N. J., died suddenly June 15. He was connected with the Vreeland Gas Engine Co. for two years, was bookkeeper for the Positive Lock Washer Co. for two years and traveled for Bless & Drake for a year. Later he rejoined the staff of the Positive Lock Washer Co. as office manager, was made assistant general manager and in 1915 assumed the position he held at the time of his death.

Edwin E. Jackson Jr., one of the most prominent organizers of business corporations in the United States, died at his home in Brooklyn, N. Y., recently, following an attack of acute indigestion. He was born in Binghamton, N. Y., 52 years ago and was educated at Amherst and Columbia universities. He practiced law in New York and his first big business feat was the organization of the so-called hardware trust, out of which he was credited with making $250,000 annually. Later he organized several pools in the wire industry and was fined $45,000 in 1911 for violating the Sherman antitrust law. Mr. Jackson's ability as an organizer netted him large returns and his home in Brooklyn is said to have cost $100,000.

Foreman Class Formed

J. Lewis Hay, of the Hay Foundry & Iron Works, Newark, N. J., has organized a group of foremen of the various departments to study modern production methods. The general subjects covered by the training include the handling of men; materials from purchase to final product; plant plan and layout; principles of organization; elements of cost finding and cost accounting; record keeping; industrial relations; hiring and firing; welfare work; safety; plant teamwork, etc.

Eight-Hour Day Brings Novel Wage Schedule to France





Yesterday Today and Tomorrow in European Industry

BY FRANCIS MILTOUN

Paris Correspondent of The Iron Trade Review

PARIS, June 20.—When M. Loucher, minister of ravitaillement, expressed the hope that the 8-hour day adopted in the metal trade of France would increase the pay of the workmen and increase the production, he reckoned without his host. During the nearly one month that the 8-hour day has been in operation, France has experienced strikes and interior disturbances, especially in the Paris region where at one time nearly a quarter of a million workmen of the metal trades were out. Since that time they have returned to work, but now the miners have struck. For three days not a bucket of coal has been mined in France.

Surprising features of the wage problem in Grenoble district have recently come to the surface. Here it appears a workman is payed, not according to his skill but in proportion to the number of children he has. This is shown in the following agreement, entered into by the employing organizations in order to stop the strikes of metallurgists in the Grenoble region:

1. Immediate application of the 8-hour law.
2. Increase of 40 cents per day for all wage earners, this bringing that of the mere laborer up to the normal equivalent of approximately $3 per day. This arrangement not to include family allocations.
3. The extension of family allowances whereby the married workman, whether his wife is employed at a wage-earning occupation or not, receives an additional $5 per month, with a still further additional $5 for the first child, and $4 per head for all others.

The daily wage of a common laborers with two children is $3.56 and $4.06 for a skilled mechanic. Before the war, without family allowances, wages in this particular legion were 80 cents per day of 10 hours for common laborers, and $1.20 per day of 10 hours for skilled labor.

* * *

Fear Coal Shortage

A cry of alarm has gone up in the French chamber of deputies over the fear that there will not be sufficient supply of coal the coming winter for French industrial and domestic needs. This comes something as a shock when we know that the coal of the Saar basin is to be available; but possible labor troubles are foreseen there; the supply from England it is considered will be nil from now on; the northern French mines only are in about one-fourth of their normal output of before the war; and besides Alsace is to be supplied with approximately 11,000,000 tons which formerly came from Germany. France's prewar need was something like 60,000,000 tons. Actually, at the moment, according to the figures given in the chamber of deputies recently by Jean Perrier, deputy of Isere, the coal production of French mines is but 60 per cent of what it was during the last months of hostilities. Mobilized miners, as their term runs out, are leaving for the better-paid and less onerous work in other lines. For the working of the Saar mines the modus operandi is yet to be arranged, and it is not yet certain what the output will be and how and by whom it will be produced. By the peace treaty Germany will doubtless be compelled to furnish France any coal that she may need, but the details of this are yet to be arranged, indeed the whole peace treaty as to details of working out its finality will have to be discussed for months after the actual signing.

* * *

Register Foreign Firms

The French government is introducing a bill in the chamber of deputies requiring all foreigners to first obtain government authorization before they may acquire or retain ownership in real estate of any kind in any of the frontier departments of France. Such property as might otherwise be owned may not even be leased for a longer period than 18 months. The formal authorization is to be granted by specific decree in each instance, a decree being a law which does not require legislation for its repeal but may be summarily canceled. This is another manifestation of the growing policy of France for the French, and one which will ultimately make it necessary for the foreign operator in France to actually associate himself with a French partner or company stockholders. Failure to observe this regulation will incur seizure and sale by a similar process to that which provides for the sale of the property of minors—a process in the conduct of which the foreigner, like the minor, will have nothing whatever to say.

* * *

Exports To India

American progress in the iron and steel trade of India has been phenomenal during the last years of the war. England's exports of these materials to India fell off from 1914-15 to 1917-18 from 78.5 per cent to 51 per cent; while those of the United States increased from 5.9 per cent to 41 per cent. Germany and Belgium accounted for approximately

8 per cent each of the remainder during the five-year prewar period, but all of this and more has been diverted to America.

Tubes, sheets and wire, and bale and box bands formed a large bulk of the trade. In British circles it is believed that the proportion of traffic to India will not differ greatly in the future from the figures given above, basing this belief upon the fact that the haul from Atlantic ports of the United States is not appreciably greater than that from England.

* * *

Seeks Levant Trade

France, with her new affiliations in the Near East, and her tutelage over Syria, which is to be granted her by the peace treaty, is entering upon a new era of foreign trade. Here she will come into immediate competition with Italy. Under the name of the Compagnie Francaise du Levant, with a capital of 9,000,000 francs ($1,800,000), the French Society for the Exportation of Matallurgic Products has founded a puissant organization. Associated therewith is the Bank of the Parisian Union, which is financing the new Citizen organization, the director of the Salmson Aviation Motors Co., the big Mediterranean shipping company, the Messageries Maritimes, and the Société des Hauts Fourneaux of Pont-à-Mousson. From its composition it is evident that the new organization is essentially a metal-trade organization.

* * *

Implement Needs Heavy

There is great complaint among the farming communities and the authorities alike as to the high prices of French-made farm machinery. This is due to the prime causes of the high prices of labor, the consequent high cost of production and the fact that quantity production is not possible from the fact that the government insists that no paarts for assembly, or semifinished parts, shall be imported.

The Syndical Chamber of Farm Machinery Manufacturers declares absolutely that any reduction in established prices, as agreed with the government, is impossible for the present.

France will not be in a position to produce one-tenth of her requirements for the next two years, unless a regime is instituted which will allow the importation of component parts for assembling. The following figures were announced officially recently to show what agricultural implements France needs: 55,000 plows, 39,350 cultivators, 50,750 harrows, 44,000 disk harrows, 13,000 seeders, 27,000 reapers, 20,000 rakers, 14,000 thrashers, 15,000 binders, and 70,000 farm vehicles. This list does not include motor vehicles, motor cultivators or tractors.

* * *

German Iron Prices

Quotations on German iron still continue to rise. All grades show material increases in May over previous values. The prices in marks per ton, f.o.b. cars, follow:

	Gray Iron.	Hematite.	Gray—Luxembourg.
Last quarter, 1918..	161.50	223.00	130.00
First quarter, 1919..	250.00	314.50	215.00
April, 1919	340.00	366.50	296.50
May, 1919	391.00	407.00	341.50

* * *

Lloyds In France

Lloyd's register of shipping is opening branch quarters in Paris. The French Bureau Veritas hitherto has performed a similar service for French ships and now is to have competition. It is said quasi-officially, appropos of the opening of the Lloyds Paris branch, that 85 per cent of French shipping now under construction is in British yards.

German Output Declines Much in Year

Washington, June 14.—Decline in the German production of pig iron in January and February of 1919 as compared with the same months of 1918 is shown by data as published in *Stahl und Eisen,* the figures having been prepared by the Union of German Iron and Steel Manufacturers.

The figures in metric tons, which do not include the output for Alsace and Lorraine and Luxemburg, follow:

	January 1919	January 1918
Hematite iron	53,347	47,256
Foundry pig iron and castings....	58,361	70,877
Bessemer pig iron (acid process).	1,994	9,384
Thomas pig iron (basic process)..	262,395	393,066
Steel iron, spiegeleisen, ferromanganese and ferrosilicon.....	113,785	207,182
Puddling iron (except spiegeleisen)	8,119	13,712
Other iron	1,351	4,134
Total	499,352	745,611
	February 1919	February 1918
Hematite iron	47,823	58,521
Foundry pig iron and castings...	57,316	67,664
Bessemer pig iron (acid process)	653	12,960
Thomas pig iron (basic process)	238,494	369,882
Steel iron, spiegeleisen, ferromanganese and ferrosilicon.....	118,251	194,207
Puddling iron (except spiegeleisen)	8,584	12,776
Other iron	1,757	2,773
Total	472,878	718,783

Through the return of the Briey basin and the Lorraine territory to France, the iron industry of Germany has been dealt a most severe blow, this fact being readily admitted even by German newspapers. Practically the only iron producing center of any importance left Germany is the Rhenish-Westphalian district.

According to the *Chemiker-Zeitung,* Germany has in recent years built up a great iron and steel industry, of which the principal center is the Rhenish-Westphalian district. It is affirmed that on that industry one-tenth of the population of Germany exists, but the production of ore lately has not kept pace with the output of finished iron, so that more than half of the requirements of the blast furnaces has had to be imported from numerous foreign sources.

Wire Merger Organizes

Pending the selection of a treasurer the meeting of the stockholders of the Clinton-Wright Wire Co., Worcester, Mass., to perfect the new organization has been deferred. Charles F. Fairbanks, Lexington, Mass., who was president and treasurer of the Clinton Wire Cloth Co., Clinton, Mass., and Boston, one of the merged companies has declined to serve as treasurer of the new company. At the outset only 10 directors were named. They are: Chairman of the board, George M. Wright; Frank A. Drury; Paul B. Morgan; Charles F. Fairbanks; Harry Bronner; Richard B. Young and George F. Naphen. Officers are, Evans F. Jones, president; John A. Denholm and George F. Wright, vice presidents.

The company contemplates the erection of extensions of the Palmer, Mass., branch plant of the Wright Wire Co. department, at an estimated cost of $1,500,000. It also plans to put each plant of the company on a 24-hour basis of three 8-hour shifts. Employes will be permitted to buy common stock along lines similar to those of the United States Steel Corp.

Launch Steel Barge

The first of 40 steel barges ordered by the railroad administration, of which the American Bridge Co. has the contract for 25 and the Dravo Construction Co. for 15, was launched at the Ambridge plant of the former company last Thursday afternoon. These barges, which are for use in the Mississippi river trade, are of standard type 230 feet long, 11 feet deep and 45 feet beam. The cargo box is 184 feet long, 9 feet high and 37 feet wide. Oil in bulk can be carried in compartments with which the barges are equipped. The carrying capacity is rated at 2300 tons. About 430 tons of steel is in the construction of these barges.

Ore Production Still Held Down

Steel Corporation and Few Independents Remain Only Active Factors on Ranges—Moving of Town of Hibbing Now Well Under Way—Some Inquiry for Manganiferous Ores is Reappearing

(Special Correspondence)

DULUTH, July 14.—Though no material improvement in mining operations on the Minnesota ranges can be observed, as yet, officials of the various companies interested in this territory are expectant of orders from their headquarters in the east to put on larger forces and to increase production to the close of the season.

"When I first went into the business I was told by one of the most experienced men in the trade not to let myself believe that I was doing better than I really was and so not to flatter myself into rearing up any balloons," said an official of one of the independent companies. He explained that he is naturally an optimist, but at the same time he did not believe the steel trade in this country is going to experience any immediate boom. The season is now so far advanced that this operator doubts whether any extensive programs will be undertaken this season by the railroads, and he believes that the hope of any real trade boom must be put over until 1920.

This producer recently was in receipt of inquiries for both bessemer and nonbessemer ores and he had quoted the established prices. The prospective buyers reported, however, that they had been offered tonnages at from 65 cents to $1 under the list. They agreed to place orders if he would meet the cuts, but he declined.

Estimating Season's Movement

Some of the authorities in the trade have been estimating the season's ore tonnage recently. There is a wide spread in the current estimates. They ranged all the way from 45,000,000 to 52,000,000 and even 55,000,000 tons has been stated. While shipments from the head of the lakes docks from the opening of the season up till June 30 were only slightly over 2,000,000 tons under the amount for the same period last year, it is feared unless the independents speed up materially, the present rate of shipments will not be maintained to the end of the season. It is noted that the grain movement from over the northwest to the terminals here is likely to call for the chartering of a larger percentage of the lake shipping tonnage than ordinarily because of the expected heavy crops of wheat and other grain, and the announced policy of the United States Grain Corp. to export on as large a scale as possible before the close of the lake navigation season. With the probability that some of the large ore carriers will be diverted to the grain trade to a greater or lesser extent at times, it is thought that iron shipments must be cut down from the high basis attained during the last three years.

Moving of Hibbing Under Way

The Oliver Mining Co. is maintaining shipments from its open-pit properties at slightly under last season's record. The company also is affording employment to a large number of miners in pushing stripping operations at some of its properties, and it is making liberal expenditures in other directions. Under the latter category may be mentioned its enterprise of moving Hibbing the "richest village on earth" from its old location to the new townsite established by the company at Alice. The work was started early last fall. In the interval the town may be said to have been on the move. Whole streets of houses have been moved bodily and others have been torn down. Several business buildings have been already erected in the new location and contracts for other mercantile structures to be built this season are about to be let by the mining company. As the reason for the decision of the Oliver interests to inaugurate a grand moving day, experts here estimated that the townsite 40 upon which Hibbing was largely built, has underlying from 25,000,000 to 30,000,000 tons of ore, one of the largest single deposits on the Mesabi range.

Apart from M. A. Hanna & Co. and Pickands-Mather & Co., the independent operators on the ranges may be said to have been holding down their mining operations to the lowest possible limits thus far this season. Commenting upon this cautious policy, as some see it, a prominent mining engineer who has been in close touch with developments in the Lake Superior district for many years, said: "It seems to me that the United States Steel Corp. has pursued a sensible course in getting out the ore and shipping it down the lakes, where it will have it available for use when required. It is quite possible that all but a couple of the independent operators will have reason to regret their inaction later on. They may be scurrying around for ore before the close of the season, and find that it will cost them more to mine and ship it, than if they had worked along in a normal way from the start in the spring."

Several new operations have been announced on the Mesabi range recently, and the outlook now is thought to be more reassuring. The Longyear interests are drilling north of the Bennett mine, what is known as the Russell mine in the Kewatin field. The McDonald 40, east of Ely, Minn., is being worked by the Chippewa Iron Mining Co. of Cincinnati. It is regarded as high-grade property. It starts with a logging railroad and a good equipment. The Cleveland-Cliffs Co. will soon be ready to operate the Boerne mine near the Buffalo property in Hibbing.

Practically all the manganiferous properties on the Cuyuna range are shut down awaiting inquiries for their ores. W. H. Locker, vice president of the American Manganese Mfg. Co., said the company lately had received an inquiry for its Cuyuna Mille Lacs mine ore. This is the first sign of any interest in manganiferous shown since the signing of the armistice, he asserted. Several of the straight ore Cuyuna range mines are being operated however, and shipping from now on is expected to be on a larger scale.

The Minnesota Steel Co. Duluth plant is now operating around 33 per cent of capacity, and approximately 1300 men are being employed, as compared with 3000 men during the war period. The company's No. 1 furnace is in blast and No. 2 furnace is down at this time for relining. The company is taking advantage of the slack period to push through much-needed repair work.

The Root & Van Dervoort Engineering Co., Champaign, Ill., has increased its capitalization from $1,346,200 to $7,500,000 and has increased its directors.

Orders Are Lax in Tool Market

Dealers Report Little Business Done in the Past Week—No Large Inquiries Are Being Put Out—Building Activity is Expected to Bring Trade From Its Lethargy—Advances Rumored at Chicago

MACHINE tool dealers throughout the various distributing districts, during the past week, report very few orders or inquiries of any consequence, but despite this, state they are doing a fair amount of business on orders for single machines, which continue to come out in steady volume. Some dealers report that the demand for tools is much heavier than is apparent on the surface, stating that in the central states, automobile manufacturers are having such a hard time supplying their immediate wants, that they are purchasing used equipment in lieu of new tools. Other manufacturers are reported holding up their orders in the hope of lower prices, but dealers state that such hopes are useless, as every indication points to advances instead of declines.

In the East there was little buying and very few inquiries. Apparently purchasers in that district are holding off for a more favorable time. On the other hand dealers state the stagnant condition of the market is only natural for this season of the year.

A fair amount of business was done in the Cleveland district, but no large inquiries are out, most of the business being done on a small scale. Dealers are filling the requirements of their regular customers, who place their orders without inquiring in the general market. One dealer reported tool manufacturers at Cincinnati are preparing to operate their plants on a wartime basis, in order to supply the demand. The automobile trade is active, it purchasing a large quantity of used machines in place of new ones. Building activity is on the increase and a number of orders are expected to be developed by these.

At Pittsburgh, little business was done, dealers confining their efforts to sales of individual machines. No lists of any size have made their appearance. Proposed plant additions and improvements to plants are increasing and are expected to enliven the market shortly. Various reasons are given for the lack of large inquiries, but dealers point out in some instances this summer's business is better than that offered during other years. The Weirton Steel Co. has practically purchased all necessary equipment for its new steel plant at Weirton, W. Va. Motive equipment is the only equipment yet to be awarded for this plant. As yet no railroad business of any consequence has appeared.

The large demand for lathes in Chicago territory has brought out the rumor that manufacturers are considering a 10 per cent increase in price within the near future, while dealers in the district are forecasting a general advance of from 5 to 10 per cent on other equipment. This follows an increase in price of shapers, recorded last week. Little business was done during the week outside of dealers filling inquiries for single machines. Despite the absence of large orders some dealers are experiencing difficulty in obtaining delivery on practically all kinds of machines.

Tool Inquiries Light in Eastern Market

ALTHOUGH plant expansion in the east is being carried out on a large scale, the equipment market has still to reflect this fact, as for the past several weeks buying of machine tools has been exceedingly light. Larger lists are virtually nonexistent and the run of small orders is not up to the volume noted in the spring. Some interests expect little real revival in machine tool trading in the east until the railroads come into the market. A rather wide range of opinion prevails as to about when this will be; nevertheless, it is generally conceded that the next month or six weeks should see considerable activity in railroad buying.

While there is little real business to thoroughly test the market, prices of machine tools are steadily showing a stronger tendency upward. In a few instances there have been slight advances, and in several others, manufacturers have stated quite flatly that their next revision would be to a higher level.

Included in current inquiries is that of the Southern Sales Corp., 68 Williams street, New York, calling for a shaper, an engine lathe, and a radial drill for shipment to Cuba. The Treadwell Engineering Co., Easton, Pa., will be in the market shortly for equipment for a new erecting shop. The Steel Equipment Corp., Avenel, N. J., will require new equipment, much of which will be of special character, for a new addition. The American Motor Truck & Tractor Co., 110 West Fortieth street, New York, will utilize the plant of the Portland Mfg. Co., Portland, Conn., which it recently purchased, for the production of trucks and tractors.

The Bethlehem Steel Co., Bethlehem, Pa., is the largest buyer in the eastern crane market at present. In addition to the inquiries recently noted, in previous issues of THE IRON TRADE REVIEW, this company is now in the market for six 5-ton electric cranes. It is understood these cranes are for Sparrows Point, Md. Aside from this business, few new inquiries are out at this time.

The Standard Oil Co. has placed orders for two 30-ton, two 20-ton and two 10-ton cranes for its Bayway, N. J., plant. The American Locomotive Works has placed orders for two 50-ton cranes with the Shaw Electric Crane Co., while a report is current to the effect the Bethlehem Steel Co. has placed an order with Pawling

A Modern "Village Blacksmith"

LUDLUM STEEL
COGGING BILLETS

The Hammer shown below is one of our eight steam hammers that operate exclusively on cogging billets.

We also have a 12,000 pound steam hammer—the largest in the surrounding territory.

We invite you to visit our plant and watch these monsters work.

Prompt shipments from our warehouse stock at Watervliet, N. Y., Detroit, Mich., Chicago, Ill., or Cambridge, Mass., handled through our District Offices.

LUDLUM STEEL COMPANY

General Offices and Works: WATERVLIET, N. Y.

Branch Offices: **New York City Philadelphia Chicago Detroit Cleveland Pittsburgh Cambridge, Mass. Cincinnati Buffalo**

Ludlum Steel Consistently Uniform

Mohawk Extra
High Speed Steel

Pompton
Carbon Tool Steel

Albany
Alloy Tool Steel

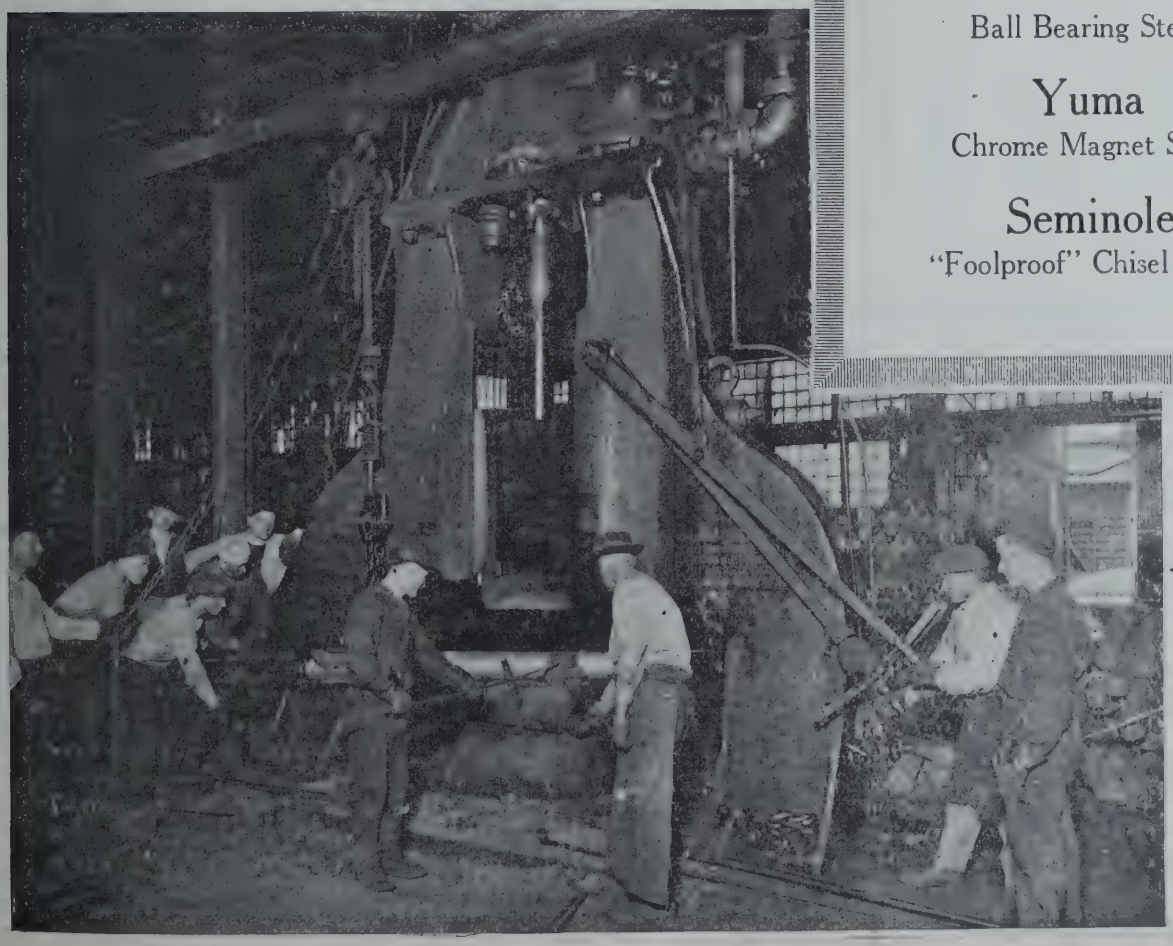
Oneida
Oil Hardening Steel

Huron
Alloy Die Steel

Teton
Ball Bearing Steel

Yuma
Chrome Magnet Steel

Seminole
"Foolproof" Chisel Steel



ESTABLISHED LUDLUM 1854

Say you saw it in THE IRON TRADE REVIEW

& Harnischfeger Co. for several cranes. Orders for a 10-ton gantry crane for South America has been placed by W. R. Grace with the Milwaukee Electric Crane & Mfg. Co.

Lathe Demand Presages Price Advance

DEMAND for high grade lathes, medium to large size, is so great in the Chicago territory that an advance in price of 10 per cent in the near future is predicted by dealers. Some dealers are forecasting a general advance of from 5 to 10 per cent, following the increase of 8 per cent in the price of shapers. It is a noticeable fact that while business is good, the demand is almost entirely for single machines. One exception to this is an inquiry now being made for seven steam drop hammers. Armour & Co. placed an order for five small machines for one of its shops and the Atchison, Topeka & Santa Fe railroad has an inquiry out for three machines, one a lathe, another a drill press and the third a pipe machine. The Morris Fertilizer Co. is in the market for 17 machines, the list being put out by the Chicago Pneumatic Tool Co., and the post office department is inquiring for $40,000 worth of tools for garage equipment. Dealers are experiencing difficulty in obtaining delivery on nearly all types of machines, delay being anywhere from 30 to 60 days.

Large Inquiries Are Absent

INQUIRIES of size are lacking in the Cleveland district, but despite this dealers report business fair with indications of heavy demand shortly. One dealer stated that at the present time the demand is greater than the supply and that machine tool manufacturers in the Cincinnati district, several of whom he represents, are preparing to operate their plants on a war time basis, that is, night and day shifts. Another dealer states that the demand for new machinery is so great that it cannot be supplied, and consequently purchasers are buying used equipment in lieu of new tools. Labor conditions are reported to be in such a state that machine tool manufacturers are unable to obtain the necessary amount of men, other industries, such as the automobile trade, acquiring all skilled labor as rapidly as possible.

Although no large inquiries have appeared in the district, inquiries for single machines continue in steady volume, as has been the rule for the past month, and dealers are converting these into sales as fast as possible, which as a whole usually total a fairly good volume.

Building activity is on the increase and many large orders are expected to be developed through these. As yet the Allen Motor Car Co., Columbus, O., which plans to purchase $50,000 worth of machinery, has not issued a list. The Chandler Motor Car Co., Cleveland, which has been purchasing machinery for the past few weeks, is reported contemplating the erection of a large plant addition and will probably be in the market for equipment shortly. The Colburn Machine & Tool Co., Franklin, Pa., is reported planning the erection of a large plant in Cleveland, to be built at an estimated cost of $140,000, and undoubtedly will be in the market for equipment. The Apex Electric Mfg. Co., Cleveland, will build a plant addition, as will the Cuyahoga Galvanizing & Mfg. Co., 1280 East Fifty-ninth street, Cleveland. The Hydraulic Pressed Steel Co., Cleveland, is purchasing machinery of all kinds. Cleveland dealers have an inquiry from the J. C. Wilson Mfg Co., Ltd., Arnprior, Ont., for a vertical boring mill, 6 to 8 feet. The Commercial Engine Co., Los Angeles, Cal., has inquired in the district for a horizontal boring mill. The Brewer-Titchener Corp., Cortland, N. Y., is inquiring for punch presses. Saiberlich Bros., 767 Drew street, Appleton, Wis., plan to build a tractor plant, 120 x 120 feet, which they state will be

China Offers Market For Machine Tools

THE present time seems especially favorable for the introduction of American machinery and machine tools in China, according to a recent statement issued by the bureau of foreign and domestic commerce, in which American machinery manufacturers are urged to take advantage of the unusual opportunity offered. According to the statement, numerous textile mills are being erected, as well as iron foundries, and a large variety of other industries, which show that the country is apparently at the beginning of a very considerable industrial development.

"Other countries are aware of the opportunity, and British manufacturers have been arranging to supply their machinery gratuitously to the engineering college which they have established in Hongkong, to a textile school in Shanghai, and to a number of Chinese industrial schools and other institutions which require machinery and mechanical equipment. The more intelligent Chinese consider American machinery excellent in design, and superior in construction, and for that reason are anxious to equip their schools with it, although it is difficult to do so owing to the universal lack of funds," says P. R. Eldridge, chief, Far Eastern division of the bureau of foreign and domestic commerce.

"It has been felt in the past that American machinery was not suited for the use of the Chinese, but this seems to be an error, as it is agreed among those who are employing Chinese in machine shops and mechanical work, that their intelligence, perseverance and manual dexterity quickly develop them into skilled mechanics under proper instructions.

"As these people are not accustomed to machinery, it will be necessary to teach them how to use American tools and the best way seems to be through the industrial and manual training schools, many of which are now in existence. It can be taken for granted that graduates of these schools will endeavor to have the machinery to which they are accustomed introduced in the factories, and as they are practically the only trained workmen they will have great influence in the selection of equipment. The ordinary manual training school requires lathes from 12 to 14 inches and 16-inch lathes of the gap type. Planers up to 24 x 24 x 48 inches are needed; and, also, 14 to 16-inch shaping machines and small milling machines, as well as small and medium universal grinding machines, wood turning lathes, small buzz planers, circular and band saws, and numerous small tools."

It is pointed out that it would be advantageous if the manufacturers of machinery would either present some of their machinery free to these schools, to loan it, or to sell it at reduced prices. Manufacturers who are interested can get details from the bureau of foreign and domestic commerce, and Julean Arnold, commercial attache, Peking, China.

Clean Water Means Greater Boiler Efficiency

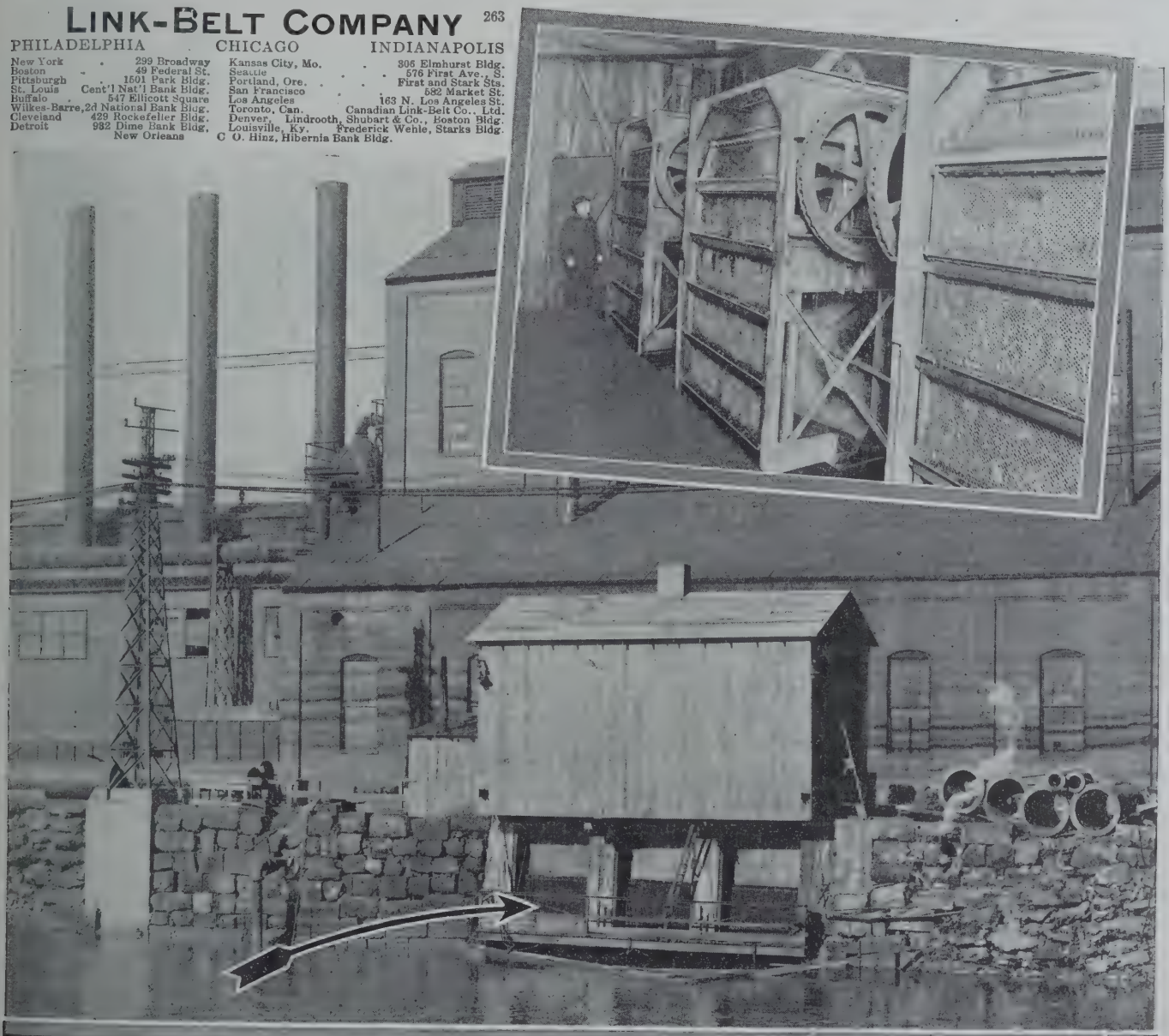
STATIONARY water screens which become clogged with trash, leaves and debris of various kinds results in a dangerously low water supply to boilers, often making a complete shut-down of the entire plant necessary while clearing the intake.

Link-Belt Traveling Water Screens are self-cleaning. They need no attention whatever and insure a steady supply of clean water to boilers at all times. There are no expensive shut-downs, no extra cleaning costs, and no dangers to power plant equipment due to trashy water.

We show a Link-Belt installation at the power plant of the Republic Iron & Steel Company at Youngstown. Send for a copy of our Water Screen Book.

LINK-BELT COMPANY 263

PHILADELPHIA		CHICAGO		INDIANAPOLIS	
New York	299 Broadway	Kansas City, Mo.	306 Elmhurst Bldg.		
Boston	49 Federal St.	Seattle	576 First Ave., S.		
Pittsburgh	1501 Park Bldg.	Portland, Ore.	First and Stark Sts.		
St. Louis	Cent'l Nat'l Bank Bldg.	San Francisco	582 Market St.		
Buffalo	547 Ellicott Square	Los Angeles	163 N. Los Angeles St.		
Wilkes-Barre,	2d National Bank Bldg.	Toronto, Can.	Canadian Link-Belt Co., Ltd.		
Cleveland	429 Rockefeller Bldg.	Denver,	Lindrooth, Shubart & Co., Boston Bldg.		
Detroit	932 Dime Bank Bldg.	Louisville, Ky.	Frederick Wehle, Starks Bldg.		
New Orleans		C. O. Hinz, Hibernia Bank Bldg.			



LINK-BELT
Traveling Water Screens

We Also Make

- ☐ Elevators and Conveyors
- ☐ Link-Belt and Sprockets
- ☐ Silent Chain Drives
- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Locomotive Cranes
- ☐ Portable Loaders
- ☐ Coal and Ashes Systems
- ☐ Coal Pockets

Write for Catalogs
Place X in Square

Say you saw it in THE IRON TRADE REVIEW

modernly equipped for the manufacture of tractors. Three additions are being added to the plant of the Star Foundry Co., Troy, O. The Mohegan Tube Co., Brooklyn, N. Y., is adding an extension to its plant, 100 x 150 feet, and will be in the market shortly for all kinds of metal working equipment.

Dealers are advising purchasers to buy their necessary equipment now. Predictions of higher prices are being made. Some dealers report that several manufacturers, who are known to be in the market for equipment, are holding up their purchases, in the hope that prices will drop. Other dealers state that most manufacturers, especially the automobile trade is active in the market, but are unable to supply their wants immediately, and therefore are buying used equipment, all of which will have to eventually be replaced.

From the dealers' standpoint the market although lax on big orders is fair, and the usual dull period of other years experienced during the summer, as yet has not been apparent in the district.

Buyers Await Lower Prices

THE Weirton Steel Co. has practically completed purchases of equipment for its new steel plant now being constructed at Weirton, W. Va. Last week it awarded to the General Electric Co. the power plant, turbine engines, motor generator sets and switchboards, and to the Westinghouse Electric & Mfg. Co. the continuous mill and other mill motors. Motive equipment for the blooming mill is yet to be awarded. It has not yet been decided whether this mill will be electrically or steam driven, but in the trade the expectation is that it will be steam driven and a Pittsburgh district company is reported to be the low bidder. The Cleveland Crane & Engineering Co., Wickliffe, O., has taken two 5-ton and one 10-ton cranes for the byproduct coke plant of the Pittsburgh Crucible Steel Co., Midland, Pa. The Whittaker-Glessner Co., Wheeling, W. Va., has placed an order for one 15-ton crane with the Champion Engineering Co., Kenton, O., which also has booked two 20-ton cranes from the Wheeling Mold & Foundry Co., Wheeling, W. Va. Both orders were placed through the Pittsburgh office of the Champion company. Cranes for the Stark, O., car plant of the Pennsylvania railroad, lines west, have not yet been placed, but it is expected they will be soon. Eight cranes will be installed at this plant ranging in size from 10 to 250 tons. Expectations run strong among the Pittsburgh district machinery and tool trade that some of the big projects which were put up for bids some time ago will be closed shortly. While prices of small tools appear to have struck bottom, this is not the case with heavy equipment and because makers of the latter are not liberally supplied with business, they are inclined to revise their bids frequently. This creates the belief in the minds of buyers that still lower prices might have been named had they waited. It is because buyers are not satisfied that prices have struck bottom that some big equipment specifications have not been placed.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Along Middle Atlantic Seaboard

BROOKLYN, N. Y.—The B. & L. Metal Stamping Co. has been incorporated with $5000 capital, by S. and L. Bady and S. Levinson, 136 Bay Thirty-first street.

BROOKLYN, N. Y.—The Schaefer Machine Co. has been incorporated with $25,000 capital, by F. M. Livingston, G. D. Ackley and J. G. Williams, 341 St. John's place.

BROOKLYN, N. Y.—The Brooklyn Drydock & Repair Corp. recently was incorporated with $5000 active capital, by T. J. Dobson, C. P. Schroetter and F. J. V. Wagner, 64 Wall street.

BROOKLYN, N. Y.—The G. F. Richer Mfg. Co. has been incorporated with $75,000 capital to manufacture and deal in tools, surgical instruments, etc., by G. F. Richer, M. Richer. 481 Monor avenue and W. J. Hoske. 618 Monroe street.

BROOKLYN, N. Y.—The Smith Randall Engineering Corp. recently was incorporated with $25,000 capital, to engage in the manufacture of tractors and engines, by F. W. Smith, G. W. Randall and M. F. Hickman, 210 East Forty-second street.

BROOKLYN, N. Y.—Joseph Gaydica, operating an iron and metal works at 1433 Thirty-eighth street, is reported having plans prepared for the erection of a 1-story shop addition, 105 x 180 feet, to be built at an estimated cost of $60,000.

BUFFALO.—The Wire Wheel Corp., 1700 Elmwood street, plans a shipping plant to cost $20,000.

BUFFALO.—The Rogers, Brown Iron Co., Erie County Bank building, is taking bids on a machine shop and storage plant, 66 x 262 feet.

BUFFALO.—Levering Bros., Baltimore, have awarded a contract for mill alterations and the erection of a cupola and charging structure at their plant here.

BUFFALO.—The Superior Bronze & Aluminum Mfg. Co. has been incorporated to make castings, etc., with $5,000 capital, by J. L. Dunn, W. D. Hopkins and L. O. Ploss.

BUFFALO.—The J. P. Devine Co., 1372 Clinton street, will spend $200,000 for a foundry 90 x 225 feet and has let the contract to Chas. Borrick & Sons Co.

BUFFALO.—Rice & Adams, 180 Chandler street, manufacturers of dairy machinery, recently filed plans for the erection of a 3-story plant addition to be built at an estimated cost of $45,000.

GARRISON, N. Y.—The Canopus Iron Corp. recently was incorporated with $1,000,000 capital, by J. G. Pearse, G. O. Angell and R. I. Gutham, 353 West Fifty-seventh street.

HADLEY, N. Y.—The Hadley Light & Power Co. has been incorporated with $25,000 capital, by W. Fowler, J. H. Smead and J. J. Breen.

LOCKPORT, N. Y.—The Root Electric Sign Co. has been incorporated with $200,000 capital, by C. T. Metzger, A. L. Hoag and I. A. Root.

NEW YORK.—The Chatham Die Casting Co. recently was incorporated with $35,000 capital, by H. Baudney, A. Hakanson and J. Preuss, 385 Fort Washington avenue.

NEW YORK.—The Victory Engine Co. recently was incorporated with $50,000 capital, by C. H. Atkins, C. O. Assmus and M. A. Farley, 28 Sterling place.

NEW YORK.—The F. B. Potterton Co., pipe fittings and valves, recently was incorporated with $10,000 capital, by F. B. Potterton, H. Weiss and A. Hild, 83 St. John street.

ROCHESTER, N. Y.—The General Fuel Saving Corp. has been incorporated to manufacture fuel saving devices, with $225,000 capital, by E. J. Shea, F. B. Shea and V. D. Ludington, Holley, N. Y.

SYRACUSE, N. Y.—The Syracuse Sander Mfg. Co. will establish a plant at Brookville, Ont., under the name of the Canada Sander Mfg. Co.

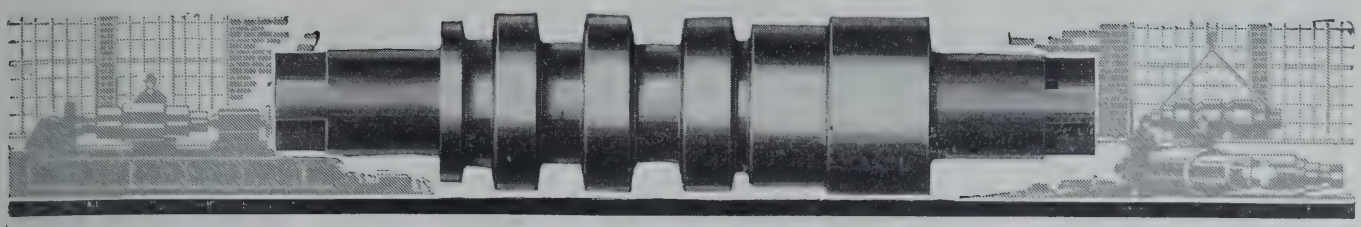
TONAWANDA, N. Y.—The Buffalo Bolt Co. has completed plans for the erection of a plant addition, 81 x 171 feet.

ERIE, PA.—The Erie City Iron Works will build a plant 40 x 122 feet.

ERIE, PA.—Rickert-Shafer Co., manufacturer of machinery and tools, contemplates a plant addition 2-stories, 33 x 150 feet. It will be in the market for equipment shortly.

HOMESTEAD, PA.—The Homestead Valve Co. has awarded the Austin Co. a contract for the erection of a foundry, 27 x 40 feet, to be erected at an estimated cost of $10,000.

KANE, PA.—The Hollingsworth Knife Co. is having



Fighting with Rolling Mill Jim



Say Fellas.—

Did you see Dempsey knock H---out of Willard at Toledo? That's what I've been tryin' to do to those Hubbard rolls, but they knocked H--- out of the tonnage instead.

I can't even knock H--- out of Hubbard.

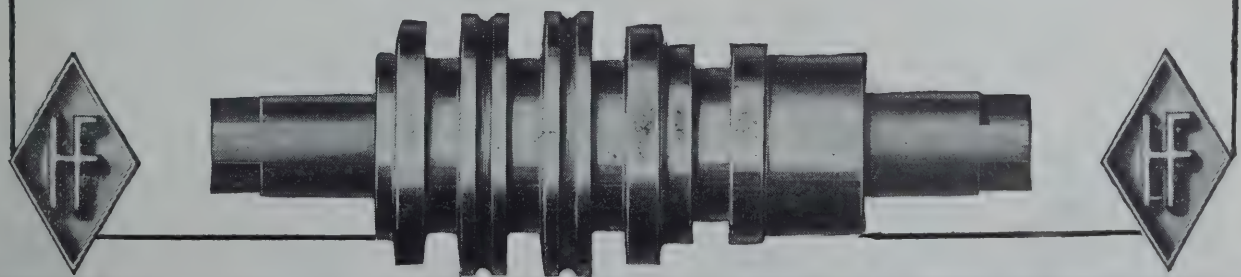
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



plans prepared for a 2-story and basement addition, 40 x 80 feet, to cost $20,000. H. Hollingsworth is president.

MANHEIM, PA.—The Bond Foundry & Machine Co. has let the contract for an addition.

MEADVILLE, PA.—Harlet D. Carpenter, of this city, will build a lighting plant at Cochranton, Pa.

NEW CASTLE, PA.—The New Castle Clay Co., the Youngstown Clay Products Co. and the Carbon Brick Co. have consolidated as the Liberty Clay Products Co., with a capital of $500,000 and will spend $200,000 for plant improvements.

PHILADELPHIA.—Hughes Foulkrod & Co. have a contract for the erection of 12 metal storehouses at Quantico, Va.

PHILADELPHIA.—The General Machine Co., Thompson and Clementine streets, is reported planning the erection of a 2-story addition, 50 x 147 feet, to be erected at an estimated cost of $10,000.

PITTSBURGH.—The Damascus Bronze Co., 928 South avenue, is taking bids for the erection of a 3-story plant, 66 x 75 feet.

PITTSBURGH.—The Russell Machine Co. has been chartered with $100,000 capital, by Charles J. Lang, Wilkinsburg, Pa., Edward J. Lang and others.

PITTSBURGH.—The Pittsburgh Open-Hearth Steel Co., Pittsburgh, has been incorporated with a capital of $5000 to manufacture ingots, billets, bars, plates, rails, etc., by J. H. McCloy, Cecil, Pa.; G. S. McCloy, Ingram, Pa., and others.

PITTSBURGH.—Dilworth, Porter & Co. has awarded to the McClintic-Marshall Co. a contract for four buildings estimated to cost $110,000. The buildings will be used as machine shop, foundry, forge and store and will be one, two and three stories high.

STROUDSBURG, PA.—Part of the plant of the International Boiler Works recently was damaged by fire.

WILLIAMSPORT, PA.—The American Farm Equipment Co., capital $100,000, has been incorporated by Charles A. Bair, William J. Housel, S. J. MacMullin, Williamsport.

WILLIAMSPORT, PA.—The Lycoming Foundry & Machine Co. has started on improvements to its plant which includes the erection of a 3-story office building and an addition to the machine shop.

YORK, PA.—The York Steel Corp. will built a plant.

AVENEL, N. J.—The Steel Equipment Corp., manufacturer of steel furniture and office equipment, will shortly undertake the erection of an extension.

ELIZABETH, N. J.—Singer Mfg. Co. will erect a foundry, 180 x 260 feet, contract having been awarded to Turner Construction Co. at estimated cost of $500,000.

HOBOKEN, N. J.—The Greater New York Ship Service has been incorporated to build boats, ships, vessels, etc., with $100,000 capital.

HOBOKEN, N. J.—The plant of the Titjen & Lang Dry Dock Co. recently was damaged by fire. The loss was estimated at $15,000.

LYNDHURST, N. J.—The Lyndhurst Body & Equipment Co., automobile bodies, etc., has been incorporated with $125,000 capital.

NEWARK, N. J.—Weston Electrical Instrument Co. will erect a storehouse.

NEWARK, N. J.—The Seton Leather Co., 62 Berona street, will erect a 1-story boiler plant.

NEWARK, N. J.—A $20,000 addition, 60 x 600 feet, will be erected here by the National Carbide Gas Co.

NEWARK, N. J.—Butterworth-Judson Corp., Doremus avenue and Central railroad, has a permit for a 2-story chemical laboratory.

NEWARK, N. J.—George Zisch has filed plans for the erection of a 1-story machine shop, 40 x 80 feet, to be built at an estimated cost of $10,000.

PASSAIC, N. J.—The Central Supply Co., plumbing materials, recently was incorporated with $50,000 capital, by Louis Levy, Joseph Hirschberg and A. H. Dunberg.

PASSAIC, N. J.—The J. G. Schmidt Iron Works, 330 Harrison street, has been incorporated with $100,000 capital, to manufacture structural steel and ornamental iron works.

PATERSON, N. J.—The Sipp Machine Co., Keen street, is having plans prepared for the erection of a 2-story plant addition, 45 x 85 feet, to be built at an estimated cost of $15,000.

TRENTON, N. J.—Hutchinson Storage Battery Co., 209 South Warren street, let a contract to Frank D. Pavory, 162 Pennington avenue, for a 2-story, factory to cost $16,500.

BALTIMORE.—Frank M. Krasmer, Dauphin street, is having plans prepared for the erection of a 2-story machine shop, 36 x 78 feet.

BALTIMORE.—The first unit of the plant of the Canion Air Brake Co., 563 Calvert building, will be a 2-story machine shop, 60 x 200 feet.

BALTIMORE.—Wm. Haselhurst, Park avenue and Preston street, is planning to build a 2-story blacksmith shop 100 x 150 feet to manufacture automobile springs.

BALTIMORE.—An option has been taken by F. S. Weise, realty broker, representing a New York manufacturing company, on property on West Baltimore street, on which to erect a $200,000 plant. The name of the concern is being withheld.

HAGERSTOWN, MD.—The Hagerstown Welding & Automobile Works, Virginia avenue, has been organized and will erect a 1-story 40 x 100 foot building and a 2-story 40 x 50 foot building.

ROANOKE, VA.—The Metal Mfg. Co. recently increased its capital from $10,000 to $25,000.

Belgians Buy American Tools From Army

(Special Correspondence.)

PARIS, June 22.—The Belgian government "Office Central d'information," has made known the fact that a syndicate has been formed known as "La Construction Metallique," for the express purpose of co-operative action to purchase from the American army in France and Belgium, any and all supplies which that army may be willing to cede in the nature of machinery and tools. The agreement has been concluded under conditions satisfactory to the Belgian purchasers. Prices are to be based upon quotations for similar articles in 1914, plus 55 per cent c.i.f. Antwerp. Purchasers are to be allowed a credit of three years at a moderate rate of interest and deliveries are to be made within stated times, which are assured of being relatively short.

These are exceptional conditions in favor of starting the wheels of production and trade in Belgium turning again with at least a semblance of their former speed. A Belgian officer, who recently returned to Brussels from a mission to Germany, has stated that innumerable Belgian machines were observed in operation in German factories, their own machinery lying idle. The difficulty of reclaiming stolen Belgian machinery is in the identification of it and for this reason it is necessary that Belgium acquire new equipment. The proposition of the American army, it is expected, will do much toward cementing the former social and business friendships between the United States and Belgium, and it is thought the newly acquired American machinery will do much toward making Belgium the first to recover from the effects of the war.

New England States

DEERING JUNCTION, ME.—The American Can Co., New York, has let the contract to the Turner Construction Co., Boston and New York, for a 4-story and basement, 220 x 240-foot factory and a 3-story, 42 x 112-foot service building to cost $300,000.

PORTLAND, ME.—Fire recently damaged the building of th Cumberland County Light & Power Co.

BOSTON.—The Northern Mining Co. has been incorporated with $5000 capital by Mark A. Lawton, Edward S. Page, Melrose, Mass.; and William E. Hutchins.

BOSTON.—The New England American Motor Car Corp. has been incorporated with $100,000 capital by Harrison D. Dockray, Walter G. Burns and M. T. Atwood.

BOSTON.—The Nelson Corp. will build a 1-story, 400 x 500-foot manufacturing plant, a 2-story, 80 x 400-foot receiving building, a 4-story, 60 x 120-foot office building and a 2-story, 84 x 87-foot power house.

HOLYOKE, MASS.—The Cowan Truck Co. has let the contract for a brick, 2-story, 100 x 200-foot mill addition.

IPSWICH, MASS.—The Boulais Tractor Co. has been incorporated to build machinery with $50,000 capital by Wilfred Boulais, Ovild H. Rathe and Edward J. Marcorelle.

TAUNTON, MASS.—Brownell & Burt, Inc., has been incorporated to make autos, carriages, etc., with $15,000 capital by Daniel L. Brownell, George H. Burt and E. H. Brownell.

QUINCY, MASS.—Fire recently damaged part of the plant of the Quincy Electric Light & Power Co. The loss has been estimated at $15,000.

WINCHESTER, MASS.—The John J. Sullivan & Co., Inc., has been incorporatel to make gas fittings, tinsmiths and plumbing supplies and materials with $2500 capital by Charles D. Mahan, John J. Sullivan and M. A. Sullivan.

WORCESTER, MASS.—Bids have closed for an addition and alterations to the foundry and storage building of the Crompton & Knowles loom works, to cost $25,000.

WORCESTER, MASS.—James Smith & Son, machinists, have let the contract for a 2-story, 60 x 212-foot manufacturing building and boiler house to cost $38,000.

PAWTUCKET, R. I.—The Muirhead Gas Heater

FARRELL-CHEEK
STEEL CASTINGS



There are certain broad characteristics about Farrell-Cheek Steel Castings that make them different.

We are not wedded to the use of any one material or form of construction. Your requirements are treated as an individual problem and the special materials best adapted to that problem are supplied. A close adherence to your patterns means a saving of expensive waste materials. Even more important to you is the saving of machine time.

By the confidence imposed in us by our customers in laying their ideas before us we feel certain that such procedure by you will be to our mutual advantage.

Farrell-Cheek Steel Foundry Company

Makers of Steel Castings that are a Little Better Than the Next Best

Sandusky, Ohio

MEMBER OF
STEEL FOUNDERS' SOCIETY OF AMERICA
NEW YORK, U.S.A.

Co., Inc., has been incorporated with $10,000 capital by James Muirhead, Frank Garvin and Edward L. Letourneau.

BRIDGEPORT, CONN.—The Perfection Shear Co. has been incorporated with $500,000 capital by E. F. Von Weytberg, and G. P. Brett Jr., both of Fairfield, Conn., and A. Dunn, Stratford, Conn.

HARTFORD, CONN.—Bids close July 22 for a brick, 2-story addition to the factory of the Arrow Electric Co., to cost $45,000.

NORWALK, CONN.—The Nash Engineering Co. will build a 3-story factory addition.

PORTLAND, CONN.—The plant of the Portland Mfg. Co. has been purchased by the American Motor Truck & Tractor Co., 110 West Fortieth street, New York, which will convert it for its own use.

PUTNAM, CONN.—The Nightingale-More Mills, Inc., has let the contract for the erection of a hydroelectric plant.

Central States Activity

KALAMAZOO, MICH.—The Goodale Co. will triple its capacity by the erection of a foundry, 80 x 80 feet with a single cupola, to manufacture brake shoes, and a foundry 140 x 280 feet, with two cupolas and an oven.

LANSING, MICH.—The Reo Motor Car Co. is erecting a machine shop, 2-stories, 200 x 541 feet.

LANSING, MICH.—The John Bohnet Co., manufacturer of motor truck bodies, is reported planning to erect a new plant in the fall.

LANSING, MICH.—The Lansing Stamping & Tool Co. is reported planning to install three new presses at an estimated cost of $35,000.

LAPEER, MICH.—The plant of the Bostic Stove Co. recently damaged by fire is being rebuilt at an estimated cost of $10,000.

MUSKEGON, MICH.—The Eagle Foundry & Machine Co. recently was incorporated with $50,000 capital, by Charles Habel, W. E. Jeannot and A. Shaw.

OWOSSO, MICH.—The Owosso Bronze Bearings Co. has started on the erection of a foundry and machine shop, both, 40 x 100 feet.

PONTIAC, MICH.—The Van Auken Co., motor car tops and equipment, is reported planning to erect a new plant.

PONTIAC, MICH.—The Pontiac Spring Works will erect a $100,000 plant, 100 x 186 feet and 63 x 87 feet, to replace the plant damaged by fire some time ago.

VERONA, MICH.—The Union Steam Pump Co. has started on the erection of a machine shop, 150 x 200 feet, which is the first unit of a proposed new plant which will be built at an estimated cost of $500,000.

CHICAGO.—Freyn, Brassert & Co., engineers, have been awarded a contract for the design and construction of an industrial building for the Grip Nut Co.

EAST ST. LOUIS, ILL.—The plant of the East St. Louis Light & Power Co. recently was damaged by fire. The loss has been estimated at $60,000.

GRANITE CITY, ILL.—The St. Louis Coke & Chemical Co. has under construction here, a battery of 80 by-product coke ovens.

ROCK ISLAND, ILL.—The Standard Metal Products Co. recently was incorporated with $30,000 capital to engage in the manufacture of silos and coal pockets. Richard Sybenga is president of the company.

SPRINGFIELD, ILL.—The Racine-Sattley Co. has started work on a plant addition, which will house the gas engine plant of the company. Total expenditure has been estimated at $50,000.

INDIANAPOLIS.—The Collapsible Auto Rim Adjustable Tool Mfg. Co. has been incorporated with $100,000 capital, by Edward H. Bauman, Dave Yover and Paul P. Scharffin.

ASHLAND, O.—Henry L. Doherty & Co. is reported planning a 10,000 kilowatt turbine at the company's power station near Mansfield, O.

CINCINNATI.—The plant of the Standard Electic Tool Co. recently was slightly damaged by fire.

CLEVELAND.—The Chandler Motor Car Co. is reported contemplating two additions and an office building, to cost $500,000.

CLEVELAND.—The Colver Mfg. Co. has awarded the Austin Co. contracts for two buildings, 35 x 60 feet and 90 x 280 feet.

CLEVELAND.—The Metals Smelting Co. has been incorporated with $10,000 capital, by Max P. Goodman, Society for Savings building, and others.

CLEVELAND.—Through the Chamber of Commerce it is reported that the Drew Electric & Mfg. Co., an Indianapolis corporation, has purchased a 2-acre site here on which to eerct a plant at an estimated cost of $50,000, to include a machine shop and brass foundry. James H. Drew is president.

COLUMBUS, O.—The plant of the Union Fork & Hoe Co. recently was damaged by fire. It will be rebuilt.

COLUMBUS, O.—The Shartle Machinery Co. recently was incorporated with $10,000 capital, by George W. Shartle and others.

DAYTON, O.—The Dayton Steel Co., recently incorporated, has purchased the plant of the Dayton Structural Steel Co. and will equip it for fabricating structural steel. J. A. Berger is president of the company.

DEFIANCE, O.—The Ohio Electric Railway is considering the erection of a power plant at Lima, O.

DELAWARE, O.—The Sunway Stove Co. contemplates a plant addition. Architect Frank Mason is preparing plans.

ELYRIA, O.—The Colson Co. has started on the erection of a $100,000 addition to its metal working plant.

FOSTORIA, O.—The Fostoria Tool & Machine Co., which was recently organized with $500,000 capital, is reported planning a 4-story plant.

HAMILTON, O.—Contracts for doubling the capacity of the Hooven, Owens & Rentschler Co. power plant, have been awarded to the F. K. Vaughn Building Co. The power house will be equipped with automatic stokers.

LIMA, O.—The Ohio Electric Co. is planning a new lighting and power plant. J. E. Dugan is general manager.

MANSFIELD, O.—The Fuller Engineering Co., Allentown, Pa., has a contract from the Mansfield Sheet & Tin Plate Co. for the installation of pulverized coal burning equipment.

PORTSMOUTH, O.—The Reliable Tractor & Engine Co. has been incorporated by Chris Heer, F. E. Adams and George W. Platt.

STEUBENVILLE, O.—A. J. Shantz & Sons, manufacturers of organs, is reported planning a 1-story building, 40 x 80 feet.

TOLEDO, O.—The Mather Spring Co. has leased a 1-story building, 70 x 120 feet.

TOLEDO, O.—The Toledo Metal Products Co. recently was incorporated with $100,000 capital by Frank S. Schroeder and others.

TROY, O.—The Star Foundry Co. will erect two plant additions, 25 x 48 feet and 85 x 90 feet. W. T. Anglemeyer is president.

YOUNGSTOWN, O.—The Youngstown Welding Co. has been incorporated with $50,000 capital, by Walter D. McKay and others.

ZANESVILLE, O.—The Dockery Brass & Iron Co. has been purchased by Louis H. Wise. It is reported extensions to its foundry and machine shop are contemplated.

Business in Canada

TORONTO, ONT.—The Northern Aluminum Co., Ltd., 158 Sterling road, is reported planning to build a plant at an estimated cost of $60,000. C. A. P. Turner, 1005 Lindsay building, Winnipeg, is the architect and engineer in charge.

TORONTO, ONT. — The Carmichael Waterproofing Co., Ltd., has enlarged the scope of its business by including a sheet metal works for the manufacture of sheet metal building material, etc. This department will be in charge of W. H. Stacey.

TORONTO, ONT.—The Canada Oil Gas Heaters, Ltd., has been incorporated to manufacture oil gas generating machines, oil heaters, gas stoves, etc., with $500,000 capital, by Murray H. Gillam, 773 Indian road; Morely P. Van der Voort and others.

TORONTO, ONT.—The Beaver Truck Builders, Ltd., have been incorporated to manufacture automobiles, trucks, engines, motors, etc., with $250,000 capital, by Richmond W. Hart, 1126 Traders Bank building; Charles H. C. Leggott, 116 Arundel avenue, and others.

TORONTO, ONT.—The Siemon Tractor Corp. has been granted a license to carry on business in Ontario as manufacturers of motor tractors, trucks, engines, motors, etc., with $200,000 capital, and has appointed Jacob C. Siemon, 309 Confederation Life building, to be its attorney.

WALKERVILLE, ONT.—The Acme Roofing Co., Walker road, plans a factory estimated to cost $40,000. G. J. Keith is manager.

WELLAND, ONT.—The Volta Mfg. Co., Ltd., has been incorporated to operate electric furnaces and to manufacture castings, iron and steel goods, etc., with $100,000 capital by Robert T. Turnbull, John Young both of Welland, Ont.; Charles W. Sim of St. Catharines, Ont., and others.

WINDSOR, ONT.—The Leggett & Platt Spring Bed Co. is building an addition 51 x 131 feet.

WINDSOR, ONT.—The John V. Gray Construction Co., Confederation Life building, Toronto, Ont., has the general contract for a plant here for the Champion Spark Plug Co. of Canada, Ltd., to cost $60,000.

WINDSOR, ONT.—The Standard Computing Scale Co., of Canada, Ltd., has been incorporated to manufacture computing scales, etc., with $10,000 capital, by Joseph M. Bucher, Thomas F. Comeford, Ferdinand P. Goettman and others of Detroit.

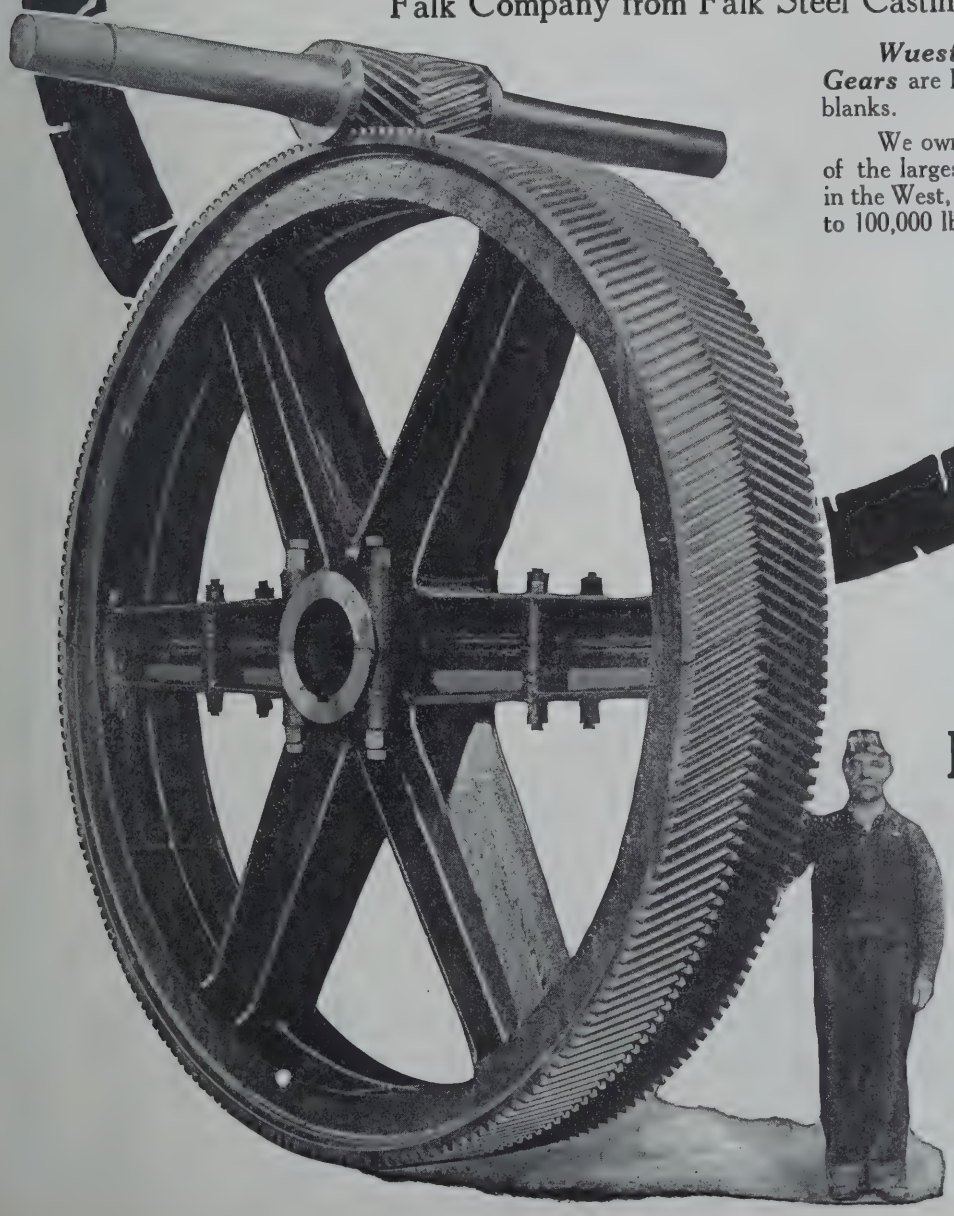
WINGHAM, ONT.—The Aero Cushion Tire Co., recently organized, has purchased two buildings from the Western Foundry Co.

YORK, ONT.—Plans have been prepared for a bridge shop here for the Grand Trunk railway, Union

PRINCE RUPERT, B. C.—The Prince Rupert Dry Dock & Engineering Co., Ltd., recently leased the Grand Truck Pacific railway's drydock for the establishment of a shipyard.

WUEST HERRINGBONE GEARS

If you are interested in obtaining
—maximum mechanical efficiency
—elimination of shock and vibration
—minimum noise
—absolute reliability
specify ***Wuest Herringbone Gears,*** manufactured by the Falk Company from Falk Steel Castings.



Wuest Herringbone Gears are hobbed from solid blanks.

We own and operate one of the largest Steel Foundries in the West, capacity 1 lb. to 100,000 lbs.

The Falk Company
Milwaukee, Wis.

Agents:

Pittsburgh—W. O. Beyer, 1024 Park Bldg.
New York—M. P. Fillingham, 50 Church St.
Wilkes-Barre—Vulcan Iron Works
Denver—Denver Engineering Works
San Francisco—F. W. Grimwood, Rialto Bldg.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Indiana, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.40c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.35c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.35c
Iron bars, New York	3.37c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.45c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.65c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10, blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.37c
No. 28 black sheets, New York	5.37c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.33c
No. 28 black sheets, St. Louis	5.30c
No. 28 black sheets, St. Paul	5.595c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.72c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.68c
No. 28 galv. sheets, St. Louis	6.79c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, New York	6.50c
Bands, Boston	4.70c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

	Black	Galvanized
STANDARD WEIGHT		
Butt Weld		
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..
PLUGGED AND REAMED		
Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28
DOUBLE EXTRA STRONG PLAIN		
Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

	Black	Galvanized
THREADS AND COUPLINGS		
Butt Weld		
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½
DOUBLE EXTRA STRONG PLAIN ENDS		
Butt Weld		
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$20.00
Chicago	19.50 to 20.00
Eastern Pennsylvania	19.00 to 20.00
Cleveland	19.25 to 20.00
St. Louis	19.00 to 19.50
Buffalo	17.50 to 18.50
New York (dealers' prices)	14.75 to 15.25
New Jersey points	**14.00 to 14.50**
Cincinnati	16.00 to 16.50
Birmingham	15.00 to 16.00
Valleys	16.50 to 17.50
Boston (dealers)	15.00 to 16.00

BUNDLED SHEETS

Pittsburgh	$14.50 to 15.00
Eastern Pennsylvania	13.50 to 14.50
Cleveland	15.10 to 15.50
Buffalo	12.00 to 13.00
Cincinnati	12.50 to 13.00
St. Louis	11.00 to 11.50

STEEL RAILS, SHORT

Chicago	$21.50 to 22.00
Cleveland	**20.50 to 21.00**
Boston (Dealers)	14.00 to 14.50
St. Louis	21.00 to 21.50
Birmingham	16.00 to 18.00
Cincinnati	16.00 to 16.50

STOVE PLATE

Pittsburgh	$17.00 to 18.00
Chicago	20.50 to 21.00
Eastern Pennsylvania	18.00 to 19.00
Cleveland	19.25 to 20.25
St. Louis	20.00 to 20.50
Buffalo	19.00 to 20.00
New Jersey points	17.25 to 18.25
Cincinnati	16.00 to 16.50
Birmingham	18.00 to 20.00
Boston (consumers)	17.50 to 18.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$23.00 to 24.00
Chicago, billet and bloom crops	22.00 to 23.00
Eastern Penna. (guaranteed)	24.00 to 25.00
Buffalo	**21.00 to 22.00**

SHOVELING STEEL

Chicago	$19.00 to 19.50
St. Louis	17.50 to 18.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$20.50 to 21.00
Chicago	20.50 to 21.00
St. Louis	20.50 to 21.00

BALED SHEETS

Pittsburgh	$17.50 to 18.00
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	$20.50 to 21.00
St. Louis	19.00 to 19.50
Eastern Pennsylvania	19.00 to 20.00

BOILER PLATE, CUT

Chicago, No. 1	$16.50 to 17.00
St. Louis, No. 1	16.50 to 17.00

ANGLE BARS—STEEL

Chicago	$20.50 to 21.00
St. Louis	19.00 to 20.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$20.00 to 21.00
Pittsburgh, No. 2	19.00 to 20.00
Chicago, No. 1	20.50 to 21.50
Chicago, No. 2	19.50 to 20.00
Eastern Pennsylvania, No. 1	25.00 to 26.00
Cleveland, No. 1	21.00 to 22.00
St. Louis, No. 1	20.00 to 20.50
St. Louis, No. 2	19.00 to 19.50
Buffalo, No. 1	20.00 to 20.50
Cincinnati, No. 1	18.75 to 19.25
Birmingham, No. 1	15.00 to 16.00
New York No. 1 (dealers' price)	21.00 to 22.00
Valleys No. 1	**18.00 to 19.00**
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$19.00 to 19.50
Eastern Pennsylvania, ungraded	14.00 to 15.00
Buffalo	16.00 to 17.00
New York (dealers)	15.25 to 15.75
Boston (dealers)	14.50 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$21.00 to 22.00

CITY WROUGHT

New York, long (dealers' price)	$17.75 to 18.25
New York, special	15.25 to 15.75

BUSHELING

Chicago, No. 1	$18.50 to 19.00
Chicago, No. 2	13.50 to 14.00
Cleveland, No. 1	18.50 to 19.50
Cleveland, No. 2	16.00 to 16.50
St. Louis, No. 1	18.00 to 18.50
Buffalo, No. 1	14.00 to 15.00
Cincinnati, No. 1	14.75 to 15.25
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.00 to 13.50
Chicago	9.50 to 10.00
Eastern Pennsylvania	13.50 to 14.00
Eastern Pennsylvania (blast furn.)	12.50 to 13.00
Cleveland	11.00 to 12.00
Buffalo	9.00 to 10.00
New York (dealers 'price)	9.50 to 10.00
St. Louis	11.00 to 11.50
Cincinnati	8.00 to 8.50
Birmingham	11.00 to 12.00
Valleys	11.00 to 11.50
Boston (dealers)	8.00 to 8.50
Boston (blast furnace) (dealers)	7.50 to 8.00

CAST IRON BORINGS

Pittsburgh	$14.00 to 14.50
Chicago	12.50 to 13.00
Eastern Pennsylvania	14.50 to15.00
Cleveland	12.50 to 13.50
St. Louis	11.00 to 11.50
Buffalo	11.50 to 12.50
New York (dealers' price)	10.50 to 11.00
Cincinnati	9.50 to 10.00
Birmingham	11.00 to 12.00
Valleys	11.50 to 12.00
Boston (dealers)	8.50 to 9.00
Boston (blast furnace)	8.00 to 8.50

IRON AXLES

Pittsburgh	$29.00 to 30.00
Chicago	31.50 to 32.50
Eastern Pennsylvania	**28.00 to 30.00**
Cleveland	31.00 to 32.00
St. Louis	32.00 to 32.50
Buffalo	26.00 to 27.00
Cincinnati	26.00 to 26.50

IRON RAILS

Chicago	$22.00 to 23.00
Cleveland	25.00 to 26.00
St. Louis	23.00 to 23.50
Buffalo	23.00 to 24.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$17.00 to 17.50
Cleveland	16.00 to 17.00
St. Louis	17.50 to 18.00
Cincinnati	14.00 to 14.50

GRATE BARS

Chicago	$19.50 to 20.00
Cleveland	19.50 to 20.50
Buffalo	19.00 to 20.00
New Jersey points	16.75 to 17.25
Eastern Pennsylvania	18.00 to 19.00

FORGE FLASHINGS

Cleveland, large	$13.50 to 14.50
Cleveland, small	16.00 to 17.00
Chicago, small	15.50 to 16.00
Boston (dealers)	**10.00 to 10.50**

FORGE SCRAP

Chicago	$18.50 to 19.00
Eastern Pennsylvania, No. 1	14.00 to 15.00

ARCH BARS AND TRANSOMS

Chicago	26.00 to 27.00
St. Louis	24.50 to 25.00

ANGLE BARS—IRON

Chicago	$24.50 to 25.50
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$15.50 to 16.00
Eastern Pennsylvania	14.50 to 15.00
Boston (dealers)	8.50 to 9.00
Cleveland	16.00 to 16.50
Buffalo	13.00 to 14.00
Chicago	15.00 to 15.50

STEEL CAR AXLES

Pittsburgh	$25.00 to 26.00
Eastern Pennsylvania	28.00 to 30.00
Cleveland	30.00 to 31.00
St. Louis	30.00 to 30.50
Buffalo	26.00 to 27.00
Chicago	29.50 to 30.00
New York (dealers' price)	21.25 to 22.25
Birmingham	20.00 to 23.00
Boston (dealers)	19.00 to 20.00

SHAFTING

Eastern Pennsylvania	$25.00 to 27.00
St. Louis	28.00 to 28.50
New York (dealers' price)	19.75 to 20.75
Chicago	25.00 to 26.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh iron	$22.00 to 23.00
Pittsburgh, steel	19.50 to 20.00
Chicago, iron	24.50 to 25.00
Eastern Pennsylvania, iron	**23.00 to 24.00**
Cleveland, iron	24.00 to 25.50
St. Louis, iron	24.50 to 25.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 22.00
Birmingham, tram car	**20.00 to 22.00**
Boston	23.00 to 24.00
Cincinnati	19.50 to 20.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	**$21.00 to 22.00**
Chicago, cupola	25.00 to 26.00
Eastern Pennsylvania, cupola	23.00 to 24.00
Cleveland, cupola	23.50 to 24.50
New York, cupola (dealers' price)	20.50 to 21.50
Cincinnati, No. 1, cupola	22.00 to 22.50
Birmingham, cupola	22.00 to 23.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	25.00 to 25.50
Buffalo	22.50 to 23.00
Boston	23.50 to 24.50

HEAVY CAST

New York (dealers' price)	$20.50 to 21.50
Buffalo	**21.00 to 22.00**
Pittsburgh	20.00 to 20.50
Eastern Pennsylvania	21.00 to 21.50
Cleveland	18.50 to 19.50
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$16.50 to 17.00
Pittsburgh, agricultural	15.50 to 16.00
Chicago, railroad	21.50 to 22.00
Chicago agricultural	20.50 to 21.00
Eastern Pennsylvania, railroad	18.00 to 19.00
Cleveland, railroad	20.00 to 21.00
Cleveland, agricultural	16.50 to 17.50
St. Louis, railroad	17.50 to 18.00
St. Louis, agricultural	18.00 to 18.50
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	16.00 to 16.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$24.00 to 25.00
Chicago	24.00 to 25.00
Eastern Pennsylvania	21.00 to 22.00
Cleveland	22.00 to 23.00
St. Louis	22.00 to 22.50
Birmingham	15.00 to 16.00
Boston (dealers)	15.00 to 15.50

LOCOMOTIVE TIRES

Chicago	$22.00 to 23.00
St. Louis	20.50 to 21.00

BOILER PUNCHINGS

Chicago	$22.00 to 23.00
Eastern Pennsylvania	21.00 to 22.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

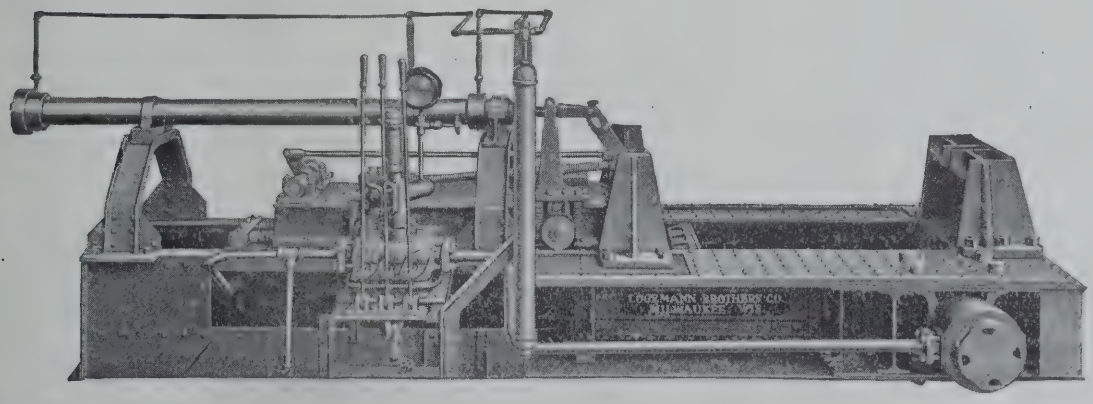
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

AIR COMPRESSORS.—A 16-page booklet recently was published by the Union Steam Pump Co., Battle Creek, Mich., in which it describes and illustrates its line of air compressors of the steam, belt and motor driven, horizontal and vertical types. Capacities of the various compressors and other data are given.

RIVETS, BOLTS AND NUTS—Catalog No. 19 has been published by the Falls Rivet Co., Kent, O., in which illustrations and lists of the company's standard products are given, as well as ready-reference tables of data concerning rivets, carriage and machine bolts, stove and tire bolts, coach screws, hot pressed nuts, cold pressed and semifinished nuts, etc.

FOUNDRY EQUIPMENT—Sand-blasts and allied equipment are described and illustrated in a small booklet being distributed by th Pangborn Corp., Hagerstown, Md. The equipment described, includes, hose, cabinet, barrel, rotary table and room sand-blast, dust arresters, dust exhausters, abrasive separators, moisture and oil separators, sand dryers, sand-blast cars, etc. All of these articles are fully described and illustrated.

MILLING MACHINES — An illustrated loose-leaf booklet containing data on milling machines and their attachments, is being distributed by the Kempsmith Mfg. Co., Milwaukee. The first part of the booklet contains a small history of the company which was organized in 1888. Plain, universal and production milling machines, either belt or motor driven, and vertical, circular, universal, cam and slotting attachments, dividing heads, index centers, vises, arbors, collets, etc., are all fully described and illustrated.

FLOOR GRINDER—The St. Louis Machine Tool Co., St. Louis, is circulating a leaflet in which it describes and illustrates a heavy floor grinder. This grinder is equipped with arbors which are larger than usual, are 0.40 per cent carbon steel and have extra coarse pitch, square threads. Bearings are long, have large oil chambers which are filled and drained through a pipe connection at the back and so arranged that the oil cannot overflow. The bearings are lubricated by chains which provide a large flow of oil. A number of accessories are described and illustrated.

GEARS—R. D. Nuttall Co., Chicago, has issued a booklet containing data on gears for tractor service. A number of illustrations are given, showing the various stages of gear manufacture, such as testing a gear with a master gear to determine whether the centers are correct and teeth accurately set; giving bevel gear the running test; determining resistance of gears to abrasion; determining the hardness of gears after heat treatment, etc. Other illustrations show a jackshaft transmission with cover removed; live transmission with cover removed; live-axle transmission unit ready to be installed in a tractor; jackshaft transmission for use with bull-gear and illustrations of gear-tooth fractures showing the uniform close-grained structure of the gear teeth.

STANDARD BUILDINGS—The Austin Co., Cleveland, industrial engineer and builder, is circulating a large illustrated catalog in which standard factory buildings which it designs and constructs, are described and illustrated. According to the booklet, the company erects permanent and substantial factory buildings quickly, eliminating by standardization and quantity production delays otherwise unavoidable. Summed up the booklet contains an explanation of the company's method of factory construction, including engineering data, illustrations and descriptions of the 10 types of standard factory buildings which it builds, as well as a presentation of the company's industrial building service for the design, construction and equipment of complete factories.

INDUSTRIAL TRACTORS—A well illustrated 18-page booklet is being circulated by the Mercury Mfg. Co., Chicago, in which tractors for use in plants, warehouses, etc., are described and illustrated. These tractors are designed to pull trackless trains of trailers and can be used to either push or pull loads. They are driven by electric motors, which obtain their current from storage batteries contained in the body of the tractor. According to the booklet, the power of these tractors in terms of draw-bar pull, varies from 600 to 1800 pounds, depending upon the power equipment. The illustrations show the tractors in actual operation at lumber yards, railroad stations, oil plants, tire manufacturing plants, foundries, machine shops, packing plants and mail order houses.

Business Change

Reorganization of the Chatham Machine & Tool Works, New York, has been effected and hereafter the company will transact business under the name of the Chatham Die Casting Co., at 128 Mott street, New York.

* * *

General offices of the Permalife Storage Battery Co. recently were moved to Indianapolis, where the company has leased the old plant of the Pathfinder Automobile Co.

* * *

The Bronzo Alumina Corp., Buffalo, manufacturers of die castings as well as sand castings in brass, bronze and aluminum, has removed its plant from Tonawanda, N. Y., to Buffalo, where it is located at 212-218 Winchester avenue.

* * *

A Cleveland office has been opened in the Garfield building, by the Sharon Steel Hoop Co., Sharon, Pa., in charge of R. C. Garlick. This office will take care of the northern Ohio and northern Indiana territories.

Opportunities Abroad

Information Can be Obtained From the Bureau of Foreign and Domestic Commerce. Requests Should be on Separate Sheets and Should be Accompanied by Opportunity Number

A party in Switzerland wishes to get in touch with exporters of American goods. Correspondence should be in French. Opportunity No. 29884.

A company in England desires an agency on a commission basis for the sale of general merchandise, cutlery, fancy leather goods, canned goods, textiles, chemicals and novelties. Opportunity No. 29,874.

The purchase and agency for all kinds of sanitary ware, toilet equipment, sinks in fire clay, bath tubs in enamel ware, gas water heaters and construction materials, are desired by a party in Belgium. Correspondence should be in French. Opportunity No. 29875.

A commercial agent in Switzerland desires to be put in touch with manufacturers who wish representation in that country. Opportunity No. 29878.

The purchase of asbestos packing, piston rings, drills, files, magnetos, copper connections, wheels, automobiles, tools, parts, tires, automobile accessories, etc., are desired by a firm in Spain. Opportunity No. 29879.

A firm in Italy wishes to purchase or secure an agency for soft steel for making bolts and nuts, known under the German name, "Weicheisen," sheet resistance 38 to 42 per cent, prolongment 20 to 25 per cent. Opportunity No. 29880.

The purchase by a company in Norway of electrical supplies, gas and electric fixtures, iron, steel boilers, various metals, shipbuilding materials, engines, electrical cable-making machinery, flour mill machinery, motion picture machinery, etc., is desired. Opportunity No. 29876.

An American firm in Salvador desires to secure representation in the Republics of Salvador and Honduras for road-making machinery and equipment of all kinds, blacksmith tools, gasoline and steam pumps, iron pipe, building materials, tools and accessories for silversmiths, goldsmiths and watch repairers. Opportunity No. 29883.

A commission merchant who has resided in Turkey for several years desires to return to that country or to the near East as a representative for the sale of farm machinery, gasoline engines, fertilizers, meats and provisions. Opportunity No. 29885.

An English company wishes to secure agencies for manufactured or unmanufactured Virginia tobacco, leather, for boot and shoe making, upholstering machinery, metals, etc. Opportunity No. 29888.

An importer in Belgium wishes to purchase or secure an agency for bathtubs, wash basins, enamel ware, gas water heaters, etc. Opportunity No. 29889.

A firm in Italy desires to purchase concrete manufacturing machinery. Correspondence should be in Italian. Opportunity No. 29891.

Cable quotations are urgently desired by a company in Brazil for caustic soda, soda ash, acetic acid, sulphate soda, sulphate lead and barbed wire. Opportunity No. 29862.

A municipality in Ecuador has asked for tenders for the construction of an electric light and power plant. Bids will be received until Sept. 1. Opportunity No. 29864.

The purchase of a 300-ton seagoing vessel, preferably iron hull, is desired by a party in Mexico. Opportunity No. 29869.

A manufacturer's agent in Australia desires to secure an agency from manufacturers of hardware and motor car accessories. Opportunity No. 29871.

The purchase and agency is desired by a party in Belgium for the sale of instruments for the reproduction of plans, scientific instruments, surveying instruments, compasses, etc. Opportunity No. 29870.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, July 24, 1919 *No. 4*

Labor Threat Being Discounted

Iron and Steel Industry Anticipates Minimum of Disturbance From Unionizing Movement —Market Continues to Expand Steadily—Automobile Builders Place Large Tonnages—Scattered Advances in Price Announced in Several Products

MANIFEST propaganda of union labor agitators being carried on in the daily press has failed to impart the slightest effect upon the iron and steel market. Business moves forward in a growing volume which is being spread over an increasing number of consuming classes and production is working closer steadily to the capacity line. Some of the largest interests with a widely diversified production now are on a 90 per cent basis. The industry is inclined to discount greatly the extravagant claims of union organizers who have been at work among the mill forces for some months, recalling the fiction and failures that have marked similar efforts in the past because the rank and file of the workmen always have withheld their sympathies from such movements. This confidence of the industry arises largely from the fact that the question of higher wages is not involved inasmuch as employes have been kept at the maximum of about 140 per cent above the prewar basis notwithstanding the decline of 18 to 21 per cent in iron and steel prices since the armistice period. At the same time developments are being followed closely because of their possible bearing upon the none-too-adequate labor supply now available.

The Carnegie Steel Co. expects to have 45 to 46 blast furnaces in commission by the end of the present week, a gain of 13 to 14 stacks in the past four weeks. The American Sheet & Tin Plate Co. has in operation 90 per cent of its sheet and 95 per cent of its tin plate capacity.

Foreign Sales Are Good

A reduction of $5 per ton in ferromanganese by English producers which places their prices below the schedule of domestic makers is interesting but scarcely is considered in retaliation for the sale of American iron and steel to the British Isles. Another sale of American girder rails in this case to Sheffield has occasioned comment. One exporter reports additional sales of 8000 tons of steel to England. The heavy advance in coal costs continues to force up British iron and steel prices. Coke is now around $14 to $15 per ton as compared with $4.30 before the war. The best export buying from this country is by Japan and the Far East. Japan is insistently seeking sheets and offering premiums. That country has purchased 10,000 tons of rails, 3000 to 4000 tons of sheet bars and its recent inquiries for tin plate total probably 200,000 boxes. Pittsburgh mills are bidding on 24,000 tons of ship steel for Japan.

Big Orders Are Placed

Distribution has been made to various mills of contracts for upwards of 300,000 tons of bars, sheets, tubes and cold rolled steel representing 12-months' requirements by two large automobile interests in Detroit and Ohio territory. The sheet tonnage placed by one of these builders, the Ford Motor Co., is reported at 80,000 with about one-half as much to the other buyer. About 200,000 tons of bar stock are included. It is understood that on at least a large part of this business no advance was paid for the 1920 deliveries.

Independent producers of wire products have taken the lead in advancing prices. The changes announced by two companies range from $2 in wire to $5 in nail products. Cast iron pipe makers have added $2 to their schedules in the west. A Chicago maker of tie plates has advanced $3 per ton. Eastern bar iron makers have advanced prices $3 a ton and report some sales on the new basis. As a rule, however, the larger producers are not inclined to favor higher prices until operations are better rounded out.

Basic Inquiry Appearing

Pig iron selling keeps up at a fair rate. Shipments generally exceed current production notwithstanding the fact that a number of plants are holding back on receiving iron because of labor troubles. The total of these interruptions is considerable. A negotiation for 50,000 to 75,000 tons of last half basic by a Mahoning valley consumer is welcomed by the furnaces in view of the sluggish market that heretofore has prevailed in this grade. Other lots of basic are being sought in various districts. The New York Air Brake Co. has closed for 10,000 tons of foundry iron. A new export sale of 5000 tons of basic has been made. Pig iron prices continue to gather strength and one valley maker has advanced $2 to $28.75 for the base grade for last quarter. Additional merchant furnaces are resuming.

JULY 24, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - 1147 Peoples Gas Bldg
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - 426 Old South Bldg.
PHILADELPHIA - - - - 1316 Land Title Bldg.
PITTSBURGH - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Big Strike Talk, Small Facts

NEWSPAPER reports of threatening labor troubles in the iron and steel industry need to be read in the light of the past to be given their true importance. It is a cardinal fact that the labor unions, despite intensive efforts exerted at times over the past 15 or 20 years, have never been able to make much progress in organizing the iron and steel industry. The conclusion inevitably asserts itself that the men have received fair treatment on the whole in the matter of wages and other considerations and that there have been no prolonged grievances to drive the rank and file into the union ranks.

Since the period of prosperity for the iron and steel industry brought on by the war was inaugurated in 1915, wages of iron and steel workers have been advanced about 140 per cent. This advanced scale of wages remains in effect and unchanged today notwithstanding the fact that since the armistice iron and steel prices have declined over 18 per cent on leading finished steel products, and over 21 per cent on pig iron. According to the statistics of the bureau of labor for April of this year, although a decrease of 30,000 was shown in the number of men employed in 106 typical establishments of the iron and steel industry as compared with the corresponding month in 1918, the combined payrolls were $150,000 greater. This represents an increase of 1.4 per cent in wage total notwithstanding a decrease of 15 per cent in the number of employes. With the exception of the ready-made clothing industry, no other major industry of the country made a showing so favorable to its employes as iron and steel.

Against this record of practical performance, the reported demands of the unions given out at Pittsburgh approach the grotesque. Some of these are:

"Increase in wages sufficient to guarantee American standards of living."

"Standard scales of wages in all trade and all classes of workers."

"Principles of seniority to apply in the maintenance, reduction and increase of working forces."

"Abolition of physical examination of applicants for employment."

"Abolition of company unions."

The last demand has considerable significance. It is a thrust against the representative plan of plant control which has been adopted with great success by a number of large independent steel companies. Manifestly the leaders of the general unions fundamentally must be opposed to inside plant control else they are likely to be looking for jobs.

Another statement credited to the strike agitators declares the movement has been inaugurated because the Steel corporation has disregarded a request from the president of the Federation of Labor to define its attitude regarding the recognition of unions and collective bargaining. This is a surprising declaration because the Steel corporation's labor policy always has been unalterably in favor of the open shop and that fact is widely known, certainly by none better than the unions. Only on May 20 in correspondence with an official of the Amalgamated association, Judge Gary said:

"We stand for the open shop which permits a man to engage in the different lines of employment whether he belongs to a union or not. We think this attitude secures the best results to the employes generally and to the employers."

History shows the Amalgamated Association of Iron, Steel and Tin Workers, which obviously would be the leader in any general strikes of dissimilar unions in the industry always has claimed far more influence and membership than it had the facts to show. It is recalled that in 1902 when a general strike was called, the Amalgamated association claimed that 200,000 to 300,000 men, largely belonging to the union, were idle. Through the enterprise of THE IRON TRADE REVIEW at that time it was shown through an exposure of the Amalgamated association's own records that the actual membership was something like 12,000. Now the union leaders are playing their usual game of feeding large figures and claims to an uninformed or biased daily press. While any form of labor disturbance at this time in the iron and steel industry would be regrettable and costly to all

concerned, the main element of misfortune would be that the public through ignorance might attach to it much greater importance than the facts warrant. It is certain that a strike in any event would not be extensive enough to be a major obstacle to the industry's rising prosperity. If a strike does come the iron and steel industry could do nothing better for itself than to give the widest publicity to all the facts for its record of generous treatment of its men stands virtually unequalled for a whole industry. If the public once grasps the true facts, there can be no question as to where its sympathies will rest.

Exchange Runs Against Trade

COMPLICATIONS of the foreign exchanges have long been regarded by practical men of business as belonging in the realm of academic discussion and theory. Last week, however, the wild gyrations of pound sterling and the drastic downward movement of other European currencies in the American exchange market brought home the timeliness of the subject to the man in the street.

Complacently basing hopes of expanded industrial activity in a large measure upon expectation of a swelling volume of orders from abroad, this country now is beginning to realize that unless something is done to steady the erratic exchange market and prevent its complete demoralization exports of necessity, particularly to European countries, will be curtailed. As the situation stands now Europeans who seek to buy in the United States must pay a stiff premium upon the dollar for what they purchase. By the amount of this premium is the cost increased.

Because of their huge debts in this country and their tremendous excess of imports from America, these countries welcome a natural weapon which will assist them in scaling down this excess of buying in the United States and in expanding their exports to this country. They are making no effort to remedy the condition. If a remedy is to be applied it is up to the United States to apply it. Otherwise Europe notwithstanding its great needs will buy only such indispensable raw material and other goods as positively cannot be obtained elsewhere. For other purchases the neutrals certainly and probably the allies will turn to Germany, which is already making a strong bid for trade, where the depreciation of the mark will offer an attraction in contrast with the obstacle of the premium on the dollar.

What is the remedy? First of all must come the machinery by which Europe may be granted long time credits to carry buyers over the period of low exchange rates. Next in importance is the liberal investment of American capital in foreign securities for the purpose of helping stabilize exchanges. Last of all, American sellers in the European market, if they would overcome German competition and the handicap of the exchanges, must price their goods at the most reasonable figure possible. The people of Europe are going to buy in the cheapest market and much as they would prefer to deal with the United States they will not countenance what seems like an exploitation of their unfortunate position.

Metals Adjust to New Basis

AN excellent example of the trend of business sentiment the past several months is found in the nonferrous metal markets. When the armistice was signed last November a widespread feeling existed that prices would decline to something like prewar levels, in view of the large producing capacity established during the war, large stocks and the slackened demand of peacetime conditions. Being highly speculative and therefore extremely sensitive to changes in sentiment, metal prices started to decline. Copper dropped from 26c on Nov. 11 to 14.50c in early spring; zinc declined from 8c to 6c; lead dropped from 8.05c to 5c. But business sentiment veered on another tack about the time the now-defunct industrial board plan failed in its efforts to fix prices of steel products.

Copper buying began in May, with a rise in prices that has thus far amounted to 9 cents a pound and is apparently not yet halted, the metal being sold last week at 23.50c. Zinc recovered from 6c to 8c, and still is advancing. Lead has been somewhat slower to respond, but has recovered 0.75c from the low point of 5c, of which gain one-half was accomplished last week. Following is a table which tells the story of the rebound in copper, zinc and lead prices in cents per pound.

	Copper	Zinc	Lead
Price Nov. 11, 1918.....	26.00	8.00	8.05
Price July 18, 1919	23.00	8.00	5.75
Low price of 1910.....	14.50	6.00	5.00
Average price for 30 years before war	15.50	6.00	4.60

The price movement of these metals reflects the growing acceptance by the public of a new and lower buying power of the dollar. The discounting of the transition from war to peace was overdone and the markets are hastening to adjust metal values in their proper relation to other commodity prices. A copper statistician points out that it normally required 2 to 2¼ pounds of copper to buy one pound of butter or one dozen eggs, but that last spring it required about 5 pounds of copper to purchase the eggs or butter. The rise of 9 cents a pound for copper has partially overcome this disparity. The world still wants commodities in their former proportions and so the law of supply and demand is adjusting values to the new standard.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 264 AND 266

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	26.50 to 27.00
Basic, Buffalo, furnace	25.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25
Malleable, delivered eastern Pa.	29.10 to 31.15

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No 2 Southern	2.25 to 2.75
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X eastern	2.75 and up
No. 1, Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25
No. 1X, eastern delivered Phila.	$30.00 to 31.60
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 27.00
No. 2 foundry, Cleveland furnace	26.75
No. 2 foundry, Ironton furnace	26.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	29.00 to 30.60
No. 2X, eastern, N. J. tidewater	29.60 to 30.90
No. 2X eastern, Boston	30.90
No. 2X foundry, Buffalo furnace	28.00
No. 2 foundry, del. Philadelphia	28.00 to 29.60
No. 2 foundry, N. J. tidewater	28.60 to 29.90
No. 2 southern, Birmingham	27.00 to 28.00
No. 2 southern, Cincinnati	30.60 to 31.60
No. 2 southern, Chicago	32.00 to 33.00
No. 2 southern, Phila.	33.50 to 34.50
No. 2 southern, Cleveland	32.00 to 33.00
No. 2 southern, Boston	35.00 to 36.00
No. 2 southern, St. Louis	31.25 to 32.25
Virginia, No. 2X, furnace	26.50
Virginia, No. 2X, Philadelphia	30.60
Virginia, No. 2X, Jersey City	31.90
Virginia, No. 2X, Boston	31.20
Gray forge, valley, Pittsburgh	27.15
Gray forge Buffalo	25.75 to 26.00
Gray forge, eastern Pa.	27.50 to 28.50
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	41.50 to 42.00
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	40.00
Charcoal, Superior, Chgo., last half	31.45 to 31.75

Coke

(At the ovens)

Connellsville furnace	$4.00 to 4.50
Connellsville foundry	5.00 to 5.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$115.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports.	115.00
Spiegel, 18 to 22 per cent furnace, spot	31.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.20 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	32 to 34 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, refined, Phila.	2.595c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, refined, New York	2.62c
Bar iron, refined, Pittsburgh	2.35c
Bar iron, extra refined, Pittsburgh	2.75c
Hard steel bars, Chicago	2.45c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	35.00 to 38.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.35c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c
Barbed wire, galvanized, Pitts.	4.10c
Cut nails, Pittsburgh	4.445c
Coated nails per count keg, Pitts.	$2.75 to 2.85
Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.50c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1588.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1588.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Full tube schedule page 1588.

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	$56.80
Six-inch and over, Chicago	53.80
Four-inch, New York	55.70
Six-inch and over, N. Y.	52.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.05c to 3.30c
Shafting, Pitts., carloads	28 off list

Cotton ties, lots of 1000 to 3000 bundles, $1.73½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.71½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.70c
Boiler rivets, Pittsburgh	3.80c
Rivets 7/16 in. and smaller Pitts.	60–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10–10 off
Cut thread	50–10 off
Larger and longer	45–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60–10 off
Cut thread	50–10–10 off
Larger and longer	50–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70–10 off
Cold pressed semifinished hexagon nuts 9/16 in. and smaller	80 off
Gimlet and cone point lag screws	65 off

NUTS

Hot pressed, square blank	3.10c off
Hot pressed, square tapped	2.85c off
Hot pressed, hexagon blank	3.10c off
Hot pressed, hexagon tapped	2.85c off
Cold pressed, square tapped	2.85c off
Cold pressed, square blank	3.10c off
Cold pressed, hexagon blank	3.10c off
Cold pressed, hexagon tapped	2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices July 23, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	31.45	31.45	33.25	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
**Southern, No. 2, Birmingham	25.50	25.25	28.00	33.50
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa	26.50	25.50	29.65	32.00
**No. 2X Virginia, furnace	26.50	26.50	28.45	33.50
**No. 2X, eastern del., Philadelphia	29.50	29.60	31.90	34.50
Ferromanganese, 80 per cent, delivered	115.00	114.00	130.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.00	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	38.00	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73

	Prices July 23, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Iron bars, Cleveland	$2.52	2.52	2.52	3.64
Iron bars, Chicago mill	2.62	2.53	2.58	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.30	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.50	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.65	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.00	3.90	3.80	6.00
Connellsville foundry coke	5.25	4.65	4.55	7.00
Heavy melting steel, Pittsburgh	21.00	17.25	15.75	29.00
Heavy melting steel, eastern Pa	19.00	16.15	15.90	28.50
Heavy melting steel, Chicago	20.00	16.75	16.40	29.00
No. 1 wrought, eastern Pennsylvania	24.50	22.50	21.50	34.00
No. 1 wrought, Chicago	22.00	18.70	18.50	33.50
Rerolling rails, Chicago	27.00	19.25	17.95	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Iron Sales Keep Up Fair Total

New Bookings and Shipments Generally Keep Ahead of Current Production—Valley Consumer Negotiates for 50,000 to 75,000 Tons of Basic—New York Air Brake Co. Buys 10,000 Tons of Foundry—More Furnaces In

Pittsburgh, July 22.—Fair-sized lots of standard bessemer pig iron have been sold in this district during the past week, and indications are that consumers' stocks are being cleaned up, and that they are coming more freely to the furnaces for their requirements. A sale of 1500 tons of bessemer was made Monday by a nearby furnace interest to a Pittsburgh consumer. The iron is said to have been sold at the established price of $29.75, furnace. Two or three new inquiries for bessemer iron involve from 3000 to 4000 tons for last-half delivery. Basic iron is being sold only in limited lots from the furnaces, but apparently there is no surplus and in some instances furnaces are short. Some large negotiations are under way. Scattering sales of No. 2 foundry iron (1.75 to 2.25 silicon) are being made. One interest reports sales aggregating approximately 1500 tons for the last half. Makers are well sold up for the remainder of this year and inquiries for this grade of iron are light. One consumer is asking for 500 tons for last half delivery. Furnace operations are increasing. The Carnegie Steel Co. has blown in four furnaces during the past week and now has 40 in operation, with expectations of having 45 or 46 in blast by the end of the present week. The company's Columbus, O., plant is running and the two furnaces there will go into blast about Friday. The company's furnace at Mingo Junction, O., is being relined. In two weeks the company expects to blow out two or three of its furnaces, one at Zanesville and the other probably at the Edgar Thompson works. The Weirton blast furnace, No. 1, of the Weirton Steel Co., Weirton, W. Va., with a daily capacity of 600 tons, was lighted Monday. This furnace is running on basic iron and will be a merchant stack until the Weirton company completes its steelmaking capacity. The furnace of the Clinton Iron & Steel Co., Pittsburgh, which is running on foundry iron, will go out of blast some time next month for relining. The American Pig Iron association will hold its regular monthly meeting at Pittsburgh.

A Girard, O., furnace interest has advanced its prices $2 for the fourth quarter and now is quoting $28.75 furnace for 1.75 to 2.25 silicon.

Good Inquiries at Boston

Boston, July 21.—Several good inquiries are out this week for pig iron. Most sales are for very small tonnages, with one exception, a sizeable order for last half delivery. A tendency toward stiffening of prices is noticed, although the general opinion is that no marked change will occur either in price or amount of tonnage sold until fall. Almost without exception furnaces are refusing to quote on 1920 business. A few scattered orders have been placed but these have been under exceptional conditions and are hardly to be taken as a market factor. One southern furnace refused to give a figure for the first quarter even when it was suggested that anything within reason would be accepted. The weak spots in the Buffalo district seem to have disappeared and all sales reported from there during the past week have been at schedule price or above. One order was placed for 2X iron (2.25-2.75) at $29, furnace, for last quarter delivery. Orders placed for eastern Pennsylvania iron are nearly all at $28 furnace for 2X Eastern (2.25-2.75). An inquiry is out from one Connecticut consumer for over 5000 tons for August and September delivery, and other consumers from the same state are in the market for 100 and 200-ton lots. A Vermont consumer is asking for a small tonnage for last quarter delivery. Total sales during the week for New England delivery are estimated to be 7000 tons.

Large Users Inquire

New York, July 21.—Largest of the pig iron transactions in this district for sometime was the purchase by the New York Airbrake Co., during the past week of approximately 10,000 tons of foundry for last half. All of this iron was placed in the Buffalo district. In addition, there were numerous sales of 1000 tons each and less. The total for the past week's business in foundry iron here is conservatively estimated to be close to 25,000 tons, all for shipment this year. Sales for 1920 did not figure in the week's business. Numerous large inquiries now are before the trade and they come from some of the most important eastern users. One large interest is in the market for 3000 tons of foundry for last quarter delivery to its western plants. Another big melter wants 4000 tons of foundry, of which half is for export. Another wants 5000 tons of foundry for August and September and some malleable and high silicon. A large eastern railroad wants 1800 tons of foundry for third quarter. Numerous other tonnages are under negotiation. A feature of the business is the inability of consumers to obtain the low prices which were being quoted a few weeks ago. The market reflects a notably stronger tone and the minimum range of delivered prices now is $29 to $30, New

Jersey tidewater points, for 1.75 to 2.25 silicon foundry, with $1 higher for 2.25 to 2.75 silicon. Sales are being made at higher figures. One eastern Pennsylvania maker has made several small sales of foundry (from 1.75 to 3.75 silicon) at prices ranging from $30 to $33 furnace. Sales of about 500 tons of low-phosphorus iron have been made by a Pennsylvania maker at $35 and $35.50 furnace. A central Pennsylvania furnace sold 1000 tons of 2.25 to 2.75 silicon foundry at $28.50 furnace. An eastern Pennsylvania maker sold some round tonnages at $27.25 furnace, for 1.75 to 2.25 per cent silicon, and at $28.25 furnace, for 2.25 to 2.75 silicon, and now practically is out of the market. A sale of 1000 tons of malleable has been made to an eastern consumer at $27.25, although eastern Pennsylvania malleable still can be had at $28 furnace. An interesting transaction is the purchase by a New Jersey consumer of 250 tons of southern iron (2.75 to 3.25 silicon) at $29.75, Birmingham. Export sales included one lot of 5000 tons of basic.

Booked for Balance of Year

Buffalo, July 22.—With two furnaces practically booked up to capacity for this year's output, others are advancing to the stage where they will be able to take only orders for delivery next year. So far no iron has been sold for delivery in 1920, with the exception of a small tonnage disposed of some months ago. Two interests which are practically out of the market made some small bookings during the week, and one of these states it still has a very small tonnage open. Neither of these interests is seeking any business for the balance of the year.

Prices Steadier in East

Philadelphia, July 22.—Although $28 Eastern Pennsylvania furnace been shaded in past week on attractive lots of No. 24 (2.25 to 2.75 silicon), this figure is now believed to be minimum. Prices show a definite hardening tendency and most of week's business was at prices equivalent to $28 to $28.50 Eastern Pennsylvania furnaces for No. 24 (2.25 to 2.75 silicon) and considerable higher foundry business was of fair proportions here in the past week but not nearly as large as in other districts. It is estimated about 15,000 tons of foundry were sold. Fairly good inquiry is out, including one lot of 2500 tons and several between this figure and 1000 tons. Several consumers are inquiring for 1920 delivery but the furnaces are not anxious to sell so far ahead. A Virginia furnace which has been selling right along lately has withdrawn after having sold an additional 3000 tons the past week at $26.50 furnace for No. 2 (2.25 to 2.75 silicon) and No. 2 plain (1.75 to 2.25 silicon) and $27.50 furnace for No. 1 X (2.75 to 3.25 silicon) 60 days. This maker will not sell any more until he knows more about future costs. This practically removes Virginia as a factor in this market at present as other furnaces are holding for $30 to $31(furnace, to which must be added 4.10 freight rate to Philadelphia. Only a few Pennsylvania makers now can be classed as anxious to sell. Most of them are comfortable as to bookings and are adding further tonnage advisedly. No business in basic was done the past week but one consumer wants 1500 to 2000 tons. No additional low phosphorus was bought but inquiry for a round tonnage for eastern users is expected to be closed this week. Copper-free low phosphorus market now is nominal but is thought attractive tonnages could be placed around $35, eastern furnace, equivalent to around $38.50 to $39. The Bethlehem Shipbuilding Corp. has inquired for 5200 tons of Virginia high manganese iron but does not expect to buy and probably will make iron of similar analysis.

Basic Tonnage Being Figured

Cleveland, July 22.—New sales of iron are running at about 50 per cent of those of June with leading Cleveland sellers but this is considerably more than current production. Shipments also are ahead of furnace output despite the fact that labor troubles among foundries are numerous and operate to hold up deliveries to these consumers. Furnace stocks accordingly are being reduced. One seller in the week booked about 20,000 tons and another 12,000 tons, largely foundry. Of the latter about one-half was for 1920 delivery and one sale of 4000 tons for first half of 1920 was included. These first half sales were made on the present price basis or $26.75 for 1.75 to 2.25 silicon. Producers, however, continue not to encourage next year buying at this time. Local and northern Ohio foundries are inquiring and buying in a fair way in lots of several hundred to 1000 tons. In basic, the principal development is the opening of negotiations by a large Mahoning valley consumer for last half requirements running 50,000 to 75,000 tons. This is the first sizable business in this grade to appear in the market in recent months.

Inquiry at Cincinnati is Light

Cincinnati, July 21.—All southern furnaces have ceased to absorb freight rates. They are holding firm at $26.75 (1.75 to 2.25 silicon) Birmingham, and most of them are maintaining the regular schedule of $28 (2.25 to 2.75 silicon) for any shipment this year. The general opinion is that the market will advance at an early date and it also is predicted that if the melt of iron continues at the present rate a shortage will occur before the end of the year. A few southern furnaces are still holding off quoting for the last quarter, and apparently there are no quotations out for shipment in the first quarter of next year, although some sales made for delivery this year were made with the understanding that part of the iron could be shipped in January and February. The inquiry is very light but another buying movement is anticipated before long.

Estimating 1920 Requirements

St. Louis, July 19.—Sales of pig iron, and inquiries, average about the same as during the past two weeks, there being a fair demand for small tonnages. Some iron has been booked for the fourth quarter, and two producers report they could have taken more orders for that period, but for the fact that their books were full. Melting in the district is in large volume, though virtually all the plants are well covered by contracts extending to Dec. 31. All important consumers are estimating their needs for the first half of 1920, and when furnaces open their books for that period, there may be considerable activity in covering. Southern interests show a decided disposition to await higher quotations before blowing in idle stacks. The leading producer in this district has gone out of blast for relining and repairs, and probably will not resume production before September. His stocks of 8000 to 10,000 tons largely are under sale. Among current inquiries is one for 400 tons of foundry iron from a Quincy, Ill., stove manufacturer. This interest took 1500 tons earlier in July. Some small tonnages were sold to foundries in this district, and 350 tons of No. 2 southern foundry (1.75 to 2.25 silicon) was purchased by a St. Louis melter. Steel plants apparently are well supplied for the time being, and save for limited tonnages of various grades for mixtures, are not buying.

Southern Market Strengthening

Birmingham, Ala., July 22.—While sales of pig iron in the Birmingham district are not as large as during the past four weeks, the market is strengthening. Fourth quarter iron is being sold, although the aggregate is not large. Iron of 1.75 to 2.25 silicon content is selling at $26.75, and iron with 2.25 to 2.75 silicon is quoted at $28. Basic iron is held at $25.75. Production is being increased. The Sloss-Sheffield Steel & Iron Co., the Republic Iron & Steel Co., and the Gulf States Steel Co., have raised their output. Three other furnaces in the state will be repaired immediately. Accumulated stocks in this district are being reduced rapidly. Less than 100,000 tons now are in stock in this district. Some export inquiries for iron are being received.

Blow in More Stacks

Chicago, July 22.—That demand for pig iron has increased largely during recent weeks is proven by the blowing in of two additional stacks at the Iroquois Iron Co.'s plant at South Chicago. One stack went into blast July 15 and the other July 20. This makes six merchant stacks active where only four were operating at the beginning of the month. Inquiry and buying are active and sales have been large in the aggregate during the present month. The present labor situation is having its effect, and if no trouble of this sort were anticipated, it is believed tonnages would be larger and that some melters who have bought already would take additional iron. The plants of the International Harvester Co. and the Crane Co. are closed because of strikes and the Illinois Malleable Iron Co. and the Green Engineering Co. also are strike-bound. Buying of malleable iron still is active. Basic iron seems to be coming to life and some inquiry is being entertained, while tonnages already have been sold, although not

in usual volume. Considerable talk is heard of quotations being advanced. Some sales involving as much as 10,000 tons in a single lot have been made but this is the exception. Inquiry is still being received for 1920 delivery, but makers refuse to quote that far ahead. A malleable foundry at Hammond, Ind., has inquired for 5000 tons for first half, and a gray iron foundry has asked prices on 2000 to 4000 tons for the same delivery. Abandonment of their policy of absorbing freight has stopped selling of iron by southern producers in this district. All southern iron now is being quoted at the full price. Considerable inquiry is being received for silveries, but sales are being made only by stacks south of the Ohio river, as the strike of furnace workers in Jackson county continues.

Bessemer Steel

Sought by Sheet Bar Users—2000 Tons Sold at $42

Youngstown, O., July 22.—Bessemer sheet bars are moving in heavy tonnages at valley mills. Last week specifications of one maker here approximated 4000 tons. Demand for open-hearth sheet bars has declined considerably, the majority of orders calling for the bessemer grade. About 600 tons of the latter for central Ohio shipment were taken today by one producer. A decided improvement has been noticed in the semi-finished market here during the past month and this has had a tendency to increase the production of bessemer steel throughout the district. Mills here are in position to do considerable business in open-hearth steel. Practically no fourth-quarter sheet-bar contracts have been made yet. This week's business at one valley mill includes 300 tons of slabs for delivery to a nearby district.

Demand Continues Heavy

Pittsburgh, July 22.—Demand for semifinished material continues heavy. It is especially marked in the case of sheet bars which are wanted in large lots by makers of sheets and tin plate. Some sellers are out of the market for spot material while others will not quote. The middlemen report that they are having great difficulty in getting steel, owing to the fact that consumers are buying directly from producers more generally than they did previously. Producers of sheet bars are operating heavily and experience difficulty in keeping up with their specifications. Some producers are rolling semifinished material on rail mills and while demand for billets and slabs is not on so large a scale as that for sheet bars, it is active and established prices are being well maintained. Good inquiry continues to exist for wire rods, some of it coming from abroad. One independent maker has been making fair-size sales from its surplus supplies which it had accumulated owing to its inability to obtain labor to draw the rods into finished wire products.

An Ohio consumer has closed with a Pittsburgh broker for 2000 tons of sheet bars at $42, mill.

Coke Inquiry is Improving

Most Producers Quoting Spot Foundry Coke at $5.50, Furnace—Spot Market for Furnace Grade More Firmly Established at $4

Pittsburgh, July 22.—Inquiries for spot foundry coke have shown slight improvement during the past week, but have not yet reached a point where they can be called active. While most of the producers are quoting spot foundry coke at $5.50, furnace, it is reported that this figure has been shaded. Some producers are well covered by contract for the last half of this year on both foundry and furnace fuel. Inquiry for spot furnace coke also has increased slightly as a result of the blowing in of more furnaces. The increase in pig iron output has interested makers more in their requirements for the last half, and some good sales of this grade for the delivery mentioned have been made within the past week. One consumer in Buffalo is reported to have taken 10,000 tons for last half delivery at $4.35, but it is believed this figure might be shaded by some sellers, perhaps as much as 10 cents. Spot market for furnace coke seems to be more firmly established at $4, although offerings are said to have been made during the past week at levels as low as $3.85 and $3.90. According to the *Connellsville Courier,* production of coke from the Connellsville region for the week ending July 12 was 157,838 tons as compared with 130,790 tons in the previous week.

Foundry Coke in Demand

Boston, July 21.—A demand for foundry coke is reported by all dealers, and many new contracts covering the balance of the year are being made. There seems to be a tendency on the part of foundries to increase their storage because of the uncertainties of the freight car situation. No announcement has been made by the byproduct producer as to the price to govern its sliding scale contracts for August, but it is generally expected that the rate will advance to $10.40 either Aug. 1 or Sept. 1. The Providence maker is still tied up with labor difficulties. Coal shipments to New England points are affected by the marine workers' strike.

Prices Firm at Cincinnati

Cincinnati, July 21.—New River and Wise county producers evidently have been able to hold their own as far as prices on foundry coke are concerned, and in the first named district some choice 72-hour coke has been sold at $8, ovens. Wise county foundry coke has brought $7.50, although purchases made were practically for "fill in" purposes. Connellsville furnace coke is very much stronger, and the minimum now is $4.25 with probably the bulk of the business being booked at $4.50. Foundry coke in that district ranges from $5.50 to $6, ovens. Pocahontas operators have not been very active in this vicinity lately but a little foundry coke from that field has been sold around $7, ovens.

Won't Quote for 1920

St. Louis, July 21.—Demand for coke is good and the market remains firm. Most inquiries are for small tonnages for prompt shipment, although a fair volume of contracting for the balance of this year is reported. Several interests have withdrawn prices they were quoting for the first quarter of 1920. Not much difficulty is encountered by dealers in filling orders for immediate delivery, production continuing as during the past six weeks. Thus far there has been an adequate supply of box cars for transporting foundry coke, although the use of more cars to handle the bumper wheat crop in the Southwest and West may create a shortage. Consumption in this district is heavy, but the fuel was bought some time ago.

Demand Growing in South

Birmingham, Ala., July 22.—Demand for both furnace and foundry coke is improving steadily. Every ton of foundry coke that can be produced is finding a ready sale. Foundry coke is up to $9, and indications are that some producers will have to withdraw from the market. Furnace coke is beginning to assume strength as furnace operations increase.

Ore Market Dull

Shipments Increase, But Most Furnaces Still Have Supplies on Hand

Cleveland, July 21.—While ore shipments from the Lake Superior district are in greater volume than last month, the market is dull and sales are much less than in June. Shipments for the first 18 days of July average 282,000, as compared with a daily average of 263,000 in June, but the bulk of the shipments is going to participating interests, and little ore is being sold in the open market. One interest sold 60,000 tons during the past week, and this was practically all that was sold to furnaces without connected interests. The latter are taking their usual consignments, but are not increasing their estimates. Southern furnaces are almost a unit in the claim that they cannot buy Lake Superior ores and make iron at a profit at the current prices of the latter. A number of them have declared themselves out of the market until iron is marked up. Some of them have supplies on hand, while others are using southern ores. No inquiries are in the market and selling agencies report a dearth of interest among the furnaces in Ohio and the eastern states. An exception to this general situation is to be found in a slight demand for low phos ores, coming from eastern furnaces with orders on hand for this grade of iron for export.

Scrap Moves Up Quickly

Advances at Chicago Are Sharp—Sellers' Market at Pittsburgh—Steel Sought in New England—Rerolling Rails Rise $3

FOR COMPLETE SCRAP PRICES SEE PAGE 266

Chicago, July 22.—All grades of iron and steel scrap are advancing, in some instances the price going up $2 to $3 at a time. The greatest advance made recently is on rerolling rails, which have been marked up from $25 to $28 per gross ton. This advance is due to increased demand on the part of rerolling mills and the uncertain supply from railroads, which are not doing as much track work as usual. Prices are getting fairly near the level of pig iron but with the probability that the latter will advance before the end of the year, many scrap dealers expect heavy melting steel to reach $25 and rerolling rails $30 per gross ton. While no heavy buying of heavy melting steel has been done recently, a large consumer is expected to come into the market before long, which will boost the situation. Rolling mill grades are looking up and are in good demand with No. 1 busheling especially wanted. The Chicago, Rock Island & Pacific offers 2800 tons of scrap, including 500 tons of No. 1 and 200 tons of No. 3 steel rail and 250 tons of No. 1 wrought. The Great Western offers 790 tons, the Chicago, Burlington & Quincy three carloads of borings, shearings and punchings, and the government ordnance department 20 tons of coil steel and 76 tons of strip steel.

Steelmakers Buying in Boston

Boston, July 21.—Some steelmakers bought scrap during the past week in the New England market and while the purchases were not large the start of a buying movement by western consumers gives the market a cheerful tone. The market for weeks has been a speculative one, with large piles of comparatively high-priced scrap in dealers' yards. Dealers are paying $16.50 to $17 for heavy melting steel and sales to consumers have been reported as high as a cent a pound on this grade. Eastern Pennsylvania steelmakers are offering $20, delivered. One concern has been looking for 1000 tons for several days but has been unable to find it at the price it is willing to pay. Turnings have been selling to nearby consumers for $11 and dealers are having a hard time buying the quality they desire at $10.50. Borings have also been active during the week and dealers have had to pay $10.50 to cover their sales to consumers. Car axles have advanced from $23 to $24 and prices on many other grades have stiffened considerably.

Pittsburgh Buying at New York

New York, July 21.—Demand by consumers in the Pittsburgh district has again resulted in an advance in the prices of heavy melting steel in the local market. Several sizable inquiries are out from these interests, and some purchases have been reported at $20 and $20.50, delivered. Buying by Coatesville consumers has also helped stiffen the market on steel, further orders having been placed for shipment to that point at $19, delivered. Although this range can be shaded in one or two instances, this material is now holding rather firm at $15.50 to $16, f.o.b., New York. While the local market is far from active, there appears to be a fairly good demand for most descriptions, and the rising tendency in prices continues in evidence. Stove plate is stronger, the market now holding at $17 to $18. An advance has also gone into effect on mixed borings and turnings. The Interborough Rapid Transit Co. will sell 1800 tons of mixed scrap July 24.

Eastern Market Quieter

Philadelphia, July 22.—Less buoyancy is reflected in the eastern Pennsylvania scrap market, with material more easily obtainable. Dealers now are buying mainly to ship rather than to store against future needs. The open market demand, however, is comparatively small. Machine shop turnings and cast iron borings now are quoted at $13.50 to $14.50, delivered.

Prices Continue to Rise

Pittsburgh, July 22.—With increasing demands coming from steel plants and steel foundries, prices of scrap continue to advance. The point has been reached where it is distinctly a seller's market, dealers showing no desire to press sales, while consumers find that they are compelled to meet the increases in prices if they are to get the material. Heavy melting steel now is well established at $21, while some quotations are up to $21.50, delivered, and reports have been heard of transactions at higher figures, although not credited. Dealers say they confidently believe the price will go to $25 or more for this grade before long. Other grades have been responsive to the rising tendency of the market and machine shop turnings, until recently extremely slow of sale, have been moving rather freely. Grades used by iron foundries, however, continue to find only a comparatively small demand. Material for makers of steel castings has become in greater demand, and prices have increased. Billet and bloom crops, low phosphorus, now are quoted at $25, delivered, and steel car wheels, under a stronger demand, are quoted at $21.

Good Demand for Heavy Melting

Buffalo, July 22.—It is now impossible to buy heavy melting steel in this district at $17.50. There is a good demand for it and some small sales have been made, although consumers find it difficult to place orders. Mills want to pay about $18, while dealers are holding out for 50 cents more. There is an outside demand for turnings and borings and No. 1 busheling, and these are strong and active. Low phosphorus steel scrap is now quoted at $22 to $23; bundled sheets, $13 to $14; machine shop turnings, $10 to $11; cast iron borings, $13 to $14; stove plate, $21 to $22; No. 1 busheling, $15 to $16, and No. 1 railroad wrought, $21 to $22.

Cleveland Market Active

Cleveland, July 22.—Strength and activity continue to mark the iron and steel scrap market in this district. Especially is this true of the Mahoning valley, demand for heavy melting steel, turnings and borings there being vigorous. Melters in the valley appear to have run short of supplies, and spot shipments of these three grades have been sought from local dealers. The larger users of scrap in Cleveland have not been buying so heavily in the past week, but trading between dealers shows no signs of falling off. Prices on all grades except No. 1 and heavy cast, stove plate, grate bars and railroad car wheels have advanced. Melting steel here now is quoted at $20 to $21, turnings at $12 to $13, and borings at $15 to $15.50.

Raise Prices in Cincinnati

Cincinnati, July 21.—Dealers have assumed a bullish attitude and nearly all quotations have advanced within the past few days. Steel mill scrap is in better demand than for some time. Cast scrap also is in demand, and foundries making semisteel castings are buying considerable steel scrap for shipment this year. No contracts for next year's delivery have been made. Steel turnings are not in much demand.

Only Dealers Are Buying

St. Louis, July 19.—Speculation among dealers continues to be the outstanding feature in the scrap market. The farmers are buying liberally in anticipation of greater demand and higher prices. Everything offered to the dealers is sold at the highest prices. Market activities, however, seem to be confined almost exclusively to middlemen. The largest consumers have plenty material in their yards and under contract. No railroad offerings were before the market during the week. The government, through the St. Louis ordnance district offers 4385 gross tons of 5½-inch square billets and a small amount of heavy melting, low phosphorus scrap, at the plant of Curtis & Co. Mfg. Co. Sealed bids have been asked for July 29 on about 852 gross tons of ingots for 9.5-inch common steel shells at the Granite City, Ill., plant of the American Steel Foundries Co. On July 25 bids will be received on 529 tons of 8-inch steel shell ingots, at the same plant.

Foreign Buyer Seeks Scrap

Birmingham, Ala., July 22.—Inquiry for heavy melting steel for export, presumably to Italy, has aroused interest among scrap dealers. It is proposed to ship the product through the port of New Orleans, the buyer to pay cost of transportation. The

domestic scrap market continues slow. Prices show some weakness, several slight changes downward having been made.

Wire Advances

Announced by Two Independents—Mills Are Well Sold Up

Pittsburgh, July 22.—Price increases announced last week by the Youngstown Sheet & Tube Co. on wire products also have been made by the Midvale Steel & Ordnance Co. Other independent companies have not announced similar action but this is due to the fact that they are either out of the market or are accepting only limited business. The leading interest is well filled up and it is understood it does not contemplate raising prices at this time. The Youngstown Sheet & Tube Co. advanced polished nails $5 a ton, staples $2 a ton, and has raised the extra for blueing and coppering wire $5 a ton, while on all wire products in less than carload lots the extra over base prices has been increased from $1 to $2 per ton. The price of polished wire nails of this company now is $3.50 per keg, for polished fence staples $3.50 per keg, for galvanized staples $4.20, while extras for coppering and blueing wire range from 75c to 85c, according to gage. The company also has announced that it has decided to discontinue quoting painted barbed wire but will take such business on advance notice. The Pittsburgh Steel Co. is well sold up on wire products and will accept no orders unless they are first submitted to the home office. This company has advanced export prices which accord with the increases announced by the Youngstown Sheet & Tube Co., and is sold up for the third quarter. The Jones & Laughlin Steel Co. also is well sold up and is out of the market on wire products. Some concern is shown about meeting present bookings as difficulty is being experienced in securing wire mill workers.

Deliveries Fall Back

Cleveland, July 22.—Orders with wire producers justify full production but it is found difficult to get operating capacity up over 75 to 80 per cent. Deliveries consequently continue to recede and now range from six to eight weeks on plain wire and nails. Both the jobbing and manufacturing trades continue to buy liberally. Barbed wire still is backward. The leading interest has made no change in its prices and has not as yet followed the lead of various independents, in this respect.

General Demand Strong

Chicago, July 22.—All lines of wire and wire products are in strong demand, the impression having become general among users that it is safe to buy for immediate or future use at present prices. Barbed wire is temporarily slow on account of conditions in the farming sections. The leading interest has made no change in price, but an Ohio competitor has advanced nails $5 per ton.

Sheet Tonnages Closed

Two Large Automobile Interests Place Over 100,000 Tons—Some Sales at Advances Reported—Valley Mills Withdraw

Pittsburgh, July 22.—Brisk inquiry still is being made for sheets and tin plate and large contracts have been closed during the past week. The Ford Motor Co. is reported to have closed a contract for 80,000 tons of sheets but it has not yet been announced how the lot was distributed. Other large tonnages for automobile makers have been booked, including about 40,000 tons for an Ohio builder for delivery over the 12 months to July 1, 1920. Consumers of sheets are placing delayed orders for the second quarter and some are said to have partly covered their requirements for the third and fourth quarters, while it is also reported that business for next year has been closed at an advance over prevailing prices. It is likely that prices will be increased by some independent makers within 90 days. The American Sheet & Tin Plate Co. is making delivery of sheets in five to six weeks and is operating at 90 per cent of its sheet mill capacity, while it is operating its tin mills at 95 per cent of capacity and making deliveries of tin plate in six weeks. Heavy business is being done in tin plate, some of which includes foreign contracts. Japan is buying tonnages of light gage black sheets which are being galvanized in that country.

Buy for Fourth Quarter

Philadelphia, July 22.—The sheet business is good, and one western maker has withdrawn from the market because he is sold up to Oct. 1. Considerable third-quarter contracting was done in the past week, and at the solicitation of buyers some fourth-quarter business also was placed.

Galvanized May Advance

Chicago, July 22.—The leading independent producer of steel sheets in this market is still refusing to quote and has booked almost its entire capacity for the remainder of this year. Occasionally a regular customer is able to place a little additional tonnage for delivery late in fourth quarter. Prices have been withdrawn on galvanized sheets on account of recent advances in zinc and it seems likely a higher price will be forthcoming before long. All former weakness in black and blue annealed sheets has disappeared. Demand is still excellent, but buying is being discouraged by producers.

Withdraws from Market

Youngstown, O., July 22.—Efforts being made to unionize sheet mill labor in this district, and the possibility of strike troubles are having some effect on the selling activities of some producers.

This question has been before sheetmakers in the Pittsburgh and Ohio districts for several weeks but not until recently has the movement in this territory become of importance. A few producers of sheets have withdrawn from the market temporarily and will not commit themselves until the situation clears somewhat. These interests have enough business to operate their mills steadily over the balance of this quarter. Galvanized business is running strong. No price concessions for any grade of sheets are being offered. A few small tonnages were sold recently at attractive prices but the market has stiffened. Western exporters are inquiring heavily, most of their requirements being for light-gage black. Japan especially is wanting several hundred tons of this product.

Export Business Heavy

Youngstown, O., July 22.—Tin plate mills in this district have enough business ahead to carry them over the next 10 weeks. A heavy business is being done both in export and domestic channels. Among export inquiries for Pacific coast shipment quoted on recently was one for 4000 boxes. Prices remain firm.

Plans New Sheet Mills

Youngstown, O., July 22.—Reports are current that a new company headed by Clinton G. Thomas, formerly president of the Western Reserve Steel Co., Warren, O., will build several sheet mills at Newton Falls, O. Approximately 100 acres situated on the outskirts of the town have been purchased for this purpose. The land fronts on the Mahoning river across from the site of the Newton Steel Co. It is declared a large housing program for the benefit of the employes is to be undertaken soon. Subcontractors under the McClintic-Marshall Co., Pittsburgh, have started work on the excavations for the new plant of the Newton Steel Co.

Britain To Get Share

Birmingham, Eng., July 11.—P. M. Salerni, representing the Vulcan Steel Products Co., London, has issued a statement with reference to an announcement that a contract amounting to $250,000,000 for the reconstruction of the devastated district of Nancy has been awarded to his company. He said the impression that the whole of the contract will be placed in the United States was not true, as a substantial part of the money will be spent in the United Kingdom.

The Fischer Machine Works, Chicago, which has operated for several years as a partnership, has been incorporated with capitalization of $50,000 by Engelbert Fischer, Charles Edmund Fischer and D. I. Jarrett. No changes or additions are planned.

Big Bar Orders Placed

Automobile Interests' Contract Was Upwards of 200,000 Tons For All Year—Implement Interests Also Buying—Specifications Are Heavy

Cleveland, July 22.—Unusually large negotiations for bars of both alloy and carbon quality which have been under way with leading automobile builders in Ohio and Detroit territory have been closed. The aggregate of these is in excess of 200,000 tons, including the cold rolled screw stock and deliveries are to run over 12 months. The business was divided among various mills. Bar specifications are coming in very heavily and deliveries are becoming more extended, particularly on the smaller sizes of rounds where they now range in many sizes from two to three months. This is in contrast to the situation which obtained during the war when large rounds for shells were the most difficult to obtain. Considerable new business is being done and makers are scrutinizing orders to eliminate the speculative factor. The T. McShaffrey Construction Co. of Akron, O., has a general contract for the new buildings for the Goodyear Tire & Rubber Co. in that city, and the 2500 tons of reinforcing bars are reported to have gone to a valley producer.

Buyers Double Requirements

New York, July 21.—A noticeable change has come over iron and steel consumers in this district during the past week or two. Most large interests only recently were following the policy of placing their minimum requirements. Now they believe that they are justified, by the current outlook, in placing their maximum requirements for the rest of the year. Two large buyers here about a week ago agreed to place tonnages representing their minimum requirements over the rest of this year, but since that time they actually have contracted for tonnages double those originally mentioned.

Bar Business is Brisk

Pittsburgh, July 22.—Lively demand exists for bars, the principal buyers being automobile makers. So far as known, the Ford Motor Co., has not closed for its requirements for the year ending July 1 next. Export demand for steel bars also is good, being chiefly for small bars from 3/16-inch up to 1 inch. While it is reported that up to recently the price of 2.35c, Pittsburgh, for merchant steel bars was shaded somewhat by certain producers, the market now seems to be firmly established. Increased strength also is shown with regard to bars rolled from new billets and from old rails. Pipe makers are taking good tonnages of muck bar which manufacturers say are being sold at 3.50c.

Bar Iron Advanced

Philadelphia, July 22.—Following example of other interests large eastern bar iron maker advanced iron bars effective today to 2.50c, Pittsburgh, double refined bars to $3.50c, bands 3/16-inch and thinner, 3.20c, for single and 4.20c for double refined, flats wider than 6 inches 2.80c for single and 3.80c for double refined and half round, half oval and fender iron 3 inches and larger 3.65c net, Pittsburgh. This maker now is taking orders at the new prices for deferred delivery as its plant is still idle because of puddlers' strike. The feature of the steel bar market is the good demand for reinforcing bars. Due to fact that most of the demand is for quick shipments the mills are starting to roll for stock. Steel bar demand continues good and one mill reports last week from standpoint of new bookings and specifications, was best since armistice. Another mill reports it has four to five weeks' work ahead.

Commitments Are Heavy

Youngstown, O., July 22.—A good demand exists in the steel bar market here. Mill commitments are heavy over the balance of the quarter. A lot of about 500 tons of soft steel bars was closed this week with an eastern consumers, for ship construction. Implement makers are inclined to contract a little although it is understood this class of trade is well covered for the balance of the year.

General Buying Strong

Chicago, July 22.—Demand for soft steel bars is excellent and manufacturers of agricultural implements, automobiles and tractors have taken large tonnages. The only drawback to an active market is the absence of railroad buying, but it is expected that material for use during 1920 will be placed within the next few months. if financial arrangements can be made. When this business is booked it will make a heavy flood of orders.

Bar iron is strongly held at 2.62c, Chicago mill, and an excellent volume of orders is being booked from general manufacturers. Mills rerolling hard steel bars find new business equal to production and in some instances slightly better. Most demand is coming from manufacturers of agricultural implements and from other manufacturers, while the demand for reinforcing bars for concrete construction is light.

Increased Prices Maintained

Pittsburgh, July 22.—Makers of nuts, bolts and rivets report that the recent increase of 5 per cent in prices is being well maintained and that business continues to come in in large volume from both consumers and jobbers. The demand is of a general character, a fair portion of it being from shipyards. Operations are practically at full capacity.

Bolt Orders Plentiful

Chicago, July 22.—Manufacturers of nuts and bolts are taking heavy orders and most have increased operation to 85 or 90 per cent of capacity. Demand is coming from jobbers and manufacturers, and from a wide expanse of territory. The recent increase of 5 per cent in price is being held firmly.

No Concession in Band Price

Pittsburgh, July 22.—Reports that bands are being sold on the old basis, when they took the steel bar base price, plus extras, appear to be exaggerated. If such sales are being made, they apparently are limited. Prominent producers assert that no concessions are being made, and that the card established on May 21, 1918, by which hoops and bands were taken from the steel bar classsification, and grouped together, with allowances for extras, is being maintained. The hoop and band base, therefore, continues to be quoted at 3.05c, Pittsburgh. Cost of production is too high, it is asserted, to warrant any cut in the price of either hoops or bands. Fair demand exists for both products, but it is not so great in proportion to capacity as is that for merchant bars.

Shafting Business Improves

Pittsburgh, July 22.—Demand for cold-rolled shafting is improving in this market and operations of the makers now are well above 60 per cent of capacity as compared with the recent average of approximately 40 per cent. Buyers are ordering tonnages freely and are specifying against contracts more liberally. Some are attempting to close for the third and fourth quarters. The market is firm at 28 per cent off list.

Price is Cut

English Ferro Down to $105—5000 Tons of Spiegel Closed in Ohio

New York, July 21.—English ferromanganese makers have cut their price to a level which they consider conducive to the bookings of business in this country. Their new figure is $105, c.i.f. Atlantic tidewater, on 80 per cent metal, which not only is lower than the present price of domestic producers, but in effect is even $1 to $2 per ton lower than the minimum price of $110 delivered, at which American producers were selling only recently. The new English price became effective the latter part of last week and so far no business has been done at this figure. Several hundred tons of 80 per cent metal have been sold in this district during the past week, however, by domestic makers, at $115 delivered.

Spiegeleisen continues to strengthen. At least 500 tons of 18 to 22 per cent were sold during the past week at $35, furnace. The chief factor in the market, however, is the inquiry from abroad. This comes particularly from Germany, Austria and Belgium, and while no definite tonnages are mentioned, it is believed that several thousand tons are involved.

The market for 50 per cent ferrosilicon is somewhat stronger, owing to the absorption of some large resale lots. One block of 1400 tons of resale alloy sold at from $70 to $76, but the last of this metal was sold to consumers nearly two weeks ago. It is difficult to obtain any resale ferro-

silicon at less than $80. Producers generally quote around $90, delivered.

Ferrotungsten is somewhat higher, chiefly because makers declare they cannot afford to produce at the lower prices recently mentioned. The minimum on domestic seems to be $1.20 per pound contained, furnace, while some makers will not sell under $1.30. Some American buyers are interested in the recent offerings of English ferrotungsten for immediate shipment at $1.05 a pound contained, c.i.f., duty paid.

The ferrochrome market is sentimentally stronger, with consumers specifying more freely against contracts. Prices continue 32c to 34c per pound contained.

The ferrovanadium market is unchanged. Supplies continue extremely scarce. The market remains at $6.50 to $7 a pound contained.

Market Somewhat Easier

Pittsburgh, July 22.—The market here for 78 to 82 per cent ferromanganese is easier. While some sellers continue to quote a flat base of $115, it is known that sales have been made at $110. The cut in the English quotation of $105, c.i.f. Atlantic ports, for 76 to 80 per cent ferromanganese has been an influence in the domestic market but not to any considerable extent. With the foreign grade selling at $105 for 76 to 80 per cent at Atlantic ports, freight differentials would make the domestic standard grade quotable at about $112, delivered, Pittsburgh. Inquiry for ferromanganese is only moderate and business placed during the past week represented only a small tonnage.

Marked improvement is shown in the market for 50 per cent ferrosilicon, although a few small lots recently have been moved at less than $80, furnace, freight allowed. The makers naming this price state that it is for prompt acceptance and give the intimation that higher levels may be expected in the near future. Some producers are quoting as high as $90 and it is doubtful if much business will be accepted under $85, most of the manufacturers being well booked. The market for ferrotungsten continues to be rather sluggish and not until recently was it possible to make sales at above $1.15 a pound.

Closes Spiegel Tonnage

Cleveland, July 22.—The Central Steel Co., Massillon, O., has a contract with an eastern producer for 5000 tons of 16 to 19 per cent spiegeleisen at $31, furnace, or $35.90, delivered, for August-December shipment.

Alloy Market Steady

Chicago, July 22.—Resale spiegeleisen has been completely absorbed, and the market is again upon a firm basis, being quoted now at $35, eastern furnace. Recent sales have run as high as 500 to 1000 tons each. Ferromanganese is being quoted at $115, furnace, freight allowed.

Buying Cotton Ties

Pittsburgh, July 22.—Fair-size orders for cotton ties are being placed and specifications against contracts are being made freely.

Railroads Want Plates

Car Repair Demands Bring Out Considerable New Inquiry—Seek 2.65c Eastern Mill Price—15,000 Tons Up for Japanese Shipyards

Philadelphia, July 22.—Due to the recent suggestion of the railroad administration that railroads in the east place orders with eastern steel plants on Pittsburgh basis, Philadelphia & Reading is trying to place a round tonnage of plates and other forms which it needs for car repair work at mill price. What the Reading road especially is trying to do is buy plates from eastern makers at 2.65c mill. Railroad repair requirements are coming more activity in the market. The Pennsylvania railroad wants 2000 tons for car repairs and other roads including Chesapeake & Ohio are likely to want some plates for car repairs. Considerable plate business has come from the Baldwin Locomotive Works lately in connection with a number of orders it has received for locomotives for export. The Chester Shipbuilding Co. has inquired for steel for two more vessels. While total still is far from satisfactory, the volume of plate business here is better than it was.

Exporters Close Slowly

New York, July 21.—The numerous good-sized export inquiries for plates alluded to in The Iron Trade Review last week, still are pendng. It was thought that at least some of them would have been closed by this time, but delays in cable communication are holding them up. A couple of good-sized domestic plate orders are under negotiation, but these are exceptional, as current business comprises mainly small orders which aggregate a small total.

Large Tonnages for Oil Tanks

Pittsburgh, July 22.—Oil storage tanks to be built in Mexico are calling for large tonnages of plates and a considerable portion of this business is being placed with Pittsburgh producers. The Treadwell Construction Co., Midland, Pa., has received orders for 17 55,000-barrel steel oil storage tanks to be built at Tampecko, Mexico. This company at present is erecting tanks of this type at Cuba and its fabricating shop is running at full capacity. Foreign demand for plates also is heavy and it is reported that Japan and other foreign consumers are making active inquiry and that the total requirements involved will not be less than 1,000,000 tons. Plate makers are interested in the adjustment that the shipping board may make with Pacific coast steel shipyards, some of whose contracts have been canceled and who are seeking to have the board substitute new contracts calling for a larger type of vessel. Plate makers in this district are bidding on 10 ships for Japan which will take about 24,000 tons of steel of which about 65 per cent will be plates, 30 per cent shapes, and 5 per cent bars.

Boiler Makers Buying Plates

Cleveland, July 22.—Boiler manufacturers are placing fairly large orders for plates, demand from this source developing earlier and much stronger than anticipated. Business continues to improve and the leading maker in this district has acquired a backlog sufficient to keep the mills operating for several weeks as at present, which is about 65 to 70 per cent of capacity.

Sidestep Jap Inquiries

Chicago, July 22.—Business in steel plates is much less active than in bars and shapes, but considerable tonnage has been taken by local producers, and the leading independent is quoting delivery in about six weeks. Shipbuilding interests in Japan are seeking plates in this country, but are asking too many concessions as to base price, extras, and other details to make this business attractive. Most makers are not seeking the business under these conditions.

New Company to Operate Cromwell Plant

Incorporation of the J. C. Cromwell Steel Co. in Ohio to take over the plant of the Cromwell Steel Co., at Lorain, O., has been effected by J. C. Cromwell and others. The majority of the stock of the new corporation, which is capitalized at $4,000,000, is held by Mr. Cromwell. Some weeks ago he took a 99-year lease on the old company's property through a deal closed some months ago, and it is expected he will exercise his option of purchase within a few days.

The Cromwell plant which consists of open-hearth furnaces and forging capacity, has been closed down for some months. It is expected that operations will be resumed in a short time.

Purchases Foundry

The West Side Foundry Co., Troy, N. Y., which several years ago took over the Paris Stove Foundry of that city, has been purchased by Thomas C. Perkins, Inc., investment bankers, of Hartford, Conn. The name of the company has been changed to the Troy Foundry & Machine Co., and additional capital has been provided for plant extensions.

The Perfex Radiator Co., Racine, Wis., manufacturer of automobile, truck and tractor radiators, has been discharged from bankruptcy upon petition of stockholders, endorsed by the creditors, showing the introduction of new capital sufficient to guarantee solvency, and the institution of a new management. It is stated that the liquid assets are $325,000, fixed assets $200,000, and working fund of $100,000 additional gained through the sale of preferred stock.

Awards Best for June

Bookings Total 117,000 Tons or 65 Per Cent—Sizable Lettings at Cleveland—Labor Troubles Check Work at Chicago

New York, July 21.—Further signs of improvement are in evidence in the eastern structural market. One of the most encouraging of these indications is the heavy buying by some of the larger jobbers. These interests are not only placing large orders, but are endeavoring to obtain early deliveries, and to meet some of this rush business one large eastern Pennsylvania mill is now working double turn. As may be inferred, however, this does not necessarily indicate that the mills are booked far in advance, although undoubtedly in view of recent lettings their position generally is improving steadily. The steady gain in structural activity is reflected in the recent report of the Bridge Builders and Structural society for June. In that month, bookings ran up to a total of 117,000 tons, or 65 per cent of the shop's total capacity, a record for the month. Following is a comparative statement:

Month	Per cent	Approximate tonnage
June, 1919	65	117,000
May	49	88,200
April	24½	48,100
March	17½	32,300
February	12½	22,500
January	12	21,600
December, 1918	29	52,270
November	27	48,700
October	43	77,400
September	60	108,000
August	57	102,000
July	116½	209,700
June	56	100,800
May	60	108,000
April	64	115,200
March	47	84,600
February	55	99,900
January	53	95,400
December, 1917	121	205,200
November	77	138,600
October	61½	110,700
September	29	52,200
August	38	68,400
July	41½	74,700
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000
December, 1916	86	148,000
November	78	134,000
October	77	133,500
September	52½	99,400
August	64	112,600
July	47½	83,600
June	58	100,000
May	80	137,000

Report Business Improving

Philadelphia, July 22.—Practically all shape makers report at least some improvement in sales and specifications. One mill goes so far as to report improvement of 100 per cent during the past week. Another maker is operating mills double turn, but says that owing to the indifference of workmen output does not exceed 70 per cent of rated capacity. New structural tonnage is small, in fact, while a number of jobs were placed here during the week they averaged only 56 tons each. Much of the current shape demand is from jobbers who appear to be moving their stocks in greater volume.

Improvement in Shape Market

Pittsburgh, July 22.—Improvement is reflected in the market for shapes. Inquiries are coming out in better volume and it is expected that considerable business will come from the shipyards before long and that reconstruction work in Europe also will develop considerable business. The Jones & Laughlin Steel Co. has taken 250 tons for the new warehouse of Rea & Co., Pittsburgh.

Good Awards at Cleveland

Cleveland, July 22.—New structural work in the Cleveland district continues unabated, and among the current lettings are some contracts calling for fairly large tonnages. The American Bridge Co. was awarded the contract for 6000 tons for the new Hanna building, Cleveland, while in Detroit, where a great volume of work is being figured at present, the Russell Wheel & Foundry Co. was awarded 2000 tons for the service building to be erected by the Detroit Edison Co. An addition for the Youngstown Steel Car Co., Youngstown, O., involving 1000 tons was let to the American Bridge Co. The Thompson-Starrett Co. has the general contract for the new Seiberling hotel at Akron, which it is estimated will require 6000 to 8000 tons. These were the largest awards in the Cleveland district, many smaller jobs combining to make up a good total. Fabricating shops in general are not working over 60 per cent of capacity, and the bulk of their business still consists of comparatively small-size jobs. The mills are receiving an increased tonnage of shape orders from the shops for stock.

Chicago Activity Less

Chicago, July 22.—In addition to the recession from a activity of June, the structural market is further depressed at present by a lockout of the building trades in Chicago and vicinity, which has brought to an end for the present all building activities. Every effort is being made to settle this difficulty, but it is feared the lockout may be of long standing. In the face of this situation, new projects are being held in abeyance, as contractors are uncertain how they can figure their costs, and it is difficult to persuade them to take on further contracts. The Rochester Bridge Co., Rochester, Ind., has taken 500 tons for a power house for the Gormully & Jeffry Co., at Indianapolis. Henry Raeder, architect, Chicago, is taking bids on 1800 tons for a tractor plant for the Nelson Corp., Cambridge, Mass.

CONTRACTS AWARDED

Foundry cupola and charging platform for Levering Bros., Buffalo, 100 tons; to Lackawanna Bridge Co.

Two theater buildings, Binghamton, N. Y., 100 tons each; to Lackawanna Bridge Co.

Hoppers for Donner Union Coke Corp., Buffalo, 900 tons; to Lackawanna Bridge Co.

Addition to Sing Sing Prison, Ossining, N. Y., 150 tons; to Kellogg Structural Steel Co.

Alterations to plant of Alberger Pulp & Condenser Co., Newburg, N. Y., 100 tons; to Kellogg Structural Steel Co.

Addition to Pratt & Lambert varnish plant, Buffalo, 100 tons; to Buffalo Structural Steel Co.

Six-story addition to department store of Gimbel Bros., Milwaukee, 100 tons to Northwestern Bridge & Iron Co.

Alterations at Watervliet arsenal; 300 tons, to Eastern Bridge & Structural Co.

Pattern shop at Philadelphia navy yard; 300 tons, to Phoenix Bridge Co.

Seiberling hotel, Akron, 6000 to 8000 tons, general contract placed with the Thompson-Starritt Co.

Warehouse for Rea & Co., Pittsburgh, 250 tons to the Jones & Laughlin Steel Co.

Hanna building, Cleveland, 6000 tons, to American Bridge Co.

Plant of Youngstown Steel Car Co., Youngstown, O., 1000 tons, to American Bridge Co.

Building for Detroit Edison Co., 2000 tons, to Russell Wheel & Foundry Co.

Office building for National Malleable Castings Co., Cleveland, 350 tons, to Bethlehem Fabricators.

Extension for Ohio Seamless Steel Tube Co., Shelby, O., 300 tons, to Hughes & Keenan Co.

Store building for Hess-Snyder Co., Massillon, O., 600 tons, to Massillon Bridge Co.

Bryant High School, Brooklyn, 400 tons, to Bethlehem Fabricators, Inc.

Theater building at Allentown, Pa., 150 tons, to Bethlehem Fabricators, Inc.

Manufacturing plant at Cumberland, Md., for American Cellulose & Chemical Mfg. Co., 300 tons, to Bethlehem Fabricators, Inc.

Lasky Famous Players Studio, Long Island City, 200 tons to Bethlehem Fabricators, Inc.

King City bridge, King City, Cal., 654 tons, to the Toledo Bridge & Crane Co.

Power house for Gormully & Jeffry, Indianapolis, 500 tons, to the Rochester Bridge Co.

Six deck plate girder spans for the United States railroad administration, Chicago, St. Paul, Minneapolis & Omaha railroad, 200 tons, to the American Bridge Company.

Factory for Eggers Veneer Seating Co., Two Rivers, Wis., 200 tons, to the Wisconsin Bridge & Iron Co.

CONTRACTS PENDING

Elevator for Southwestern Milling Corp., Kansas City, Kan., 500 tons; bids being taken.

Foundry building, or third unit, for Samson Tractor Co. of General Motors Corp. at Janesville, Wis., 800 to 850 tons. Frank D. Chase, Inc., Chicago, consulting engineer. Bids being taken. Power plant, 700 to 750 tons, bids to be taken later.

Bridge over Allegheny river for B. & O., 6000 tons, bids being asked.

Service station for Kelly Springfield Tire Co., Fifty-fourth street, New York; 600 tons, bids being asked.

Repairs for seven New York Central bridges; 450 tons, pending.

Jail for Cuyahoga county, O., 300 tons, bids to be opened July 28.

Addition to plant of Maumee Malleable Castings Co., Toledo, O., 200 tons, bids being taken.

Tractor plant for the Nelson Corp., Cambridge, Mass., 1800 tons, Henry Raeder, of Chicago, taking bids.

Drake Hotel, Chicago, 500 tons. Bids being taken.

Will Mine Ore

The Jacks Peak Tramway and Mining Co. of Delhart, Texas, is preparing to develop its iron ore beds, situated 30 miles east of Cavuzozo, N. M. It is constructing a tramway, eight miles long, to give the mine a transportation outlet to the Chicago, Rock Island & Pacific railroad. The company has a contract to mine and ship 200 tons of ore a day. N. M. Vinyard is president and general manager.

Car Repair Work Active

Railroads Coming Out for Numerous Requirements in This Line—1400 Tank Cars Placed—Chilean Order May be Closed

New York, July 21.—An order for 1400 tank cars has been placed with the General American Tank Car Corp. by the Island Oil & Transport Corp. for delivery before January of next year.

Included in recent export inquiries are those for 3000 miscellaneous cars for South African railways; 400 box cars for Siam and 500 coal cars for China. Domestic inquiries include those for 100 special cars for the Atlantic Coast line; 100 tanks for the Texas Oil Co.; 150 cars for the Southern Sales Corp.; 100 tanks for the Chickasaw Refining Co.; 100 tanks for the Texas Pacific; 400 cars for the Swift Co.; 509 cars for the H. C. Frick Co.; 100 coal cars for the Inland Collieries Co. The Northwest Trading Co. wants 100 flat cars and 100 gondolas for export to China. There is virtually no buying.

Several lots of open-hearth rails, averaging around 500 tons, have been recently placed in the local market, the price being around $47.50 a ton.

Place Large Repair Orders

Philadelphia, July 22.—Although few new car orders are likely to be placed in the near future, repairing of old cars will provide considerable activity in the car market for some time. It is estimated there are 50,000 to 100,000 cars to be repaired. The Pennsylvania lines west have just placed the following cars to be repaired: 1500, Pressed Steel Car Co.; 600, Liberty Car & Equipment Co.; 600, Ryan Car Co., and also large numbers with the American, Ralston and Greenville companies. The Pennsylvania lines will repair a considerable number of cars in their own shops. The New York Central railroad is placing big repair orders, while the Chesapeake & Ohio, Reading and other roads either will place orders or do the work themselves. Small tonnages of standard rails are selling at $45 and $47. Light rails continue to sell heavily at full rate. Practically no shading is reported.

Raised $3 at Chicago

Chicago, July 22.—An inquiry made some time ago by the Chilean government for 600 freight cars is still active, but has not yet been placed with a builder. Press reports give the information that that country is seeking to establish a loan of $30,000,000 in this country to be used for rehabilitating its railroads. This gives great promise of business from that source. An inquiry for 500 steel box cars of 30-ton capacity is current in this market. Some repair work is understood to have been contracted by the Pennsylvania and New York Central railroads.

It is understood one manufacturer of tie plates in this territory has advanced his price from 2.75c to 2.90c, an increase of $3 per ton. The leading interest has not made any change in its schedule on track fastenings.

Cast Pipe Up

Western Price Advanced $2—Tubular Goods Keep Up Activity

Chicago, July 22.—An advance of $2 per ton on cast iron pipe has been made for deliveries in Chicago and the West, making present quotation $56.80 for 4-inch and $53.80 for 6-inch and over, class B pipe. Even at this level makers claim they cannot make a profit. Buying of cast iron pipe is somewhat more active than was the case early in the season and cities which have been delaying are now making purchases, although asking for smaller tonnages than usual. The United States Cast Iron Pipe & Foundry Co. has taken 250 tons at Lakewood, O. Bids will be opened at Ashland, Ky., July 24 on 150 tons; at Decatur, Ill., July 25 on 125 tons; at Portsmouth, O., July 28 on 350 tons; at Sterling, Col., July 22 on 1000 tons, and at Akron, O., Aug. 1 on 1250 tons.

Pipe Market Extremely Active

Pittsburgh, July 22.—Extreme activity continues to characterize the market for iron and steel lapweld pipe, and the leading maker of steel lapweld pipe is practically out of the market. Inquiries from jobbers and oil interests are heavy and some consumers have had to divide their lots in order to place the business, while some still are unable to cover their requirements. The recent advance made by the Wheeling Steel & Iron Co., of 2½ points on buttweld and 5 points on lapweld pipe so far has not been followed by other companies, according to reports, but this appears to be due to the fact that they are well sold up and have little to offer. Improvement also is shown in the demand for buttweld pipe and mill operations have increased in consequence.

Demand Has Not Slackened

Youngstown, O., July 22.—Lapweld pipe continues to lead steel sales by producers in this territory. Specifications of one producer last week aggregated between 8000 and 12,000 tons. Two months ago sales were hovering around 5000 tons weekly but these have been increasing steadily until now the average weekly business for this product at valley plants approximates 10,000 tons. The principal consumers of this product are oil country interests.

The Nonferrous Metals

	Copper	Future Straits N. Y.*	‡Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony
July 16	22.75	52.00	5.50	7.75	33.00	8.50
July 17	23.00	52.125	5.50	7.85	33.00	8.50
July 18	23.25	51.875	5.75	7.95	33.00	8.625
July 21	23.50	52.00	5.75	8.05	33.00	9.125
July 22	23.75	51.875	5.75	8.05	33.00	9.25

‡American Smelting & Refining Co.'s price.
*July shipment from Singapore, c.i.f. New York.

NEW YORK, July 22.—The nonferrous metal markets have been more active the past week than at any time since this country entered the war. Large blocks of copper, lead and zinc have been sold to consumers at rising prices. Export inquiry has continued in the market, with some business being done, despite the decline in sterling exchange rates. The London metal market has advanced along with this market.

Sales of copper thus far in July have kept pace with those of previous months, which were far in excess of monthly production, more than 200,000,000 pounds having been sold in June, also in May. The Germans have not been inquiring for copper to any extent, but heavy purchases of semi-manufactured goods for shipment to European neutrals are believed to be destined for Germany. However, German demand, hanging over the market, is an important factor. Just as important is the labor situation in the western producing fields. The producers are short handed and facing a great deal of discontent. The Anaconda Copper Mining Co. recently advanced wages of its miners $1 a day, bringing the wages to the basis of 22c copper, as against an 18-cent level which prevailed previously this year. The copper market this week ranged from 23c to 23.50c for July-August delivery.

The zinc market has been extremely strong, both pig metal and zinc ore rising sharply. Prime western zinc sold to consumers at 8.00c on Monday. High grade zinc is quoted 9.00c to 9.25c. Both galvanizers and brass mills have been large buyers, while Japan has continued to make purchases.

The American Smelting & Refining Co. advanced its lead price July 18 from 5.50c to 5.75c a pound, New York delivery. Outside sellers already had been obtaining the advance and immediately raised their quotations to 5.85c.

Keeping pace with the other metals, antimony advanced in price, jumping from 8.50c, duty paid, for spot metal, a week ago, to 9.25c on Monday.

The aluminum market is firm, outside sellers asking 32.50c to 33.00c for virgin metal, while the producers' quotation for 1919 delivery continues 33c.

Brass and copper products are keeping pace with copper, advancing almost daily. Brass sheets are 26.75c, copper sheet, 32.50c; brass rod, 25.25c; seamless brass tube, 35.00c; seamless copper, 36.50c.

English Orders Please Exporters

Great Britain Beginning to Rival Japan as a Market for American Iron and Steel—French Surtaxes Result in Cancellation of Some Contracts—Germans Active in Foreign Fields

NEW YORK, July 21.—Export inquiries and orders are increasing. Coincident with this is a movement toward higher prices. The export houses are, as a consequence, in a general scramble for business. All the markets, with the possible exception of some points in South America, are showing up well. Prices of iron and steel, however, in that territory once covered by the Central Powers, are declining for reasons which are not generally understood here. Prices in India also are declining, but American houses are still able to make sales there. It is said the prime reason prices in the territory of the Central Powers have declined is because the peoples there have no purchasing power and they anticipate that Germany will be able to supply them. Germany already is reported to be underselling the English in Holland.

Japan and the Far East still afford the American producers the best market. Japan has purchased large tonnages of plates within the past month or so, but few sales have been recorded within the past week. That country still has in mind a comprehensive shipbuilding program and American houses anticipate they will be able to supply them. Japan has been a heavy purchaser of 30-gage B. W. G. sheets. Those mills capable of rolling these sheets are well filled up with orders. The United States Steel Products Co. has placed much of this business. It is also understood that the Consolidated Steel Corp. has taken orders for similar plates. One agent declared that the demand for such sheets from Japan is so insistent that he was offered a premium of $20 if he could obtain 1000 tons. Several thousand tons of this material have recently been contracted for. A forthcoming increase in bars is forecast in the fact that mills are rapidly filling up with orders for this material. A Virginia furnace has sold 6000 tons of foundry iron, contracting to deliver 1000 tons a month.

Japan has purchased about 10,000 tons of rails. Inquiries for tin plate from that country have been extremely heavy and orders are being taken by nearly all producers. It is said that recent inquiries for tin plate received from Japan would probably total 200,000 boxes. Japan has also purchased from 3000 to 4000 tons of steel bars. Japan's purchases of copper, aluminum and other metals continue on a large scale.

China is purchasing also, but not nearly in the quantity that Japan has. The Chinese requirements appear to consist chiefly of second-hand material. Shanghai has sent in some orders for bamboo steel, nails, wire, etc. India has also purchased bamboo steel. This is the product that heretofore has been obtainable chiefly from Germany.

Singapore has purchased 2000 kegs of nails, as well as a miscellaneous supply of other materials. As a general thing, the sales to points as far away as India and Australia are small and they appear to be for the purpose of replenishing merchant stocks. Nevertheless American materials can still compete at far away from home. Australia has purchased sheets and wire.

South America's Needs Unfilled

The South American market is not nearly so prosperous as it has been in the past. German commercial activities are reported to have been reinitiated in Argentina. England is said to have sold iron pipe to Argentina. The exact causes of this sale are not known, and it has surprised some American houses inasmuch as England herself is rather short of materials in general and has been purchasing stocks from the United States. The South American purchases have been chiefly sheets and wire products. Some good tonnages of barbed wire have been sold.

American prices on wire and nails have been advanced all around, it is reported. The producers have at last followed the lead of Jones & Laughlin. As a general proposition the prices have been advanced 5 cents on wire and 10 cents a keg on nails. The Consolidated Steel Corp., however, has notified foreign purchasers of prices even higher than this.

Brazil has come into the market for 1000 tons of 12-pound rails. These are desired for a street railway project. There are a number of railroad undertakings in South America awaiting development, but all of these need financing before anything can be done. Bolivia and Brazil both have commissions in this country now looking for loans with which to purchase American products.

Next to Japan, some American exporters declare that England is today the best market for American products. One company is reported to have sold approximately 8000 tons of steel to England, but of what this consisted was not made known. The United States Steel Products Co. is said to have sold some pig iron to England but the tonnage was not made public. According to the general gossip of the market several producers have been able to sell small orders of pig iron in that country. But the bulk of the British purchases today do not consist of semifinished material. The orders are declared to comprise sundry articles, the individual being in small quantities but the aggregate bulking large.

England is buying small quantities of pig lead, and some considerable tonnages of billets, bars and plates. While the British inquiries are generally for prices it has been estimated that their requirements of billets today total 10,000 tons. Some of the bars England is buying is for re-exportation to India. American agents are also selling to India.

Both France and Italy have in prospect great needs for ship steel and some American producers are anticipating beng able to get some of this business. According to one house the requirements will exceed 1,000,000 tons, but everything depends upon the financing. At present neither country has the money with which to buy, and a scheme of bond issues is being worked out. Among the French inquiries received by the market here are many for wire rods.

A new schedule of rates from North Atlantic ports to England has been promulgated by the shipping board. A rate of $17 per ton is quoted on steel products. For the moment, however, the shipping situation is causing exporters no little concern. The marine strike spread considerably during the past week and all the agents have been hastening to load the goods that have already been received at the ports.

Charge Pittsburgh Base is Unfair

Western Association of Steel Consumers Files Expected Action With Trade Commission Against Steel Corporation and Chicago District Independents—Declares Western Mills Discriminate in Favor of Certain Buyers by Dropping Pittsburgh Freight

WASHINGTON, July 23.—Discrimination against fabricators and other users of steel in general in the Chicago district in favor of those consumers located nearer to Pittsburgh is the ground which the Western Association of Rolled Steel Consumers takes in its application filed with the federal trade commission for a complaint against the United States Steel Corp., its subsidiaries the Illinois Steel Co. and the Carnegie Steel Co., and the independent producers, the Inland Steel Co., the Interstate Iron & Steel Co. and the Steel & Tube Co. of America, to compel the wiping out of the Pittsburgh base on steel products.

It is contended that the steel rolled in the Chicago district by the defendant companies "is produced at a cost substantially lower than at the Carnegie plant of the United States Steel Corp. at Pittsburgh or at other plants at Pittsburgh or elsewhere" and "that among the reasons for the reduced or favorable cost of producing rolled steel at Gary and Chicago, Joliet, East Chicago and Indiana Harbor as compared with the cost of producing rolled steel at Pittsburgh or elsewhere are the shortness and directness of the all-water transportation of ore from the mines of Minnesota to their mills in the Chicago district and of their proximity to coal." It is pointed out that in 1917 when the last official statistics were available, about 86 per cent of the entire production of iron ore of the country came from the Lake Superior district; 10 per cent from the Birmingham district; 2½ per cent from Pennsylvania, New York and New Jersey; and 1½ per cent from Colorado. It is submitted that the greatest normal growth and increase in iron and steel production under peace conditions will occur naturally in and around Chicago by reason of the cheaper cost of production and the increase in the consumption demand in the Middle West and in the territory tributary to the Chicago district.

"The applicant submits that the normal and reasonable price for rolled steel should be measured by the cost of production, with the addition of a reasonable profit, without the addition of a large and arbitrary increase, which forms no part of the cost of production and is over and above such reasonable profit," says the application.

"The application of the principle of price fixing at cost plus a reasonable profit and of the law of supply and demand, requires that the price of rolled steel in the Chicago district should be as low as and not greater than the price at any other point or in any other district in the United States. The fixing of any higher price for rolled steel produced in that district is arbitrary, artificial, unreasonable and uneconomical, and gives to the respondent producers excessive and unreasonable profits.

"It is submitted that if basing points are economically sound, then in the interest of the trade—of consumers and producers and of the districts or sections to be served and affected—their selection should take into view their situation with respect to cost of production, supply and proximity to existing and growing greater demand under normal and natural conditions. In any proper consideration of the question, the applicant maintains that if a basing point or basing points are to be considered as proper and recognized, Chicago best answers all the conditions and should be a basing point."

In support of its application, the petitioning association sets forth certain facts which it is held violate the law and equitable trade practice. It is charged that the addition of "fictitious freight rates" to the price at Pittsburgh when selling to consumers outside of Pittsburgh, discriminates against the members of the Western Association of Rolled Steel Consumers to the extent of $5.40 a ton and favors their competitors in the Pittsburgh district by this amount.

"And so the applicant charges," says the petition, "that the fact that such Chicago district fabricators of steel are obliged to pay for rolled steel purchased of the respective respondents and produced at their mills in said Chicago district in accordance with this single Pittsburgh base price, i.e., a price equal to the Pittsburgh price of the commodity plus a sum equal to the freight charge per ton from Pittsburgh to the point of destination (although in fact no such freight charge is actually incurred)—deprives such consumers of rolled steel in the Chicago district from enjoying the advantage to which they are entitled of their proximity to the real producing points at Gary, Ind., and elsewhere in the Chicago district, and arbitrarily and unjustly discriminates against such consumers in said Chicago district, in so excluding them from competing for business with those fabricators who are in or tributary to the Pittsburgh district and the east, and in enabling such eastern fabricators, at the same time, to compete on unfairly advantageous terms in trade with the fabricators in the Chicago district, as if the plants of such eastern fabricators were in the Chicago district."

It is held that this disadvantage suffered by the fabricators and consumers of rolled steel in Chicago is not a natural one and is not due to the latter's geographical location or remoteness from adequate mills or supply, and that such increase in the cost of rolled steel increases

"the cost and selling price of everything involving its use, and not only the fabricators in the Chicago district, but their customers and all who consume or use the products of steel in that section of the country are wrongfully and prejudicially affected by this compulsory increase in price."

Furthermore it is charged "that to meet the said Pittsburgh base price, the respondents who have mills in the Chicago district make prices and sell to purchasers in the Pittsburgh district or in territory between the east line of Indiana, and Pittsburgh, who are competitors of the members of applicant, at prices of the Pittsburgh mills and themselves absorb the freight rate from their mills to the purchaser's plant and thus discriminate in price to the amount of several dollars per ton in favor of such competitors and against applicant's members."

A charge that the defendant steel companies do not maintain the Pittsburgh base price but have practices and made other discriminations in favor of certain consumers in the Chicago district. In this direction the application says:

"They have quoted and made and do quote and make, as applicant is informed and charges, to and in favor of all or certain agricultural implement manufacturers, and to certain other consumers and purchasers in order to secure orders,—prices f.o.b. Chicago or f.o.b. mill for such rolled steel, which is less by said addition of $5.40 per ton or thereabouts than the prices exacted from the members of the applicant.

"They have quoted and made and do quote and make prices to railroad companies for rails, angle-bars, splice bars and tie plates f.o.b. Chicago or Pittsburgh or f.o.b. mill. They quote and sell basic pig iron at the same price f.o.b. Chicago and f.o.b. Pittsburgh.

"That the said respective discrimina-

tions in price between purchasers of such commodities are not on account of differences in the grade, quality or quantity of the commodity sold and do not make only due allowance for difference in the cost of selling or transportation, nor are such discriminations made in good faith to meet competition. But they are made by agreement or understanding amounting to agreement between the respondents or between respondents and other producers of steel in order to maintain prices of rolled steel and particularly to maintain such increased and unreasonable prices in and throughout said Chicago district to the members of the applicant and other consumers therein."

The effect of discrimination in price, it is claimed, is to substantially lessen competition and tends to create a monopoly and brings about unfair methods of competition declared to be unlawful by section 5 of the federal trade commission act.

Finally, the "petitioner, respectfully asks that by reason of the foregoing facts disclosing acts and conditions set forth in this application of unlawful discriminations in price, and of unfair methods of competition in commerce, this commission investigate the matter complained of and if, upon such investigation, the commission has reason to believe that there is violation of law over which the commission has jurisdiction, that a complaint be issued against the respondents, and such further proceedings be had as the law requires or contemplates and to the commission shall seem meet."

Filing is Informal

Washington, July 22.—Application of the Western Association of Rolled Steel Consumers for a complaint against the United States Steel Corp. and Chicago independent companies charging that the maintenance of the trade custom of basing prices f.o.b. Pittsburgh, is in violation of law, was filed informally with the commission July 22, and later probably will form the basis of a suit to open up the entire freight equalization question. Victor Murdock, acting chairman of the commission, said the application is being studied by the commissioners to determine the necessary procedure. It is likely the case will be formally entered for filing and taken up somewhat along the lines discussed with Judge Gary and Attorney Miller when they appeared before the commission July 9.

Navy Awards Contracts

Washington, July 22.—Closely following the award by the navy department last week of contracts for an aggregate of 50,000 tons of armor plate to the three leading makers, came the allocation by its bureau of supplies and accounts of approximately 4030 tons of plates, shapes and bars for U. S. Repair Ship No. 1, now being built at Puget sound. From the bids received and opened July 1, the bureau made the following awards: Youngstown Sheet & Tube Co., 2035 tons of plates, $108,028; the Jones & Laughlin Steel Co., 965 tons of plates, $53,373; and the Carnegie Steel Co., 1030 tons of shapes, $50,110; 45 tons of bars, $1907; and 13 tons of plates, $715.

Plans New Extensions of Valley Plants

Youngstown, O., July 22.—Construction of an 18-inch band mill at the McDonald plant of the Carnegie Steel Co. will begin soon, according to an announcement made by officials. Foundations were put in last year but further work was suspended on account of war necessities.

Plans are being developed for the installation of 30 additional sheet mills at the DeForest plant, Niles, O., of the Republic Iron & Steel Co. With the 30 additional units in operation, the Republic company will have a 40-mill plant and will become the largest producer of sheets in the Mahoning valley.

Controlling interest in the American Zinc Products Co., Greencastle, Ind., has been acquired by Wade A. Taylor, president of the Valley Iron Co. of this city. The company operates a smelter at Fort Smith, Ark., and a plant for rolling sheet zinc at Greencastle, Ind. C. W. Martin, formerly associated with the DeForest Sheet & Tin Plate Co., has been elected president of the Zinc company succeeding D. W. Kerr.

Adding Sheet Mills

Two additional sheet mills are being installed at the plant of the Canonsburg Sheet & Tin Plate Co., Canonsburg, Pa. This gives the company eight mills. The new units were built by the Hyde Park Foundry & Machine Co., Hyde Park, Pa., which also built the original 6-mill installation.

Remodeling Stack

The Thomas Iron Co. is remodeling its No. 3 furnace at Hokendauqua, Pa. It is installing an automatic revolving top of the McKee type, and is enlarging the hearth. It expects to blow in this furnace Oct. 1. The Thomas Iron Co. plans also to install a new pig casting machine.

Little Effect

Of Efforts to Unionize Mills Anticipated by Judge Gary

New York, July 22.—Efforts of the American Federation of Labor to unionize the steel mills of the country will have little effect, either in the operation of the mills or in the market generally, in the opinion of Judge E. H. Gary.

"Do you think the movement now under way to unionize employes of the United States Steel Corp., and bring about a general strike will meet with success?" he was asked in an interview today.

"I do not," he replied, "for the reason that employes have received and will continue to receive better treatment and better conditions of employment from the Steel corporation under its principles and policies pertaining to labor than they could expect through the efforts of the labor unions. The vast majority of workmen are not members of labor unions."

Asked whether the present foreign exchange situation would effect export business, Judge Gary said:

"There is a large foreign business offered, and it will be offered in increasing amounts and quantities. I don't see anything in the way of satisfactory export business during the remainder of the year, and probably for a longer period. I think the natural way of taking care of the foreign exchange question is by the purchase of more foreign commodities, and I believe this country ought to be liberal in buying from foreign countries. We can do it, for we have the necessary money. The masses of the people of this country are well supplied with money and can afford to buy in large volume. Therefore, I expect to see imports increase, and also exports increase more than would be a relative proportion. This country never before has had as great a chance of increasing its business as at present and we are sufficiently skillful to seize upon and utilize opportunities which are offered to us. It is up to us."

Will Rebuild Furnaces

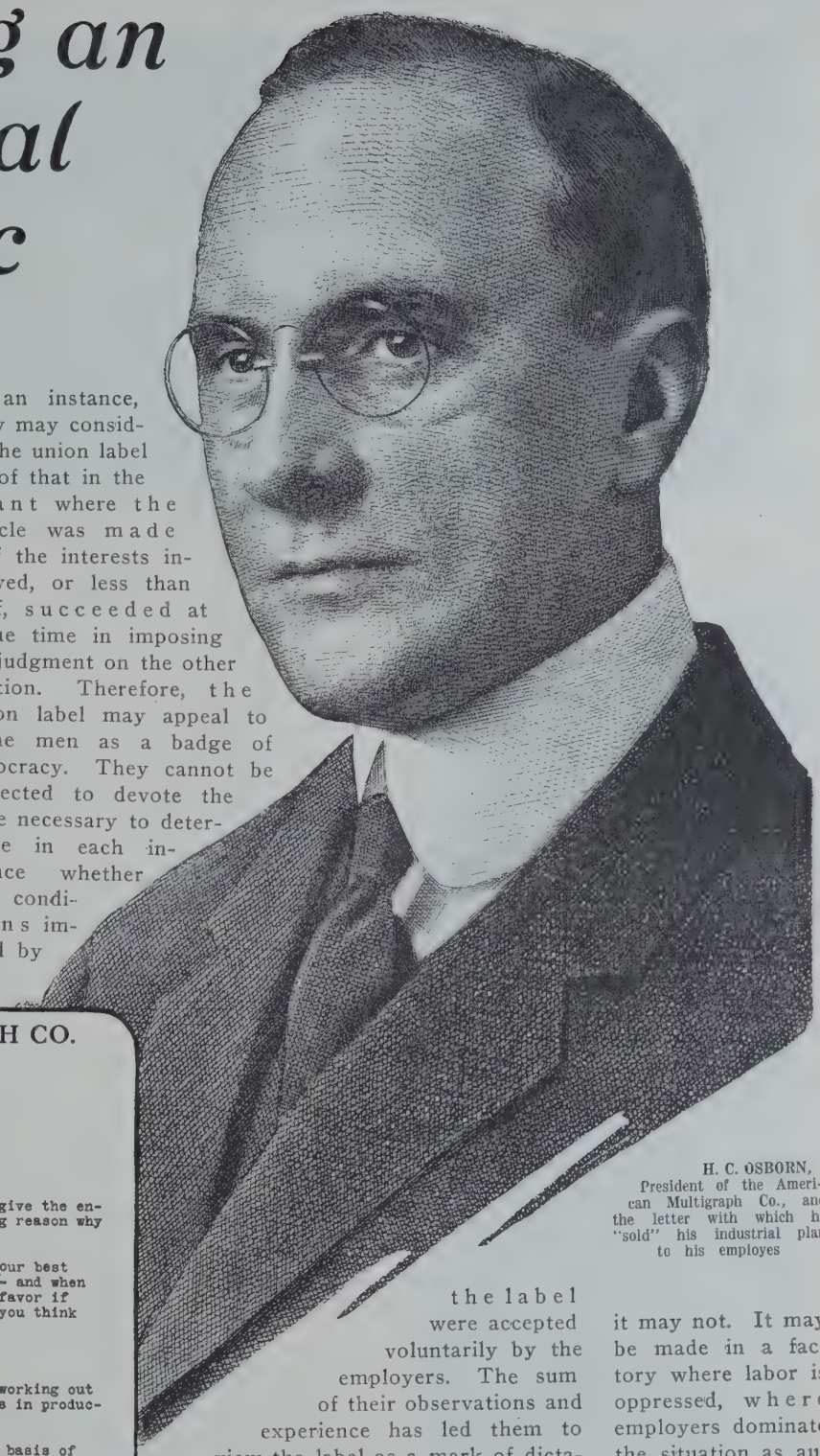
Reconstruction of the No. 1 blast furnace at the Crane works of the Empire Steel & Iron Co., Catasauqua, Pa., is under way. The program includes the erection of a trestle, stock bins, pig machine, one stove, boilers and blowing engines. The rebuilding of this furnace is under the supervision of the Arthur G. McKee & Co., Cleveland. The latter company also is installing a McKee-type stock distributor on the No. 3 Hokensauqua, Pa. stack of the Thomas Iron Co. This furnace will be placed in blast about October 1. Contracts for the rebuilding of the Oxford furnace, Oxford, N. J., of the Empire Steel & Iron Co., have been let to Freyn, Brassert & Co., Chicago.

Organizing an Industrial Republic

BY A. J. HAIN

MANUFACTURERS who have granted their employes representation seem to have overlooked an important possibility of the plan. That is the commercial value in a label or trademark bearing the words "Made in an Industrial Democracy," or a similar phrase to denote that the product originated in a plant where labor is given a voice in its own management.

The union label idea? Well, there are labels and labels, and they symbolize various ideals. The union label is evidence that the article on which it appears was made by members of a labor union in a closed shop. That may be the only certificate necessary to induce some men to select the article in preference to some other, but a great number of buyers may have a different opinion of the same label. As an instance, they may consider the union label proof that in the plant where the article was made half the interests involved, or less than half, succeeded at some time in imposing its judgment on the other portion. Therefore, the union label may appeal to some men as a badge of autocracy. They cannot be expected to devote the time necessary to determine in each instance whether the conditions implied by the label were accepted voluntarily by the employers. The sum of their observations and experience has led them to view the label as a mark of dictatorial authority. And as an argument to them why they should buy, the label has about the same force as if it read: "Made in Germany."



H. C. OSBORN,
President of the American Multigraph Co., and the letter with which he "sold" his industrial plan to his employes

THE AMERICAN MULTIGRAPH CO.
FACTORY AND GENERAL OFFICES
EAST 40TH STREET AND KELLEY AVENUE
CLEVELAND, OHIO, U. S. A.

2-28-19

Frank Heider,
City.

I hope you will find time between now and Monday to give the enclosed booklet a careful reading. That's the one big reason why I'm sending it to your home.

The new idea described in the booklet is worthy of your best thought. Talk about it to your friends and family -- and when you come in Monday morning I will consider it a big favor if you'll come to my office and tell me whether or not you think we're on the right track.

Will you do that?

From now on, you will be urged to use your brain in working out our problems, just as you are asked to use your hands in producing the work.

It means the beginning of Industrial Democracy, as a basis of management, in the American Multigraph Company. Through the representation provided, your thoughts and suggestions will be considered in the laying out of Company policies and regulations.

We expect the plan to produce great things. It will mean progress and benefits to us all. Of course, it is going to add to our responsibilities, too -- especially for the representatives and those who are elected to Congress -- but the honor will be worth the extra effort.

To me it represents an idea that has taken us many years to work out. I hope it will mean that we can work with greater co-operation and added efficiency.

The biggest result to wish for is contentment. If, through the workings of this plan, cheerfulness and good will towards others can be multiplied, then we need have no fears for the success of Industrial Democracy in our Plant.

Just now I want your support. If you think the idea a good one, say so, and then pledge yourself to help it make good!

Sincerely yours,
A. C. Osborn
President.

Why label goods to indicate the conditions under which they were made in the factory? It is quite true that considerably fewer men look for a trade union label than those who do, and that members of trade unions form a large proportion of the number who do not. But consider an article without a label; it may be made in a factory where labor conditions are ideal, and, again, it may not. It may be made in a factory where labor is oppressed, where employers dominate the situation as autocrats. Fortunately, a label is not significant in this sense by reason of its absence; but there is no visible proof for the buyer that the maker is not a despot, nor yet any evidence that he is a prince among his men. The buyer buys blindly, or, as some believe, he does



CONGRESS IS COMPOSED OF EMPLOYES, ELECTED BY EMPLOYES



F. A. WIDOWS
Chairman of the congress

worse—picks the union label to play safe!

If we are to have labels showing that one element in a business establishment has won a victory over the other, why not have them to show that true democracy exists? Our flag is the symbol of our national democracy; why not a symbol of industrial democracy?

A few million men washed their faces and hands this morning with a certain brand of soap. It's a good soap, selling on its merits, with proper advertising; but no picture of pretty face, and no pretty phrase could focus our attention on that soap, make us admire and prefer it so much, quality admitted, as to know that in the factory where that soap was produced an industrial Utopia has been attained, that managers and men work together as brothers, that the soap is the product of an institution permeated with the guild spirit. Of course, in selling soap we must have pictures of pretty faces, but visualizing the spirit of industrial peace and happiness will go a long way to help, to furnish the background, or the solid effects.

"Made in an Industrial Democracy"—the guarantee that employers and employes have upheld the sacred principles of the rights of men, or "Made in a Closed Shop"—which is the most satisfying to the American spirit?

* * *

EMPLOYERS are endeavoring to sell themselves to employes, and eventually we may expect to see them advertise themselves on the point more extensively. But at present the disposition seems to be to regard employe representation, by which they seek to convince employes of their sincerity, in the nature of an experiment. There is no telling when someone may come along, and in those factories where the golden rule has been put in practice convince employes there is something better.

No one wishes to advertise a failure, but a failure frequently occurs through lack of advertising, and if trade unionism supplants employe representation in a shop where the latter has been tried it probably will do so because trade unionism conducted a better selling campaign than was conducted in behalf of equal representation. The challenge of trade unions to those employes who have granted representation is to lay on the table the specifications of the plans they have adopted for the practical application of the golden rule in industry. If they cannot do that with perfect confidence, if the plans cannot stand the searchlight, trade unions have the better of the argument, so far as public opinion is concerned. If the plans are such as to satisfy the average man's sense of justice the days of trade unionism are numbered.

Employers in greater number every day are accepting the challenge. They are drafting plans which if adhered to, they say, will provide a basis for understanding and equitable settlement of every dispute that may arise. They are putting employes to the test, and furthermore they are seeking to train and educate those employes to stand the test; not to convert them to a distorted sense of justice, but to what is just to their employers as well as to themselves.

After American industry has been thoroughly "democratized" the real test as to whether we shall have industrial harmony will remain the same as it is today in every institution, the even balance of commonsense judgment, the personality and



SENATE IS COMPOSED OF THE MANAGERS OF DEPARTMENTS

intelligence of the men. Human nature has not changed; a new dispensation of generosity has not been attained with the overthrow of the kaiser; the dollar has not lost its attractiveness. Every rule and law made is subject to violation, and industrial democracy, while a powerful instrument for good, is no straightjacket. If it accomplishes that which some claim for it, the settlement of every dispute, it will rank with, if not transcend, the league of nations and its ideals. And if it achieves only one purpose, providing a means of "contact" between employers and employes, perpetually indicating to them the direction in which their best interests lie, employers will not have "sold" themselves in vain.

* * *

OF the making of industrial relationship plans it might be said, as once was said of the making of books, "there is no end." And like books, some of the plans smack of fiction and some of fact; some are fair-weather fancies, and others deep-rooted to withstand the stress of time. A number were devised apparently for elementary classes, for easy interpretation; while not a few of them were developed to measure up to men of higher mentality, graded as psychological tests are graded.

So in considering any plan for employe representation, either proposed or in operation, it is important to bear in mind the character of the organization, the work performed, and the number of men who perform it. Some idea of the workmen, their skill and mental capacity may be obtained by what they produce.

At the plant of the American Multigraph Co., Cleveland, a democratic system of government has been in operation since February, 1919, in the shape of an industrial republic.

The plan was not originated in a day, nor was it picked "grab-bag" fashion from a miscellaneous assortment of theoretical systems for allaying industrial unrest. It was developed with much thought and study by the executives of the company, with H. C. Osborn, the president, who has made extensive investigations of industrial problems in this country and abroad, participating as the leading spirit.

Mr. Osborn chose a novel method for submitting the plan to the employes. He did not want their hasty judgment; he wanted them to consider it carefully so that they might understand and appreciate every detail. If there were any flaws in it; any opportunities for injustices he wanted them discovered; he wanted the employes to be convinced before accepting it. An industrial plan "sold" against the better judgment of employes, he believed, could no more stay sold than a machine sold under similar circumstances.

It was typical of the way the company went about the affair that Mr. Osborn decided on a method of introducing the plan to the employes in such a way that it would compel them to "stop, look and listen." He mailed a letter to each employe to reach the employe's home Saturday afternoon. He wanted the worker to have a day or more in the calm atmosphere of home to think it over.

"The new idea described in the booklet," he said, referring to the printed copy of the constitution enclosed with each letter, "is worthy of your best thought. Talk about it to your friends and family and when you come in Monday morning I will consider it a favor if you will come to my office and tell me whether or



R. G. A. PHILLIPS,
Vice president of the American Multigraph Co., and chairman of the senate



Representatives Maintain Contact Between Employes and the Employes' Congress.

not you think we are on the right track."

Thus the one-big-family idea in modern industry was carried directly into the employe's home. He considered it in relation to his employer, to himself and to his family, at a time and place removed from prejudice and suspicion. The company was appealing to him for a closer alliance; it offered him as much independence as any man may reasonably ask for in a free government, a voice in his own management; new responsibilities, and new opportunities.

Came Monday and a majority of the employes told Mr. Osborn that they wanted the plan put in effect. Not a few were enthusiastic about it, while some were skeptical. Several did not favor it.

"Why not?" Mr. Osborn asked one who objected.

The employe had heard of "such plans" tried out, and also that they gave a company an opportunity to trick its employes.

"How long have you worked for the Multigraph company?" he was asked.

"Six months."

"Has the company ever tricked you?"

"No, it never did."

"And it never will," Mr. Osborn assured him, thanking him for his opinion and asking him to give further thought to the plan and how it might work out in the Multigraph plant.

By Wednesday 85 per cent of the employes had approved of the plan and more did so subsequently. Pledge cards were signed by those who favored it, giving their promise to abide by the constitution for one year, the purpose being to keep a record of the signers and the objectors and to ask the latter for their views after the plan received a fair trial.

So an election was held in the plant, with campaign speeches, posters and ballot boxes, and the new government "of the people, for the people and by the people" of the Multigraph company was born.

* * *

THE Multigraph plan provides for a congress composed of 12 members elected by employes and 12 others chosen jointly by the president of the company and the three elected members receiving the highest vote. Also, it provides for a senate, composed of departmental managers, with the vice president of the company serving as its chairman.

Women may vote and may be elected to congress, but as the number of women employed does not exceed one-fourth of the total number of employes, about 1000, that ratio is maintained in their representation. Congress elects one of its members chairman who does not vote except in case of a tie. The manager of industrial relations of the company is secretary of congress.

"Beginning with the second election," the constitution provides "all terms of office shall be for one year, four members being elected and four appointed each year. For the purpose of organization, however, the first congress shall be made up as follows: Of the 12 elected by the employes the four receiving the greatest number of votes shall serve for three years from the day elected; the next four shall serve for two years and the next four for one year. The 12 appointed to office by the president shall be divided and serve for terms similar to the elected 12, the president being required to designate who are the individuals serving the various terms."

Committees are appointed by the chairman to consider such subjects as employment and discharge; education and publications; health, sanitation and safety; wages and rates; economies and suggestions; shop training; sales co-operation; recreation, athletics and entertainments, and others deemed necessary.

Congress maintains contact with employes through representatives, appointing outside of its own personnel a representative in each department "whose duty it shall be to gather material for congress and to interpret rulings of the congress to employes in that department." Representatives may appear before congress and be heard with reference to any proposal, but they cannot vote.

The senate is composed of the production manager, chief engineer, superintendent, advertising manager, sales director, treasurer, chief inventor, chief inspector, manager of industrial relations, purchasing agent, auditor, and vice president, the latter being chairman.

The senate must approve or reject measures passed by congress, and in rejecting measures must give its reasons, and offer suggestions for amendment. All measures approved must be submitted to the president and his cabinet, composed of the officials of the company, for final adoption. Should the senate and congress

be unable to agree it becomes their duty each to appoint three members to serve as a joint committee, this committee to appoint one of its members chairman, who shall not vote except in case of a tie.

Should either party to the dispute wish to dissent from the ruling of this committee it may appeal to the supreme court, the court being composed of three members of congress, three members of the senate and three members of the president's cabinet, the chairman or chief justice being chosen by majority of the court.

Either congress or senate may impeach one of its members and a member impeached must show cause why he should not be dismissed from the company.

"In adopting this plan it is our belief that it will prove of permanent and lasting value to all three partners in our business—employes, management and stockholders," it is stated in the preamble to the constitution. "With this thought in our mind, and with the intention that the plan be given a full and fair trial it is entered into subject to the limitation that it may be terminated Jan. 1, 1920, or upon any anniversary thereof should the parties to the agreement have reason to believe that the mutual benefits expected have not been realized."

* * *

HOW is your industrial plan succeeding?" the vice president of the company and the manager of industrial relations were asked six months after the election.

"Too early to say," they replied. "We consider it still in an experimental stage; only time can tell what the outcome will be."

"From your experience what do you see as the chief difficulty which may arise in the way of the successful operation of industrial democracy?"—this to the manager of industrial relations.

"The possibility of some men regarding it as something on the order of a nickel-in-the-slot-machine. For instance, our company in response to a request from employes has just decided to pay once a week instead of twice a month. That change will cost $6000 extra per year, and when it is made there is no assurance that once a week will prove any more satisfactory or necessary than twice a month. After they have it, the employes may find that they do not care for it any more than the present system. It may work out all right, and again it may be that the company was put to needless expense."

"How do you 'size up' the Multigraph plan?" the writer asked the chairman of the Multigraph congress.

"It will prove a benefit to all of us if we succeed in putting it across; if no one tries to take advantage of it," he said.

And to get another angle on it, the writer put the same question in a casual way to several of the employes.

"We're satisfied," said one.

"It's a fine proposition," said another.

"The boys were a little suspicious of it at first, but it's going along all right, and everybody seems to be happy," a third declared. "Of course, you never can tell ——."

Now while the attitude of conservatism as regards the future of the plan was clearly indicated by executives and employes, the writer sat five hours through a session of congress and again two hours through a session of the senate and received a composite picture of earnest, thoughtful, good-natured men, considering their problems in frankness and sincerity. If congress is representative of the class of employes in the Multigraph plant, perhaps any system providing for discussion of mutual problems would succeed.

It would be difficult to judge, if the plan continued indefinitely, just what proportion of the success was due to the merits of the plan itself and the share which might be ascribed to the type of men, but a superficial survey would suggest Russia and the United States in comparison. Here a predominance of intelligent men make of the mechanism of democracy a smoothly running, helpful machine; in Russia they make of it a buzzsaw off its bearings.

It was significant that in the session of congress very little was said regarding personal relations; there was little evidence that anyone was dissatisfied. The question of an 8-hour day was brought up, as will be referred to presently, but it was suggested and discussed without irritation. It was mentioned that the rest period for some girls had been withdrawn since war work was discontinued. Members said they thought the girls should be allowed to rest five or ten minutes in the morning and afternoon. It developed that some of them had not enjoyed the rest period through a misunderstanding, as some girls go home earlier than others.

By far the greater portion of the session was devoted to suggestions for improving details of operation of the plant, some of them disclosing expert knowledge of machines and mechanical processes.

Was it because they had a congress at this plant that the employes showed such interest in improving their work? A "committee" might have done just as well? Here is a case where the elementary principles of representation have been elaborated upon to stimulate interest. There is something interesting in a congress, a senate, a supreme court, a president and a cabinet. It does not take any more time for a group of men to make or mar an establishment whether you call them a com-



EDUCATIONAL WORK IS AN IMPORTANT FEATURE OF THE MULTIGRAPH COMPANY'S INDUSTRIAL PLAN

mittee or a congress, but there is something in the name and the system to hold attention, to command thought.

* * *

FOR example, the minutes of the meeting of congress, summarizing the reports of committees, and other transactions, will give the reader an idea of the work done once a month:

SALES CO-OPERATION COMMITTEE: Reported on suggestion passed to them by the economy committee. Investigation shows that the field does over-order at times and recommendations were made to adopt a plan to check this. Also, the committee recommends the issuance of a parts catalog.

EMPLOYMENT AND DISCHARGE: Reported that one or two cases have come to their attention but that they were able to settle them outside of congress. Because of the confidential nature of the work of the committee no report was made. Conclusions arrived at were entirely satisfactory all around and decisions had been made according to recommendations made by committees.

EDUCATION AND PUBLICATION: Progress is being made along the lines of preparing for the school of multigraph operating and Mr. Blackie is investigating the matter of free library co-operation, and a list of books recommended.

HEALTH, SANITATION AND SAFETY: Quite a large report was presented * * * and during the discussion it was suggested that the matter of fixing up the front lawn be taken up with the proper persons. Traffic lines for sharp turns. Adopted unanimously. Blower for dry grinders in toolroom. Suggested that they be installed when toolroom is moved. Adopted unanimously.

SUGGESTION COMMITTEE: Was requested to take hold of the present suggestion system and bring it up to date. A system of boxes and posters to be gotten up with the idea of stimulating both the quality and quantity of suggestions turned in. Also recommendations are to be presented on the rearrangement of prizes. Suggestion on storing of finished product before polishing or plating adopted.

SALES CO-OPERATION COMMITTEE: Called attention to previous report on recommendations that inspection department be separated from assembling. It was recommended that for the good of the production the final inspection department be separated entirely from inspection. This will insure greater efficiency in both departments and lessen the chances for passing over things in order to keep up with the rush.

SPOILED WORK COMMITTEE: Presented report on several phases of the spoiled work around the plant. Report was also made on the results of an investigation that resulted in doubled production.

IMPROVEMENTS:—Suggested investigation into the matter of drill grinders and the changing of orders by stores clerk. Several examples were given of how orders were changed from wheels specified to something else. Investigation ordered.

RECREATION: Report on progress of ball team and dance as well as on attendance at gymnasium. It was also suggested that Bill Potter's offer to loan his quoits for use as patterns be accepted and new ones be cast.

MISCELLANEOUS COMPLAINTS: Nothing very big. All matters fixed O. K. Committee appointed to investigate matter of rest periods for girls being withdrawn.

Senate reports approvals on all matters in previous minutes except the matter of weekly pay. This is being investigated and senate will report at a later meeting.

J. Wise reports that production in his department is 31,000 behind on one operation of the Gridleys. Suggests that matter be looked into in order to keep production line straight.

Motion that congress write letter to Mayor Davis telling him that they approve of action of authorities in downing the May day rioters.

Mullen suggested library plan and a plan for employes' insurance. Senate already investigating the subject and will present report.

Question of aliens arose. Information

Educational Work Indispensable

BY R. G. A. PHILLIPS

Vice President of The American Multigraph Co.

OF ALL the movements under way and under discussion with relation to industrial betterment, to my mind the educational program is the most important, and should receive the closest attention from the executives of any business.

It is not the men's fault that the "soap box orator" can so twist facts as to cause unrest. It is the fault of the people who should have presented the facts to the men a long, long while ago. I do not believe and I do not think any employer believes, that the people who work for him are any the less ambitious than he himself is. I do not feel that the common laborer has any right to be less ambitious than the college graduate, and I do feel that the industry that can afford the greatest opportunity to is human element, both in advancement and in training, will be the strongest industry in the end.

It is a shame for employers to have employes who do not know their employers' business. It is a shame to have employes who only know a fraction of what they should know to handlde their jobs properly.

I think the more educational work that can be done along the lines of teaching the men about the materials they use, about things of timely interest, the organization of the business, and how the various departments function, and also a liberal program which will embrace outside subjects, such as current events and the like, will prove of invaluable help.

I do not think that employers will find the employes unwilling to co-operate in an educational program that is designed to benefit them. Employers will not have any objections on the ground that such work should be held on company time. I think there will come times when it will be necessary to hold a session or two on company time, in order to demonstrate some particular feature or other that must be demonstrated while the plant is in operation. But on the whole, employers will find that if their course is well balanced and is made so interesting that interest in it can be sustained, they will find men, and plenty of them, willing and anxious to sit two or three hours after 5 o'clock, in order to better fit themselves for the job ahead.

We are entering an era where it is considered better management to advance men from the inside to the the top, than it is to go outside for material to fill the bigger jobs. It is more to the advantage of the management and more to the credit of the force to promote men to bigger jobs rather than to hire from the outside to fill those jobs.

Every employe has ability along two lines. The first is the physical ability, which is the class of labor that quite a number of employers are perfectly content to buy. Second is the labor of his brains which can be just as valuable as an employer is willing to make it.

We, at the Multigraph plant, believe that educational work is almost indispensable. Since our early years of existence we believed in it thoroughly. We are 100 per cent gold on it and are planning year by year to make this work more embracing in the things it will do.



Girls operate many machines at the plant of the American Multigraph Co.



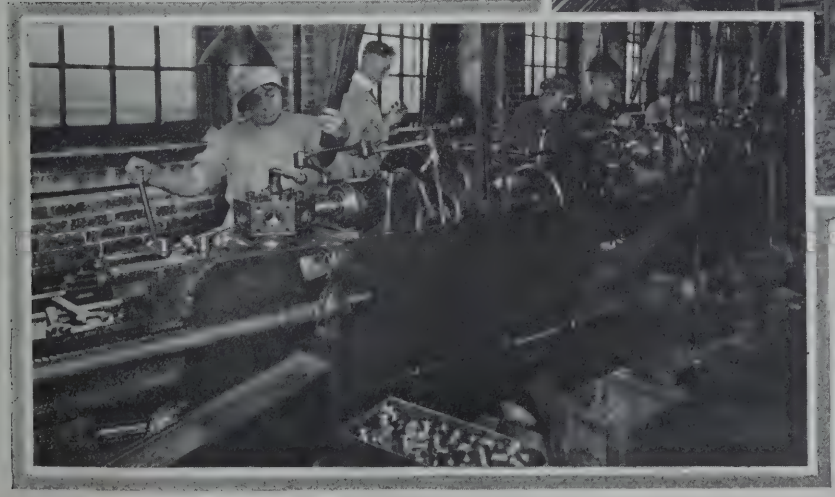
Sensitive drill press operators proved their ability during the war—and since



More than one thousand workers, men, women and girls, find life worth living in this industrial republic



Women also show considerable skill in operating turret lathes



Manufacturing automatics are generally operated by men, tool setting, if done by the operator, requiring skill and muscular exertion

given that only citizens are now employed and that only three noncitizens work here.

Representative Rambo presented motion for 8-hour day. Referred to a special committee.

Representative Kirkham brought up matter of docking for lateness. This was discussed considerably but no action taken.

Representative Koberna brought up matter of picnic.

* * *

GENTLEMEN, you and I know this company wants to do all it can for us," said the chairman of congress in charging the special committee he had named to consider a request from the shop for an 8-hour day. "It is not a question about the company wanting to give us an 8-hour day; it would give us that and more if it were possible. It is a question whether we can produce as much in eight hours and make it possible for the company to keep up wages. If we can't do that, but insist on eight hours, something must give way; wages must come down or the company may be forced out of business. So in considering this proposition it is up to us to first give serious though to the matter and determine if we can arrange the work so that output will not suffer.

"If we can show the company that we can continue to produce as we are producing, then we would be justified in asking for eight hours; but mere promises that we will work harder, and all that, are not sufficient; there must be something more definite. As this committee takes hold of this matter I would like to have it bear in mind that it must not only be considered from the viewpoint of the fellows in the shop. Good will of the management for the men will not pay wages; the management must have the means for paying them and we must provide them."

On the evening this proposition came before congress, May 5, that body was in session from 5:30 to 10 o'clock. All committee reports had been submitted and discussed, 90 per cent of the work being of a constructive character. It was near the close of a session which might have been regarded as a hard grind if spirits had not been buoyed up by keen interest and enthusiasm in the work.

A representative brought in the request from some of the men in his department. Impatience on the part of congress might have provoked a feeling of resentment. So the members put their watches back in their pockets, lighted fresh cigars and proceeded to give the request prompt attention. A member suggested that it merited thorough investigation, and it was agreed that the most expeditious way of accomplishing this was to have the president select a special committee, the members themselves proposing names of those they wished to be chosen.

Employes at the Multigraph plant now receive 11 hours' pay for 10 hours' work, all time over eight hours being paid for at the rate of time-and-a-half. No dissatisfaction with the amount of wages was expressed, the spokesmen for the men saying that now that the company has resumed peacetime production they thought eight hours sufficient.

A situation which in some plants might have developed into a strike was handled in an orderly, commonsense way; the proceeding was a clear-cut expression of confidence in the company's management, and a recognition of the power of co-operation. It was evidence of an aroused sense of responsibility, perhaps the best the operation of the plan thus far has afforded.

June 5, one month later, the special committee was deep in its work, investigating direct production costs, overhead and all the details relating to wages, production and profits. And, in the meantime, the machines in the Multigraph plant hummed merrily along, the workers cheerful and contented, confident that "if it can be done it will be done."

* * *

SENATE was in session. There came for consideration the case of C—— S——. Fellow-employes petitioned for an increase in wages for him, saying that he had worked for the company for 12 years in the same job and that he received but $90 a month. If C. S. was employed 12 years in one job, the petition stated, surely that was proof that he had "made good," and having "made good" he was entitled to more than $90. It seemed to the few who petitioned that it was regrettable there was no greater reward for such faithfulness and service.

But this case was no exception to the rule in having two sides, and the other side presented a different picture. In favor of C. S. was the length of his service, against the increase in wages was this: C. S. had reached his natural limitations, he showed no initiative, no ability to progress. He was too satisfied with his job which he had made no larger than when he came to it, but he was dissatisfied with the wages. In other words, C. S.'s wages had moved ahead while C. S. stood still, and the wages could go no further without co-operation on the part of C. S.

The job was an $80-a-month job; because of its very nature it could never be much more than that unless the man made it more. C. S. preferred to receive $90 for an $80 job than to strive for a $100 job. His superior had a long talk with him a year before when he asked for an increase from $80 to $90 and received it. The manager of the department tried to make the employe understand that his qualifications in that particular line of work were limited; that given a chance in the job higher up while the man who held that job was away, C. S. could not grasp its rudiments and that he was incapable of additional responsibilities.

After that, and here is the crux of the case, C. S. was offered opportunities in other lines of work. The plant was engaged on war contracts and needed men. Others were receiving high wages; there was a chance for C. S. in another department, but he did not seize the opportunity. He did not want to give more; he wanted to receive more. And sympathetic fellow-workers overlooking the fact that if they themselves took more from the enterprise than they produced it would not exist, petitioned in his behalf.

Unfortunately, there was another element entering into the case. The employe had a physical infirmity, which while arousing sympathy did not interfere with his normal activity. The plea for C. S. was not based on this ground and, therefore, this feature of the case was dismissed. It narrowed down to a point of paying an employe considerably more than he earned. The senate considered such a policy would be contrary to the best interest of the organization as a whole, and it ove ruled the petition.

* * *

ONE of the outstanding features of the Multigraph plan as distinguished from some others, notably those in operation at the plants of the Colorado Fuel & Iron Co., and the Bethlehem Steel Co., is that it keeps within the organization th final determination of what is fair to the company and its employes.

In the plan adopted by the two latter companies it is provided that when disputes cannot be settled satisfactorily by committees, in which the management and the employes are equally represented, an appeal may be made by either party to the state mediation board; but it is significant that in the four years of the operation of the Colorado plan it has not been necessary to make such an appeal, and as far as known no appeal has been made from the decisions of committees organized in the Bethlehem plant in the half year of opera-

tion of the employe representation plan.

Results so far strongly suggest that where there is opportunity for frank discussion and arbitration within an organization there is less need for outside interference. A strong plea for just this form of settlement was made by the war labor board in practically all its decisions. Corporations with industrial disputes were urged to provide their employes means for organizing and discussing their problems with the management, and this ruling was hailed as a signal triumph by organized labor, which, however, did not commit itself to abide by the results of this system.

Organized labor frequently found the arrangement was not satisfactory to it and carried its disputes to state or federal institutions. It is possible, therefore, that trade unionism might frown on any arrangement whereby employes pledge themselves to abide by decisions made within the industrial organization itself, but the plan does not consider trade unionism as a dominant factor. It places the unionism of employers and employes above unionism of class and stakes its success on the principle that organization within is superior in all respects to organization without.

* * *

CONFIDENCE between employes and employers in industrial relations will never appeal to some men as a confidence game. The one-big-family idea will always find scoffers. Let any group of employers and their employes write an agreement guaranteeing each other a square deal and let them pledge themselves to its fulfillment, still there will be those who will interpret the action as sinister.

Prejudice opposes the new spirit of fellowship in industry because prejudice has asked itself the question "Where do I come in?" and concluded that in the changed order of affairs there will will be no room for it. But because prejudice exists it must be reckoned with; the employer who would extend his hand to his employes must show that he has nothing up his sleeve; he must demonstrate that he regards treaty with something more than a "scrap of paper," else he will find many interests ready to seize the opportunity to block his efforts and drive in the wedge. Skepticism and suspicion regarding the new agreement exist regardless of how well it may be devised to protect the interests of employers and employes. It is a situation where words cannot synchronize management and men, but where purpose must be proved by action.

Will democracy in industry succeed? What is it? A contract, a bill of rights, self-government, or a more sympathetic feeling between men of all classes in their working relations? Some industrial enterprises have no constitutions and yet have democracy. Others have agreements defining rights, but there is strife. Therefore, it must be more than a written rule of conduct; it must be the golden rule in everyday practice.

Will it succeed? As good government is founded on self-imposed restraint, the answer depends on how well the various interests represented in industrial democracy restrain themselves.

Desires Must be Sincere

It may be assumed that those who propose an agreement of this kind are sincere in their desire for its fulfillment, so from the viewpoint of those employers who offer a plan insuring justice to their employes the proposition narrows down to how well the employes restrain themselves. If the agreement operates in such a way as to give one party an unfair advantage of the other in a difficult situation it is obvious that it will fail.

New opportunities are created with new responsibilities, and there is danger in imposing responsibilities on persons who are not capable of assuming them. Manifestly it is unfair to give a group of men the power to enforce demands when they themselves do not understand the consequences of these demands. If employers are to invite employes to participate in management it would seem that education is the first step in the process, and that unless employes are educated to understand their responsibilities the plan is fraught with possibilities of misunderstanding and dissension.

Organize some men and tell them to make suggestions for their welfare and it is possible that some interests entitled to consideration may be overlooked. Some employers might view such a step as equivalent to arming an enemy. But education proves a stabilizing influence.

Some time ago a trade union leader said that American industrial managers do not want their employes to become educated "because then they cannot exploit them," but even a casual survey of industrial relations today would lead to the conviction that the education of employes is one of the first considerations of employers, and that where principles of democracy are fostered educational work is regarded as the vital factor in their practical and successful application.

Discover Oil in England

A great deal of interest has been aroused by the discovery of oil in the Chesterfield district as the result of the boring operations undertaken about seven months ago by the Marquis of Hartingdon. Fortunately, the old field is only a few miles outside Sheffield, while in Chesterfield itself there are large and important iron and steel works, including blast furnaces, foundries and rolling mills. The district is a great center for the production of cast-iron pipe. If the oil supply proves to be abundant it will be a great boon to the iron and steel trades of the Midlands.

The oil was reached at a depth of just over 3000 feet and it is roughly described as giving off a strong odor of paraffin and benzine. The liquid is almost of the consistency of varnish, opaque and of a brownish green hue. A suspension of drilling took place to enable the rise to be measured as well as to analyze the product and for putting in the necessary connections and fittings. It is hoped that the oil will eventually come to the surface of its own accord as it is rising under obviously fairly strong pressure.

The oil has been discovered at varying depths, but this is the first indication of real volume. Seven wells have been sunk in Derbyshire, namely at Hardstoft Heath, Brimington Common, Ironville, Renishaw and Ridgeway. Hardstoft has been the first to yield oil, but there are hopes that a discovery may be made at Brimington, where a depth of 2500 feet has been reached. In this well the casing was blown in by gas pressure at a depth of 1100 feet. At Ironville slight traces of oil were found at 1000 feet but at a second well in the same neighborhood a drilling of 1800 feet failed to yield any trace of oil but the drilling will be continued possibly to 3600 feet. A considerable amount of gas has been found at Renishaw. At a depth of 1600 feet gas flowed at the rate of between 200,000 and 300,000 cubic feet per day which, on ignition at the top of the hole, produced a flame 15 feet high.

Further drillings are taking place at Stoke-on-Trent, in North Staffordshire, and a start is about to be made in Scotland. Most of the plant is being imported from America. In the preliminary investigations great help has been received from Eugene Z. Ickles, an American geologist of experience in home and foreign oil fields.

Builds Steel Plant in Far East

Japanese Company Will Be Self-Contained Upon Completion of Open-Hearths —Blooming, Plate and Structural Mills Are Now Under Construction in This Country—Built Plate Mill

AMERICAN-BUILT rolling mills are gradually coming into the favor of foreign steelmakers. In the last few years several mill installations have been consigned to England, France and Australia. Probably one of the latest orders filled by American rolling-mill builders is one for a plate and structural mill which will be shipped across the Pacific ocean to the Kiushu Steel Works, Yawata, Japan. Plans are formulated already for a complete steel plant, which when completed, will cost approximately $3,000,000. About two-thirds of this sum will be spent in this country for materials.

The initial plant will include three 50-ton basic open-hearth furnaces, a 20-unit producer plant, an 84-inch plate mill, a 24-inch structural mill, a boiler house, four heating furnaces, and several shop buildings. As will be observed from the accompanying plan drawing, provision has been made for five additional open-hearth furnaces, four heating furnaces, three soaking pits and the construction of a blooming mill.

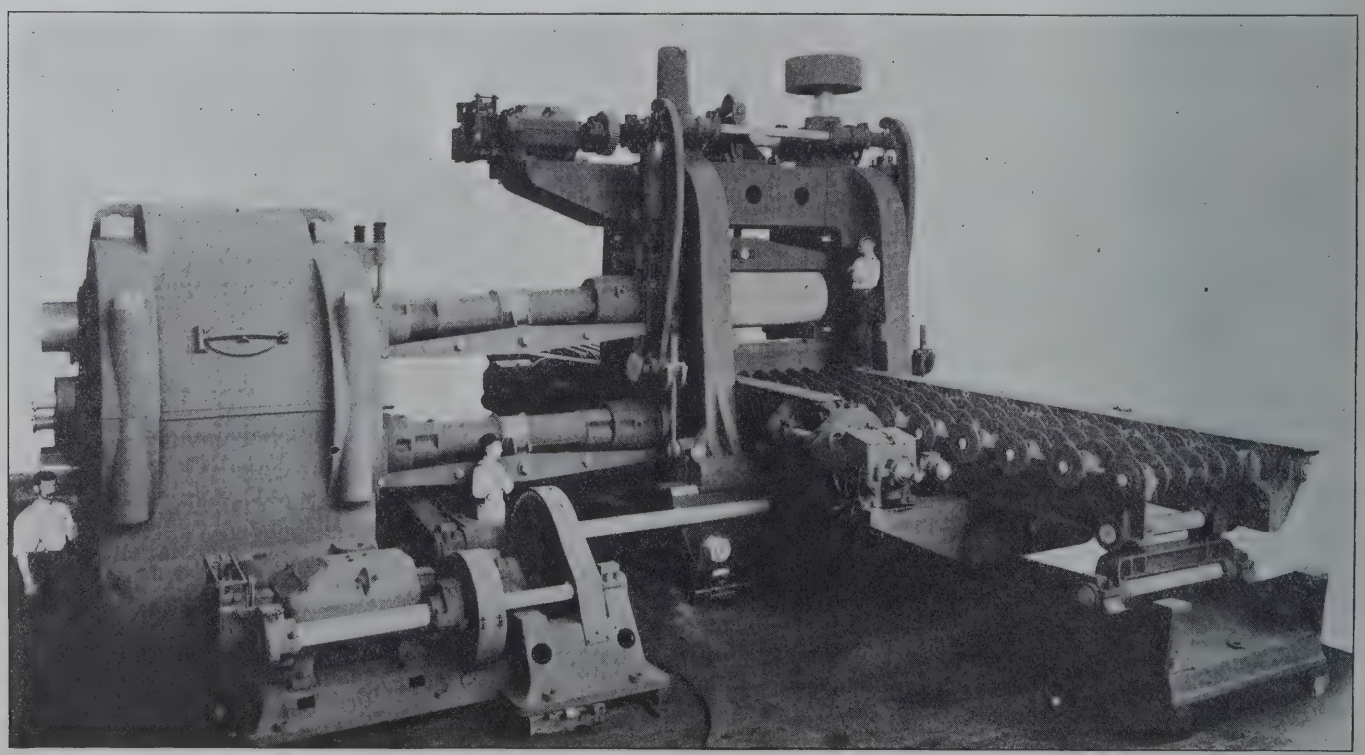
Until the company installs the 35-inch blooming mill, which will be motor-driven, the ingots will be rolled direct into plates, shapes and bars. Upon construction of the blooming mill, top-cast ingots will be produced and bloomed into slabs for both mills. Since the company already has its own blast furnaces, coal mines, iron-ore mines and fire-brick plants in China, the materialization of its present plans will make it one of the most completely self-contained organizations in the Far East. Favored in these respects and also having access to abundant and cheap labor, the time probably is not far off when Japanese shipbuilders will go to foreign countries for supplies of steel.

American Company Designs Plant

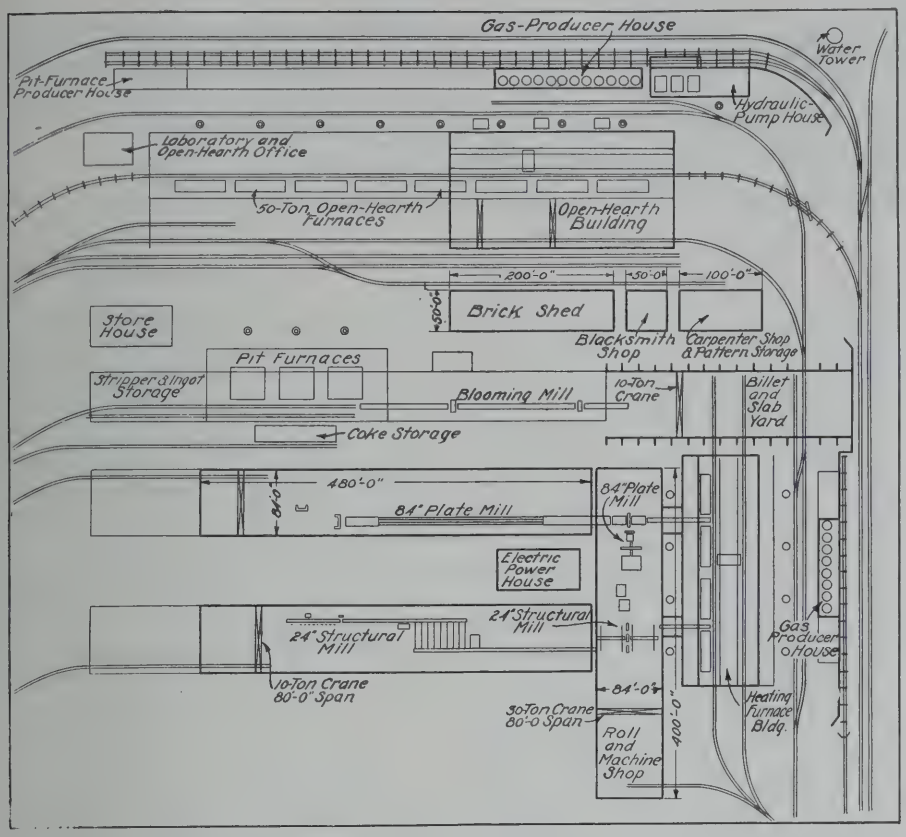
The head of the Kiushu Steel Works received his education in this country and was graduated from the University of Pennsylvania, being classmate of H. D. Wilson of the Wilson-Snyder Mfg. Co., Pittsburgh. It was natural, therefore, that when shaping his plans this Japanese manufacturer should seek out Mr. Wilson, whom he appointed resident agent and representative of the company. Through Mr. Wilson, the Kiushu officials entered into a contract early last year with the S. R. Smythe Co., Pittsburgh, to act as consulting and contracting engineers for the proposed plant.

Plans of the entire plant were prepared by the Smythe company, which also contracted for 1500 tons of steel and iron, license for which was secured early this year and the shipment completed by way of Tacoma, Wash., early in April. The three basic open-hearth furnaces from designs of this company, are served by 12 Smythe gas producers. These are equipped with reversing valves of the Schild sliding type, the gas valve being 33 inches and the air valve 36 inches diameter. The stacks are of concrete, lined with fire brick.

Four furnaces serve the plate and structural mills. They are of the four-door, side-charging type and are served by eight Smythe gas producers, also equipped with the Schild sliding type reversing valves, of 27 inches diameter for gas and 30 inches diameter for air. The charging machine which serves the furnaces is of the floor type and was furnished by Wellman-Seaver-Morgan Co., Cleve-



ON THIS 84-INCH, THREE-HIGH PLATE MILL NO WORKING PARTS ARE BUILT BETWEEN THE SHOES, THE MIDDLE-ROLL OPERATING MECHANISM BEING ON THE OUTSIDE OF THE HOUSINGS



LAYOUT OF THE NEW STEEL PLANT OF THE KIUSHU STEEL WORKS, YAWATA, JAPAN

land, which also furnished the charging machine for the open-hearth plant.

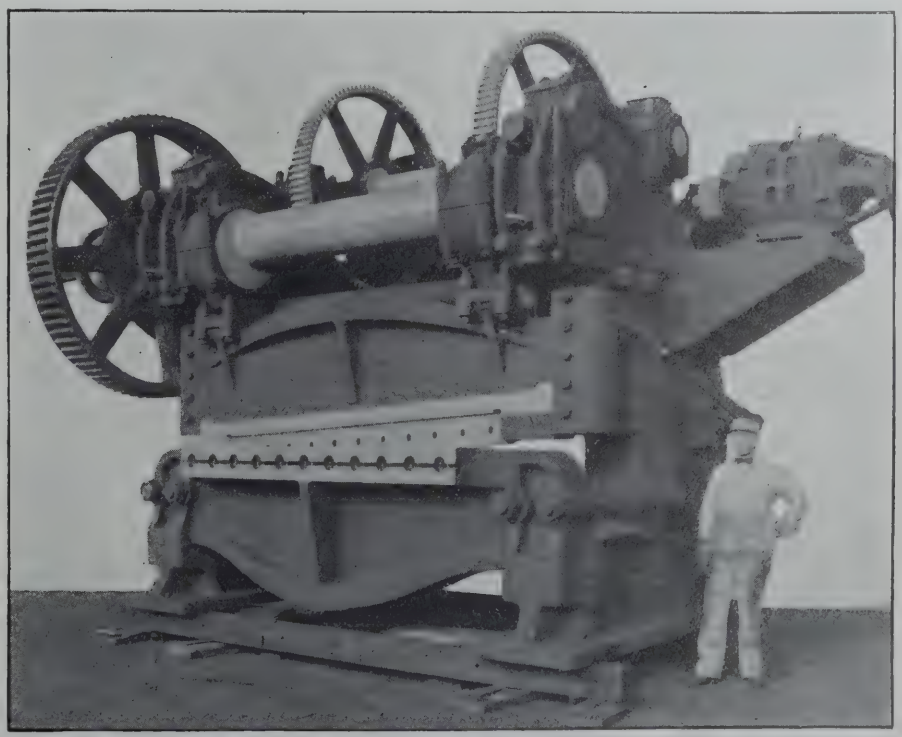
Where Contracts Were Placed

The entire plant will be electrically driven, the motors being constructed by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Contract for the cranes in the plant went to the Alliance Machine Co., Alliance, O., while the Treadwell Construction Co., Midland, Pa., furnished the steel ladles. All of the buildings are of steel construction, designed and detailed by the S. R. Smythe Co., but because of the war regulations at time of shipment, the steel had to leave the country plain for fabrication in Japan.

The Morgan Engineering Co., Alliance, O., has under construction and is about to ship an 84-inch, three-high plate mill to the plant. The entire installation including the mill, front and back-mill tables, slab-delivery tables, runout tables, with plate straightener, plate conveyor, 84-inch cut-off shear and 132-inch slitting shear is being furnished by the Morgan company. The mill is of the Lauth three-high type with cast-steel housings. The top and bottom rolls are 30 inches diameter on the barrel and 84 inches long between necks. The middle roll is 18 inches diameter. The lift of the top roll is 12 inches. The mill is intended to roll from slab ingots into finished plates. The top roll is counterbalanced by means of the usual hydraulic cylinder.

A feature of this mill is that the outside flanges of the housings are dished in order to provide more room for the tables. Another feature is, that no working parts are built beneath the shoes, the middle-roll operating mechanism being on the outside of the housings. The screw-down is operated by two 50-horsepower motors, located on brackets on the sides of the mill housings. A ratchet gear is provided in the mechanism to operate as a slip gear when lowering, and as a ratchet gear when raising the rolls. The mill is driven by a 2000-horsepower motor through herring-bone reducing gears and pinions, thus making a mill speed of 56 revolutions per minute. The motor will operate at 420 revolutions per minute.

The two tilting tables are equipped with 15-inch diameter disk-type rollers. The tilting mechanism is of the motor-driven type located on the drive side of mill. The slab-delivery tables are 74¼ feet long with 15-inch diameter rollers, spaced on 21-inch centers. The front table to plate straightener is 38½ feet long, with rollers spaced on 33-inch centers. The plate straightener for straightening rolled plates is of the nine-roller type, with main rolls of forged steel, 14 inches diameter. The back table to plate straightener is 33 feet long, having rollers spaced on 33-inch centers. Next to this table is a roller-chain conveyor table which is 200 feet long and provided with four strands of roller chain traveling on structural steel framework. An 84-inch, motor-driven, cutting-off shear, with an approach table, 38½ feet long, having rollers spaced on 33-inch centers, is provided. A motor-driven slitting shear with knives 132 inches long for slitting plates 1¼ inches thick, is also provided.



MOTOR-DRIVEN SHEAR WHICH WILL CUT A PLATE 84 INCHES WIDE AND 1¼ INCHES THICK

Finding Organization Expenses

Factors to be Considered in This Branch of Cost Accounting Explained, Together With Their Relation to Management and Inspection—Simple Method Shows Standard of Efficiency

BY M. H. POTTER

ORGANIZATION factors covering expenses in up-to-date, efficient plants may be determined readily because a definite plan and system of functions is involved. The work is so distributed that each employe may be easily classified.

Scientific management considers the unit value of work which may be done by an individual or a group. From a standpoint of cost accounting this is a valuable feature, inasmuch as a reduction in the force handling organization matters and details does not affect the accounting system. As regards comparison, organization factors offer litle or no value, as no standard can be determined upon which a basis may be established.

The units into which the various factors should be divided, as shown in the chart, will depend on the organization. The following are given as illustrative: Offices necessary for organization details; wages of cost clerks, order clerks, etc.; necessary forms, cards, indexes, etc.; percentage of accounting expenses due to organization details; depreciation of all office furniture, appliances, typewriters and similar machines; repair of such articles; wages of timekeepers and assistants; maintenance expenses involved; interest or rent of offices.

It should be understood that the organization factors here outlined include only such expenditures as are chargeable to production, although these are, of course, indirect costs. As the duty of the organization, or that part of it here dealt with, is to expedite production through system, it can be readily determined where efficient organizations is maintained.

The management or supervision factor is made up of the following elements: Superintendent's salary; department foremen's salaries; wages paid to the various supervisors and shop instructors; offices necessary for the foregoing; interest, depreciation and maintenance of fixtures, furniture, office equipment, etc.

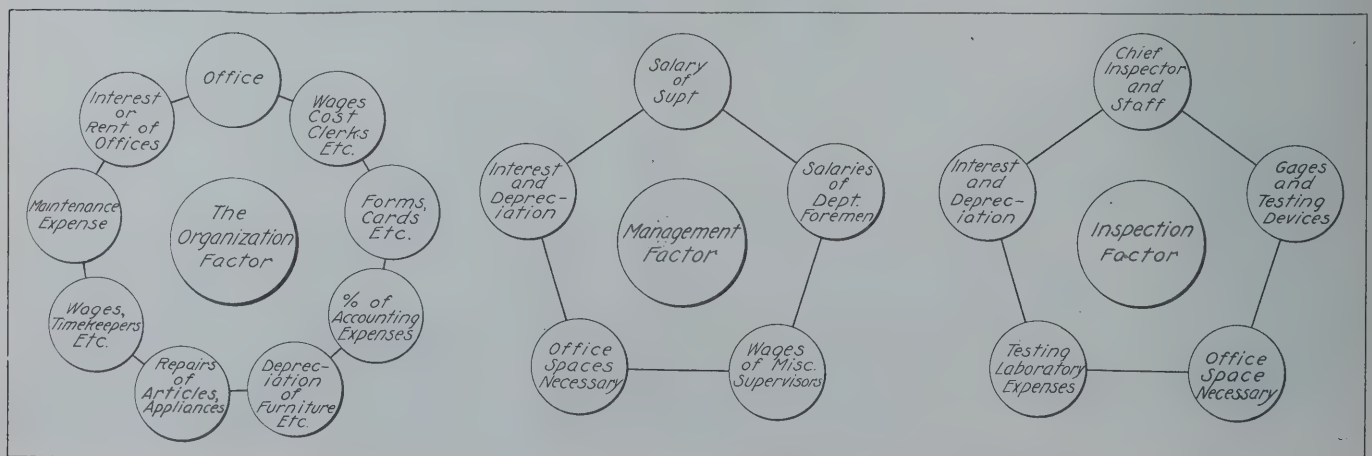
In apportioning the expenses which come under the management factor no great difficulty is encountered, inasmuch as the expense is fixed either proportionately or is confined to one individual department. Where one or a few departments require more than a necessary amount of the general executive's time, much information is available for a study with a view to eliminating the causes. In this manner the method of accounting outlined here is valuable as a means of standardization.

The inspection factor in the majority of industrial works will require careful analysis if it is to be accurately divided into elements for proper apportioning. Here again the value of such a factor is considerable from the viewpoint of comparison and standardization, the idea being to so determine the inspection expenses in each department that percentages can be compared. Obviously, many variables will be found which must be scrutinized so that allowances may be made. Inspection has become an important part of practically every organization, although there are no set laws relating to it by which the accountant may be governed, and therefore the elements will vary largely. Those following are given only as a means of explanation: Chief inspector and working force; gages, devices and all necessary appliances; offices necessary; testing laboratory expenses; interest, depreciation and maintenance.

This is the fifth article in a series by this author on the subject of cost accounting in steel works, written for THE IRON TRADE REVIEW.

To Increase Oil Output

According to the United States geological survey, the petroleum output of the country in 1918 amounted to 345,000,000 barrels. The demand for domestic petroleum in that year was approximately 366,000,000 barrels. The deficiency was made up by imports from Mexico. In all the known oil fields considerable extensions were made. Extensive developments, affecting the future supply of high-grade oil, took place in the central and northern Texas field. About 60 oil wells were completed during 1918, and at the end of the year the new field was credited with a potential capacity of 50,000 barrels of oil a day, though its actual capacity, limited by pipe-line facilities, was only about 18,000 barrels a day. The campaign of drilling over more than 40 counties in northern Texas before the end of 1918 would doubtless result in the opening of other pools of high grade in 1919.



ELEMENTS ENTERING INTO ORGANIZATION, MANAGEMENT AND INSPECTION COSTS

Drafting Room Must be Efficient

Adequate Lighting, Heating, Ventilation and Modern Equipment are Among the Chief Factors Which Promote Satisfactory Production—The Chief Draftsman Must Possess a Broad Training Along Practical Lines

BY F. B. JACOBS

IN the efficient management of the drafting room, sometimes dignified with the title of engineering department, depends the efficiency of many subsequent processes connected with the manufacture of machinery, due to the fact that the drafting board is the first tangible connecting link between an idea and an actuality. To dream of how a machine or special tool should be constructed to yield practicable results is one thing—to put the idea on paper in shape of a drawing that can readily be read and understood is quite another proposition.

Thus, figuratively speaking, the drafting room is a sort of "idea mill" for the practical production of drawings to convey to the workman the plans formulated in the brain of the designer. And to cause the idea mill to run smoothly it should be conducted on a highly efficient basis, otherwise overhead expense is increased while the net results are decreased.

The first factor to consider in drafting room efficiency is the location of the drafting room itself. Time was, and not so many years ago at that, when any place where a few drawing tables could be spread was considered a suitable location and such factors as heat, light, ventilation, etc., were given scant consideration. Congenial surroundings, however, have much to do with efficiency because they tend to keep the morale of the force near the theoretical 100 per cent mark.

An ideal location for the drafting room is over the main office, in cases where this department is housed in a separate building. Such a location for the drafting room offers several advantages. First, it is away from the distracting noises and vibration of machinery. Second, this location permits of excellent natural lighting abilities, as skylights can be located on the roof. This form of direct natural lighting is productive of good results because sharp shadows are eliminated. Thirdly, such a location tends to foster self-respect among the drafting-room employes.

It is impossible to make good drawings under poor light and for this reason adequate lighting is a prime essential. As previously stated, overhead lighting by means of skylights is ideal but in cases where this is not possible the next best method is to arrange the tables near the windows so that the light strikes the table from the left side. The object of this, of course, is to keep the man from working in his own light. Should the draftsman be left handed, his table must be arranged to take light from the right side. Not one draftsman out of a hundred is left handed, but as the individual himself is not to blame for this apparent freak of nature, consideration should be shown him in arranging his working conditions.

Heat and ventilation, as far as they affect the drafting room, should be considered together. It is obvious that a man cannot work in his shirt sleeves, as a draftsman generally does, in a temperature lower than 65 degrees Fahr., and also he must have plenty of fresh air or his brain cells refuse to function properly. Steam is, of course, the ideal heat as it can be economically supplied from the main power plant. This system of heating, however, leaves no provision for ventilation. Thus after the air is heavily charged with carbonic-acid gas thrown off in respiration it is not only unfit to breathe but it also lowers the man's mental efficiency.

Plenty of Fresh Air

The ideal ventilation system consists of means for supplying fresh air, warmed to the correct temperature. This system does away with the make-shift method of attempting to ventilate a room containing from 50 to 200 employes by opening a few windows here and there. This system breeds discontent, due to the fact that your husky Swede, for illustration, who boasts of the fact that he never wears underclothes winter or summer, wants to work by an open window even in the coldest weather. On the other hand, the city-bred American, who is often brought up in a steam-heated apartment, cannot stand such a procedure. These two types of men are, of course, extremes and as it is impossible to accommodate both at the same time, it is evident that a well-regulated ventilation system that supplies fresh air constantly at a comfortable temperature will avoid these personal disputes and tend to promote efficiency.

Good work cannot be produced without adequate equipment. This factor applies to the drafting room as well as the machine shop. No shop superintendent would be expected to maintain production at present-day standards with antiquated machine tools and for the same reason the draftsman should not be depended upon to maintain a satisfactory working pace if he is compelled to work over a board designed along lines that were in vogue some 25 years ago. There are a number of concerns which specialize on drafting-room equipment, especially drawing tables that are designed to enable the draftsman to work to the best advantage.

How often we see a man working at a large drawing, say 36 x 48 inches, leaning over a board that is not equipped for proper adjustment. He cannot work to advantage in this position to say nothing of the fact that constant abdominal pressure brings about internal complications that sooner or later put him on the sick list. There is little excuse for this state of affairs. Modern drawing tables capable of angular adjustment solve this difficulty. A table of this type, together with a small cabinet for storing his tools and reference books, and a reference table for drawings, is all the draftsman needs.

Upon the selection of the man in direct charge of the drafting room, generally termed the chief draftsman, depends the smooth running of the entire department. Such a man must possess a broad mechanical training, he must be a first-class executive and, what is perhaps the most important qualification of all, he must have a thorough knowledge of modern production methods. Thus it is seen that the selection of a chief draftsman is an important step in organizing a drafting department on an efficient basis. If he is not possessed of a broad mechanical

training he is sure, sooner or later, to rely on theory alone which is always a costly experiment. Again, if he is a poor executive, the men under him soon become aware of the fact, with resultant discord where harmony should prevail and, last of all, if he is not thoroughly conversant with production methods he is sure to approve designs, both in tools and machinery, that are too costly to manufacture or operate to enable the concern successfully to meet competition. It is a simple matter to design machinery or special tools, that is for a man who understands what he is doing, but to design tools that will save dollars, day after day, instead of consuming them, or machinery that can be manufactured economically is quite another story.

"But where am I to find such a man?", the manufacturer asks. One answer is: Go steal him from one of your competitors by offering him an attractive salary. This is not good business ethics to be sure, but it is how an organization is sometimes built up. A more satisfactory procedure all around is for the manufacturer to retain the services of a man possessing the necessary qualifications and give him free rein to work out his own salvation, with such guidance as may be necessary for his proper training.

Main Factor is Compensation

Now we all like to hear the truth once in a while. If a concern succeeds in obtaining the services of an efficient chief draftsman it is doubtful if another company can steal him if the man's salary is satisfactory, which factor has as much to do with loyalty as any one other.

Which type of man makes the best chief draftsman, the college-trained mechanical engineer or the man who works himself up from the shop? This question cannot be answered positively. Instances have been known where men who worked up from the shop made excellent drafting-room executives. One point in favor of such a man is that he is practical. He does not pass drawings that involve castings which it is impossible to mold or mechanical monstrosities that cannot be manufactured except at great cost. On the other hand, he lacks the theory gained from a college course and the general broadening influence of a higher education.

The college-trained engineer often makes an excellent chief draftsman, that is if he is shrewd enough to grasp the practical side of manufacturing processes. There is no fixed rule to follow in the selection of the best type of man. It is purely a case of taking a long chance and watching results.

There are, of course, innumerable other points that could be considered while discussing drafting-room efficiency such as the kind of men to hire, whether they should be paid by the week or hour, what hours they should work and so on. These factors are up to the chief draftsman, however. Once installed in his position, it is up to him to run his department efficiently and work out his own salvation.

Welding Tight Joints Electrically

ELECTRIC welding results in an attraction between the molecules at the surfaces of the metal which first renders them mobile through heat and then moves them by pressure into closer proximity, according to Thomas E. Murray Jr., Brooklyn, N. Y., who recently obtained two patents covering electric-welding methods. In the nomenclature of electric welding, surfaces thus treated are said to adhere.

Mr. Murray further states that while temperature of a degree sufficient to make the opposing surfaces adhesive will effect a union, the strength of the union is often of wide variation. In fact the strength of any joint cannot be known except by testing it to a point of destruction. A given joint may be sufficiently strong to meet conditions involving small strain but it may be inadequate to withstand the demands of heavy loads or shocks, or of moving machinery.

The effort to make stronger joints has led to a moderate increase in the strength and duration of the current for the purpose of obtaining greater plasticity or fluidity of the metal, which sometimes leads to burning of the surfaces to be joined. Increase of pressure leads to greater extrusion of metal at the joint which is intensified when the fluidity of the metal is augmented. This results in surface adhesion only and a defective joint.

Another cause of uncertainty in electric welding is the difficulty of insuring a uniform current flow per unit area of the welded surface. If the metal contains elements having low conductability, the current will cause unequal heating of the surface, with the result that one part may be burned before a proper welding condition is brought about elsewhere.

Electrically-welded joints that possess a strength as great as that of the integral mass of the same material of like cross-sectional area are claimed to be produced by subjecting the bodies to be welded to an electrical current of extremely and abnormally high-ampere strength, existing for a short time only.

Where the area is small a current of approximately 5000 amperes to the square inch is used. In case of a surface five square inches, the duration of the current should be about one second and with an area of 19 square inches the current can be left on from two to three seconds.

How a Weld is Made

It is said that a weld is not caused by surface molecular attraction but by a complete disassociation of the molecules for a certain distance inward from the surface of each body, followed by the intermingling of the molecules of one body with those of the other, and their neutral attraction developed within the momentarily gaseous film so that the molecules become united throughout the mass.

Thus, the two bodies cohere. If they are of the same material, after welding there is no solution of continuity and the two bodies simply become integrally one. If the two bodies are of different materials, then while there is still no solution of continuity, a portion of the welded mass is composite and partakes of the nature of both bodies. For illustration, if copper and zinc are the materials welded, a portion of the welded mass will be an alloy or mixture of the two metals. The high temperature developed gasifies the metal or metals of the bodies to be welded instantly; and in the brief time the current is on the molecules mingle and cohere. With high-ampre strengths there is not time for any burning of the metal or for the conduction of heat away through the mass before the metal gasifies or the intermingling of the molecules occurs.

Another advantage claimed by the inventor through the use of abnormally strong currents is the neutralization of the difficulties due to radiation from the heated bodies to the holding electrodes when the area of contact between these bodies and elec-

trodes is increased to any great extent.

For an illustration the inventor assumes that two bars measuring in rectangular cross-sectional area 1 square inch are to be united. The best conditions are attained when each bar is enclosed in a copper electrode in contact with all four sides. If each electrode is 1 inch wide, then the contact area of each electrode with its bar is 4 square inches.

If, however, while keeping the area the same, the form of the area be changed, say to the shape of a parallelogram of ½ x 2 inches, the contact area of the copper electrode holders will then be 5 instead of 4 inches, or 20 per cent greater. This increases the radiation surface of the bar and thus the heat developed will escape to the electrode more rapidly than before. All that is necessary with a given shape to insure a good weld is to continue to increase the strength of the current until a perfect union is produced.

Heat Treating Shells

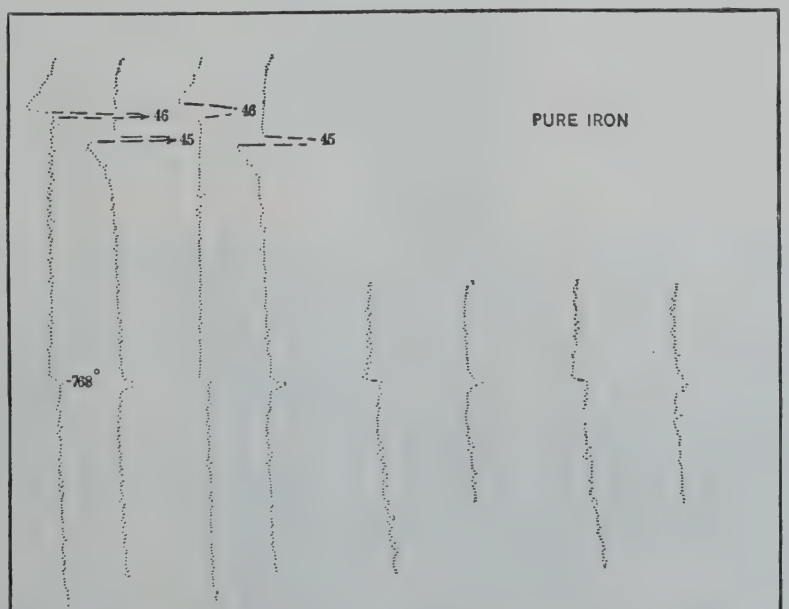
In the manufacture of shells at the Couzon works near Rive-de-Gier, Loire, France, which were greatly extended when the Germans occupied the Douai works, the thermic treatment is given in a shop built of reinforced concrete 15 meters wide x 63 meters long. Three furnaces are used. The first furnace reheats the shell while the second raises its temperature still further. The shells are then tempered in the third furnace and passed to the cooling apparatus. All the furnaces are heated by producer gas, the consumption of coke for making the gas being respectively 8.2 per cent, 6.5 per cent, and 3.5 per cent of weight of shells treated in the three furnaces. Each shell is gradually raised to a temperature of 900 degrees Cent. during a period of one hour, then moved to the second furnace which is kept at the highest temperature and finally cooled in running water. The Brinell tests for hardness are employed.—*Génie Civil.*

Simplifies Method for Thermal Analysis

ONE of the most useful, and at the same time least commonly used, methods of thermal analysis for the determination of transformations in metals and alloys consists in the recording of the time intervals required for successive increments of temperature change during heating or cooling, the temperature of the furnace containing the specimen being altered at a uniform rate. The curve obtained by plotting these time intervals as a function of the mean temperature of the specimen during the interval is called the inverse-rate curve.

Whenever the inverse-rate method has been used, the intervals have usually been measured with the use of a chronograph. In its operation as practised at the United States bureau of standards, the temperature of the specimen is measured by a thermocouple and a dial potentiometer. The operator sets the potentiometer at successive values of the electromotive force differing by about 0.02 millivolt, and records the exact instant, on the chronograph, by pressing a contact key at which the galvanometer coil passes through its null position. Two-second intervals are also recorded on the chronograph record, and the number of seconds elapsing between successive signals is afterward counted from the record and plotted as a function of the electromotive force or of the temperature. The most minute thermal arrests may be detected by this method but a good chronograph and the time of one operator during the recording and to read the intervals from the record are required.

The method suggested in the following paragraphs is believed to be simple, convenient and accurate, and eliminates the expense of the chronograph and the time of one operator in counting the chronograph record. The remainder of the apparatus, consisting of furnace, thermocouple, and potentiometer, is used exactly as in the former method. Two stop watches are used, which may be mounted in a small frame and held in one hand, a finger being placed on each stem. During the run, the operator sets the potentiometer and marks the instant at which the galvanometer is at zero by pressing the stems of both watches simultaneously, stopping one at the end of the interval it has measured and starting the other upon its measurement of the next. The interval is read and recorded upon a suitable blank sheet, the hand of this watch returned to its zero position and the potentiometer set at the next value. The operation is repeated for each successive interval. The intervals so recorded are afterwards plotted directly as a function of the electromotive force.



INVERSE-RATE HEATING AND COOLING CURVES OF PURE IRON TAKEN WITH CHRONOGRAPH AND WITH STOP WATCHES

The accompanying illustration shows the inverse-rate curves for two complete runs on pure iron including the heating and the cooling curve. Both A_3 and A_2 are indicated on the first set of curves, but only A_2 appears on the second set. In each case, the intervals were recorded both with the stop watches and with the chronograph in the usual manner. The curves marked *C* were taken with chronograph and those marked *W* with stop watches. There is little difference in the smoothness of the two sets of curves

From a paper to be presented at the Chicago meeting of the American Institute of Mining and Metallurgical Engineers, Sept. 22 to 26, 1919. The author, Paul D. Merica, is physicist, United States bureau of standards.

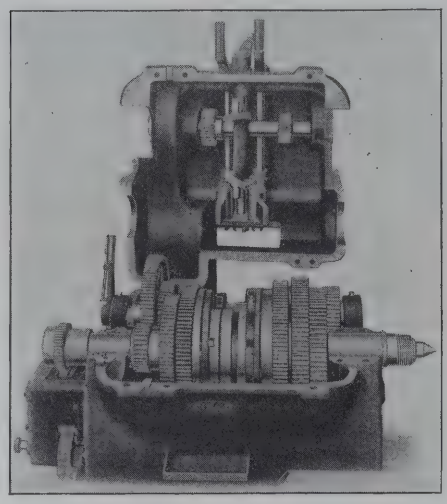
or in the accuracy or precision of the measurement of the time interval.

A general consideration of the accuracy of the stop watch also indicates that the precision of measurement by stop watch is sufficient for the purposes of thermal analysis. It is only rarely, perhaps once in a hundred times, that a stop watch is not accurate to within 1/5 second, and its maximum error is 2/5 second. It is found that the variation of successive intervals of time measured in the inverse-rate method, due to actual non-uniform rate of cooling or heating of the furnace, or to inaccuracy of the operator in signaling the moment when the potentiometer is balanced is approximately 1/5 second. It is therefore not necessary to obtain the greater precision of time measurement which is unquestionably possible by the use of the chronograph.

New Lathe Has Novel Speed Control

Twenty speeds may be obtained with a new geared head lathe, either belt or motor driven, recently developed by the Cisco Machine Tool Co., Cincinnati. The machine is provided with a double friction countershaft which may be run at 300 or 130 revolutions per minute, imparting to the spindle 10 different speeds for each speed of the countershaft.

Another feature of the lathe, as shown in the accompanying illustrations, is that, including the back gear lever, only four levers are required for the entire number of speed changes, thus simplifying the operation of the machine. One handle controls a powerful friction on the spindle and two more control the shifting of four back gears on the eccentric shaft. A pull pin in the face gear makes it possible to run direct from the spindle when the back gears

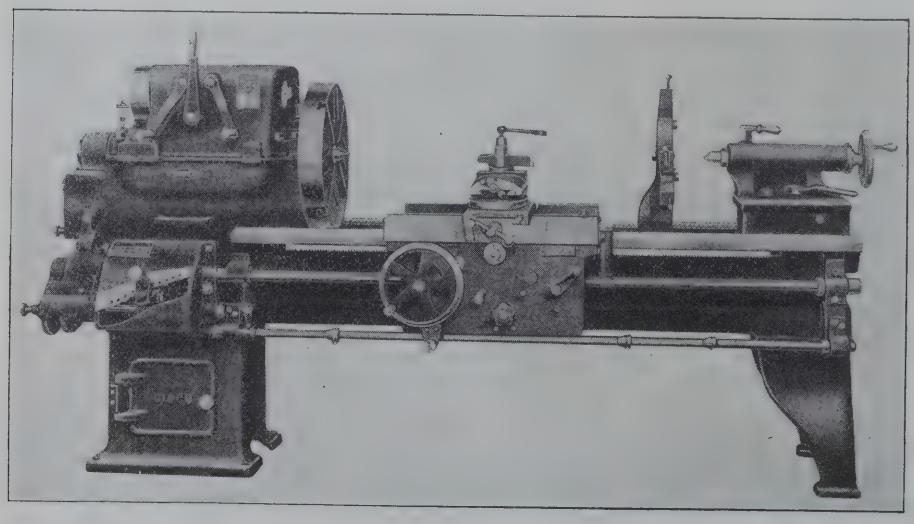


VIEW OF GEARS IN HEAD SHOWING METHOD OF SHIFTING

are disengaged. The eccentric shaft lever or the back gear lever causes the back gears to mesh with spindle gears. Six gears and a friction are mounted on the spindle while there are four gears on the back shaft. With the exception of the drive shaft gears, all gears are made from carbon steel and all geared heads are ball bearing.

The lathe can be fitted for motor drive by attaching a plate with a bracket for an intermediate stud to the top of the regular geared head. An intermediate rawhide gear is mounted on the stud and meshes with a pinion on the motor and a gear on the drive shaft. Both pinion and gear on the drive shaft are of steel. With a motor drive, speeds from 220 to 150 revolutions per minute are obtained. Power for the four sizes in which this lathe is built varies from 2½ horsepower for the 14-inch lathe to 7½ horsepower for the 24-inch size.

A bulletin dealing with the preparation of manganese ore has been issued by the United States bureau of mines. The author, W. R. Crane, explains the expansion of the business of mining and preparing manganese ores brought about by the great demand for manganese during the war, describes the methods employed in dry mining, washing and concentrating manganese ores; and reviews in detail each step in the process of cleaning manganese ores as practiced at several washing plants. Considerable data regarding the size and operation of equipment are given. The various conditions affecting the preparation of the ore are summarized in the conclusion of the booklet.



FRONT VIEW OF GEARED HEAD LATHE SHOWING THE LEVERS WHICH GIVE SPEED CONTROL

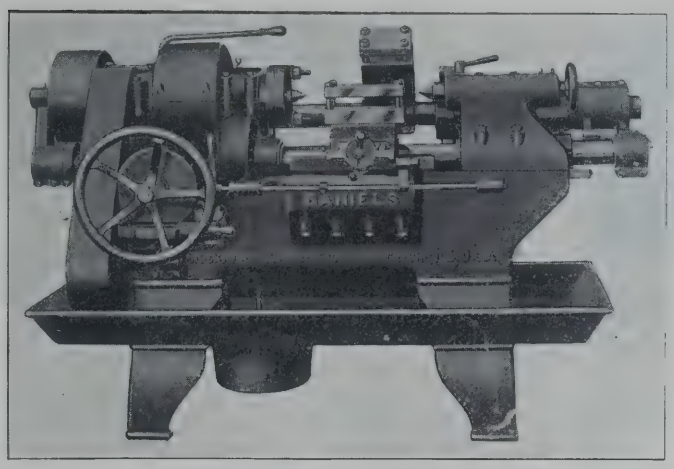
Tools Are Cast From High Speed Steel

Recent researches in high-speed steel have resulted, it is said, in the development by the Chrobaltic Steel Co., Chicago, of a material that can be cast directly into cutting tools such as milling cutters, counterbores, die sections, etc., thus saving time ordinarily spent in machining operations. This steel can be hardened in air or oil and it is pointed out that it can be hardened and annealed several times without destroying its inherent properties.

Tools made of this material can be used in cutting all kinds of materials as commonly used in manufacturing. In some tests recently made, a cutter 3 inches in diameter and ⅜-inch face was used on a shell billet 4½ inches square taking a cut ½-inch deep. The feed was $1\frac{5}{16}$ inches per minute to start with and gradually increased until the cutter broke. The cutter speed in this test was 42 revolutions a minute which gave a peripheral speed of 395.8416 inches a minute. After the feed was increased to 6⅛ inches per minute, the cutter milled two lineal inches before breaking.

To enable toolsmiths to work the material properly, the following data are given for hardening and annealing: In hardening, the tools are heated slowly, preferably in a muffle furnace, from 1832 to 1877 degrees Fahr., at which heat they are held until the tools are thoroughly heat soaked. The heat is then dropped from 20 to 50 degrees Fahr., at which heat the steel is withdrawn and quenched in oil. Good results are also said to be obtained through permitting the steel to cool in the air until the red disappears and is invisible in the shade, followed by quenching in oil. It is stated that the slight drop in temperature while the steel is in the furnace is of the utmost importance. On comparatively large tools, milling cutters for instance ,air blast has been effec-

tively employed to hasten cooling before quenching in oil. In annealing, the material is first heated to 1832 degrees Fahr. in a closed muffle and then allowed to cool slowly. On rush jobs, however, rapid annealing can be accomplished by heating the steel slowly to 1202 degrees Fahr. and allowing it to fall to a black heat, after which it can be cooled naturally in air or quenched in boiling water. After annealing the material should show a scleroscope test of approximately 38. It is then in condition to be machined at a speed of from 25 to 30 lineal feet per minute.



AUTOMATIC LATHE FOR RAPID PRODUCTION

Modifies Universal Milling and Shaping Machine

Several modifications of the duplex universal miller and shaper manufactured by the Cochrane-Bly Co., Rochester, N. Y., recently were announced. The machine now is fitted with single heads only, and is built as a duplex universal vertical miller and shaper, universal vertical miller only, universal vertical shaper only, and a plain vertical miller. The universal head on both duplex and single machines is adjustable right to left, or left to right through the full circle. The shaper and milling heads may be moved independently front and back 40 degrees, and are operative in any position.

The milling spindle, which has an adjustment of 3½ inches with hand feed, is hollow and is furnished with draw bolts for holding milling cutters, split collets, etc. Drilling, milling, boring and slotting operations can be performed readily at any angle. The stroke of the shaper ram is adjustable from 0 to 6 inches. The crank arm or link is of solid steel and compensation is provided in the crank pin box to take up the wear on both crank pin and link. The drive is through a friction clutch pulley and double cone of gears running in a bath of oil. All gears in the machine are of steel, and those in the driving train are hardened.

Safety Features

The direction of spindle can be reversed and it also can be disengaged and revolved freely by hand. It may be locked when cutters are being changed. The clutch pulley has an oil reservoir to provide lubrication for long periods. A cone brake opposes the clutch, engaging it when the clutch disengages, bringing the machine to an instant stop. The machine is designed for five changes of speed control by a lever within easy reach of the operator.

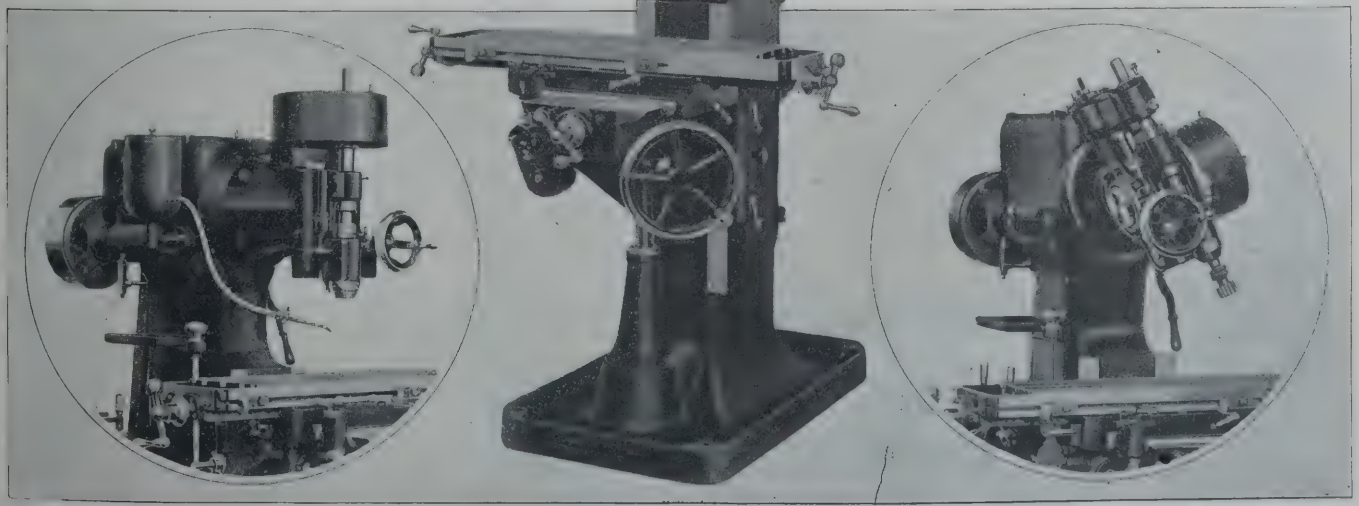
A circular table with dividing attachment and a compound circular table are furnished in connection with the machines. The attachments make it possible to drill, bore, slot, plane or mill work with unusual accuracy and to space and layout holes, keyways, etc., according to exacting specifications. The machines are adapted for work on die blocks, jigs, tools, templates and metal molds .

Builds Automatic Lathe on Heavy Lines

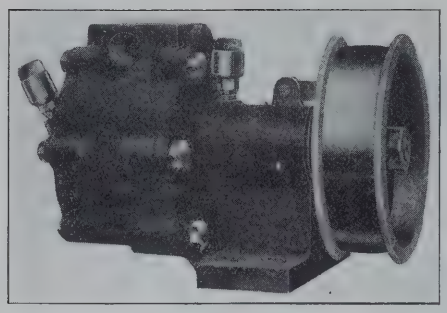
An automatic lathe, designed and built for the rapid production of duplicate parts, is being manufactured by the Rockford Machine Tool Co., Rockford, Ill. The machine, which was designed by Lee G. Daniels, is built on the lines of a 22-inch heavy-duty lathe with a view of minimizing vibration.

No mechanical changes are provided, the lathe being a single-purpose machine. Change gears can be used to vary the feed but in order to change the speed the overhead pulley must be changed. The headstock is cast in one piece with the bed. The tool carriages move on heavy steel bars whose ends are supported in the head and tailstocks. The side carriage carries tools for turning different diameters and the right angle carriage is equipped for facing, boring and recessing.

In operating this lathe, the work



FROM LEFT TO RIGHT ARE SHOWN PLAIN VERTICAL MILLER, DUPLEX UNIVERSAL MILLER AND SHAPER AND UNIVERSAL VERTICAL MILLER



PUMP WHOSE PRINCIPAL WORKING PARTS ARE ROLLERS

is placed between the centers or in the chuck and the feed worm lifted in position. Both feeds continue until the side carriage trips the feed at a predetermined position, when both carriages return to the starting point. The operator removes the finished piece and puts in another one. One man may operate several machines at a time.

Centering Machine Handles Irregular Stock

To facilitate the centering of rough and irregular forgings for machining, the Newton Machine Tool Works, Inc., Philadelphia, has recently developed a new centering machine. As shown in the accompanying illustration, two universal vises of the interlocking type are included in the equipment. Jaw adjustment is by means of a screw which gives capacity for round material from 2 to 12 inches in diameter and of any desired length. A rack and pinion make the two vises adjustable to the bed of the machine.

The spindle is made of forged steel 3 inches in diameter, runs in bronze bushed bearings and has 4 inches of cross and 4 inches of vertical adjustment with 8 inches of hand feed. These cross and vertical adjustments are equally divided from the center line of work. Power for operation is furnished by a motor mounted on the head of the machine and almost directly over the spindle. The drive is accomplished through a bronze driving gear. All movable parts about the equipment are kept in alignment by adjustable taper shoes.

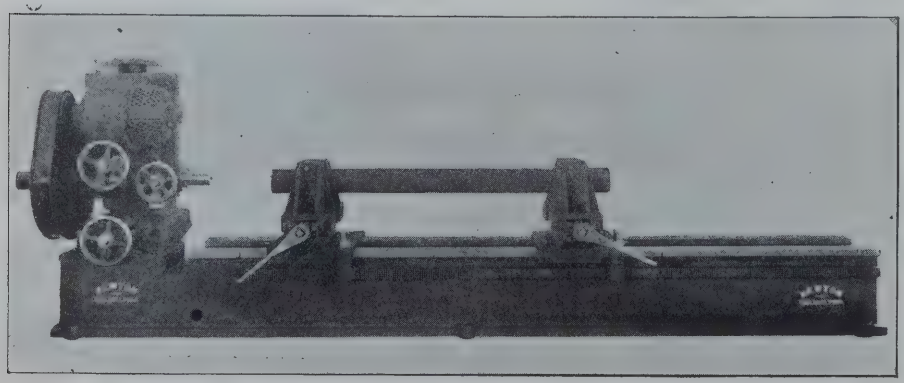
Working Parts of New Pump Are Rollers

A new pump, whose principal working parts consist of two rollers which rotate eccentrically in the pump chamber, has been developed by the Michigan Machine Co., Detroit. It is stated that the rolling motion of the rollers eliminates the wear usually caused by scraping of the working parts against the pump chamber. The pump may be used anywhere within 10 feet above the level of the liquid and is self-priming. Because of the unique design of this pump, no release valves or overflow piping are required. It is claimed that the outlet in the discharged piping may be closed and the pump allowed to run without damaging the pump or pipings. This is accomplished by using a spring placed in a rectangular slot in the inner roller which bears against a squared shaft. The spring operates only when the pressure on the pump is as great as the pressure required to suppress the spring. When the pressure is reached the compression of the spring allows the rollers to come to the center of the pump where they continue to revolve in the liquid without exerting further pressure on it. This feature also guards against destruction of the pump when steel chips or other foreign substances work through the intake pipe and into the chamber. The pump is operated at speeds ranging from 100 to 600 revolutions per minute.

Describes War Effort

An attractive booklet, entitled *Our Bit,* and being a brief account of the work done during the war by the C. & G. Cooper Co., Mt. Vernon, O., recently was published by that company. The booklet contains 24 pages and is of heavily coated stock. Numerous colored illustrations are given. During the war the company organized a munitions department for machining steel shells, which was equipped largely by machinery built in the company's own shops. This department, according to the booklet, machined and fitted with copper firing bands, about 1000 three-inch high explosive shells per day. Fifty forging presses, mainly 1000 and 1500 tons capacity, were built and installed in government arsenals by the company during the war. The company built 69 gas-engine driven gas compressors. Several large batteries of mechanical gas producers were built for American wood pulp interests. The triple expansion marine engines built by the company for the Emergency Fleet corporation helped the government in its shipbuilding plans.

The booklet is dedicated to the men employed by the company, both those who went into the ranks and those who stayed and provided the machinery essential to warfare.



ADJUSTMENTS ON THIS MACHINE SIMPLIFY THE CENTERING OF WORK

Truscon Steel Will Build Plant in Japan

To develop business opportunities in the Far East, the Truscon Steel Co., Youngstown, will establish a plant in Japan, midway between Yokohama and Tokio, according to a recent announcement. The new plant will be equipped to handle all departments of work carried on by the corporation in Youngstown. Construction will be under the supervision of F. W. Shackleton, who was a captain of engineers in France during the war, who recently returned to Youngstown to resume his position with the Truscon company. Prior to entering its employ, he was affiliated with the William Tod plant, Youngstown, now owned and operated by the United Engineering & Foundry Co.

Mr. Shackleton will sail from Vancouver, B. C., for Yokohama early in August to commence the preliminary work on the new plant. Actual construction work is expected to start early in February, 1920.

The Truscon company now is completing a machine and blacksmith shop 50 x 570 feet at its Youngstown plant. All steel for the building was made in its own plant and the steel was erected on concrete bases, also built by its own workmen. The building soon will be ready for the installation of machinery.

Coal Rise Bomb in British Mart

Practically all Quotations Withdrawn While Iron and Steel Makers Prepare to Make Increases — Government Criticized for Putting Handicap on Export Trade— Glasgow Buys American Steel Rails—Domestic Demand Strong

Bureau of The Iron Trade Review,
Prince's Chambers, Corporation St.,
Birmingham, Eng., July 11.

THE iron and steel industries are much perturbed by the heavy increase in the price of coal announced by Sir Eric Geddes in the house of commons two days ago. An advance of 6s ($1.44) will add at least 15s ($3.60) and possibly £1 ($4.80) to the cost of pig iron. By coincidence the announcement was made on the eve of the Birmingham quarterly meeting, and scarcely anything else was discussed at the gathering. All pig iron makers immediately withdrew their quotations although they are protected by a form of contract binding the consumer to pay for the increase in cost of production.

Staffordshire makers a week ago announced an advance of 10s ($2.40) per ton on forge iron, but like the others they withdrew their quotations. Until the precise effect of the advance is determined, furnace interests prefer to refrain from making quotations. Buyers also are not very anxious to make contracts until they know what they are to get for their finished iron and steel.

Some advance in the price of coal was expected as a result of the reduction of one hour in the miners' working day, but the most pessimistic prophet did not anticipate a rise of more than 4s (96c) per ton. Not in years was so little business done as at the quarterly meeting. It is assumed that coke will be about 10s ($2.40) higher and it is already selling about £2 10s ($12) per ton compared with something like 18s ($4.32) before the war.

The general expectation is that pig iron will be advanced about £1 ($4.80) per ton.

The long-suffering consumer appears to be roused at last and nobody would be surprised if the big coal increase should prove the beginning of the end of a government which, while it has served the country well in the war, has disgusted traders by its unlimited concessions to labor. Everybody recognizes that a tremendous handicap has been put upon export trade.

Americans will realize the extreme importance of the increase if, as we are informed here, steam coal can be bought in America as low as 13s 6d ($3.24) per ton, whereas in the important steel center of Barrow-in-Furness the price, before this last addition, was 34s 6d ($8.30) and presumably will now be 40s 6d ($9.72).

There is still plenty of demand for iron, and in the Cleveland districts more attention is being given to export trade licenses. The second half of the year commences with 26 furnaces in blast in the northwest coast, compared with 31 at the beginning of the year. Some idea of the rise in price may be inferred from the fact that while in January bessemer mixed numbers sold at £6 7s 6d ($30.60) per ton, the latest advance brings them to £9 12s 6d ($46.20). This was before the 6s ($1.44) advance in coal, and another increase must, of course, ensue. The advance is chiefly due to the higher cost of raw material, but the position of the makers has been strengthened by the enormous demand for iron.

The east coast iron hematite trade is strong with plenty of orders after the recent advance of 10s ($2.40). Consumers are eager to place orders for delivery even at the end of September on the basis of recent quotations, but sellers will not quote at present. The trade has experienced a slight benefit from a little easing of freights due to the fact that boats are now compelled to return home laden, the price of bringing rubio ore to the Tees now being 57s ($13.68).

The Glasgow tramway department is practically out of rails, and a supply of British-made rails could not be got. The order has been accordingly placed in America, and the department not only saved £10,000 but is promised delivery in July instead of September, the earliest date at which the British rolling mills could undertake to supply. Naturally, the British railmakers are not letting these orders go out of the country without protest; but as they cannot give the most effective reply in early deliveries, their protests are likely to fall on deaf ears.

In the finished iron and steel market the effect of the increase in the price of coal is variable. The iron trade, which is now almost exclusively a home trade, seems for the time being to be able to command any price. South Staffordshire makers are practically in possession of a monopoly. While there has been a great deal of talk of American importations, the actual arrivals are too small to have anything more than a sort of moral influence on the market.

South Staffordshire ironmasters have lately exercised caution under the impression that big consignments of bars were coming from America; but only very small lots have arrived, and the news of a brisk revival in America conveyed by The Iron Trade Review cable service this week is encouraging the hope that America presently will have quite enough to do to look after her customers at home.

Probably the only business done yesterday in the finished department was in iron bars. Some buyers insisted on booking regardless of the price, with the result that a contract was based upon a quotation of no less than £25 ($120) per ton, although the standard is £21 10s ($103.20). A number of makers claim to have been getting £23 ($110.40). This is substantially above the price at which American iron has been sold here, so that there seems ample opening for American competition.

The quantities arriving from America can hardly be described as more than sample lots but a fair range of variety has now reached the Birmingham warehouses and as the wide uses of Birmingham's numerous trades call for an adaptable quality this is a good test. So far no complaints have been received and a leading merchant says it would take a very clever expert to discern any difference between American iron and a good average brand from South Staffordshire.

The trade has decided to consider the whole situation with a view to a general revision of prices. An increase of £2 ($9.60) per ton is expected. Local works are still full of orders, consumers pressing for deliveries without much concern as to price, but manufacturers know the present situation is unhealthy, if only because of the comparative absence of foreign trade.

It is clear from the exports in June that increasing quantities are going abroad, but these are not from the Birmingham district, although Birmingham is getting its share of a certain amount of increase in manufactured goods of which iron is the basic metal. The South Yorkshire Bar association has advanced its prices for bar iron £1 ($4.80) per ton, making the basis price for crown bars £21 10s ($103.20) per ton net, delivered in the association's area. This price was fixed before the coal increase.

Private Aid, Densmore's Hope

Appropriation of $400,000 Allowed By Congress Will Finance But 60 Offices, But Director General Already is Operating 204 "Federal" Agencies, With Outside Help—Still Seeks Larger Sum From Government

WASHINGTON, July 22.—The United States employment service will be able to finance only 60 offices scattered throughout the country as a result of the refusal of congress to vote more than $400,000 for the continuance of the bureau, according to John B. Densmore, director general of the service. But, he points out, already 204 additional employment offices are open and operating as a result of outside support given the service, and after returns have been received from all sources he expects more than 300 federal offices will be open. This condition will last, he says, until congress passes the Nolan-Kenyon bill which would create a permanent national employment system.

These operating and prospective agencies, according to the director general, do not include 2000 emergency bureaus finding jobs for returning soldiers and sailors. Welfare organizations, chambers of commerce and many private citizens contribute to the support of the federal offices, Mr. Densmore declared, while the agencies which have been cooperating in the establishment of soldier-sailor bureaus are handling that phase of the work. He claims the response of the country indicates "a general desire of all to give practical assistance to the soldier and civilian war workers seeking to reestablish himself."

Congress will act upon the proposed bills within the next five months, Mr. Densmore believes. During that period he pleads for continued private support of the federal bureaus.

In his entreaty to congress in behalf of the Nolan-Kenyon bill, Mr. Densmore during the past week had the personal support of Dudley R. Kennedy, an employment expert of Philadelphia, formerly industrial relations manager for the Hog Island shipyard and at one time assistant to the president of the Youngstown Sheet & Tube Co. Others who appeared before the joint congressional committee in behalf of the measure were:

Neal Farnham, employment manager of the Heggeman-Harris Construction Co., New York city; Frank Morrison, secretary of the American Federation of Labor; George W. Kirchwey, director of the federal employment service in New York; Edward C. Lycett, employment manager of the Washington Steel & Ordnance Co., Washington, D. C.; Thomas C. Atkeson, secretary of the National Grange; Henry D. Sayer, of the New York state industrial commission; Don Lescohier, professor of economics, University of Wisconsin; Albert H. White, Taunton, Mass., manufacturer, and George H. Dale, Watertown, Mass., representing the associated industries of Massachusetts.

Mr. Kennedy predicted that "within a year, possibly in less time, there will be a labor shortage in the United States equal, if not greater, to that during the war." He said: "There is not great unemployment in this country now. The coming of a shortage is one of the strongest arguments for the establishment of a permanent federal employment service. It is needed to level the national labor supply. The country needs more than a mere statistical gathering and clearance bureau in Washington—a 'paper' organization."

The testimony of nearly all the others mentioned appearing before the committee was along this line.

Court Enjoins Molders

Judge Albert B. Anderson of the United States district court of Indiana, recently granted the Connersville Foundry Corp., Connersville, Ind., a permanent injunction, restraining 25 members of the International Iron Molders Union of North America, from interfering in any way with employes of the corporation not connected with the union. The defendants were specifically enjoined on 19 separate grounds. The action was brought by Samuel Clay, superintendent of the foundry company.

Will Take Strike Vote

PITTSBURGH, July 22.—Meeting in Labor Temple here Sunday, presidents of 24 international unions of iron and steel workers prepared a strike vote to be placed before employes in the iron and steel plants of the country. This is another step taken by organized labor in its efforts to unionize the iron and steel workers of the country. According to the union leaders, the decision to take a strike vote is based on the disregarding by the United States Steel Corp. of a request by President Samuel Gompers of the American Federation of Labor to define the corporation's attitude concerning the recognition of unions and collective bargaining.

A program of 12 demands was prepared by the union presidents to be placed before members of their respective unions for the strike vote. The demands are:

1—Right of collective bargaining.
2—Reinstatement of men discharged for union activities.
3—An eight-hour day.
4—One day's rest in seven.
5—Abolition of the 24-hour shift.
6—Increase in wage sufficient to guarantee American standard of living.
7—Standard scales of wages in all trades and classifications of workers.
8—Double rate of pay for all overtime, holiday and Sunday work.
9—Check-off system of collecting union dues and assessments.
10—Principles of seniority to apply in maintenance, reduction and increase of working forces.
11—Abolition of company unions.
12—Abolition of physical examination of applicants for employment.

Only members of the unions represented will be asked to vote on the strike, it was stated. The committee in charge of negotiations with Judge Gary consists of John Fitzpatrick, D. J. Davis, of the Amalgamated Association of Iron, Steel and Tin Workers; Edward J. Evans, Chicago, of the Electrical Workers' union; William Hannon, Chicago, of the Machinists' union, and Mr. Foster, Pittsburgh. As a final move before the strike call, the United States government, through President Wilson, will be asked to induce the em-

ployers to permit the unionizing of the iron and steel industry.

According to a statement by union leaders employes of Mahoning valley iron and steel plants affiliated with the American Federation of Labor already have voted to strike. The extent to which the valley mills have been unionized is debatable. As the result of efforts made during the past nine months, numerous local unions of the Amalgamated Association of Iron, Steel and Tin Workers have been formed. Thousands of mill workers have remained indifferent to these efforts at organization. Heads of steel concerns in the valley declare they do not believe their men will strike and that in the event of a general walkout being ordered their employes will remain loyal.

Payrolls Larger Though Fewer Are Employed

Washington, July 21.—An increase of nearly $150,000 in the combined payrolls of 106 identical establishments manufacturing iron and steel is reported by the bureau of labor statistics for April as compared with the same month last year, while at the same time there is shown a decrease of more than 30,000 in the actual number of men employed. These figures represent an increase of 1.4 per cent in the total of wages paid and a decrease of 15 per cent in the number of employes. With the exception of the industry making men's ready-made clothing, of the 13 industries compared no other made such a showing as that attributed to the iron and steel industry.

According to the report, the 106 iron and steel establishments employed 170,592 men last April as against 200,761 in April, 1918, a decrease of 30,169. The wages paid these 170,000 men 10 weeks ago amounted to $10,669,134, which is $146,625 more than the 200,000 drew in the same month last year. In comparison with March, 1919, April shows both a decrease in the number of employes and a decrease in the wages paid. While two companies fewer reported for March and April than did for the two Aprils, still the comparison, at least of percentages, is indicative of the trend of the times.

There was a decrease of $971,016 in the April payroll as compared with March, a decline of 8.6 per cent. The 170,719 employes of the 104 establishments in March were paid $11,326,153, while the 163,584 men employed by these companies in April drew $10,355,137. The decline in the number of employes was 4.2 per cent.

Bethlehem Issues Booklet on First Elections

The Bethlehem Steel Co. has issued an 84-page booklet setting forth the results of the first elections under the employe representation system at its Steelton, Lebanon and Maryland plants. Short personal sketches of the elected representatives together with portraits of their chairmen and secretaries serve to emphasize the importance the company attaches to the system of industrial democracy which it inaugurated last fall. In a letter addressed to the employes and published in the booklet, E. C. Grace, president of the company says:

"The management is extremely gratified with the results of the first elections. The employes have shown excellent judgment in the selection of candidates to represent them, and it is our sincere hope and belief that these men who have been thus honored will co-operate with the management to the mutual good of the company and the employes whom they represent. The plan of employe representation in industry is essentially the same as the theory of popular government. * * * The representation has not been inaugurated alone for the settlement of grievances, but in order to attain a lasting success must be utilized in a constructive manner."

Corporation to Aid More Workers Acquire Homes

Youngstown, O., July 21.—Employes of the United States Steel Corp., in this district will be aided by the corporation in building or purchasing their own homes, according to announcement made at the office of the Carnegie Steel Co. Details of the plan have not been completed, but it is said the work will be done through a land subsidiary and that the interest to be charged will not exceed 5 per cent. During the war the Carnegie company built many houses for employes of the McDonald plant near this city, and finally the industrial settlement was incorporated as a city.

Puddlers Compromise

The disagreement between the Reading Iron Co. and its puddlers over the puddling rate has ended. Effective July 1, the company reduced the rate from $14.37½ to $10.50, but the men refused to accept the new rate and held out for $10.92½. A compromise on $10.75 was finally reached. All of the mill wages are based on the puddling rate. Leon E. Thomas, president of the company, has issued the following statement:

"As a result of several conferences with our own employes a rate of $10.75 per ton for puddling was agreed upon, and the company promised to review the wage situation every 60 days, making such changes as the market conditions at that time warranted, in order to maintain the same relation between the puddling scale and market conditions as exists at the present time. Notices to this effect were posted throughout the works of the company, which has givn rise to the report that an agreement had been signed. The Reading Iron Co. will continue to operate as an open shop."

It is thought likely the $10.75 rate will be adopted by other eastern makers.

Mill Wages Lowered After Examination

Steel and tin mill wages for July and August will be on a reduced basis because of the lower prices developed at the bimonthly examination of sales sheets at Youngstown, O., recently. The reduction will be 4½ per cent for sheet operatives and 5 per cent for tin workers. The average price of Nos. 26, 27 and 28 gage black sheets shipped in May and June was shown to be $4.35 per 100 pounds, and the average shipping price of tin plate per base box during a similar period was $6.90. The averages for the preceding two months were $4.50 and $7.15 respectively.

Sells Stock to Employes

The Dominion Sheet Metal Corp., Hamilton, Ont., has inaugurated a profit-sharing scheme for employes. They will be offered 8 per cent preferred stock at par, the number of shares to be based upon earnings. The employes will pay for the stock at the rate of 2 per cent per month and they will be credited with the 8 per cent dividend at the rate of 2 per cent each quarter and no charge will be made for interest. All employes will receive one week's vacation for which they will be paid.

Insures Employes

A group contract with the Travelers Insurance Co., Hartford, Conn., has been entered into by the Eberhard Mfg. Co., Cleveland, in which all employes of the Eberhard company who have been employed there for more than three months, are insured for $500, and employes who have been with the company five years or more will be insured for $1000.

No Shipment Tax on Exports

Commissioner of Internal Revenue Revises Transportation Regulations, Holding That Goods in Transit in This Country Sold for Foreign Account Must be Exempted—Proof of Validity is Required

WASHINGTON, July 22.—With the minds of exporters and manufacturers turned to opportunities in foreign trade, amendments to the regulations governing the transportation tax provisions of the revenue act have been made by Daniel C. Roper, commissioner of internal revenue, and are being called to the attention of export shippers. The revised regulations, however, not only apply to foreign shipments but also affect domestic movements of freight. The commissioner regards the export regulations of great importance, however, and in addition to promulgating the new rules has prepared a special statement.

The amounts paid for the transportation of property in the course of exportation are held to be exempt from the tax imposed by section 500 of the revenue act of 1918, according to the revised regulations. Property is in course of exportation when it has been started on voyage or delivered to the carrier for transportation to a place beyond the boundaries of the United States. It is also defined that movement must be continuous, without a break, that is, without the shipment being stopped at the instance of the shipper "for a business purpose, private sale, storage, grading, sacking, reshipment or manufacture and not in necessary delay or accommodation to the means of transportation." If there is a break, shipment to the point of the stoppage is regarded as a domestic shipment on which tax must be paid.

Proof Must be Submitted

The regulations point out that to secure exemption from tax on amounts paid for the transportation of property in course of exportation, it is necessary that proof of the continuity of the movement and its export character be submitted. To do this the regulations require that the exporter disclose he had on hand at the time the movement started "a contract, order, proposal of purchase or other written evidence of intention to export." Proof of the continuity of shipment and of the export character of the shipment may be provided in the form of a "temporary exemption certificates" and a "certificate of exportation."

The two instruments are to be obtained from the railroad or transportation agency over which the shipment is to start. The temporary exemption certificate must bear date prior to or of the day the shipment moves, and is to contain the name of the shipper, commodity, point of export, number, date or other identifying feature of foreign requirements certificate, contract, order, proposal of purchase, or other written evidence of intention to export, car number, initial and weight or other measure of the commodidty to be exported, freight charges, and foreign destination in case of isolated or single shipments where the foreign requirements certificate is not used.

The certificate of exportation must contain a statement signed by the master of the vessel receiving the cargo, an authorized agent of the ocean carrier or a customs official at border points, setting forth various details of the shipment.

Add 1125 Tons a Day to Surplus Stocks

WASHINGTON, July 22.—The net accumulation of iron and steel stocks belonging to the war department at manufacturing plants, depots, camps, posts and arsenals has been at the rate of 1125 tons a day, according to a circular just issued by the raw materials and scrap section of the office of the director of sales. From June 1 to July 10 the net increase of materials on hand was 50,222 tons. Actual sales, figures of which are not available, have been considerably lower than the accumulations through liquidation of contracts and other adjustments affecting war materials.

The quantity of iron and steel, from ore to finished products, including scrap on hand July 10 amounted to 846,936 tons as compared with 796,714 tons June 1. This increase was due apparently to the taking over by the department of more than 60,000 tons of shell steel forgings from manufacturers whose claims were settled. This item is the largest increase, while a decrease of more than 11,000 tons of billets practically reduces the net gain to 50,222 tons. There are fluctuations in other items, but as is noted on the circular, "the lists are subject to daily revision."

Listing of the items in the new circular is different from that of the one showing the stocks as of June 1, making comparison more difficult, but in regrouping some of them it may be seen that there has been an increase of 177 tons in raw materials, 114 in ferrosilicon, 54 in ferromanganese, 14 in pig iron, with a net loss of five in iron ore; a gain of 5543 in semifinished material, a decrease of little more than 6000 tons in scrap, and a gain of 62,000 in finished products.

Sales of steel as such have not been reported recently, but in the usual weekly statement of the disposition of various materials of all kinds, the director of sales shows $9,607,769 recovered in sales in the week ending July 11, of which more than $7,500,000 represents disposals of wool. Details as to other items were not stated, but in the week ending July 4, net sales amounted to $8,027,000, $782,825 representing ordnance surplus, $77,166 military railways, $388,841 aircraft, and $100,639 construction materials, with $6,604,823, probably wool, of surplus property in the purchase, storage and traffic division.

In the entire period ending July 4, these materials have brought returns as follow: Wool, $155,998,000; railway rolling stock, $69,000,000; chemicals, acids, etc., $32,000,000; textiles, $19,855,000; subsistence, $11,000,000; clothing and equipage, $4,200,000; animals, $18,500,000; nonferrous metals and scrap, $18,274,886. Under miscellaneous, which item represents a recovery of $14,304,384, probably would be found some iron and steel.

The material the war department

is selling is being disposed of by the respective bureaus, subject to the supervision of the director of sales. The raw materials and scrap section of this office. Munitions building, Washington, can furnish full description and particulars of all the materials on hand. The surplus will be offered for sale from time to time, the general method being through sealed proposals.

Want Iron and Steel Plants in Brazil

Washington, July 22.—Plans for the construction of blast furnaces and iron and steel plants in Brazil by American capital have been laid before a high official of the government by Dr. Epitacio Pessoa, president-elect of that country, who is visiting the United States to cement more closely the commercial relations of the two countries. It is declared by the official that the idea is of a most interesting nature and Dr. Pessoa was advised to submit his plans to Chairman E. H. Gary of the United States Steel Corp., Chairman C. M. Schwab, of the Bethlehem Steel Corp., and other large iron and steel manufacturers of the United States. Brazil is abundant in raw materials, Dr. Pessoa stated, but there are no plants for the manufacture of the finished product. Practically all iron and manganese are at present exported. The fact that these plans are being considered appears to take on added significance by reason of the fact that Mr. Gary and Mr. Schwab are said to have conferred with Dr. Pessoa in New York last week.

It is evident that Dr. Pessoa and the Brazilian people prefer American capital to British financial assistance, as the president-elect does not hesitate to state that he has received a voluntary offer from the British firm of Vickers, Ltd., which is anxious to establish a plant in Brazilian territory. No reply has yet been made Dr. Pessoa declares. Dr. Pessoa was elected on a platform which advocated friendliness toward the United States.

Cabinet officers of the United States government have approved the plans of Dr. Pessoa as a favorable investment for American capital.

Foundries Well Booked

Newark, N. J., July 19.—Some gray iron foundries in this district are operating to capacity. Most of them, however, could take care of a good deal more business than they have on their books, and it may be said that their condition reflects the general situation. The foundries which are exceptionally active are mainly those which are parts of certain machinery manufacturing establishments or which produce castings for certain lines which are unusually active. Prices on castings have reflected no change during the past week. However, the opinion of eastern foundrymen is that the present level is minimum and that any change would be in an upward direction. This opinion is based upon a number of factors. In the first place, pig iron and scrap iron are showing a hardening tendency, and all indications point to an increase in labor wages. Local foundrymen say that there is no doubt but that labor conditions are bound to become critical in this district as industrial activity increases, since there is a great scarcity of men, and employers simply do not know where to get them.

Breaks Loading Record

Duluth, July 21.—All high records for the loading of iron ore in the Duluth-Superior harbor, some of them of years standing, have been broken by the steamer D. G. KERR of the Pittsburgh Steamship line. The vessel took on a cargo of iron ore at the Duluth, Missabe & Northern dock aggregating 12,689 tons in 35 minutes. The best previous record was established by the steamer REAM at the same dock, which loaded a cargo of 11,800 tons of ore in 45 minutes. The D. G. KERR entered the Duluth piers at 11 o'clock in the morning and passed out at 2:05 o'clock in the afternoon of the same day. Only 16 men were required to place the cargo in the hold, which illustrates the efficiency of the dock equipment.

Puts in Open Hearth

An oil-burning open-hearth furnace with a capacity of 15 tons daily is to be built by the McDougall-Duluth Co., Duluth. The plant is expected to be in full operation by the latter part of September or the first week of October, according to announcement made by A. Miller McDougall, general manager of the company. All the equipment now at the McDougall-Duluth Co.'s Polk street plant is to be removed to the newly-constructed machine shop at Riverside, the site of the company's shipbuilding plant. The company also proposes to erect a blacksmtih shop at Riverside to replace the one destroyed by fire recently at an estimated loss of $20,000.

Swedish Trade

Is Seriously Affected by Lack of Communication With Germany

The Swedish iron and steel trade for the first quarter of 1919, as shown by the report of the Swedish Iron Works association reflects the depression which has followed the armistice and attributes as the cause the "wait and see" tendency of the market pending the decisions of the peace conference. At the same time, the blockade and other difficulties in communication with Germany have had a favorable effect on some branches of the trade. Exports of iron ore were 275,000 tons compared to 347,000 tons during the same period in 1918. The export diminished each month until in March were only 77,000 tons. Iron and steel production decreased during the first quarter as follows:

	Jan. 1—March 31 1918	1919
Pig iron (including castings)	206,600	159,700
Blooms and rough bars	28,100	21,200
Bessemer and Thomas ingots	14,300	12,600
Open-hearth ingots	112,300	115,300
Crucible and electro ingots	2,200	2,500
Rolled and hammered iron	84,800	91,200
Total	448,300	402,500

Pig iron production dropped to the level of 1911-12 and only 81 of the 132 blast furnaces were operating. Rolled and hammered products increased due to the decreased imports from Germany and the fact that stocks are depleted. Exports were 19,000 tons less than for the first quarter, the largest loss being in pig iron as a result of the decreased demand from the central powers. Exports of rolling mill products have increased due to the demand from neighboring neutral countries, which have been cut off from supplies in Germany.

Effects of the blockade are shown in the quarterly imports which fell off 15,000 tons, pig iron again netting the largest decrease. Disregarding pig iron which can be supplied at home, the classes of product in great demand are plates and building materials. The report pessimistically sums up the market in the following words:

"It is characterized by a small demand and yielding prices. The Swedish iron trade is working under extremely difficult conditions inasmuch as the high price of production is a great handicap to sales, especially for export. The prospects must also be designated as gloomy seeing that further increase in the cost of production is inevitable owing to the anticipated introduction of the 8-hour day."

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

CHARLES L. WARWICK, whose election to the office of secretary-treasurer of the American Society for Testing Materials recently was announced, graduated from the school of civil engineering at the University of Pennsylvania in 1909. After graduation, Mr. Warwick joined the teaching staff of the department of civil engineering, specializing in structural engineering subjects. During the past year he was in charge of the courses in this department with the title of assistant professor of structural engineering. Mr. Warwick's first work with the American Society for Testing Materials was in the capacity of editorial assistant to Dr. Marburg. A year prior to Dr. Marburg's death in June, 1918, Mr. Warwick was given the title of assistant to the secretary, and during the past year has held the position as assistant secretary. He has resigned his assistant professorship at the University of Pennsylvania and hereafter will devote his entire time to the activities of the American Society for Testing Materials.

A. O. Hurxthal, who was a captain in the ordnance department, has become associated with the Philadelphia Textile Machinery Co., Philadelphia.

George Shook has been appointed blast furnace superintendent for Witherbee, Sherman & Co., Port Henry, N. Y.

E. R. Stoughton, resident agent at Detroit for M. A. Hanna & Co., Cleveland, is recovering from an attack of pneumonia.

G. A. Traube, formerly of the Westinghouse Air Brake Co., Pittsburgh, has become associated with Gaston, Williams & Wigmore, New York.

Edward Law, son of the late Ernest Law, recently was admitted as a partner to the firm of Ernest Law & Co., Philadelphia, iron and steel merchants.

W. W. Vesy has been appointed western sales manager for the Bossert Corp., Utica, N. Y., with offices at 611 Citizens building, Cleveland, which were recently opened.

W. L. Dickel, formerly employed by the Keystone Steel & Wire Co., Peoria, Ill., has been made sales manager of the General Steel Co., Milwaukee.

C. M. Weld, consulting mining engineer, has returned from war work at Washington and has resumed his practice with offices at 66 Broadway, New York.

David B. Sutton has become sales manager of the Thatcher Propeller &



CHARLES L. WARWICK

Foundry Corp., Albany, N. Y., which was formerly the George H. Thatcher Co.

Frank G. Wheeler, until recently connected with the Miehle Printing Press & Mfg. Co., Chicago, has become associated with the Chapman Engine Works, Marcellus, Mich.

A. L. Roberts, former designing engineer for the Bethlehem Steel Co., has been elected president of the Roberts Co., Philadelphia, consulting and contracting mechanical engineers.

Cleveland S. Soper recently resigned his position of instructor of machine design at Wentworth institute, Boston, and has accepted a position as engineer with the Kent Machine Co., Kent, O.

George A. Jurey will resign soon as chief clerk of the open-hearth department of the Republic Iron & Steel Co., Youngstown, to became an auditor for the Jones & Laughlin Steel Co., Pittsburgh.

D. C. Schulz Sr. has assumed the duties of sales manager for the Pittsburgh Crane & Equipment Co., Sharpsburg, Pa.

N. S. Thulin has been made special railroad representative for the Chicago Pneumatic Tool Co., Fisher building, Chicago. He will be on the staff of S. C. Sprague, the company's manager of western railroad sales.

H. J. McCann, former purchasing agent for the Dominion Iron & Steel Co., Sydney, N. S., has been appointed assistant to Mark Workman, president of the Dominion Steel Corp., at the Montreal, Que., offices.

N. Palmer, formerly manager of the Worthington nickel mine, Sudbury, Ont., has been appointed general superintendent of the chrome iron properties of the Black Lake Asbestos & Chrome Co., Black Lake, Que.

John W. Barrett, for the past 11 years connected with the Pittsburgh Coal Co., has assumed his duties as an inspector in the fuel department of the Youngstown Sheet & Tube Co. with offices in Pittsburgh.

B. L. Cogshall, formerly connected with the United Alloy Steel Corp., Canton, O., recently resumed his new duties as assistant to President John Bindley of the Pittsburgh Steel Co., Pittsburgh.

F. W. Shumard, supervisor of the machine and small tools branch of the Motor Transport Corps, has left government service and is now superintendent of the Arnold Hellmuth Mfg. Co., Brooklyn.

Earle W. Vinnedge has received his release from military service and has joined the staff of the Worthington Pump & Machinery Corp., Cincinnati, in the capacity of sales engineer.

Albert C. Mann, former purchasing agent of the Illinois Central railroad, has been appointed vice president in charge of purchases for the American International Steel Corp., 120 Broadway, New York.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WOODWARD WILLIAMS, who has been connected with the A. M. Byers Co. since the latter part of 1913, as general manager of sales and general manager of the company, has resigned and on Aug. 1 becomes general manager of the Reading Iron Co., Reading, Pa. Mr. Williams takes to his new position an experience covering almost 15 years in both the operating and sales divisions of the iron and steel business. Following his graduation from Harvard university in 1904 he entered the employ of the Carnegie Steel Co. and served in various capacities in the mills of that company. He was mill foreman at the Youngstown, O. plant during the famous strike of 1905 and subsequently was transferred to the Duquesne works where he served as an open-hearth furnace helper and later became assistant chief inspector of the plant. He severed his connection with the Carnegie company in 1909 and joined the sales force of the Bourne-Fuller Co., Cleveland, O., being attached to the St. Louis and Pittsburgh offices. In 1911 he was made Pittsburgh district manager for the company succeeding Norris Clark, who recently took over and became president of the Lake Erie Iron Co. After two years in this position he resigned to become sales manager of the A. M. Byers Co. and the building up of the sales organization of that company was one of the achievements of his connection with the company. Mr. Williams is a native of Cleveland, O., where he was born Oct. 21, 1882. He is a member of the Duquesne club, the Oakmont Country club, the Pittsburgh Athletic association, and the Harvard club of western Pennsylvania.

Victor E. Rehr, general manager of the Aetna Foundry & Machine Co., Warren, O., has been elected to the board of directors of the company, to succeed W. W. Ludt, recently resigned.

Randolph Owens, who for 10 years has been connected with the St. Louis office of the American Sheet & Tin Plate Co., Pittsburgh, has been transferred to the Philadelphia office.

H. H. Maxfield, who has been acting works manager of the Pennsylvania railroad lines west, with headquarters at Altoona, Pa., has been appointed works manager in charge of the Altoona shops of the company.

W. C. Tyler, formerly district manager at the New York office of the Poole Engineering & Machine Co., Baltimore, has been appointed general sales manager in charge of all the selling activities of the company. His office will be in New York.

Capt. Leonard A. Bonner, motor transport corps, son of James B. Bonner, Washington representative of the United States Steel Corp., returned to this country recently, after a year's service with the American forces in France.

J. Brewster Pray, formerly affiliated with the New York Shipbuilding Corp., now represents the Montgomery Iron & Steel Co., Philadelphia, in New York, with headquarters in the Candler building, 220 North Forty-second street.

Capt. John T. Jans has joined the engineering forces of Holcroft & Co., Detroit, foundry furnace and oven specialists. Captain Jans was graduated from the University of Michigan in 1912. He was 21 months in France with the 16th engineers.

H. R. Trotter, formerly chief engineer of the S K F Ball Bearing Co., has been appointed chief engineer of the S K F Industries, Inc., New York, which was recently organized to supervise the sales and engineering activities of several companies.

J. H. Van Campen, formerly of the Bethlehem Steel Co., Bethlehem, Pa., and until recently plant engineer for the Timken Roller Bearing Co., Canton, O., has accepted a position in the engineering department of the Midvale Steel & Ordnance Co., at Coatesville, Pa.

James J. Warren, Toronto, Ont., has been appointed president of the Consolidated Mining & Smelting Co. to succeed the late W. D. Matthews. Mr. Warren has been managing director of the company since 1915 and for a year previous to that was a member of the board of directors.

R. C. Garlick has been appointed district manager throughout northern Ohio and Indiana for the Sharon Steel Hoop Co., Sharon, Pa., with offices at 931 Garfield building, Cleveland. For the past year he has been handling direct sales of the company at Sharon, Pa., and for 10 years prior to that was with the company as salesman in the Chicago territory.

Charles G. Guild has been appointed secretary of the Wayne Oil Tank & Pump Co., Ft. Wayne, Ind., to succeed Clayton O. Griffin, resigned. Mr. Guild, formerly was manager of the Burlington Wheel Co., Burlington, Iowa.

W. H. Ginder has been appointed superintendent of the open-hearth blooming mill department of the Eastern Steel Co., Pittsville, Pa., succeeding H. S. Flanagan who resigned recently and now is in California. Mr. Ginder, before joining the Eastern Steel Co., was chief chemist at the Vandergrift, Pa. plant of the American Sheet & Tin Plate Co. and also had been attached to the Schoenberger works of the American Steel & Wire Co., Pittsburgh.

Roy M. Wolvin has been elected a director of the Dominion Steel Corp., Sydney, N. S., to fill a vacancy on the board. He has been identified with lake shipping for a number of years as president and general manager of the Montreal Transportation Co., for several years and later as vice president of the Halifax Shipyards, Ltd., Halifax, N. S. H. J. McCann has been appointed assistant to President Mark Workman at the Montreal office of the Dominion Steel Corp. He commenced his service with the company a number of years ago as telegraph operator.

Roland S. Lebarre, assistant manager of sales of the Carnegie Steel Co. for the Cleveland district, has resigned that connection, effective July 21, and has been made general sales manager of the alloy steel department of the Interstate Iron & Steel Co., Chicago. He has spent his entire business career with the United States Steel Corp., joining the Illinois Steel Co. 20 years ago, and in 1902 entered the sales department. During the past 14 years he has been assistant district manager of the sales for the Carnegie Steel Co. at Cleveland.

Industries Are Wanted

Australia Negotiates With Various Manufacturers—Mineral Lands Await Exploitation—Other Australian News

(Special Correspondence.)

NEWCASTLE, N. S. W., June 30. —The commonwealth government has given careful consideration to means for establishing new industries in Australia. The cabinet is endeavoring to get in touch with manufacturers in various parts of the world. Some form of bonus probably will be offered. As this country virtually is a storehouse of minerals of all kinds there is ample scope for producers, and the government is seeking to convince them that with careful operation great returns are assured. Here are vast iron deposits and precious metals, alkaline earths, copper, tin, lead and antimony in abundance. There are about 5,000,000 persons in this country and its natural resources could easily support 20 times that number. Immense tracts of valuable mineral lands are now used only as sheep runs and cattle stations.

The government statistician has issued a report stating that the total value of products manufactured in the 5333 factories in New South Wales in 1918 was $427,500,000. A total of $70,983,035 was paid in wages to 117,732 employes, 25 per cent of whom were women. The average wage paid men amounted to $825 and that paid women to $285. The value of output per employe was $3755.

In the last few years frequent attempts have been made to smelt the beach magnetic iron ore and the iron ore found around New Plymouth at the base of Mount Egmont. The New Zealand Iron Ore Smelting Co. is constructing a huge breakwater and a blast furnace. The iron sand from the beach is dried and electrically concentrated, then mixed with coal and ground before used in the furnace.

The Newbold Silica Fire Brick Co., Ltd., has started work on a new plant on a four-acre site at Waratah, new Newcastle, close to the property of the Commonwealth Steel Products Co.

Two new steel furnaces for the Lithgow Ironworks Co. are practically completed. An important feature in the construction is a reinforced concrete smoke stack, 160 feet high, the base of which is 20 feet in diameter.

The Broken Hill Proprietary Co. reports a record output at its iron and steel works at Newcastle for the four weeks ending Feb. 5. The coke ovens produced 14,695 tons of coke, 138,787 gallons of tar and 218 tons of sulphate of ammonia. No. 1 blast furnace was under repairs, while No. 2 furnace produced 12,549 tons of pig iron. The foundry produced 1825 tons of steel and the steel works, 16,710 tons of steel. The blooming mill rolled 13,097 tons of billets and shipbuilding plates. The rod mill produced 1748 tons.

Copper Situation Acute

A problem demanding immediate attention of the commonwealth government has been created by the closing down of copper mines in New South Wales and the great difficulties under which this class of metallurgical work are carried out. In Transmania and South Australia the situation is acute, especially as more men are employed in the work of copper mining than in any of the other districts. At present the producers are faced with the reduced value of the metal and the difficulty of shipping. Australia consumes only a small amount of the copper it produces, and therefore the export markets are of the utmost value to her.

At Port Kemba during February, 1919, 70 men were laid off at the Electrolytic Copper Works, and there are now fewer than 150 employed there, whereas about 700 were employed formerly. The cause of the slump is the embargo on the sale of copper outside of Great Britain, and no relief is expected until peace is declared. Another contributing factor to slackness is the scarcity of supplies as the result of the closing of commonwealth mines. The estimated value of copper on these particular works is $4,800,000.

At a meeting of the Primary Producers' association held at Cowra strong comments were made concerning the prices of imported agricultural machinery. A reaper and thrasher before the war cost £122 ($585.60). Now it costs £225 ($1080).

The Tin Mining Co. at Waratale, Tasmania, produced in the last half of 1918 ore totaling 51,000 tons, and sold it for an average price of £333 ($1598.40) per ton.

For the four months ending Oct. 31, 1918, the imports into Australia of machinery, iron and steel were valued at nearly £5,000,000 ($24,000,000).

The American trade commissioner in Australia will take evidence in the case of complaints against American shippers regarding failure of goods to come up to sample, bad packing, etc., and will endeavor to settle matters amicably. American houses are understood to be ready to make reparation, and if any Australian firm refuses to accept their terms the federal trade commissioner has power to compel a settlement.

The Parapara Iron Co., of New Zealand, producing iron ore in New Zealand and selling it in Australia, has asked for government assistance.

An official statement by the government says that the total value of metals and concentrates paid for by the imperial authorities and still in Australia is £7,000,000 ($33,600,000). In the absence of a normal demand several of the large concerns are complaining of serious handicaps brought about by the government selling out cheap.

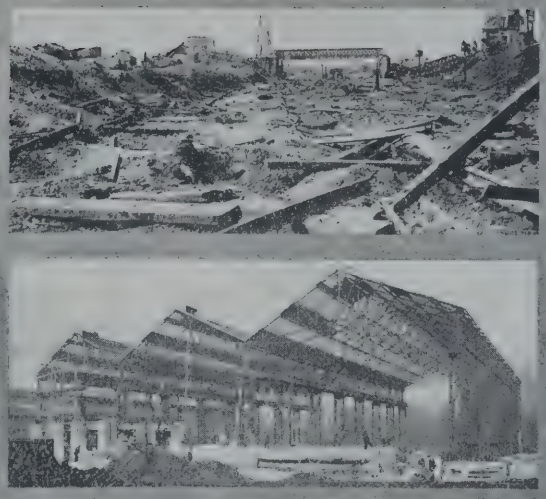
Galvanized iron is quoted at £65 ($312) a ton and tin plate at 40s ($192). Fourteen-gage barbed wire is £56 ($268.80) and black steel sheets £57 ($273.60).

The Broken Hill Proprietory Co., Ltd., has issued the following report on operations of its iron and steel works in Newcastle, N. S. W., during the four weeks ending April 2: Coke ovens produced 14,580 tons of coke, 149,439 gallons of tar and 232 tons of sulphate of ammonia; No. 2 blast furnace produced 12,566 tons of pig iron; open-hearth furnaces produced 17,779 tons of steel; blooming mill produced 14,802 tons; rail and finishing mill produced 9704 tons of 60 and 80-pound rails; 18-inch mill produced 3596 tons; 12-inch mill, 1738 tons; 8-inch mill, 241 tons and rod mill, 308 tons.

To Honor Schwab

Wednesday, Aug. 20, has been set as the day for the big flag-raising celebration to be held at the summer home of Charles M. Schwab at Loretto, Pa. The event, which promises to be one of the greatest in the history of Cambria county, will be in honor of Mr. Schwab, and some of the most noted men of the country will be present on this occasion. Among them will be Ambassador Jusserand who will confer upon Mr. Schwab distinguished honors awarded him by the French government in recognition of the prominent part his company played in the manufacture of munitions for the allies and as director of shipbuilding for the United States during the war.

France Still in need of 30,000,000 Tons of German Coal



Yesterday Today and Tomorrow in European Industry

BY FRANCIS MILTOUN

Paris Correspondent of The Iron Trade Review

PARIS, July 1.—Monsieur Henri Couriot, a leading technician of the French mining industry, gives some interesting facts and figures concerning coal and its relation to the French iron and steel trade. "France," he says, "cannot enter the industrial arena without 30,000,000 tons of German coal per annum."

Coal imported into France before the war amounted to but 20,000,000 tons per annum, but now there is Lorraine and Alsace requiring something like 11,000,000 tons a year. The coal of the Saar basin is not the best for the iron industry of Lorraine. Indeed, when the Germans were operating the furnaces they brought a good part of their coal from the Ruhr district.

On the eve of war, coal for industrial purposes in France cost 40 per cent more than it did in England and 20 per cent more than in Germany. In reality the cost was even greater, since the 20,000,000 tons which France brought in from outside paid a customs duty of 24 cents a ton. In dollars and cents, industrial coal then cost France 40 cents a ton more than in Belgium, $1 more than in England, and $1.40 more than in Germany. Germany furnished France with 78 per cent of France's imports of coke for metallurgical purposes before the war, and at a price which favored its own industries to the detriment of those of France.

In the department of Meurthe et Moselle, the chief iron and steel producing region of old France, a ton of coke cost $6.80 in 1913, at which time it cost but $4.80 in Belgium, $3.80 in Germany and $3.40 in England. At that time the department was producing 2,190,000 tons of steel per annum in 36 converters and nine open-hearth furnaces, and 3,400,000 tons of pig iron in 78 blast furnaces. Even transportation was far more costly in France. The transportation of 100 tons for a distance of 100 kilometers cost 22 cents more than in Belgium and 54 cents more than in Germany. These are some of the reasons why Belgium and Germany were turning out iron and steel products more cheaply than in France.

The production of pig iron in France required coke to the value of $10.60 per ton; in Belgium $9.40; in Germany but $8.10. Steel from Thomas furnaces cost in France, for combustible alone, $9.40; in Belgium $7.50 and in Germany $5.80.

It is impossible to count upon a sufficient supply of either industrial or domestic coal from the devastated mines of northern France for a period of five years at least. Production will hardly exceed 50 per cent of normal for two years yet. Half of the coal supply of France as it existed before the war is unavailable at this time, and since the armistice importations from England have fallen to a very low ebb.

The coal of the Saar will be absorbed largely by the industries of Alsace and Lorraine, while France has just obligated herself to grant 1,000,000 tons a year to Switzerland to take the place, in part, of what was formerly supplied the mountain republic by Germany.

This is the coal situation in France today, particularly as it affects industry. It should be borne in mind that in March, 1919, less coal was produced by French mines than that which was produced in the month of October, 1918, when the war was on.

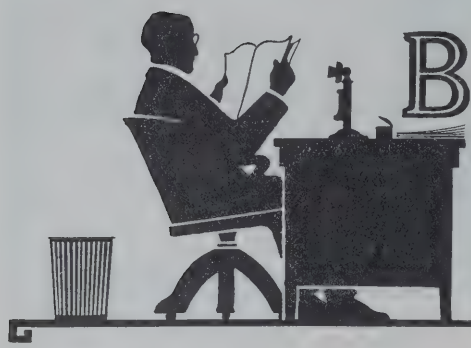
A report states that the Paris "electric sector" has a stock of but 27,000 tons on hand, a seven-day supply, whereas its usual stock is for three months. If any such voids occur in supplying the French metallurgical industry with coal and coke during the next year of much needed production, one may well say with Monsieur Couriot that "it is impossible for France to enter the industrial world with dignity and honor unless she obtains by priority 30,000,000 tons of coal from Germany within the next year." In 1913 the French metal industries used 12,545,000 tons, or 19.4 per cent and other industries 19,811,000 tons, or 30.5 per cent of the entire amount of coal consumed in France.

The possibility of a plebiscite in Upper Silesia as to its final partition is something more than mere politics. There is the very important economic aspect as to whether, if Germany is deprived of these coal fields, she will be able to deliver to France 30,000,000 tons a year which French industry requires.

The Ruhr mines of Germany are easily accessible to France, but if their product is to be shipped to other parts of Germany to replace supplies which might otherwise be had from Silesia French blast furnaces of Lorraine will go short. General opinion in France is absolutely fixed on this point, hence the quasiagreement to reconsider the Silesian proposition.

The *Deutschlands Steunkohlenfelder und Steinkohlenvorraunth,* issued in 1912, states that the Silesian fields, which would otherwise pass to Poland, are capable of furnishing Germany 33 per cent of the annual coal supply of normal times. Giving Silesia to Germany will give France a chance to import coal from Westphalia.

Little Stories of Business Life





The Tragedy of An Idea

PERHAPS no one knows better than an inventor that for every idea which develops into a successful invention there are thousands which lead to failure. The late Samuel T. Wellman is known the world over for his open-hearth charging machine and other notable works. Only a few of his closest friends are aware that he always was trying out new ideas with the hope of contributing further to the perfection of manufacturing methods, and that frequently his efforts met with failure, which to a great many men would have proved most discouraging

Mr. Wellman once was convinced that he had hit upon a scheme for eliminating pipes and blow holes from ingots. To test his theory he had erected a jarring machine in the plant of the Wellman-Seaver-Morgan Co., and on it mounted a 3-ton ingot mold. He believed that jarring the hot metal would prevent the formation of pipes and other undesirable irregularities in the ingot.

On the day of the test Mr. Wellman and a few of his most intimate friends grouped themselves around the machine to watch the outcome. The ingot mold was poured and jarred vigorously for 30 minutes. On the following day, the ingot was slit so as to expose the structure of the metal. The interior was entirely free from pipes and blow holes, but in each of the four corners there were countless fissures and gas bubbles giving the steel a most beautiful appearance but, of course, making the ingot absolutely worthless for practical purposes.

This particular incident is typical of many experiments undertaken by Mr. Wellman and illustrates to what lengths that indefatigable engineer was willing to go to test the value of an idea.



Wonders of Niagara

THE electrothermic process used by the Carborundum Co., Niagara Falls, N. Y., is interesting and many thousand visitors inspect the plant annually. Recently an Englishman was taken through the plant. He asked innumerable questions and the guide explained at length how Niagara Falls were utilized to generate the electricity which flowed through the carborundum furnaces. In the furnace room, the visitor noticed a small stream of water which flowed over the electric terminals to cool them.

"Ah, yes!" he exclaimed, "isn't it wonderful. So that's how you utilize the water from Niagara Falls."



The Future Foretold

SOME writers seem gifted for uncanny vision," said Clayton Mark, chairman of the board, Steel & Tube Co. of America, as he turned the pages of a scrap book and referred to some of the successive steps which finally led to the recent merger of his company with the Newport Mining Co. and the Northwestern Iron Co. "Here is a little story printed in a financial publication as far back as 1916 which has appealed to me as being strangely prophetic. The writer did not name all of the companies now in the present merger, which embraces the Mark Mfg. Co. and the Iroquois Iron Co., but he named some of them and forecast the general lines along which expansion would take place, even to giving the location of some of the plants and mines recently acquired. We ourselves, at that time, did not know just how our plans would work out; they were in intangible form. The writer may only have been dreaming at that time, but events have come to pass as he predicted. Sometimes a trade journalist or a financial writer knows more of what he is talking about than readers give him credit for knowing."



Light on a Strike

THE Consolidated Steel Corp. has reason to figure out the value of electrical current. Its big staff is quartered in one of the large modern office buildings on Broadway in New York, but, like many New York office staffs, is dependent upon electric lighting on the brightest of days. Recently there was a spell of rainy days and the dampness caused a short circuit in the lighting arrangement. Three times in one week the staff was thrown into a state of idleness by the lack of sufficient light.

The greatest trouble was caused in the shipping department which was working hard upon the manifests and shipping documents. The eastern ports were threatened with a tieup on account of a marine strike. Ships were being tied up every day because the men refused to work. Every minute counted. Material had to be rushed aboard ship and started out before the strike spread. The Consolidated was but one of the multitude of export organizations anxious over this situation, but it was one of the largest and had much more at

stake. The short circuit in the lighting system in this case proved to be a grave inconvenience.



Want Their Beer

SCARCITY of beer continues to be a great source of grievance among the industrial classes of Great Britain, especially among the iron and steel workers," says the British correspondent of THE IRON TRADE REVIEW. "At one town in the north of England it is said boys follow brewery wagons to see where beer is delivered and then write the names of the public houses on slips of paper which they sell to workers as the latter leave the factories. In the iron and steel districts, scouts are sent out to find what public houses will have beer at night, so that the men can go there without having to make a tour of the streets to find where a drink can be obtained. According to *The Morning Advertiser,* the miners of a Lancashire colliery town arrange for someone to go out on Sunday mornings to an adjoining area, taking with him a couple of homing pigeons. If the prospector finds a supply of beer he releases his pigeons which carry the information to his friends. As a result the next half dozen tramcars from the mining center are crowded with men hurrying to get a drink."



Gary Calls the Turn

JUDGE GARY predicted 20-cent copper several weeks ago, when the market was around 16 cents a pound. The prediction aroused considerable surprise in the copper trade, for while it was expected prices would go higher, no one was looking for better than 18-cent copper in the near future. Little more than a month later copper reached and passed 20 cents. All of which would seem to indicate that a shoemaker can watch other things beside his own last. Incidentally, the government as well as the copper people seem to have been surprised by the action of the copper market. Early in April the copper producers arranged with the government to market some 100,000,000 pounds of government copper. This stock had occasioned some anxiety among the copper producers, as it was feared the amount was large enough if sold in the open market to affect seriously the copper business, which was then on the downgrade. Accordingly the plan was made by which the producers would market this copper for the government over a period of 15 months, with a monthly withdrawal based on the total copper business done. But it did not take 15 months. In fact, business revived so rapidly that the entire 100,000,000 was disposed of in three months.



Genuine Co-operation

NINE American manufacturers in the same line were called the other day to consult with the owner of a plant who wished to install some new machinery. The owner knew exactly what work was to be expected of the new machinery but he did not draw up his specifications as he was in a hurry to get his equipment. To the nine machinery makers he explained in detail what he wanted ending with the simple statement that he wished to get delivery within a few months.

All nine said that undoubtedly they could make a machine which would meet the requirements. Only one of the nine was at the time building a machine which particularly filled the want and this was a patented machine. We will call this man Jones, but it was Smith who made the unusual suggestion.

"Mr. Purchaser," said Smith, "Jones is the only one of us who can fill your order immediately, although all of us could compete. But to permit us to compete you would have to wait until your engineers could figure out specifications which would enable us all to bid. Jones undoubtedly will quote you his lowest price because he is confronted with the potential competition of the rest of us. Our business is to serve our customers and I would suggest that if you want an installation immediately that you purchase what Jones has."

The suggestion was unanimously adopted, and that, the purchaser said later, is the result of war co-operation.

Foundrymen's Convention Plans Maturing

Preparations rapidly are nearing completion for the Inter-Allied Foundrymen's Congress and Exhibition which will be held in Philadelphia during the week of Sept. 29. The committee on papers announces that 34 addresses and papers have been secured to date. These cover every phase of the foundry industry. It is practically assured that the technical material prepared will be sufficient to provide special sessions to consider gray iron, malleable iron and steel problems. The broad questions of management and personnel also will be discussed.

More space already has been reserved for the machinery and equipment exhibition than the total required for any previous convention. Excellent facilities for exhibiting equipment are provided at the Philadelphia Commercial Museum and many manufacturers will avail themselves of the opportunity to demonstrate new and improved machinery.

The committee of the Philadelphia Foundrymen's association is providing an extensive program of entertainment, to include some interesting visits to local manufacturing plants. It is planned that these inspection trips will be scheduled so that they will not conflict with the technical sessions.

President A. O. Backert, who has just returned from an extended trip to England and France, reports a lively interest abroad in the foundry industry of America. The cordial invitation extended by Mr. Backert to the various associations of foundrymen of the allied nations will no doubt result in a large foreign attendance.

Form English Syndicate

A syndicate has been formed at Sheffield, England, known as the Sheffield Steel Products, Ltd., with the object of meeting more vigorously foreign competition in cutlery in the markets of the world. One of the effects of the war was to show Sheffield manufacturers that German cutlery manufacturers slowly but surely were outcompeting the English products. In order to meet the problem, the syndicate was formed. Already several large businesses have been acquired, two of which possess valuable trade marks relating to files, saws, cutlery and tools. The directors are A. H. Wild, J. H. Stewart, R. E. Skipworth and J. T. Wood. The latest step taken by the syndicate has been the acquisition of the plant of the Templeborough National Projectile, Ltd., which was built especially to meet the needs of the war. It occupies 20 acres. The syndicate has agencies in the chief markets of the world.

The Allied Steel Castings Co., Harvey, Ill., will install a 10-ton open-hearth furnace in addition to its Wellman-Seaver-Morgan 5-ton tilting furnace which will be enlarged

A Word With the Editor

Readers of *The Iron Trade Review* Express Themselves on Various Topics of Commercial and Industrial Importance

Folly of Excessive Taxation

Editor, THE IRON TRADE REVIEW:—

The subject of the federal tax law has had a great deal of my attention and thought since the passage of same, regarding the liquidation of the government war debt in a period of but 21 years.

My understanding of this act is that we are to collect $6,000,000,000 in 1919 and $4,000,000,000 each year thereafter for 21 years.

I recently made a trip throughout the Mahoning valley and Pittsburgh district, during which time I heard many steel men express themselves on the inconsistency of our government undertaking to wipe out this enormous war debt in so short a period of time. It is my belief, concurred in by every manufacturer with whom I have talked, that if our government attempts to collect so vast a sum in so short a space of time, it will stifle industry.

I am constrained to ask the question—Can the government, in equity, take such an enormous sum from its partners without handicapping them in their production and taxpaying ability? The policy as set forth by this levy is sure to impair energy and is equally sure to discourage production of any manufacturing concern. It means the confiscation of 50 to 65 per cent of each individual's or industry's earnings.

Being a loyal citizen of the United States government, it is my aim and desire to support and uphold it to the utmost, but the incentive and ambition to build up a successful business or industry, to be a credit to the community as well as our country, is lost when over half of one's earnings are appropriated each year by our government for taxation.

I believe there should be some immediate action taken by every one concerned to have this law repealed, and in its stead, to provide that for raising this vast sum of money, the taxation should cover a period of 80 years, under which arrangement the business of the United States could not suffer, as it is bound to by the enforcement of the present law.

I am a manufacturer, and like many others with whom I have talked, did not fully grasp the burdensome measures imposed on the business of the country at the time this law became effective, but now that we have paid our taxes, we find that should we continue along the same lines, raising $4,000,000,000 per annum, it will prove a great injustice to many industries in the United States.

My discussion with the different steel men throughout the Mahoning valley has caused me to ask this question of myself: Why am I working with all the energy I possess to build up a business that is giving employment to many hundreds of people, from the profits of which I have to pay a tax of from 50 to 65 per cent?

If this is to continue there can be nothing but a disastrous ending, as there is no business in this United States that can prosper year after year under this burden.

I, like many others, can stand it for one or two years, but when you figure that these conditions will remain with us for 20 years, we can see but one result—that of the slowing up of business and the paralyzing of many industries, with its attendant failures.

Very truly,
BOYLE MFG. CO.,
W. J. Boyle, President.
Los Angeles, Cal.

Kelly the Real Inventor

Editor, THE IRON TRADE REVIEW:—

Please refer to page 119 of your issue of July 10 in the article "To Honor Bessemer." This mentions Sir Henry Bessemer as the inventor of the Bessemer process. If you will take the time to investigate the matter you will find that Bessemer was not the inventor of this process but that William Kelly was the inventor.

The writer is a grandson of William Kelly and was named for him. He discovered the pneumatic process for making steel in Lyon county, Kentucky, and was given the patent for same in the United States, although his application was made after Bessemer had applied for a patent on the same thing, William Kelly having proven priority. I think that Andrew Carnegie, the Cambria Steel Co., and a number of other steel men prominent at that time will verify this statement.

The story is that my grandfather had two Englishmen working for him at his furnace and forge in Lyon county and that they left him and went to England and told Bessemer what William Kelly had done and that Bessemer tried it and applied for patents on the process.

Complete details of this matter can be supplied you by W. C. Kelly, president of the Kelly Axle Mfg. Co., Charleston, W. Va., and John G. Kelly, president of the Braddock National bank, Braddock, Pa., both of whom are sons of William Kelly, and uncles of the writer.

My only interest in the matter is to see fair play and to give the credit for this great invention to the proper man. Awaiting your reply, I am,

Yours truly,
W. K. THOMPSON.
Los Angeles, Cal.

Capital Blind, Too?

Editor, THE IRON TRADE REVIEW:—

Your editorial July 3, 1919, "Why is Labor so Blind?" I am afraid has an important link missing. It should read: "Why is Labor and Capital so Blind?"

The advocated policies of both are so radically extreme that there must be something fundamentally wrong in both. Sifted and simmered down, present extreme systems amount to this.

First: The bonus, or piece work system, is staged by the employer for one and only one reason; he figures that he can get good, honest men to do a day's work for a day's pay any time, but by offering a bonus the same honest man will hop in and do two days' work for much less than two days' pay. It may be "practical" but it certainly is not just.

Second: The labor organizations realize that their best men are being mulcted by the so-called just (?) bonus system. In order to combat this, they stage the extreme opposite and advocate that one man's time is as valuable as another's. It is a combative arbitrary principle.

The two sides are matching wits to see which party can get the *most for nothing*. The inevitable result is discord. Whether this discord will increase or diminish will depend entirely upon what both sides are willing to do towards removing the cause. One extreme is as unjust as the other.

Yours truly,
PIONEER MANUFACTURING CO.,
J. M. Schenk, Manager.
Waterloo, Ia.

Discusses High Costs of Southern Iron

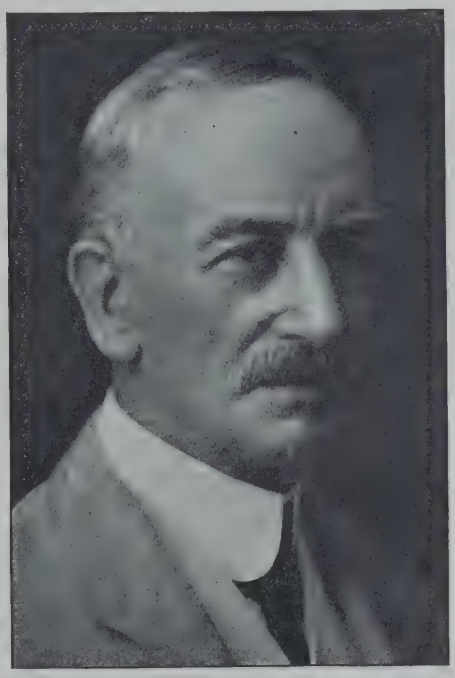
Morris W. Bush, mine operator and iron manufacturer at Birmingham, in a long interview recently published by a Birmingham newspaper makes some interesting declarations, regarding the changed conditions competitively that have been established in the production of pig iron in the Birmingham district. "The advantage of the Birmingham district for the production of pig iron over other competitive districts in the United States or abroad which existed 30 to 40 years ago have disappeared. The general belief prevalent in Alabama that these advantages continue and allow the Birmingham district to dictate the price of pig iron to the balance of the United States, is unfortunately baseless, for that condition has passed away never to return," says Mr. Bush.

Thirty years ago the cheap conditions of production in the Birmingham district, according to Mr. Bush, were due to the fact that the ore used was the "soft" red ore from the outside of the Red Mountain seam which was easily accessible, was worked by hand and contained an average of 50 per cent of iron or more. This easily mined ore has been exhausted requiring underground openings by means of slopes, extensive and expensive equipment, etc. Today the ore does not contain more than an average of 36 per cent metallic iron in the best self-fluxing quality. Some of the ore running 38 to 40 per cent is so silicious as to make the smelting more expensive. Limestone suitable for blast furnace use today must be hauled from a greater depth. The Pratt seam of coal, affording the best coke, has been exhausted to a large extent. Instead of 2800 pounds of coke to the ton of pig iron as used 30 years ago, from 3300 to 3800 pounds now is required. The effect of the war was to greatly increase wages and labor cost so that southern plants are paying northern rates today without the northern efficiency. Railroad rates on blast furnace materials in the Alabama district have doubled. The 25 per cent horizontal advance in freight rates operates strongly against southern pig iron in competing at northern destinations where a large part of its product must be distributed.

"Within 20 years there has not been a single new blast furnace built in the Birmingham district," said Mr. Bush, "but within that time two have been pulled down and the sites turned to other purposes. During that time more than $100,000,000 has been expended in competitive plants in such districts as Chicago and others, where Alabama pig iron formerly could always find a market and could afford to sell as a rule at $1 below the cost of local brands. The total blast furnaces of the district amounted to 51 in 1908, of which today only 45 remain, and out of the 45 there are only 27 which have never been in the hands of their creditors—and out of this total number of 45, only 18 are at present in blast."

Obituaries

COL. JAMES KILBOURNE, president of the Kilbourne & Jacobs Mfg. Co., Columbus, O., manufacturer of agricultural and road-building equipment, and known to the iron and steel industry as the founder



COL. JAMES KILBOURNE

and builder of one of the largest steel fabricating plants in the middle west, died at his home in Columbus recently. He was a graduate of Kenyon college and of Harvard university. He served as captain during the Civil war and for gallant and meritorious service was brevetted major, lieutenant-colonel and colonel. Before organizing the Kilbourne & Jacobs Mfg. Co., he practiced law for a time. At the time of his death, he was a director of the Columbus, Hocking Valley & Toledo railway, the Columbus & Cincinnati Midland railway, the Hayden Clinton National bank, the New First National Bank of Columbus and the Midland Mutual Life Insurance Co. In 1892 and 1896 he was a delegate from his home district to the democratic national convention and in 1900 as a delegate at large, was chairman of the Ohio delegation. In 1901 he was nominated for governor of Ohio, but was defeated. He was president of the Ohio Centennial Commission of 1903, a member of the American Society of Political and Social Science of the National Geographic Society, of the National Forestry association, the Ohio Archaeological society, and was former vice president of the Leslie F. Orren Educational society and a member of a number of other societies.

Oscar Otto, general superintendent of the South Philadelphia machine works of the Westinghouse Electric & Mfg. Co., who died recently, as the result of an automobile accident, was born in Manitowoc, Wis., Jan. 2, 1859 He finished an apprentice course as machinist in the shops of the Chicago & Northwestern railway and later accepted a position with the Northern Pacific Railroad Co. at Tacoma, Wash. He went from there to the Oregon Short line at Salt Lake City, Utah, returning in 1898 to the Chicago & Northwestern as superintendent of its Chicago shops. Mr. Otto became general superintendent of the Westinghouse machine works at East Pittsburgh in June, 1909. When the company opened its new plant at Essington, Pa., he supervised the installation of the machinery and in February, 1918, he was transferred to the South Philadelphia works where he remained until his death.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

SAMUEL S. BUCKLEY and Edgar D. Newkirk, president and secretary-treasurer of the Onondaga Steel Co., Inc., Syracuse, N. Y., who recently returned from a trip abroad, commenting on their trip state there is little likelihood of French competition in the American market. On the other hand they did not think America would make any great inroads into the French market, as it is expected England and Sweden will supply France with most of its imports of tool steel, until that country is rehabilitated. They declare there was a decided feeling of labor unrest throughout France, despite the fact wages in the steel mills and other industries are much higher than in prewar days, and compare favorably with those paid in this country.

From their observations the French steel industry will recover quickly providing coal can be furnished in sufficient quantity, due to the fact the mills are more or less scattered and were not damaged to the extent the ore and coal fields were. One mining engineer told them that it would take three years before conditions in the Lens coal district could become normal.

* * *

ERECTION of a building and purchase of all necessary machinery and equipment has been effected by the Liberty Starter Co., Detroit. The new equipment is now being placed in the building. The company manufactures electric starters.

* * *

IN order to care for its expanding business the Mohegan Tube Co., Brooklyn, N. Y., is building an extension to its plant, 100 x 150 feet, which will be modernly equipped. It is the company's intention to double the plant's capacity, after erection of the addition has been completed.

* * *

CONSTRUCTION of a building, three stories, 66 x 286 feet, is now in progress, for the Benjamin Electric Mfg. Co., Chicago, which when completed will be utilized for warehouse purposes. It will be arranged with large loading platforms for railroad service as well as for truck receipts and shipments. The building will be connected with the plant by means of covered passages and mechanical conveyors which will handle material to storage and for shipment. Frank D. Chase, Inc., Chicago, is engineer in charge of construction.

* * *

THE Heinle Co., Pittsburgh, metal-rolling engineers, is furnishing several Canadian rolling mills with roll designs and self-explanatory charts on large rounds and squares, chain rounds and staybolts. Preparation for the improvements to roll this material was deferred when the war started.

* * *

ORDERS have been received by the Electric Furnace Construction Co., Finance building, Philadelphia, for a 1-ton Greaves-Etchells electric furnace from the Sullivan Machinery Co., Claremont, N. H., and a furnace for the manufacture of coinage bronze from the Imperial Japanese Mint, Osaka, Japan.

* * *

ERECTION of a temporary building is under way for Saiberlich Bros., Appleton, Wis., to enable the company to complete a number of demonstrating tractors. Plans for a permanent plant, to be two stories, 120 x 120 feet, are now being prepared. This plant will be equipped with modern machinery for the manufacture of tractors on a quantity scale.

* * *

THE P. A. Geier Co., Cleveland, is erecting an additional plant which will be entirely occupied by its machinery department. The present building occupied by the machine shop will be taken over by the electrical division. A recent increase in capital from $250,000 to $400,000 has been authorized. P. A. Geier is president of the firm.

* * *

REORGANIZATION of the W. & B. Douglas Co., Middletown, Conn., has been effected by electing Dale D. Butler president. The other officers are: Vice president, William B. Douglas; secretary, F. E. Gibbons, and treasurer, George D. Hastings. The company plans to engage a new factory manufacturer. The firm is engaged in the manufacture of pumps.

* * *

IN order for the firebrick for its second battery of blast furnace stoves has been placed by the American Rolling Mill Co. with the Ashland Fire Brick Co., Ashland, Ky. The latter producer had received a previous order for brick for six stoves. The Mid-Continent Iron Co., Kansas City, Mo., also has placed an order with the Ashland company for blast furnace brick.

* * *

FOR the present the Dayton Steel Co., Dayton, O., will conduct operations in a plant which it recently purchased and to which it is now making small additions and improvements. According to F. C. Worbs, manager, a new plant will be erected as soon as the company's business warrants it. The company will specialize in the fabrication of structural steel. J. A. Burger is president of the firm.

* * *

THE Atlas Engineering Co., Lincoln, N. J., capitalized at $10,000, has purchased all necessary equipment and will engage in the conversion of high speed scrap, the manufacture of high-speed steel and small forgings. The company does not plan to erect a plant at present. Officers are: President, M. F. Wirtz; vice president and general manager, K. G. Walker; treasurer, G. L. Wirtz, and secretary, M. T. Otto.

* * *

THE Oliver Chilled Plow Works, South Bend, Ind., recently purchased four 500-horsepower Connelly boilers, equipped with Green stokers, Foster superheaters and Diamond soot blowers. The Jeffrey Mfg. Co., is equipping the company's plant with coal-handling machinery and water softening equipment is being furnished by the Dodge Mfg. Co. The Advance Pump Co. is supplying the plant with centrifugal boiler feed pumps while the turbines are being supplied by the Steam Motor Co. The Oliver company recently completed the erection of a new boiler house, and the equipment now is being installed.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE L. B. Foster Co., Pittsburgh, recently acquired control of the Light Railway Equipment Co., manufacturers of light rails, frogs, switches, portable and industrial track, turntables, dump cars, flat cars, coal charging cars and industrial cars. A new factory recently was completed by the company at Holmes, near Philadelphia, management of which is in the hands of H. A. Ellis, who has had many years of experience with the industrial car business for a great many years. B. H. Behrens, for 20 years identified with the Orenstein-Arthur-Koppel Co., now the Koppel Industrial Car & Equipment Co., is manager of sales of the company, general offices of which are in the Park building, Pittsburgh, with sales offices in the Commercial Trust building, Philadelphia, and the Tribune building, New York City.

* * *

A RECENT incorporation is that of the Borgeson Mfg. Co., Torrington, Conn., which plans to engage in light machine work and to specialize in manufacture of a universal joint. The company is capitalized at $50,000. Officers are: President, John Kennedy; vice president, James J. Green; treasurer, Richard J. Kennedy; secretary, James L. Green and assistant secretary and treasurer,, Emile J. Lavalette.

* * *

CONTRACTS were recently let by the Belden Mfg. Co., 2300 South Western avenue, Chicago, for the erection of a 4-story factory building, to be built at Kilpatrick avenue and West Congress street, Chicago. This will be the third building erected by the company at this site, and construction of five more are contemnew building, when completed, will plated in the next few years. The be utilized for the expansion of the firm's magnet wire departments.

* * *

DUE to an increasing export trade in its regular line of rolling mill and steel works equipment, the directors of the Treadwell Engineering Co., Easton, Pa., recently authorized the building of an extension to the plant's main erection shop. The building will be 90 x 220 feet and will be equipped with modern tools and a number of cranes. A central heating system will be installed. The company also plans the erection of a steel foundry for the manufacture of heavy steel castings, but this project will not be taken up for some time.

* * *

THE Trieschman Mfg. Co., Hartford, Conn., recently was granted a charter with $50,000 capital, to continue on a broader scale the business conducted by L. H. Trieschman, manufacturer of straps, articles of leather, etc. The reorganized company plans to put on the market several patented articles of metal. No plant enlargements are contemplated at this time. L. H. Trieschman is president of the company.

* * *

INCORPORATION of the Berggren Engineering Corp., 252 Fortieth street, Brooklyn, N. Y., to engage in general engineering, marine work, boilermaking, etc., has been effected. The company which is capitalized at $20,000, has acquired a plant in which it has installed modern equipment, and will specialize in the manufacture of a newly-invented piston ring. The officers of the company are: President, Gustave Berggren; treasurer, John Edwards, and secretary, Reuben M. Cohen. The company maintains a branch office at 277 Broadway, New York.

* * *

PARK & WILLIAMS, Inc., Real Estate Trust building, Philadelphia, have been made the selling agents for merchant pig iron, produced by the Alan Wood Iron & Steel Co., at its Swede furnaces at Swedeland, Pa. The latter company recently completed a large new stack giving it a total of three furnaces. The small furnace is about to be blown in on foundry iron. Due to excess blast furnace capacity, as compared with its steel requirements, the Alan Wood Iron & Steel Co. is expected to be a regular seller of iron in the future.

* * *

THE Carlin Steel Products Co., Philadelphia, has been dissolved as a partnership and organized as a corporation with the following officers: President, S. Worcester Sargent; treasurer, John Lindauer Jr.; secretary, David L. Schwartz. The company will continue in its present quarters in the Commercial Press building. It now acts as sales representative in the Philadelphia district for the American Brake Shoe & Foundry Co., the American Malleable Co., the Laclede Steel Co., Russel, Burdsall & Ward Bolt & Nut Co., the Neely Nut & Bolt Co., the Pittsburgh Rivet Co., LeMoyne Steel Co., and the Endicott Forging & Manufacturing Co.

* * *

BRIGGS & Turivas, Chicago and New York, scrap dealers, purchased the plant of the British Chemical Co., Trenton, Ont., from the imperial munitions board of Canada, and have formed Briggs & Turivas of Canada, capitalized at $1,200,000. The British Chemical Co. was organized during the war, and the plant was built at a cost of $8,000,000. It has a daily capacity of over 100 tons of sulphuric acid, 75 tons of nitric acid. 25 tons of finished smokeless powder and 45 tons of ethyl alcohol. The company may decide to discontinue the manufacture of powder and nitric acid and limit production to sulphuric acid.

* * *

THE first hull of a contract for 12 all-steel 5000-ton ships for the Emergency Fleet corporation, recently was launched at the plant of the Mobile Shipbuilding Co., Mobile, Ala. This is the first all-steel ship built at this port and the company expects to launch on the average of one hull a month at the present time five hulls are in various stages of completion. At a recent meeting of the stockholders several names were added to the board of directors. They are: Henry D. Tudor, president of the Commonwealth Finance Corp., New York; Henry Hall, president of the First National Bank; A. L. Staples, president of the Peoples National Bank and Frank W. Boykin, manufacturer, all of Mobile. Henry L. Brittain was re-elected president; Frank McLaughlin, former general manager, vice president and general manager, and George D. Brittain was re-elected treasurer. The capital stock of the company was increased to 50,000 shares.

Upset Exchange Threatens Trade

Germany Looms as Most Formidable Competitor as Depreciation of Mark Attracts European Trade to Former Enemy—Premium on Dollar Raises Wall Against Buying Here—Republic Report Out

BY JOHN W. HILL, FINANCIAL EDITOR

THE urgent necessity of expediting measures to finance exports to Europe and forestall, if possible, the undermining of American export hopes by German competition especially, was the outstanding lesson of the severe demoralization which overtook the foriegn exchange market last week. The feature of the movement was the sensational decline on one day of sterling to an unprecedented low point of $4.26, a discount for the pound in the United States of 12½ per cent, caused largely by the appearance on the market of a huge volume of sterling bills held by cotton shippers.

With allied and neutral money—depreciated in this country by degrees ranging from the current discount on the pound of 10 per cent and on the franc of 25 per cent, to 26 per cent for the Belgium franc and 40 per cent for the Italian lire, it is impossible to remain blind to the cold economic fact that a rigid wall is being raised against exports from American shores. On the other hand, the German mark is at more than 66 per cent discount in both France and England as well as in America, a situation offering glittering attractions to buy in Germany. Optimists, therefore who have been indulging in the complacent dream of industrial activity and prosperity based upon anticipations of huge requirements to be met in Europe may have to prepare themselves for a rude awakening unless remedial steps are taken soon.

The needs of Europe are so imperative that many have not allowed themselves to be concerned over the movement of the exchanges, feeling that the war-torn nations would be forced to buy at any price. But these very nations are revealing an ominous unconcern over the exchange situation, themselves, which would be peculiar if a great volume of purchases were contemplated here. The uncomfortable fact is, that the Europeans greet the lofty isolation of the dollar joyfully as a convenient tariff wall which will serve to cut down their excess of imports from the United States without the unpleasantness of quarreling with home free traders over high import duties. No one doubts that the European countries will be forced into the American market for many kinds of raw materials, foods and other necessities, but such purchases will be kept down to the strictest minimum. To cover these indispensable requirements long term credits will be arranged in order to carry the buyer through the period of low exchange quotations. As for the remainder of their requirements the allies will either wait or turn to Germany where they may be enabled to buy, because of the depreciation of the mark, on a far more favorable basis than in the United States.

To overcome this attraction of the depreciated German mark already beginning to be felt in the world's commerce, America has two means at hand. She must price her goods reasonably and be ready with long time credits and with funds to invest in foreign securities to the extent necessary to stabilize the exchanges and prevent violent fluctuations which keep both buyer and seller in a state of uncertainty.

The following table showing the parity, the present quotation and the approximate discount of the currencies of 13 European countries in relation to the dollar, presents the problem in a vivid concrete way:

PREMIUM ON DOLLAR

	Parity of Exchange	Quotation July 22	Approximate per cent of discount
English	$4.86	$4.35	10
French	.193	.141	25
Italy	.193	.116	40
German	.238	.085	64
Holland	.402	.377	5
Belgium	.193	.14	28
Roumania	.193	.093	51
Cezko-Slovakia	.203	.057	70
Austria	.203	.042	72
Juga-Slavia	.203	.038	80
Sweden	.268	.247	8
Norway	.268	.237	11
Denmark	.268	.224	16

According to the above table an order of pig iron priced at $10,000 in American money would cost the English buyer a sufficient number of pounds to make $11,000 according to normal exchange valuations, while a German buyer with the mark at one-third its normal valuation, would have to pay a total of marks that would equal $30,000 in times when the mark was accepted at par. The American seller of course would not get any more than the $10,000 in dollars, the difference being absorbed by the evaporation of values caused by the depreciation of the foreign currencies. On the other hand goods bought in Germany in terms of marks can be purchased for many less dollars, or pounds or francs than in normal times. Where European buyers will turn for supplies in the face of this situation is hardly open to question.

Thus the handicap under which American export trade labors is made clear. The most extreme necessity will be required to bring those countries into this market so long as exchange rates remain unstabilized and these buyers are compelled to settle on that basis. Some American exporters have accepted payment for goods in terms of foreign currency which means that they take the exchange risk, but the recent fluctuations are causing sellers to insist on payment in dollars, throwing the exchange risk upon the buyer.

A glance at the export figures of the United States shows why the exchanges are in their present upset state. Since the beginning of the world war the excess of exports to Europe has attained nearly $12,000,000,000. This was offset by $10,000,000,000 in government credits and $2,000,000,000 in private credits, with the result that exchanges were stabilized during the war. On March 20, however, the government credit extensions having practically ceased, the official support was removed from the exchanges. Notwithstanding, heavy exports to Europe have continued. To what extent the following table showing the excess of exports from the United States to seven European countries for May and for the 11 months ending with May, indicates:

	Excess of Exports May	11 Months
France	$ 47,993,668	$ 808,747,616
Italy	34,817,082	435,744,685
Holland	1,677,770	52,041,434
Norway	12,220,136	82,441,270
Spain	2,440,212	64,106,074
Sweden	4,731,420	54,796,742
United Kingdom	159,258,234	1,713,700,447

Not only has Europe a staggering

adverse trade balance to solve but the allied countries are burdened with an annual interest payment of $500,000,000 to this country. Little wonder that they want American buying scaled down. It is realized that until European countries are able to produce sufficiently to pay their debts in exports that their problem will remain a tremendous one.

Germany's advantage in point of the exchanges is undisputed but her ability to supply goods for export has been questioned in some quarters.

On the other hand, keen observers who have just returned from Europe, unhesitatingly maintain that Germany will loom as America's most formidable competitor. England, Belgium and France as well as the neutrals are making preparations to resume trade relations on a broad scale with the late enemy. Belgium is to encourage the importation from Germany of raw materials and to permit the importation of manufactured articles that do not compete with home industries.

At the start Germany is handicapped by her lack of raw materials, high coal prices, and labor troubles, while the impediment of heavy taxes will remain ever with her with the result that her production costs are advanced enormously. Yet she is appearing in neutral countries and even in the devastated regions with aggressive sales campaigns, offering in some cases to replace the machinery in Belgium plants demolished by Hun armies, at price levels with which America and England cannot compete. Possibly she is willing to do business at a loss for a time. While the buyers in Belgium and other countries would prefer to purchase in America, their native thrift and present necessity probably will cause them in the end to overcome their repugnance and trade where they can buy the cheapest. Germany's plants have been unscathed and her genius of organization is said to be accomplishing wonders in re-establishing industrial equilibrium. Once this is achieved and industrial peace created, providing she is able to obtain raw materials on reasonable terms, Germany without doubt will be an important factor in European trade. Her lack of shipping will hamper her exports overseas, however, for a long period.

Respecting Germany's future Barkley's Bank, Ltd., London, made the following interesting comment in a recent bulletin:

"Bargaining with Germany for an indemnity resolves itself into bargaining for a larger share of her export business. Unpalatable as it may seem the allies are now interested in Germany as a business establishment—not as a beaten, disorganized and ill-found nation. The allies have to face the fact that if they are to receive from Germany a great contribution they must first of all help her to become a great industrial nation. The acceptance of the indemnity forces the allies to trade with her."

Republic Earnings Shrink But Orders Gain

The most striking and significant feature of the second quarter report just made public of the Republic Iron & Steel Co. is the gain in unfilled orders on hand June 30. These show an increase from the low total of 114,305 tons on March 31 to 187,361 tons on the latter date, an increase of 73,056 tons. This detail of the report reflects the broadening operations of the steel industry, and serves to counteract the tremendous slump in earnings revealed during the period, because of the promise it gives for the coming months.

After federal taxes and charges surplus for the quarter was $510,916 compared with $1,053,956 for the preceding quarter and $3,005,772 for the corresponding period one year ago. After paying preferred dividends aggregating $437,500 and common dividends of $407,865 a deficit of $334,448 was exhibited. This compared with surpluses of $2,160,407 for the quarter in 1918 and $6,285,037 in 1917.

The slump reflects the paralysis which overtook the industry during the unfortunate price controversy between the industrial board and the railroad administration which held back buying and the recovery of trade conditions until late in May.

The Surplus available for dividends for the six months ended June 30 amounted to $1,564,872, as compared with $6,027,540 for the corresponding period in 1918. Following is the comparative statement of the company's earnings for the second quarter:

	1919	1918
Net earnings*	$ 952,770	$3,675,444
Other income	169,816	178,849
Total income	$1,122,586	$3,854,294
Deprec. and renewals	343,778	573,606
Exhaustion of minerals	89,467	86,364
Bond interest	178,425	188,651
Balance	$ 510,916	$3,005,772
Preferred dividends	437,500	437,500
Common dividends	407,865	407,865
Deficit	$ 334,448	†$2,160,407

* Net earnings from operation after deducting charges for maintenance and repair of plants, amounting to $1,174,246, and provision for federal and excess profits taxes.

† Surplus.

Reduced Price

Brings Out Better Business in Naphthalin—Shortage in Phenol

New York, July 21.—The recent reduction in prices has resulted in considerably better activity in naphthalin. Both the dye industry and drug trade, sellers assert, are buying in larger volume than for several weeks. The market on naphthalin in flakes may be quoted at 6½ cents to 7½ cents and on naphthalin in balls at 8½ cents to 9½ cents.

The shortage of phenol continues most pronounced, with spot shipments very difficult to obtain. Relief is expected, however, as soon as the government releases some 27,000,000 pounds which it has in stock. The market may be regarded as nominal.

Trading in pure and 90 per cent benzol continues brisk, the rubber industry being especially active. This demand in conjunction with the heavy movement of motor benzol, is making for the continued shortage of supplies of the pure product. Pure benzol is holding at 24 to 28 cents for spot and contract shipments. Toluol is also scarce, although quotations on this product, too, are unchanged, the market being at 25 to 35 cents. Solvent naphtha is holding at 22 to 27 cents for either spot or contract shipments.

The long-expected buying of sulphate of ammonia on the part of the fertilizer industry has not yet developed and the domestic market remains dull. Export demand, however, continues in evidence, with orders being taken at around $4.60 in double bags at Atlantic seaboard.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Contract

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.08½ to .09½
Naphthalin, balls	.10½ to .11½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	nominal

Small Lot Tool Sales Numerous

July Orders Better Than In Previous Years—Large Prospective Buyers Thought to be Withholding Purchases Despite Price Advances—Crane Awards Fairly Numerous in Pittsburgh and New York Districts

ACTIVITIES in the various machine tool selling centers continue to be devoid of important trade developments. Buyers are supplying their immediate wants only and while evidence is not lacking to show that machinery is needed in many directions, prospective purchasers are holding off. Advances of 15 per cent on lathes and 5 per cent on shapers are noted this week and it is claimed these will be followed by others. Dealers continue to declare if the disinclination to close is based upon an expectation of lower prices, waiting will be costly. Deliveries are being pushed further into the future from week to week.

Strikes in Rockford, Ill., have delayed machinery deliveries in Chicago but labor difficulties prevailing in many directions, have so far had little effect upon the machine tool market. In the east some labor troubles have indirectly benefited the machinery industry. Manufacturers who have faced walkouts, etc., are calling for special machinery to do work mechanically which formerly was done by hand.

In Pittsburgh, noteworthy transactions occurred in the crane market only, light machinery and tools meeting only a fair demand. The Falcon Steel Co., Niles, O., bought five cranes from the Morgan Engineering Co., and placed its motor and switch contract with the General Electric Co. The Newton Steel Co., West Newton, O., purchased several cranes from the Alliance Machinery Co. The Cambria Steel Co., Johnstown, Pa., closed for some steam blowing engines. Some heavy machinery inquiries are due for appearance including one from the American Rolling Mill Co., Middletown, O., for equipment for its contemplated new sheet mills. Further east, crane orders to the value of about $2,000,000 were placed with the Morgan Engineering Co., the Cleveland Crane & Engineering Co., and the Shaw Electric Crane Co., by the Charleston, W. Va., ordnance plant. Several other small crane sales were made in the New York district. Bids have been taken on three cranes for France.

Much of the demand for machine tools in the east is coming from brass manufacturers in New Jersey and in Brooklyn, N. Y. It is generally believed in that territory however, that no large amount of buying will be done until the railroads are in a position to close on their equipment requirements. The Bethlehem Steel Co. purchased 10 machines for its plate shop and the A. B. See Elevator Co. bought about $70,000 worth of machinery for its plant in Jersey City, N. J.

Fair sized inquiries are out in Chicago for various plant extensions and the Rock Island arsenal wants 10 machines The ordnance department in Chicago is endeavoring to dispose of 64 lathes. Cleveland dealers are interested in inquiries from the Marion Steam Shovel Co., Marion, O., which desires several used machines in addition to the new tool list issued recently. The Koehring Machine Co., Milwaukee, Wis., will require a number of cranes, lathes, drill presses, milling machines, drills, etc., a little later on. An important contract closed with a Dayton, O., engineering company calls for a very large amount of dies, gigs, gages, fixtures, etc., to equip the unusually heavy list of tools recently placed by the General Motors Co.

Eastern Tool Market Revives Slightly

A REVIVAL in activity in the New England industrial district is having a stimulating effect upon the New York machinery market. Sellers report a number of miscellaneous inquiries coming out from this district, and account for this development in a large measure by the fact that the New England manufacturers have begun to divert at least a portion of their capacity to the production of special equipment, for which there is a steadily increasing demand due to the efforts now being made by manufacturers to overcome labor difficulties by mechanical methods.

The brass trade in northern New Jersey and Brooklyn, manufacturers of valves, fittings, etc., are contributing to the bettered inquiry at this time. No large lists are being issued by these interests, but inquiries for one and two machines are being brought out in increasing volume. The local market, nevertheless, is still far from being active, and sellers generally believe there will be no large amount of buying until the railroads are in a position to act upon their requirements. Lists of second hand tools are being brought out, but these tools are not being readily absorbed.

Among the larger orders placed during the passed week was one for 10 machines for a plate shop for the Bethlehem Steel Co. This business went to the Cleveland Punch & Shear Works. The A. B. See Elevator Co. has purchased about $70,000 worth of equipment for its plant at Jersey City, N. J. A boring machine and a couple of large lathes were included in the order. Lathe manufacturers met in Buffalo last week to discuss trade conditions. The increase in costs was emphasized.

Various new plant projects continue to come up in the east. One of the largest under contemplation is a $1,000,000 refinery at Baltimore for the Mexican Petroleum

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Co., 20 Broadway, New York. The Hanson-Whitney Mfg. Co., New Haven, Conn., recently incorporated with $100,000 capital, will build a new plant for the manufacture of machinery. James Stewart & Co., 30 Church street, New York City, have been awarded a contract for the erection of a large shipbuilding plant at Hampton Roads, Va., by the recently organized Norfolk-Hampton Roads Dry Dock & Ship Repair Corp. Another shipyard project is that of the Southern Shipbuilding Corp., Newport News, Va. Contracts for six all-steel buildings have been awarded to the Truscon Steel Co., Youngstown, O., and it is expected that the yard will be in operation by Jan. 1.

The award of between $1,500,000 and $2,000,000 worth of cranes for the Charleston, W. Va., ordnance plant constitutes the largest business to be placed of late. The Morgan Engineering Co. received the larger share of this business, with the Cleveland Crane & Engineering Co. and the Shaw Electric Crane Co. figuring in the remainder. The Chicago Pneumatic Tool Co., Chicago, has placed two overhead cranes, one of 15 tons and the other 20 tons capacity, and a 10-ton trolley and 15-ton bridge, this business, according to reports, going to the Champion Engineering Co.

Other orders include a 15-ton handpower crane for the Phoenix Utilities Co., Dallas, Tex., the order being placed with the Electric Bond & Share Co., 71 Broadway, New York City. The Greenwood Brass Foundry Co., Brooklyn, has placed a 10-ton electric crane with the Shaw Electric Crane Co. Hunter & Havens, Bridgeport, Conn., have awarded a 3-ton crane, with a 60-foot span, to the Case Crane & Engineering Co.

New inquiries include a 10-ton and 15-ton crane for the Meade-Morrison Mfg. Co., Boston. Both cranes are to have a span of 68 feet and a 3-ton auxiliary. The United Gas & Electric Co., 61 Broadway, New York, is inquiring for a 5-ton bucket handling crane with an 80-foot span, for the Little Rock Railroad & Electric Co., Little Rock, Ark. Westinghouse, Church, Kerr & Co., New York City, are in the market for two 15-ton cranes, with 62-foot span, and two 5-ton wall cranes, with 20-foot boom, for Pettibone, Mulliken & Co., Chicago. The Treadwell Engineering Co., Easton, Pa., is inquiring for one 35-ton crane, with 57-foot span, for a new erection shop. Another inquiry is that of Banthaw & Frazer, Hoboken, N. J., calling for one 5-ton crane, with 41½-foot span. Abendroth Bros., Portchester, N. Y., are in the market for a 3-ton electric crane, with a 30-foot span.

The equipment trade is much interested in the announcement of an appropriation by New York City for the construction of 11 piers for Staten Island. These will cost about $15,000,000. Of further interest are plans for the erection of a $2,000,000 drydock on Staten Island by the Frazer, Brace & Clark Drydock Corp.

The Bethlehem Steel Co., Bethlehem, Pa., is expected to close very shortly on nine electric cranes. Anthony Gibbs, 61 Broadway, New York, has closed bids on one 30-ton and two 10-ton gantry cranes and two special cranes for shipment to France.

Equipment Contracts Awarded in Pittsburgh

ACTUAL equipment awards are on the increase in the Pittsburgh district. The Falcon Steel Co., Niles, O., recently closed for five cranes, three 10-ton and two 30-ton, to the Morgan Engineering Co., Alliance, O., and also has awarded the contract for motors and switches to the General Electric Co. The Newton Steel Co., West Newton, O., has placed an order for four cranes with the Alliance Machinery Co., Alliance, O., and also has closed with the General Electric Co. for the motors and switches.

The Mesta Machine Co., Pittsburgh, has received an order from the Cambria Steel Co., Johnstown, Pa., for two 48 x 84 x 84 x 84 x 60-inch steam blowing engines, these engines being similar to four other engines installed at this plant by the Mesta Machine Co. some time ago. The Mesta company has received the contract and is building two 24 x 52 x 36-inch Una Flow type blowing engines for the Tata Iron & Steel Co. in India, and a 42 x 84 x 84 x 84 x 60-inch steam blowing engine for the Pittsburgh Crucible Steel Co., Midland, Pa.

Several inquiries for heavy steel plant machinery are up and as builders are beginning to become filled up and less inclined to sacrifice profits for orders, it is more than probable that some of this business will be closed shortly. Business in light machinery and machine tools is steady rather than active, buyers still being inclined to cover actual requirements rather than to anticipate them.

Chicago Transactions Continue Small

BUSINESS in the Chicago machinery market is not so active as it has been during the past three weeks, and owing to a strike of machinists at Rockford, Ill., some deliveries have been held up. Following the lead of a large manufacturer of shapers who recently increased his price 8 per cent others have now increased their prices, but the advance in most instances has been only 5 per cent. The general advance expected in the machinery market has not materialized, and if business continues in small lots, makers and dealers may delay action until a larger buying movement develops.

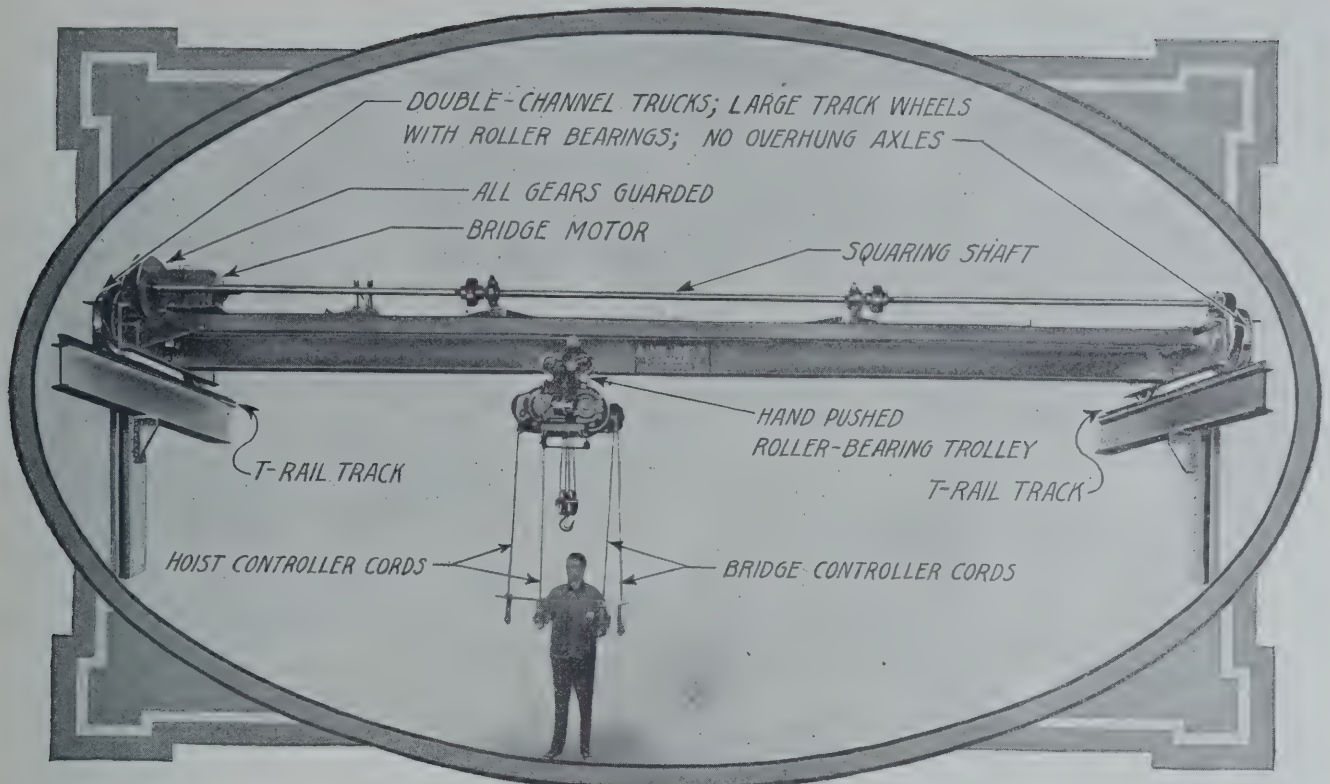
The Sundstrand Adding Machine Co., Rockford, Ill., is building a new plant and has inquiries out for considerable equipment. The Edwards Valve Mfg. Co., Indiana Harbor, Ind., is extending its plant and will need a half dozen miscellaneous machines. Instead of selling equipment, as generally was expected would be the case, the Rock Island arsenal is reported in the market for about 10 new machines. These are the largest inquiries before the market at present.

While some dealers report they are doing a "phenomenal" business for this season the business consists almost entirely of single machines, and other dealers say that the business in July is not nearly so large as it was last month. The ordnance department of the United States army is offering 64 standard amalgamated shell-turning lathes for sale, which now are at the Chicago storage depot.

Machine Tool Distribution Widespread

SPECTACULAR inquiries and sales continue absent from the Cleveland machine tool market. Equipment needed immediately is being purchased but buyers still decline to anticipate their requirements. Sales sheets record many single tool sales; a drill here, a grinder there, a lathe somewhere else. One of the pleasing features of the market, it is said, is the widespread distribution of sales, dealers claiming that scattered business is the most desirable. Apparently there is a considerable big business under the surface but purchasers are holding back for an unstated reason. Dealers claim that those buyers who are withholding their purchases because they expect prices to drop are doomed to disappointment. Much talk continues to be heard of increases and an advance of 15 per cent on a representative line of lathes was received no earlier than last Monday morning.

Confirming orders are being received in Cleveland in large numbers from the General Motors Corp., Detroit, on its recent huge machinery contract. One of these orders received last week, called for three machines at a cost of approximatly $50,000. The Defiance Machine Works, Defiance, O., which is building the machines for the General Motors Corp., has let a million dollar con-



Here's The Ideal Crane for Side Bays

IT'S just the thing for machine shops, foundries, structural shops, mills, etc. The time it will save in a machine shop by quickly and economically serving machine tools with castings, etc., will soon pay for the crane. After that, the saving is "pure velvet".

Important Advantages

1. Crane always ready for service. Any shop hand can operate it. No need for keeping an operator up in a cage.
2. Pull a cord to operate hoist or crane; let go, and it stops. Simple as A, B, C.
3. All operating cords handy, both controllers mounted on hoist—right where the load is being handled.
4. Load is handled with greater precision and safety, than when operator is carried in a cage near ceiling and must depend on signals.
5. Like our mono-rail electric hoist and other Link-Belt products, this crane embodies Quality, Reliability, Accessibility, and High-Efficiency.

Built in 1, 2 and 3 Ton Capacities. Write for data blank. Let us figure on your requirements.

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284

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Detroit 932 Dime Bank Bldg.
New Orleans C. O. Hinz, Hibernia Bank Bldg.
Kansas City, Mo. 306 Elmhurst Bldg.
Seattle 576 First Ave., S.
Portland, Ore. First and Stark Sts.
San Francisco 582 Market St.
Huntington, W. Va. Robson & Prichard Bldg.
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- ☐ Elevators and Conveyors
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- ☐ Portable Loaders
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- ☐ Coal Pockets

Write for Catalogs
Place X in Square

tract to the Carroll Engineering Co., Dayton, O., for the special jigs, fixtures, dies, gages, etc. The Carroll company has opened a branch office in Defiance, where all the engineering work will be done. Actual construction work will be carried on in Dayton, where tools and fixture manufacturers will be kept busy for the next year.

Some Cleveland dealers report a dearth in inquiries, while those who angle for them with stock lists and attractive prices, report the receipt of large numbers. The demand for used machinery is large, many buyers believing that bargains now are obtainable with war plants becoming reorganized on a peace basis. In addition to its list of new machinery issued recently, the Marion Steam Shovel Co., Marion, O., wants heavy duty drills, 30 to 40-inch lathes and a 28-inch Gisholt turret lathe. The Ideal Electric & Mfg. Co., Mansfield, O., manufacturer of power apparatus, desires to obtain a 10 x 72-inch Norton grinder, a 26-inch turret lathe, a 20-inch x 8-foot heavy duty engine lathe, a 21-inch x 10-foot Leblond lathe, a 76-inch Bullard heavy duty boring mill if it can dispose of its present 72-inch Bickford boring mill, an air compressor, a 18-foot heavy duty boring mill and an open side planer. It also is offering a 20-inch Rockford and a 20-inch Mechanics drill for sale with a Hall steam pump air compressor. The Koehring Machine Co., Milwaukee, will require two 15-ton cranes as well as a number of machine tools later in the season. Included in its list of requirements are several 24-inch turret lathes, 20-inch lathes, a number of drill presses, radial drills, etc., an open end milling machine, a keyseater and a planer. These are wanted to equip a new 74 x 325-foot building which the Koehring company is about to erect.

Small inquiries continue to be received in fair volume. The Schwab Safe Co., Lafayette, Ind., wants a new or used drill press to hold a 1-inch drill with a 12-inch table and a ¼-inch capacity squaring or gap shear. The Eagle Engineering Co., Springfield, O., desires a 22-inch Barnes 4-spindle drill. The Keystone Brass Works, Inc., Erie, Pa., is anxious to locate a 24-inch backgeared drill press with power feed and automatic stop as well as a 28-inch sliding head drill.

Generally speaking, the machine tool business for July this year is much better than it usually is in that midsummer month and a number of building projects continue to be announced and these spell equipment requirements. Deliveries, however, are receding further and further into the future. The largest of these new programs of expansion is the recently announced plan of the American Rolling Mill Co., Middletown, O., to absorb the open-hearth capacity inaugurated during the war. Eight new sheet mills are to be built as a result of the refinancing recently arranged and a list of heavy machinery requirements is expected shortly. The International Motor Co., Allentown, Pa., plans a 300 x 600 foot addition which including equipment will cost approximately $150,000. Several machine shops are to be erected shortly including one for the Modern Machine Works, Slatington, Pa., one for the Youngstown Steel Car Co., Youngstown, O., one for the Will-Burt Co., Orrville, O., and one for the Hooven-Owen-Rentschler Co., Hamilton, O. The Brenneman Tractor Co., Dayton, O., expects to build a factory in the near future.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

PORTLAND, ME.—The Job Shipbuilding Corp. has been incorporated with $50,000 capital by R. L. Johnson, H. I. Smith and others.

BOSTON.—The Vermont Hydro-Electric Corp. has been incorporated with $50,000 capital by John F. Moors, Ralph B. Harris, Salem, Mass., and William P. Daniels.

BOSTON.—The Coaler Mfg. Co. has been incorporated to build machinery with $250,000 capital by Ernest F. Koehler, South Berlin, Mass., Ludovic A. Morin, Marlboro, Mass., and Alexander J. Smith, Holliston, Mass.

CAMBRIDGE, MASS.—The F. S. Payne Co., manufacturer of freight elevators, will build a 1-story addition.

HOLYOKE, MASS.—The Holyoke Wire Cloth Co. has been incorporated with $30,000 capital by John Warnock and Alexander H. Warnock, both of Springfield, Mass., George C. Doherty Sr., James Lees and A. Stuart Dunlop.

LAWRENCE, MASS.—The Mills Machine Co. contemplates a machine shop and office building.

NEW BEDFORD, MASS.—The Continental Wood Screw Co. is taking bids for a 2-story addition, 45 x 160 feet, estimated to cost $50,000.

SPRINGFIELD, MASS.—The Package Machinery Co., 182 Bernie avenue, has let a contract for a plant addition, to cost $14,000.

WESTFIELD, MASS.—The Federal corp. has been incorporated to build motor vehicles with $800,000 capital by Herbert P. Linnell and Charles W. Dodson, both of Springfield, Mass., and George H. Sharp.

WORCESTER, MASS.—The M. D. Holmes & Sons Co., heating and ventilating, has let the contract for a brick, mill construction, 4-story and basement, 50 x 100-foot manufacturing plant to cost $50,000.

HILLSGROVE, R. I.—The Rhode Island Malleable Iron Works has awarded a contract for an addition, 25 x 40 feet.

BRIDGEPORT, CONN.—The Perfection Shear Co. recently was incorporated with $500,000 capital, by E. T. Von Wettberg and G. P. Brett Jr.

GROTON, CONN.—The New London Ship & Engine Co. has plans for a 1-story plant addition, 60 x 70 feet, estimated to cost $25,000.

NEW HAVEN, CONN.—The Standard Iron Works has been organized here with capital stock of $3,000. Among the incorporators is Samuel D. Pardell.

NEW HAVEN, CONN.—The Johnson Machine Works has been incorporated with $20,000 capital by F. Godfrey Johnson, Theodore P. Tonne and F. C. Johnson.

NEW HAVEN, CONN.—The Johnson Machine Works has been organized with a $20,000 capital to manufacture machine tool equipment. The incorporators are F. Godfrey Johnson, Theodore P. Tonne and Florence Carmen Johnson, all of this city.

NEW HAVEN, CONN.—The Hanson-Whitney Mfg. Co. has been organized with a capital of $100,000 to manufacture machinery. A plant will be erected although the location has not as yet been announced. Temporary offices of the company will be in the Park street building of Billings & Spencer, now being erected. B. M. W. Hansom who recently resigned as vice president and works manager of the Colts Patent Fire Arms Mfg. Co., is president of the new concern. Clarence E. Whitney also this city, is treasurer, and F. W. Young is secretary.

NORWICH, CONN.—The Irving E. Bogue Co. has been incorporated with a capital stock of $50,000 to manufacture and deal in machine tools and other equipment supplies. William F. Bogue is one of the incorporators.

SOUTHINGTON, CONN.—The Hartford Battery Mfg.



From a photograph of the tractor-testing floor of the Van Dorn Iron Works Co., Cleveland, Ohio, showing Kreodone installation.

Kreodone EVERLASTING Wood Block Floors

Actual Photograph Illustrating Our Prompt and Efficient Service

ABOVE is a view of the plant of the Van Dorn Iron Works Co. at Cleveland, Ohio. The Van Dorn Company had to have a dependable, wear-resisting, permanent floor for its tractor-testing department. It had to have the floor at once.

After considering many kinds of floors, they decided to use Kreodone. The order was given to us on Tuesday night. *The following Friday morning the floor was laid complete and in use.*

Since it was laid it has had, and still is having, the hardest kind of use—testing big "tanks" and caterpillar tractors. It has more than proven everything we say about Kreodone.

When they discontinue making this heavy equipment, this shop will be converted into an assembly room without any further floor expense.

Kreodone floor blocks are of selected long leaf pine, treated with our special, pure Kreodone Oil, which not only preserves the blocks indefinitely, but makes them free from sticky, tarry smudge or other evidences of adulteration.

Write us for full information. Tell us the space you wish to cover and we will give you complete specifications.

REPUBLIC CREOSOTING COMPANY, Indianapolis, Indiana

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BRANCH OFFICES:

315 Peoples Gas Bldg., Chicago
204 Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland
31 Transportation Bldg., Philadelphia
828 Plymouth Bldg., Minneapolis
445 Central Bldg., Seattle
Masonic Temple, Mobile

Co., Hartford, has purchased the old Clark Bros. bolt factory at Milldale, near here. The plant was recently occupied by Barnes & Kopert Mfg. Co., which has since moved to New Britain, Conn. The Battery company will start production on Aug. 1.

WATERBURY, CONN.—The Waterbury Wire Die Co. has been incorporated with $10,000 capital, by W. H. Mahoney, J. P. Wall and I. C. Spiers.

North Atlantic States

BROOKLYN, N. Y.—Albert T. Hoagland, 116 St. Mark's avenue, has had plans prepared for a machine shop, 1-story, 25 x 100 feet, to cost about $10,000.

BROOKLYN, N. Y.—The Briggs Engineering Co., 227 Twenty-fourth street, manufacturer of mechanical products, has increased its capital from $50,000 to $100,000.

BROOKLYN, N. Y.—Magid, Katzman & Strober, operating a metal works at 56 Boerum street, has a permit for a 2-story, 100 x 107-foot plant, to cost about $100,000 with equipment.

BUFFALO.—The Jewell Steel & Malleable Co. is enlarging its foundry on Hertel avenue and building extensive pattern vaults.

BUFFALO.—The Wire Wheel Co. of America, Elmwood avenue, has awarded a contract for a plant addition, to cost about $15,000.

BUFFALO.—The Atterbury Motor Car Co., Elmwood and Hertel avenue, are erecting a 1-story, 80 x 181-foot machine shop at a cost of $30,000.

BUFFALO.—The John W. Cowper Construction Co. has the contract for the fabrication of steel for a foundry extension for the American Radiator Co.

BUFFALO.—After several weeks delay due to changes in specifications, work has again been resumed on the new unit of the Saginaw Malleable Iron Co.

CLAYTON, N. Y.—The St. Lawrence River Motor & Machine Co. plans the erection of a 1-story machine shop estimated to cost $15,000.

GLENFIELD, N. Y.—The Otter Creek Power Corp. has been incorporated with $35,000 capital, by H. S. Lewis, H. D. and G. L. Cornwall.

LOCKPORT, N. Y.—The Merritt Mfg. Co. contemplates a machine shop, 1-story, 70 x 90 feet, to cost $15,000.

MIDDLETOWN, N. Y.—Clemson Bros., manufacturers of saws, have had plans prepared for a 1-story addition, 80 x 140 feet, to cost about $20,000.

NEW YORK.—The American Radiator Co. has purchased a plot at Laurel Hill, L. I., for future plant expansion.

NEW YORK.—The Manhattan Railway Co., 165 Broadway, has had plans prepared for an extension to its machine shop.

NEW YORK.—The West Fiftieth Street Garage Corp., 412 West Thirty-eighth street, will build a 2-story machine shop, 50 x 100 feet, to cost about $18,000.

NEW YORK.—The Universal Condenser Co. has been incorporated with $100,000 capital, by P. G. Chichester, E. Nolan and B .T. Powell, 945 East 180th street.

NEW YORK.—The Ampyer Mfg. Co., machinery, recently was incorporated with $25,000 capital, by R. Singer, M. D. Reardon and M. Rothman, 299 Broadway.

NEW YORK.—The Sheet Metal Construction Co. recently was incorporated with $15,000 capital, by M. Kestenbaum, A. D. Hyman and M. S. Goldberg, 695 Lexington avenue.

NEW YORK.—The Metricappliance Corp. recently was incorporated with $20,000 capital to manufacture electric meters, by A. W. Franklin, M. B. and D. B. Kassel, 47 West 112th street.

NEW YORK.—The Frazer, Brace & Clark Dry Dock Corp. has been incorporated with $1,200,000 capital, by C. E. Frazer, C. C. Clarke and R. H. Strahan, 44 West Ninth. street.

NEW YORK.—The Hamilton & Chambers Co., 29 Broadway, structural steel and iron products, recently was incorporated with $10,000 capital, by John H. Hamilton, George H. Mitchell and others.

NEW YORK.—The Moran Shipyards Corp. has been incorporated to build ships, etc., with $25,000 capital, by M. Roger, 231 A First street, Union Hill, N. J., E. G. Halbert, 418 Second street, New York, and W. C. McCreery, 217 Prospect place.

ROCHESTER, N. Y.—J. F. Ancona, architect, 190 Birr srteet, has plans for a foundry addition. The name of the owner is being withheld.

ROCHESTER, N. Y.—The Roadmaster Motors, Inc., automobile accessories, has been incorporated with $25,000 capital, by A. Holley, A. J. Tischer and R. K. Chase.

ROCHESTER, N. Y.—The Sargent & Greenleaf Co., Court street, manufacturer of locks, expects to build a new factory having 50,000 square feet of floor space. The cost of construction will be between $150,000 and $175,000. W. H. Foxall is vice president of the company.

SALEM, N. Y.—The Humphrey Die & Tool Corp. recently was incorporated with $6000 capital, by A. H. Humphrey, J. H. Potter and S. C. Brown.

SYRACUSE, N. Y.—The Crucible Steel Co. contemplates a plant, 1-story, 220 x 560 feet.

SYRACUSE, N. Y.—W. S. Hoffman, 329 Tuckel street, is building a foundry and power house, 50 x 200 feet, at an estimated cost of $50,000.

SYRACUSE, N. Y.—An extension, costing $100,000, including equipment, will be erected by the United States-Hoffman Co., manufacturer of pressing machines. One structure will be 80 x 200 feet, 1-story, while another, a power house, will be 40 x 60 feet. The general contract has been awarded to Dawson Bros. Property has been purchased for the erection, at a later date, of an 80 x 100-foot foundry building. The company also contemplates moving its branch factory from Utica and merging it with its local plant.

TONAWANDA, N. Y.—The Buffalo Bolt Co. has had plans prepared for an addition 71 x 81 feet.

ALLENTOWN, PA.—The International Motor Co. has plans for a 1-story addition, 300 x 600 feet, which with equipment will cost about $150,000.

AMBRIDGE, PA.—The Universal Septic Tank Corp. has purchased the holdings of the Asbestos Protected Metal Co., Beaver Falls, Pa., and has started work on remodeling it for its own use.

ERIE, PA.—The Art Metal Co. has let a contract for a plant, 1-story, 120 x 160 feet, to cost $40,000.

ERIE, PA.—The Hall Engine Co. has let a contract for a shovel plant addition, 1-story, 116 x 200 feet, to cost $75,000.

ERIE, PA.—R. S. Scobell, business manager of the board of education, recently took bids for woodworking machinery.

FREEPORT, PA.—The Freeport Water Co. has taken bids for a waterworks plant here.

LANCASTER, PA.—The Lancaster Steel Products Co. has let a contract for a plant addition.

MEADVILLE, PA.—The Phoenix Iron Works is taking bids for a plant.

PHILADELPHIA.—The Howard Garager Machine Co. has purchased property for the erection of a new shop.

PHILADELPHIA.—Contractors are completing the Rainey-Wood Coke Co.'s plant of 110 by-product coke ovens.

PHILADELPHIA.—The Fairmount Machine Co. has leased a building at 10 North Tenth street and will establish a plant.

PHILADELPHIA.—The Wright Roller Bearing Co. has awarded a contract to John R. Wiggins Co. for the erection of a small plant addition, 26 x 80 feet, one story.

PHILADELPHIA.—The Lowry Top & Body Co. has purchased from the Hero Mfg. Co. the factory building at Adams and Gaul Sts. for $35,000. The building is part of the steel company's plant.

Central States Activity

ANTIGO, WIS.—Architect C. F. Dallman has completed plans for a 2-story addition to the Antigo high school. The addition will be equipped for manual training instruction.

APPLETON, WIS.—To conduct preliminary work and assembling operations. the Fox River Tractor Co., recently organized, is erecting a 1-story shop, 40 x 90 feet.

APPLETON, WIS.—The capital stock of the Reliance Motor Truck Co. has been increased from $500,000 to $1,000,000 and about Sept. 1 the company will break ground for a 4-story manufacturing addition, 70 x 300 feet.

ANTIGO, WIS.—The Antigo Tractor Co. is a new corporation with a capital of $100,000 organized by local business men to manufacture a four-wheel-pull tractor. A plant will be erected. Officers are: President, William H. Wolpert; vice president, Edward McCandless; secretary, Richard Koebke; treasurer, Alvin Hyams.

BEAVER DAM, WIS.—The Malleable Iron Range Co. will erect an annealing building, 1-story, 50 x 125 feet, costing $35,000.

BELOIT, WIS.—Bids are being taken until July 28 by the board of education for the erection of a junior high school and vocational training institute.

BIRNAMWOOD, WIS.—Bids are being taken by the village board for a new water tank of 50,000 gallons capacity, mounted on an 80-foot tower.

EAU CLAIRE, WIS.—The common council has authorized a bond issue of $125,000 to finance extensive improvements in the city water works plant, including additional pumping and power equipment.

FOND DU LAC, WIS.—Contracts have been awarded by the Lotex Tire Co., for the first unit of its plant, 45 x 200 feet, with a separate boiler and transformer house, 40 x 80 feet. T. W. Meiklejohn is secretary.

FOND DU LAC, WIS.—The National Drop Head Projector Co., which is completing a new plant, has changed its style to the Drop Head Projector Co. and increased its capital stock from $75,000 to $125,000.

FOND DU LAC, WIS.—Additions costing $75,000, requiring new wood and some metalworking equipment will be made by the Northern Casket Co. The branch factories at Denver, Col., and Sioux City, Ia., also will be improved.

GRAND RAPIDS, WIS.—The Consolidated Water Power & Paper Co. will build a high voltage trans-

mission line costing $50,000. L. A. DeGuere is consulting engineer.

DETROIT.—The Steere Engineering Works, Detroit, and the Owosso Boiler Works, Owosso, Mich., have been consolidated. J. L. Brandel, president of the Owosso company has announced plans for a large plant to be known as the Steere Engineering Works.

DETROIT.—The Continental Motors Corp. is reported planning to spend $1,000,000 in expanding its plant at Muskegon, Mich. A power plant and factory addition, 180 x 500 feet is planned. New equipment will be bought for the Detroit plant according to a report.

GRAND RAPIDS, MICH.—The Hackett Motor Car Co. has been authorized by its stockholders to increase its capital to $3,000,000 to provide for expansion. J. F. Johnson is president.

JACKSON, MICH.—The Briscoe Motor Corp. is doubling its floor capacity.

KALAMAZOO, MICH.—The Kalamazoo Motors Corp. is erecting a machine shop.

KALAMAZOO, MICH.—The D'Arcy Spring Co. is erecting a plant addition, 190 x 200 feet.

MENOMINEE, MICH.—The Lloyd Mfg. Co. has let the contract for a 3-story factory addition, 100 x 400 feet, and will invest $100,000 or more in new electric power equipment, machinery, tools, etc.

YPSILANTI, MICH.—The Ypsilanti Foundry Co. has been incorporated to engage in a general foundry business, with $100,000 capital, by John H. Lonsky, 574 Delaware street, Detroit, George J. Zimmerman and J. C. Robinson.

CHICAGO.—The Chrobaltic Tool Co. recently was incorporated with $100,000 capital, by Harold Beacom, R. S. Tuthill and M. J. Atkinson, and will engage in the manufacture of tools and mechanical devices.

GALESBURG, ILL.—The Dependable Truck Co. is reported contemplating a plant addition, 80 x 400 feet, to cost $35,000.

PANA, ILL.—The Pana Engine & Mfg. Co. recently was incorporated with $50,000 capital and will engage in the manufacture of steam engines and machinery.

STERLING, ILL.—The Sterling Stamping Co. has been organized by S. L. and F. X. Maier, with $12,000 capital.

WAUKEGAN, ILL.—The Cyclone Fence Co. recently awarded a contract for an addition estimated to cost $35,000.

BRYAN, O.—The Bryan Pattern Machine Co. is reported contemplating an addition to its plant.

CANTON, O.—The Canton Stamping & Enameling Co. will erect a 1-story building.

CINCINNATI.—The John Van Range Co. has leased a building which it will utilize for a plant addition.

CLEVELAND.—The Allyne-Ryan Foundry Co. has a permit to erect a molding shop, 40 x 140 feet.

CLEVELAND.—A 4-story machine shop 89 x 110 feet is being erected by the Grabler Mfg. Co., 6565 Broadway to cost $80,000.

CLEVELAND.—The National Malleable Casting Co. is reported planning a laboratory, 3-stories, 49 x 62 feet, to cost $40,000.

MIDDLETOWN, O.—Capitalization of the American Rolling Mill Co. has been increased from $10,741,000 to approximately $19,000,000, the proceeds of which will be used to increase the capacity of the plant by building eight new sheet mills and a new jobbing mill.

NILES, O.—Contracts have been let for the construction of the new buildings of the Youngstown Steel Car Co. The machine shop, boiler and engine rooms and the electrical shop will surround the main building 200 x 400 feet. The erection will cost $700,000.

ORRVILLE, O.—A new factory, including a machine shop 60 x 100 feet, a pattern shop 30 x 40 feet and a blacksmith shop, 40 x 60 feet will be started about Aug. 15 by the Will-Burt Co., manufacturer of mechanical tools and vises. Cost of construction and the installation of equipment will aggregate $35,000.

RAVENNA, O.—The United Roll & Foundry Co. will erect a plant.

SANDUSKY, O.—Purchase of the plant of the Lake Erie Drydock & Mill Co. has been made by the Scientific Mfg. Co., recently organized to manufacture a sectional automobile rim. The plant will be converted for use as a factory.

SHELBY, O.—The Ohio Seamless Tube Co., A. C. Morse, manager, has let contracts for a steel plant addition, 1-story, 56 x 140 feet, to cost $55,000.

SIDNEY, O.—The Wagner Mfg. Co. has awarded the contracts for the erection of a 3-story 50 x 70-foot machine shop and a 2-story, 50 x 80-foot foundry at a cost of $65,000.

SPRINGFIELD, O.—The Springfield Spring Co. has awarded the contract for a 1-story, 30 x 76-foot shop and a 1-story, 50 x 80-foot warehouse to cost $65,000.

SPRINGFIELD, O.—Work will be commenced at once on the 50 x 177-foot addition to the factory building of the Wickham Piano Plate Co. The building will be one-story and of concrete and steel.

TOLEDO, O.—The Wagner Mfg. Co. has let a contract for a foundry and machine shop.

TOLEDO, O.—The Toledo Auto Parts Co. has been incorporated with $10,000 capital by J. G. Gluck and others.

TOLEDO, O.—The Jeannin Electric Co. has been incorporated with $150,000 capital and will engage in the manufacture of electric motors. The company will locate at 110 Eleventh street. C. H. Clement is president.

Business Changes

The Cutler-Hammer Mfg. Co., Milwaukee, has opened an office at 905 Kresge building, Detroit, to expedite the handling of orders and to provide improved engineering service in the Detroit district. The office is in charge of H. S. Kinsley.

* * *

An office has been opened at 553-50 Church street, New York, by the National Tool Co., Cleveland. E. S. Chamberlain is in charge. The company also announces that its Philadelphia branch office has been moved from 11 North Sixth street to 40 North Seventh street, and is in charge of H. L. Mather.

* * *

Incorporation of the Godfrey Conveyor Co. has been effected to conduct the business formerly known as John F. Godfrey, Elkhart, Ind. The incorporation was made necessary due to the increased amount of business.

* * *

The Dolomite Products Co. recently established offices at 52-54 William street, New York, in charge of James Eells.

* * *

Announcement has been made by the Chicago Pneumatic Tool Co., Chicago, to the effect that its Minneapolis office has been moved from the Metropolitan Bank building to Fifth avenue and Fifth street south, where a complete stock of pneumatic and electric tools, air compressors, oil engines, rock drills and parts, will be maintained.

* * *

The American Rolling Mill Co., which has been located in suite 1832 Oliver building, Pittsburgh, finding it necessary to have larger quarters has moved to suite 432 of the same building.

Business in Canada

BRANTFORD, ONT.—The Allied Aeroplane, Ltd., has been incorporated to manufacture airplanes, machinery, motors, etc., with $40,000 capital, by John Dowling, George Dowling and Charles Dowling, all of this city.

BRANTFORD, ONT.—The Canadian Aero Co., Ltd., with a capital of $50,000 has been incorporated to operate air craft service and to manufacture air craft and machinery. Incorporators are Willoughby S. Brewster and Geoge D. Heyd of Brantford.

HAMILTON, ONT.—The Canadian Type Registering Co., Ltd., has been incorporated with a capital stock of $24,000 to manufacture scales and type registering devices.

TORONTO, ONT.—The plant of the Athos Foundry, Ltd., 64 Jefferson street, recently was damaged by fire.

TORONTO, ONT.—The plant of the Armstrong Machinery Co., 83 Richmond street west, recently was damaged by fire.

TORONTO, ONT.—Maulson-Buchanan, Ltd., has been incorporated to manufacture plumbers' supplies with $40,000 capital, by Victor L. Maulson, Joseph L. Buckanan and Thomas H. Barton.

TORONTO, ONT.—The munitions plant on Coxwell avenue, was recently acquired by the John Wood Mfg. Co., Conshohocken, Pa., and it will be utilized for the manufacture of range boilers, etc.

TORONTO, ONT.—The Magnum Holding Corp., Ltd., capitalized at $3,000,000, has been chartered to manufacture automobile accessories, etc., by Melvin G. Hunt, 28 Douglas drive, Lewis E. Denyes and Easton M. Ansley.

TORONTO, ONT.—The Canada Metal Window Co., Ltd., has been incorporated to manufacture metal window sashes, etc., with $50,000 capital by Edwin G. Long, Bay and Melinda streets, Albert Mearns and others.

TORONTO, ONT.—The Electric Materials & Products Co., Ltd., has been incorporated with a capital of $50,000 to manufacture electrical supplies. Directors are John Downs, Orlando C. Glover and William A. Sweet of Toronto.

WALKERVILLE, ONT.—The American Auto Trimming Co., Detroit, is making preparations for a manufacturing plant to cost about $100,000. F. H. Joyce is general manager.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Indiana, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.35c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.35c
Iron bars, New York	3.37c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.45c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.65c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10, blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.37c
No. 28 black sheets, New York	5.37c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.33c
No. 28 black sheets, St. Louis	5.30c
No. 28 black sheets, St. Paul	5.595c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv sheets, Chicago	6.72c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.68c
No. 28 galv. sheets, St. Louis	6.79c
No. 28 galv. sheets, Buffalo	7.05c
No 28 galv. sheets, New York	8.50c
Bands, Boston	4.70c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galvanized
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	28

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galvanized
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galvanized
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$21.00 to 21.50
Chicago	20.00 to 20.50
Eastern Pennsylvania	18.50 to 19.50
Cleveland	20.00 to 21.00
St. Louis	19.00 to 19.50
Buffalo	18.00 to 18.50
New York (dealers' prices)	14.75 to 15.25
New Jersey points	**14.00 to 14.50**
Cincinnati	17.50 to 18.00
Birmingham	13.50 to 14.50
Valleys	**16.50 to 17.50**
Boston (dealers)	16.00 to 16.50

BUNDLED SHEETS

Pittsburgh	$15.00 to 15.50
Eastern Pennsylvania	13.50 to 14.50
Cleveland	15.50 to 16.00
Buffalo	13.00 to 14.00
Cincinnati	13.00 to 13.50
St. Louis	11.00 to 11.50

STEEL RAILS, SHORT

Chicago	$23.50 to 24.00
Cleveland	22.50 to 23.50
Boston (Dealers)	14.00 to 14.50
St. Louis	21.00 to 21.50
Birmingham	15.00 to 17.00
Cincinnati	17.50 to 18.00

STOVE PLATE

Pittsburgh	$17.00 to 18.00
Chicago	21.50 to 22.00
Eastern Pennsylvania	18.00 to 19.00
Cleveland	19.25 to 20.25
St. Louis	20.00 to 20.50
Buffalo	21.00 to 22.00
New Jersey points	17.25 to 18.25
Cincinnati	16.00 to 16.50
Birmingham	18.00 to 20.00
Boston (consumers)	17.50 to 18.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	23.00 to 24.00
Eastern Penna. (guaranteed)	23.00 to 24.00
Buffalo	22.00 to 23.00

SHOVELING STEEL

Chicago	$19.50 to 20.00
St. Louis	17.50 to 18.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.50 to 22.00
Chicago	22.50 to 23.00
St. Louis	20.50 to 21.00

BALED SHEETS

Pittsburgh	$18.00 to 18.50
Chicago	16.50 to 17.00

FROGS, SWITCHES, GUARDS

Chicago	$21.50 to 22.00
St. Louis	19.00 to 19.50
Eastern Pennsylvania	18.50 to 19.50

BOILER PLATE, CUT

Chicago, No. 1	$17.50 to 18.00
St. Louis, No. 1	16.50 to 17.00

ANGLE BARS—STEEL

Chicago	$22.50 to 23.00
St. Louis	19.00 to 20.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$21.00 to 21.50
Pittsburgh, No. 2	20.00 to 20.50
Chicago, No. 1	22.00 to 22.50
Chicago, No. 2	21.00 to 21.50
Eastern Pennsylvania, No. 1	24.00 to 25.00
Cleveland, No. 1	23.00 to 24.00
St. Louis, No. 1	20.00 to 20.50
St. Louis, No. 2	19.00 to 19.50
Buffalo	21.00 to 22.00
Cincinnati, No. 1	20.00 to 20.50
Birmingham, No. 1	14.50 to 15.50
New York No. 1 (dealers' price)	21.00 to 22.00
Valleys No. 1	**18.00 to 19.00**
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$19.00 to 19.50
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	16.00 to 17.00
New York (dealers)	15.25 to 15.75
Boston (dealers)	14.50 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$21.00 to 21.50

CITY WROUGHT

New York, long (dealers' price)	$17.75 to 18.25
New York, special	15.25 to 15.75

BUSHELING

Chicago, No. 1	$20.00 to 21.00
Chicago, Chicago, No. 2	14.50 to 15.00
Cleveland, No. 1	20.00 to 21.00
Cleveland, No. 2	17.50 to 18.50
St. Louis, No. 1	18.00 to 18.50
Buffalo, No. 1	15.00 to 16.00
Cincinnati, No. 1	15.00 to 15.50
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.50 to 14.00
Chicago	9.50 to 10.00
Eastern Pennsylvania	13.00 to 14.00
Eastern Pennsylvania (blast furn.)	12.00 to 13.00
Cleveland	12.00 to 13.00
Buffalo	9.00 to 10.00
New York (dealers 'price)	9.50 to 10.00
St. Louis	11.00 to 11.50
Cincinnati	8.00 to 8.50
Birmingham	10.00 to 11.00
Valleys	11.00 to 11.50
Boston (dealers)	9.00 to 9.50
Boston (blast furnace) (dealers)	7.50 to 8.00

CAST IRON BORINGS

Pittsburgh	$14.50 to 15.00
Chicago	13.00 to 13.50
Eastern Pennsylvania	13.00 to 14.00
Cleveland	15.00 to 15.50
St. Louis	11.00 to 11.50
Buffalo	11.50 to 12.50
New York (dealers' price)	10.50 to 11.00
Cincinnati	9.50 to 10.00
Birmingham	10.00 to 11.00
Valleys	11.50 to 12.00
Boston (dealers)	9.50 to 10.00
Boston (blast furnace)	8.00 to 8.50

IRON AXLES

Pittsburgh	$29.00 to 30.00
Chicago	32.00 to 33.00
Eastern Pennsylvania	28.00 to 30.00
Cleveland	35.00 to 36.00
St. Louis	32.00 to 32.50
Buffalo	26.00 to 27.00
Cincinnati	26.50 to 27.00

IRON RAILS

Chicago	$23.00 to 24.00
Cleveland	27.00 to 28.00
St. Louis	23.00 to 23.50
Buffalo	23.00 to 24.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$18.00 to 18.50
Cleveland	18.00 to 19.00
St. Louis	17.50 to 18.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$21.00 to 21.50
Cleveland	19.50 to 20.50
Buffalo	19.00 to 20.00
New Jersey points	16.75 to 17.25
Eastern Pennsylvania	17.50 to 18.50

FORGE FLASHINGS

Cleveland, large	$15.00 to 16.00
Cleveland, small	18.50 to 19.50
Chicago, small	15.75 to 16.25
Boston (dealers)	**10.00 to 10.50**

FORGE SCRAP

Chicago	$21.00 to 21.50
Eastern Pennsylvania, No. 1	13.50 to 14.50

ARCH BARS AND TRANSOMS

Chicago	$27.00 to 28.00
St. Louis	24.50 to 25.00

ANGLE BARS—IRON

Chicago	$26.00 to 26.50
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 16.50
Eastern Pennsylvania	14.00 to 14.50
Boston (dealers)	8.50 to 9.00
Cleveland	17.00 to 18.00
Buffalo	15.00 to 16.00
Chicago	16.00 to 16.50

STEEL CAR AXLES

Pittsburgh	$25.00 to 26.00
Eastern Pennsylvania	29.00 to 30.00
Cleveland	34.00 to 35.00
St. Louis	29.00 to 30.50
Buffalo	26.00 to 27.00
Chicago	30.50 to 31.00
New York (dealers' price)	21.25 to 22.25
Birmingham	19.00 to 21.00
Boston (dealers)	23.00 to 24.00

SHAFTING

Eastern Pennsylvania	$25.00 to 27.00
St. Louis	28.00 to 28.50
New York (dealers' price)	19.75 to 20.75
Chicago	27.00 to 28.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh iron	$22.00 to 23.00
Pittsburgh, steel	21.00 to 21.50
Chicago, iron	25.50 to 26.00
Eastern Pennsylvania, iron	**23.00 to 24.00**
Cleveland, iron	24.00 to 25.50
St. Louis, iron	24.50 to 25.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	20.00 to 21.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	**$21.00 to 22.00**
Chicago, cupola	27.50 to 28.00
Eastern Pennsylvania, cupola	23.00 to 24.00
Cleveland, cupola	23.50 to 24.50
New York, cupola (dealers' price)	20.50 to 21.50
Cincinnati, No. 1, cupola	22.00 to 22.50
Birmingham, cupola	22.00 to 23.00
St. Louis, roilroad	26.50 to 27.00
St. Louis, agricultural	25.00 to 25.50
Buffalo	22.50 to 23.00
Boston	23.50 to 24.50

HEAVY CAST

New York (dealers' price)	$20.50 to 21.50
Buffalo	**21.00 to 22.00**
Pittsburgh	20.00 to 20.50
Eastern Pennsylvania	21.00 to 21.50
Cleveland	18.50 to 19.50
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$16.50 to 17.00
Pittsburgh, agricultural	15.50 to 16.00
Chicago, railroad	23.00 to 23.50
Chicago agricultural	22.00 to 22.50
Eastern Pennsylvania, railroad	18.00 to 19.00
Cleveland, railroad	21.00 to 22.00
Cleveland, agricultural	18.00 to 19.00
St. Louis, railroad	17.50 to 18.00
St. Louis, agricultural	18.00 to 18.50
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	16.00 to 16.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$24.00 to 25.00
Chicago	27.00 to 28.00
Eastern Pennsylvania	21.00 to 22.00
Cleveland	24.50 to 25.50
St. Louis	22.00 to 22.50
Birmingham	15.00 to 16.00
Boston (dealers)	15.00 to 15.50

LOCOMOTIVE TIRES

Chicago	$24.50 to 25.00
St. Louis	20.50 to 21.00

BOILER PUNCHINGS

Chicago	$23.00 to 24.00
Eastern Pennsylvania	20.00 to 21.00

Announcement
to Buyers and Sellers of Scrap

Whatever your connection in handling Scrap, you expect these things:

Right Price
Quick Action
Courteous Treatment

Established over five years, with a complete and able staff of experienced Scrap men, our organization is ready to serve you.

— The James S. Miller Co
McCormick Building
Chicago

We can give especially efficient service to

— Steel Foundries { Open Hearth and Electric
— Rolling Mills
— Blast Furnaces
— Iron Foundries { Gray and Malleable

New Trade Publications

ELECTRIC ARC WELDING. — The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently issued a publication covering the process of electric arc welding and the necessary apparatus required. It compares the different processes of welding and points out the good qualities of electric welding.

POWER CHARTS.—Charts giving the relation in any shaft between power, shaft diameter, torsional stress and speed, have been issued by the Wellman-Seaver-Morgan Co., Cleveland, in pamphlet form. This is known as bulletin No. 22. Four practical examples are also included which explain how the charts are used.

CORE OVENS.—The Foundry Equipment Co., Cleveland, is circulating a 44-page illustrated booklet, in which it describes and illustrates core and mold ovens. The information given is general and the illustrations show typical installations. These ovens are built for operation with portable racks, rolling drawers, shelves, cars or combinations of these, and are built to be operated by coke, oil, gas, powdered coal, electricity, etc.

THREAD MILLER.—The Smalley General Co., Inc., Bay City, Mich., is circulating a 4-page pamphlet in which it describes and illustrates a thread miller. It is a single purpose machine designed for three milling speeds. It obtains three changes of speed from the 3-step cone. It is of sturdy construction, occupies little floor space and is easily operated. A time study is given on the back page of the pamphlet.

DRINKING WATER SYSTEM.—The Armstrong Cork & Insulation Co., Pittsburgh, is circulating a 4-page leaflet in which it describes a modern system for the delivery of drinking water to convenient parts of factories, etc. The system consists of water fountains placed at convenient parts of the plant. The company has issued a 48-page booklet, in which the subject of drinking water systems is gone into thoroughly.

TUBE SCRAPING DEVICE.—A scraping device which permits cleaning of lower boiler tubes without shutting down the boiler, keeps the heating surface of the boiler at maximum efficiency and is easily operated, is described and illustrated in a 12-page booklet recently published by the Combustion Engineering Corp., New York. Two of the illustrations are line drawings, showing the front view of a boiler with the scraper in use and a side view with the scraper in operation.

CORKBOARD INSULATION.—A 6-page leaflet is being circulated by the Armstrong Cork & Insulation Co., Pittsburgh, describing cork insulating material for cold storage rooms and freezing tanks. According to the leaflet, this material consists of pure granulated cork compressed in metal molds and baked at a moderate temperature. After baking, each sheet is trimmed and sanded to insure uniformity of size and thickness. It is supplied in standard sheets, 12 x 36 inches, and from one to six inches thick.

PUNCHING AND FORMING PRESSES—The Ferracute Machine Co., Bridgeton, N. J., recently issued an illustrated catalog containing over 400 pages. The equipment listed covers practically all types of presses used in sheet metal work. In all, nearly 1000 separate items are listed and described. A short description of each type of machine is given together with a number of illustrations which show the company's presses in actual use. The large amount of technical information contained makes the catalog of unusual value.

AUTOMATIC LATHE.—A 4-page catalog is being distributed by the Rockford Machine Tool Co., Rockford, Ill., in which an automatic lathe, designed for the rapid production of duplicate parts, is described and illustrated. The machine is built throughout on 22-inch heavy duty lathe lines. It is of the one-speed and one-feed type. Change gears can be used to vary the feed, but according to the leaflet, it is unnecessary to change them unless there is a radical change in the character of the work. The drive is to a friction pulley, through a pair of helical gears to the spindle. The headstock is of cast iron in one piece with a bed. The side carriage is supported on a heavy steel bar and the carriage is solidly and permanently clamped to the bar.

Opportunities Abroad

Information Can be Obtained From the Bureau of Foreign and Domestic Commerce. Requests Should be on Separate Sheets and Should be Accompanied by Opportunity Number

The purchase and agency for the sale of carriage and cart axles, machines for the manufacture of carriage and cart axles, agricultural machinery and light automobiles, are desired by a firm in Belgium. Opportunity No. 29941.

A government in the West Indies desires to purchase a small number of motor trucks. Opportunity No. 29943.

A mechanical engineer will be in America to secure commission or consignment contracts for sale in Belgium of electrical material and supplies, metallurgical appliances, rolling mills, electric furnaces, ores, coal, etc. Opportunity No. 29945.

Descriptive pamphlets and photographs of machinery are desired by a company in Ceylon, which desires to purchase for a complete Portland cement factory. Opportunity No. 29946.

An Italian company wishes to receive offers of machinery, possibly with eventual representation, for cotton spinning, wool carding, washing and combing of wool, cotton and wool waste, and machines for treating waste in general. Opportunity No. 29947.

An electrical dealer in France desires to represent manufacturers of electrical goods in Brittany, particularly electric fans. Correspondence should be in French. Opportunity No. 29921.

Tenders for 36 steel barrage gates and accessories are called for by the chief engineer of the water board of a city in South Africa. Opportunity No. 29922.

Sewing machines, watches and automobiles are required by a firm in Portugal. Correspondence should be in French. Opportunity No. 29926.

A merchant from France who is in this country desires to purchase from manufacturers only, for Roumania, iron and steel, and metal products, electrical goods, automobiles, rubber goods, agricultural machinery, hardware, machinery, electric railway cars and equipment for electric railways, glass and general merchandise. Opportunity No. 29931.

A firm in Belgium desires to purchase or secure washstands, water-closet installations, shower bath installations, heaters for baths, radiators, valves and the agency for the sale of sanitary ware, bathtubs, accessories and vacuum cleaners. Correspondence should be in French. Opportunity No. 29933.

A firm in this country is about to send a representative to Cuba to establish branch offices and desires to secure exclusive agencies from manufacturers of all kinds of hardware, tools, nails, roofing materials, railroad accessories, electrical supplies, etc. Opportunity No. 29934.

A firm in India wishes to purchase and to secure the agency for the sale of hardware. Correspondence may be in English. Opportunity No. 30013.

A man in France desires the representation of manufacturers for the sale of tin in bars, iron in sheets and bars, wire and lead pipe. Correspondence should be in French. Opportunity No. 29988.

A firm of commercial agents in Belgium desires to purchase shoemakers' tools and equipment, buckles of iron, nickel and brass for harness, bits and related equipment. Opportunity No. 29936.

The purchase by a party in Canada of tack manufacturing machinery is desired. Opportunity No. 29938.

A company in this country which is about to send representatives to Finland, desires to purchase or secure an agency for the sale of machinery, electrical supplies and equipment, agricultural machinery, hardware, automobiles, etc. Opportunity No. 29911.

A party in Colombia wishes to obtain the agency for the sale of hardware, chemicals, etc. Correspondence should be in Spanish. Opportunity No. 29913.

The representation of American manufacturers of refrigerating machinery, house heating apparatus, etc., is desired by a party in France. Opportunity No. 29914.

A company of steamship agents and brokers in Spain desires to purchase two sailing vessel hulls, iron or wood, of about 1600 to 2000 tons each. Correspondence should be in Spanish. Opportunity No. 29915.

Machinery for grinding and purifying sea salt, with directions as to refining, is desired by a party in Mexico. Opportunity No. 29920.

The agency for a light motorcycle and a large American automobile is desired by a firm in Sweden. Opportunity No. 29949.

An engineer who leaves early in August for France, desires agencies and connections with manufacturers for the sale of American products, especially building materials and construction supplies. Opportunity No. 29950.

Bowl pressings made of 26-gage pickled and close-annealed steel, suitable for vitreous enameling, 14 inches and 16 inches in diameter, and about 4½ inches deep, are desired by a firm in England. Opportunity No. 29955.

Catalogs and information concerning oil engines and the vacuum tunnel system for river steamers are desired by a company in Colombia. Correspondence should be in Spanish. Opportunity No. 29958.

An agent in Ireland desires to represent American manufacturers of engineering and shipbuilding materials, mechanical and general lines. Opportunity No. 29989.

A company in Switzerland wishes to secure the agency for the sale of machine and other tools, automobile accessories, tin plates and carborundum wheels. Opportunity No. 30015.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, July 31, 1919 No. 5

Consumption Keeps on Growing

All Indications Reflect a Continued Expansion of Underlying Demands for Iron and Steel —Railroad Buying Beginning to Appear—Less Talk of Labor Uncertainties— Prices Incline Upward But Advances Are Held Back

CONSUMPTION of iron and steel is keeping to the upgrade as measured by the new inquiry, outgoing mill tonnage and general operations. Order books have reached the point in most lines where producers are more reluctant to accept additional business than buyers are to place it. This is notably the case in sheets, wire, tubular goods, tin plate and steel bars. The market still lacks uniformly distributed buying due principally to the lagging railroad demand, but even the absence of this factor usually so essential to a prosperous industry, is being offset to a considerable extent by the breadth of both domestic and foreign requirements. Furthermore, negotiations by the railroads are showing an appreciable increase. Likewise, the heavy products such as plates and structural shapes, which have failed to keep step with other finished material, are showing a more positive betterment.

There has been less allusion to labor uncertainties as a market factor and in some quarters at Pittsburgh the situation in the mills is reported more favorable than a few weeks ago. The Carnegie Steel Co.'s operations have been raised to 98 per cent of ingot capacity. A strike of industrial trainmen at Cleveland, however, has interrupted operations at three blast furnaces and at the steel works of the leading wire producer.

Railroads in the Market

Some semblance of railroad buying in the form of car repairs which first appeared a week or so ago, is developing into business. Two builders in the Chicago district have placed 16,000 tons for this purpose. The Pennsylvania railroad has closed tentatively on 8000 tons of a 12,000-ton plate requirement subject to the approval of the railroad administration because of the latter's recent suggestion that all steel purchases be made on a mill instead of a Pittsburgh basis. Quotations to the Pennsylvania railroad were uniformly 2.65c, Pittsburgh. The Philadelphia & Reading also has a round tonnage under negotiation but is holding up the purchase until it is determined whether it may buy on a Pittsburgh basis which it has been quoted.

Delayed financing of European needs is checking export trade somewhat in that direction, but to other markets it remains very satisfactory. Recent Japanese purchases include 3000 tons of plates, 1000 tons of bars, 3000 cases of tin plate and 500 tons of sheets. Holland bought 5000 tons of shipbuilding material. The recent sale of American girder rails to Glasgow amounted to 10,000 tons. Belgium is inquiring for 50,000 tons of foundry coke.

Makers Slow to Advance

While conditions of cost and demand would seem to warrant some marking up of prices in various lines, the conservative attitude of large producers toward making advances at this time, still prevails. Current reports are that steel bars are likely to be the first of the heavy products to break away from this rule, because of the broad market that has developed in this line. Recent advances in wire products for export have failed to check the buying. A Pittsburgh independent now has raised his schedule on foreign business for the second time in two weeks in addition to adopting the $2 to $5 increase on domestic orders announced a week ago by two mills. New advances in the wire schedule for export have been made by other producers.

Iron is Sold $2 Higher

A surprisingly large volume of pig iron buying is being maintained considering the heavy purchases in June. One important Cleveland seller with five or six furnaces has booked this month an even greater tonnage than in June. Sales chiefly are of foundry and malleable grades though a Massillon, O., steel plant has inquired for 25,000 to 40,000 tons of basic and has bought partially. The John A. Roebling's Sons Co. bought 10,000 tons of basic and a round lot of low phosphorus. A New England scale manufacturer who inquired for 20,000 tons of foundry iron is reported to have closed for about half of this amount. Prices are pointing upward but in an irregular fashion. The leading Chicago seller has advanced prices for 1920 delivery $2 and has sold about 15,000 tons on this basis, chiefly malleable. A Mahoning valley maker has sold some foundry iron at $2 advance. The eastern market on basic has been established 25 cents higher.

JULY 31, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
PHILADELPHIA - - - - 1316 Land Title Bldg.
PITTSBURGH - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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War Diverts Steel Output

STEEL production in the United States in 1918 fell short of the high record of 1917 by approximately 600,000 tons and totaled 44,462,432 tons, according to the official statistics just announced by the American Iron and Steel institute. It is questionable whether last year would have established a new high record, even had the signing of the armistice been delayed until after Jan. 1, 1919, because while production fell off considerably in November and December, following the cessation of hostilities, the combined totals of these two months was in excess of that for the corresponding period of the record year of 1917. The sharp slump in ingot output in January and February, 1918, due to demoralized transportation conditions started off the year under too great a handicap for this to be overcome subsequently. Had it not been for the abnormal conditions prevailing during these two months, 1918 would have exceeded all other years in gross output. Special steels, however, show up well in the year's figures. The ouput of alloy steel ingots and castings was the greatest in history by a considerable margin. The advance of the electric steel process is shown by the high mark of production reached in 1918 with 511,364 tons compared with 304,543 in 1917, and 168,918 in 1916.

Although the production of steel ingots and castings in 1918 was the second largest in history, the production of rolled finished steel was less not only than that of 1917, but also that of 1916 or by 1,911,946 tons and 1,224,635 tons respectively. This was true in the latter case, notwithstanding the fact that steel ingot output in 1918 exceeded that of 1916 by about 1,650,000 tons. The failure of finished steel to hold its own with its established ratio of the past toward ingot output apparently was due to the changed conditions of demand caused by the war. Manifestly more steel went into forgings direct from the ingots than ever before due to the heavy production of shells, ordnance, ship parts, etc., since the statistics of finished rolled steel include rolled blooms and billets for forging purposes and semi-finished products rolled for export. Of the major finished lines produced, plates is the only material to show an increase over the preceding year. The total output of sheared and universal plates in 1918, was 5,119,908 tons compared with 4,158,238 tons in 1917, an increase due to expanded shipbuilding.

It is certain that the war operated to materially divert iron and steel production from its accustomed channels in 1918. As a consequence that year was an abnormal one in many respects and the influence of an essentially war market is to be seen in the statistics for that period.

Opportunity Knocks at Door of France

IT is a singular fact that the ore fields of Alsace-Lorraine, constituting one of the most abundant and accessible sources of iron in Europe, never have been free from political influence for a sufficient period to allow them to be exploited with unhampered initiative and foresight. Situated on the disputed frontier of two powerful nations, the mineral properties and steel works in this district always have been threatened with invasion.

Considering this serious handicap, it is not surprising that both France and Germany have failed to profit in any but half-hearted manner by the vast stores of mineral wealth at their disposal. In recent years, France has developed 70 concessions in the French portion of the Longwy-Briey fields, but has not been free to extend activities beyond the international boundary of 1871. The extent of French operations is clearly shown in an article appearing on pages 296 and 297 of this issue. During the past 46 years, Germany, under the provisions of the treaty of Frankfort, has had a chance to avail itself of the opportunities presented by the proximity of Lorraine ore and Saar coal to the Moselle and Saar rivers, which as tributaries to the Rhine, constitute an unexcelled means of transportation. Under the terms of the treaty, Germany was to canalize the Moselle and Saar, but although the

improvement would have cost but $65,000,000, the empire only partially carried out its pledge. Other events show that Germany deliberately scorned the advantages to be found west of the Rhine for the purpose of forestalling any infringement upon the already established might of Westphalia as a steel center. The military advisers insisted that the industrial strength of the empire be concentrated east of the Rhine and their influence was sufficient to drown out the voices of those who realized the economic advantages of the southwest.

Now for the first time in recent years, France is sufficiently protected, by the terms of the treaty of Versailles, to develop the territory of the Saar and upper Moselle according to economic principles. The world will watch the efforts of French ironmasters with mingled feelings of confidence and apprehension. It is to be hoped that distressed Europe soon may realize the full potential value of its most productive ore field.

Railroad Buying is Appearing

IN the waves of buying which have followed periods of depression, it always has been customary for railroad requirements to assume an important place. In fact, the iron and steel industry has been accustomed to regard it almost as a rule that the smaller buyers throughout the country refused to buy until the way had been pointed by the railroads. To put it another way, it was not until the railroads started to buy that the periodical era of prosperity got under way.

In view of all precedents, therefore, the exceptional developments of the market, since the armistice, have been a puzzle to a great many individuals who have sought to interpret the present in the light of their past experiences. On all sides, it is agreed that the one thing which still is necessary to put the industry on a full operating basis, is railroad buying. There has been a realization right along that the actual physical needs of the railroads are great. Tremendous quantities of iron and steel are involved not only in the huge improvement programs which in recent years have been adopted by the railroads as part of their policy of development, but to make needed repairs and keep the various systems actually going. In fact, it is known that the restricted buying during the past couple of years has resulted in deterioration of railroad properties. The two factors which have prevented this buying coming to a head, it has been felt, were the disposition of the railroad administration to keep such buying down to a minimum and, second, the difficulty on the part of the government, even if it had favored the necessary purchases, of financing the expenditures involved.

But, despite the attitude of the government, it was evident from the reports in last week's issue of THE IRON TRADE REVIEW that the long-delayed railroad buying wave is on its way and is gathering in volume. These reports told not only of the large amount of essential car repair business which is expected to contribute considerable activity to the equipment market for some time to come, but they told of the new car needs of the various roads as indicated by pending inquiries. Whether these new car needs are placed immediately is not a vital matter as far as the market is concerned, since the improvement from a general standpoint is becoming more apparent every day. But the inquiries which are current, indicate that those who are accustomed to looking for liberal railroad orders as a part of every buying movement will shortly be satisfied in this connection, since, despite the government's attitude, the needs of the railroads actually exist and must be satisfied.

No Trade Without Credits

FAILURE of the American bankers' committee to reach an agreement on any proposed plan for financing the European countries may be interpreted as a threat against the present export trade of the United States. Europe has been buying from this country more than has been purchased from it ever since 1914. At first Europe paid in cash, sending over gold and the millions of securities they held in American enterprises prior to the war. Then the United States government stepped in and financed the transactions by extending credit loans.

Under the war finance act the United States treasury has not much over $700,000,000 more of credits which it can extend our allies. At the rate this is being used up it will not last much longer than two months more. Unless some concerted effort is made on the part of American bankers to extend credits to Europe to take the place of the aid heretofore rendered by the treasury department, European exchange will decline so rapidly as to make further exporting practically prohibitive, since adequate shipments of gold are out of the question.

France presents a deplorable situation. During the first three months of 1919 the French imports were six times as large as exports. Her unfavorable trade balance was $1,000,000,000 greater than during the same period of 1918. The United States now prohibits the importation of French wines and liquors. Today the French are not producing the goods which we can import. If we do not take French goods and do not take French bonds, the French will have nothing with which to pay us for such commodities as we might wish to sell them. American bankers are unwilling to express publicly their real apprehension over the European outlook.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 330 AND 332

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	26.75 to 27.25
Basic, Buffalo, furnace	25.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 28.00
Malleable, delivered eastern Pa.	29.10 to 31.15
FOUNDRY IRON SILICONS	
No. 2 Northern	1.75 to 2.25
No 2 Southern	2.25 to 2.75
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X eastern	2.75 and up
No. 1, Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25
No. 1X, eastern delivered Phila.	$30.50 to 31.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 27.00
No. 2 foundry, Cleveland furnace	26.75
No. 2 foundry, Ironton furnace	26.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	29.00 to 30.60
No. 2X, eastern, N. J. tidewater	29.60 to 30.90
No. 2X eastern, Boston	30.90
No. 2X foundry, Buffalo furnace	28.00
No. 2 foundry, del. Philadelphia	28.00 to 29.60
No. 2 foundry, N. J. tidewater	28.60 to 29.90
No. 2 southern, Birmingham	27.00 to 28.00
No. 2 southern, Cincinnati	30.60 to 31.60
No. 2 southern, Chicago	32.00 to 33.00
No. 2 southern, Phila.	33.50 to 34.50
No. 2 southern, Cleveland	32.00 to 33.00
No. 2 southern, Boston	35.00 to 36.00
No. 2 southern, St. Louis	31.25 to 32.25
Virginia, No. 2X, furnace	26.50
Virginia, No. 2X, Philadelphia	30.60
Virginia, No. 2X, Jersey City	31.90
Virginia, No. 2X, Boston	31.20
Gray forge, valley, Pittsburgh	27.15
Gray forge Buffalo	25.75 to 26.00
Gray forge, eastern Pa.	27.50 to 28.50
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	38.50 to 39.00
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	40.00
Charcoal, Superior, Chgo., last half	31.75

Coke

(At the ovens)

Connellsville furnace	$4.00 to 4.50
Connellsville foundry	5.00 to 5.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$115.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports.	105.00
Spiegel, 18 to 22 per cent furnace, spot	35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	78.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.15 to 1.25
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	32 to 34 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00
SHEET BARS	
Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00
SLABS	
Pittsburgh and Youngstown	39.00 to 41.00
WIRE RODS AND SKELP	
Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, refined, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, refined, New York	2.62c to 2.77c
Bar iron, refined, Pittsburgh	2.35c
Bar iron, extra refined, Pittsburgh	2.75c
Hard steel bars, Chicago	2.45c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	35.00 to 38.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.35c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh	4.445c
Coated nails per count keg, Pitts.	2.85c to 3.10c
Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.50c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK	
No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c
TIN MILL BLACK	
No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
GALVANIZED	
No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c
BLUE ANNEALED	
No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1588.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1588.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Full tube schedule page 1588.

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	$56.80
Six-inch and over, Chicago	53.80
Four-inch, New York	55.70
Six-inch and over, N. Y.	52.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Shafting, Pitts., carloads	28 off list

Cotton ties, lots of 1000 to 3000 bundles, $1.73½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.71½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.70c
Boiler rivets, Pittsburgh	3.80c
Rivets ⅞ in. and smaller Pitts.	60–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS (⅜ x 6 inches, smaller and shorter)	
Rolled thread	50–10–10 off
Cut thread	50–10 off
Larger and longer	45–5 off
MACHINE BOLTS (⅜ x 4 inches, hot pressed nuts)	
Rolled thread	60–10 off
Cut thread	50–10–10 off
Larger and longer	50–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70–10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	80 off
Gimlet and cone point lag screws	65 off
NUTS	
Hot pressed, square blank	3.10c off
Hot pressed, square tapped	2.85c off
Hot pressed, hexagon blank	3.10c off
Hot pressed, hexagon tapped	2.85c off
Cold pressed, square tapped	2.85c off
Cold pressed, square blank	3.10c off
Cold pressed, hexagon blank	3.10c off
Cold pressed, hexagon tapped	2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices July 30, 1919	Average prices June, 1919	Apr., 1919	July, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	31.75	31.45	33.25	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
**Southern, No. 2, Birmingham	27.00	25.25	28.00	33.50
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa	27.00	25.50	29.65	32.00
**No. 2X Virginia, furnace	26.50	26.50	28.45	33.50
**No. 2X, eastern del., Philadelphia	29.50	29.60	31.90	34.50
Ferromanganese, 80 per cent, delivered	110.00	114.00	130.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.00	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	41.50	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	38.00	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73
Iron bars, Cleveland	$2.52	2.52	2.52	3.64
Iron bars, Chicago mill	2.62	2.53	2.58	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.30	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.50	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.65	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.00	3.90	3.80	6.00
Connellsville foundry coke	5.25	4.65	4.55	7.00
Heavy melting steel, Pittsburgh	21.00	17.25	15.75	29.00
Heavy melting steel, eastern Pa	19.00	16.15	15.90	28.50
Heavy melting steel, Chicago	21.50	16.75	16.40	29.00
No. 1 wrought, eastern Pennsylvania	25.50	22.50	21.50	34.00
No. 1 wrought, Chicago	23.50	18.70	18.50	33.50
Rerolling rails, Chicago	29.00	19.25	17.95	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Pig Iron For 1920 Sells $2 Higher

Chicago Producer Markets 15,000 Tons on This Basis—Valley Foundry Also Sold at $2 Advance—Eastern Basic Up—Active Buying Continuing—Ohio Steelmaker Buying 25,000 to 40,000 Tons of Basic

Chicago, July 29.—Books of the leading seller of northern iron have been opened for first half of 1920 at a horizontal advance of $2 per ton over present prices, $28.75 being asked for No. 2 foundry iron, silicon 1.75 to 2.25. Sales have been made at the advanced price to the extent of about 15,000 tons, all but a small portion being malleable. This action was taken to assist melters in covering castings contracts for first half. Business for this delivery is not being solicited as furnace men expect prices to be higher on the bulk of their output for 1920. Options on iron for 1919 delivery are not being given and prices now quoted are for immediate acceptance, indicating an expectation of impending advances. Present buying is in large aggregate volume, though individual inquiries and sales are small, 1000 tons being about the limit in most cases and most being much less. Repetition of purchases is frequent, indicating increased business on books of melters, beyond what had been estimated. A characteristic instance is purchase by one melter of 1000 tons after the latter had contracted for 1500 tons as sufficient for the remainder of the year. Milwaukee malleable users have been active in buying recently and an inquiry for 500 tons of that grade has been put out by a Wisconsin melter. At the Federal furnace plant, South Chicago, a relined stack is being blown in and the other stack is going out for relining. The relined Northwestern furnace at Mayville, Wis., will be blown in in August. The Illinois Steel Co. is selling against the production of its idle stack at Milwaukee and will blow in before Oct. 1. This leaves idle only one merchant stack, one Iroquois at South Chicago, and the small stack leased to ferromanganese producers. The Inland Steel Co. is preparing to blow out one stack at Indiana Harbor, which produces some merchant foundry iron. Southern sellers not only refuse concessions on freight charges, but one important producer which has held stiffly for full schedule now is quoting $28, Birmingham, for 1.75 to 2.25 silicon, $30 for 2.25 to 2.75 silicon and $32 for 2.75 to 3.25 silicon for last half of 1919. An Illinois melter recently took 500 tons of northern and an equal tonnage of southern, the latter being 3.25 to 3.75 silicon, a grade avoided by northern makers, at $31.75, Birmingham. Jackson county silvery makers now are willing to book for last quarter, apparently seeing an end of the strike. A sale of 500 tons was made recently in this territory.

Some Shading on Northern Iron

Boston, July 28.—The weak spot in the pig iron market here has changed from the South to the North during the month. One large southern interest which has been active in New England has sold up its capacity for third quarter and is temporarily out of the market. It has refused business on No. 2 southern (2.25 to 2.75 silicon) at $28 furnace. Other southern furnaces have stiffened their prices until it is thought that little iron is reaching New England from this territory at below $34 delivered for No. 2 southern (2.25 to 2.75 silicon). A northern interest has been shading during the last week on many small orders, particularly in some places in Connecticut. Consumers who were reluctant to buy for third quarter some weeks ago now are coming out freely for that delivery. A Massachusetts foundry bought 1800 tons and a Connecticut foundry 1100, both of 2.25 to 2.75 silicon iron, for delivery before October. Little next year business is being placed although some small orders for last quarter and first quarter combined are reported. Inquiries are more numerous than at any time in several weeks and aggregate about 4000 tons. A Rhode Island consumer is asking for several grades for fourth quarter. A Connecticut consumer wants 500 tons of special analysis iron for third quarter. A Maine foundry is asking for 200 tons for third quarter. Among many of the furnaces usually active in this market, prices have stiffened during the past week. One eastern Pennsylvania maker is quoting from $30 to $32 at furnace for fourth quarter on 1.75 to 3.25 silicon and several small orders have been placed on that basis. The actual sales of the week through Boston agents are reported approximately the same as for the week previous, about 7000 tons. This does not include the business placed against the inquiry of the Crane Co. for 5000 tons which went directly to the furnace. The Sossions Foundry Co., Bristol, Conn., placed 3000 tons and E. & T. Fairbanks & Co., St. Johnsburg, Vt., 1000 tons during the week. Considerable iron is selling in New England above the $28 Buffalo price for 2.25 to 2.75 silicon.

Large Tonnages Sold

New York, July 28.—Much activity was displayed by the pig iron market in this district during the past week. The Crane Co., Bridgeport, Conn., bought 5000 tons of foundry, 500 tons of malleable and 500 tons

of high silicon. The Sessions Foundry Co., Bristol, Conn., bought 1000 tons of foundry for last quarter. The New York Central railroad closed for 1650 tons of spot foundry. A New Jersey interest bought 1000 tons of foundry for last half. A New York state melter also bought 1000 tons for the last quarter. Numerous other lots of 1000 tons each or less, featured the business during the past week. It is understood that the E. & T. Fairbanks & Co., St. Johnsbury, Vt., who inquired for 20,000 tons of foundry for nearby shipment have closed for nearly one-half of this tonnage and may buy more. Numerous new domestic inquiries are in the market. Several involve 1000 and 2000 tons each. A large railroad equipment manufacturer which recently inquired for 3000 tons of foundry for its western plants has not yet closed. A large eastern consumer during the past week bought a round tonnage for domestic use and also closed for a large block for shipment to a foreign plant. In addition, 1500 tons of foundry were closed for export to the Orient and several other good-sized blocks were sold for export. Included in new export inquiries is one for 10,000 tons. The outlook for export buying seems to be improving but high freight rates and unfavorable exchange for European buyers continue important obstacles. The market continues strong, and the direction of prices is upward. One Lehigh valley maker now is asking $30, furnace, as a minimum for 2.25 to 2.75 silicon foundry, and $29, furnace, as the minimum for 1.75 to 2.25 silicon. One Buffalo maker has advanced its price on malleable from $27.25 to $28, furnace. On foundry iron, Buffalo furnaces continue to stick to the regular schedule, namely $26.75 to $28, and $29.75. Eastern New York state makers with a somewhat more favorable freight rate than Buffalo interests have been selling to New England consumers during the week at this schedule at the furnace. The only sale of basic reported in this district during the past week involved 100 tons for export which went at somewhat higher than $25.75, Buffalo.

Last Quarter Iron at $2 Advance

Pittsburgh, July 29.—Proof of the strength of the pig iron market lies in the fact that actual sales of No. 2 foundry (1.75 to 2.25 silicon) have been made for last quarter delivery by a Girard, O., furnace at an advance of $2 a ton or $28.75. Another furnace has advanced its price of No. 2 foundry 50 cents to $27.25 for spot shipment in carload lots and one broker is asking an advance of 50 cents on forge iron for immediate delivery. Most furnace interests are well sold up for the remainder of the year. A number of inquiries are pending for both steelmaking and foundry grades, although basic tonnages are not so numerous as bessemer and foundry. Sales also have been made in fair volume for the last half and in all instances at the regular market quotation. Furnaces are strongly discouraging bookings into next year and so far as known only one lot has been sold in this district for that delivery. It involves 8000 tons of malleable iron recently placed by a maker of railroad malleable castings at $27.25 valley and it is understood the business was distributed among three or four furnaces. A consumer with a plant at Paden City, W. Va., has closed with two nearby furnace interests for 2500 tons each of forge and bessemer iron, to be shipped 500 tons monthly from August to December inclusive. Another furnace in this district sold 3000 tons of gray forge iron to a Connellsville district consumer for the year at $25.75 valley. The same interest sold other lots of No. 2 foundry iron to Pittsburgh district consumers, for the year, one involving 1000 tons and the other 300 tons. Consumers are showing more eagerness to cover for last quarter. One inquiry involves 2000 tons of low phosphorus for last quarter. The market for this grade is strong at $39 to $40, valley furnace, for copper-free iron. An inquiry for first quarter delivery involves 1000 tons of malleable. Additional furnaces continue to be blown in. It is understood that No. 1 furnace of the McKinney Steel Co. at Josephine, Pa., will go into blast within the next two weeks. Blast furnace No. 3 of the Cambria Steel Co., Johnstown, Pa., has been relined and it is understood it will go in tomorrow.

Basic is Sold Higher

Philadelphia, July 29.—Pig iron business has been rather active in this territory the past week. The John A. Roebling & Sons Co. bought nearly 10,000 tons of basic from several makers at prices which establish market at $26.75 to $27.25, delivered. The Roebling company also bought a round lot of copper-free low phosphorus iron and another interest bought a tonnage of this grade. These sales establish this grade at $37, eastern furnace. A brisk selling of foundry has been done although no exceptionally large tonnages are reported. The tendency continues toward higher prices although minimum on No. 2X (2.25 to 2.75 silicon) still is $28, eastern Pennsylvania furnace. A leading Virginia interest offering several thousand tons of high manganese and high silicon foundry based on $27.25, furnace, for No. 2 plain (1.75 to 2.25 silicon). Where the extras fail to make the price $30 or higher the minimum charge will be $30. The Worthington Pump & Machinery Corp. is inquiring for 7000 tons of foundry for last half and first half. An eastern consumer is feeling out the market on basic. The Princess furnace in Virginia blew in last week.

One Virginia maker who recently withdrew from the market has entered additional 4400 tons at $26.50 furnace for No. 2X (2.25 to 2.75 silicon), $27.50 for No. 1X (2.75 to 3.25 silicon) on which it previous had quoted.

Good Business at Buffalo

Buffalo, July 29.—With two furnace interests now out of the market for pig iron, attention is focused on the inquiries in the local field. They have been numerous during the past week, although most of them are considered of a speculative character. The aggregate amount of tonnage inquired for during the past week has been about 50,000, while bookings have probably reached 25,000 tons. Orders are fast reducing the small amount of remaining capacity for the remainder of the year. Furnace interests remain firm in their refusal to quote for 1920. One interest has increased its malleable grade to $28, furnace.

More Basic Is Sought

Cleveland, July 29.—New buying in pig iron is keeping up on a liberal basis. One of the largest selling interest in this district reports that its bookings in July were heavier than in June, although the latter was a very large month in this respect. Other sellers continue to enter considerable tonnage but they are less disposed to sell as freely as they have been and some have taken their traveling men off the road. One Cleveland interest reports sales of 20,000 tons in the week some of which was for delivery after Jan. 1. There is increasing interest among certain classes of consumers in next year's iron and some of the larger melters including malleable foundries, are included. While some sales for next year continue to be made by certain producers where the circumstances are special, it is still the rule that makers are not inclined to sell so far ahead under prevailing uncertainties. Further basic inquiry has been added to that already pending. The Central Steel Co., Massillon, O., is now buying its needs in the open market and has been negotiating for 25,000 to 40,000 tons for last half. This buyer is understood to have made some purchases and reports having obtained some concessions. The 50,000 to 75,000-ton lot of basic for this year for which the Trumbull Steel Co., Warren, O., has been negotiating, still is unplaced as far as known.

Reopen Books at Higher Level

Cincinnati, July 28.—The firm attitude on the price question taken by both the southern and northern furnaces seems to have stimulated inquiry. A few southern furnaces have reopened their books for last quarter business but at a higher level. Some southern iron, in scattered lots, has brought $28, Birmingham, for the shipment named, but not all furnaces are yet on this level. For prompt shipment $26.75 can be done on iron running from 1.75 to 2.25 silicon.

Stream of Small Orders

St. Louis, July 26.—The market for pig iron is steady and satisfactory. There is a continuous stream of small orders for prompt shipment and delivery through the balance of the year. A feature of the demand has been an insistent request for low grade irons by the foundries, and several important selling agencies report they have been sold out of that grade. The stove industry is more active than at any period since the war started, and other specialty makers, notably boiler and tank manufacturers, report unusual activity. The volume of melting by foundries in the district is enormous, and this would be reflected in current sales save for the fact that these interests are already well covered to Dec. 30,

and producers are unwilling to sell further into the future. The leading local furnace interest, which has closed down for relining and repairs, has nearly disposed of its accumulation of between 10,000 and 12,000 tons, and could sell considerably more iron. Prices are strong, and indications point to advances.

Increasing Production in South

Birmingham, Ala., July 29.—Southern pig iron production will be increased as quickly as possible. A number of furnaces have been started up, and preparations are being made to relight two or three others during the next two weeks. A little selling is still in progress, but only a part of the probable make of the fourth quarter has been sold. Inquiries are coming in that warrant the belief that output can be sold. Confident that there will be an increase in price soon, furnace companies are refraining from selling indiscriminately in the open market.

Ore Sales

Show Slight Gain—Shipments 5,000,000 Tons Behind Last Year's

Cleveland, July 28.—Indications of a slight upward trend are discernible in ore market activity. After several weeks of dullness, a half dozen furnace interests have placed orders with one company for more than 100,000 tons, while another ore company has received orders for 50,000 tons. Some of the furnace interests are buying ore for the manufacture of basic iron, while low phos ores also are in greater demand. Some shading of prices has been done in the selling of the latter grade.

The season's arrivals at lower lake ports up to Aug. 1 are 5,000,000 tons in arrears of the shipments up to that date last year, and while the movement for the balance of the year will not make up the deficit, present indications are that the total for the year will not be so far below those of 1918 as was expected during the slack period last spring. Instead of 61,156,732 tons, the total shipments last year, the season of 1919 will probably show about 55,000,000 tons.

Operations, however, are not on a par with those of last year, stocks are being depleted, and already there is talk of a possible increase in the price of ore next spring. Some ore interests claim this is inevitable, unless the new year should start with a period of depression.

Up to July 25, 7,154,793 tons of ore were brought down from the Lake Superior district this month, an indicated daily average placing the month's total movement at 8,670,000, or 690,000 tons more than that in June, and 1,989,203 less than in July, 1918. On this basis the total shipments up to Aug. 1 are 24,700,000 tons as compared with 29,608,933 last year. The loss in May, June and July this year was over 6,000,000 tons, but April shipments showed a gain of more than a million tons and reduced the shortage to approximately 4,908,933 tons.

Belgium in Need of Coke

Has Inquiry in American Market for 50,000 Tons—Connellsville Market Shows Softness

New York, July 28.—An inquiry has come out in this district for 50,000 tons of foundry coke for Belgium for shipment over the next few months. It is understood that some difficulty is being encountered in securing quotations on the entire tonnage although producers are naming figures on a part of the business.

The New England by-product producer is expected to make a decision this week as to the price on foundry coke for 1920. So far this year this maker has not been naming any flat prices but has named a price to apply to shipments each month. The present price of the maker is $5.50, Connellsville. The northern New Jersey by-product producer also is asking this price on foundry coke, which is equivalent to $8.60 delivered Newark and other northern New Jersey points. New Jersey by-product furnace coke continues to be sold at about $1 less than foundry coke. A fair amount of foundry business has been booked in this district lately by western Pennsylvania beehive makers.

New England Demand Active

Boston, July 28.—The activity in industrial coke during the last week has amounted practically to a scramble. This no doubt has been caused in large part by the marine workers' strike, which virtually tied up all shipments of coal to New England. Shipments of foundry coke have been constantly increasing and are now being made in such quantities as to indicate a positive increase in business among the foundries. Many concerns are realizing the possibility of a coke and coal shortage in the fall and are laying in stocks; but a large portion of the shipments represents actual day-to-day consumption. The local by-product producer announces that the price on sliding scale contracts for August will probably be the same as in July, $9.90 delivered. Industrial coke, however, will advance from $7 to $7.50 and domestic coke probably will be raised during the early part of the month from $10.50 to $11.00.

Softness in Coke Market

Pittsburgh, July 29.—Recovery of the Connellsville coke market is slow, and the market for furnace coke, both spot and contract, is soft. While spot furnace fuel continues to be quoted at $4, ovens, and some leading dealers refuse to sell at lower figures, it is understood that tonnages were moved during the past week at $3.90. Moreover, it is probable that small lots might be bought for $3.85. This softness has been due in part to the accumulation of fuel in the Connellsville region, and the fact that furnaces have supplies. Though lacking firmness, the market for contract furnace coke shows signs of increased activity and is quoted at $4.25 to $4.50. One furnace interest in this district has closed a contract for the remainder of the year at $4.25, but sellers insist this level is somewhat under the market, claiming it is more nearly represented at $4.35 for this delivery. Fair-sized lots of both nearby shipment and contract tonnages of furnace coke have been sold on a sliding scale fixed on the basic pig iron price, valley, of 6¼: 1 or $4.12 for the former delivery, and 6: 1 or $4.29 for contract tonnages. The spot market, however, may take a sudden upward turn in view of the fact that tomorrow there will be a car supply of only 50 per cent in the Connellsville region. This will be the first time since the armistice was signed that there has been a shortage of cars and it may develop that shipments will be inadequate to supply requirements and will result in higher prices. Foundry interests are showing more concern and specifications against contracts are being made in greater volume. Contract foundry coke appears to be quotable at $5.25 to $5.50, ovens, while the spot market for this grade seems to call for the same price, although it is reported that some sales have been made at $5.25 ovens. According to *The Connellsville Courier*, production of coke in the Connellsville region for the week ended July 19 totaled 164,220 tons as compared with 157,838 tons the previous week.

New Contracts Absorb Increase

Cincinnati, July 28.—The recent increase in the production of furnace coke in the Connellsville district is said to be quite large. However, reports have reached here that some large contracts for 48-hour coke have been placed recently in that field, and the contracts will more than absorb the increase. This is borne out by quotations, a few interests holding out for $4.50, ovens, on contract business. Some spot furnace coke may be had at $4.25, ovens, but no standard brand below this figure. Pocahontas foundry coke is quoted from $7 to $7.50, ovens, but little business is reported.

Refuse Orders for 1920

St. Louis, July 26.—Contracting for coke over the balance of this year continues on a liberal scale. Melters throughout the district and in the West and Southwest are providing for their needs. Prices of all grades are firm. Dealers report they could do a good business in both furnace and foundry grades for the first half of next year, but oven interests refuse to book such orders. Predictions of a shortage of coal and freight cars have caused apprehension among the larger interests of the district, and there is a disposition to accumulate coke. Improvement in demand and prices for lead and slab zinc during the past two or three weeks is expected to be reflected in heavy purchases of fuel by smelters. This outlet has been a weak spot in the coke market many months.

To Export Steel Scrap

Big Tonnage is Sold in East—No. 1 Cast Sells Above Pig Iron at Chicago—$22 Steel Reported at Pittsburgh

FOR COMPLETE SCRAP PRICES SEE PAGE 332

Philadelphia, July 29.—A heavy tonnage of heavy melting steel involving many thousands of tons has been sold for export and eastern scrap interests have taken a prominent part in this. This is the principal development in the market here during the past week. Domestic business in steel scrap is limited, although another sale of 500 to 1000 tons was made at $20 delivered eastern Pennsylvania. Pittsburgh interests are offering $22 delivered for steel, which is equivalent to around $21 delivered eastern Pennsylvania, but no business has resulted. The largest domestic transaction closed here during the week called for 2000 tons of stove plate to a New Jersey melter at $21 delivered. The trend of the market continued higher and a number of the grades have been further marked up as a result of the week's business.

Dealers Keep up Buying

Boston, July 28.—The buying of iron and steel scrap by consumers fell off during the past week and as many sizable lots were thrown on the market it was thought prices would suffer. The opposite condition, however, was actually the case for in several grades prices advanced. Dealers continue to absorb any lots which appear at almost any price. The competition kept up in this way has raised machine shop turnings until in some cases dealers paid $10.50 delivered. No. 1 machinery scrap has sold for $1.10 per 100 pounds. Steel car axles and rerolling rails have advanced. Some inquiries are out but most of these are from New England consumers. A Connecticut concern wants malleable scrap and is willing to pay $21. A Massachusetts foundry is asking for stove plate. It looks as if the steelmakers were purposely holding off their orders in an attempt to bring prices down.

Steel in Good Demand

New York, July 28.—Continued good demand for heavy melting steel is the outstanding feature of the local scrap market. Pittsburgh consumers are still in the market, and eastern buyers also are covering on sizable tonnages. It has been reported that as high as $21, delivered, has been paid for steel for Pittsburgh, and up to $19.50, delivered, for Coatesville, Pa. Nevertheless, the local market on heavy melting steel continues to hold pretty steadily at around $15.50 to $16, f.o.b. New York.

A fairly good demand is also in evidence for other descriptions, including machine shop turnings and stove plate. A large northern New Jersey consumer continues to be a heavy buyer of this latter material, with the result that dealers are offering from $17 to $18, f.o.b. New York, a slightly higher range than last week. All other prices, however, are unchanged, although the tendency is upward.

Scrap Price Trend Upward

Pittsburgh, July 29.—Prices of iron and steel scrap continue buoyant. It is believed that some dealers have good stocks on hand and are holding them for higher prices. Indications are that they believe it will not be long before heavy melting steel will command $25. While this grade still is quoted at $21 to $21.50, it is reported that light tonnages have been sold for as high as $22. Compressed sheets are in fair demand and the prevailing quotation appears to be from $18.50 to $19. Only occasional inquiries come out for billets and bloom crops, low phosphorus, and $24.50 represents the market. Machine shop turnings continue to be quoted at $14.50 to $15. The Pennsylvania railroad has issued a list, asking for bids by Aug. 4, on 21,125 tons of scrap. Among the heaviest lots included in the list are 4000 tons of No. 1 steel rails, 3000 tons of No. 1 heavy melting steel, 1075 tons of No. 1 wheels, 1027 tons of No. 2 railroad wrought and 1026 tons of miscellaneous steel rails.

Valley Mills Buying in Buffalo

Buffalo, July 29.—There is an active demand for heavy melting steel, mills in the valley districts offering as high as $22.50, delivered, for that grade. The freight rate is about $2.36. There is no record of sales at over $20, dealers' yards, but there have been sales on the basis of $22.50, delivered, Youngstown and Buffalo. Local mills are buying limited quantities, and prices received from outside the district are higher than the local consumers want to pay. Dealers do not care to sell except in small amounts, and are holding for better prices. There is a strong demand for cast iron borings, and stove plate is very scarce. A local consumer is offering as high as $22.50 for the latter grade.

Steel Rises Another $1

Cleveland, July 29.—Scrap iron and steel in Cleveland territory continues to reflect strength, and trading is on the increase. A few days ago melters and dealers were deadlocked, the former claiming the latter had boosted prices without reason. Just now melters are more inclined to meet the price ideas of dealers, and while all scrap iron and steel prices are firm some have advanced. This, dealers say, is the answer to the price question. Heavy melting steel, now more than ever the leader of the market, has advanced $1, now being quoted at $21 to $22. Sales are reported at the $22 mark, but most tonnage is moving at $21. In old steel rails, small drop forge flashings and railroad car wheels, the spread has been narrowed by 50 cents, the minimum moving up that much. Large forge flashings, rerolling rails and railroad malleable also have advanced. Demand for practically all grades is strong.

Cast Above Pig Iron

Chicago, July 29.—Great strength marks the situation in iron and steel scrap in this district and some unusual features have presented themselves. No. 1 cast scrap has sold recently in fairly large tonnages at $28 per gross ton, delivered, which is at least 75 cents per ton higher than the delivered price of pig iron. One sale of 1000 tons calls for delivery at any time within the next four months. This seems to be an attempt to discount the future and to buy against an expected rise in pig iron. Rerolling rails are almost unobtainable and have mounted steadily. The market is practically bare of stove plate. An eastern buyer recently combed this district for this grade and was able to obtain only a few carloads at a high price. The reason for this scarcity is that low prices prevailing several weeks ago prevented gathering of country scrap and cut down shipments from that source, from which most stove plate is derived. Large consumers of heavy melting steel and allied grades are expected to come into the market before long as they have not been buying much recently and must replenish their supplies soon. This is one factor in giving the market strength. Railroad offerings are unusually light. The Grand Trunk offers 1000 tons, the Chicago & Western Indiana three carloads and the Lake Erie & Western a blind list. The ordnance department is asking bids on 180 tons of steel bars and 3126 tons of gothic billets.

Consumers Showing Interest

Cincinnati, July 28.—More activity is reported in the scrap iron and steel market. Heavy melting and cast borings have been advanced slightly, and all other grades are firm. The outlook is said to be encouraging and while there is no scramble on the part of consumers to obtain scrap melters seem more concerned as to future requirements. Not much speculative buying is being done, and some concerns predict a growing scarcity of scrap should the melt increase. No scrap steel stored in this vicinity has been offered in the past few days by the ordnance department, although it is understood some material may be expected from this source soon.

Prices Up; Only Dealers Buying

St. Louis, July 26.—The market for scrap iron and steel continues strong, with rather unusual conditions prevailing. Dealers, who are still bullish in their views, are the principal bidders and buyers. They are throwing down material, and many have large piles in their yards from which they are not disposed to sell at present prices. Rerolling rails have been raised from $24 and $24.50 to $28.50 and $29. The leading interest re-

fuses to buy at these prices. Wrought scrap is in strong demand among dealers, but the only user of this grade in the market is bidding $2 under dealers' quotations, and apparently will not go higher. Steel mills are not purchasing much material, but steel grades are advancing in sympathy with the balance of the market. Business with the rolling mills is somewhat improved. There is a scarcity of stove plates and iron axles. Stove manufacturers are operating their plants on a large scale, and the outlook for fall and winter is good. The St. Louis district ordnance office will open bids Aug. 6 on 153 gross tons of billets for 8-inch common steel shells, and on 444 tons of steel ingots, the material being at the plant of the Curtis & Co. Mfg. Co., St. Louis. On Aug. 7 it will open bids on 1524 tons of billets for 8-inch common steel shells, also at the Curtis plant. The office opened bids recently on 4385 tons of gothic billets at the Curtis plant, the highest bid being $22 on 655 tons and $24.15 on 3730 tons. It will take bids Aug. 5 on 382 tons of 9.5-inch steel shell ingots at the American Steel Foundries plant in East St. Louis. On that date it will also sell miscellaneous material.

Little Selling in South

Birmingham, Ala., July 29.—Southern dealers are selling small tonnages of scrap, but these are not sufficient to warrant any changes in quotations. Activity reported in other sections has not affected the southern market. Country scrap is not being bought in, but railroad scrap is plentiful. Other producers are withholding their material, apparently in expectation of receiving higher prices.

Chicago Warehouses Put up Sheet Prices

Chicago, July 29.—An increase of $5 per ton on black and galvanized sheets from warehouse has been announced. No. 28 gage black are now quoted at 5.62c, Chicago, and No. 28 gage galvanized at 6.97c, Chicago. Other grades of sheets and other steel products from warehouse remain unchanged.

July Business Is Less

New York, July 28.—Business for July, according to some local warehouse interests, will not aggregate the volume transacted last month, although they assert buying of some materials, particularly bars and sheets, has involved a fairly good tonnage. The increasing building activity in the east has not as yet resulted in much demand for shapes, although in some instances, the warehouses are laying additional tonnages against possible higher mill prices and an increased demand early in the fall. The demand for plates also is small.

Cotton Tie Market Quiet

Pittsburgh, July 29.—Specifications for cotton ties are being received in fair volume, but orders are small and few, the season being almost closed.

Sheet Orders Are Heavy

Foreign Buying Adds Liberal Tonnage to Active Domestic Demand —Consumption is More General—Operations at 90 Per Cent

Pittsburgh, July 29.—Both domestic and export orders for sheets continue to be placed with mills in this district. Foreign business is being closed with consumers in England and Holland as well as in Japan, China, India, South Africa, South America and the Scandinavian countries. Business placed in Holland, Norway, Denmark and Sweden comes largely from consumers who previously bought from German mills. In the domestic market makers of sheets report that bookings exceed their capacity and deliveries are being made in four to eight weeks, blue annealed sheets being shipped in the shorter period. The class of buyers has become more general, and, in addition to automobile interests now includes enameled and stamping works, implement makers, manchinery manufacturers and others. Both the Ford Motor Co. and the Willys-Overland Co. have closed for heavy requirements into next year in some lines and for the remainder of the year in others.

Valley Mills Keeping Busy

Youngstown, O., July 26.—Demand for sheets is so strong that some of the mills are out of the market for third quarter delivery, while others are not able to promise deliveries in less than from 75 to 90 days. A steady increase in buying since July 1 has given the mills such a backlog that they are refusing orders for prompt delivery. Galvanized and black sheets are most in demand, a comparatively small portion of recent bookings coming from automobile manufacturers.

Strength is Maintained

Chicago, July 29.—Demand for steel sheets contiues strong and most makers have as much on their books as they desire at this time, with buyers insistent for further tonnage. The leading independent in this district is practically sold for the remainder of this year except a small remaining tonnage of black and blue annealed sheets for delivery late in last quarter. Quotations have been withdrawn entirely on galvanized sheets, due to the advanced price of zinc.

Sheet Bars Few

Users Have Difficulty in Filling Needs—Steelmakers Try to Buy

Pittsburgh, July 29.—Because of the heavy demand coming from makers of sheets and tin plate, prediction is being made that a scarcity of sheet bars is likely to develop in the near future. One large producer is said to have withdrawn from the market, except for its regular customers. The market is firm at $42, Pittsburgh. Fair-size tonnages of billets are moving, although open market inquiry is only moderate. While demand for forging billets is considerably less than normal, improvement in this market has developed and the price appears to be well established at $43.50, Pittsburgh, with some makers out of the market. Inquiry for slabs is quiet, due largely to the inactivity of business from carbuilding plants. The Jones & Laughlin Steel Co. has advanced its price for soft wire rods for export and Canada from $52 to $57, Pittsburgh, leaving the domestic price unchanged at the former figure. The increase in the export price is the same as that made by the United States Steel Products Co. Steel production is increasing. The Carnegie Steel Co. last week operated at 98 per cent of ingot capacity.

Rods Sold to England

Philadelphia, July 29.—A feature of the semifinished market in this district the past week was the sale of 4000 tons of wire rods to England. These rods recently were sold by the government from its stocks. Exporters say that at the present wire rod price they are unable to place any export orders with the mills. An eastern consumer wants 1000 tons of forging billets for future needs as this interest believes the price is going higher.

Steelmakers Seek to Buy

Cleveland, July 29.—Sheet bars have become scarce and various producers now are refusing to accept further orders. Some steel producers have been among those who have been inquiring for sheet bars from other makers. One of these interests, short on steel, is a valley sheet and strip producer. Some of the sheet makers who have been obtaining their supplies from large makers affiliated with sheet and tin plate plants have been notified that they cannot expect to receive further supplies and they have been endeavoring to make purchases in other directions. A local inquiry for 250 tons of sheet bars has been current. Sheet bar prices are very firmly maintained. Slab orders still are slow, though there is a little betterment in this movement.

More Activity in Strip Steel

Pittsburgh, July 29.—Improvement is reflected in the market for hot and cold-rolled strip steel. The automobile, building, and hardware trades and jobbers are showing greater interest in connection with the covering of their requirements. Operations of mills now average between 70 and 80 per cent. As soon as repairs are completed output will be increased. While there were reports that recently small sales of hot-rolled strip steel were being made at 3.05c, Pittsburgh, it is said that this quotation has disappeared and the market is firm at 3.30c, Pittsburgh.

Bar Market Is Broader

Railroads Are the Only Laggards—Specifications Unusually Heavy From Manufacturing Trade—Some Talk of Advances

Chicago, July 29.—Producers are booking practically as much soft steel bar business as they can handle, at least as much as they could expect in the most active market with railroad demand absent. This business is coming from manufacturers of tractors, automobiles, agricultural implements and general lines of industry too numerous to mention. Not only are contracts being made, but specifications are unusually heavy, indicating that the steel is actually going into manufacturing projects. The general situation is increasingly satisfactory and most mills are increasing their operation steadily. With railroads restrained from buying, a heavy demand is thus removed from the market. The only change from this condition recently has been contracting for car repairs by carbuilding companies where railroads are not allowed to do their own work.

Hard steel bars rerolled from rails are in fairly strong demand and heavy specifications are being received from agricultural implement manufacturers, who contracted a few weeks ago. One great difficulty in this department is scarcity of rerolling rails and their high price. It is believed an advance on this product will be made shortly.

Bar iron continues firm at 2.62c, Chicago, and business is said to be as strong as is possible without participation by railroads. General manufacturers and builders of wagons are taking considerable material, and the situation is fairly comfortable.

Japan is Big Buyer

New York, July 28.—Export buying of bars has become active. Japanese interests, particularly, are taking good-sized tonnages, which, in conjunction with the brisk domestic buying recently, has resulted in a greatly strengthened tone. In fact, it now is said that bars will be the first of the heavy finished steel products to be advanced. It further appears to be the opinion of some large makers that it will not be long before there is much less margin between prices on bars and plates, than at present.

England Buys Tonnage

Philadelphia, July 29.—Included in recent steel bar business placed in this district was 6000 tons for export to England. Domestic steel bar business continues active so that mill schedules are being maintained. Although several makers have advanced their price to 2.50c Pittsburgh, bar iron still can be had in east at 2.35c Pittsburgh. An eastern shipyard just has placed heavy order for bolts.

Bar Market is Brisk

Pittsburgh, July 29.—Extreme activity characterizes the market for steel bars, and inquiry is heavy, a fair portion of the requirements being for cold drawing plants. Some makers are entirely sold up for the third quarter and are well booked for the last quarter. Practically no business is coming from car-building plants. The recent buying of a leading automobile interest is understood to have included 85,000 tons of alloy and carbon bars, and a large part of the business is said to have come to mills in this district. Considerable export tonnage also has been booked for merchant bars. Demand for concrete reinforcing bars is heavier and specifications for this grade of material are coming in freely, some makers reporting bookings for the next three months at 2.35c, mill. Export business in this line also is being done. Makers of muck bars say business is brisk and that orders are being booked at 4.50c for puddled material made from pig iron.

New Tonnage Keeping Up

Cleveland, July 29.—Activity in steel bars, both on the side of new contracting and in specifications is keeping up and if anything the volume is on the increase. Deliveries are so extending that on any large assortment, new contracts will call forth quarter shipments. Deliveries now range from two to 10 weeks and in a few cases even beyond. Representatives of prominent steel bar makers report that business now is the largest in volume since the armistice. One manufacturer of automobile accessories has been inquiring for 6000 tons of spring steel for this year and has placed a considerable portion of this business at the regular price of 2.60c Pittsburgh. Rerolled bars are stronger and various sales are being made at 2.45c mill. Some producers are quoting higher than this figure. A new addition to the plant of the Cleveland Automobile Co. will require several hundred tons of reinforcing bars.

Bolt Commitments Heavy

Chicago, July 29.—Orders for bolts and nuts on mill books are unusually heavy and some makers are beginning to take account of their obligations to determine if they have oversold on their production for the remainder of the year. New orders are being received in goodly volume and most plants are operating at present up to the limit of their labor supply. Business is coming from all consumers, especially from manufacturers of tractors and automobiles.

Volume Best in Months

Cleveland, July 29.—Makers of nuts, bolts and rivets are enjoying the best business in nine months. Some few orders are being received but specifications against old contracts constitute the main activity. The recent advance has not acted as a deterrent to nuts and bolts and indications point to an early revision upward in rivet prices. Makers of the latter product are operating 100 per cent of capacity with the demand active. One large maker of nuts and bolts is operating day and night shifts. Some foreign business is being received.

Better Demand at Pittsburgh

Pittsburgh, July 29.—Makers of nuts, bolts and rivets in this district report that conditions, both as to inquiries and orders, are better and that prices remain firm at the advances recently established. Continued improvement in the business outlook is predicted and some makers report that they are operating at 100 per cent. Buying is of a general character. Steel mills are placing fair-size orders in connection with work for the upkeep of their plants and dealers are buying heavily. Deliveries are being made in two to three weeks on normal quantities.

English Ferro

Is Sold Below Domestic Metal—Spiegeleisen Price is Firmer

New York, July 28.—English ferromanganese has been sold for delivery into this country at $105, c.i.f. The tonnages involved, however, were so small as to be practically insignificant. In fact, activity in the ferromanganese market has been at a low ebb during the week. One lot of 150 tons of 80 per cent domestic metal was sold at $115, delivered, and some carload business also was transacted at this price. It is regarded probable that if attractive tonnages were offered, domestic makers would quote a price equivalent to that being asked by the English makers.

Somewhat more activity featured spiegeleisen than ferromanganese during the past week. Sales which were reported aggregated fully 1000 tons and probably were in excess of this quantity. The minimum on 18 to 22 per cent spiegeleisen now is $35, furnace. New export inquiries for 1500 to 2000 tons are in the market. It is reported some tonnage has been sold to Belgium, but this is not confirmed. Italy has been inquiring for spiegeleisen and ferromanganese.

The special steel ferroalloys have shown more life the past week than in months. A large number of small inquiries are in the market. A feature is the number of inquiries for a few pounds each of various alloys from steelmakers who evidently are experimenting on new combinations. Considerable talk continues to be heard of English competition at prices below the American market but the amount of business going to overseas sellers is negligible. Some large users of ferrochorome have been figuring on their requirements. One consumer alone wants 500 tons. The market for this alloy is unchanged at 32 cents per pound contained with 4 to 6 per cent carbon. Ferrotungsten is steady at $1.20 to $1.25 per pound contained. Ferrovanadium is stronger and inquiry is improving. Prices are firm at $6.50 to $7 per pound contained.

A number of sales of comparatively small lots of 50 per cent ferrosilicon have been made. The Bethlehem, Allegheny and Brier Hill Steel companies are among the buyers. Al-

though some makers continue to quote $90, most of the current business is at $78 to $80. The market's tone, however, continues to strengthen with the gradual absorption of resale offerings.

Offer Russian Ore

New York, July 28.—Following the recent arrival of a cargo of Caucasion manganese ore which was sold at about $80 per long ton for ore running amout 80 per cent of manganese oxide, importers announce they are now able to quote on regular shipments of this ore. Italy is inquiring for a cargo of 3000 tons of metallurgical manganese ore for shipment to Genoa and New York dealers are figuring on this business. The general market continues quiet at about 60 to 65 cents per unit, c.i.f. Atlantic port, for Brazilian, Indian and Cuban ores analyzing 45 to 50 per cent manganese.

Arranges to Convert Ore

Philadelphia, July 29.—The Midvale Steel & Ordnance Co. instead of buying 5000 tons of ferromanganese for which it recently inquired has placed a contract for the conversion of 8000 tons of Indian manganese ore which it recently bought. E. J. Lavino & Co. will blow in the Lynchburg, Va., furnace on ferromanganese tomorrow. Domestic metal now again can be had at $110 for 80 per cent and some carload business has been entered at this figure. It is learned that only 76 per cent manganese is guaranteed by English makers who are offering at $105 tidewater. American makers have organized committee which recommends 25 per cent add valorem as necessary adequately to protect the domestic ferromanganese industry.

Alloy Market Quiet

Pittsburgh, July 29.—The recent heavy buying movement of ferromanganese has been followed by quietness in the market for alloys. Makers still are quoting 78 to 82 per cent ferromanganese at $115, delivered Pittsburgh but it is altogether likely that tonnages of this grade could be bought for $110, as compared with the level of $105, c.i.f., Atlantic seaboard, for 76 to 80 per cent English ferromanganese. Inquiries for this alloy are limited and involve only small lots. Light inquiry also prevails for spiegeleisen, comparatively little of which is consumed in this district. The market, however, is reported to have a firmer tone, with 18 to 22 per cent spiegeleisen quoted at $32 to $35, furnace. The strike of workers at the Jackson, O., furnaces continues, but there is not much inquiry for bessemer ferrosilicon, their product. The 10 per cent grade is quoted at $49.75, 11 per cent at $53.05, and 12 per cent at $56.35, Ashland, Ky., Jackson and New Straitsville, O.

Expect English Ferro

Chicago, July 29.—Ferromanganese is rather listless at $115, furnace. The impression has gained ground recently that English ferro will be available soon at about $105, seaboard, equivalent to $110 to $115, Chicago. Spiegeleisen is steady and quiet at $35, eastern furnace.

Railroads Buying Plates

Pennsylvania Places 8000 Tons Subject to Official Approval—Reading Receives Bids—Car Tonnages Closed at Chicago

Philadelphia, July 29.—The Pennsylvania railroad has placed orders for 8000 tons of plates subject to the approval of the regional direct of the railroad administration. All quotations received were on basis 2.65c, Pittsburgh, and uncertainty prevails as to what the regional director will say in view of the recent suggestion of Henry B. Spencer of the railroad administration purchasing department that railroads buy only on mill basis. The Pennsylvania railroad requirements call for about 12,000 tons more. It is understood Philadelphia & Reading took bids on a tonnage but said it could not buy on Pittsburgh basis on which mills quoted. Plate business has improved considerably and eastern operations now around 40 per cent.

May Increase Spread

New York, July 28.—In some quarters here it is thought that the spread now existing between the prices of plates and bars will be decreased in the near future. In other words, it is thought that when prices are advanced, bars will be advanced more proportionately than plates. It is reported here that a Buffalo plate maker is offering plates freely in Canada at 2.50c, Pittsburgh.

Plate Buying Increases

Pittsburgh, July 29.—Increased buying of plates is noted and a considerable portion of the tonnage is for oil-tank construction. While orders from domestic shipyards are not large some fair-size tonnages for vessel construction are being placed and export demand for this purpose is being maintained at a good rate. So far as can be learned by careful inquiry sales are being made at the established price of 2.65c, Pittsburgh. Any cutting of prices that may have been made appears to have disappeared. Operations of plate mills are estimated at about 70 per cent of capacity.

Bookings Better in Valley

Youngstown, O., July 26.—Mahoning valley plate mills have a larger volume of business in hand than at any time since shipbuilding was at its height. Light plate mills are taking orders conditional on delivery six to eight weeks hence, and on heavier plates the producers also are acquiring a backlog. Both narrow and wide plates are in demand. The market is firm at 2.65c, Pittsburgh.

Boiler Steel Is in Good Demand

Cleveland, July 26.—Increased demand for boiler plate features the local market. During the past two weeks orders have been coming in sufficient to keep one of the local mills operating at full capacity, with 30 days business ahead. This business is being taken at 2.65c, with 15c extra for flanging. Some demand also is coming out for plates for storage tanks. An order for 5000 tons of light plates and sheets has been placed with a local interest by the Willys-Overland Co.

Situation is Stronger

Chicago, July 29.—Although steel plates have been in less demand than bars and shapes during recent weeks, orders from various sources have given plate mills a better backlog than had been thought and they are in fairly comfortable position. An independent plate maker in the west has sold practically its entire output for the remainder of the year and finds it does not obtain further business on offers of five to six weeks delivery, indicating that other interests are not so well situated. Japanese inquiries for ship plates continue to be disregarded because of insistence on concessions. A lot of about 150 tons for repair work was placed recently in this market for export to Japan. Word has been received here of the intention of the Emergency Fleet Corp. to release further shipbuilding projects on the Pacific coast, which will bring further plate business to Chicago mills.

Tin Plate Demand

Exceptionally Heavy as Bumper Crops are Harvested—Big Export Orders

Pittsburgh, July 29.—Abnormal crops of fruit and vegetables on the Pacific coast and the unusually large run of salmon have resulted in an exceptionally heavy demand for tin plate. Large orders for export shipment also continue to be placed. Some of them run as high, if not higher, than 100,000 boxes and are coming from such markets as Japan, the Scandinavian countries and South America. The Jones & Laughiln Steel Co. is operating 29 out of its 32 mills while the American Sheet & Tin Plate Co. is operating at about 95 per cent of capacity and is making deliveries in about eight to ten weeks. Some makers of tin plate alreadv have begun to report a scarcity of labor.

Withdraw From Market

Buffalo, July 29.—Orders for tin plate have increased to such an extent that mills that have been selling tin mill sizes of black plate have withdrawn from the market and are reserving the balance of their capacity for tinned plate.

To Argue Steel Suit

New York, July 28.—The reargument of the government's suit for the dissolution of the United States Steel Corp. is expected to take place before the United States Supreme Court at Washington early in October. It is expected that R. V. Lindabury, C. A. Severance and D. A. Reed again will appear at that time as attorneys for the corporation.

New Jobs Are Numerous

Miscellaneous Structural Work Continues Good Though July Tonnage is Probably Less Than in June—Fabricating Prices Vary

New York, July 28.—While it is believed that structural business in the East for July will fall below that of the preceding month, fabricators look for a good showing, despite the usual dullness around this season of the year. Furthermore, a still better showing is expected in August, which also is ordinarily quiet. These expectations are based on the tonnages involved in the various miscellaneous projects now under serious consideration and likely to development within the next few weeks, rather than on any individual construction program as might be carried on by the railroads or other governmental departments. The projects now up for attention pertain especially to apartment houses, theaters, office buildings and other miscellaneous structures, and, in the main, do not involve large individual tonnages. Yet the total tonnage involved is large. One of the largest new requirements in sight at this time calls for 6000 to 7000 tons for a dirigible hangar at Lakehurst, N. J. The bureau of yards and docks is expected to issue specifications within the next couple or three days in order that bids may be in by Aug. 6.

While one mill is reported to be operating at around 70 per cent of capacity, the majority of shape mills in the East are running at nearer 50 per cent.

Eastern Mills Fill Up

Philadelphia, July 29.—Structural shape orders with eastern mills have improved to such an extent that two large makers now are operating to capacity. New lettings in this district, however, are still light. The Belmont Iron Works has taken 350 tons for a sugar mill extension in Cuba and 300 tons for a hangar in Texas.

Activity in Structurals

Pittsburgh, July 29.—Some fabricators report that booking appear to have fallen off recently, following the rush of business from the automobile trade. Others report improvement in orders. Inquiries are coming out in somewhat better volume, and call for both domestic and export tonnages. Some fabrociating shops are operating at only moderate capacity, but are increasing the rate. The largest lot of the week was 5000 tons for an extension to the plant of the American Rolling Mill Co., Middletown, O., and this went to the American Bridge Co. A permit has been granted to the American Steel Hoop Co. for the erection of a two-story steel, brick and tile office building in Pittsburgh. A contract will be let soon for a cold-rolled strip steel mill to be built at Ambridge, Pa.

Recent Bids Show Price Trend

Cleveland, July 26.—Bids on two structural jobs in the Cleveland district afford an interesting basis of comparison. The King Bridge Co. submitted a bid of $111.90 a ton for fabrication and erection for the new Cuyahoga county jail, while the only other bidder on this job submitted a figure of $123. The county architect estimated that 2100 tons would be required, but the fabricators bid on an actual requirement of 1700 tons. Bids were submitted on a tonnage basis, and the lowest bid exceeded the architect's estimated by $1.90 a ton, although the total bid for 1700 tons was $41,000 lower than the architect's estimate of $231,000 for 2100 tons. The matter was referred to the county solicitor for an opinion as to whether the contract could be let under the circumstances. It is reported on reliable authority that the contract for 6000 tons for the Hanna building, which was awarded last week to the American Bridge Co., was let on a tonnage basis of $76, delivered. It is estimated that the cost of erection will average $16 a ton for this job. Fabricators in figuring the county jail job allowed, in one case, $25 a ton for erection, and in another, $28. A bid of $90 a ton delivered was submitted by one of the largest fabricators on another job. Structural lettings are not so numerous as a month ago and fabricating shops are still working at about 50 per cent of capacity. Bids are to be opened Aug. 11 on the general contract for the new Cleveland library, and while the exact tonnage has not been announced, it is estimated that it will amount to more than 1000. A 2000-ton award for a local theater was made.

Strikes Deter Building

Chicago, July 29.—With the building trades still locked out in Chicago, new construction has been stopped and projects well under way are suspended, making a large hole in demand for shapes. Activity, therefore, is much less than was the case in June. The largest award recently made in Chicago is 1454 tons to the Bethlehem Steel Co., for the Chicago Tribune. No information is forthcoming as to the character of the building. A number of projects that promised early maturity are held in abeyance because of labor difficulties. Bids are being taken on about 500 tons for trusses in the Drake hotel, Chicago, the structure being mostly reinforced concrete.

CONTRACTS AWARDED

Garage for Stalwood Realty Co., Lennox avenue, New York, 400 tons to Heddon Iron Construction Co.

Factory for Pick Chocolate Co., Brooklyn, 300 tons to Heddon Iron Construction Co.

Y. M. C. A., Bayonne, N. J., 450 to 500 tons, to Heddon Iron Construction Co.

Addition to the plant of the Pittsburgh Valve & Fittings Co., Barberton, O., about 175 tons; to Jones & Laughlin Steel Co.

Machine shop buildings for the Phoenix Iron Works Co., Meadville, Pa., 300 tons; to the Penn Bridge Company.

Machine shop building for Mesta Machine Co., Pittsburgh, 200 tons; to McClintic-Marshall Co.

Extension to plant of American Rolling Mill Co., Middletown, O., 5000 tons; to American Bridge Co.

Tribune building, Chicago, 1454 tons, to Bethlehem Steel Co.

Grain elevator, South Chicago, Northwestern railroad, 298 tons, to Toledo Bridge & Crane Co.

Additions to machine shop for George B. Limbert & Co., East Chicago, Ind., 178 tons, to Midland Structural Steel Co.

Factory for International Shoe Co., Mount Vernon, Ill., 150 tons, to Christopher & Simpson.

Additions to machine shop of Advance-Rumely Co., Laporte, Ind., 100 tons, to American Bridge Co.

Allan theater and office building, Cleveland, 2000 tons, to Fort Pitt Bridge Works.

Building for Globe-Wernicke Co., Cincinnati, 300 tons, to General Iron Works.

Foundry building for Continental Motors Co., Muskegon, Mich. ,150 tons; to Lackawanna Bridge Co.

CONTRACTS PENDING

Bridge for Baltimore & Ohio, 400 tons, bids being asked.

Government warehouse at Curtis Bay, Md., 250 tons, contract pending.

Shop for American Locomotive Works, Schnectady, N. Y., 650 tons, bids being asked.

Government hangar at Lakehurst, N. J., 6000 to 7000 tons, pending, general contracts awarded.

Two bridges for Rutland railway, 190 tons, to independents.

Warehouse in Jersey City, 700 tons, plans changed to reinforced concrete.

Building for the Tiedke Co., Toledo, O., 350 tons, to the Toledo Bridge & Crane Co.

Foundry for the Toledo Machine & Tool Co., Toledo, O., 1300 tons, bids being taken.

Building for Cleveland Tractor Co., Cleveland, 500 tons; bids being taken.

Public library, Cleveland, 1000 tons or more; bids on general contract to be opened Aug. 11.

Buildings for Timken Roller Bearing Co., Columbus, O., tonnage indefinite, bids being taken.

Orders Refused

By Makers of Tubular Goods—Large Canadian Inquiry is Pending

New York, July 28.—Demand for lapweld pipe contiues entirely beyond the capacity of the mills with the result that big tonnages constantly are being refused. One large interest now has an inquiry out for 75 miles of line, gas pipe and casing, and a Canadian interest has an inquiry for 118 miles of line gas pipe and casing. Most makers now are out of the market on buttweld pipe as far as the solicitation of business is concerned. Orders from the merchant trade have been heavy of late, with the result that all that most of the makers now are trying to do is to take care of their customers. The recent advance of the Wheeling Steel & Iron Co. has not been followed by any of the other makers.

Eastern Prices Unchanged

New York, July 28.—Although western makers have advanced their prices $2 a ton, the eastern market on cast iron pipe continues to hold around $52.70, New York, for 6-inch pipe and over and $55.70 for 4-inch. Manufacturers in the East, however, state that prices are stronger at these levels than for some time. Buying at the present time continues to come almost entirely from private sources,

and this business, sellers assert, aggregates a fair volume. Despite a stronger tone, municipalities hold back. At present, there are virtually no inquiries, and public buying is at a minimum. A fair amount of miscellaneous inquiry is coming out from various export houses, but as has been the case all along, there is little buying.

Sold Up on Lapweld Pipe

Pittsburgh, July 29.—Mills making iron and steel lapweld pipe are so well sold up that it is more general for them not to quote, except for regular customers, and deliveries are being made by some mills in five and six months. The National Tube Co. is shipping lapweld pipe in 18 to 20 weeks. Some makers of iron lapweld pipe are sold up to the first of the year and later. Inquiries for this grade continues to come out in good volume, especially from the oil well interests. Some makers have booked practically twice as much business during the past four or five weeks as they can produce in almost two months. It is understood that the Sun Oil Co., Philadelphia, has not closed on its inquiry for 300 miles of 8-inch line pipe. Another inquiry involves 70 miles of 8-inch line pipe. Some consumers, having been unsuccessful in their attempts to buy direct from mills, have turned to the jobbers, but without any degree of satisfaction. The market for buttweld pipe has shown improvement and makers of this grade are booking sizable tonnages. Jobbers are buying freely. Deliveries of buttweld pipe are being made by the leading interest in three to four weeks. Operations of the pipe mills are estimated at about 90 per cent of capacity and they will be greater when repair work being done is completed. The Riverside plant of the National Tube Co., at Benwood, W. Va., will go into operation some time in August.

Labor Shortage Troubles

Chicago, July 29.—Buying of cast iron pipe has given shops so much tonnage that they are operating at the limit of their labor ability but are unable to keep up with demands because they cannot obtain sufficient men to operate at plant capacity. This results in the necessity of shifting men from one pit to another in the endeavor to meet requirements of various sized pipe. The pipe asked by Denver has been divided, the United States Cast Iron Pipe & Foundry Co. taking 1800 tons of 24 and 36-inch, and the Colorado Fuel & Iron Co. 1200 tons of 6 to 20-inch. The United States Cast Iron Pipe & Foundry Co. has taken 400 tons for St. Cloud, Minn., through a contractor. Ashland, Ky., has rejected all bids on 150 tons and is readvertising, for Aug. 18.

All Kinds of Pipe in Demand

Birmingham, Ala., July 29.—Cast iron pipe makers in the South have many specifications in hand or in sight. Makers of sanitary pipe are having a good demand, and one or two may be forced to withdraw from the market, on orders for delivery during the balance of the year.

Car Repair Steel Bought

Builders in Chicago District Close for 16,000 Tons—Some New Car Inquiry Current—Few Rail Purchases—Small Spikes Active

Chicago, July 29.—With railroads unable to buy material for use in their own shops, it appears to be possible for them to contract with carbuilding concerns for considerable repairs on their equipment. As a result, the Ryan Car Co. has bought 11,000 tons of finished steel, including plates, shapes and bars, and the Liberty Car Co., 5000 tons, both orders going to the leading interest. No action has been taken on inquiry for cars for Poland or for Chile, and several inquiries for cars to be used in this country are also pending. An inquiry for 100 to 200 steel dump cars for export to Europe has been put out by Belasco & Co., of New York. The American Car & Foundry Co. has taken an order from the Lehigh Valley Coal Co. for 100 mine cars and from the Shawmut Mining Co., St. Marys, Pa., for 200 wooden mine cars.

No buying of standard steel rails or fastenings is being done at present and inquiry for light rails is unusually quiet.

Small Spikes Sell Freely

Pittsburgh, July 29.—Producers of small spikes are operating at practically 100 per cent of capacity, orders for this business are being placed freely and some makers are almost sold up. Jobbers are covering requirements and are being given deliveries in from six to eight weeks. Except for infrequent and small orders from the railroads, virtually no business is being done in standard spikes. While there is no inquiry for standard rails for domestic railroads, it is understood that there is some activity in the export trade. The market for light sections is firm at 2.45c, Pittsburgh, and inquiries continue to come from foreign buyers, as well as from coal mining interests in this country.

Higher Price

On Wire Quoted by Pittsburgh Maker —Producers are Sold Up

Pittsburgh, July 29.—Action taken by the Youngstown Sheet & Tube Co., and the Cambria Steel Co., in advancing prices of wire products was followed last week by the Pittsburgh Steel Co. The latter announced a straight increase of $2 a ton on wire products of all kinds and 25c a keg on bright and coated nails for domestic business. It also increased export prices for the second time within two weeks, the levels for which are higher than those applying in the domestic market. The export prices, which include Canada, are understood to be the same as the advanced prices quoted by the United States Steel Products Co. The Pittsburgh Steel Co., on domestic business, now is quoting $3.50 on bright nails, $3.10 on coated nails, and $3.10 on plain wire, 3.50c on painted barbed wire, and 4.20c on galvanized barbed wire, Pittsburgh. This company is well sold up on wire products and is accepting no orders unless they are first submitted to the home office. The Jones & Laughlin Steel Co. also sold up on wire products, has not increased prices on nails and drawn wire. The American Steel & Wire Co. continues to quote the old rates, but is taking business only from regular customers.

Advances Not Followed

New York, July 28.—Although most of the independent wire makers have advanced their prices, their example has not been followed by the American Steel & Wire Co. This interest apparently has made no decision which would involve any change in prices in the near future. Due to the large unfilled tonnages on their books, the wire makers are making no effort to book any further business.

Strike Affects Operations

Cleveland, July 29.—Wire producers are so heavily filled with business that they are accepting new orders with great caution. Sales representatives are being required to submit all inquiries to mill headquarters. Inquiry is active. Strike troubles on the Newburgh & South Shore railroad and at the Central furnace group of the American Steel & Wire Co., are interfering with the operations of the Newburgh steel works. Finishing mill operations are being kept up by cold steel from stock. Three of the four Central furnaces are idle. If the trouble continues, steel may be shipped in from outside plants. An inquiry for 600 to 700 tons of wire for Holland has been current locally.

Leading Maker Stands Pat

Chicago, July 29.—Although many manufacturers of wire and wire products have advanced prices recently, the leading interest is holding to the former schedule and has not yet followed its competitors. As a result its position is peculiar and it is being given an unusual volume of inquiry from which to sift out such regular customers as it is willing to give contracts. Under these circumstances it is also limiting the tonnages it will accept.

Hammond Steel Improves

At a cost of approximately $250,000, the Hammond Steel Co., Syracuse, N. Y., which recently increased its capital from $1,000,000 to $1,700,000, will erect plant extensions including a new rolling mill. The building will be 80 x 260 feet, with an addition of 40 x 60 feet. The addition of several electric furnaces of the 12 and 15-ton type is contemplated at this time as well as the erection of a central power plant.

Temporary Check in Export Trade

Big Japanese Buyers Depart—Will Appear Again in Market Next September or October—England Withdraws Prices at Buenos Aires—British Continue to Buy Heavily Here—South American Sales Good

NEW YORK, July 28.—One prominent steel man declares that exports today are normal, whereas another big agency reports that they are above normal. At the present rate of business the United States will export 7,000,000 tons of steel this calendar year, whereas prior to the war America's iron and steel exports amounted to less than 3,500,000 tons. It is confidently believed in the trade that with more stable conditions which should come within the next six months or so, our exports easily should reach 10,000,000 tons during the year 1920. These figures are adding confidence to the previous expectations of exporters that the war would awaken the foreign trade instincts of American producers and be the means of introducing our goods to permanent customers in the markets of the world.

Temporarily, however, there is said to be a slump in both inquiries and orders, but this is due, it is felt, more to the summer period than to any lessening of the actual demands abroad. Slumps such as these occur periodically. It merely means that a flood of inquiries have been cleaned up and the agencies are awaiting the development of further business. The large Japanese buyers, for instance, have left for home and the more important of the Japanese business has for the time being been closed. It is expected that these purchasing interests will come into the market again about September or October.

Japan, however, still is buying wire rods, tin plate and light sheets. It is still about the best market for this country today. Among the recent sales to Japan were 1000 tons of bars, 3000 tons of plates, 500 tons of sheets, and 3000 cases of tin plate. The big Japanese inquiries for shipbuilding material were but partly closed. This business is believed to be temporarily out of the market, and the inquiries will not be repeated again until next fall. Current shipments to Japan are keeping a large fleet of ships busy. One line declared that it is able to send a ship a week into this trade, but were it not for the iron and steel tonnages to be moved two ships a month would be adequate to take care of the business going to the Orient. Among recent sales made in the Orient is one which consists of 1500 tons of foundry iron.

The Chinese boycott of Japanese ships will hurt business with China, it is feared. Merchants are said to be unwilling to send their goods on Japanese boats for fear that the Chinese will refuse to accept delivery. This boycott is particularly vigorous at Shanghai, Chefoo and Canton. China has been buying wire products, nails and light rails. Some new inquiries have come into the market for flat cars and locomotives for the Chinese government. A new Australian inquiry for tin wire has appeared in the market.

Miscellaneous Sales to Latin America

Many of the export companies hold that the Latin-American business is about the best today although the orders from that secion run in extremely small tonnages. The fear of British competition in South America has been largely dissipated. According to a recent report received here the British have withdrawn their prices at Buenos Ayres. American sales made in these markets embrace wire, pipe, tin plate, sheets and bars. The individual orders vary from 50 to 100 tons each. South America also has been purchasing galvanized wire.

The steamship strike interfered greatly with the outward movement of business but that did not cause any stoppage to the inquiries or the orders. At no time was the strike considered so serious as to make exporters disinclined to give c.i.f. quotations to their foreign customers.

English business predominates in European orders. England has been buying iron bars heavily. One house alone has sold 2000 tons. Recent sales of bars to England probably would total 10,000 tons or more. England also has been buying products largely because the prices asked by the English producers are said to be approximately $30 a ton higher than those quoted by the American producers. An order for 2000 tons of wire was closed and some screw stock has been disposed of to the British. English tin plate prices, however, continue lower than those of this country. As a consequence, England dominates the markets of Portugal and Spain.

England and France are believed to be obtaining raw material and semi-finished products from the Saar valley. This is a trend of trade which was common prior to the war. The new source of supply for the British mills, nevertheless, has not stopped all sales of American raw materials to England. An order for billets, to be shipped through a southern port in a cotton ship, has been noted. An inquiry for 10,000 tons of foundry iron, presumably for English account, has appeared in the market. The reputed sale of tram rails to the city of Glasgow is said to have totaled 10,000 tons, although the official confirmation of this sale by the U. S. Steel Products Co. still is lacking. Among the recent English inquiries are noted 500 tons of structural steel and 200 tons of mild steel sheets.

England has been trying to buy coal in this country without much success. It is understood that orders have been placed by Norway, Sweden, Switzerland and other countries through the London market. Due to strikes and the resultant scarcity of coal in England the London agents are striving to keep their trade by buying up stocks in the United States.

French inquiries continue to come in, but there is little optimism regarding them. French wants include nails, wire and sheets. One of the inquiries noted was for 2000 tons of thin black sheets. Italy has come into the market for a considerable quantity of shipbuilding material and these inquiries are now in the process of negotiation. Italy is said to have purchased ferromanganese, spiegeleisen and coke. The coke purchases are a new development as heretofore Italy's fuel wants appear to have been concentrated on coal. Belgium is trying to buy 50,000 tons of foundry coke.

A sale of 5000 tons of shipbuilding material to Holland is noted. There have been some interesting inquiries and sales to Baltic ports which are believed to be intended for Germany. The Germans are said to be obtaining their supplies by purchases made through Holland and the Scandinavian countries. As a matter of fact it is now common gossip that the Germans obtained their supplies of iron and steel in this manner even before the allies lifted the commercial blockade. Germany, as well as Austria and Belgium are in the market for spiegeleisen. Canada is inquiring for 118 miles of line gas pipe and casing.

Mills to Reply in Basing Case

Federal Trade Commission Decides to Receive Complaints Against Pittsburgh Price Base and Asks Steelmakers to Submit Statements by Sept. 1—Will Consolidate Claims From Other Cities With Chicago Hearing

WASHINGTON, July 29.—Decision of the federal trade commission to investigate the trade custom of basing prices at Pittsburgh was announced publicly last Saturday with a letter from Victor Murdock, acting chairman of the commission, to E. H. Gary, president of the American Iron and Steel institute. This action followed receipt on July 22 of the application of the Western Association of Rolled Steel Consumers for issuance of a formal complaint against the United States Steel Corp., its subsidiaries, the Illinois Steel Co. and the Carnegie Steel Co., and three independent producers, the Inland Steel Co., the Interstate Iron & Steel Co. and the Steel & Tube Co. of America, to eliminate Pittsburgh as the basing point on steel products.

Judge Gary was asked, in the letter, to inform the members of the institute of the pending action so that all iron and steel producers and consumers may determine whether they are interested in the question because, as Judge Gary told the commission in a preliminary conference on July 9 and as Mr. Murdock points out in his letter, the point involved is more than merely whether shall Chicago be made a basing point. As was suggested at that conference, it is likely the custom as practiced in other trades, nonferrous metals, foodstuffs, etc., may be taken up at the same time. It was said today the chamber of commerce of the United States may notify other industries of the pending case and call upon them to present their views.

Prior to the filing of the Western association's application, complaint had been made to the commission by the board of trade of Superior, Wis., and by the chamber of commerce of Birmingham. These complaints will be consolidated with that of the association and it is likely other communities through their civic organizations will take part in the case. The commissioners have come to the view expressed by Judge Gary early this month that it will probably be the biggest lawsuit ever heard by the commission, if not in this country, and more far-reaching because of the almost universal application of the trade practice.

Judge Gary is to notify members of the institute so they may state their positions on the question. In the meanwhile the commission has notified the shipping board, the railroad administration, the war department, the navy department, the post office department, the interstate commerce commission, the American Federation of Labor and other departments of the government and other organizations. As was stated in the commission's announcement of its intention to investigate the question of freight equalization, "the nominal respondents are the Steel corporation and the others, but every maker and consumer of steel products is interested in the outcome."

The course being followed is that substantially outlined at the conference here July 9 when, in addition to Judge Gary, John S. Miller, counsel for the Western association, was in attendance. Mr. Murdock's letter to Judge Gary follows:

Violations Are Charged

"An application has been received from the Western Association of Rolled Steel Consumers for the issuance of a complaint by the federal trade commission against the United States Steel Corp. and others which alleges that the practice of selling rolled steel on a Pittsburgh basing point basis is repugnant to the federal trade commission act and to the Clayton act.

"The commission is advising you of this matter in order that you may inform members of your organization so that each may determine if he is interested therein.

"Additional copies of the application will be sent on request to such members of your organization or other parties as may request it.

"It is suggested that you also advise them directly of this matter in order that each may prepare written statemens of his position with regard thereto for submission to this commission. Such statements should be submitted to the commission before Sept. 1, 1919.

"The subsequent procedure in this matter will be as follows: After due opportunity has been given for all interested parties to submit statements to the commission regarding their positions, and other information deemed necessary by the commission has been obtained, public hearings will be held by the commission, which interested parties are invited to attend, in order to determine whether the application should be granted, or other action taken according to the facts so developed.

"The question raised by the applicant may not be the only question involved in this matter and the remedy suggested by the applicant, namely, to make Chicago a basing point may not be the only remedy, or the appropriate remedy, even in the event that the applicant's contention is found to be valid. In other words, the whole question of the practice of having basing points for making rolled steel prices may be involved, as well as the question whether Pittsburgh, or some other place should be the sole basing point, or whether there should be more than one basing point.

"Will you, then, aid the commission's effort to bring notice to all interested parties, by informing your members as above suggested?"

The commission also has noted the following:

"The board of trade of Superior, Wis., has raised the same question with the federal trade commission and several other complaints have been received. The chamber of commerce of Birmingham has notified the commission that it desires to be heard. All these complaints will be consolidated into the single proceeding.

"A copy of the letter of notification has been sent to many government departments including the shipping board, the railroad administration, the post office department, the navy department, the war department, the interstate commerce commission, and others. It will also go through the American Federation of Labor to all central labor unions throughout the country."

Judge Gary's letter to Commissioner Murdock carried the following paragraph explanatory of the original adoption of Pittsburgh base:

"The iron and steel industry in this country really started at Pittsburgh many years ago. That was probably the cheapest point of production, largely because the fuel was there in immediate proximity and the iron ore was brought on the lakes to Conneaut, north of Pittsburgh, and brought by a short railroad to the furnaces and the limestone was in that vicinity. It was the cheapest point for the assembling of the raw materials and consequently the cheapest place for producing iron and steel.

"That being so, of course, iron and steel products which were made were sold at a price f.o.b. mill, which meant f.o.b. Pittsburgh. Then later works were started in other places—Youngstown, not very far from there; Johnstown in the other direction, not very far from Pittsburgh—and the manufactured products were sold then f.o.b. Pittsburgh."

Turning Tide

In Steel Trade Shown by Steel Report —June High Mark

Convincing evidence of the turning of the tide in the iron and steel industry is to be found in the second quarter report of the United States Steel Corp., which shows June with earnings of $12,371,349, the peak point reached during the six months of the current year. Total earnings for the three months' period after federal taxes of $34,331,301 exceeded those for the March quarter by nearly $1,000,000. With the first and second quarter reports now public, a picture of the iron and steel industry's fluctuations during the reconstruction period following the armistice may be seen. This shows that January before complete cancellation of war orders netted earnings of $12,240,167. February dropped to $11,883,027, while the low point for the six months was reached in March when earnings were $9,390,190. The Steel corporation suffered with the rest of the industry during the industrial board price controversy and the resulting trade paralysis. When activity began to appear in the spring the corporation profited because of its diversified output.

It is interesting to note that while during the six months preceding the war ending with June 30, 1914, the company showed a deficit of $11,448,881, the half year of 1919 following the war resulted in a surplus of $10,130,903 after paying dividends and excess profits taxes.

Following the custom inaugurated in its March report the corporation withheld the estimated federal taxes. They were estimated in some quarters at $35,000,000 for that quarter and probably were no less in the June period.

The comparative income account follows:

	1919	1918
April	$11,027,393	$20,644,982
May	10,932,559	21,494,204
June	12,371,349	20,418,205
Total quarter earnings after operating expenses and federal taxes	34,331,301	62,557,391
Deprec. and sinking funds	11,007,195	10,157,908
Net income	23,324,106	52,399,483
Interest and bond premium	5,356,819	5,474,333
Balance	17,967,287	46,925,150
Dividends:		
Preferred	6,304,919	6,304,919
Common	6,353,781	21,602,856
Bal. of surp. for quarter	5,308,587	19,017,375

In an informal review of the trade Chairman E. H. Gary spoke hopefully of the future, although emphasizing the fact that export movement thus far is only moderate. The recent collapse of foreign exchange has proved a disturbing element but that situation, he declared is now in process of correction. He was optimistic regarding general domestic trade conditions applicable to the iron and steel industry.

Receives Mill Contract

The Youngstown Foundry & Machine Co., Youngstown, O., has secured the contract for furnishing the new 18-inch mill to be installed by the Carnegie Steel Co. at its McDonald plant, Youngstown. This contract will take about three months to complete. The Youngstown Foundry & Machine Co. built all the mills that so far have been installed at the McDonald plant.

In addition to this contract, this company recently has secured other large orders, among which are several large shears. Recently this company made shipment to South America of two of its enclosed headstock typ of roll lathes.

More Furnaces in Blast

The Carnegie Steel Co. now is operating 46 of its 59 furnaces, as compared with 40 one week ago. Furnaces of this company which were blown in included one at Farrell, Pa., two at the Edgar Thomson works, two at the Columbus, O., plant, one at New Castle, Pa., and one at Mingo Junction, O., while one furnace at the Edgar Thomson works was blown out for repairs.

The McKinney Steel Co. now is operating all of its four furnaces at Cleveland.

Expect Warehouse Rise

Philadelphia, July 29.—New and higher prices on iron and steel stocks from warehouse are expected to be announced in all districts before the end of the present week, according to information current in this territory.

The Nonferrous Metals

	Copper	Future Straits N. Y.*	‡Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony
July 23	23.50	51.75	5.75	8.00	33.00	9.37½
July 24	23.75	51.75	6.00	8.00	33.00	9.37½
July 25	24.00	52.75	6.00	8.00	33.00	9.50
July 28	23.75	54.00	6.00	7.90	33.00	9.50
July 29	23.75	54.50	6.00	7.75	33.00	9.25

‡American Smelting & Refining Co.'s price.
*July shipment from Singapore, c.i.f. New York.

NEW YORK, July 29.—The nonferrous metal markets have quietd down somewhat following a period of trading, which probably has been more active than any since those of early in the war. Sales of copper, lead and zinc have far exceeded production, preparatory to a season of increased manufacturing consumption to provide for the lack of commodities the world over. Japan has been in the market almost steadily, buying large quantities of all three metals. Purchases of copper for Japanese account last week approximated 2000 tons, bringing her estimated total purchases in recent months to more than 20,000 tons. Prices continued to rise last week, despite the tendency of dealers to take profits in some cases.

Large producers of copper increased their quotation on electrolytic to 23.75c to 24c for July, August and September deliveries, while 24.25c was asked by the only large sellers willing to quote on October. Production of copper now is said to be only about 50 per cent of capacity and in the past three months sales have far exceeded output. Water scarcity in Montana now is proving an added handicap, labor shortage long having held up output.

The zinc market softened somewhat after it reached the 8-cent level a few weeks ago. This was due principally to offerings by dealers, producers showing no great inclination to press sales, especially of futures. The price of ore has advanced to around $55 a ton, or to a point at which slab zinc cannot be smelted at a profit at 8c. Without such an ore price supplies of ore it is thought would fall short, so the position of the zinc market is considered comparatively strong. High grade zinc is quoted 8.87½c, New York.

The lead market advanced sharply last week, the leading producer increasing its price $5 a ton more on Thursday to 6c, New York, 5.75c, East St. Louis basis. A large amount of buying of lead was done in July. The lead situation is regarded as particularly strong. There is some anxiety over labor at the smelters and the margin between demand and supplies is small as it is. A shutdown of a smelter or so would quickly be reflected in the market. Japan and Canada have been inquiring for lead.

The tin market has advanced the past week, due to sharp rise at London and Singapore. The supply of spot tin at London is small. On sales of 50 tons Monday at London the market advanced £8. July shipment Straits advanced to 54c, c.i.f. New York; August shipment, 53.50c; July shipment, Lamb & Flagg, from England, 54c; early August shipment Straits, from England, 54.50c. There is not an oversupply of tin in this country, as indicated by the holding of the spot tin price at 69c to 70c, while even such prices fail to tempt consumers holding supplies to resell, although they could cover with tin for delivery a few months from now at almost 20c a pound lower.

The antimony market has been very strong, due to sales for shipment from here to Copenhagen and Rotterdam, for German account. About 500 tons have been sold and large inquiries remain unfilled.

High Achievement in Australia

Marine Construction and Engineering Works at Castlemaine, Australia Presents Interesting Features — Country Awakening to Manufacturing Possibilities—American Machinery Used—Government Work Handled

BY THOMAS J. SWAIN
(Special Correspondence to The Iron Trade Review)

FOUNDED in 1874, just after the great gold rush to Forest Creek, now Castlemaine, Australia, the engineering works of Thompson & Co., has grown steadily until it now generally is conceded to be the largest works of its kind south of the equator. Australians point with pride to this enterprise as proof of their claim that in engineering skill, as in many other directions, they can hold their own in competition with the best in the world. Certainly there is no engineering firm in this quarter of the globe so widely known and so representative of modern thought and practice.

The company manufactures mining and metallurgical equipment, steam engines, covering the whole field of reciprocating types up to units of 3000 horsepower, air compressors and blowing engines, condensers, steam boilers, pumping engines, dredging plants and locomotives. A large proportion of the plant's resources are devoted to federal and state government work, and to production for the Australian navy.

War Brought an Awakening

In the development of the Thompson works can be observed the awakening of Australia to its own possibilities in the field of engineering and manufacturing. Until the war fanned the latent spark of industry Australia overlooked many opportunities, and production in many lines suffered from the tendency to look elsewhere in the world for finished products. Australians now realize that this blighting influence was the result of unwise prejudice and are more inclined to appreciate manufacturing ability in this country.

System, courage and enterprise have combined to make the Thompson works a model for Australian manufacturers. While the plant is among the oldest in the country the equipment is of the most modern type, and methods adopted are similar in many respects to those in use in the largest British and American manufacturing establishments. The firm originated through the activities of David and James S. Thompson, who did well at mining and then launched out as contractors for erecting mining plants. The original works, employing six hands and occupying less than a quarter of an acre of ground, has increased until it now employs about 600 and covers 8¼ acres.

After the death of the late David



These shops at Castlemaine are considered a model for Australian engineering works.

Railway tire, automatic machine and engine repair shops of Thompson & Co.

Thompson Sr., the business was carried on by his widow and brother, with David Thompson Jr. as director of technical operations. In 1913 the present company was formed to take up the manufacture of locomotives. Many of the men holding important positions now originally were apprentices in the engineering shop; likewise many other men in other successful plants learned their work here. When the new company was formed much equipment was purchased for the construction of locomotives and tenders for the Victorian government and today this work is an important department of the company's enterprise.

Entering the works one observes a modern two-story office building. Then the visitor passes through the shop used for the construction of railway switch points and crossings, for which the firm has large contracts. The rail-planing and machinery department is equipped with nine planing machines, shapers, cold saws, forges and bending apparatus. To curtail the handling expense of rails this department is equipped with several motor-driven back saws. Trucks bring in new material to the traveling cranes. One of these cranes can move a 15-ton section to another department in a few minutes.

Steam is supplied by the power plant at a pressure of 150 pounds to two independent sets of triple-expansion, high-speed, enclosed-type engines, each of 300 horsepower, coupled to two 250-kilowatt, 230-volt direct-current generators.

Equipment in the testing shop is sufficient to test steam engines, generators up to 500-kilowatt capacity, and pumps with a capacity up to 10,000 gallons per minute. The general machine shop is equipped with up-to-date machines, such as six horizontal boring and turning mills, and one 6-foot vertical boring and turning mill. A special machine has been fitted with a milling and gear-cutting attachment and is capable of cutting the teeth in spur wheels up to 20 feet in diameter. The equipment also includes vertical and horizontal milling machines, high-speed lathes and grinding and slotting machines.

The engineers' department has a 7-foot Hendy-Norton toolmakers' lathe, a Cincinnati milling machine and universal grinder, an integral grinder, and a Gisholt tool grinder.

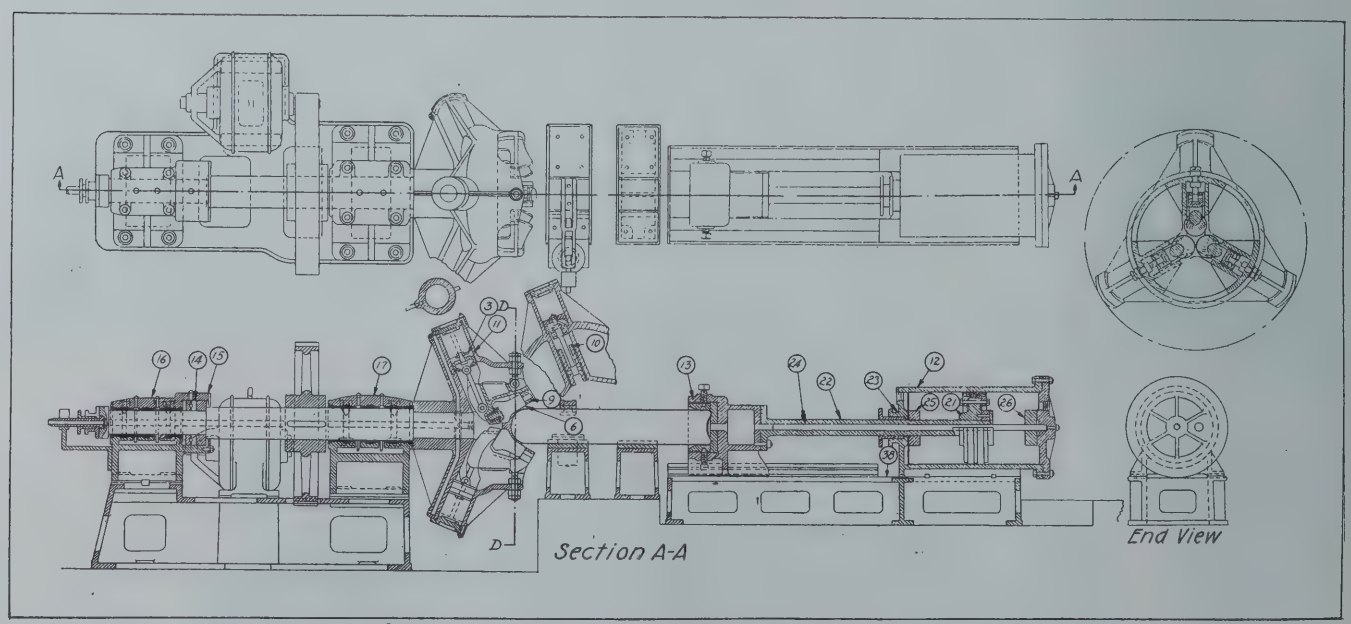
Rapid Forming of Steel Tank Noses

FORMING various shapes of noses on steel cylinders, tubes and tanks suitable for transporting explosive gases and liquids, has been a comparatively expensive process, contrasted with the manufacture of the article proper. This is due to the many operations that have to be performed. In order to facilitate production, Walter Ferrier, general superintendent of the Elyria Iron & Steel Co., Elyria, O., and Cleveland, conceived the plan of spinning the work while applied against three rolls, 120 degrees apart.

The machine is shown in the accompanying illustration. It operates the rolls on the surface of the partly formed nose so that by skin friction the top surface of the wall will not be elongated or pulled relative to the inside surface, but rather form the nose. In this way, the tank will neither increase or decrease in length and the area of any transverse cross section of the nose will be equal to that of the tank or tube itself. This gives sufficient metal at the neck to permit of drilling and tapping out.

These results are obtained by pivoting the roll containers on one end and operating the other end pneumatically by the direct expansion process. Three air cylinders are cast in one piece with the housing 120 degrees equidistant apart and at equal angles with center lines converging at the same point in the center. When the rolls, *6*, are closed or in the position shown in the illustration they make an angle of 30 degrees with the horizontal and are always acting in planes radially equidistant apart. Their tendency is to always approach the horizontal or open up by virtue of the centrifugal force induced by the revolving housing. This force is counteracted, of course, by the air pressure in the cylinders immediately upon application. This housing, with its nest of rolls, is revolved by means of a hollow shaft at about 130 revolutions per minute, driven by a 10 horsepower motor through gears.

A cored hole through the shaft is provided to admit the air by means of a stationary gland connection at



MACHINE EQUIPPED WITH PNEUMATICALLY OPERATED ROLLS FOR SPINNING THE ENDS OF HEAVY STEEL TANKS

the outer end to the three pneumatic cylinders, *3*, operating the rolls. The air ports leading from the annular groove in the hub and the three radial holes emanating from the center core of the shaft are illustrated. The rolls are equipped with roller bearings, *9*, and brass wearing plates on the roll containers, *10*, as shown in section *DD*. All pneumatic pistons have leather cupped packing rings, *11*.

The tank is forced against the action of the rolls by means of a high pressure pneumatic cylinder, *12*, through the medium of a sliding chuck, *13*. This thrust is counteracted by means of a ball thrust bearing, *14*, and with the gasket, *15*, in place forms an oil reservoir for proper lubrication.

A sliding chuck is directly connected to the main piston, *21*, with a hollow steel rod, *22*, flanged on the chuck end, and sliding through a packed gland, *23*. This piston rod slides back and forth over a smaller stationary push-out rod, *24*. The liners, *25* and *26*, are for adjusting the stroke to a minimum to avoid the waste of air unnecessarily. A liner is provided in the housing roll cylinders to govern the length of stroke to accommodate the small diameter of neck required. The main cylinder, *12*, being double acting, is controlled by means of a 4-way valve, and the air inlet through the main shaft to the roller cylinders is controlled by a 3-way air valve since they are only single acting. The sliding chuck, *13*, is mounted on a common bed plate, *38*, with the main cylinder, *12*, to insure alignment. The main air cylinder, *12*, is also doweled on its bed plate, *38*, by means of a key which can be shifted forward to a second keyway placed to suit the best stroke for a given piece of work.

With the rolling machine described, one tank can be nosed in one heat. This is partly due to the effect of the action of the rolls on the work. The time required is said to be less than one minute. One man can operate the whole controlling mechanism which is simple, one 4-way valve, two 3-way valves and one motor controller, which does not have to be operated for each tank, but only for starting and stopping the machine. When running at full capacity the machine requires an air supply of about 10 cubic feet per minute at a pressure of 100 to 120 pounds per square inch.

Book Review

Storage, by H. B. Twyford, Otis Elevator Co.; cloth, 200 pp., 6 x 9 inches; published by D. Van Nostrand Co., New York; furnished by THE IRON TRADE REVIEW.

Storing of raw material and manufactured articles forms a line of economic endeavor which has not been appreciated to its fullest extent. Lack of proper storing constitutes a handicap to any business, and more especially to a manufacturing enterprise. Last winter's transportation difficulties focused attention upon the danger of limited capacity for storing. Post-armistice cancellations emphasized the folly of unlimited hoarding of supplies and manufactured articles. These two extreme instances serve to demonstrate the problem as one worthy of study by the executive. The first portion of this book is devoted to a discussion of the economic aspects of the storage problem. Stored material is considered as a source of wealth, capable of appreciation in value only through a raise in price; but subject to loss through storing cost, and depreciation factors. Details relating to the best modern storage practice occupy the remaining portions of the book. Emphasis is placed upon the correct description, records and inventory as essential to economical storing. Location, equipment and storeroom appliances as factors in decreasing cost occupy a number of chapters which are well illustrated from photographs. Inspection, receiving and delivery are discussed. Ledger card and memoranda forms are suggested for these details of storing. The author handles the entire question as a problem in business procedure and his discussion is in the character of a summation of modern experience.

German Industrial Plans

German manufacturing companies are losing no time in converting munition works into factories for the manufacture of machinery for industrial use. The Westphalia & Anhalt Explosives Co. has sold the Adolph Bruckmann, Chemische Fabrik Oscherleben, which it purchased only a year ago, to the firm of Meyer & Riemann Chemische Fabrik & Co. at Linden-Hannover, and is reorganizing its factories, with headquarters at Magdeburg.

Large Locomotive Requires Much Steel

Baron Shimpei Goto, former president of the Manchurian and Imperial government railways, former minister of home affairs and later minister of foreign affairs of Japan, and who is now devoting considerable effort to clearing away American misunderstanding with respect to Japan, recently visited the Schenectady plant of the American Locomotive Co. The accompanying illustration shows Baron Goto's party, with officials of the company, beside one of the huge locomotives built lately for the railroad administration. This locomotive is the heaviest standardized unit of the Mallet type. Its construction including the tender required 64 tons of plates, 4¼ tons of shapes, 64 tons of bars and forgings, 20 tons of tubes, 84 tons of steel castings and 4 tons of springs.



370-TON LOCOMOTIVE BUILT FOR THE RAILROAD ADMINISTRATION

Imperfect Steel, or Heat Treating?

Relation Between Defects in Manufacture and Subsequent Treatment of Steel is Receiving Co-operative Attention — Sources of Trouble in Both Producers' and Consumers' Plants are Pointed Out

BY A. F. MacFARLAND

THE relation between steel-mill practices and heat treatment of fabricated steel parts is such a broad subject that it is impossible, in a paper of this nature, to deal with it in a thoroughly comprehensive and exhaustive manner. It is hoped, however, that certain lines of profitable and interesting investigation may be suggested that will help to solve many difficulties.

Arguments between steel mills and the metal working industries are continually occurring as to which party is responsible for the failure of steel parts. The question arises as to whether the trouble was caused by steel of inferior quality or by improper heat treating. The trend at present is toward co-operation of the producer and consumer to work out their problems on a mutually advantageous basis. Steel mill men visit consumers' plants to familiarize themselves with requirements their steels must meet. Metal-working industries send their metallurgists to the mills to study the processes of steel manufacture and rely upon their advice to a great extent as to the best sources of steel supply. The days of trade secrets are slowly but surely passing, and an "open door" policy is being adopted by the more progressive concerns. This trend should be encouraged.

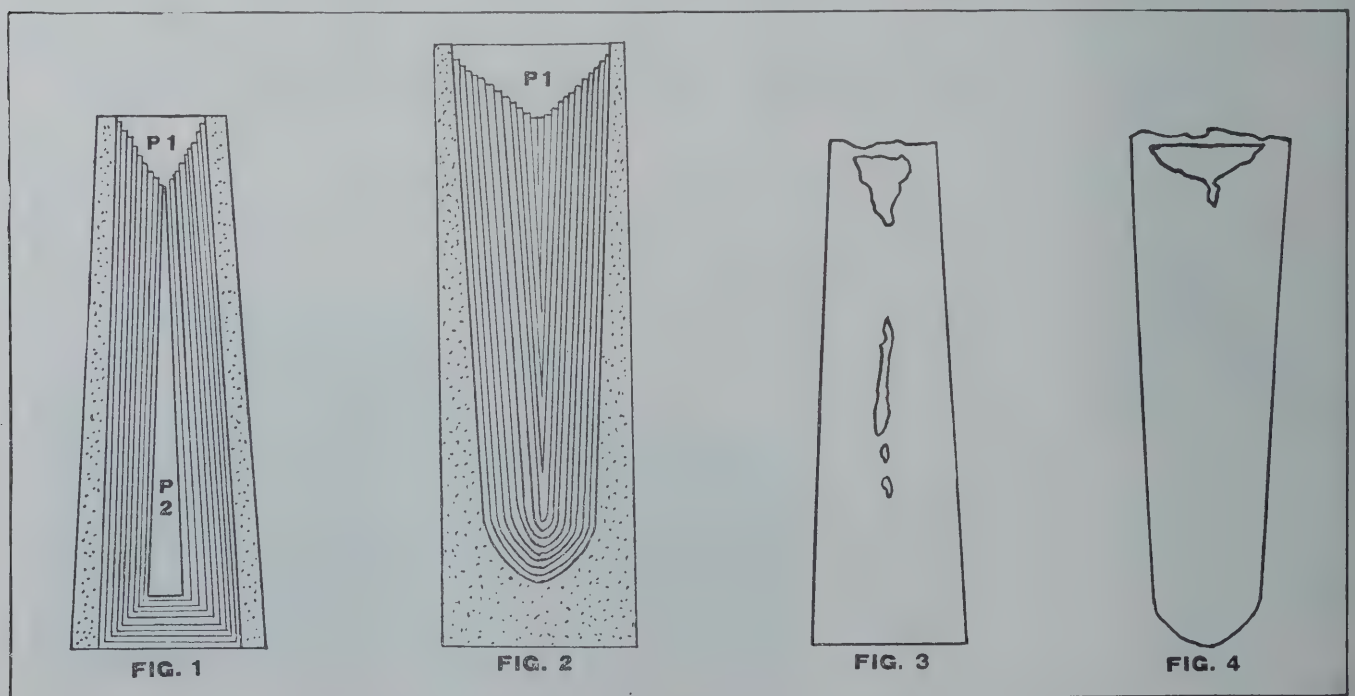
The heat treatment of steel may be considered as beginning with the melting operation at the producer's plant and as including all the subsequent heat applications. Keeping this definition in mind, it will be readily understood even by those having only a fundamental knowledge of steel manufacture what tremendous influence mill practice may exert upon the result obtained in heat-treating products of the metal-working industries.

Controlling Factors in Heat Treating

In a broad analysis, time, temperature and concentration of elements involved are the controlling factors of all heat treating. Consider what means are utilized in commercial practice to control these factors. Temperature, for example, leads to a consideration of the method of heat generation, its proper application and suitability of the method for attaining the degree of temperature required. In the bessemer converter, heat is generated by chemical reaction in the metal. Open-hearth furnaces are fired with oil, gas or tar, the hot products of combustion coming into direct contact with the bath. Crucible furnaces are heated by the combustion of oil, gas or coke, and the products of combustion do not come in contact with the steel.

The object in calling attention to the differences in methods of generating and applying heat is to raise the question as to what affect they have, if any, one the intermolecular structure of the steel produced that will influence its properties during the subsequent operations. To be more definite, what advantage has the heat of the crucible furnace, whose temperature exceeds the melting point of the steel by only a working margin, over the more intense heat of the bessemer process? What influence does the superheated steel directly under the electrodes in the electric furnace exert upon the finished product? A great amount of scientific

From a paper presented at a recent meeting of the Cleveland chapter of the American Steel Treaters' society. The author, A. F. MacFarland, is a metallurgist with the Vanadium-Alloys Steel Co., Latrobe, Pa.



FIGS. 1, 2, 3 AND 4—HOW A PIPE IN A STEEL INGOT IS CAUSED AND HOW IT MAY BE MINIMIZED BY USING THE PROPER TYPE OF MOLD

research along these lines is necessary to provide reliable answers to these questions.

Many consumers have experienced trouble due to "dirty" steel. There are many causes for this difficulty and most of them can be traced to the melting department, although the rolling mill has been at fault frequently. Careless handling and working of heats, together with a lack of appreciation of the deleterious effects of nonmetallic inclusions may be said to be the usual causes of dirt in steel. Dirt, meant to include everything that is not metal, comes from slag, improperly prepared tapping holes and spouts, ladles, gases, aluminum additions to the ladle, etc.

The first commercial electric furnaces for making steel were operated in much the same manner as open-hearth furnaces, so far as refining, tapping, etc., were concerned. The furnaces were, and are still, equipped with a tapping spout, over which metal and slag were poured into a ladle. Many operators failed to consider that open-hearth furnaces have their tapping hole below the slag line, and that on tapping, clean metal is obtained, the slag following the steel, flowing into the ladle last, and acting as a blanket to the metal below, keeping it hot and preventing skulls.

Later Developments of Tap Holes

After serious troubles were experienced by some companies, an open-hearth melter operating an electric furnace, bricked up the tap-out door on his furnace, leaving a hollow tile or sleeve brick for the metal to flow out. This was filled with dolomite and the furnace tilted when the heat was ready. The pressure of the metal behind the dolomite stopper dislodged it and a clean tap-out was obtained. Improvements have been made upon this scheme for holding the slag back and in one device that has been found satisfactory the hollow tile through which the hot metal is to pass is stuffed with waste, holding the metal and slag back until the spout is full and then burning out. A further advantage is provided by a visible spout enabling the man tilting the furnace to gage the "head" of the metal. In this manner a perfectly clean tap can be obtained if the furnace is handled carefully.

Clean brick-lined ladles are more conducive to clean steel than ladles lined with ganister or brick with coating of fireclay. Also, holding hot steel in the ladle to allow the gaseous and other impurities to rise to the surface is another point that is often neglected and is important in obtaining clean metal. All precautions of this nature, however, are superfluous unless the steel has been properly deoxidized in the furnace.

Much of the prejudice against electric steel that existed only a short time ago was probably due in many cases to dirt. When electric steel failed the consumer blamed the process. War activities did much to overcome this prejudice. Many of our best gun steels, high-speed tool steels, and other high-grade products have been produced successfully in the electric furnace.

Detecting Impurities in Steel

How can impurities in steel be detected? Microscopic examination has proven to be extremely valuable in this matter, but, like all of our methods of testing it has serious handicaps. A relatively large number of samples from each heat should be examined before condemning the steel. This requires time and sometimes the production department will not wait. On the other hand, the small consumer has no facilities for this kind of testing and must rely to a great extent upon the steel mills to supply him with high-grade material.

Steel used for wearing parts, such as ball bearings, rapidly goes to pieces unless it is dense and free from impurities. Tool steel gives poor service if it is not pure and often the tool hardener gets the blame unjustly. Dirt in gun steel causes rapid erosion of the bore, and, consequently, shortens the life of the gun. When any steel to be heat treated contains occluded slag and gas it is liable to check or crack when it is quenched.

Steelmakers have been reluctant to admit that impurities are an almost unavoidable component of all commercial steels, but it is believed that the problem should be faced squarely with an earnest endeavor toward improvement rather than by trying to camouflage its true nature. Dirt in steel exerts a far more important influence upon physical properties of the steel than is commonly recognized.

The passage of steel from a liquid to a solid state in actual practice presents some of the knottiest problems steel mills have to deal with. How to make good ingots is as much of an art as it is a science. Besides the inherited influence from the melting and refining process, the temperature of teeming, methods of casting, and the design and proper use of ingot molds have a direct bearing upon the soundness of the ingot and its suitability for subsequent forging.

Perhaps one of the best-known sources of trouble in consumer's heat-treating departments is the cavity at the top of the ingot commonly called pipe. Some of the modern alloy steels weld with difficulty, but even if the weld is complete the central part of the rolled or forged bar will not be the same as it would had there been no pipe. Steel exhibiting a hard center often have been encountered and have given trouble. Abnormal hardness may be due directly to segregation and indirectly to pipe.

The shape and general design of ingot molds have a great deal to do with the piped steel. Figs. 1 and 2 illustrate two types of molds in general use. It will be assumed both molds are filled with molten steel. As the steel cools and freezes it shrinks, the metal nearest the wall of the mold freezing first. The continuance of this freezing and shrinking may be illustrated by the parallel line shown in the illustrations. In Fig. 5 the primary pipe P_1 will be completely formed, theoretically, and frozen at the bottom of the cavity before the metal in the area P_2 has solidified. This metal in turn will form a cavity on cooling which is known as the secondary pipe. In Fig. 6 the pipe is shown in the upper portion of the ingot, as the steel at the top in this type of mold is the last to freeze.

Other Important Factors

Figs. 3 and 4 illustrate further the advantages derived by the use of the "big and up" tapered mold. The pouring or teeming temperature of molten steel, together with its rate of flow into the mold, however, are more important considerations than the shape of the mold in making sound ingots.

The examination of split and broken ingots is instructive. It may reveal the bad effects of casting steel at a temperature too high or too low. Scorched ingots are found most often in the tool-steel mills, perhaps on account of the small size of the ingots cast. It has been found that by casting slowly enough, or by increasing the size of the mold, retarding the rate of cooling, the scorched effect may be eliminated irrespective of how high the temperature of casting may be. Scorched ingots are fragile and often cause much trouble in cogging, forming cracks on the corners of the bar which are caused by weakness due to the well-developed crystal line structure characteristic of scorched ingots.

Many tons of electric furnace steel

billets have been scrapped because of cracks that developed in the cogging operation. There is little doubt that much of this loss was occasioned by the excessive temperature of the steel at the time of casting. In the open-hearth and crucible process the margin of temperature attainable above that necessary to get the steel out of the furnace and into the molds is probably not more than 100 degrees Cent.

Cold cast ingots exhibit badly pitted surfaces which must be chipped and ground smooth before working. Such surfaces cause troublesome seams and cracks in the finished bar. Also, cold cast ingots often exhibit blowholes and segregations. The bottom portion of a cold cast ingot is usually lower in carbon content than the remainder of the ingot. This is due to the formation of individual crystals and crystal groups of more pure iron in the molten steel, which sink to the bottom due to their greater weight.

Blowholes in finished steel parts are a never-ending source of aggravation to consumers of steel and their heat-treating departments. A blowhole causes checking and warping and many other troubles. Their origin may be traced to a variety of sources, as there is no one factor responsible for all blowholes.

Steel may be thoroughly deoxidized in the furnace, but, when it is poured into the ladle or teemed into molds it reacts energetically with the oxygen of the atmosphere through which it passes. Therefore, the stream of metal should be kept solid, and minimum splashing should occur in order to keep the surface exposed to the atmosphere as small as possible. Oxygen acting with steel forms iron oxide which in turn reacts with carbon in the steel, liberating gas. Some of this gas is trapped and forms blowholes as the steel rapidly solidifies in the molds. Rusty molds also cause blowholes by means of a similar reaction.

Split molds offer many advantages over solid molds for inspection and cleaning and are being adopted where size and weight permit of their economical use.

The formation of blowholes by the action of iron oxide and carbon in steel is usually accompanied by troublesome ferrite segregations. Blowholes may be closed up during cogging and rolling but the ferrite segregations remain to mark the places where blowholes existed. Ferrite segregations are spots of carbonless iron, representing soft, weak areas in the steel. They are more easily identified in the higher carbon steels on account of the correspondingly less amount of free ferrite present. If steel, in casting, splashes on the side of the mold above the level of the steel, it immediately solidifies and oxidizes, causing ferrite segregations when the mold is filled.

Minor surface defects in bars of finished material cause no end of trouble in hardening, tempering and annealing operations. "Hair seams," not visible to the naked eye, often pass inspection in the mill and get to the consumer who does not detect them until the machined parts reach his heat-treating department. Seams are usually caused by bad ingot surfaces, blowholes just below the surface of the ingot, insufficient chipping and grinding, and dirt from the hearth of the heating furnace sticking to the surface of the billet. Careful inspection together with plenty of chipping and grinding will eliminate most of these difficulties.

In the rolling mill, faults having a little different origin than seams, but often appearing as such, may be developed, such as roaks, overfills, laps, etc. A roak is caused by rolling scale into depressions of a billet. This scale causes decarbonization of the surrounding metal giving rise to defective areas which manifest themselves as soft spots, checks or cracks in the finished parts.

The degree of reduction from the ingot to the billet and from billet to bar to give maximum physical properties is another influencing factor of importance. There is no rule in general usage for percentage reduction as it depends to some extent upon the chemical analysis and properties of the steel being worked. In all cases, however, the ingot should be worked sufficiently to obliterate all traces of ingot structure. When ingot structure is inherited by the finished bar it is known as "ingotism."

Heating temperatures, soaking periods, and finishing temperatures should be under careful control in forging and rolling steel in order to impart as near the desired physical properties to the finished steel as is practicable without resorting to further heat treatment. Tool steels require more careful handling than the ordinary grades, and it has been found advantageous to anneal the ingot before placing it in the heating furnace preliminary to cogging down.

Sinter Gains On Ignition

Dwight E. Woodbridge, mining engineer, Duluth, Minn., who has been active in the development of eastern Mesabi magnetite ores, calls attention to a recent report in THE IRON TRADE REVIEW of an analysis of eastern Mesabi sinter showing a loss of 1.83 per cent by ignition. Mr. Woodbridge says that the actual analysis shows a gain on ignition of 1.83 per cent, instead of a loss, due to the oxidation of magnetite into hematite. While the ore originally is a magnetite, the sintering process changes a slightly varying but still large proportion of it into a hematite. Any heat treatment not in a reducing atmosphere is said to have the same effect, the result being a gain on ignition rather than a loss, as in the case of hematites containing volatiles.

Recovering Aluminum from a Norway Substitute

Bauxite, the usual source of aluminum, is not found in Norway, but labradorite, a form of felspar, containing 30 per cent of aluminum oxide exists in large quantities.

It dissolves readily in weak nitric acid to nitrate of aluminum containing small quantities of nitrate of lime and nitrate of soda. This solution is evaporated to dryness and the salts heated to a definite temperature at which they split into oxide of aluminum or basic hydroxide of aluminum and nitric acid. The latter is recovered in a concentrated form.

The Air Nitrate Cos. have large quantities of weak nitric acid, which they concentrate at considerable expense, and one has entered into an agreement with a company working the labradorite deposits for the double purpose of acid concentration and production of oxide of aluminum.

The small quantities of nitrate of lime and nitrate of soda are easily separated, and have a commercial value as chemical manures. The oxide of aluminum is treated in the electric furnace in the same way as oxide from bauxite. The company has secured all the most profitable deposits in Norway at a low price without competition.—*Teknisk Ukeblad.*

Suggests Cost Keeping

To assist owners of small metal mines to keep accurate cost records, the United States bureau of mines, department of the interior, has published a 46-page pamphlet compiled by J. C. Pickering. This pamphlet, known as technical paper No. 223, offers a number of suggestions and illustrates them with reproductions of many cost forms, some of which are now in use in several mines. Much stress is laid on the necessity for properly systematizing accounts and costs during the development and equipment stages of mining properties.

Welds Sternpost on Transport

Repairs Large Steel Casting on U.S.S. "Northern Pacific" without Removing it from Position

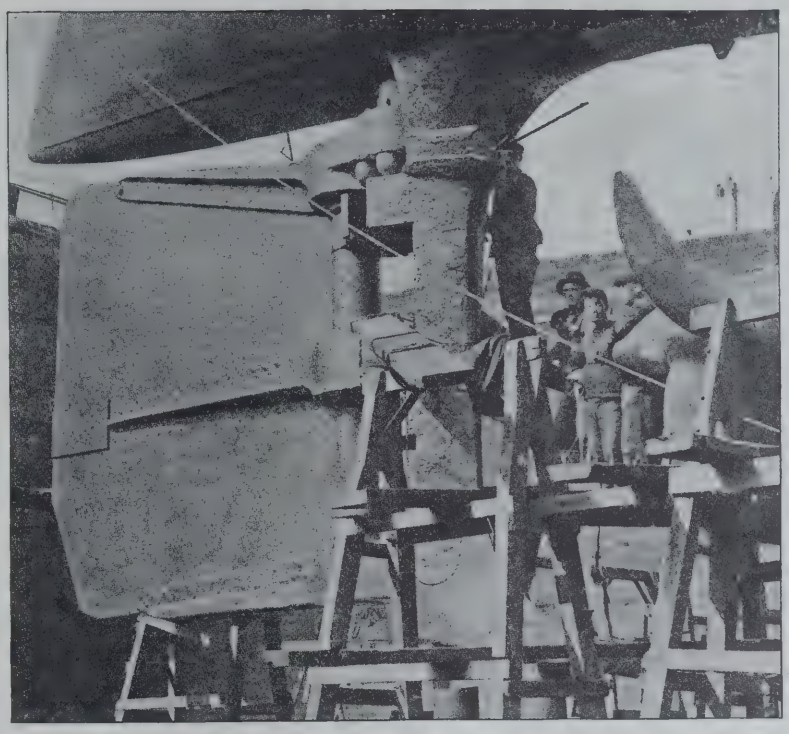


FIG. 1—VIEW OF COMPLETED WELD WITH THE RUDDER SHIPPED AND THE VESSEL PRACTICALLY READY FOR FLOATING

READERS of this article will recall the grounding of the United States army transport NORTHERN PACIFIC off Fire Island, Long Island, N. Y., on Jan. 2, 1919. It will be remembered that the 3000 passengers were rescued with difficulty and that not until two weeks after the mishap was a fleet of tugboats able to ease the steamship off the sand shoal and tow it into drydock at New York.

Included in the damage sustained by the ship was a crack in the cast steel sternpost just above the uppermost gudgeon. The cross section of the break formed a rough triangle, each side of which was about 2 feet in length. At the point of break the casting is hollow, and has walls about 3 inches in thickness.

It was decided to repair the sternpost by means of a thermit weld. First it was necessary to construct a substantial scaffolding, to provide a steady support for a mold box. This scaffolding consisted of a 16 x 16-foot wooden platform erected about 20 feet above the floor of the drydock. The next step was to cut out a 3-inch gap at the break of the sternpost with an oxyacetylene torch. Careful measurements had indicated that the two parts already had separated a sufficient amount to make up for the contraction of the weld as closely as that contraction could be estimated in advance. A view of the sternpost, after the fracture had been cut out, is shown in Fig. 2.

In order to reach the hollow interior of the casting for the purpose of supplying wax for the inside part of the pattern and for building up the inside of the mold, it was necessary to cut out a section of the ship's plate with a cutting torch. This enabled the workmen to haul wax, tools and molding materials up through this hole by means of ropes and pails, thus avoiding the inconvenience of having to carry them down the series of hatchways inside the ship. A pipe connecting the inside and outside workers served as a useful speaking tube. After supplying yellow wax to the hollow inside of the broken section and placing a layer of wax on the floor of the casting, molding material was deposited inside the casting and rammed up to a depth of 24 inches. Five-eighth-inch gaggers were used to help support the mold. A wooden cylindrical riser pattern was vertically connected with the wax on the floor of the casting. Wax was also applied to the outside of the cut out gap. A pattern was formed varying from about 1½ to 2 feet in width and bowed upward on each side of the triangular casting at points where contact with risers was to be made later. Sixty-seven pounds of wax were required for making the wax pattern, which is shown in Fig. 3.

A mold box next was constructed by

From an article appearing in *Reactions*, published by the Metal & Thermit Corp., New York.



FIG. 2—FRACTURE CUT OUT, LEAVING PLACE FOR WELDING STEEL TO ENTER. FIG. 3—WAX PATTERN APPLIED PREVIOUS TO BUILDING UP MOLD
FIG. 4—ANOTHER VIEW OF THE FINISHED WELD

cutting out the desired sizes of sheet iron with an oxyacetylene flame and bolting them into position. The finished box with its base resting on the platform had a rectangular through-like shape and measured 48 inches high, 51 inches on the side parallel with the ship, 54 inches wide at the base and 10 feet wide on top. Forty barrels of backing material and six barrels of facing material were required for the mold. Patterns for feeding gates, risers, and pouring gates were prepared. These patterns, which were of wood and pipe, were removed before preheating.

Two No. 10 automatic crucibles were suspended 10 feet above the mold box by chain hoists. They were held steadily in place by lashing them against the hull by means of steel wire cable. Approximately 700 pounds of thermit were placed in each crucible. Asbestos was wrapped around the chains holding the crucibles and asbestos sheets were placed between each crucible and the hull of the ship. Molding sand was scattered liberally over the platform to prevent its catching fire.

How the Mold Was Heated

Preheating of the mold was started at 8:15 a. m. on the day of the reaction. Two gasoline and compressed air preheating torches were directed through the side of the mold box and a third down through the riser opening in the interior of the casting. The preheating continued steadily for seven hours. At 3:15 p. m., the broken sections had developed a very bright heat. Pressure was then turned off and the heating gates on the sides of the mold plugged up with clay.

Both crucible reactions were set off simultaneously by men stationed on ladders near the crucibles. At 3:30 p. m., on signal, each man ignited with a red-hot rod the teaspoonful of ignition powder which lay on top of the thermit. As the reaction started, the men jumped down and retired to a safe distance. About 45 seconds was allowed for the liquid thermit steel to form from the reaction, after which time the two assistants tapped the crucibles by knocking up the tapping pins with long iron rods, thus allowing the molten steel to flow into the mold.

The weld was allowed to anneal itself by cooling slowly, the mold box not being dismantled until the following day. When the molding material was finally cleared away the risers and gates were cut off with an oxyacetylene torch and the weld examined by chipping off pieces of metal. The weld proved satisfactory in every way and was accepted by the representatives of the navy yard.

Machine Guns Wonder Product of War

IN no war previous to the one concluded in 1918 has the machine gun taken such a prominent place in the armaments of the contending forces," says the United States war department in its historical review of its activities in the war. "The popularity of the earlier machine guns was retarded by their great weight. Some of them were so heavy that it took several men to lift them. All through the history of the development of machine guns the tendency has been toward lighter weapons, but it was not until the great war that serviceable machine guns were made light enough to give them great effectiveness and popularity.

"Such intense heat is developed by the rapid fire of a machine gun that unless the barrel can be kept cool the gun will soon refuse to function. The water jacket which keeps the gun cool proved to be the principal handicap to the inventors who were trying to remove weight from the device. The earliest air-cooled guns were generally unsuccessful, since the firing of a few rounds would make the barrel so hot that the cartridges would explode voluntarily in the chamber, thus rendering the weapon unsafe. The Benet-Mercie partly overcame this difficulty by having interchangeable barrels.

"These conditions led to the development of machine guns along two separate lines, the heavy type machine gun, which must be capable of long sustained fire, and the automatic rifle, whose primary requisite is extreme lightness. These requirements led to the ultimate elimination in France and in the United States of guns of the so-called intermediate weight from ground use.

Lewis Gun Great Aid to Allies

"The machine gun produced by the American inventor, Col. I. N. Lewis, was a revelation when it came to the aid of the allies early in the great war. This was an air-cooled gun which could be fired for a considerable time without excessive heating, and it weighed only 25 pounds, a slight burden for a soldier. The Lewis machine gun was hailed by many as the greatest invention brought into prominence by the war.

"We had at the outbreak of the war only two factories in the United States which were actually producing machine guns in any quantity. These were the Savage Arms Corp., which in its factory at Utica, N. Y., was nearing the completion of an order for about 12,500 Lewis guns for the British and Canadian governments, and the Marlin-Rockwell Corp., which manufactured a large number of Colt machine guns of the old lever type for the Russian government. The Colt factory in the spring of 1917 was equipping itself with machinery to produce Vickers guns, an order for 4000 of which had been placed the previous December by the war department on recommendation of the machine gun board. None of these guns, however, had been completed when the United States entered the war. The Colt company also held a contract for Vickers guns for the Russian government about this time.

"It was evident that we would have to build up in the United States almost a completely new capacity for the production of machine guns. Nevertheless, we took advantage of what facilities were at hand; and at once, in fact within a week after the declaration of war, were placing orders for machine guns. The first of these orders came on April 12, when we placed a contract with the Savage Arms Corp. for 1300 Lewis guns. This order was subsequently heavily increased. On June 2 we placed an order with the Marlin-Rockwell Corp. for 2500 Colt guns, these weapons to be used in the training of our machine-gun units.

Browning Guns Won Favor

"After tests by the machine gun board the board pronounced two newly developed Browning machine guns the most effective guns of their type known to the members. The Browning heavy gun with its water jacket filled weighs 36.75 pounds, whereas the Browning automatic rifle weighs only 15.5 pounds. The tests also proved the Lewis machine gun to be highly efficient. The board recommended the production of large numbers of all three weapons; the two Brownings and the Lewis. The board also approved the Vickers gun, which weighs 37.50 pounds, and we accordingly continued it in manufacture.

"The first act of the ordnance department after this report had been received was to increase greatly the

orders for Lewis machine guns with the Savage Arms Corp., and the second to make preparation for an enormous manufacture of Browning machine guns and Browning automatic rifles.

"When it was proposed to adapt the Marlin gun for synchronized use in firing through propellers on airplanes, the ordnance department detailed officers to co-operate with the Marlin company in their efforts. For technical reasons of design the original gun apparently had little or no adaptability to such use. Many new models were built only to have them knocked to pieces by the failure of some feature to perform properly the work for which it was designed. Nevertheless the enthusiasm of the company for its project could not be chilled and it continued the development until the gun finally became the triumph in gas-operated aircraft ordnance.

Iron Notch Is Drilled By A Single Workman

Although the drilling of the tap hole of blast furnaces is performed four or five times each day without injury to the operators, there are few plants which have not had at some time a severe accident. The Mullen-type blast furnace tapping machine, which is shown in the accompanying illulstration, has been designed to reduce the possibility of these accidents to a minimum by eliminating the presence of a gang of men in front of the tap hole at casting time. It is built by the Southwark Foundry & Machine Co., Philadelphia.

The machine consists of an air cylinder which imparts a reciprocating motion to the drill. At each stroke the drill is also given about one-eighth of a turn. The cylinder and drill are fed forward by means of a 1-horsepower reversing-type motor through a train of gears operating a feed screw. The operator, who is stationed 50 feet from the furnace, opens the throttle on the air line and the machine starts to drill. He then starts the feed by closing a switch. To enable the operator to regulate the feed of the machine to suit the varying degrees of hardness in different sections of the hole, a dial is placed on the machine which indicates the amount of feed required. This dial is installed in plain view of the operator.

How Drill is Withdrawn

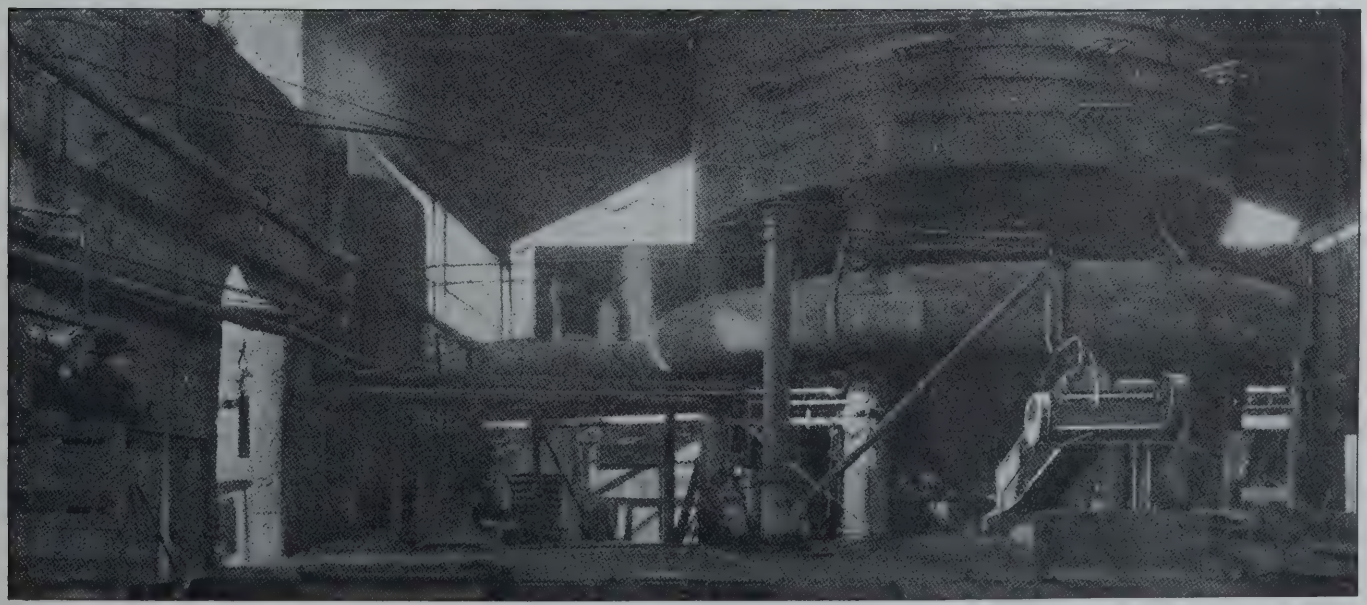
When the hole is opened, he reverses the switch, which engages the high-speed return feed. The drill is removed in about five seconds from the deepest holes. The machine is so balanced that when the drill is removed it automatically assumes a horizontal position. It may be removed either by the working force or by the use of a wench at a safe distance from the furnace, but it is preferable to use an air cylinder about 6 inches diameter located at some point convenient to the operator so that the entire operation is performed by one man.

The machine is placed in front of the furnace as soon as the troughs are cleaned and dried after the cast. In case of an emergency such as breakouts, heavy slips, etc., the machine can be started instantly, by simply throwing a switch. The drill used and the motion given to it by the machine are the same as in the old method and no tapping bar is required. The machine will tap a furnace in three to four minutes under ordinary conditions.

Reduces Flue-Gas Heat To Aid Combustion

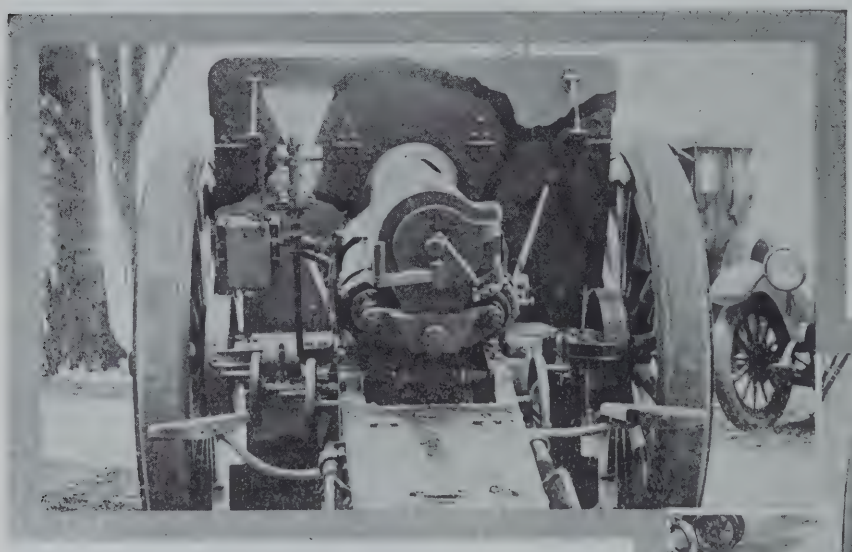
Tests on a new form of gas-heated recuperative furnace designed by the Davis Furnace Co., Luten, Eng., are said to have shown good results in the reducing to a minimum heat losses by way of the flue. The heat thus saved has been utilized for the purposes of the furnace thereby increasing its thermal efficiency. Suitably proportioned double recuperators were placed under the oven floor and arranged so that the heat absorbing materials are alternately heated by the escaping products of combustion and made to give up their accumulated heat to the air passing into the combustion chamber.

As a result of this arrangement, it is stated, that with an oven furnace 4½ x 3 feet, consuming 370 cubic feet of gas per hour and maintaining a temperature of 1050 degrees Cent., the flue gases have been found to have a temperature not exceeding 65 degrees Cent., thus containing only 2 to 2½ per cent of the heat generated by the gas. In addition to saving the heat, which would have otherwise been lost in the flue gas, the preheating of the combustion air resulted in the production of a higher flame temperature, with an accompanying increase of efficiency within the furnace. It is believed that temperatures beyond 2000 degrees Cent. are obtainable.

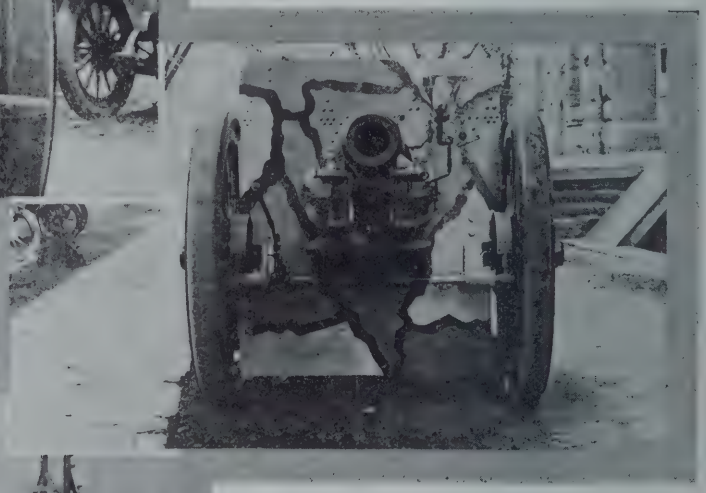


TAPPING MACHINE IS SUSPENDED FROM A JIB CRANE AND IS SWUNG CLEAR OF THE TROUGHS IN ABOUT FIVE SECONDS. OPERATOR'S PULPIT IS SHOWN AT THE LEFT

New and Old Types of Field Guns



Front and rear views of 4.7-inch gun carriage with band-brake, 1906 model. Note breach and panoramic sight



Four seasonal camouflages were used on these guns. The rubber tires were made in Ohio



Great stability was procured in the mounting of this 8-inch, 1917 model, Vickers howitzer



240-MM. howitzer at Elevation of 60 Degrees

75-MM. French gun, model 1897

American Skill Aids Development



75-MM. gun carriage, 1916 model, showing gun at Elevation of 53 degrees



155-MM. French gun, 1918 model, with split trail

75-MM. French gun, 1897 Model





155-MM howitzer, developed in 1918 at the Schneider factory in France

Eight-inch Vickers howitzer, 1917 model



Longwy and Briey Concessions

	Name	Exploiting Company	Area in Acres
1	Coulmy	Societe Metallurgie de Gorcy	155
2	Chatelet	Boutmy & Cie	15
3	Romain	Societe Metallurgie de Gorcy	350
4	Warnimont	Societe de Musson	285
5	Senelle	Hauts Forneaux de Chiers	1960
6	Mont St. Martin	Acieries de Longwy	1565
7	Mexy	De Saintignon & Cie	575
8	Saulnes	M. Raty & Cie	243
9	Lexy	Forges de la Providence	1262
10	Pulventeux	Societe Lorraine Mines de Fer	540
11	Moulaine	Acieries de Longwy	927
12	Mont de Chat	H. Fourneaux de Chiers	552
13	Rehon	F. de Saintignon et Cie	858
14	Herserange	Acieries de Longwy	1083
15	Villerupt	Auberives-Villerupt	815
16	Longlaville	M. Raty & Cie	652
17	Micheville	Acieries de Micheville	1000
18	Hussigny	La Providence & Acieries de Longwy	515
19	Joeuf	De Wendel et Cie	3280
20	Cantebonne	Acieries d'Angleur	25
21	Godbranche	Mines de Godbranche	2380
22	Casnes	Lorraine Industrielle	137
23	Bois d'Avril	Grandsons of F. de Wendel	1080
24	Serrouville	Mines de Serrouville	1800
25	Homecourt	Acieries de la Marine et Homecourt	2235
26	Aboué-Moineville	Fonderies de Pont à Mousson	3532
27	Moutiers	Mines de Moutiers	1515
28	Valleroy	Mines de Valleroy	2215
29	Bréhain	Acieries de Micheville	923
30	Tiercelet	Syndicate de Tiercelet	1923
31	Crusnes	Aubrives-Villerupt	1188
33	Giraumont	Chatillon-Commentry Neuves Maisons	2000
34	Jarny	Mines de Jarney	2030
35	Fleury	Acieries de Pompey	2018
36	Jouaville	Mines de Jouaville	2577
37	Labry	Chatillon-Commentry	2145
38	Briey	Schneider et Cie	2723
39	Batilly	Thyssen of Mulhein sur Ruhr	1720
40	Droitaumont	Schneider et Cie	2925
41	Conflans	Mines de Conflans	2055
42	Brainville	Forges de la Providence	2887
43	Bellevue	Mines de Bellevue	1472
44	Génaville	Acieries de Micheville	1715
45	Errouville	Mines de Errouville	2370
46	Fillieres	Villerupt Laval-Dieu	2012
47	Sancy	M. Raty et Cie	1837
48	Anderny-Chevillon	Acieries de la Marine et Homecourt	4790
49	Bazonville	Acieries de Micheville	1500
50	Mance	De Wendel et Cie	1800
51	Tucquegnieux-Bettainvillers	Acieries de Longwy	4148
52	Mairy	Fonderies de Pont à Mousson	2730
54	Beuvillers	Hauts Fourneaux de Chiers	1807
56	Malavillers	Denain & Anzin	1260
57	Murville	Mines de Murville	1240
58	Bertrameix	Senelle-Maubege	1063
59	Landres	Acieries de Micheville	1333
60	La Mourière	Mines de la Mouriere	1185
61	Bouligny	Mines de Bouligny	1090
62	Pienne	Acieries du Nord et de l'Est	2155
63	Joudreville	Mines de Joudreville	1252
64	Amermont-Dommary	Mines de Amermont-Dommery	2353
67	Saint Pierremont	Mines de Saint Pierremont	2293
68	Bruville	Societe d'Etudes Minieres Lorraines	2185
69	Hatrize	M. de Wendel	2105
70	Ville au Montois	Societe des Recherches de l'Est	2620

Lorraine Ore Future For Iron and

FRENCH holdings in the Longwy-Briey iron ore basin are divided among 60 or 70 companies or individuals including among them virtually all the prominent names of the iron and steel industry of the country. Many of these proprietary concessions, as they are known, have been in possession of the present holders for many years, and as the result of prolonged effort and the application of modern methods had brought the region up to its high productivity just preceding the war.

In the accompanying map and list are shown the names, locations and extent of the various workings in the Longwy-Briey basin under direct control. All these operations are on the French side of the old frontier. Other references on the map explain various German possessions hitherto operated for German account, the disposition of which is still a matter of arrangement, as a result of the peace treaty.

The treaty of Frankfort had cut in two this rich region of mineral resources. Actually at that time the portion which remained French was in but an early state of development. This, of itself, as is now known, caused the Germans to disregard its possibilities. In 40 years or more France had made a considerable development and has accomplished many really remarkable extractions to the chagrin of the German ironmasters who were working their deposits just over the line of the frontier. In the Briey region the 20 odd principal exploitations were carried down from 500 to 700 feet only. The cost on an average was $2,000,000 in equivalent francs for each exploitation shaft.

The development of the ore extraction of the department of the Meurthe et Moselle, the portion of Lorraine which remained French after the treaty of Frankfort, is as follows:

1870–74	984,000 tons
1890	2,832,000 tons
1900	4,730,000 tons
1905	8,430,000 tons
1910	13,210,000 tons
1913	19,814,000 tons

In 1913 the Meurthe et Moselle

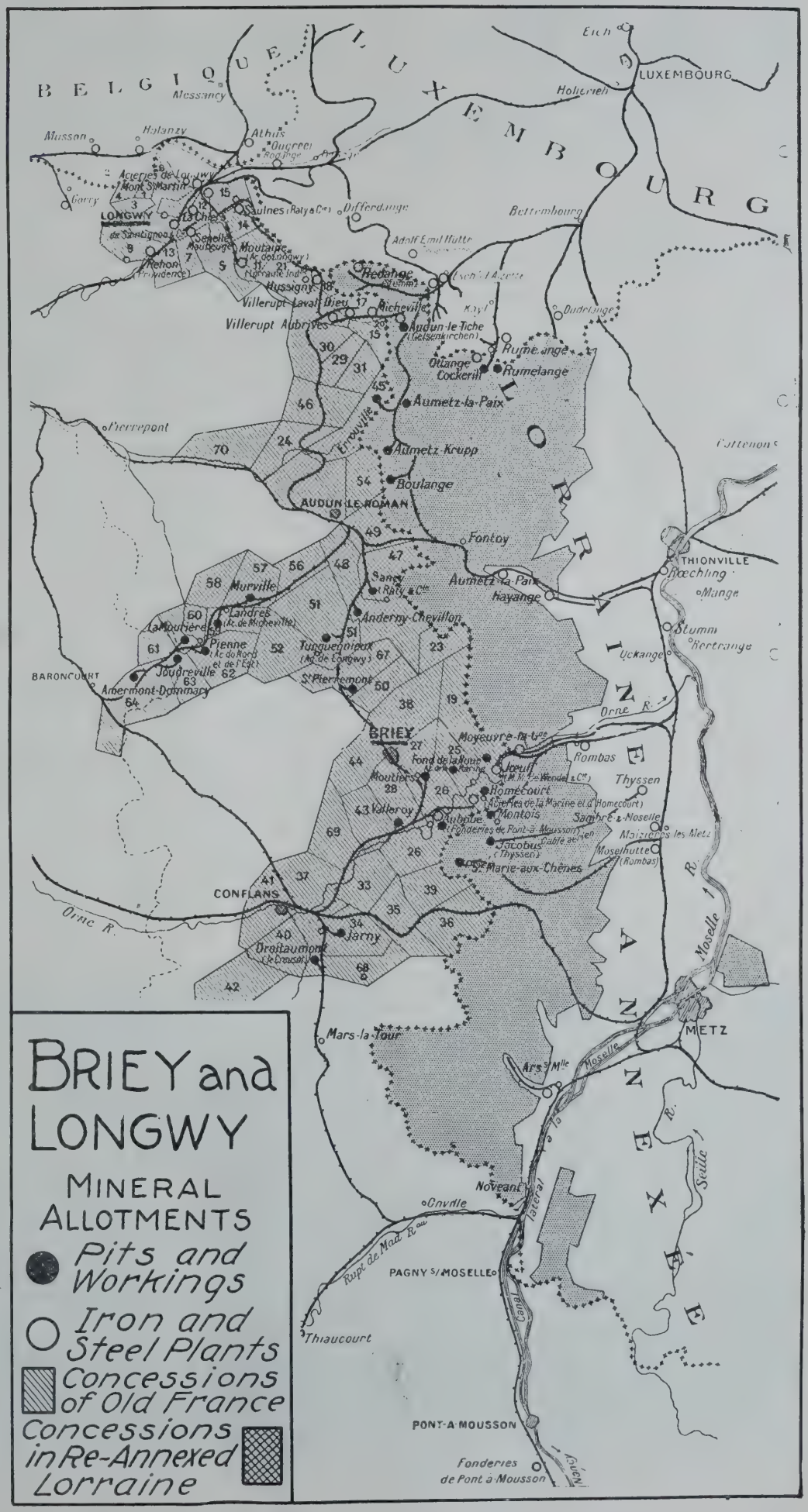
Insures French Steel

had 25 iron and steel plants possessing among them 78 blast furnaces, 36 converters and 9 open-hearth furnaces. The production of pig iron was 3,400,000 tons, and of steel 2,190,000 tons.

Farther to the south is the Nancy-Frouard-Pont a Mousson group which were preserved to France by the defense of the Grand Couronne de Nancy in September, 1914. The various plants of that region never once ceased production, although they were often under bombardment at long range and by aeroplane.

A sidelight has developed during the last days of the peace congress which may have a far-reaching effect, in an iron and steel way. Upper Silesia is, for a time at least, to remain Germany. If the words of the treaty in any way differ from this statement the fact is obvious.

The resources of the region should mean much to those who can read between the lines. The fact is if France is to receive all the coal she desires from the Saar, and coke from Westphalia and the valley of the Rhur, Germany must be allowed to serve her widely distributed industries of the center and west of what was once the German empire from the Upper Silesian resources, rather than by the long haul necessary from the western deposits. This is the economic problem as it was put up to the allies, with the result that the region was withheld from Poland, although manifestly it is an integral part of the ancient nation and should be incorporated with it.



Britain Has Iron-Steel Exchange

Supported By Metal and Allied Industries, Birmingham Institution Affords Convenient Meeting Place for Buying and Selling—Has Technical Library in Connection — Growth Extends Back Over Half Century

BY JOSEPH HORTON

British Correspondent of The Iron Trade Review

ONE of the most useful institutions in the Midland iron and steel trade of Great Britain is the Birmingham exchange, situated in Stephenson place, Birmingham, England, in the center of the city. For many years representatives of the iron, steel and coal trades have been in the habit of meeting there every Thursday afternoon. The central meeting hall, shown in the accompanying illustration, has an area of about 90 x 70 feet. The supporting pillars are numbered, as a convenience for visitors making a first meeting and generally for prearranged interviews.

The popularity of the institution is evident from the large membership, comprising about 2200 ticket holders, each paying a subscription of three guineas per year. The membership is steadily increasing. Two years ago the subscription was increased from two to three guineas but this had no influence whatever in arresting the membership. Apart from its use as a weekly rendezvous, the exchange serves as a kind of business club, open to members every day from 9 a. m. to 6 p. m.

In addition to the central hall there is an excellent reading room, equipped with a commercial and technical library. The daily supply of newspapers and telegrams, giving particulars of metal prices and a full service of trade and general news, greatly adds to the utility of the exchange.

Practically everybody in the iron, steel and coal trades is represented in one way or another on the exchange, and it is quite possible that at no distant date a larger establishment will be necessary. Surrounding the exchange with frontages to New street and Stephenson place, is a suite of offices on three upper floors mostly occupied by iron, coal and metal firms, which contribute a substantial income to the Exchange Building Co.

There can be no question about the great utility of the institution even in these days of telegraphs and telephones. Apart from the question of individual negotiation, a weekly opportunity is furnished for consultations between the heads of the trade on general questions of wages, prices of materials, trading conditions, railway regulations, etc., as these arise.

It is a rather remarkable fact that Birmingham, though a large consumer of iron and steel as a raw material for its innumerable industries, has no large iron or steel works of its own with the single exception of one open-hearth plant most in the heart of the city which turns out steel for the making of hammers, dye blocks, and tools of various descriptions. But Birmingham is only 12 miles away from Wolverhampton and Dudley, both important iron and steel manufacturing centers, while North Staffordshire, with its most important group of iron works is about 30 miles away. The city is within easy reach of the smelting and iron and steel making areas of Northamptonshire, Derbyshire, Shropshire and North Wales. A useful regulation of the exchange permits the supplying of a visitor's ticket to Englishmen and foreigners visiting the city on temporary business, the only formality necessary being the introduction by a recognized member. At the quarterly meetings held on the second Thursday of January, April, July and October, the building is thrown open to all and sundry, a most convenient arrangement for the numerous visitors from South Wales, Sheffield, Middlesborough, Glasgow and the principal shipping ports. On all such occasions the building usually is crowded to its full capacity.

The origin and development of the exchange is interesting. Its founder,



CENTRAL MEETING HALL OF BIRMINGHAM EXCHANGE, WHERE IRON, STEEL AND ALLIED TRADES HOLD MEETINGS EACH THURSDAY. NOTE NUMBERED PILLARS FOR CONVENIENCE IN ARRANGING INTERVIEWS

Edwin Lander, in June, 1861, sent out a circular asking support for a scheme to establish an exchange. His efforts were backed by Mayor Arthur Ryland, one of the heads of the prominent firm of Archibald Kenrick. His object was explained to be that "Persons engaged in business might have the opportunity of meeting each other at a particular time on each day with a far less waste of time than going to each other's offices at the risk of not finding the person whom they wanted to see." The scheme was taken up with some heartiness but the original program was modest, consisting merely of the utilization of an existing building. It is much to the credit of the Midland institute, a well known educational institution to which the city owes a good deal, that one of its largest rooms was placed at the disposal of the exchange promoters for an hour each day without charge. It was soon found that one hour per week was insufficient while the subscription of half a guinea, with a guinea for firms of not more than two partners, was hardly worthy of the object in view. It was, however, a useful beginning and for the quarterly meetings the spacious town hall was placed at the disposal of the trades. Eventually a building scheme was evolved and the present exchange was opened in January, 1865, by William Scholefield, M. P., one of the Birmingham members of the parliament. Mr. Gladstone and Lord Stanley were both invited to perform the ceremony but were unable to attend. The venture was an immediate success and eventually the place became so overcrowded that the present building became necessary and was completed in 1876. Four years later the institution was incorporated. The quarterly meetings have been continuously held in the exchange since 1876 instead of, as formerly, in the town hall.

A remarkable fact is that, though the exchange originated with a managing committee representing, in addition to banking interests, corn dealers, miscellaneous factory operators, general manufacturers and merchants, iron, gun, and metal traders and general drapers, the present membership almost wholly is comprised of men engaged in the iron, steel and coal trade in its various branches, or of those who purchase iron and steel. Naturally the miscellaneous membership, though not relatively numerous, is of a fairly widespread character, including accountants, analysts, asbestos manufacturers, belting manufacturers, chemical makers, cement makers, canal companies, electrical engineers, lamp manufacturers, timber importers, etc. In all cases, it may be said, the membership is related to the iron, steel and coal trades by some kind of link of utility. The invested funds amount to £10,000 and a scheme of extension is under consideration which will greatly add to the utility of the exchange and increase the service rendered to its members.

Plan Equipment Exhibit

A permanent exhibition of machinery and appliances used in the mining industries will be established in the Grand Central Palace, New York, under the auspices of the Merchant and Manufacturers Exchange of New York. The latter organization in taking over the Grand Central Palace, has arranged to accommodate permanent exhibits pertaining to various lines of industry. An entire floor with approximately 50,000 square feet of space is to be devoted to machinery and supplies used in the development and exploitation of metal mines, nonmetal mines, coal mines, oil wells, etc., and the handling and marketing of these products.

Examines Torpedoed Steel

At a recent joint meeting of the Birmingham Metallurgical society and the Staffordshire Iron and Steel institute, Prof. H. C. H. Carpenter, Royal School of Mines, South Kensington, presented a paper entitled "The Rolling Temperature of Steels." The author stated that more than a year ago he had been asked by a distinguished naval architect why it is that a steel shipplate which proved to be a ductile material at the time of working, should break up as a perfectly brittle material when subjected to sudden impact. Professor Carpenter exhibited a number of micrographs showing the structure of steel plates in ships which had been torpedoed. He stated that in general there are five factors which affect the quality of the steel. These factors are the temperature at which the steel is cast, the soundness of the ingot, the chemical composition of the metal, the method of working the metal, and finally the temperature or temperature range at which the metal is worked.

Professor Carpenter investigated a number of steel plates taken from torpedoed ships. The first specimen examined undoubtedly had been taken from a plate that had been worked at too high a temperature. Upon being subjected to the impact of a torpedo, the steel had been shattered into bits, indicating extreme brittleness. The other specimens were quite different in that they had been deformed considerably by the explosion. The author believes that the material rolled at a lower temperature was able, even in this most severe impact test, to retain to some extent its quality of ductility. His investigations seem to show that other things being equal, the greater the size of the crystals, whether of steel or of other material, the greater is the tendency under impact to break as a brittle material.

The paper was discussed by G. Carrington, president of the Staffordshire Iron and Steel institute and A. O. Backert, president of the American Foundrymen's association. Mr. Carrington said that from his experience it seems likely that a great many cases of defective structure in plates is due to excessive temperatures caused by piling together a number of hot plates instead of allowing each plate to cool separately at its natural rate of cooling.

Safety Men Graduated

One hundred and thirty men, comprising this first Ohio class of safety supervisors, were graduated recently from the school operated under the auspices of the northeastern division of the national safety council. C. W. Price, general manager, national safety council, addressed the graduates on the necessity of industrial safety and S. W. Tener, American Steel & Wire Co., president of the northeastern division awarded diplomas. The graduates are safety men employed by the Aluminum Castings Co., American Shipbuilding Co., American Steel & Wire Co., Brown Hoisting Machine Co., Cleveland Metal Products Co., Cleveland Tractor Co., Hydraulic Pressed Steel Co., McKinney Steel Co., National Malleable Castings Co., Upson Nut Co., Van Dorn Electric Tool Co., and other large manufacturing plants in the Cleveland district.

Makes Testing Apparatus

The Durkee Mfg. Co., Grasmere, borough of Richmond, New York City, recently has increased its manufacturing facilities and now is prepared to build on order magnetic testing apparatus of any design. This expansion of the Durkee company is a result of the growing importance attached to the application of magnetic analysis to the examination of steel products. Dr. Charles W. Burrows, who presented a paper on the

application of magnetic analysis at the recent convention of the American Society for Testing Materials and who has been instrumental in laying the foundation upon which the science of magnetic testing is based, has been retained by the company as consulting engineer on instruments. Dr. Burrows will keep in close touch with the design, manufacturing and test departments engaged in making apparatus for magnetic testing.

New Plate Machine Does Work of Five

A combination punch and shear, embodying the functions of five or more single machines, has just been developed by Joseph Ryerson & Son, Chicago. Shearing, bar and section cutting, coping, notching, and punching may be done on this machine without changing tools or attachments.

As shown in the accompanying illustration, the machine consists chiefly of a heavily ribbed base upon which are mounted the bearings for a train of gears transmitting power to three sliding heads by means of automatic clutches. The head at the left carries the dies for punching; the center head is equipped for cutting sections; and the head at the right is provided with dies for shearing and splitting, cutting bars and coping and notching. The clutches for the right and center sliding heads are foot-operated, while the clutch for the head at the left is equipped with both foot and hand control.

The base of the machine is heavily ribbed and properly balanced to insure a rigid foundation. The operating side of the machine, as shown at the left of the accompanying illustration, is free from all overhanging machine parts. The driving mechanism, including gears, clutches, flywheels, etc., are on the opposite side. This feature of design is considered important from the standpoint of safety. Ample space around each unit of the machine is provided so that operators will not interfere with each other while handling different kinds of work at the same time.

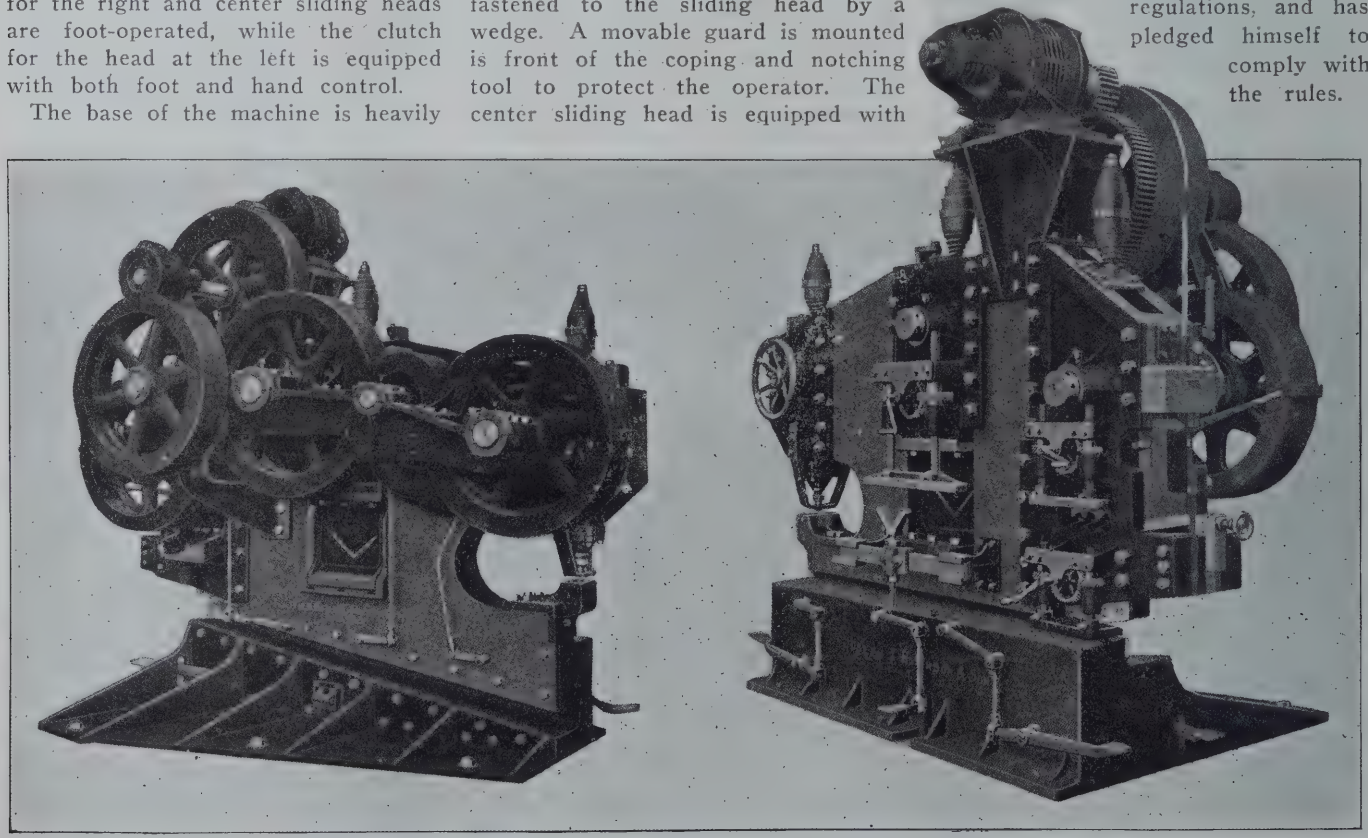
The main frame of the machine consists of a skeleton offset shear body, reinforced by heavy steel plates. Plates of any length and width in thickness up to the capacity of the machine may be split on the shear, which is equipped with an adjustable hold-down. The punch is fitted with architectural jaws, permitting the punching of I beams, channels and sections in either flange or web. The sliding head of the plate shear carries a shear for cutting round and square bars. This shear blade has three or four notches for cutting bars of different sizes without excessive distortion.

The coping and notching machine consists of two crucible steel cover plates and brackets rigidly jointed to form a jaw, in which lower coping and notching blades are mounted. The coping and notching blocks are fastened to the sliding head by a wedge. A movable guard is mounted is front of the coping and notching tool to protect the operator. The center sliding head is equipped with a specially designed blade holder which permits the quick change of blades for cutting angles, channels, tees and other sections.

The sliding heads are of crucible steel. The plungers are operated by pitmans and counterbalanced by heavy coil springs. The machine may be driven by belt or by motor. With the exception of the motor gear, all gears and pinions of the machine are of cast steel, having teeth cut from solid metal.

Booklet Promotes Safety

A small booklet prepared by the Kempsmith Mfg. Co., Milwaukee, and supplied to every workman in the employ of the company, has for its purpose the promotion of efficiency and safety. The forepart of the booklet deals with working hours, shop regulations and what is to be expected from the workman. It is interesting to note that the company urges all its employes, who are not already American citizens, to become such and states that promotions of new employes who are citizens will be given first consideration. The latter part of the book deals with safety rules, including a series of resolutions and pledges which the employe agrees to follow to protect himself and fellow workmen. A detachable receipt is bound into the booklet and is signed by the new employe to show that he has received a copy of the regulations, and has pledged himself to comply with the rules.



FRONT AND REAR VIEWS OF NEW PLATE MACHINE WHICH DOES SEVERAL KINDS OF WORK SIMULTANEOUSLY

Builds Internal Grinder for Small Work

Extensive tests have just been completed by the Heald Machine Co., Worcester, Mass., on a new internal grinder designed for small work. As indicated in the accompanying illustration, the work head is driven by a cross belt through the base from a four-step cone pulley. The flow of water and the revolving of the work head automatically stop when the grinding wheel is withdrawn from the work. This is accomplished by a friction clutch in the base of the machine operated by a lever which is tripped by a small dog on the table. When the operator desires to resume work he simply pushes the lever to the vertical position, thereby starting the work head and water.

The machine is equipped with a collet chuck having a capacity for material from ⅜ to 3 inches in diameter. The feed to the cross slide is calibrated to 0.00025 inch. The feed lever controlling the movement of the slide is at the operator's left, while the pilot wheel actuating the movement of the table is at the right.

The grinding wheel head has a solid adjustable taper bearing at the wheel end and revolves in ball bearings at the pulley end. The machine is equipped with an automatic wheel guard which covers the wheel as it is drawn from work. The grinder is designed for work ranging from ¼ to 2 inches in diameter and 4 inches long.

American Competition Stirs British House

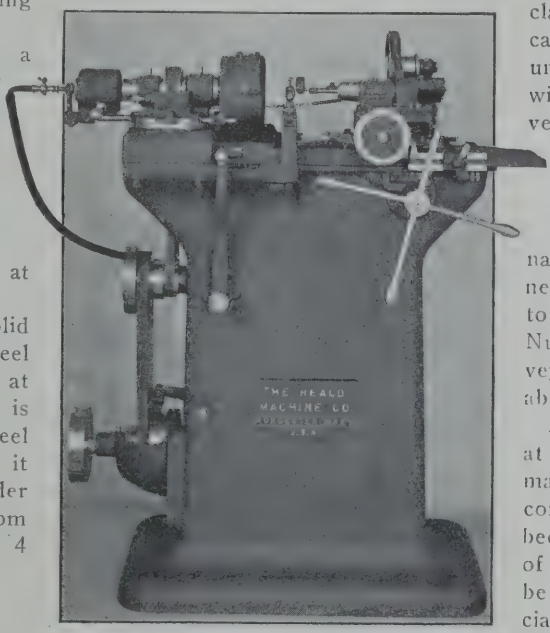
(*Special Correspondence*)

Birmingham, Eng., July 11.—In the house of commons the president of the board of trade was asked whether the Union of South Africa government had recently placed in the United States orders for 44,000 tons of rails, 1000 cars, 250 trucks, and in the United States and Canada orders for 70 large locomotives; also whether he could state the reason for the placing of those important orders in America instead of in Great Britain. Lieutenant Colonel Amery, replying, explained that some of the orders were placed in the United States prior to the armistice at a time when it was impossible to supply railway material in Great Britain. The 70 locomotives, however, were ordered after the armistice and this was explained by the fact that British offers in respect to price and date of delivery were so unfavorable that the South African authorities were obliged to go further afield. Forty locomotives were ordered from Canada.

News has been received of the importation of American nuts and bolts, and the nut and bolt manufacturers in the Black country state that their only chance of meeting this competition is to purchase American bars. They are endeavoring to place orders for this material.

To Use Electric Furnaces

Hamilton & Hansell, Inc., have sold one 1000-pound, 400-kilovolt-ampere electric furnace of the Rennerfelt type to the Steel Alloys Co. of America, to be erected at the latter's plant in Bayway, N. J., for the reduction of tungsten-acid to metallic tungsten. The company also has sold one 1000-pound, 200-kilovolt-ampere Rennerfelt furnace to the British American Nickel Co., Ottawa, Can., to be erected at its Deschene plant in Quebec for melting nickel. It has booked an order for one 150-kilovolt-ampere, single-phase pot furnace with complete equipment to the Netherlands government, colonial department, to be erected at the experimental station at Batavia, Java, Dutch East Indies.



GRINDER EQUIPPED WITH AUTOMATIC WATER AND WORK HEAD STOPS

The Lundie Engineering Corp. has taken over the manufacture and sale of Lundie tie plates, formerly handled by John Lundie, 52 Broadway, New York. The Chicago office at 30 North LaSalle street is in charge of C. Z. Moore, manager of sales.

Italy May Import Iron Ore Supply

A discussion of Italy's demand for ore and pig iron by the Italian Metallurgical association admits that the needs of the metallurgical industry of Italy cannot be definitely satisfied by the limited supplies of iron ore existing in the country. From this statement it is taken that Italy must depend on foreign sources for the necessary raw and semimanufactured materials.

Of the 706,246 tons of ore mined in Italy in 1914, at least 649,561 tons came from the island of Elba and during the years of the war, the greater part of increased ore outputs were of Elban origin. It is now claimed that large quantities of ore cannot be mined from this source under convenient conditions as it will now be necessary to exploit the veins under the sea at resulting greater cost. At the same time, however, the war has stimulated the research for other ore deposits in Italy and only recently were electric blast furnaces installed in the Val di Cogne near the French frontier and estimated to contain 6,000,000 tons. In the Nurra district of Sardinia recent surveys have revealed the existence of about 6,000,000 tons of good iron ore.

If pig iron production is maintained at 400,000 tons annually, it is estimated that 700,000 tons of ore will be consumed. To remedy this it has been suggested that greater quantities of scrap iron and steel will have to be imported, the Metallurgical association says 420,000 tons a year. In other quarters, it is believed a better policy to bring the ore from abroad and make the pig iron locally. From the industrial program which Italy is drawing up it seems that larger quantities of pig iron will be needed than before or during the war.

Byers Plant Resumes

Operations have been resumed in all departments with the exception of the blast furnace and plate mill at the plant of the A. M. Byers Co., Girard, O., as the result of the signing of a scale presented by representatives of the Amalgamated Association of Iron, Steel and Tin Workers. The blast furnace is expected to be relighted within a few days. Operations at the plant ceased July 1, at which time the company declined to sign the scale as presented to them. The Byers company is the first of the valley open shop companies to sign the scale.

Price Control Bobbing Up Again

Birmingham Representative Starts With Resolution For Investigation of "Coal Profiteers" and Winds Up With Demand For "Thoroughgoing System of Price Fixing" of All Raw Materials and Living Essentials

WASHINGTON, July 29.—Price fixing, more or less successful during the war but failing as an after-the-war experiment, is again advocated, this time by George Huddleston, representative of the Birmingham district in congress. Arguing in behalf of his resolution authorizing an investigation into alleged profiteering in coal, he told the rules committee of the house that "a thoroughgoing system of price fixing which would include not merely raw materials but all of the common necessities of life" is necessary to avoid serious conditions.

The rules committee, of which Philip P. Campbell, of Kansas, is chairman, has not made a report on the resolution or indicated whether Mr. Huddleston's proposition would be considered favorably, but observors, noted the fact the committee gave the Alabamam considerable time to state his case. The congressman's plan recalls the fate of the industrial board which, organized by Secretary Redfield, of the department of commerce, failed to reduce prices, other than those on steel products, through failure of the railroad administration, the navy department and other government bureaus to agree to buy at the suggested levels.

Mr. Huddleston's chief grievance, as he expressed it, was against the coal operators of his district, but he complained against the entire industry. He urged Attorney General Palmer to investigate the operators' efforts to get the public to buy coal now at what he termed "quite extortionate prices." He particularly desired an investigation of the National Coal association, members of which, he said, appear to have an express or implied combination to maintain prices. As a result of his request, Mr. Palmer instructed the district attorney at Birmingham to look into the matter in that district, but Mr. Huddleson and some members of the committee feel the scope of the investigation should be wider.

Says Industries Are Deadlocked

"The industries of the United States are deadlocked against themselves on account of extortionate, quite extortionate, prices," Mr. Huddleston declared. "Extortionate prices are being demanded for raw materials, coal, iron, cotton, wheat, lumber, etc. The people who produce them have made large profits. They have made a pocketful of money during the war and they are not willing to go back to prewar profits. They are holding the prices up and the result is we are not doing business in this country.

"You must bring down the price of the materials of living just as you should bring down the cost of steel. Do you expect a man who is making nails out of steel at present prices to sell his nails at the 1914 prices? He cannot do it. No more can a workingman paying present prices for the necessities of life reduce the cost of his labor. Therefore, you must strike first at the great basic commodities and in that way control prices. There is a disposition on the part of these profiteers to lay it all on the workingman."

After declaring he made an investigation of the cost of labor and found the average increase in wages of all kinds to be only 34½ per cent over 1914 wage scales, Mr. Huddleston said:

"What I am saying is addressed to the general propaganda sent throughout the whole country, appearing in various forms and coming from various organizations. It is coming from men who have made millions out of the war and who want to keep on making millions in times of peace. The suggestion coming from these sources is that the workingman ought to be punished and that there should be first a reduction in the cost of labor."

Blames Independent Consumers

Before he launched into the discussion of the high cost of living and advocated price fixing, the Birmingham congressman said the United States Steel Corp. is not to blame for the conditions in his district. He said:

"The largest users of coal in my district are the iron-producing concerns. Out of 45 iron blast furnaces only 18 are now in operation."

"I understood you to say that the United States Steel Corp. produced most of the coal it uses," commented B. H. Snell, of New York.

"Yes."

"Then it does not make much difference what the price is if they produce it and use it."

"It would make quite a difference to them if the price represented the cost of production, for it would go into the cost of producing their iron and steel. I am not after the Tennessee company (Tennessee Coal, Iron & Railroad Co.) which is the local branch of the Steel corporation, about coal prices, because they do not produce coal to sell to others. I am after the men who produce coal for commercial purposes, and put such a big price on it that the people cannot buy it for domestic use or for steam purposes. I want them to run their mines so as to give men work and so there will be no suffering for coal next winter."

Mr. Huddleston is the author of a bill now in the house which would continue in effect the fuel control provision of the war-time Lever bill and force the operators to run their mines for the double purpose of preventing a coal shortage next winter and to provide work for their employes. The act would remain in effect five years after the peace with Germany has been proclaimed.

Government Sells Scrap At Big Profit

WASHINGTON, July 29.—Sales department in the week ending of surplus material by the war July 18 netted only $1,675,000, one of the smallest weekly reports on record, but included disposal of small tonnages of steel and brass on which the government might be accused of profiteering. A quantity of sheet steel and scrap which originally cost $313.13 was sold for $2196.97, or at 702 per cent of the original cost. A small lot of brass for which the war department paid $113.63 was sold for $555.50, or 491 per cent of the cost price. Both sales were negotiated by the signal corps and, with the week's total sales, brought the total realized from surplus material since Jan. 1 to $354,470,000, which is 78 per cent of the original cost of the material.

Contract liquidation, which of course is preliminary to turning over the material involved to the sales division, in the week ending July 5 effected a saving of $50,622,000 to the war department, this amount being nearly 86 per cent of the value of the uncompleted portions

of the contracts. This sum, added to previous similar savings, made a total of $1,331,139,000 saved out of contracts calling for expenditures amounting to $1,544,248,000. This total value of suspended contracts is, however, only 42.8 per cent of all commitments which, at that time, were $3,609,013,000 and which later, with cancellations not yet reported, will be considerably greater.

The war department last week announced that of more than $11,000,000,000 appropriated for the fiscal year ending June 30, $3,653,000,000 represents the unused balance. Ordnance appropriations of $4,499,000,000 were used to the extent of only $2,210,000,000. It is pointed out that the unexpended balance may be smaller after settlements have been made on canceled contracts. Engaged in contract liquidation now are 518 officers of emergency rank. It is expected this work will not be completed until Sept. 30 when regular army officers supplant the reserves.

To Transfer Surplus Stocks

Report was made to the senate last week by the department of agriculture that, according to the provisions of the federal aid road act of July 11, 1916, and as amended Feb. 28 last, the sales division of the war department has the following materials and equipment which are to be turned over for distribution by the department of agriculture to the various state highway bureaus for the development and construction of road ways:

Structural steel, 1186 tons; reinforcing steel, 10,000 tons; sheet-metal roofing, 16,000 tons; nails, 50 tons; spikes, 35 tons; blank nuts, 10 tons; threaded nuts, 10 tons; drill steel, 100 tons; hollow drill steel, 10 tons; solid drill steel, 10 tons; horse and mule shoes, 20 tons; horseshoe nails, one ton; axle steel, three tons; tire steel, three tons; steel or iron pipe, with fittings, 150 miles; cast iron culvert pipe, 56,025 lineal feet; corrugated metal culvert, 120 carloads; telephone wire, 2000 miles; steel forms for concrete road construction, 40,000 lineal feet.

Shipping directions have already been given for 12 kegs of spikes and 37,921 lineal feet of cast iron culvert pipe. This material—and the plan is applicable to the entire quantity to be transferred from the war to the agriculture department—is allotted to the several state highway departments in accord with the terms of the federal aid road act. In addition to the iron and steel articles enumerated the surplus material to be used in highway expansion and maintenance are the following:

Four hundred road rollers, 700 concrete mixers, 600 road graders, 400 elevating graders, 200 sprinkling wagons, 200 road oilers, 125 derricks of from 30 to 60 feet boom, 100 pile drivers, 200 air-drill outfits, 700 road and railroad plows, 300 rooter plows, 160 automotive cranes, 3600 tractor trailers, 200 steam shovels, 6500 dump wagons, 250 conveyors, 100 boilers, 14,500 scrapers, 4000 wheelbarrows, 10 dredges, 20 ditching and trenching machines, 100,000 feet hoisting cable, 1000 miles industrial railway tracks, 200 industrial railway locomotives, 3500 industrial railway dump cars, and large quantities of axes, adzes, crowbars, cant hooks, hammers, riveters, hatches, shovels, spades, trowels, saws, wrenches, sledges, picks, mattocks, drills and drill bits.

The list also contains machine tools, woodworking tools and miscellaneous outfits, as follows: Fifteen complete machine shop outfits, including lathes, drills, planers, fittings, etc.; three swing lathe engines, 14 to 20 inches; three end milling machines, three planers, four power punches, three shapers, four power shears, three shop-screw presses of 25 tons capacity each; 12 boring machines; complete sets carpenters tools, wheelwrights' outfits, farriers' outfits, blacksmith outfits, etc.

Report Coke Haulage

Washington, July 29.—Reports from 14 of the principal coal and coke carrying railroads, as compiled by the department of commerce, show that in first four months of 1919 6,705,000 tons of coke were hauled as compared with 8,608,000 tons last year. Shipments of bituminous coal were 54,500,000 tons as compared with 77,700,000 tons in the period in 1918, while anthracite hauls in 1919 were 6,400,000 tons, as against 7,550,000 in 1918.

To Build Strip Mill

Pittsburgh, July 29.—Work is to begin at once on the erection of a cold rolled strip steel plant at Ambridge, Pa., adjoining the plant of the Standard Seamless Tube Co. Those interested in the cold rolled strip plant are J. S. Hammond, H. F. Devens, Frank R. Schneider and others. The size of the new plant has not been definitely determined upon. It will be situated on a site of 40 acres on Buss avenue.

Chicago Foundries Buying Scrap Collectively

Chicago, July 28.—Collective buying of scrap iron and steel has been decided on by the Chicago Foundrymen's association. Hereafter, it is understood, members of the association will make their requirements known at the headquarters of the association, and purchases will be made through that office. It is hoped that the minimum prices may be obtained by buying in larger quantities and also that the members will be freed from constant soliciting by scrap dealers. A circular letter sent to members of the association says:

A careful canvas of the membership reveals the fact that they are all now well supplied with scrap iron for some time. Nevertheless, scrap dealers are daily attempting to inveigle our members to purchase at present high prices, using the argument that scrap is "going up." Don't buy—there's no reason why you should and a great many reasons why you should not. This office and many of the members have had numerous letters from which it is very evident that there is no very strong market otherwise the dealers would have fixed the selling price and not ask us to."

Urge Greater Output

Co-operation of the press, the pulpit and other educational institutions is urged by the National Association of Manufacturers in a campaign to show that high prices are largely due "to the growth of tendencies among our labor elements to restrict individual and collective production," and to emphasize the fact that lower price levels may be brought about only through an increase in output. Resolutions adopted at a recent meeting of the association in New York point out that certain interests are fostering the belief that manufacturers are mainly responsible for abnormal prices, whereas it is "the dangerously unsound make-work doctrine" which is the underlying cause. Attention also is called to the fact that heavy war debt taxation has contributed to high prices, and the shortening of the duration of such taxes is urged.

Issues Export Guide

Issued by the Export Manufacturers of the United States, Inc., 149 Broadway, New York, the Export Register is designed to aid manufacturers who desire to develop foreign trade. It lists over 800 exporting houses in the United States and following the general index a page is devoted to each, giving financial rating, mail and cable addresses with codes used, kind of business and when established, buyer's name, markets reached and classes of merchandise handled, as well as lines specialized in.

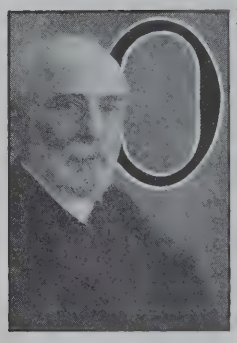
In view of the fact that fully 75 per cent of United States exports of manufactured products are handled through commission houses, the value of this medium to manufacturers is readily ascertained. By reference to it they are able to determine which exporting house is best fitted to handle a particular line of goods in a given foreign market.

Liberty or Death, Bell's Defiance

Famous British Ironmaster Demands Right to Manage Own Works, "Even if I am Shot for It"—Cheered as He Challenges Union's Claim That He Cannot Discharge His Men—Steel Exports Gain Slowly

BY JOSEPH HORTON

Bureau of The Iron Trade Review,
Prince's Chambers, Corporation St.,
Birmingham, Eng., July 10.



SIR HUGH BELL

ONE of the most important witnesses who has appeared before the coal commission during its long sitting was Sir Hugh Bell. Sir Hugh is the distinguished son of Sir Lothian Bell, whose researches in blast furnace work gave great impetus to the iron and steel industry. He was once president of the Iron and Steel institute, and for some years past he has been prominently known as an avowed opponent of everything calculated to restrict the freedom of manufacturers to control their industry. He has been especially prominent as a free trader.

Sir Hugh Bell gave evidence in behalf of the National Federation of Iron and Steel Manufacturers on the question of the nationalization of coal mines generally, and particularly with reference to the effect of such nationalization on the iron and steel industry. He explained that the federation was thoroughly representative of the iron and steel industry of the country. The approximate wages bill of the 253 members is £21,000,000 ($100,800,000 and of the total production of nearly 10,000,000 tons of steel in the United Kingdom, the federation produces 8,694,000.

Sir Hugh is managing director of Bell Bros., Ltd., a director of Dorman, Long & Co., Ltd., and of the North Eastern Steel Co., chairman of the Horden Collieries, Ltd., of the North Eastern Railway Co., and other companies.

He said he views with great apprehension the growing tendency to replace the action of economic law by government interference. He believes coal nationalization would be against the best interests of the commercial progress of the country and would materially retard further improvement in the general condition of the workers, an improvement which he sincerely desires. He pointed out that coal mining calls for constant speculation in the sinking of new shafts, whereas a highly centralized government service does not lend itself to the taking of such risks. He expressed the belief that under government direction it would be impossible to maintain the efficiency and elasticity of the arrangements for obtaining foreign orders which have been gained by the experience of private owners and merchants in many years of foreign trading.

Sir Hugh proceeded to give particulars of steel trade extension, remarking that the development of British steel works during the war would, when completed, give an annual capacity of 12,000,000 tons of steel, compared with an output of 7,500,000 tons before the war. He said that fact alone increases the interest of the trade in a larger coal supply. Further, iron ore mines abroad provided material for nearly 40 per cent of the British production and transportation has been affected seriously by the shortage and high price of British coal. Unless the country can secure imports of iron ore in quantities exceeding pre-war deliveries, there is not the smallest prospect of their being able to produce sufficient pig iron to supply the full capacity of greatly enlarged steel plants.

Practically the whole of this iron ore is at present obtained from Spain, Algeria, Tunis and Scandinavia, Sir Hugh continued, nearly all ships from these countries bringing iron ore to England return with coal cargoes, either direct to the exporting ore country or to an adjoining country, from which a short voyage in ballast is easy. In 1913 British fuel exports to Spain alone amounted to 2,823,961 tons. Unless this export is maintained Spanish ore can be imported only at greatly increased prices and higher freight rates. He said the early revival of the export of coal is of vital importance to the iron and steel trade.

According to Sir Hugh American prewar production of iron and steel was about 31,000,000 tons a year, whereas her present capacity is about 48,000,000. Prior to the war the United Kingdom exported about 5,000,000 tons of iron and steel and the United States only about 2,700,000 tons. In his opinion America's increased output will give her an enormous exportable surplus whenever the home demand falls off. America also had an advantage in regard to cost. He predicted that unless exports of coal, iron and steel from the United Kingdom are maintained, a large amount of unemployment in the British iron and steel trade is a certainty. In view of the large number of iron and steel works owning collieries he expressed apprehension regarding the proposal to remove his collieries from his own management and place them in other hands.

On cross-examination, replying to Sir Leo Money, Sir Hugh admitted that there was a dangerous shortage of iron and steel at the outbreak of the war, but he would not admit that the reason was to be found in the fact that many British blast furnaces made only hundreds of tons, whereas the Continental furnaces made thousands of tons.

"Until a few years ago you could not put up the latest type of furnace in this country without going to Germany for some parts?" asked Sir Leo.

"Why slur the British ironmaster? The Germans found out how to do something that I could not do and I bought my machinery from Germany. As soon as I am allowed I will do so again," replied Sir Hugh.

There followed a sharp discussion between Mr. Smillie, a representative of the miners, and Sir Hugh Bell, in the course of which Sir Hugh said that if he were a workman he would not give up the right to strike. He added:

"As an employer of men, the one thing I will not give up under any condition, unless parliament compels me—and then I may stand against the wall and be shot—is the right to discharge my men. I demand that right."

"And we deny your right to dis-

charge your men unless for a just cause," said Mr. Smillie.

"I hope I will not discharge them for any other."

Sir Hugh was applauded by the spectators as he left the stand.

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Coal Production Declining

Lord Aberconway, presiding at the annual meeting of the Tredegar Iron & Coal Co., Ltd., July 8, commented severely on the Sankey report of the coal commission, describing that commission as grotesque in its proceedings, in its personnel and in its report. It was a curious fact, he said, that the "cranks and fanatics" who were so largely represented during the proceedings were men who, at the last general election would show, had no influence whatever in the country. Not one of them obtained a seat in parliament. He declared the country, if it had an opportunity, would condemn the action taken by the "wire-pullers" in the miners' federation. He pointed out that the prewar output of coal was 287,000,000 tons, while the country may now produce only 214,000,000 tons. Since the Sankey award, the output per man has been declining, in spite of a considerable increase in the number of workmen. Absenteeism was greater in May than in any other similar period. Instead of the industry making a profit of between £15,000,000 and £20,000,000 ($72,000,000 and $96,000,000) there probably will be a deficiency in the current year of not less than £45,000,000 ($216,000,000), or a loss of 4s 3d ($1.02) per ton on the estimated reduced output. He said the loss will be made up out of the pockets of the consumer.

This extraordinary agitation if persisted in, he declared, will drive the country into commercial ruin. England is the busiest manufacturing nation in the world, but it cannot carry on its industries without coal, and without cheap coal industry will be handicapped. Dealing with nationalization, Lord Aberconway said it never was a success, because state administration could never compete successfully with private administration. He referred to the postal service, the telephone service and the railroads.

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Exports Recovering Slowly

Exports of British iron and steel which declined during the war to the point of stagnation are now making a slow recovery. The total value of exports during June was £64,562,346 ($309,899,261) an increase of 43.38 per cent. For the six months ending with June the total was £334,755,257 ($1,606,825,234), an increase of 35.62 per cent. The June imports totaled £122,945,655 ($590,139,144) or an increase of 21.06 per cent. For the six months the value of imports was £717,034,479 ($3,441,761,200), an increase of 9.93 per cent.

The quantity of iron and steel manufactures there exported during June was 193,743 tons, compared with 153,655 tons in June of last year. For the six months the quantity was 1,005,976 tons as compared with $18,208 tons.

Pig iron exports show a decided falling off, from 51,834 tons in June, 1918, to 27,816 this year. In the first six months of 1918 exports amounted to 249,704 tons, and in the same period this year to 154,579. The total exports of wrought iron bars, angles, etc., was 3963 tons, as compared with 3219 last year. The first half compares badly, as last year the exports were 25,229 tons and this year 17,875.

Galvanized sheets are again making a respectable showing. This trade was almost annihilated by the war. In June of last year, the total exports were only 634 tons, whereas this year they have mounted to 10,201. For the first six months last year the total was 4820 tons, this year, 47,495.

There have been substantial increases in exports of black sheets, black plates, hoops and strips, cast iron, steel bars and tinned plates and sheets. Of these the most striking figures relate to steel bars, of which the values increased from £271,103 ($1,301,294) to £710,526 ($3,410,525), while for the six months the figures last year were £2,338,786 ($11,216,173) and this year £3,511,076 ($16,853,165). For tinned plates and sheets, last year's values in June were £778,460 ($3,736,608) and this year £867,823 ($4,153,550). For the six months, the increase was from £3,648,107 ($17,510,913) to £4,407,958 ($21,158,198).

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How Some Plants are Faring

Bell Bros., Ltd., of which Sir Hugh Bell is the moving spirit, has had another good year. The directors report a divisible amount of £15,723 ($75,470) under which they recommend a dividend on the ordinary shares of 10 per cent, carrying forward £20,037 ($96,177). This, after payment of interest on 4 per cent debenture stock and 6 per cent preferred shares for the half year. They carry to reserve fund £16,942 ($81,321), and to reserve for general purposes, £40,000 ($192,000).

The Millon & Askam Co. has a large plan of reorganization under which it proposes to have an authorized capital of £2,000,000 ($9,600,000), divided into 500,000 7 per cent cumulative and participating shares of £1 ($4.80) each and 1,500,000 ordinary shares of £1 ($4.80) each. The participating preference shares will be entitled to an additional 2 per cent dividend in each year when a dividend with or without bonus, equal to 10 per cent, free of income tax, is paid on the ordinary shares.

The central tinplate selling agency now embraces about 15 per cent of the Welsh tinplate output, all its sales being made through the central office in London. There is no prospect that the whole of the tinplate trade will join the organization, as various groups of manufacturers are making arrangements to establish selling agencies of their own, one object being to dispense with the service of the metal merchants.

Important steel works in Sheffield the services of the metal merchants. sisted by electricity they have been able to obtain at low cost from the Rotherham electrical supply station. The town council has just decided to reduce the basic rate for the supply of current for traction purposes from 1¼d (2½c) to 1d (2c) per unit. The council is making extensions which will provide a capacity of 70,500 kilowatts and it is claimed the new station will contain the largest electrical installation of any plant in the British Isles.

The District Iron & Steel Co., Ltd., which is one of the most important rerollers of steel in the country and whose works are situated near Birmingham, is enlarging its plant to increase production.

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Steel Products Exhibited

The British scientific products exhibition at Central Hall, Westminster, has a number of interesting exhibits all more or less connected with the successful prosecution of the war. Among these are some fine exhibits of steel. Messrs. Hadfields have a large display which includes a specimen of the largest shell ever fired from a gun. It is a naval shell of 18-inch caliber, weighing a ton and a half. Next to this is a 6-inch heavy trench mortar of the kind which in France or Flanders flung what Tommy Atkins humorously called "toffee-apples" into no man's land. Messrs. Vickers show pictures of a Vickers-Vimy Atlantic airplane and a battleship under full steam, also a model steam launch, with drop forgings, and alloy and tool steels. The metallurgical section includes a great range of various alloys.

Vacant Jobs Exceed Idle Men

Employment Service's Figures Show Employers' Needs Could Not be Filled When It Claimed There Was a Great Surplus of Labor—Claims to Have Placed 5,000,000 Workers at Average Cost of $1.34

WASHINGTON, July 29.—The United States employment service in the 18 months ending June 30 placed nearly 5,000,000 workers at a total expense to the country of approximately $6,640,000, according to an accounting made by the department of labor. This was at an average cost of $1.34 per placement and covered every phase of the bringing together of men and jobs, the report declares.

In the year and a half the service was in operation, the department states 7,108,655 workers applied for employment. Of these 6,446,294 were referred to employers, and the placement of 4,955,159 workers was accounted for in return reports. During the 11 war months of 1918 3,675,658 persons were registered for jobs while references reached 3,444,093 and placements 2,698,887. In the subsequent seven months of the readjustment period registrations totalled 3,432,997, references 3,002,201 and placements 2,256,272. Employers' requests for help in the 18 months were for 12,079,514 workers, of whom 7,904,675 were sought during the war.

Contrary to the impression given in the weekly unemployment reports sent out by the employment service, the figures showing jobs wanted and help wanted in the seven readjustment months disclose the fact that in all except February there were more vacant positions reported to the service than there were workers seeking employment. In the seven months employers asked for 4,174,839 workers, there being 741,842 more vacancies than there were registrants. In February "jobs wanted" exceeded "help wanted" by 8824.

It was but natural that during the war months, when the drain on the nation's man power was heaviest, employers' requests for help should have outweighed those of the unemployed workers—the excess was 4,229,017—but to account for continuance of this condition the department says it "was not because there were more jobs than men but because in many instances workers of particular qualifications were sought."

In discussing the present labor surplus the department says the peak "appears to have been reached about the middle of May and the labor market is now becoming more equalized with indications of a shortage within the next year."

Women constituted 20 per cent of the total workers placed, the statement says. Common labor placements were 23 per cent. The other 77 per cent "constituted skilled labor and other workers engaged in specific occupations."

In the seven months ending June 30 placements included 314,137 returned soldiers and sailors and in that period registrations by this class of workers reached 513,604. It is said the returns on soldiers' placements are incomplete.

"The beginning of industrial and military demobilization caused little change in the number of persons registering for employment," the report states, "but it did result in a tremendous drop in the requisitions from employers for workers. The extent of the great labor shortage that existed during the war and was emphasized during the late summer and fall of 1918 when war production so greatly increased is indicated in the figures of employers' requisitions. These figures also indicate the extent to which employers throughout the country have used the United States employment service not only during the war when labor was so sorely needed but from the signing of the armistice and the reversal of the situation to one of labor surplus."

Efforts in behalf of the Nolan-Kenyon bill to create a federal system of employment bureaus are being continued by the executives of the present service. Among the witnesses before the joint committee considering the measure last week was William E. Hall, vice president of the Duriron Steel Castings Co., Dayton, O., who is assistant director general of the service. Mr. Hall said that the majority of employers in the United States are in favor of a national system but that many have been misled into opposition by false propaganda conducted by small groups of reactionary employers.

Announcement was made by the department of labor last week that the number of federal agencies being operated with the limited funds now available from the government and through the support of outside organizations had reached 303. The number of emergency bureaus handling soldiers and sailors seeking employment now total 2294.

Secretary Wilson Urges Housing Study

Washington, July 29.—Another war-born bureau of the department of labor will be permanently established if congress passes the Tinkham bill. This measure would create a bureau of housing and living conditions, not merely for the convenience of the government, as was the case during the war, but for the public generally. William B. Wilson, secretary of labor, is strongly in favor of the proposal and has written John W. Langley, chairman of the house committee on public buildings and grounds, in response to that official's request for the secretary's recommendations. Mr. Wilson's letter in part is as follows:

"Investigations made by the housing corporation and by other branches of this department show that bad housing conditions reduce productive capacity and materially increase labor turnover, and that good housing conditions increase productive capacity.

"Such a bureau of housing as is outlined by Mr. Tinkham's bill should, in my opinion, investigate housing and living conditions in communities which request such investigation, and should conduct extensive research in the field of housing, in order to discover and bring to public attention every available means for reducing the cost of good housing for the industrial population, and for the promotion of home building throughout the industrial communities of America.

"Records of this department show that the housing shortage is acute in practically every industrial city of America, and every day letters are received requesting assistance in meeting this shortage.

"There is no doubt that the housing shortage in America will be more acute in the coming winter than it has been at any other time in the history of this nation, and every effort should be applied to stimulate the building of homes during the summer and fall, and to assist communities in making available housing facilities in order that the hardships may be reduced to a minimum."

Wilson Backs Densmore in Mooney Case

Secretary of Labor Wilson has sent to the house a statement, as requested, explaining the connection of John B. Densmore, director general of the employment service, with the Mooney case. Mr. Wilson says he did not permit Densmore to go to San Francisco and testify before the grand jury, although the jury, a judge, and the public requested such action, because: "The grand jury had been in continuous session for about six months with District Attorney Fickert as its legal adviser.

Fickert was reflected upon in the Densmore report, and some of the members of the grand jury were referred to in the report as having had improper relations with certain alleged jury fixers who were mentioned."

At the same time Densmore made a statement to the joint committee on labor of the house and senate, saying that this action was misconstrued by those persons who interpreted the refusal as evidence of the desire of certain officials at Washington to aid Mooney.

Densmore was sent West to investigate immigration cases and also the Mooney case when he was solicitor of the department of labor. It is claimed that he did not investigate the Mooney case, but other representatives who went with him did. Later they submitted their report to him and that is how he became connected with the insinuations against the district attorney and jurors.

Workers Endorse Thrift Bond Saving Plan

A system providing for "automatic thrift" was adopted at a recent meeting of the general shop committee representing employes of the Sprague electric works of the General Electric Co., at Bloomfield, N. J. Having decided to promote thrift among employes, the committee considered various methods of saving, and finally endorsed a plan as worked out by the National Thrift Bond Corp., of New York, composed of a group of nationally known public-spirited men seeking to foster the saving habit among all wage earners in the country.

According to this plan an employe signs a subscription form promising to save a certain amount regularly, and thrift receipts to that amount are inserted in his pay envelope instead of cash. Saving is thus made automatic, and requires no further initiative on the part of the worker. Ten dollars worth of thrift receipts may be exchanged for a $10 thrift bond which bears interest paid through coupons attached. Ten thrift bonds may be exchanged for a $100 registered thrift bond.

Labor Shortage Growing More Pronounced

New York, July 26.—While there is not so much uneasiness over the strike vote which unionized steelworkers are taking, there is considerable concern on the part of iron and steel plant executives over the labor shortage. This is becoming more acute rapidly, and while it is not so noticeable in some parts of the country as in others, apparently there is not one important industrial district where there is an abundance of workers. Even in districts where industrial establishments are few and where it always was possible in the past to secure enough help by drawing upon the farmers in the district, men now are not to be had.

Virginia pig iron makers say that they are confronted with new demands made possible by the labor shortage. Newark, N. J., foundrymen admit that despite the present high level of wages, they probably will have to pay still more before the end of the year, to compete against other industries.

An Alabama maker of pig iron has a full order book and is anxious to blow in another furnace, but is prevented from doing so by the lack of men. For the same reason a turnbuckle plant in the West is prevented from operating double turn. Steel mills throughout the country are handicapped by the labor shortage. This has been apparent in wire and sheets, especially. The situation threatens to become worse instead of better. Iron and steel plant executives say that adoption of 8-hour shifts would require a constantly growing number of men, and there seems to be no prospect of obtaining them.

Pay For French Labor is Increased 25 Per Cent

Employes in the French metallurgical and mining industries, building and electrical, and allied trades are now working eight hours a day and receiving the same wages they received for working 10 hours a day prior to June 1. Payments for piece work have been so graded that pieceworkers receive as much for eight hours as they formerly did for 10. The French figure that while the working time has been reduced 20 per cent, wages have been increased 25 per cent, in practically all of the principal industries and trades.

The agreement between employes and employers does not take into consideration wage increases made during the war, present wage scales being the same as they were when the agreement was signed, June 1. It provides, however, that bonuses which were granted employes during the war and which were intended to be temporary, must be made continuous. If an employer put into operation a system for paying extra money for extra production he must continue such a system. The new agreement provides that the employes make every effort to produce as much in eight hours as they formerly produced in 10 hours, but failure on their part does not entail a penalty.

With respect to the reoccupied regions, it is provided that a supplementary agreement may be entered into permitting employes to work from one to two hours a day to accomplish special tasks, where time is an imperative factor. Another exception permits of extra labor in steel mills, foundries and at blast furnaces, when the success of an 8-hour day's work depends on extra attention for an hour or two. The agreement gives the workers the right to decide for themselves when such extra time is essential.

Strikers Get Increase

About 400 employes of the Republic Iron & Steel Co.'s nut and bolt works at Muncie, Ind., have agreed to return to work, accepting a 15 per cent increase in day wages, 7½ per cent increase for piece work and an 8-hour working day. The men asked for a 20 per cent increase in day wages, a 10 per cent increase for piece work and an 8-hour day instead of a 10-hour day.

LABOR NOTES

An increase of 10 per cent in wages voluntarily has been granted employes by the Andrew Terry Co., Terryville, Conn., manufacturer of malleable iron castings.

The child labor section of the war labor bill, which places prohibitive tax on products of child labor entering interstate commerce, has been declared unconstitutional by federal judge at Greensboro, N. C.

While the hospital recently opened by the Clark Equipment Co., Buchanan, Mich., manufacturer of drills and precision tools, was primarily intended for the use of its employes, it is open to the citizens of the community at cost.

The General Electric Co. put into effect on June 23 a reduction in working hours at its Schenectady, N. Y., plant, from 50 to 48 hours per week. The decrease in working time has been accompanied by an increase in hourly pay in order to allow the men to receive the same weekly wages as before. The increase to hour-basis men is approximately 4 per cent. The night workers, principally firemen and plant maintenance men, will work 50 hours for the present.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE CORRUGATED BAR CO., INC., New York, recently announced it had taken over the entire assets and liabilities of the Corrugated Bar Co., a Missouri corporation, and is continuing the business of the latter, which is in the process of dissolution. The taking over of the Missouri company means the retirement of the Garrison interests, which held the majority of stock since the company's inception in 1891. The company now passes into the control of A. L. Johnson, who has been connected with the enterprise since July, 1895. The officers of the new corporation are: President, A. L. Johnson; vice president and treasurer, W. H. Kennedy; secretary, Ralph McCarty, and general manager of sales, A. E. Lindau.

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BLAST furnace lining for its Covington, Va., furnace has been ordered by the Low Moor Iron Co., Low Moor, Va., from the Ashland Fire Brick Co., Ashland, Ky. The Ashland company also is shipping a lining for the Federal furnace of the By-Products Coke Corp., South Chicago, Ind.

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THE Phoenix Iron Works Co., Meadville, Pa., has recently contracted for a two-story brick and steel constructed machine shop building, 64 x 240 feet. The general contract was let to W. W. Lindsay & Co. and the structural work involving 300 tons., was sublet to the Penn Bridge Co. The erection of a new machine shop building completes the program of new construction and improvements initiated by the Phoenix Iron Works Co. four years ago in order to modernize and place all departments, including its foundry and plate fabricating shops, on a highly efficient mechanical basis.

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SPECIFICATIONS for the third unit of the new tractor plant established at Janesville, Wis., by the General Motors Corp., and known as the Samson Tractor Co., are expected to come before the structural trade within 10 days. The third unit will be a foundry, 300 x 500 feet, and involve 800 to 850 tons of steel. Upon the completion of this job, a fourth unit, consisting of a steam generating plant and boiler house, estimated to take 700 to 750 tons of structural shapes, will be undertaken. The project is in charge of Frank D. Chase, Inc., consulting engineer, Chicago. The Worden-Allen Co., Milwaukee, which erected the first unit of the Samson plant, is rushing work on the second unit.

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THE Open Hearth Steel Products Co., 140 South Dearborn street, Chicago, has been formed to manufacture and market slag line cooling devices for open-hearth furnaces. It has taken out a Delaware charter and is capitalized for $100,000. The company has acquired all rights under the Naismith patents and will manufacture and make installations. This device is now in actual use and all open-hearth furnaces at the plant of a large steel company at Chicago are thus equipped. D. C. Bennett, a capitalist and automobile manufacturer, is president, A. J. Coleman, president of the Feature Products Corp., Chicago, is vice president, and Ralph N. Ballou, cashier of the National Produce Bank of Chicago, is treasurer.

* * *

PROPERTY formerly known as the West Side Foundry Co., Troy, N. Y., has been purchased by the Thomas C. Perkins, Inc., investment bankers, Hartford, Conn., and will be conducted in the future as the Troy Foundry & Machine Co., Inc., a new company incorporated under the laws of Massachusetts. Extensions are contemplated as is an increase in capital. The management will continue as at present with the addition of Thomas C. Perkins, Hartford, as treasurer. Other officers are Charles A. Sleicher, Troy, president and general manager; John T. Starkweather, Troy, vice president and chief engineer; Robert A. Stevens, secretary and assistant treasurer. In addition to Messrs. Perkins, Sleicher and Starkweather, Philip S. Ripley, Hartford, and Reginald W. Millard, president of the Foster Merriam Co., Meriden, Conn., are directors. Along with the foundry, the company operates an extensive machine department. Automobile accessories, transmissions and engine-driven tire pumps are manufactured.

* * *

PLANT expansion on a large scale in the sheet, tin and jobbing mill industries is indicated by a large number of orders for furnaces and other equipment, now on the books of the George J. Hagan Co., Pittsburgh, furnace and combustion engineer. The company has a contract from the Eastern Rolling Mill Co., Baltimore, for furnishing 12 Hagan-Allis continuous pair heating furnaces, 12 double-type stoker fired sheet furnaces; six standard stoker-fired, double-length battery annealing furnaces, as well as all material and labor needed for the construction of the plant, erection of which is to be started the latter part of August. The company has also received a contract from the American Sheet & Tin Plate Co., Pittsburgh, for 24 sheet and pair furnaces for Gary, Ind. All are stoker-fired and are of heavy construction. At this plant six double-length, stoker-fired annealing furnaces are also being installed. The LaBelle Iron Works, Steubenville, O., has contracted for the installation of four Hagan-Allis continuous pair furnaces; four Hagan-Bailey combination furnaces and eight double compartment sheet furnaces, all of the stoker-fired type. The Canton Sheet Steel Co., Canton, O., will install one Hagan-Costello open annealing furnace. Contracts have been received from the Otis Steel Co., Cleveland, for a bar heating furnace. The Whitaker-Glessner Co., Wheeling, W. Va., has contracted for the installation of seven Hagan-Allis continuous pair furnaces at its Portsmouth, O. plant, and the Newport Rolling Mill Co., Newport, Ky., for four Hagan-Allis continuous pair furnaces; four Hagan-Bailey combination furnaces; two Hagan-Costello open annealing furnaces; eight standard double-compartment sheet furnaces and three standard double-compartment, double-length annealing furnaces.

The Hagan company recently sold to a French interest its entire foreign rights on devices for sheet and tin mill furnaces.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

WHILE new purchases of gas producing equipment for open-hearth furnaces have been few since last summer, recent contracts closed by the Morgan Construction Co., Worcester, Mass., include one from the Cambria Steel Co. for 51 producers for service at its Franklin, Pa., furnaces. The Weirton Steel Co., Weirton, W. Va., is building an entirely new open-hearth and blooming mill plant containing 27 producers furnished by the Morgan company. In addition to this new business the same selection of producers has been made by four leading British steel plants this year and this means that about 400 of these machines are in operation or have been contracted for.

* * *

MACHINERY and equipment for the proposed extension to the plant of the Lancaster Steel Products Co., Lancaster, Pa., has either been purchased or shortly will be closed up. This addition will triple the company's capacity for cold drawn alloy and screw stock bars in sizes up to 5-inch round.

* * *

ARRANGEMENTS are being made by the Lycoming Foundry & Machine Co., Williamsport, Pa., manufacturer of automobile motors, practically to double its capacity. A considerable quantity of machine tools, power transmission and electrical equipment will be required. No additions to foundry or factory equipment are contemplated at this time.

* * *

CONTRACTS for an extension to its steam shovel manufacturing building have been let by the Ball Engine Co., Erie, Pa.. The extension will be 185 x 116 feet and the company hopes to have it completed inside of three months. While many of the orders for machine tools and equipment have been placed, additional lots will be required in all probability.

* * *

THE Ohio Valley Metal Products Co., Wheeling, W. Va., recently organized to manufacture patented metal products, has selected a site and building. It has voted a capital stock of $30,000 which has been subscribed and it is understood that none of the stock will be offered for public subscription except in limited amounts. The plant is modernly equipped and will do a jobbing business exclusively.

* * *

THE Pittsburgh Rolls Corp., Forty-first street and Allegheny Valley railroad, Pittsburgh, has begun construction work on a 12-ton open-hearth furnace, two core ovens and a double annealing furnace. The foundations for the new units have been laid. The open-hearth and the double annealing furnace are being built by the S. R. Smythe Co., Inc., Pittsburgh, while the Pittsburgh Rolls Corp. itself is building the core ovens.

* * *

AFTER being out of blast for several months, during which time it was overhauled, the Reusens, Va., blast furnace of the Lavino Furnace Co., Lavino, Va., will be blown in early in August. Superintendent Joseph J. Becker stated recently that at first the furnace will not be operated at full capacity, due to the market price of pig iron, which will be the output for several weeks. Later it will return to the production of ferromanganese, on which it was engaged when closed down.

* * *

CONTEMPLATED additions by the Koehring Machine Co., Milwaukee, include a building of reinforced concrete construction, 74 x 325 feet, for an erecting floor. For it two 15-ton cranes will be required. The company's machine room is to be enlarged a little later and several 24-inch turret lathes, some 20-inch lathes, a number of drill presses and radial drills as well as an open-end milling machine, a key-seating machine and a planer will be purchased. It will likewise erect an addition to its structural shop. It will be of reinforced concrete, 70 x 118 feet.

* * *

THE Page Steel & Wire Co., 30 Church street, New York, has opened a branch office in Chicago, at 29 South La Salle street, to handle its products, including welding rods, twisted pairs, plain and galvanized strand, bond wires, and barbed wire as well as the brands of fence manufactured by the Page company. It has another new branch office in the Book building, Detroit. Distribution in Canada is in the hands of Taylor & Arnold, Ltd., Montreal, Toronto, and Winnipeg. The sales of the iron department are under the supervision of W. T. Kyle, sales manager, 30 Church street, New York.

* * *

BY a joint manufacturing arrangement completed at Seattle, the Vulcan Mfg. Co.'s plant will manufacture large cranes for the Colby Steel & Engineering Co. The latter company some time ago purchased the West Coast Steel Co., and the Auto Marine Engine Works both of Tacoma and is manufacturing the cranes in both shops. The Vulcan and the two Tacoma plants will handle all the Colby orders in the United States. Under an arrangement just completed the Canadian Northwest Steel Co.'s Vancouver plant will manufacture the Colby company's British Columbia orders. These cranes are used extensively in the shipyards of the northwest and by lumber mills. The Colby company has its headquarters in Seattle.

* * *

JOHN TOD and others of the Bessemer Limestone Co., with quarries at Bessemer, Pa., have incorporated the Bessemer Limestone & Cement Co., with a capital of $3,000,000. The incorporation of the company follows reports that an extensive development was contemplated in the affairs of the company. Inclusion of the word "cement' 'in the title of the company, indicates, it is believed that the company plans to engage on a large scale in the cement industry, but as yet the officials have not given out a definite statement. Officers are: President, John Tod; vice president, R. C. Steese; vice president and general manager, F. R. Kanengeiser; treasurer, J. R. Rowland and G. G. Treat. The general offices of the company are in Youngstown, O.

Production of Steel and Finished

Steel Ingot Output Increases While That of Castings Decreases—Electric Process Makes Gain While Crucible Shows Loss

PRODUCTION of steel in the United States in 1918 was the second largest in the history, being exceeded only by the 1917 output. According to the figures compiled by the American Iron and Steel institute, the 1918 output was 44,462,432 gross tons of steel ingots and castings, 598,175 tons less than the 1917 total of 45,060,607 tons. Of the 1918 total, 43,051,022 tons consisted of steel ingots and 1,411,410 tons of steel castings. In 1918, 212 works in 25 states and the District of Columbia made steel ingots, against 202 works in 26 states and District of Columbia in 1917. In 1918, 280 works in 30 states, the District of Columbia and the Panama canal zone made steel castings against 242 works in 27 states, the District of Columbia and the canal zone in 1917. Electric production has more than tripled itself since 1916 while crucible production has declined very rapidly and bessemer only slightly.

Of the 32,476,571 tons of basic open open-hearth steel ingots and castings produced, 3,870,017 tons were duplex steel ingots and castings made from metal partly purified in bessemer converters and finally purified in basic open-hearth steel furnaces, against 3,791,830 tons in 1917, an increase of 78,187 tons or 2.06 per cent. In 1916 the production was 3,436,457 tons and in 1915 it was 1,781,491 tons. In 1918 duplexing was done by 10 works in 6 states against 10 works in 6 states in 1917, 9 works in 5 states in 1916, 6 works in 4 states in 1915 and 5 works in 4 states in 1914. In 1918 there were 133 works in 22 states and the District of Columbia which made alloy steel ingots or castings.

The production of all kinds of iron and steel rolled into finished forms in 1918 shows a decrease of 1,911,946 tons or 5.78 per cent as compared with 1917. The total of 31,155,754 tons was made up of 1,573,976 tons of iron products and 29,581,778 tons of steel. Universal plates made up 1,234,782 tons of which 919,448 tons were under 30 inches wide,171,468 tons were between 30 and 48 inches and 143,866 tons were over 48 inches wide. Sheared plates amounted to 3,885,126 tons, black sheets to 2,073,639 tons and black plates rolled on tin mills to 1,605,588 tons, making a grand total for sheets and plates of 8,799,135 tons.

Structural shapes totaled 2,849,969 tons compared to 3,110,000 tons in 1917. Of the 1918 output, 2,438,126 tons were heavy and 411,843 tons were light shapes. Angle splice bar production was 137,264 tons, that of tie plates, 161,881 tons, of fish plates 10,787 tons, and of other rail joints 51,292 tons, making a total of 361,224 tons. Forged iron and steel by the rolling mills and steel works totaled 1,295,566 tons, an increase of 216,801 tons over 1917. Production of galvanized sheets fell from 1,388,880,976 pounds in 1917 to 1,280,889,074 pounds in 1918. Cut nail production totaled 418,811 tons in 1918 compared to 461,674 tons in 1917. In the production of pipes and tubes, in 1918 there were 25 active works, of which 19 made black, 15 made galvanized, 14 made oil country goods, 10 made O. D. and miscellaneous pipe and 12 made boiler tubes.

In 1918, 18,310 tons of iron and steel nail plate were made, a decrease of 4554 tons over 1917. Six plants in five states rolled iron or steel nail or spike plate in 1918 against seven plants in five states in 1917.

PRODUCTION OF STEEL INGOTS AND CASTINGS BY PROCESSES.

Years	Open-hearth.			Bessemer.	Crucible.	Electric	Miscellaneous.	Total. Gross tons.
	Basic.	Acid.	Total.					
1904.	5,106,367	801,799	5,908,166	7,859,140	83,391	.....	9,190	13,859,887
1905.	7,815,728	1,155,648	8,971,376	10,941,375	102,233	.....	8,963	20,023,947
1906.	9,658,760	1,321,653	10,980,413	12,275,830	127,513	.....	14,380	23,398,136
1907.	10,279,315	1,270,421	11,549,736	11,667,549	131,234	.....	14,075	23,362,594
1908.	7,140,425	696,304	7,836,729	6,116,755	63,631	.....	6,132	14,023,247
1909.	13,417,472	1,076,464	14,493,936	9,330,783	107,355	13,762	9,185	23,955,021
1910.	15,292,329	1,212,180	16,504,509	9,412,772	122,303	52,141	3,194	26,094,919
1911.	14,685,932	912,718	15,598,650	7,947,854	97,653	29,105	2,844	23,676,106
1912.	19,641,502	1,139,221	20,780,723	10,327,901	121,517	18,309	2,853	31,251,303
1913.	20,344,626	1,255,305	21,599,931	9,545,706	121,226	30,180	3,831	31,300,874
1914.	16,271,129	903,555	17,174,684	6,220,846	89,869	24,009	3,622	23,513,030
1915.	22,308,725	1,370,377	23,679,102	8,287,213	113,782	69,412	1,527	32,151,036
1916.	29,616,658	1,798,769	31,415,427	11,059,039	129,692	168,918	604	42,773,680
1917.	32,087,507	2,061,386	34,148,893	10,479,960	126,716	304,543	495	45,060,607
1918.	32,476,571	1,982,820	34,459,391	9,376,236	115,112	511,364	329	44,462,432

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS.

Years.	Ingots.	Castings.	Total.	Years.	Ingots.	Castings.	Total.
1909.....	158,978	23,002	181,980	1914....	577,107	69,846	646,953
1910.....	538,462	29,357	567,819	1915....	923,251	97,896	1,021,147
1911.....	425,169	56,290	481,459	1916....	1,306,157	56,458	1,362,615
1912.....	689,392	103,109	792,501	1917....	1,576,806	67,529	1,644,335
1913.....	625,430	88,927	714,357	1918....	1,721,367	66,485	1,787,852

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS, BY PROCESSES, GROSS TONS, 1918.

Processes.	Ingots.	Castings.	Total.
Open-hearth steel—basic	1,013,913	10,724	1,024,637
Open-hearth steel—acid	323,913	29,191	353,104
Bessemer steel	41,286	23,430	64,716
Crucible steel	54,370	64	54,434
Electric steel	287,885	3,076	290,961
Total	1,721,367	66,485	1,787,852

TOTAL PRODUCTION OF ALL KINDS OF FINISHED ROLLED IRON AND STEEL, 1887–1918.

Years	Iron and steel rails.	Plates and sheets.	Nail plate.	Wire rods.	Structural shapes.	All other finished rolled products.	Total. Gross tons.
1887.	2,139,640	603,355	308,432	.....	.....	2,184,279	5,235,706
1888.	1,403,700	609,827	289,891	279,769	.....	2,034,162	4,617,349
1889.	1,522,204	716,496	259,409	363,851	.....	2,374,968	5,236,928
1890.	1,885,307	809,981	251,828	457,099	.....	2,618,660	6,022,875
1891.	1,307,176	678,927	223,312	536,607	.....	2,644,941	5,390,963
1892.	1,551,844	751,460	201,242	627,829	453,957	2,579,482	6,165,814
1893.	1,136,458	674,345	136,113	537,272	387,307	2,104,190	4,975,685
1894.	1,021,772	682,900	108,262	673,402	360,305	1,795,570	4,642,211
1895.	1,306,135	991,459	95,085	791,130	517,920	2,487,845	6,189,574
1896.	1,122,010	965,776	72,137	623,986	495,571	2,236,361	5,515,841
1897.	1,647,892	1,207,286	94,054	970,736	583,790	2,497,970	7,001,728
1898.	1,981,241	1,448,301	70,188	1,071,683	702,197	3,239,760	8,513,370
1899.	2,272,700	1,903,505	85,015	1,036,398	850,376	4,146,425	10,294,419
1900.	2,385,682	1,794,528	70,245	846,291	815,161	3,575,536	9,487,443
1901.	2,874,639	2,264,425	68,850	1,365,934	1,013,150	4,772,329	12,349,327
1902.	2,947,933	2,665,409	72,936	1,574,293	1,300,326	5,383,219	13,944,116
1903.	2,992,477	2,599,665	64,102	1,503,455	1,095,813	4,952,185	13,207,697
1904.	2,284,711	2,421,398	61,601	1,699,028	949,146	4,597,497	12,013,381
1905.	3,375,929	3,532,230	64,542	1,808,688	1,660,519	6,398,107	16,840,015
1906.	3,977,887	4,182,156	54,211	1,871,614	2,118,772	7,383,828	19,588,468
1907.	3,633,654	4,248,832	52,027	2,017,583	1,940,352	7,972,374	19,864,822
1908.	1,921,015	2,649,693	45,747	1,816,949	1,083,181	4,311,608	11,828,193
1909.	3,023,845	4,234,346	63,746	2,335,685	2,275,562	7,711,506	19,644,690
1910.	3,636,031	4,955,484	45,294	2,241,830	2,266,890	8,475,750	21,621,279
1911.	2,822,790	4,488,049	48,522	2,450,453	1,912,367	7,316,990	19,039,171
1912.	3,327,915	5,875,080	45,331	2,653,553	2,846,487	9,908,475	24,656,841
1913.	3,502,780	5,751,037	37,503	2,464,807	3,004,972	10,030,144	24,791,243
1914.	1,945,095	4,719,246	38,573	2,431,714	2,031,124	7,204,444	18,370,196
1915.	2,204,203	6,077,694	31,929	3,095,907	2,437,003	10,546,188	24,392,924
1916.	2,854,518	7,453,980	30,088	3,518,746	3,029,964	15,493,093	32,380,389
1917.	2,944,161	8,267,616	22,864	3,137,138	3,110,000	15,585,921	33,067,700
1918.	2,540,892	8,799,135	18,310	2,562,390	2,849,969	14,385,058	31,155,754

Material in 1918 Second in History

Plates and Sheets Show Increase While All Other Finished Material Shows Decrease — Seamless Steel Tubes Make a Gain

PRODUCTION OF MERCHANT BARS, SHOWING IRON AND STEEL MERCHANT BARS SEPARATELY, GROSS TONS, 1905–1918.

Years.	Iron.	Steel.	Total	Years.	Iron.	Steel.	Total.
1905...	1,322,439	2,271,162	3,593,601	1912.	944,790	2,752,324	3,697,114
1906...	1,481,348	2,510,852	3,992,200	1913.	1,026,632	2,930,977	3,957,609
1907...	1,440,356	2,530,632	3,970,988	1914.	563,171	1,960,460	2,523,631
1908...	685,233	1,301,405	1,986,638	1915.	657,107	3,474,135	4,131,242
1909...	952,230	2,311,301	3,263,531	1916.	993,948	5,236,354	6,230,302
1910...	1,074,163	2,711,568	3,785,731	1917.	983,926	5,226,031	6,209,957
1911...	835,625	2,211,737	3,047,362	1918.	846,898	5,395,851	6,242,749

PRODUCTION OF STRUCTURAL SHAPES, GROSS TONS, 1892–1918.

Years.	Tons.	Years.	Tons.	Years.	Tons.
1892.....	453,957	1901.....	1,013,150	1910.....	2,266,890
1893.....	387,307	1902.....	1,300,326	1911.....	1,912,367
1894.....	360,305	1903.....	1,095,813	1912.....	2,846,487
1895.....	517,920	1904.. ...	949,146	1913.....	3,004,972
1896.....	495,571	1905.....	1,660,519	1914.....	2,031,124
1897.....	583,790	1906.....	2,118,772	1915.....	2,437,003
1898.....	702,197	1907.... .	1,940,352	1916.....	3,029,964
1899.....	850,376	1908.....	1,083,181	1917.....	3,110,000
1900.....	815,161	1909.....	2,275,562	1918.....	2,849,969

PRODUCTION OF WROUGHT IRON AND STEEL PIPE AND BOILER TUBES, 1917–1918.

Kinds of pipe.	1917—Gross tons.			1918—Gross tons.		
	Iron.	Steel.	Total.	Iron.	Steel.	Total.
Black, standard...	90,119	969,628	1,059,747	74,871	940,914	1,015,785
Galvanized.....	25,949	249,356	275,305	20,209	244,473	264,682
Oil country goods.	102,337	785,566	887,903	67,136	727,633	794,769
O. D. and misc....	90	115,600	115,690	.....	91,157	91,157
Boiler tubes.....	55,395	92,937	148,332	40,742	83,344	124,086
Total.....	273,890	2,213,087	2,486,977	202,958	2,087,521	2,290,479

PRODUCTION OF WIRE NAILS IN 100-LB. KEGS, 1889–1918.

Years.	Production.	Exports.	Consumption.	Years.	Production.	Exports.	Consumption.
1889..	2,435,000	19,172	2,415,828	1904..	11,926,661	734,554	11,192,107
1890..	3,135,911	18,395	3,117,516	1905..	10,854,892	799,734	10,055,158
1891..	4,114,385	18,986	4,095,399	1906..	11,486,647	1,035,705	10,450,942
1892..	4,719,524	21,387	4,698,137	1907..	11,731,044	945,035	10,786,009
1893..	5,095,945	27,451	5,068,494	1908..	10,662,972	593,819	10,069,153
1894..	5,681,801	38,920	5,642,881	1909..	13,916,053	686,687	13,229,366
1895..	5,841,403	53,012	5,788,391	1910..	12,704,902	960,295	11,744,607
1896..	4,719,860	95,638	4,624,222	1911..	13,437,778	1,200,957	12,236,821
1897..	8,997,245	129,767	8,867,478	1912..	14,659,700	1,530,353	13,129,347
1898..	7,418,475	307,190	7,111,285	1913..	13,559,727	977,477	12,582,250
1899..	7,618,130	750,781	6,867,349	1914..	13,132,814	809,167	12,323,647
1900..	7,233,979	613,858	6,620,121	1915..	14,583,026	2,051,475	12,531,551
1901..	9,803,822	420,506	9,383,316	1916..	17,147,665	3,363,876	13,783,789
1902..	10,982,246	595,391	10,386,855	1917..	17,040,666	2,574,054	14,466,612
1903..	9,631,661	704,546	8,927,115	1918..	12,279,800	1,763,524	10,516,276

PRODUCTION OF TINPLATES AND TERNE PLATES, 1891–1918.

Years.	Tinplates.	Terne plates.	Total pounds.
1891 (second 6 months).....	368,400	1,868,343	2,236,743
1892 (calendar year).....	13,921,296	28,197,896	42,119,192
1893.....	64,536,209	59,070,498	123,606,707
1894.....	102,223,407	64,120,002	166,343,409
1895.....	165,927,907	88,683,488	254,611,395
1896.....	270,151,785	89,058,013	359,209,798
1897 (first 6 months)	203,028,258	49,545,643	252,573,901
1897 (second 6 months).....	.....	.....	322,205,619
1898 (calendar year).....	.....	.....	732,289,600
1899.....	.....	.....	808,360,000
1900 (cen. year end. May 31)..	707,718,239	141,285,783	*850,004,495
1901 (calendar year).....	.....	.....	894,411,840
1902.....	.....	.....	806,400,000
1903.....	.....	.....	1,075,200,000
1904 (cen. year end. Dec. 31) .	867,526,985	158,857,866	*1,032,940,706
1905 (calendar year).....	.....	.....	1,105,440,000
1906.....	1,100,373,000	193,367,000	1,293,740,000
1907.....	996,650,000	156,447,000	1,153,097,000
1908.....	1,048,896,000	154,179,000	1,203,075,000
1909.....	1,179,858,000	190,930,000	1,370,788,000
1910.....	1,450,821,000	168,184,000	1,619,005,000
1911.....	1,597,629,000	158,441,000	1,756,070,000
1912.....	1,965,659,000	191,396,000	2,157,055,000
1913.....	1,708,186,000	136,944,000	1,845,130,000
1914.....	1,939,785,000	146,195,000	2,085,980,000
1915.....	2,201,825,054	163,470,646	2,365,295,700
1916.....	2,552,224,275	214,176,952	2,766,401,227
1917.....	3,233,314,911	153,891,653	3,387,206,564
1918.....	3,216,247,675	85,376,569	3,301,624,244

* Includes 1,000,473 pounds in 1900 and 6,555,855 pounds in 1904 of "other sheet iron and sheet steel, tin or terne plated."

PRODUCTION OF IRON AND STEEL PLATES AND SHEETS, 1889–1918.

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1889.....	716,496	1899.....	1,903,505	1909.....	4,234,346
1890.....	809,981	1900.....	1,794,528	1910.....	4,955,484
1891.....	678,927	1901.....	2,254,425	1911.....	4,488,049
1892.....	751,460	1902.....	2,665,409	1912.....	5,875,080
1893.....	674,345	1903.....	2,599,665	1913.....	5,751,037
1894.....	682,900	1904.....	2,421,398	1914.....	4,719,246
1895.....	991,459	1905.....	3,532,230	1915.....	6,077,694
1896.....	965,776	1906.....	4,182,156	1916.....	7,453,980
1897.....	1,207,286	1907.....	4,248,832	1917.....	8,267,616
1898.....	1,448,301	1908.....	2,649,693	1918.....	8,799,135

PRODUCTION OF SEAMLESS STEEL TUBES, GROSS TONS, 1913–1918.

Years.	Hot finished.	Cold drawn.	Total.
1913.....	42,740	65,827	108,567
1914.....	36,939	53,656	90,595
1915.....	63,488	76,180	139,668
1916.....	61,235	129,238	190,473
1917.....	87,615	139,060	226,675
1918.....	142,308	150,586	292,894

PRODUCTION OF CAST IRON PIPE, NET TONS, 1917–1918.

Kinds of pipe.	1917—Net tons.			1918—Net tons.		
	Pipe.	Fittings.	Total.	Pipe.	Fittings.	Total.
Gas and water*...	696,097	52,076	748,173	455,319	52,981	508,300
Soil and plumbers'	175,625	75,303	250,928	80,089	31,284	111,373
Total.....	871,722	127,379	999,101	535,408	84,265	619,673

*Includes culvert pipe. Manufacturers able to separate their production report 16,770 tons of culvert pipe in 1918 and 19,725 tons in 1917.

PRODUCTION OF CONCRETE BARS, SHOWING IRON AND STEEL CONCRETE BARS SEPARATELY, GROSS TONS, 1909–1918.

Years.	Iron.	Steel.	Total.	Years.	Iron.	Steel.	Total.
1909..	.....	159,352	159,352	1914.	.....	288,471	288,471
1910...	4,645	236,464	241,109	1915.	.....	353,408	353,408
1911...	2,388	256,353	258,741	1916.	2,683	458,717	461,400
1912...	2,500	271,832	274,332	1917.	1,497	469,687	471,184
1913...	113	319,557	319,670	1918.	468	344,152	344,620

Statistics are not available prior to 1909.

PRODUCTION OF WIRE RODS, GROSS TONS, 1888–1918.

Years.	Tons.	Years.	Tons.	Years.	Tons.	Years.	Tons.
1888..	279,769	1896..	623,986	1904..	1,699,028	1912..	2,653,553
1889..	363,851	1897..	970,736	1905..	1,808,688	1913..	2,464,807
1890..	457,099	1898..	1,071,683	1906..	1,871,614	1914..	2,431,714
1891..	536,607	1899..	1,036,398	1907..	2,017,583	1915..	3,095,907
1892..	627,829	1900..	846,291	1908..	1,816,949	1916..	3,518,748
1893..	537,272	1901..	1,365,934	1909..	2,335,685	1917..	3,137,138
1894..	673,402	1902..	1,574,293	1910..	2,241,830	1918..	2,562,390
1895..	791,130	1903..	1,503,455	1911..	2,450,453	.....	.....

Small quantities of copper-clad steel wire rods are included.

PRODUCTION OF SKELP, SHOWING IRON AND STEEL SKELP SEPARATELY, GROSS TONS, 1905–1918.

Years.	Iron.	Steel.	Total.	Years.	Iron.	Steel.	Total.
1905...	452,797	983,198	1,435,995	1912.	327,012	2,119,804	2,446,816
1906...	391,517	1,137,068	1,528,585	1913.	312,746	2,189,218	2,501,964
1907...	444,536	1,358,091	1,802,627	1914.	264,340	1,718,091	1,982,431
1908...	297,049	853,534	1,150,583	1915.	262,198	2,037,266	2,299,464
1909...	370,151	1,663,230	2,033,381	1916.	355,445	2,572,229	2,927,674
1910...	350,578	1,477,616	1,828,194	1917.	336,591	2,337,640	2,674,231
1911...	322,397	1,658,276	1,980,673	1918.	258,500	2,305,511	2,564,011

PRODUCTION OF MISCELLANEOUS ROLLED IRON AND STEEL PRODUCTS, GROSS TONS, 1918.

Miscellaneous rolled products.	Iron.	Steel.	Total.
Hoops.....	.....	262,281	262,281
Bands and cotton-ties.....	497	250,270	250,767
Long angle splice bars, fish-plate bars, tie-plate bars, and other rail joint shapes.....	49,475	367,430	416,905
Rolled sheet piling, not including fabricated..	.....	11,689	11,689
Railroad ties.....	.....	6,438	6,438
Rolled forging blooms, forging billets, etc	.....	1,659,118	1,659,118
Blooms, billets, sheet bars, etc., for export....	7,838	824,908	832,746
Spike and chain rods, bolt and nut rods, horseshoe bars, strips, shafting, tires, etc...	391,864	1,401,870	1,793,734
Total.....	449,674	4,784,004	5,233,678

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

B. L. COGSHALL, who has been appointed assistant to the president of the Pittsburgh Steel Co., Pittsburgh, with headquarters in Pittsburgh, effective July 1, comes to that company from Canton, O., where for a year he was manager of production of the United Alloys Steel Corp. Previously he was with the Illinois Steel Co. for 11 years as secretary to the general superintendent of the Gary works. Mr. Cogshall was graduated from the University of Michigan in 1906 with the degree of M. E.

E. O. Floyd has been made general sales manager of the Rossendale-Reddaway Belting & Hose Co., Newark, N. J., effective Aug. 1.

Charles A. Swan has become associated with the Crucible Steel Forge Co., Cleveland, in the capacity of general superintendent.

C. A. Ducharme has been transferred from the Philadelphia to the Boston sales office of the Republic Iron & Steel Co.

Carl W. Gage, who has been in the St. Louis office of the Jones & Laughlin Steel Co., Pittsburgh, for some time, has been transferred to New York.

George Stich, formerly with the Huntington Steel Foundry Co., Huntington, Ind., has accepted a position with the Union Sanitary Mfg. Co., Noblesville, Ind.

Arthur J. Coldwell has been made assistant general superintendent for the Klaxon Co., Newark, N. J. On Aug. 15, 1918, Mr. Coldwell severed his connection with the Coldwell Lawnmower Co., Newburgh, N. Y., after an association of 15 years to become production engineer for the ordnance department in the plant facilities section, New York district. In January of this year he secured his release from the service and entered the employ of the Klaxon Co. as efficiency engineer.

George W. Pope has returned to the Minneapolis Steel & Machinery Co., Minneapolis, as structural sales manager, after two years' service at the Hog Island shipyards of the American International Shipbuilding Corp. He had been affiliated with the Minneapolis company for 14 years prior to taking up war work in the east.

Q. S. Snyder, of Chicago, has been made vice president and treasurer of the Pittsburgh Rolls Corp., Pittsburgh, succeeding H. R. Warfield, resigned.



W. WOODWARD WILLIAMS

Who as announced in THE IRON TRADE REVIEW of July 24, becomes general manager of the Reading Iron Co., Reading, Pa., on Aug. 1.

M. B. Summers who has been connected with the Stalmaker Steel Co., Frick building, Pittsburgh, for several years, has been made secretary to succeed F. S. Easterly, who recently resigned.

N. B. Folsom, who has been acting treasurer of the Brier Hill Steel Co., Youngstown, O., since the retirement of John Stambaugh several months ago, has been elected treasurer of the company's board of directors. Herbert J. Weeb, former cashier, has been chosen assistant treasurer.

J. J. Brown, formerly vice president and general manager of the Wheeler Condenser & Engineering Co., Carteret, N. J., has been elected president of that company, succeeding Charles W. Wheeler, who died recently. H. S. Brown, who was elected vice president at the same time, formerly was New England manager for the Power Specialty Co. and also is president of the Brown-Ferries Co., Philadelphia.

Charles S. Hogan and Ray E. Lawlor now are salesmen in the Chicago and Detroit offices respectively of the Youngstown Sheet & Tube Co., Youngstown, O., having been transferred from the home office.

W. F. Reulman has been appointed manager of the Detroit office and warehouse at 660 West Fort street, recently established by Edgar T. Ward's Sons Co., 646 Washington boulevard, Chicago.

Malcolm E. Gregg, who for several years has been Buffalo district sales manager of the Republic Iron & Steel Co., has resigned to become affiliated with the general sales office of the Lackawanna Steel Co., Buffalo.

Wilford L. Stork, metallurgist for the Michigan Motor Casting Co., division of the Buick Motor Co., has resigned to become associated with the Detroit Valve & Fitting Co., Wyandotte, Mich., as foundry superintendent.

J. Earl Myers, manager of the Pittsburgh office of the Whitney-Kemmerer Co., has resigned that position, effective Aug. 1, to become sales manager of the Westmoreland Fuel Co., First National Bank building, Pittsburgh.

Frank R. Colville, who formerly was connected with the Reno-Kaetker Electric Co., Cincinnati, as sales manager, now is affiliated with the sales department of Eaton, Rhodes & Co., that city, pig iron and coke merchants.

W. C. Greer, who recently accepted a position with the McKenna Brass & Mfg. Co., Pittsburgh, formerly was superintendent of the Seward Foundry, following his service as foreman for the Verona Steel Castings Co., and the Pittsburgh Brass Mfg. Co., Pittsburgh.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

GEORGE R. WOODS has resigned from the Allied Machinery Co. of America, New York, effective July 31, to accept another position in the same field. On Aug. 2, he will sail for Europe to study industrial conditions and upon his return in November, will announce his new connection. His European address will be in care of Morgan, Harjes & Co., 14 Place Vendome, Paris, France.

George Mesta, president of the Mesta Machine Co., Pittsburgh, has sailed for Europe on a combined pleasure and business trip to last until November.

Joseph E. Sweeny now is salesman for the Ideal Concrete Machinery Co., Cincinnati, having been honorably discharged from government service.

Frank Smith, Bridgeport, Conn., has taken the position of credit manager of the Lincoln Twist Drill Co., Taunton, Mass. He served in the army ordnance department during the war.

J. Leonard Replogle has received the decoration of the chevalier of the legion of honor from the French government in recognition of his services during the war as director of steel supplies.

H. A. Daniels now is identified with the sales force in the Cleveland office of Manning, Maxwell & Moore, Inc., machine tools, cranes, etc. He formerly was sales manager for the Baush Machine Tool Co., Springfield, Mass.

Robert Voigtlander, who for the past seven years was manager of the architectural iron and bronze department of the Robert Mitchell Co., Ltd., Montreal, Canada, has been made southern sales manager of the Southern Brass Mfg. & Plating Co., Houston, Tex. Mr. Voigtlander's experience includes 19 years employment and association with brass foundries.

W. S. Vrooman, who for some time has been identified with the Cleveland Tool & Supply Co., Cleveland, handling machine tool correspondence, has become identified with the Cleveland-Duplex Machinery Co., 1224 West Sixth street, that city, as office manager. By this arrangement, President G. J. Hawkey will be relieved of some of his duties and will be able to give more time and attention to the trade.

Charles Russell, credit and office manager of the Russell & Erwin Mfg. Co., New Britain, Conn., has resigned



ROWLAND S. LEBARRE

Who as announced in THE IRON TRADE REVIEW of July 24, has been made general sales manager of the alloy steel department of the Interstate Iron & Steel Co., Chicago.

to accept a similar position with the Hart & Hegeman Mfg. Co., Hartford, Conn. Mr. Russell has been with the company 18 years.

H. A. Wolcott has been appointed Chicago district manager for the Ohio Locomotive Crane Co., Bucyrus, O. His headquarters are 1417-19 Lytton building, Chicago. Mr. Wolcott has had several years' experience in handling locomotive cranes.

George T. Trundle Jr. has resigned as chief engineer of the American Multigraph Co., Cleveland, after a service of 12 years. He has opened offices at 241 Brotherhood of Locomotive Engineers building, that city, as a consulting engineer. He will specialize in management, production, machine design and human relationships. During the war Mr. Trundle invented several machines for munitions production. Among these was a thread mill which greatly increased the American Multigraph Co.'s fuse production.

Joseph W. Peters is affiliated with the sales organization of the Reeves & Skinner Machinery Co., St. Louis, having resigned the secretaryship of the Engineers club of that city. W. E. Rolfe, 305 City Hall, will serve as secretary of the club until a permanent officer is elected.

W. L. Layton now is traffic manager at the main works of the Westinghouse Electric & Mfg. Co., East Pittsburgh, having been transferred from Springfield, Mass., where he has served the New England Westinghouse Co., in a similar capacity for four years.

Frank O. Leitzell has become affiliated with the Blaw-Knox Co., Pittsburgh, as an engineer-salesman in the sheet and tin mill specialties department. He formerly was assistant to the general manager of the H. K. Porter Co., Pittsburgh. Mr. Leitzell was graduated from Pennsylvania State college in 1907.

R. R. Shafter has returned to the sales organization of the Traylor Engineering & Mfg. Co., Allentown, Pa., maker of mining, milling, crushing and smelting equipment, after an absence of two years as general superintendent of the shipyard of the Traylor Shipbuilding Corp. Mr. Shafter will be New York district manager in charge of the Traylor Engineering & Mfg. Co.'s office at 30 Church street, New York City.

A. T. Miles, a member of the engineering department of the New Departure Mfg. Co., Bristol, Conn., has been elected a chevalier of the French legion of honor in recognition of his valuable services. Mr. Miles became an ambulance worker with the French army in 1916, obtaining a commission. In 1917, after America entered the war, he became identified with an American ambulance unit as first lieutenant and in addition to this latest honor, had received the French croix de guerre with palm and star.

Activities Described

For Reconstruction in Foreign Countries—Report of Council is Specific

Readjustment and reconstruction activities in foreign countries, particularly relating to industrial, financial and labor features, are described in a 188-page report just issued by the council of national defense. This is a compilation of reports of the most specific and informative character which have been published in the United States and abroad, and also a summary of United States commerce reports.

Much attention is devoted to reconstruction work in the United Kingdom, Germany and France. While Germany is attempting an ambitious program of socialization of industry, it appears that in Russia the plan has failed. "German business circles fully realize that the signing of peace only means the beginning of a new and even harder commercial war and that all the resources of business will be required to put industrial Germany on a sound basis," according to a recent commerce report, which proceeds to outline some of the means taken by Germans to re-establish her export trade. Among these are the organization of a liability company to open warehouses and establish agencies abroad, educational activities and exhibitions, and the creation of a bureau to deal with foreign questions other than political.

Attention is called to the fact that French manufacturers engaged in rebuilding projects are buying collectively and not as individuals, and that a "Societe Co-operative des Mines de Fer et de la Siderurgie des Regions Sinestres" is conducting commercial and industrial operations necessary for reconstructing the iron mines and steel works in the invaded districts. The Societe Mineraux et Metaux is taking a leading part in the purchase of metals in the United States. Control of the iron and steel consortium over imports was withdrawn early this year and the consortium exists now solely for the liquidation of stocks held in various parts of France.

London bankers are anxious to invest heavily in financing Belgium's industries, although Belgian financial institutions have arranged for a credit of $50,000,000 in the United States and are now seeking an additional credit of a like sum. British bankers have been relieved of all wartime formalities in financing exports.

Thirty British trades are co-operating in the government department of scientific and industrial research which aims at "a complete revaluation of science in the scale of British thought and practice," according to a commerce report. Much work is being done by the British government to assist the development of its iron and steel industry. The British Manufacturers' association has merged with the Federation of British Industries and many overseas trade commissioners have been appointed to keep the 16,000 members of the organization advised of the opportunities in foreign countries and of the activities of their competitors.

The Cuban government is going to create a geological survey which is to be modeled after that of the United States. Cuba is making especially earnest efforts to increase its output of chrome and manganese ore.

Obituaries

FREDERICK SARGENT, head of the engineering firm of Sargent & Lundy, Chicago, and expert in electrical generating stations, died July 26 at his home in Glencoe, a suburb of Chicago. He was taken ill while on a trip to England in May and did not improve. He was born in Cornwall, England, in 1859, and came to the United States in 1880, engaging as designer of steam engines for marine purposes. He was connected with the Sioux City Engine Co. and latter with E. P. Allis & Co., Milwaukee, now the Allis-Chalmers Mfg. Co. In 1884 he removed to Chicago and was consulting engineer of the commonwealth Edison Co. of that city. The firm of Sargent & Lundy was formed in 1891 and Mr. Sargent was consulting electrical engineer for the World's Columbian exposition at Chicago. During the recent war he was consulting engineer for the power station of the arsenal at Edgewood, Md., and for the United States government in other projects.

William Althoff, president of the Twentieth Century Brass Co., Belleville, Ill., and one of the founders of the Eagle Foundry and the St. Clair Foundry, died at Belleville, Ill., July 23, aged 70. He was born in Westphalen, Germany, and came to America when 11 years of age.

Patrick Kennedy, inventor of many electric lighting devices for steam railways, died July 21, at his home in Brooklyn, aged 69. Until five years ago he was chief engineer of the Consolidated Railway Electric Light & Equipment Co. Mr. Kennedy, in 1878, formed the firm of Kennedy & Diss, machinists, of which he became sole owner in 1894, continuing the business thereafter as the Kennedy Machine Works.

Robert D. Schulte, aged 71 years, former blast furnace builder, died Wednesday afternoon, July 23, at his home in Mt. Lebanon, Pittsburgh, after a short illness from pneumonia. Mr. Schulte, who was born in Germany, came to this country when 19 years old and has resided in the Pittsburgh district practically ever since. He was well known in the iron and steel trade. Previous to his retirement from active business 15 years ago, Mr. Schulte was associated with the late Harry Quigg.

La Verne W. Noyes, president of the Aeromotor Co., Chicago, died July 24 after an illness of several weeks of pneumonia and heart trouble, aged 70 years. He was born at Genoa, N. Y., and finished his education in the Iowa State college. He moved to Chicago in 1879. He had much inventive genius and perfected several harvesting machines. He had been president of the Illinois Manufacturers' association, the National Business League of North America and the Chicago Civic Federation. He was also a member of the American Association for the Advancement of Science and the president of the board of trustees of the Chicago Academy of Science.

Clarence W. Hathaway, who for the last eight years has been metallurgist for the Granite City Steel Works branch of the National Enameling & Stamping Co., Granite City, Ill., was drowned on July 19, while swimming in the Mississippi river on July 19. He was born in Columbus, O., in 1886 and received his higher education at Ohio State university. Before becoming affiliated with the National Enameling & Stamping Co., Mr. Hathaway had been employed by the United States Steel Corp., at Gary, Ind. He was a member of the American Chemical society, the Metallurgical Society of America and the American Ceramic society.

Better Orders

Are Reported by Manufacturers of Refractories—New Work Increasing

Pittsburgh, July 29.—Some producers of refractories in this district report that orders are coming in in good volume. Steelmakers who have not been in the market for a long time appear to have about cleaned up supplies that they had on hand and are seeking requirements for new construction and repair work. Most of the demand is for first quality, the market for the Pennsylvania grade being quoted at $36 to $40 per 1000 f.o.b. works. As a general thing prompt shipment is being asked. Some producers of refractories, however, report that business is only moderate but that they expect further improvement in the near future. Complaint is made from some districts of a scarcity of cars. In this connection it has been reported that the railroad administration is about to release 6000 cars which are said to have been accepted finally by the railroads.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 38.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent	$ 40.00 base
76 per cent	100.00 base

Buyers Should be Notified

American Consul Wilbur T. Gracey, Monterey, Mexico, says that the attention of the consulate has been called to the difficulty that local firms are experiencing in securing acknowledgements of orders sent by them to the United States. This is a condition which was prevalent prior to the war, but with the added difficulties of trade incident to present conditions, the situation has been much intensified. It appears that firms here send orders to the United States and get no replies for several weeks or months, and in some cases numerous telegrams are sent without any replies being received. The failure to acknowledge receipt of orders causes a great deal of unnecesary trouble and anxiety, and it is believed that if American manufacturers could be brought to realize how important it is for buyers in foreign countries to know as soon as possible that their orders have been received and are receiving attention, and if possible the approximate date when goods might be shipped, it is probable that greater care would be taken in this matter.

Oppose Alabama Plan to Tax Iron and Steel

Birmingham, Ala., July 29.—Alabama coal, ore, pig iron and steel producers are opposing a bill in the legislature to place a tax of 5 cents per ton on coal and 3 cents per ton on iron ore, and an income tax and an excess profits tax. Representatives of the industries have been in Montgomery the past 10 days and have appeared before committees of the legislature. They claim the proposed tax will increase the costs of making pig iron 65 cents a ton.

Will Hold Exposition

From Oct. 27 to Nov. 8, an exposition of the manufactured and kindred products of the Mississippi valley will be held at the Exhibit building, St. Louis. It will be the first exhibition in this territory since the ending of the war. Exhibits are expected from each of the 20 states in the Mississippi valley territory, which furnishes most of the country's iron, coal, timber, wheat, corn, cotton, wool, live stock and a large portion of its manufactured products. Robert L. Burch is managing director. Foreign buyers are to be invited to attend the exposition, through the commerce department of the United States government. Delegates are expected to attend from Mexico, Cuba, West Indies, Central and South America, Europe and the Orient.

The annual convention of sales managers and district managers of the Aluminum Co. of America was held at the plant of the company at New Kensington, Pa., on June 10 and 11. A picnic for those in attendance and the 2000 employes of the company followed the conclusion of the convention.

Phenol Stocks

About to be Released by Government —Tar Products Lively

New York, July 28.—The release of some 27,000,000 pounds of phenol by the government will likely take place this week. The stocks, it is believed, will be handled by two producers and the minimum price will be set around 12 cents. The release of this phenol will come as considerable relief to consumers, who at this time find supplies rather difficult to obtain. At present, the market largely is nominal.

Following the recent reduction in prices, naphthalin continues in fairly good demand. Both the dye industry and drug trade again are in the market, and trading is on a larger scale than in several weeks. Current quotations in flakes run around 6½ to 7½ cents, and naphthalin in balls, 8½ to 9½ cents.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Contract

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.08½ to .09½
Naphthalin, balls	.10½ to .11½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	nominal

Both pure benzol and 90 per cent benzol are scarce, due to the continued good demand by the rubber industry and the large buying for motor fuel. Despite this shortage, however, prices on pure benzol remain unchanged at 24 to 28 cents per gallon for both spot and contract. Toluol also is scarce. Prices, though, continue to hold around 25 to 35 cents for spot and contract business. Solvent naphtha is fairly active at 22 to 27 cents.

No change as yet has come over the market on sulphate of ammonia. Domestic inquiry remains as quiet as ever, and export demand is unchanged in volume.

Capitalization of the British Dyestuffs Corp. is given as £10,000,000.

Drop Co-ordinated Credits Plan

Bankers Unable to Work Out Comprehensive Financial Aid for European Countries Which is Acceptable to Political and Industrial Powers—Independent Groups Will Assume Task—General Industrial Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

WITH the abandonment by the powerful group of New York bankers of comprehensive plans for bringing about a nationally-organized effort to extend financial assistance to Europeans, the way has been cleared for negotiation of individual banking credits in connection with export trade. The bankers, it is said, were compelled to give up what they believed to be an excellent scheme for co-ordination of the country's resources, because of the attitude of industrial interests and political powers. The floodgates will now be opened to the scores of competing requests for credits from many countries of the world.

Since the armistice $130,000,000 in credits have been advanced to European nations. The initial accommodation was the $50,000,000 acceptance credit for Belgium, after which came the $25,000,000 bond flotation for Sweden. Switzerland has disposed of $30,000,000 in bonds to American investors in the last few days, while Czecho-Slovakia has arranged with New York bankers for acceptance credits which may aggregate $25,000,000. Practically all of the European nations from neutrals to the central powers are feeling out the American investment market. Banking loans to Norway and Denmark are pending. Germany is trying to put through a huge commercial credit deal totaling at least $100,000,000. The most favorably talked of plan for aiding the late enemy country is to have banks in this country grant commercial credits which are to be used in the United States and to be guaranteed by German banks.

Announcement has been made by a Boston financier in Paris that a gigantic loan is to be sought in the United States next autumn sufficient to cover French, British, Belgium and Italian credits for a period of 30 years, or until these countries do not need any further help. That the issuance of such a loan is the only way to save Europe from collapse, is the conviction of the financial authority responsible for the announcement.

What the result will be of the bankers giving up the co-ordinated plan and throwing the burden of meeting the situation upon independent competitive groups, remains to be seen. Thus far the investment resources have absorbed with extraordinary ease all of the offerings, both foreign and domestic, that have been made. But the aggregate may prove too great, and securities of some nations too insecure to permit of full financial justice being done to all parties if no plan of allocation is adopted.

Precisely what constituted the chief difficulty in the way of the successful working out of the plan has not been intimated. Certainly the obstacles were many. In the first place it is doubtful if an exact inventory of needs of the various countries is available. This is evident from the fact that the credits required are variously estimated at from $3,000,000,000 to $10,000,000,000.

Possibly the government may be appealed to eventually, but it is not anticipated that such request would meet with success. The government has already advanced Europe all but nearly $500,000,000 of a $10,000,000,000 credit. Besides this $1,000,000,000 has been authorized to finance wheat shipments and purchases of government property abroad. Furthermore congress has authorized $1,000,000,000 to be extended in export aid by the War Finance Corp., practically none of which has been used as yet. Beyond this the government can hardly afford to go, in view of the active propaganda already being pushed to obtain a cancellation of the huge credits already extended.

Export Trade Hangs an Outcome

The plan of the bankers contemplated a vast co-ordination of the nation's resources in goods and credit and their allocation among the needy countries of Europe. Under this plan it would have been necessary for Europe to pool its resources as collateral against which the American corporation would have issued debentures. There is no present question more important to business as this one of foreign credits. The maintenance of America's prosperity depends largely upon the continuation of vast exports. While the possibilities for permanent development of export trade lie in the directions of the southern hemisphere and in the Orient, it is to this country's advantage that Europe's urgent temporary requirements be met, in order that the countries there do not break down.

Sir George Paish, the noted British economist, last week urged the cancellation of the American-Anglo loan to the allies, declaring that the economic and credit structures of those debtor countries are on the verge of collapse. Europe must buy raw materials here but even these can not be purchased unless the foreign exchange is stabilized, which may be accomplished by credits. If America fails to extend these credits, he says, exports will fall off drastically, prices may drop, industrial activity lag and depression prevail. Consequently it is up to this country to come forth with the credits as well as the goods. If this be impossible through independent measures then some form of co-ordinated effort will be imperative in the coming months.

How large a share the export situation is playing in the present recovery in the industrial situation is indicated by the fact that total exports for the fiscal year ended June 30 amounted to the unprecedented sum of $7,225,000,000 as compared with $5,928,000,000 in 1918 and $6,294,000,000 in 1917. In the five years since the outbreak of the European war America has piled up an excess of exports over imports amounting to more than $14,000,000,000, a total which corresponds roughly to the private and governmental credits advanced Europe. The excess of exports over imports for 1919 was $4,129,000,000, the largest in the history of the nation. Imports for the fiscal year were $3,096,000,000, a gain over last year, making total foreign commerce for the country $10,321,000,000. June exports of $918,000,000 were the highest record for all time for the country, and compared with $606,000,000 in May and with $485,000,000 in June, 1918. Only a portion of this stupendous increase reflects the advanced prices, the larger part

indicating the growing volume of shipments. Is the country willing to see this enormous and lucrative trade cut off?

Bethlehem Passes Extra Common Dividend

Notwithstanding the increasing volume of steel business directors of the Bethlehem Steel Corp. have decided to forego the declaration of the extra dividend of ¾ per cent, fearing that with the continued high cost of production and the present level of prices, profits would not justify any extra disbursement. The corporation has declared the regular quarterly dividends of 1¼ per cent on its A and B common stock, however. Since early in 1917 Bethlehem has paid 10 per cent on its common stock, until the end of 1918. In the first quarter of 1919 the stock was put on a 5 per cent regular basis with an extra dividend of 1¼ per cent declared for that period. In April the extra was ¾ per cent. The directors made the following statement:

"It was deemed expedient to make no extra distribution to stockholders at this time, feeling it wise to conserve the corporation's resources against the somewhat uncertain future.

"The corporation's shipbuilding plants are still producing at full capacity, principally on work taken during the war period. The steel plants as a whole are operating at about 60 per cent capacity; in some important lines at full capacity, but the small volume of orders from the railroads, who are normally the largest single purchaser, makes for an unbalanced order book.

"The corporation is continuing its policy of modernizing its plants and extending into new fields. To date this year it has spent $12,000,000 and has authorized, financed, and in course of execution further plant extensions at a cost of $20,000,000. When completed, this expenditure, in the main, will provide additional structural capacity at the Bethlehem plant, additional merchant plate and tinplate output, and a new sheet plant at the Maryland plant extension of dry dock and repair facilities at our various shipyards and the modernizing and extension of the American Iron & Steel plant at Lebanon. Material progress has been made in converting the purely war-time plants into various commercial pursuits closely allied to the different lines of our present business."

Equipment Finance Plan is Taking Form

After a meeting of the association of railway executives at New York, July 25, it was announced that the formation of a national equipment corporation to take up and finance, in a single operation, a large part of the $250,000,000 worth of equipment contracted for by the government and allocated to the various railroads, is under consideration with the government. Many of the strongest roads have joined in this movement, it was stated, in the belief that the relationship with the government would be simplified and that the general railroad situation would be benefitted. The question as to the extent to which railroad properties were maintained under government control, and the character of the control that is to be exercised after the roads are returned to private ownership also were discussed.

Shows Auto Demand

Striking improvement which has taken place in the automobile industry in recent months is reflected by the June quarter report of the Stewart-Warner Speedometer Co., which shows a large increase in earnings over the corresponding quarter of 1918. Net profits for the three months ended June 30 were $824,229 as compared with $716,728 in the same quarter one year ago. The first six months yielded net profits of $1,373,833 as compared with $944,310 in the first half of 1918. The totals are before provision for federal taxes, but after all other charges and reserves. In addition to the showing made officials state that the company has many unsettled government claims which will be paid in the near future. Sales in July are declared to be running 25 per cent greater than those of the same period last year. The company has no outstanding bank loans, and is in strong financial position.

Buys Propeller Plant

The George H. Thatcher Co. Albany, N. Y., has purchased the American Screw Propeller Co., Philadelphia, engineers and designers, and will bring this organization to Albany to act as its engineering and designing department on screw propellers and other marine work. The name of the George H. Thatcher Co. has been changed to the Thatcher Propeller & Foundry Corp.

British Firm Prospers

Directors of Pease & Partners, Ltd., a large firm of colliery owners and iron and steel manufacturers in the north of England, report a working profit on the year ending April 30 of £373,497 to which is added £104,547 undivided profit on the previous year, according to advices from the British correspondent of THE IRON TRADE REVIEW. They add £100,000 to the general reserve, pay a dividend of 12½ per cent free of tax for the year and carry forward £106,192.

Financial Crop Ends

THE Pittsburgh Steel Co. has filed an appeal in the common pleas court at Greensburg, Pa., from the $2,950,000 valuation placed upon its plant at Monessen, Pa. The statement declares that from 1916 to 1918 inclusive, the assessed valuation of the plant was $1,309,000 and that the local assessor fixed the valuation for 1919 at $1,950,000. When the Westmoreland county commissioners sat as the board of revision in Monessen in March, the Monessen assessors' figures were increased $1,000,000. This, the statement says, is an increase of 127 per cent in three years and is declared to be exorbitant.

* * *

Imbrie & Co., New York bankers, are offering an issue of $1,500,000 first mortgage 7 per cent sinking fund gold bonds of the United Iron Works, Inc., Titusville, Pa. The bonds are callable as a whole or in part, on not less than 60 days' notice at 105 and accrued interest.

* * *

Assignment for the benefit of creditors has been made by the Hyatt Steel Products Co., Ltd., Vancouver, B. C.. The firm has two plants, one for the manufacture of white metal and the other a steel foundry and rolling mill at Port Moody.

* * *

Ownership of the Inland Machine Works, St. Louis, has been acquired by O. G. Starks, who purchased the interests of all other stockholders. The industry has outgrown two plants already on its 15-acre site in the West End, and a new 3-story structure will shortly be erected

* * *

The Maxim Munitions Co., Derby, Conn., has been petitioned into bankruptcy by creditors and Harrison H. Henry, its president, has been made temporary receiver by the United States district court. A committee representing creditors also has been appointed. The Derby factory was under lease to the United States Cartridge Co., Lowell, Mass.

* * *

Capitalized at $3,000,000 the Iron Products Corp., New York, has been incorporated to absorb in a merger the Essex Foundry, Newark, N. J., and the Central Foundry Co., with plants at Newark, Baltimore, Medina, N. Y., Vincennes, Ind., Anniston, Bessemer and Holt, Ala. Both companies produce cast iron pipe, steam and flange fittings and similar products.

* * *

Brokerage firms throughout the country are disposing of the $6,000,000 6 per cent sinking fund gold notes issued by the Sloss-Sheffield Steel & Iron Co. The company plans to use the funds by paying off a $2,000,000 debt due Feb. 1, 1920, pay for the by-product coke oven plant nearing completion and to provide other developments.

Tool Buyers Reluctant to Close

Prospective Purchasers In Connection With Many Building Projects Apparently Are Withholding Business—Present Buying in Small Lots—Labor's Attitude Has Effect—Bethlehem Steel Co. Awards 19 Cranes

SIZABLE sales of machine tools are practically a missing quantity in the different machine market centers. Labor unrest is advanced in one district as the chief reason for the present diffidence on the part of buyers to close upon their requirements. They hesitate to invest capital in equipment while the labor market remains unstabilized. This lack of large business is being made up in a measure, in some districts by an increased number of small orders. These continue in good volume in practically all markets, particularly in Pittsburgh, Chicago and Cleveland. In the former, some sellers report that business is better than at any time since the armistice.

Price revision upward seems to be the order of the day. Everything points that way in Pittsburgh and in Cleveland, while in Chicago, shapers have advanced 15 to 20 per cent while two lathe manufacturers have marked their prices up about 10 per cent. Deliveries on some types of milling machines, planers and lathes are attractive at one to two months, while on other tools, three, four and five months is the time required for filling orders.

Orders placed do not come from any particular line of industrial activity, although in Chicago, the automobile, truck and tractor industries predominate. Practically every industry is represented on the order books of tool sellers and it appears that these manufacturers are rounding out their equipment to make their tool rooms and machine shops as efficient as possible.

Building activity in practically every territory presages some important sales of machinery in the near future. In the east, this is particularly noticeable, where heavy equipment is meeting a ready sale. The chief item of importance is the award of the Bethlehem Steel Co., of 19 cranes to the Alliance Machine Co., Alliance, O., for Lebanon, Bethlehem, Pa., and Sparrows Point, Md. The American Locomotive Works, also contracted for two 50-ton overhead cranes. Small crane inquiries are current from the National Marine Engineering Co., Scranton, Pa.; the Quaker City Corp., Philadelphia; Gregg Co. Ltd., Hackensack, N. J.; Sanderson & Porter, New York and Barr, Thaw & Frazer, Hoboken, N. J.

Many dealers believe that when once the railroads start to fill their tool requirements, other manufacturers will follow. Small lists from the Chicago, Burlington & Quincy and the Santa Fe roads have so far produced no orders. The New York Central is out with a small list in New York and the Pennsylvania is understood to be inquiring for some tools for Ohio shops.

Dealers in other cities are negotiating with Cleveland houses for their requirements. One fair sized inquiry comes from L. F. Seyfert's Sons, Inc., Philadelphia, for 14 tools and another comes from the H. F. Lyon Co., San Francisco, for 16 for export to Japan. This list has been circulated in Detroit, Chicago and elsewhere. Export business in the east and in the Cincinnati districts is reported to be in splendid condition, many tools going to European countries.

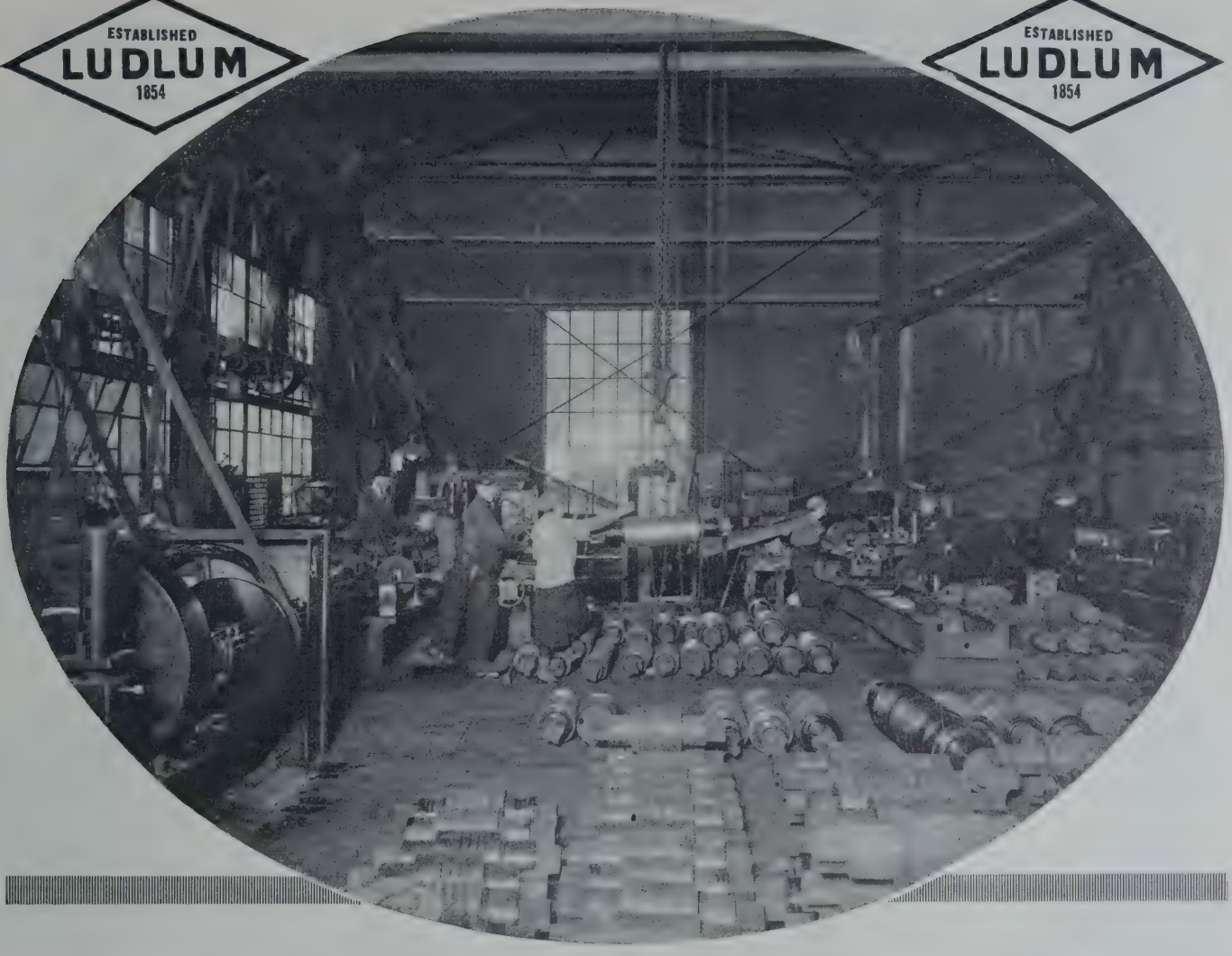
Eastern Tool Trade Reflects Building Activity

INCREASING building activity in the East, while not resulting so much in a direct demand for machine tools, nevertheless is making itself felt in the local equipment market. This is noticeable particularly through the channels of the metalworking industry, which is confronted with an improved demand for various fixtures and metal products, necessitating in many instances additional tools. No large lists are coming out from this source, yet the inquiries taken as a whole, present a fairly sizable amount of business. Further miscellaneous demand is also noted this week from the New England district, where manufacturers of equipment are giving much attention to the production of special tools.

A feature of the market is the revival of the list of the Standard Oil Co., 26 Broadway, New York, for shipment to Roumania. The inquiry originally called for more than 40 tools. It is understood that several revisions have been made. A small list now current is that of the New York Central railroad, including three fair sized lathes and two drills. Included in new projects to come before the attention of the eastern trade is a new plant for the Oliver Rim Co., manufacturer of automobile accessories, at Atlanta, Ga. A $200,000 addition will be erected by the Brown-Lipe-Chapin Co., gear manufacturers, of Syracuse, N. Y. The Hammond Steel Co., also of Syracuse, will expend $250,000 on the erection of a new rolling mill, power plant and other works additions. It is reported that the General Electric Co. will build a 4-story steel and concrete factory building near Newark, N. J.

The placing of a large order again features the eastern crane market this week, the Bethlehem Steel Co. awarding 19 cranes, ranging from 5 to 40 tons capacity each, to the Alliance Machine Co. Of this number, six 5-ton overhead cranes were for Lebanon, Pa.; 10 standard cranes, ranging from 10 to 40 tons capacity, and

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Ludlum Steel Consistently Uniform

Mohawk Extra
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Yuma
Chrome Magnet Steel
Seminole
"Foolproof" Chisel Steel

two 5-ton charging cranes, for Sparrows Point, Md.; and one 15-ton standard crane for Bethlehem, Pa. Another sizable contract to be awarded during the past few days is that of the American Locomotive Works, involving two 50-ton overhead cranes. This business, despite previous reports to the contrary, was finally awarded the Champion Engineering Co. Other orders include one 10-ton overhead crane, with 48-foot span, placed with the Niles-Bement-Pond Co. and two 10-ton transfer bridges of 29-foot span, awarded the Victor R. Browning Co., Cleveland, for a naval project at Hampton Roads, Va. The Universal Winding Co., Providence, R. I., has bought a 5-ton electric overhead crane for a foundry. The Humble Oil Co., 26 Broadway, New York, has purchased a 15-ton handpower crane for Baytown, Tex. Fraser, Brace & Co., 1328 Broadway, New York, have awarded the Milwaukee Electric Crane & Mfg. Co. a 15-ton crane with 30-foot span.

New business includes an inquiry for a 10-ton crane, with 50-foot span, for the National Marine Engineering Co., Scranton, Pa.; two 20-ton electric cranes, with 16-foot and 18-foot spans respectively, for the Quaker City Corp., Philadelphia, both for export; and a 2½ to 3-ton crane, with 27-foot span, for the Gregg Co., Ltd., Hackensack, N. J. Sanderson & Porter, 52 Williams street, New York, are inquiring for a 2-yard bucket-handling crane, with a 34-foot span, one 5-ton electric crane, with an 18-foot span, and a 5-ton handpower, with a 27-foot span. This inquiry is understood to be in part an alternate proposition. The Hammond Steel Co., Syracuse, N. Y., will be in the market shortly for cranes and monorail equipment. The Adirondacks Steel Co., which is to build a new plant at Watervliet, N. Y., is expected in the market shortly for several cranes.

Shapers and Lathes Up in Chicago

ADVANCED prices for machine tools in Chicago territory are beginning to be made in a small way and generally higher prices on all machine tool equipment is expected to follow shortly. One manufacturer of shapers has issued a list increasing his prices 15 to 20 per cent and two lathe manufacturers have made advances of about 10 per cent. A large volume of business continues to come to dealers in the Chicago district, made up almost entirely of small lots and single tools, and for the most part the lighter class of equipment. Practically no large inquiries are being received. A characteristic purchase recently made involved six light tools for a new manufacturing business about to undertake the production of an automobile tool. Heavy equipment is not in demand, although an occasional sale is made.

A recent equipment list issued for the Rock Island arsenal, including considerable foundry equipment, has not been closed. The machine shops at this arsenal have been filled up wherever additional machinery was needed from stocks already in possession of the government. Delivery from manufacturers has been slowed up considerably, although not yet as far removed as was the case during the war. Some isolated cases of labor disturbances have aided in this delay. Small lists issued by the Chicago, Burlington & Quincy and the Santa Fe railroads have not produced orders. Manufacturers of engines for trucks, tractors and automobiles seem to have large orders and are buying further equipment. The tractor demand is not as large as had been expected, but automobile demand is heavy.

Tendency is Toward Higher Prices

INQUIRY in fair volume exists in the Pittsburgh district for machinery and machine tools. Buying is of a general character, orders being rather evenly distributed among diversified lines. While individual sales as a rule do not involve large purchases, the aggregate business placed reaches a satisfactory total. Some sellers in the Pittsburgh district report that they have done a larger business in July than at any time since the armistice was signed.

The result of this business has been to extend shipments and there appears to be a distinct tendency toward higher prices, which some sellers think will develop

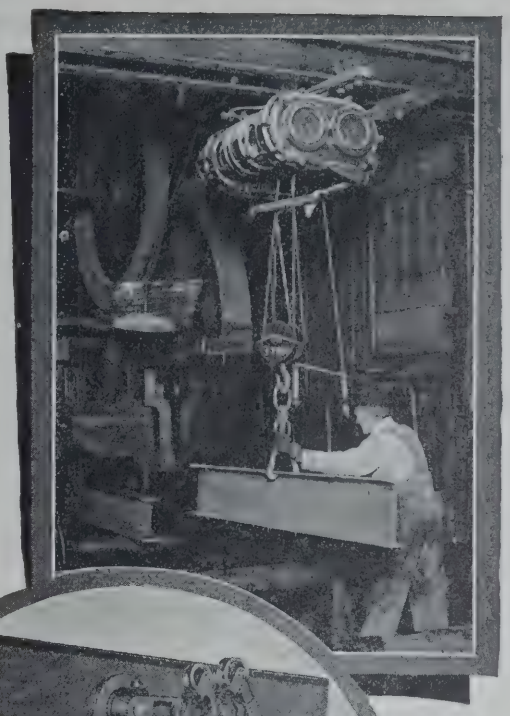
Disguised "Made in Germany" Equipment Seen in France

ELECTRICAL machinery and appliances are being made in Germany, shipped into Spain and Switzerland and from the latter two countries into France and then sold in France as though made in Spain and Switzerland, according to Jacques Languehin, a consulting engineer of Paris, who is visiting in Pittsburgh. Mr. Languehin gave assurance that his statement was correct because he handled German machinery and electrical products before the war, and since the armistice has seen the same kind of equipment in France, marked as though it were manufactured in Spain and Switzerland.

Mr. Languehin says France will not buy from Germany if it is at all possible to keep from doing so, but he added that persons not entirely familiar with German products sometimes are deceived by the methods used by the Germans. Mr. Languehin, who specializes in research and laboratory work, came to Pittsburgh to view its industries and said he had been especially interested in the Westinghouse plant in East Pittsburgh. Study is being made by him of methods employed by Pittsburgh industries. While in Pittsburgh he is making his general headquarters at the office of the bureau of foreign and domestic commerce, which is making arrangements for Mr. Languehin to visit the various plants he desires to see and has a representative of the office accompanying him.

Mr. Languehin said the plan being used by the Germans was possible owing to the prevailing rates of exchange, the German mark being so low in value that 8 marks now are equivalent to a dollar, as against four before the war. The franc has lost in exchange also, 7 francs making up a dollar, compared with five before the war. This question of exchange, Mr. Languehin said, will have an effect on business with America until the rate more closely approaches parity. It is his opinion that the rate now is too high for a considerable business with America because materials may be bought from other countries at less cost. He said, however, he believes the rate will become more favorable in the near future and then he expects a great deal of business as the French are desirous of trading with the United States.

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They enable one man to handle pieces which would otherwise require a crew. They reduce the idle moments of your machinery while waiting for material to be handled in the old slow laborious manner.

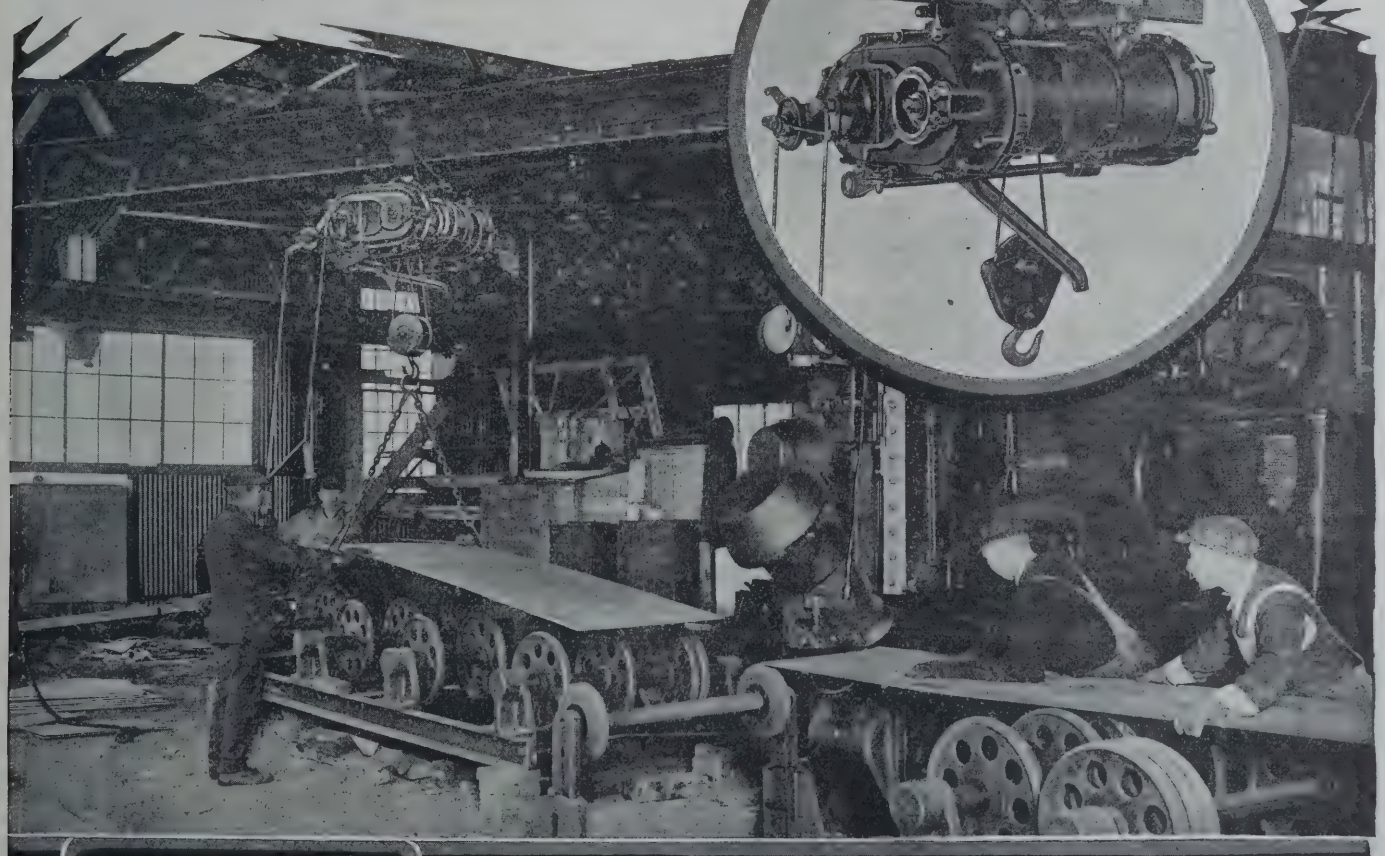
Link-Belt Electric Hoists can be easily, quickly and inexpensively installed in old or new buildings. Monorail tracks can be attached to ceilings or girders anywhere. Little head room required. All parts are fully enclosed in dust proof, weather proof casings. They can be operated outdoors as well as indoors. Made in various capacities—floor or cage operated.

Our staff of engineers is at your service. Let them suggest quicker, easier, more economical ways of accomplishing hoisting and transporting service in your plant. Ask for our Electric Hoist Book No. 246.

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St. Louis . . Central National Bank Bldg.	San Francisco . . . 582 Market St.	
Buffalo . . . 647 Ellicott Square	Los Angeles . . . 163 N. Los Angeles St.	
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within the next two months. Lathes and planers are being delivered in better time than most other lines of equipment, shipments of these two lines being promised generally in two months.

Small Lot Sales Prevail in Cleveland

AGGRESSIVE machine tool sellers in Cleveland and vicinity report the receipt of numerous inquiries and not a few of their proposals result in orders. In a way this combats the statements of a few dealers who claim that there is no business, that but a few inquiries worthy of note are being received and that those few seldom develop into orders. Dealers of this latter class in casting about for a reason for the sluggish market are divided. Some claim that the absence of railroad patronage is holding up general buying since large tool needs appear under the surface. Several, however, are firmly of the belief that underneath and underlying all is the labor question. As one prominent dealer stated, "No manufacturer is going to invest a large amount of money in equipment until he knows that labor has become more stabilized and will not make more stringent demands than already have been made. Labor will not cease its demands for larger wages, shorter hours, etc., until food prices are reduced."

Those dealers who report a satisfactory week say that their business is coming from diversified lines of manufacture and consists chiefly of orders for one or two machines. Most of the equipment on order is of a light character, although orders for heavy presses, boring mills and lathes have been taken. Deliveries continue to be post-dated, indicating that tool builders are busy. All indications are that prices will soon advance on those lines which have not already announced increases. Some lines, which did not announce reductions after the signing of the armistice, will remain stationary. It is understood that one line of presses has been reduced.

One of the largest lists in the Cleveland market comes from an eastern dealer. L. F. Seyfert's Sons, Inc., Philadelphia, wants one 42, one 48 and one 60-inch Bullard vertical boring mill; one 4 and one 6-foot Cincinnati Bickford radial drill; one 50-inch x 25-foot and one 46-inch x 33-foot Fifield lathe; one No. 3-B Milwaukee universal and one No. 3 Cincinnati universal milling machine; one 30 x 30-inch x 8-foot American, one 30 x 30-inch x 8-foot Gray, one 30 x 36-inch x 8-foot Gray and one 36 x 36-inch x 20-foot Gray planers; one 20-inch G. & E. shaper. Another dealer in the west is inquiring for a power driven wheel press 120 to 150-ton capacity. This is the H. F. Lyon Co., San Francisco, which also is seeking prices on a list of equipment for export to Japan. The list includes one lathe, 60-foot x 24-inch height to center, one 30-foot lathe, 30 inches height to center; one 10 x 18-foot planing machine; one 12 x 8-foot turning mill; one large and one small gear hobbing machine; five No. 2 horizontal universal and plain milling machines and one vertical milling machine, one 18 x 6-foot turbine casing boring machine; one gear cutter, five feet in diameter; one 1½-inch horizontal and one 1½-inch vertical portable radial drilling machine, all machines to be coupled with 220-volt, 3-phase, 60-cycle electric motors. The Fairbanks Co., New Orleans, La., wants a 25-foot x 60-inch Wickes lathe and a 10-foot Pitt lathe. Fayette R. Plumb, Inc., Bridesburg, Philadelphia, wants one guillotine shear to cut cold .70 carbon steel 5 x 1½-inch. The United States Chain & Forging Co., Pittsburgh, is in the market for a 48 x 48 x 12-foot planer as well as a heavy duty planer with solid housing to have direct motor drive, 240-volt, alternating current, 3-phase, 60-cycle motor. The L. A. Young Industries, Inc., Detroit, has been inquiring for shears and is ready to place its order. A. C. Woods & Co, Rockford, Ill., wants a double end punch and shear. The punch end is to have a 12 to 15-inch or a little larger throat, with capacity of one inch through one-inch stock, provided with architectural or structural jaw. The shear end is to have a 12 to 15-inch throat or a little larger with capacity to shear 1¼-inch medium steel bars. The American Die & Tool Co., Reading, Pa., wants turret lathes in first class condition. The Timken Roller Bearing Co., Canton, O., is understood to be still in the market for equipment for Canton but has closed on machine tools for the new plant at Columbus, O. The Ideal Electric & Mfg. Co., Mansfield, O., wants a 28-inch lathe. The Bayne Mfg. Co., Bushnell, Iowa, wants a new or second hand power bending machine that will make a 2-inch eye on rods ¼ to ½-inch in diameter. The Wilt Twist Drill Co. of Canada, Ltd., Walkerville, Ont., wants two No. 2-B universal milling machines.

Several engine companies have come into the market of late for equipment. The Bessemer Gas Engine Co., Grove City, Pa., is taking quotations on six 3 x 36-inch Jones & Lamson turret lathes. The Ball Engine Co., Erie, Pa., is erecting an addition to its steam shovel building and wants new equipment and machine tools. The Ajax Iron Works, Corry, Pa., manufacturer of oil pumping engines is erecting a 200 x 60-foot addition and will probably need equipment soon.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

BOSTON.—The Bahmann Iron Works Co. has been incorporated to build clay-working and sugar machinery in Dayton and Cincinnati, O., with $950,000 capital by John C. Bills Jr., Belmont, Mass.; George P. Davis, Waltham, Mass.; John E. Peakes, Newton, Mass.; Hugh W. Babb, Cambridge, Mass.; Aaron Smith, Boston; B. A. Patten and M. Joyce, both of Cambridge, Mass.

NORFOLK DOWNS, MASS.—The Pneumatic Scale Co. has let the contract for a reinforced concrete, 2-story addition to its machine shop to cost $75,000.

WEST SPRINGFIELD, MASS.—The Gilbert & Barker Mfg. Co. is to erect a corrugated steel, 30 x 80-foot building for furnace experimentation.

WOBURN, MASS.—The Woburn Machine Co. has let the contract for a 50 x 100-foot addition.

WORCESTER, MASS.—Bids have closed for a brick, mill construction, 4-story, 58 x 403-foot factory and office building and a 1-story, building for hardening and galvanizing for the Walden-Worcester, Inc., maker of wrenches, to cost $250,000.

AUBURN, R. I.—Bids have been closed for a brick, 2-story, 40 x 250-foot and 100 x 120-foot additions to the factory of the United Wire & Supply Co., to cost $100 000.

PROVIDENCE, R. I.—Bids will be asked for about Aug. 1 for a brick and reinforced concrete,



Say, Fella's,—

I've been 'round th' lakes on some boat for th' past week—a little of that vacation stuff. Had Hubbard rolls in all th' mills before I left, so figur'd there couldn't be any trouble. Haven't heard of any trouble from th' mill, so guess I used some judgment.

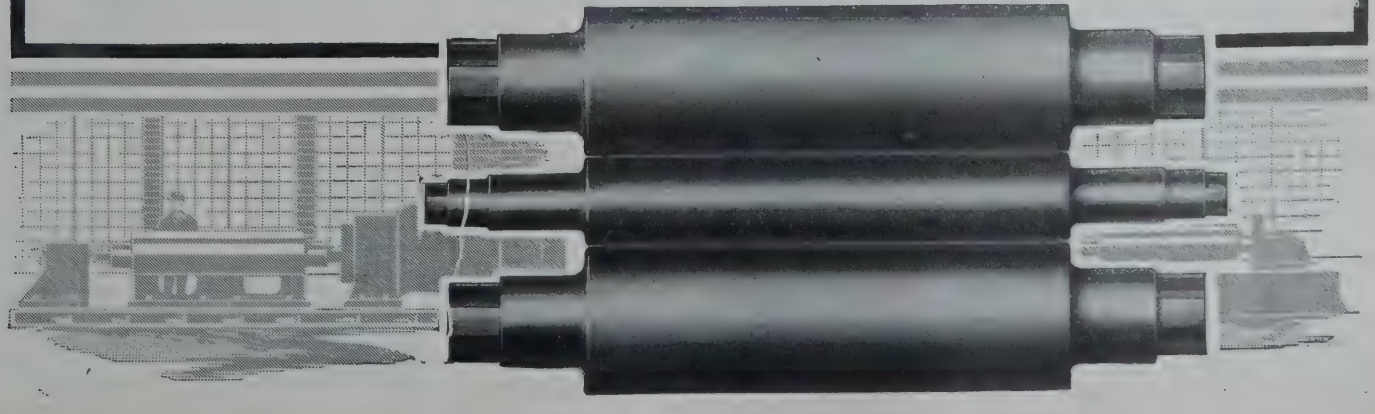
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



fireproof, 5-story and basement, 130 x 155-foot factory and public garage for Harry Fulford, metal ornaments, to cost $400,000, both of which have been leased.

BRIDGEPORT, CONN.—The J. D. Johnson Co., New York, maker of plumbing supplies, has let the contract for a brick, mill construction, 2-story and basement, 40 x 120-foot warehouse and office building and a corrugated iron, 2-story, 45 x 85-foot pipe storage building to cost $30,000.

MERIDEN, CONN.—Foster-Merriam & Co. have let the contract for a brick, 2-story addition, the first floor of which will form an extension to the foundry, while the second will be required for offices.

NEW BRITAIN, CONN.—The White Eagle Mfg. Co., maker of cutlery, is to build a 2-story, 33 x 80-foot brick factory.

NEW BRITAIN, CONN.—The Corbin Cabinet Lock division of the American Hardware Corp. is to build a large addition.

NEW HAVEN, CONN.—The American Radiator Co., Chicago, has let the contract for a brick warehouse to be used as an eastern distributing station.

PLAINVILLE, CONN.—The Trumbull Electric Mfg. Co. has let the contract for a 4-story factory addition to cost $75,000. An enameling room and steel press shop will also be built later.

PORTLAND, CONN.—The factory formerly owned by the Portland Mfg. Co. has been sold to the American Motor Truck & Tractor Co., New York. The building, which is 3 and 4 stories high, 85 x 350 feet, will be partially equipped with machinery at the present and the rest installed as needed.

STAMFORD, CONN.—The Dalton Mfg. Co., New York, builder of lathes, is to build a plant at Sound Beach.

North Atlantic States

ALBANY, N. Y.—A cupola and mill building costing $35,000 will be built by the Thatcher Propeller & Foundry Corp., at Thatcher and Learned streets.

BROOKLYN, N. Y.—The Atlantic Smelting & Reining Co. will start work shortly on the erection of a new $2,000,000 plant near Newark. Upon its completion the company will remove its main plant now located in Brooklyn. The plant will occupy the greater part of six acres.

BUFFALO.—The Wire Wheel Corp. will build a shipping plant here to cost $20,000.

BUFFALO.—The Jewel Steel & Malleable Iron Co. will build a plant here to cost $6000.

BUFFALO.—The M. Hayman & Co., 856 East Ferry street is erecting a steel foundry at a cost of $10,000.

BUFFALO.—The Rogers-Brown Iron Co. is erecting a steel-concrete machine shop on the Hamburg turnpike at a cost of $50,000.

GARRISON, N. Y.—The Canopus Iron Corp. has been incorporated at a capital stock of $1,000,000. The incorporators are R. I. Gutham, G. O. Angell and J. G. Pease.

NEW YORK.—The Schaefer Machine Co., Manhattan, has been incorporated with a capital stock of $25,000 to manufacture engineering and mechanical specialties of every kind.

NEW YORK.—The Lessman Loader Co. has been incorporated at a capital stock of $300,000 to manufacture machinery of all kinds. The incorporators are W. F. O'Keefe, E. E. Aberlee and J. H. Dowdell.

NEW YORK.—The Penberthy Injector Co., capitalized at $550,000, has been incorporated to manufacture brass and iron injectors. The incorporators are T. L. Croteau, P. I. Drew and H. E. Knox.

NEW YORK.—Plans are being prepared by the Brown-Lipe-Chapin Co., gear manufacturers, for a $200,000 addition to its plant. The work will include the erection of two buildings, one five stories high, 70 x 78 feet and the other two stories high, 50 x 50 feet. This latter an addition to the case hardening department will be completed first. Noble & Collins are architects in charge.

PASSIAC, N. Y.—The J. G. Schmidt Iron Works, 360 Harrison street, capitalized at $100,000, has been incorporated to manufacture structural steel and ornamental iron.

CANONSBURG, PA.—The Fort Pitt Bridge Works will build an addition 80 x 200 feet to its plant here.

ERIE, PA.—The Erie City Iron Works will build a plant 40 x 122 feet in this city.

ERIE, PA.—The Ball Engine Co. has awarded a contract for an extension to its steam shovel building, 116 x 185 feet. It is expected that the improvement will be completed within two or three months.

HOMESTEAD, PA.—The Homestead Valve Mfg. Co. has let the contract to the Austin Co., Pittsburgh, for a foundry 27 x 40 feet.

PHILADELPHIA.—The Hess-Bright Mfg. Co. contemplates a 2-story, 45 x 105-foot laboratory.

PHILADELPHIA.—A 1-story, 116 x 800-foot, steel frame foundry building will be built for the Dodge Steel Co., by the Austin Co.

PHILADELPHIA.—A $55,500 foundry, 116 x 180 feet, is being built by the Austin Co., Cleveland, for Kern Lodge, Morris building, Philadelphia.

PHILADELPHIA.—Smith Drum & Co., Allegheny avenue, engineer and machinist, has had plans prepared for a 1-story addition, 25 x 100 feet, estimated to cost $23,000.

PITTSBURGH.—The Pittsburgh Model Engine Co. has let a contract for a plant addition to cost $200,000.

PITTSBURGH.—Phil & Miller, Wabash building, has the contract for a sewage disposal plant for the Consumers' Mining Co., Hoboken, Pa.

PITTSBURGH.—The Duquesne Light Co. has sold $25,000,000 worth of bonds and proposes to build an electric power plant at Cheswick, Pa.

PITTSBURGH.—The Pittsburgh Truck Mfg. Co., capital $100,000, manufacturers of automobiles and accessories, has been incorporated by F. P. Lawders, James G. Murray and M. C. Lawders, Pittsburgh.

PITTSBURGH.—The G. L. Sullivan Co., capital $25,000, manufacturers of truck bodies, hoists, wheels, mechanical parts, etc., has been incorporated by Albert St. Peter, Pittsburgh; C. H. Boston, Wilkinsburg; W. A. Madigan, Mt. Oliver.

PITTSBURGH.—A plant addition consisting of a 2-story, 75 x 75-foot building will be built by the Basic Mineral Co., 834 Columbus avenue, manufacturer of a flux and deoxidizer for use in melting metals. The building, which will house the mill, laboratory and storehouse, will cost $25,000.

SHANKSVILLE, PA.—The Shanksville Electric Co. recently was incorporated with $5000 capital, by W. H. and C. E. Fox and J. O. Lambert. The company will manufacture electrical equipment.

SLATINGTON, PA.—The Modern Machine Works has leased property and will install machinery and equipment for a machine shop.

CAMDEN, N. J.—The contract for the erection of a 1-story, 48 x 66-foot pattern and clipping shop has been awarded by the Lutz Co. The cost will be $10,000.

ELIZABETH, N. J.—The Gnone Mfg. Co. recently was incorporated with $60,000 capital, by F. A. Hemphill, A. F. Bender and others, to engage in the manufacture of mechanical toys.

GLOUCESTER, N. J.—The city will rebuild the water works and receive bids in August. The new plant will cost $35,000.

IRVINGTON, N. J.—A 1-story brick and steel warehouse, having approximately 20,000 square feet of floor space, will be erected here by Wheelock, Lovejoy & Co., of New York, distributors of iron and steel products. William H. Lehman, also of New York, is drawing plans.

JERSEY CITY, N. J.—F. Ferguson & Son, 1122 Clinton street, operating a foundry, plans a new foundry estimated to cost $10,000.

LYNDHURST, N. J.—The Rotary Machine & Engineering Co. has been incorporated with $500,000 capital, by M. J. Noble, J. A. Freere and J. M. Freere.

MATAWAN, N. J.—A. P. Munning, metal worker, is having plans prepared for two 1-story additions, 42 x 150 feet and 42 x 115 feet.

NEWARK, N. J.—Jackson-Wardell Mfg. Co., manufacturer of tools, dyes and special machinery, will erect a factory on Frelinghuysen avenue.

NEWARK, N. J.—Plans have been prepared by the General Electric Co. for the erection of a 4-story, steel and reinforced concrete factory building.

NEWARK, N. J.—Kell Hock & Co., Inc., has been incorporated to manufacture machinery with $75,000 capital. Jacob Kell and Joseph Hock, of Newark, are incorporators.

Central States Activity

GREEN BAY, WIS.—A 6-story fireproof addition, costing $100.000. will be erected by the Morley-Murphy Hardware Co.

GREEN BAY, WIS.—The Miller Iron & Metal Co., dealer in scrap metal, junk, etc., will build a 3-story warehouse addition, 50 x 100 feet.

HARTFORD, WIS.—The International Steel Products Co. is increasing its capacity for manufacturing mufflers or silencers for gas engines.

JANESVILLE, WIS.—Schlueter & Kakuske have opened a boiler and machine shop here.

KENOSHA, WIS.—The Macomber & Whyte Co., manufacturing wire rope, cable, etc., is contemplating a large plant addition. George S. Whyte is secretary-treasurer.

KEWAUNEE, WIS.—The Commercial Club has guaranteed to provide a site and factory building for E. J. Duescher, Seattle, who is planning to open a plant for making oil burners and air compressors.

MAYVILLE, WIS.—The board of education has decided to build a high school, with manual training and domestic science departments, to cost between $90,000 and $100,000.

MENASHA, WIS.—The U. S. Tractor Co. is completing its new factory building.

MERRILL, WIS.—The Anson-Gilkey-Hurd Co. is equipping part of its plant with machinery for the manufacture of toys.

MILWAUKEE.—The Sivyer Steel Casting Co. is arranging for a new office building, 2-stories, 50 x 80 feet.

MILWAUKEE.—Articles of incorporation have been filed by the Central X-Ray Co., to manufacture, assemble, X-ray machines and other scientific instru-

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of Farrell-Cheek Steel Castings Quality is in the choice of the right type of steel for your particular requirements. From laboratory to cupola, from cupola to converter, and thence to the molds, the metal that goes into every Farrell-Cheek casting is RIGHT. The experience of users of our castings PROVE it. If you want real high-grade Steel Castings made to special requirements we are able to serve you now. Immediate Delivery. Write us.

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"Makers of Steel Castings that are a little better than the next best."

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MEMBER OF STEEL FOUNDERS' SOCIETY OF AMERICA

NEW YORK, U.S.A.

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ments. The capital stock is $100,000. The incorporators are F. W. Whitlow, Otto Herrmann and William Guillianne.

MILWAUKEE.—The Stewart Tractor Co. will take bids shortly for a tractor plant, 2-stories, 120 x 300 feet.

MILWAUKEE.—The Northwestern Motor Car Co., 2418 North avenue, is building a large garage, salesroom and shop building and has increased its capital stock from $75,000 to $150,000.

MILWAUKEE.—The improvements being made by the Vilter Mfg. Co., ice and refrigerating machinery, corliss engines, etc., at a cost of $125,000, include a new sand conveyor system for its foundries.

MILWAUKEE.—Articles of incorporation have been filed in behalf of the Draeger-Corbett Machinery Co., with a capital of $25,000. It will manufacture and deal in machine tools, etc. The incorporators are represented by George Katz, attorney, 120 Wisconsin street.

MILWAUKEE.—The Koehring Machine Co., manufacturing gasoline engines and concrete mixing outfits, will make extensions to its plant. A new assembling floor is under construction, and work will begin shortly on an erecting shop, combined with an office building, 75 x 330 feet.

MILWAUKEE.—Cahill & Douglas, consulting engineers, Gross building, have been commissioned to prepare specifications for equipment for a steam generating plant for the Briggs & Stratton Co., 1047 Louis avenue, which is doubling the size of its electrical and automobile parts plant.

MILWAUKEE.—The Surf Mfg. Co. has been incorporated with an authorized capital stock of $100,000 to manufacture all-metal, power-driven washing machines, etc. The incorporators are Alois Krahn, Oscar F. Fischedick and T. J. Hannan, attorney. Headquarters have been opened at 518 Grand avenue.

MONTFORT, WIS.—The board of education is taking bids until July 19 for the erection of a high school, 3-stories, 75 x 124 feet, costing $75,000. Manual training equipment will be purchased later.

OSHKOSH, WIS.—The Oshkosh Trunk Co. has a permit to make additions costing $85,000. The work includes a 1-story power plant addition, 37 x 87 feet.

OSHKOSH, WIS.—The Marnot Leather Mat Co. has been organized with $10,000 capital and will manufacture leather and wire mats, belting, and similar material and supplies. M. H. Goettman, Bart W. Heiss and Edward W. Goettman are the incorporators.

PORT WASHINGTON, WIS.—The city is making improvements costing $30,000 in the light and power plant.

RACINE, WIS.—The Hamilton-Beach Mfg. Co. is having plans prepared for a 1-story addition, with metal sash, to be 70 x 350 feet and to cost about $50,000 without machinery.

RACINE, WIS.—A $50,000 addition will be erected by the Racine Mfg. Co., manufacturer of automobile bodies, stools, etc. Edmund B. Funston is preparing plans for a 2-story building, 50 x 125 feet.

RACINE, WIS. — Stanley and Paul Keleske and Stanley Kalicicky have organized the Wisconsin Screw Co. with a capital stock of $25,000 to engage in the manufacture of screw machine products and automobile accessories.

RACINE, WIS.—Hans P. Johnson, operating a machine shop, has organized the H. P. Johnson Mfg. Co., with a capital of $50,000. The plant will be located at Indianapolis, where local capital has provided a factory site.

RANDOLPH, WIS.—The Randolph Hardware Co. contemplates a warehouse, 1-story, 32 x 60 feet.

SCHLEISINGERVILLE, WIS.—The Vim Tractor Co. will spend about $30,000 for new buildings and equipment.

SHEBOYGAN, WIS.—A $20,000 machine shop will be built by the H. R. Prange Co. It will be 60 x 100 feet.

SHEBOYGAN, WIS.—The Wald Mfg. Co., hardware specialties, will remodel its plant and build an addition costing about $15,000.

SHEBOYGAN, WIS.—Contracts will be let about Aug. 1 by the F. Blocki Mfg. Co., agricultural implements, for a new plant, 118 x 150 feet, costing about $50,000.

STOUGHTON, WIS.—The Stoughton Wagon Co. will build a factory addition.

STOUGHTON, WIS.—An appropriation of $45,000 has been made by the board of education for the construction and equipment of a central light, heat and power plant. The building will be 65 x 132 feet, two stories.

WAUKESHA, WIS.—The Chamberlain-Delworth Repairing Co. has been formed by George Chamberlain of Waukesha and A. L. Delworth, formerly of Minneapolis, to open a general machine shop.

WEST ALLIS, WIS.—The Gerlinger Steel Casting Co. will build a 1-story boiler house addition, 30 x 55 feet, costing $12,000.

WEST BEND, WIS.—A bond issue of $50,000 has been authorized by the common council for a 3-story addition to the high school to be equipped for manual training instruction.

WEST BEND, WIS.—The West Bend Aluminum Co., which recently completed factory additions, has arranged to make a bond issue of $200,000 to provide ample working capital, and new equipment, etc.

WAUKESHA, WIS.—Cahill & Douglas, consulting engineers, Gross building, Milwaukee, are preparing estimates for a steam generating plant for the R. L. Kenyon Co.

WAUPUN, WIS.—Instead of contracting with private concerns for the manufacture of license plates for motor vehicles, the state will furnish its own supply by installing a complete equipment of stamping, embossing and punching tools in a department of the Wisconsin state prison at Waupun.

ADRIAN, MICH.—The Adian Brass & Aluminum Casting Co. recently was incorporated with $25,000 capital, by Frank Bachrach, Morris Schmitzer and Louis Frank.

COLDWATER, MICH.—The Homer Furnace Co. has broken ground for its new plant.

CONSTANTINE, MICH.—L. Smith, Peru, Ind., is opening a foundry here.

DETROIT.—The Detroit Metallic Casket Co. contemplates a plant addition.

DETROIT.—The Liberty Starter Co. plans the erection of a plant addition.

DETROIT.—The Fisher Body Co. plans the erection of a 6-story plant.

DETROIT.—The Ford Motor Co. will erect a brick and steel service building.

DETROIT.—The Wilson Body Co. will build a power plant and factory building.

DETROIT.—The Detroit Gray Iron Foundry Co. has let contracts for a plant addition.

DETROIT.—The Burroughs Adding Machine Co. is reported contemplating a plant addition.

DETROIT.—The general contract has been let by the Peninsular Brass Works for a foundry.

DETROIT.—Work has started on the erection of a plant for the Detroit Seamless Steel Tubes Co.

DETROIT.—The Buhl Sons Co. contemplates the erection of an addition to its iron and steel warehouse.

DETROIT.—The Packard Motor Car Co. has increased its capital from $21,000,000 to $50,000,000 and plans to enlarge its facilities.

DETROIT.—Albert Kahn, architect, Marquette building, is taking bids on work involved in remodeling the Ford Shipbuilding plant at River Rouge.

DETROIT.—The Utility Machine Co., 400 Union Trust building, has been incorporated with $50,000 capital, by George K. Parsons and others.

DETROIT.—Dorr Miller, 138 Fort street, is president of the Dorr Miller Differential Co. recently incorporated at Portland, Me., with $750,000 capital.

DETROIT.—The Motor City Tool Co. recently was incorporated with $16,000 capital, by Frank Nichols, 1064, Cadillac avenue, Arthur Totz and Albert Leshke.

DETROIT.—The Federal Steel Co. recently was incorporated with $100,000 capital, by A. J. Kinnucan, 467 Longfellow avenue, D. L. Seymour and Thomas W. Hunter.

DETROIT.—The Steere Engineering Works, Detroit, and the Owosso Boiler Works, Owosso, have been merged under the former name and the Detroit works will be removed to Owosso.

DETROIT.—The paint and service buildings of the Commerce Motor Car Co., recently damaged by fire, are being rebuilt. The buildings were damaged to the extent of $80,000.

DETROIT.—The O. L. Anderson Co., Inc., general sheet metal manufacturing, recently was incorporated with $10,000 capital, by O. L. Anderson, Lafayette and Trumbull avenues and others.

DETROIT.—The Federal Screw Works recently was incorporated with $60,000 capital, by Oscar Schiller, David S. Diamond, 201 Palmer street east, and Russell A. Gunn, 794 Second street.

DETROIT.—H. C. Mills, W. O. Adams and Everitt Betts have purchased the Ann Arbor Machine Co., Ann Arbor, Mich., and the name has been changed to the Production Castings Co.

DETROIT.—The Detroit Carburetor & Mfg. Co. recently was incorporated with $10,000 capital, by David C. Kay, 931 Second street, C. E. Neff, 250 Commonwealth avenue and F. E. LaFehr.

DETROIT.—The Cecil R. Lambert Co. has been incorporated to manufacture metal products and machinery, with $10,000 capital, by Cecil R. Lambert, 114 Lothrop avenue, Alvin S. Evers and Thomas F. McCoy.

DETROIT.—The Hercules Machinery Co. has been incorporated with $50,000 capital, to engage in the manufacture and sale of power presses and broaching machines, by Trevor T. Murton, 55 Peterboro street, and others.

DETROIT.—The Senn Tool & Machine Co. has been incorporated to manufacture metalworking tools and machinery, with $30,000 capital, by Oscar F. Senn, 911 Trumbull avenue, Forest T. Ellis and Edward R. Nyland.

DETROIT.—The Detroit Spring Co. recently was incorporated with $50,000 capital to manufacture and sell springs, by James D. Cummings, 61 Jefferson avenue; W. W. Cummings, Toronto, Ont.; and Henry W. Cummings.

DETROIT.—The Crocker Air Line Co., for the manufacture and sale of air compressors, engines, etc., has been incorporated with $150,000 capital, by James Crocker, 115 Fort street, Mrs. Lee Crocker, and William H. Carter.

DETROIT.—The American Standard Tool Works, Inc., has been incorporated to manufacture and sell machinery, machine tools, etc., with $100,000 capital, by Homer R. Shafer, 60 Lafayette boulevard, Frederic Wiard and John Owen.

MARQUETTE, MICH.—The city of Marquette, Charles Petallic, superintendent, will build an electric light and power plant costing $150,000.

MUSKEGON, MICH.—The Continental Motors Corp., Jefferson avenue, E., Detroit, will build a 2-story engine manufacturing plant and power plant, 180 x 500 feet, costing $1,000,000.

CHICAGO.—The Triangle Motors Co., 2211 South Michigan avenue, has let a contract for a factory and salesroom.

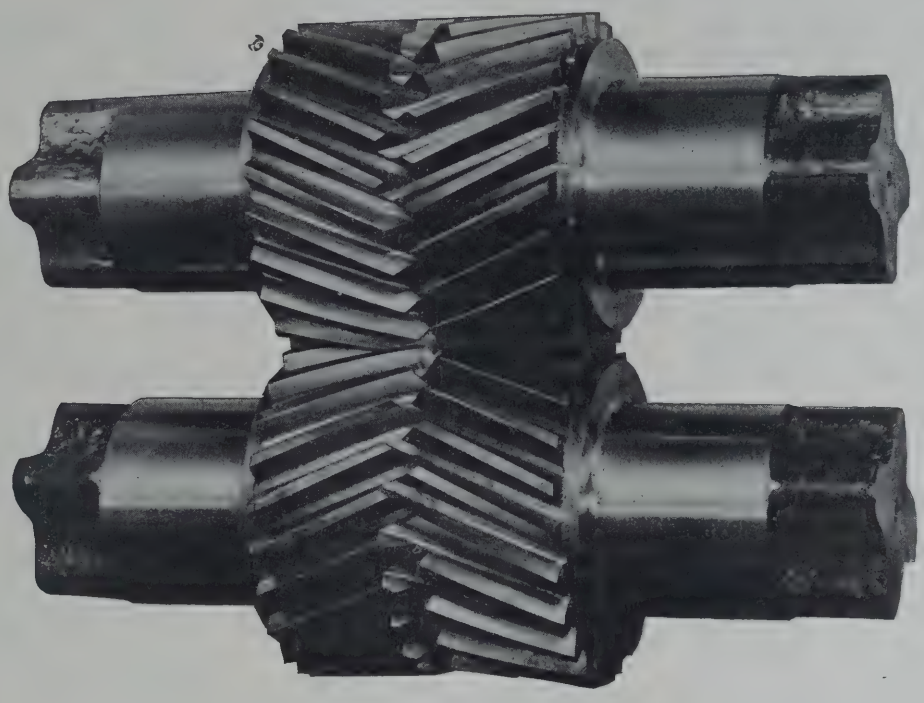
CHICAGO.—P. Ballman has let contracts for a 1-story machine shop, 65 x 140 feet, to be built estimated to cost $10,000.

CHICAGO.—The Butler Street Foundry & Iron Works has let a contract for an addition, 25 x 125 feet, estimated to cost $25,000.

CHICAGO.—The Whitman & Barnes Mfg. Co. has awarded contracts for a 1-story forge shop, 100 x 500 feet, estimated to cost $225,000.

CHICAGO.—The Chicago Gear Co., 2823 Fulton street, has let contracts for a 1-story plant, 70 x 146 feet, estimated to cost $10,000.

CHICAGO.—Albert Pick & Co., manufacturer of



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Open Hearth Steel Castings

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THE FALK COMPANY

MILWAUKEE, WIS.

AGENTS: Pittsburgh—W. O. Beyer, 1024 Park Bldg. New York—M. P. Fillingham, 50 Church St. Wilkes-Barre—Vulcan Iron Works. Denver—Denver Engineering Works. San Francisco—F. W. Grimwood, Rialto Bldg.

cooking apparatus, and metal novelties, 212 West Randolph street, has awarded a contract for an addition.

CHICAGO.—The Crawford Tool & Mfg. Co., 4810 West Twenty-second street, has broken ground for a 2-story machine shop, 28 x 120 feet, estimated to cost $20,000.

CHICAGO.—The Apex Appliance Co., manufacturer of washing machines and other mechanical devices, will build a 5-story plant, 100 x 260 feet, costing $275,000.

CHICAGO.—The Whitman & Barnes Mfg. Co., care J. C. Scanlon, 565 West Washington street, will build a 1-story forge shop, 100 x 500 feet, costing $500,000.

CHICAGO.—The Sheffield Steel & Iron Co., 332 South Michigan avenue, has been incorporated with $10,000 capital, by R. H. Halsted, H. C. A. Mitchell and George W. Gordon.

CHICAGO.—The Chrobaltic Tool Co., capitalized at $100,000, has been chartered to manufacture tools and mechanical devices, by R. S. Tuthill, Harold Beacom and M. J. Atkinson.

CHICAGO.—The Open Hearth Furnace Co. recently was incorporated with $100,000 capital, by B. F. Cowan and P. Zals to engage in the manufacture of furnace equipment.

CHICAGO.—The Gill Mfg. Co., E. P. Chalfont, president, 351 West Fiftieth street, manufacturer of automobile parts, will build a 1-story factory, 120 x 240 feet, costing $100,000.

CHICAGO.—The Monarch Carburetor Lock Co. of Illinois, 7 West Adams street, Chicago, capitalized at $100,000, has been chartered by Carlton E. Fox, B. T. Bancroft and J. A. F. Chandor.

PANA, ILL.—The Pana Engine & Mfg. Co., capitalized at $50,000, has been chartered to manufacture engines and machinery.

ROCKFORD, ILL.—The Rockford Milling Machine Co., W. A. Brolin, president, has increased its capitalization from $300,000 to $900,000, to build an addition to the Sundstrand Adding Machine Co., a subsidiary. The addition will be four stories, 60 x 250 feet. The Holm-Page Co. has the general contract.

ANDERSON, IND.—A 1-story, 60 x 180-foot addition will be built to the plant of the Laurel Motors Corp. on Sycamore street. C. E. Hayes is general manager.

FORT WAYNE, IND.—The Wayne Oil Tank & Pump Co. is planning a new tank shop for the manufacture of oil tanks. The new building will be 140 x 400 feet.

GOSHEN, IND.—The Winter Stamping Co. has been incorporated with a capital of $50,000 to manufacture metals. Directors are John Winter, Doretta R. Winter and Cecil L. Winter.

GREENSBURG, IND.—The United Engineering Co. has been incorporated with a capital stock of $150,000 to manufacture and assemble chassis for automobiles. W. S. Reed, Frank Hamilton and Will G. Smiley are directors.

HAMMOND, IND.—The Railway Motor Car Co. of America, has let contracts for a manufacturing plant, 1 and 2-stories, 100 x 150 feet, and a power house, 40 x 73 feet.

INDIANA HARBOR, IND. — The Edwards Valve Mfg. Co. is planning an extension to its plant for the manufacture of motor truck axles. The exact size of the building has not been determined.

INDIANA HARBOR, IND. — The William Graver Tank Works is planning to build a fabricating shop 76 x 180 feet, and a building 30 x 60 feet, for its engineering staff. The company is now in the market for equipment for the fabricating shop.

INDIANAPOLIS.—The Indianapolis Wire Hoop Co. has been incorporated with a capital stock of $10,000 to manufacture wire hoops. Directors are: Emmet M. Starns, H. Douglas and G. W. Whittington.

INDIANAPOLIS.—The Woodbridge Ornamental Iron Co., an Illinois corporation capitalized for $10,000, has qualified to do general manufacturing business in this state. William Woodbridge of Indianapolis has been named general agent.

ARCHBOLD, O.—The Acme Level & Mfg. Co. is reported contemplating a new plant here.

BUCYRUS, O.—It is announced that the New York Blower Co. will be moved to the plant at Laporte, Ind., as fast as the machinery can be released from service.

CLEVELAND.—The American Pattern Co., capitalized at $10,000, has been incorporated.

CLEVELAND.—The Stevens Iron Works Co. has incorporated with a capital of $50,000.

CLEVELAND.—The Cleveland Metal Products Co. has awarded a contract for a warehouse, 3-stories, 92 x 199 feet, to cost $150,000.

CLEVELAND.—The Sommer Adams Co., 2934 East Fifty-fifth street, contemplates a power house and factory building estimated to cost $75,000.

CLEVELAND.—The plant of the Crescent Brass Mfg. Co., Lake avenue, recently was damaged by fire. The loss has been estimated at $70,000.

CLEVELAND.—The Sommer-Adams Co., 2934 East Fifty-fifth street, has awarded contracts for a foundry and machine shop, 60 x 120 feet, to cost $35,000.

CLEVELAND.—The Interlake Engineering Co., 203 Scotham avenue, has purchased a site on which it will build a 2-story punch shop 45 x 80 feet, to cost $75,000.

CLEVELAND.—The Austin Co., 11612 Euclid avenue has the contract for a 2-story, 75 x 200-foot factory for the Superior Foundry Co., East Seventy-first street.

CLEVELAND.—A 1-story, 30 x 70-foot factory building costing $7000 is being built at East 131st and Taft avenue, by H. J. Walker, manufacturer of automobile parts.

CLEVELAND.—Plans are being made for a 3-story, 75 x 140-foot factory building for the National Copper & Smelting Co., Rose building. The building will cost $25,000.

CLEVELAND.—The P. A. Geier Co., which recently increased its capital from $250,000 to $400,000, plans to erect an addition plant to be utilized by the company's machinery division.

CLEVELAND.—The contract has been awarded for a 3-story, 40 x 120-foot factory and a 1-story, 45 x 160-foot assembling room for the Peerless Motor Car Co. The costs will be $40,000 and $25,000 respectively.

CLEVELAND.—Contract for a 2-story, 40 x 50-foot addition to the factory at 239 West Thirty-eighth street, has been awarded by the Cleveland Electro Metals Co., 421 Guardian building. The cost will be $6000.

CLEVELAND.—Plans are being prepared for a 3-story, 72 x 266-foot machine shop and a 1-story, 120 x 300-foot foundry additions to the plant of the Cleveland Metal Products Co. The cost will be about $75,000. Contract for a 3-story, 60 x 90-foot assembly plant was awarded recently to cost $120,000.

COLUMBUS, O.—A new tinning plant will be erected by the Solar Metal Products Co. in Starr avenue.

COLUMBUS, O.—The Columbus Conveyor Co. has let a contract for a plant, 1-story, 70 x 180 feet, to cost $30,000.

COLUMBUS, O.—Plans are being made by the Timken Roller Bearing Co. for a one-story, saw tooth roof type factory building to be erected on the nine-acre plot of ground owned by the company at Cleveland and Fifth avenues.

DAYTON, O.—The Brenneman Tractor Co. has been incorporated with a capital stock of $10,000 to manufacture farm tractors. A factory building will be erected a little later.

DAYTON, O.—The American Machine Products Co. has been organized with a capitalization of $25,000. Incorporators are Robert G. MacKenzie, Walter N. Frank, Fred G. Miller, Wellmore B. Turner and Lester L. Cecil.

DAYTON, O.—The Dayton Handle & Golf Co. has been incorporated for $150,000 to take over the plant of the Dayton D Handle Co. Considerable enlargement will be made to the golf department and the manufacture of farming tools will continue as before. The new company was incorporated by L. W. Crandall, H. H. Stewart, J. F. Ballin and Harry C. Bratt.

HAMILTON, O.—The Hamilton Machine Tool Co. has taken out a permit for a small plant addition.

HAMILTON, O.—Purchase of 143 acres of land has been made by the Hamilton Furnace Co. The capacity of the plant will be increased in the near future.

JACKSON, O.—The Jaxon Steel Products Co., General Motors Corp., is building a factory 100 x 120 feet. The Austin Co., Cleveland, is the contractor.

KENTON, O.—A contract for an addition, 41 x 80 feet, to the Ohio Machine & Tool Co. has just been awarded to the Bellefontaine Bridge & Steel Co.

LORAIN, O.—The Lorain County Electric Co. contemplates a power plant addition, 40 x 300 feet.

MARIETTA, O.—Extensive improvements are being made to the plant recently purchased by the Pittsburgh Sheet, Tin Plate & Steel Co., from the Pittsburgh Sheet & Tin Plate Co. in East Norwood. The new company is installing new machinery and is overhauling the old.

MARION, O.—The American Malleable Castings Co. has let a contract for a foundry addition, 60 x 70 feet, to cost $30,000.

NEWTON FALLS, O.—The Ohio Structural Steel Co., recently incorporated for $75,000 will take over the Heltzel Steel Form & Iron Co., of Warren and will make extensive additions to the branch plant at Newton Falls. J. W. Heltzel is the chief incorporator.

RAVENNA, O.—A third plant of the Perfection Piston Ring Co., with plans at Newark, N. J., and Cleveland, will be finished here about Sept. 1. The company expects to merge the Cleveland plant with the Ravenna plant at a later date.

SPRINGFIELD, O.—The Superior Gas Engine Co. is building a 2-story machine shop 60 x 80 feet, a 2-story foundry service 32 x 113 feet and a 1-story foundry 112 x 282 feet. T. A. Graham is the contractor.

TIFFIN, O.—Two stories are to be added to the main plant of the Hollis Tractor Co., which is remodeling the old strawboard factory to suit its needs. The addition will be used for the offices and the engineering department.

WARREN, O.—Work has been started on the factory building, 100 x 400 feet, for the Supreme Motors Co. C. H. Davies is general manager.

WELLINGTON, O.—The Sterling Foundry Co., with a capital stock of $150,000, has been incorporated by R. E. Clisby, C. M. Ross, V. M. Clisby, A. W. McHenry and S. H. Hummell.

WHEATLAND, O.—Contract for a 70 x 250-foot power house and machine shop for the Slick-Knox Steel Co. has been awarded to the McClintock Marshall Co., Pittsburgh. A large assembling plant also is being considered.

YOUNGSTOWN, O.—The Lumen Bearing Co. has been incorporated with a capital of $250,000 by H. P. Parrock and others. Purchase of several acres of land for a factory site was effected several weeks ago. Construction will begin at an early date.

LOUISVILLE, KY.—The Belknap Hardware & Mfg. Co. recently filed amended articles of incorporation.

MOREHEAD, KY.—The Consolidated Hardware Co. has been incorporated with $50,000 capital, by E. F. Maggard, S. M. Bradley and F. M. Cook.

BECKLEY, W. VA.—The Raleigh County Register Co. has had plans prepared by H. M. Miller, Roanoke, Va., for a machine plant in this city.

CHARLESTOWN, W. VA.—The Charlestown Heat & Light Co. has been incorporated with $50,000

capital, by Jay Gates, A. Howard Ritter, Carl W. Penninger and C. S. Newhall.

FAIRMONT, W. VA.—Bids are being taken for a brass plant to be erected in this city by the West Virginia Metal Products Co.

FAIRMONT, W. VA.—Guy Borden will have charge of building the plant of the West Virginia Metal Products association here to be 300 x 600 feet.

HUNTINGTON, W. VA.—The Kyle Smith Aircraft Co. will be taken over by the Ohio Valley Car & Mining Machinery Co. which will make improvements to its plant.

MARTINSBURG, W. VA.—The Martinsburg Heat & Light Co. has been incorporated with $100,000 capital, by Jay Gates and others.

MORGANTOWN, W. VA.—The Cook Process Co. has been organized with $100,000 capital to operate a steel plant here. Incorporators are Alfred Sondheimer, Montclair, N. J.; O. J. Van Pelt, George C. Beach, Roscoe Stewart and S. E. White.

PARKERSBURG, W. VA.—Plans are being made to build a 1-story, 105 x 220-foot foundry for the Parkersburg Rig and Reel Co. The cost including the equipment will be $150,000. Day & Zimmerman, 611 Chestnut street, Philadelphia, are the architects.

WHEELING, W. VA.—Repairs are being made to the plant of the Follansbee Bros. Co.

WHEELING, W. VA.—The Center Foundry & Machine Co., Main and Twentieth streets, is making alterations to its plant.

WHEELING, W. VA.—Work will be started soon on an annex 125 x 250 feet to the plant of the J. E. Moss Iron Works.

Throughout the West

KANSAS CITY, MO.—A new corporation is to be formed to take over the plant of the Thomas Track Appliance Co., which operates a foundry here.

ST. JOSEPH, MO.—Sixteen 100-horsepower boilers are being installed by the Missouri Iron & Steel Co., just north of Brandsville. It is expected that these boilers will increase the output of the furnace 100 to 105 tons per day.

ST. LOUIS.—The Chester Iron Foundry Co. contemplates a foundry.

ST. LOUIS, MO.—The St. Louis Metal Ware Co., 2507 Broadway, is having plans prepared for a plant, 250 x 450 feet. R. L. Neidringhaus, care owner, is engineer.

ST. LOUIS.—The Gravois Foundry Co., 5001 South 38th street, will build a 1-story and a 2-story foundry 62 x 235 feet. The building will cost $10,000.

ST. LOUIS.—The 2-story machine shop of the Colcord-Wright Machinery & Supply Co., 1223 North Broadway, recently was damaged by fire. The loss has been estimated at $28,000. J. W. Wright is president.

ST. LOUIS, MO.—P. J. Bradshaw, architect, International Life building, is making plans for a 3-story machine shop 150 x 250 feet for the Washington University Corp., to be leased to the Weber Motor Car Co.

LITTLE ROCK, ARK. — The Berg Safety Crank Co., Joseph C. Berg, president, will build a plant for the manufacture of automobile locks and gasoline engine devices, at a cost of $25,000.

CISCO, TEX.—A $30,000 machine shop will be built by D. M. Howard for sharpening tools for oil well use. The shop will be known as the Howard Tool Co.

DALLAS, TEX.—The Kibbe Tractor & Implement Co., capitalized at $50,000, has been chartered by Louis G. Kibbe and associates.

EASTLAND, TEX.—The Howard Tool Co. is reported planning the erection of a machine shop at an estimated cost of $30,000.

HOUSTON, TEX.—The Houston Compress Co. will build a machinery repair shop.

HOUSTON, TEX.—The Reed Roller Bit Co., capitalized at $250,000, has been chartered by Neils Esperson, C. E. Reed and J. H. Greshy.

MINERAL WELLS, TEX.—The Central Power & Light Co. has been incorporated with $250,000 capital, by Ira J. Kerr, Roy R. Poe and M. B. Milburn.

SHERMAN, TEX.—Plans are being made for an electric power and light plant costing $650,000.

WICHITA FALS, TEX.—The Contractors' Machine & Supply Co., capitalized at $300,000, has been chartered by H. R. McClintock, C. J. Lurie and R. T. Crawford.

BEGGS, OKLA.—The Beggs Power & Ice Co. is reported planning to build a $100,000 electric light plant.

COMANCHE, OKLA.—This city has voted $35,000 in bonds for electric light and waterworks improvements.

GARBER, OKLA.—This city has engaged Black & Veatch, Interstate Bank building, Kansas City, Mo., to prepare plans for an electric light plant and waterworks.

PAWHUSKA, OKLA.—This city is preparing preliminary plans for an electric light plant.

PAWHUSKA, OKLA.—The Ferguson-Hurley Motor Co. will equip a machine shop and repair station at an estimated cost of $40,000.

TULSA, OKLA.—The Oklahoma Iron Works will build a plant costing $500,000, equipment being about half this sum.

TULSA, OKLA.—The city of Tulsa has voted $5,000,000 in bonds to build a waterworks system. H. A. Pressey is engineer.

ATCHISON, KANS.—The Bailor Plow Co. is constructing a factory and office building and will erect an assembly building, 80 x 150 feet.

KANSAS CITY, KANS.—The Municipal electric light plant will be enlarged and equipment added at a cost of $400,000.

ST. JOHN, KANS.—Plans are being prepared by Burns & McDonnell, Kansas City, Mo., for rebuilding and extending the waterworks and eletric light plant at a cost of $50,000.

WICHITA, KANS.—The Coleman Lamp Co. will take bids shortly for a plant, 2-stories, 100 x 140 feet.

WICHITA, KANS.—The Kansas Gas & Electric Co. is having plans drawn for a power plant addition, 3-stories, 70 x 120 feet, to cost $275,000.

BEATRICE, NEBR.—The Beatrice Iron Works, including the buildings, was recently sold at public auction for $35,000. The buyers were Dr. H. A. Hepperlen and H. A. Thompson.

OMAHA, NEBR.—The Nebraska Iowa Steel Tank Co., Thirteenth and Willis street, has let a contract for a plant, 122 x 225 feet.

OMAHA, NEBR.—Additions to the plant of the Omaha Structural Steel Works, 48th and Leavenworth street, will consist of a foundry 80 x 119 feet and a machine shop 41 x 278 feet costing $20,000 and $25,000 respectively.

KELSO, WASH.—Contract for the substation here was awarded by the North Coast Power Co. to H. A. Strand, construction to begin at once.

SEATTLE.—The Draper Engine Co. is reported contemplating the construction of a plant addition.

SEATTLE.—The Power Appliance Co. recently was incorporated with $250,000 capital by C. J. Mahoney, C. F. Hallett and others.

SEATTLE.—Shaw Metal Mfg. & Spinning Co. has been incorporated with $100,000 capital by H. A. Shaw and others.

SEATTLE.—Universal Tractor Attachment Co. has been incorporated with $50,000 capital by Samuel Glenn and others.

SEATTLE.—Further development of the city's Cedar river hydroelectric power plant at a cost of $420,000 has been provided for by the utilities committee of the city council.

SPOKANE, WASH.—The International Steel Co., L. L. Bair, president, has bought a 5-acre tract and is preparing to build a rolling mill costing $10,000.

SPOKANE, WASH.—A 5-acre site near the Milwaukee railroad has been purchased by the International Steel Corp., which intends to erect a steel rolling mill to cost $100,000.

SPOKANE.—The International Steel Co. has purchased five acres and it is reported, will erect a $100,000 steel plant. L. L. Blair is president. The plant is to have a rolling mill and electric furnace.

TACOMA, WASH.—The old plant of the West Coast Steel Co. is being fitted up for the manufacture of tractors by the Blewett Tractor Co., which was recently organized with $100,000 capital. A. R. Blewett heads the company.

KLAMATH FALLS, OREG.—The Klamath Heating Co., recently organized, is reported planning to build a central heating plant to cost $40,000.

OREGON CITY, OREG.—The state highway commission is planning a bridge 385 feet long over the Milametter river of structural steel encased in concrete to cost $268,000. C. B. McCullough is state bridge engineer.

ROSEBURG, OREG.—Wm. Polman, owner of the light and water plant here, is making an inspection of the property with a view to making improvements.

TOLEDO, OREG.—The Fisher-Storey sawmill damaged in a recnt fire is to be rebuilt. It will be motor-driven, being supplied with power by a plant erected at the mill.

LOS ANGELES.—The Monarch Carburetor Lock Co. recently was incorporated with $100,000 capital, by Samuel M. and Benjamin M. Bancroft and Frank E. Greth.

Business in Canada

MONTREAL, QUE.—The Automatic Gage & Supply Co,, Ltd., has been incorporated to manufacture automobiles and other vehicles and accessories with a capitalization of $100,000.

MONTREAL, QUE.—H. C. Johnson, Ltd., Bank of Toronto building, has been awarded the general contract for the erection of a $12,000 foundry building here for the Canadian Steel Foundries, Ltd., 120 St. James street.

MONTREAL, QUE. — The Laval Industrial Co., Laval de Montreal, will build a 2 and 3-story, 40 x 70-foot factory on the Boulevard. Metal stampings are the product of the company. The new plant will cost $22,000.

MONTREAL, QUE.—The Charles H. Russell Co., Ltd., has been incorporated to manufacture products and articles in which wood, iron and steel are used, etc., with $20,000 capital stock; by Arnold Wainwright, Felix W. Hackett, Joseph J. Harold and others.

(*Concluded on Page* 334)

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.35c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.35c
Iron bars, New York	3.37c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.45c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.65c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10, blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.50c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.33c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	6.75c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.68c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.70c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galvanized
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	28

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galvanized
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galvanized
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric GG Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$21.00 to 21.50
Chicago	21.50 to 22.00
Eastern Pennsylvania	19.00 to 19.50
Cleveland	21.00 to 22.00
St. Louis	20.00 to 20.50
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.50 to 16.00
New Jersey points	**14.00 to 14.50**
Cincinnati	18.00 to 18.50
Birmingham	13.50 to 14.50
Valleys	16.50 to 17.50
Boston (dealers)	16.00 to 16.50

BUNDLED SHEETS

Pittsburgh	$15.00 to 15.50
Eastern Pennsylvania	15.00 to 16.00
Cleveland	15.50 to 16.00
Buffalo	14.50 to 15.00
Cincinnati	13.00 to 13.50
St. Louis	11.00 to 11.50

STEEL RAILS, SHORT

Chicago	$24.50 to 25.00
Cleveland	23.00 to 23.50
Boston (Dealers)	14.00 to 14.50
St. Louis	22.50 to 23.00
Birmingham	15.00 to 17.00
Cincinnati	18.00 to 18.50

STOVE PLATE

Pittsburgh	$17.00 to 18.00
Chicago	24.50 to 25.00
Eastern Pennsylvania	19.00 to 20.00
Cleveland	19.25 to 20.25
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New Jersey points	18.25 to 19.25
Cincinnati	16.00 to 16.50
Birmingham	18.00 to 20.00
Boston (consumers)	14.50 to 15.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penna. (guaranteed)	23.00 to 24.00
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$21.00 to 21.50
St. Louis	19.00 to 19.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.50 to 22.00
Chicago	24.50 to 25.00
St. Louis	22.50 to 23.00

BALED SHEETS

Pittsburgh	$18.00 to 18.50
Chicago	17.50 to 18.00

FROGS, SWITCHES, GUARDS

Chicago	$21.50 to 22.00
St. Louis	20.00 to 20.50
Eastern Pennsylvania	19.00 to 19.50

BOILER PLATE, CUT

Chicago, No. 1	$18.50 to 19.00
St. Louis, No. 1	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$23.50 to 24.00
St. Louis	21.50 to 22.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$21.00 to 21.50
Pittsburgh, No. 2	20.00 to 20.50
Chicago, No. 1	23.50 to 24.00
Chicago, No. 2	22.00 to 22.50
Eastern Pennsylvania, No. 1	25.00 to 26.00
Cleveland, No. 1	23.00 to 24.00
St. Louis, No. 1	21.50 to 22.00
St. Louis, No. 2	20.50 to 21.00
Buffalo	21.00 to 22.00
Cincinnati, No. 1	20.00 to 20.50
Birmingham, No. 1	14.50 to 15.50
New York No. 1 (dealers' price)	21.50 to 22.50
Valleys No. 1	**18.00 to 19.00**
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$19.00 to 19.50
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.50 to 16.00
Boston (dealers)	14.50 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers' price)	$18.00 to 18.50
New York, special	16.00 to 16.50

BUSHELING

Chicago, No. 1	$20.00 to 21.00
Chicago, Chicago, No. 2	14.50 to 15.00
Cleveland, No. 1	20.00 to 21.00
Cleveland, No. 2	17.50 to 18.50
St. Louis, No. 1	20.00 to 20.50
Buffalo, No. 1	16.50 to 17.00
Cincinnati, No. 1	15.00 to 15.50
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.50 to 14.00
Chicago	10.50 to 11.00
Eastern Pennsylvania	14.00 to 15.00
Eastern Pennsylvania (blast furn.)	12.50 to 13.00
Cleveland	12.00 to 13.00
Buffalo	12.00 to 12.50
New York (dealers 'price)	9.50 to 10.00
St. Louis	12.50 to 13.00
Cincinnati	8.00 to 8.50
Birmingham	10.00 to 11.00
Valleys	**11.00 to 11.50**
Boston (dealers)	9.50 to 10.50
Boston (blast furnace) (dealers)	7.50 to 8.00

CAST IRON BORINGS

Pittsburgh	$14.50 to 15.00
Chicago	14.00 to 14.50
Eastern Pennsylvania	14.50 to 15.00
Cleveland	15.00 to 15.50
St. Louis	12.00 to 12.50
Buffalo	13.50 to 14.00
New York (dealers' price)	10.50 to 11.00
Cincinnati	10.00 to 10.50
Birmingham	10.00 to 11.00
Valleys	**11.50 to 12.00**
Boston (dealers)	9.50 to 10.50
Boston (blast furnace)	8.00 to 8.50

IRON AXLES

Pittsburgh	$29.00 to 30.00
Chicago	33.00 to 34.00
Eastern Pennsylvania	15.00 to 16.00
Cleveland	35.00 to 36.00
St. Louis	34.00 to 34.50
Buffalo	28.00 to 29.00
Cincinnati	26.50 to 27.00

IRON RAILS

Chicago	$25.00 to 26.00
Cleveland	27.00 to 28.00
St. Louis	23.50 to 24.00
Buffalo	24.00 to 25.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$18.50 to 19.00
Cleveland	18.00 to 19.00
St. Louis	18.00 to 18.50
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$22.00 to 22.50
Cleveland	19.50 to 20.50
Buffalo	20.00 to 20.50
New Jersey points	16.75 to 17.25
Eastern Pennsylvania	17.50 to 18.50

FORGE FLASHINGS

Cleveland, large	$16.00 to 16.50
Cleveland, small	19.00 to 19.50
Chicago, small	16.50 to 17.00
Boston (dealers)	**10.00 to 10.50**

FORGE SCRAP

Chicago	$22.00 to 22.50
Eastern Pennsylvania, No. 1	13.50 to 14.50

ARCH BARS AND TRANSOMS

Chicago	$29.00 to 30.00
St. Louis	25.50 to 26.00

ANGLE BARS—IRON

Chicago	$27.50 to 28.00
St. Louis	25.50 to 26.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 16.50
Eastern Pennsylvania, iron	15.00 to 16.00
Boston (dealers)	9.50 to 10.00
Cleveland	17.00 to 18.00
Buffalo	15.00 to 16.00
Chicago	17.50 to 18.00

STEEL CAR AXLES

Pittsburgh	$25.00 to 26.00
Eastern Pennsylvania	28.00 to 30.00
Cleveland	34.00 to 35.00
St. Louis	31.50 to 32.00
Buffalo	28.00 to 29.00
Chicago	31.00 to 31.50
New York (dealers' price)	21.25 to 22.25
Birmingham	19.00 to 21.00
Boston (dealers)	24.00 to 25.00

SHAFTING

Eastern Pennsylvania	$25.00 to 27.00
St. Louis	28.00 to 28.50
New York (dealers' price)	19.75 to 20.75
Chicago	29.00 to 30.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh iron	$22.00 to 23.00
Pittsburgh, steel	21.00 to 21.50
Chicago, iron	26.00 to 26.50
Eastern Pennsylvania, iron	24.00 to 25.00
Cleveland, iron	24.50 to 25.50
St. Louis, iron	24.50 to 25.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	20.00 to 21.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	**$21.00 to 22.00**
Chicago, cupola	28.50 to 29.00
Eastern Pennsylvania, cupola	23.00 to 24.00
Cleveland, cupola	23.50 to 24.50
New York, cupola (dealers' price)	20.50 to 21.50
Cincinnati, No. 1, cupola	22.00 to 22.50
Birmingham, cupola	22.00 to 23.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	25.00 to 25.50
Buffalo	22.50 to 23.00
Boston	23.50 to 24.50

HEAVY CAST

New York (dealers' price)	$20.50 to 21.50
Buffalo	**21.00 to 22.00**
Pittsburgh	20.00 to 20.50
Eastern Pennsylvania	21.00 to 21.50
Cleveland	18.50 to 19.50
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$16.50 to 17.00
Pittsburgh, agricultural	15.50 to 16.00
Chicago, railroad	23.50 to 24.00
Chicago agricultural	23.00 to 23.50
Eastern Pennsylvania, railroad	18.00 to 19.00
Cleveland, railroad	22.00 to 23.00
Cleveland, agricultural	18.00 to 19.00
St. Louis, railroad	19.00 to 19.50
St. Louis, agricultural	18.50 to 19.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	16.00 to 16.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$24.00 to 25.00
Chicago	29.00 to 30.00
Eastern Pennsylvania	22.00 to 23.00
Cleveland	25.00 to 26.00
St. Louis	28.50 to 29.00
Birmingham	**15.00 to 16.00**
Boston (dealers)	16.50 to 17.00

LOCOMOTIVE TIRES

Chicago	$25.50 to 26.00
St. Louis	21.50 to 22.00

BOILER PUNCHINGS

Chicago	$24.00 to 25.00
Eastern Pennsylvania	23.00 to 24.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

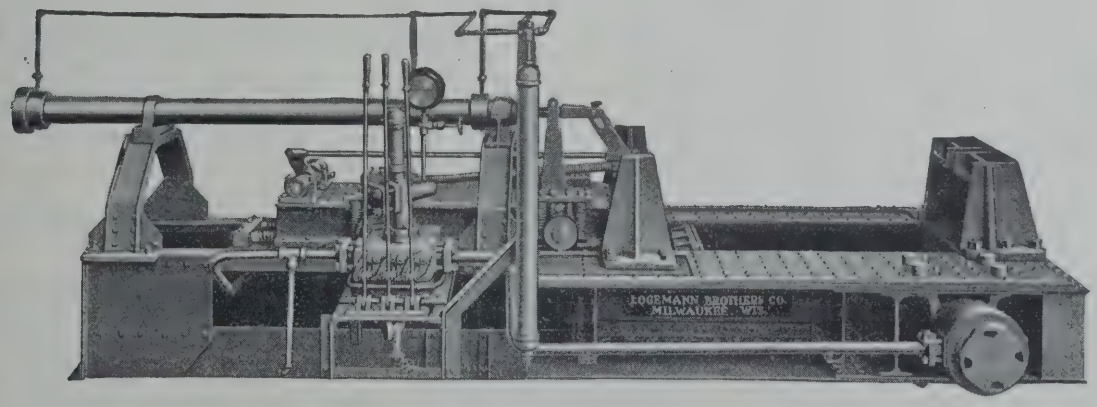
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

(*Concluded from Page 329*)

MONTREAL, QUE.—The Thomas Davidson Mfg. Co. is building a large addition to its plant on Delisle street. The gray iron foundry work has been discontinued at the main plant and a new modern foundry building 74 x 100 feet is being erected at Turcot, adjoining the steel plant.

MONTREAL, QUE.—The Lignite Utilization Board of Canada, 80 St. Francois Xavier street, Lesslie R. Thompson, secretary, will shortly install power house equipment as follows: Three 125 horsepower horizontal tubular return boilers with usual fittings, for 125 to 150 pounds steam pressure, one steam driven boiler feed pump; two 200 kilovolt ampere, 110 volt, 3 phase, 60 cycle, gasoline or oil driven emergency lighting sets; one standard underwriters' steam fire pump, 1000 U. S. Gallons per minute, 125 to 150 pounds steam pressure.

COCHRANE, ONT.—The town council is making preparations for the construction of an addition to its waterworks plant and system to cost $30,000. Engineer, E. Casewell.

GUELPH, ONT.—The Lang Mfg. Co. has awarded the contract for the erection of a machine shop to be constructed on the Harris street side of its present plant. The company which at present conducts a general machine shop business proposes to take up other lines of manufacture as soon as the new plant is completed.

HAILEYBURY, ONT.—It is announced that the United Iron & Machinery Co. will call for bids at an early date for the erection of a foundry and machine shop to cost $75,000.

HAMILTON, ONT.—The J. Spencer Taner Co. of Canada, Ltd., is making preparations for the building of a factory here to cost about $100,000.

HAMILTON, ONT.—W. J. Westaway, 72 James street north, has been appointed engineer for the building of a factory here to cost $600,000 for Perritts & Spencer of Bury, England.

NIAGARA FALLS, ONT.—The L. & P. Mfg. Co., Ltd., has been incorporated to conduct a general foundry business and to manufacture machinery. The company is capitalized for $50,000.

OTTAWA, ONT.—The Beach Foundry Co. is erecting a foundry here to cost $75,000.

OTTAWA, ONT.—The Battery Engineering & Supply Co., Ltd., has been incorporated to manufacture machinery and electrical appliances with a capital stock of $50,000.

PARRY SOUND, ONT. — The town council has awarded the general contract for an electric light plant, generating station building, dams, conduits, etc., costing $65,000 to W. M. Fletcher & Co., 155 Bloor street west, Toronto, Ont., and the electrical apparatus contract to the Canadian Westinghouse Co., Ltd., Hamilton, Ont.

TORONTO, ONT.—Dodge Brothers will build a plant here for the manufacture of automobiles, etc., to cost $60,000.

TORONTO, ONT.—Plans are being prepared by C. A. P. Turner, for the construction of a reinforced concrete factory building 60 x 280 feet for the Northern Aluminum Co.

TORONTO, ONT.—Soren Bros., Ltd., with a capital stock of $250,000 has been incorporated to manufacture tin, granite and sheet metal ware. The directors are Moses Soren, Louis Soren and Alfred Branson.

TORONTO, ONT.—The Wilson Motor Body Co., Ltd., has been incorporated for $40,000 to manufacture automobiles, cycles, engines and vehicles. The directors are Henry H. Davis, Edward H. Brower and William W. Lang.

TORONTO, ONT.—The Chase Tractors Corp., Ltd., has been incorporated to carry on the business of iron and steel founders, mechanical engineers and manufacturers of all kinds. The capital stock is $200,000.

TORONTO, ONT.—The Chase Tractor Corp., Ltd., has been incorporated to manufacture farm tractors, motor cars, machinery, implements, etc., with $2,000,000 capital stock; by James L. Ross, 72 Isabella street; Arthur W. Holmested, Room 43, 20 King street east; and others.

WALKERVILLE, ONT.—The Interchangeable Counterbore Tool Co. of Canada, Ltd., has been incorporated with $200,000 capital stock to manufacture tools and other metallic products.

WATERFORD, ONT.—The town council is contemplating construction of waterworks plant and system to cost about $40,000.

New Trade Publications

THREAD MILLER.—A 4-page folder describing a thread miller has just been issued by the Smalley-General Co., Inc., Bay City, Mich. The miller described is a powerful machine designed to do heavy and exacting work. The machine is said to mill threads with one revolution of the work and is used in the manufacture of automobile parts, pipe fittings, flanges, oil and gas well supplies, and in tool rooms. Various features of the machine are explained in detail in the folder.

LOCOMOTIVE CRANES—The United States Crane Co., Chicago, has just issued a 16-page bulletin describing a 20 to 30-ton locomotive crane for grab bucket, hook block or magnet service. The crane described is mounted on a cast steel frame supported by two 100,000-pound capacity trucks. The boom is 50 feet long and the safe lifting capacity of the crane without track clamps is 10 tons at a 15-foot radius or 4 tons at a 50-foot radius. All parts of the crane are described and illustrated.

ELECTRIC PRECIPITATION.—The recovery of valuable material from smoke and gases is the subject of an attractive 24-page booklet just issued by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The advantages of electrical precipitation and the principles involved in the methods used are fully explained. It is stated that there are three different methods of arranging electrical apparatus for electrical precipitation. Each of these methods is outlined and the electrical equipment for each is fully described and illustrated.

BLOWERS.—Much valuable information on rotary positive blowers, gas exhausters, pumps and vacuum pumps, couplings, blast gates, relief valves, feed devices and governors is contained in bulletin No. 70 issued by the P. H. & F. M. Roots Co., Connersville, Ind. Complete tables giving sizes best fitted for various uses with capacity, speeds and other data useful to the engineer feature this bulletin. The principle utilized in the impellers and blowers made by this company is clearly set forth. Many illustrations assist in making plain the text.

PNEUMATIC CONTROLS.—The Parker Appliance Co., Cleveland, is distributing a small booklet devoted to pneumatic controls for commercial vehicles. A system of air brakes for use on motor trucks and trailers is described and illustrated. The equipment consists of a compressor mounted on the motor, a storage tank, an unloader, which automatically relieves the pump when the working pressure is excessive, a distributing valve, a hand control and brake cylinders. A diagram of the various parts of the equipment and the necessary piping for motor trucks and trailers is shown.

ELECTRIC COMPRESSORS AND DRILLS.—An attractive 36-page booklet describing electric air compressors, portable electric drills and electric valve grinders, has just been published by the Black & Decker Mfg. Co., Baltimore. The air compressors described are of an unusually compact design and consist of a motor which imparts power to a piston by means of a train of gears and a connecting rod. The air passes from the cylinder into a condensation chamber, from which it is delivered for use. The compressors are made in various sizes and for various purposes. The electric drills described are equipped with a pistol grip and a trigger switch, and are made in six sizes, varying in capacity from $\frac{3}{16}$ to $\frac{7}{8}$-inch diameter holes in steel. The electric valve grinder is similar in many respects to the small electric drill, the spindle being fitted with a detachable bit.

Opportunities Abroad

Information Can be Obtained From the Bureau of Foreign and Domestic Commerce at Washington. Requests Should be on Separate Sheets and Should be Accompanied by Opportunity Number

The purchase of cold-drawn seamless steel pipes for electrical heating and isolators for electrical contacts is desired by a man in Switzerland. Quotations should be given c.i.f. Cette. Correspondence should be in English. Opportunity No. 29990.

General hardware lines, cutlery, hollow ware, flat ware and house furnishing goods are desired by a firm in Spain. Quotations should be given f.o.b. American port. Correspondence may be in English. Opportunity No. 29991.

A man in Australia wishes to act as agent in the far eastern countries for American exporting houses desiring to sell motor cars, tools and machinery. Opportunity No. 30007.

An importer in Belgium desires to purchase fire engines, ladders, hardware, bronze, copper, bicycles and motorcycles. Opportunity No. 30002.

The agency for the sale of building materials, hardware, domestic and general, motor accessories, electrical machinery and fittings is desired by a man in England. Opportunity No. 30004.

A man in Australia wishes to act as agent in the far eastern countries for American exporting houses desiring to sell motor cars, tools, machinery and leather. Opportunity No. 30007.

A company in Switzerland wishes to secure the agency for the sale of machine and other tools, automobile accessories, tin plate and carborundum wheels. Quotations should be given f.o.b. New York or c.i.f. French or Italian ports. Opportunity No. 30015.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, August 7, 1919 *No. 6*

July Output Shows Trade Growth

Increase of 48 Blast Furnaces in Operating List is Shown and Production is Increased by 360,626 Tons—New Orders Keep Ahead of Rising Output—Labor Conditions Greater Factor in Some Districts

JULY carried forward in an accelerated way the turn of iron and steel conditions which came in June and production figures for that month impressively measure the extent of this further growth of business. It is shown by the statistics of pig iron production that the surprisingly large gain of 48 blast furnaces was made by the active list in July. Of this increase, 37 were contributed by the steel works or nonmerchant stacks and 11 by the merchant producers. The strong trend toward increased steel works output is shown by the fact that not a single furnace supplying these plants was blown out in July. The heavy gain in the number of furnaces in blast brought about an increase of 360,626 tons of pig iron in July over June. The July total was 2,474,654 tons as against 2,114,028 tons in June and 2,107,729 tons in May. The number of furnaces in blast at the close of July was 247 compared with 199 in June and 197 in May.

New business is more than keeping pace with the expansion of production. With one or two exceptions buying continues on a very liberal scale and receding deliveries and growing order books attest the strong position enjoyed by most producers. Nevertheless, a highly conservative attitude continues to be maintained with regard to price advances which manifestly in some products at least seem more than warranted by underlying conditions.

Mills Are Filled Up

In several finished lines, the mills are taking new business sparingly or avoiding it entirely because of their filled-up conditions. Wiremakers have enough business on their books to keep them fully engaged for three months at least. The largest producer of lapweld pipe is sold up five to six months. Sheet tonnage entered in July was close to a high record for that product, and in this product specifications are greatly in excess of output. The scarcity in sheet bars has grown more pronounced and this is reflected by the fact that the American Sheet & Tin Plate Co. has been drawing upon Chicago mills for supplies for the Pittsburgh district. Steel bar demands are heavy and are widely spread over the various channels of consumption so that deliveries are steadily lengthening. Plate business is improving but in a slow fashion. Car steel inquiries and purchases in the Chicago district continue to foot up a good total.

Iron Buying Is Active

Reports of probable price advances seem to have stimulated renewed interest among pig iron buyers and the past week has shown a considerable burst of new inquiry and an increased volume of sales. There is a stronger movement toward negotiations for next year and some of the larger buyers are figuring in this, notably certain automobile builders and other important consumers in the Detroit district. The amount involved runs up to 25,000 tons or so. A steelmaker in the St. Louis district is inquiring for 10,000 tons of basic. Cleveland makers have advanced prices 50 cents, a Buffalo interest has raised its schedule $1 to $1.75 for next year and corresponding action has been taken by several individual producers in eastern Pennsylvania in the south and elsewhere. Supplies of iron are not so freely obtainable and fully 50,000 tons of export inquiry could not be quoted on because the metal was not available.

Good Selling for Export

Export business is in good volume despite the obstacles of the European exchange situation. Although England continues a fairly active purchaser, the Orient and South America offer the most promising field for immediate business. China has bought 15,000 kegs of nails in addition to various other lots of steel and pending inquiries from that country include 20,000 tons of rails, 15,000 tons of shapes and 2000 tons of ingots. Japan bought 3000 tons of blue annealed sheets and 1000 tons of light rails. New sales to England include 2000 tons of steel bars, 1500 tons of iron bars and 1000 tons of pipe.

Labor conditions continue to play some direct or indirect part in plant operations here and there. The strike of railway shopmen has restricted the supply of cars and motive power for the mills in the Chicago district and has caused the banking of several blast furnaces at South Chicago and Gary. Wire production at Cleveland remains greatly curtailed because of the refusal of the leading maker to grant the excessive demands made by the industrial trainmen.

AUGUST 7, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - 426 Old South Bldg.
PHILADELPHIA - - - - - 1316 Land Title Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Steel Breasts the Tide

EXTRAORDINARY opportunities for great national service have come to the iron and steel industry of this country on several occasions. During the war, iron and steel supplied the foundation for the full tremendous effort which this country made in building up an offensive strength which was destined to be unparalleled among all belligerents, had not the armistice checked the development of these plans. The unstinted energy and the determination with which iron and steel manufacturers put their facilities at the disposal of the nation and its allies is engrossed imperishably upon the records of the great conflict and it has been fitly said it constitutes one of the brightest pages in the history of the industry.

Iron and steel producers now are confronted with a new situation of national moment in which they are certain to play a large part. The continuing rise of prices for necessities of life manifestly has reached the stage where it has become more of a sociological than an economic problem. Accordingly it urgently demands the highest quality of statesmanship and the exercise of broadgaged methods to supply the remedy and to soothe the restless public mind. It has become manifest to thinking men that to allow prices to continue their upward trend regardless of the underlying economic conditions, means the courting of increasing unrest, business unsettlement, and in the end possibly some form of radical reaction.

Every advance of prices that now is made means but another impetus given to the "vicious cycle" all along the line, which in the end means little or no advantage to either employer or employed. It would seem that the time has arrived when sound business counsel calls for a firm and advanced stand by some interests or branch of industry, sufficiently powerful or capable of leadership to throw its weight against the present reckless movement and to breast the tide.

Apparently, this role is falling to, or is being recognized and accepted by the leaders of the iron and steel industry. It is perfectly plain that in various lines of finished products, present conditions of supply and demand would warrant a substantial advance of prices. Yet the leaders in the industry are exerting their influence against any advances at this time and in fact are refusing to put up their schedules regardless of the circumstances. Such advances in iron and steel prices as have recently been made have been confined to individual producers here and there and by no means have been of a general character. Most of the iron and steel being sold today is at prices which voluntarily were reduced at the suggestion of the industrial board in March. Iron and steel stand alone as the only materials to be so reduced.

The position against higher prices of the ruling thought of the iron and steel industry is doubly strengthened by the market position which these materials hold today in general commerce. Despite good operations and a demand that is piling up unfilled orders on makers' books, prevailing prices on pig iron and the important forms of finished steel are from 15 to 20 per cent below the level in effect at the time of the signing of the armistice. This is in decided contrast with the comparative price situation that rules on foodstuffs and various other materials that are fundamental to daily life. Furthermore, prices on iron and steel in effect at the time of the armistice were arbitrarily low because of the government control. In fact, the prices on various iron and steel products as fixed by the government were from 25 to almost 150 per cent lower than those established by the open market conditions prior to Sept. 24, 1917, when the controlled market began.

The policy being followed by the leaders of the iron and steel industry today is one of the most wholesome and hopeful examples of collected business judgment and patriotic wisdom that is to be seen in the present convulsion of hysteria which the country is experiencing over the intolerable conditions of living cost. It affords a rallying point for all business sincerely anxious and willing to do its part in bringing the country back to a state of reason and common sense.

How Government Defeats Own Purposes

REQUESTS for bids on government-owned machine tool equipment in former war plants arouse less interest each time an announcement of a proposed sale is made. Why should interest lag, when at first it was so keen? An answer to that question would carry the story of how the government defeats its own end by lack of business methods.

When proposals first were invited bids were filed by many bargain seekers. Prices named in some cases were so low that they were rejected. Bids which offered reasonable prices were pigeon-holed and action on them delayed so long that the bidders placed orders elsewhere.

Lately, however, a clause has appeared in requests for bids which has had an effect similar to a "hands-off" sign, or a red lantern. This clause makes a bidder responsible for the tool or group of tools after he has been notified that his bid has been accepted. The government is not responsible for fire, accident or theft, and while opportunity is offered for inspection before the bid is filed, it does not guarantee the tool's condition subsequently. No insurance or assurance of any kind is given. The clause follows:

(ACCEPTANCE OF PROPERTY:) After the property has been transferred to the purchaser (which transfer becomes a fact as soon as has bid has been accepted), the United States government will not be responsible for loss by fire or other causes, neither will the United States government be responsible for undiscovered wear or other defects, as it is assumed that the bidder is thoroughly familiar with the property for which he is submitting his offer.

Tool dealers declare that if an individual or a company endeavored to inaugurate or adopt the measures now being pursued by the government, they could not expect to remain in business very long. It would be impossible to sell tools or machinery on such a basis.

Unbusiness-like methods accounted for the government's failure to place orders efficiently and economically in wartime. Unbusiness-like methods made for delay in acting on claims which had to be settled following the signing of the armistice. And unbusiness-like methods in peacetime explain the government's failure to sell its tools, and why it is necessary for it to find berths for them in different government departments, such as the arsenals, navy yards, etc.

Testing Steel With X-Rays

APPLICATION of the X-ray to metallurgical problems is a development that promises considerable advance in the testing of steel. Equipment has been developed capable of sending the rays through four inches of steel, revealing various facts as to the internal structure. A hole 1/64-inch in diameter and of the same depth drilled in a 2-inch piece of steel will show plainly in a radiograph made with an exposure of two minutes.

Flaws and cavities in steel thus are disclosed, and flakes in the interior are brought to notice of the observer. Faulty welds in iron ½-inch thick have been detected by this means.

This use of the X-ray may come into common practice, supplementing other tests in cases where absolute soundness is the essential. It may have the effect of bringing about economy of design in cases where an unnecessarily large margin of safety has been allowed, by demonstrating the sufficiency of a smaller section.

Much progress has been made in this new application and a recent meeting of the Faraday Society of London, presided over by Sir Robert Hadfield, was given over to demonstrating methods and results.

Give Government Tools to China?

A BULLETIN recently issued by the bureau of foreign and domestic commerce, points out to the machine tool industry the wonderful opportunity offered for the introduction of American-made machinery in China. The bulletin intimates that it would be advisable if American manufacturers would install machinery in engineering schools and colleges in China, free of charge, or at a low cost, stating that England had already done this and is introducing its equipment throughout that country.

To do this the American manufacturer undoubtedly would have to expend a large sum. No doubt in the end he would reap financial return through cultivating the growing market in China for American tools. But why should he invest his money, time and labor to install machinery gratis in a foreign country, when the government could do it much more easily, both financially and diplomatically?

At the present time the government has on its hands machine tools valued at many millions of dollars. After much debate a bill was reported to the house several weeks ago to sell the tools to technical schools in this country at 10 per cent of their cost value. Why could not the government install some of this equipment in China at the same rate, or for that matter gratuitously? That is a thought for today. It is the government's duty to help increase foreign trade as much as possible. A large outlay is provided yearly to support a branch of the public service instituted for this purpose. Here is an opportunity for constructive trade promotion which the government could carry out entirely with its own devices. If it is a good investment for the manufacturers to demonstrate American tools in China, it is a better one for the government possessed as it is at present of its great surplus of machinery, which it is trying so zealously to put out to the best advantage.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 398 AND 400

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	26.75 to 27.25
Basic, Buffalo, furnace	25.75 to 26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	30.00 to 31.15

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X eastern	2.75 and up
No. 1, Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25
No. 1X, eastern delivered Phila.	$30.50 to 31.50
No. 1 foundry, Chicago furnace	28.00
No. 2. foundry valley. Pittsburgh.	28.15
No. 2 foundry, Buffalo	26.75 to 28.00
No. 2 foundry, Cleveland furnace.	27.25
No. 2 foundry, Ironton furnace	26.75
No. 2 foundry. Chicago furnace	26.75
No. 2 fdry., Chgo. fce., 1920 del.	28.75
No. 2X, eastern del., Phila.	29.00 to 30.60
No. 2X, eastern, N. J. tidewater.	29.60 to 30.90
No. 2X eastern, Boston	30.90
No. 2X foundry, Buffalo furnace	28.00 to 29.00
No. 2 foundry, del. Philadelphia	29.00 to 30.50
No. 2 foundry, N. J. tidewater	28.60 to 29.90
No. 2 southern, Birmingham	26.75
No. 2 southern, Cincinnati	30.15
No. 2 southern, Chicago	31.75
No. 2 southern, Phila.	33.25
No. 2 southern, Cleveland	31.75
No. 2 southern, Boston	34.75
No. 2 southern, St. Louis	31.00
Virginia, No. 2X, furnace	31.00
Virginia, No. 2X, Philadelphia	34.10
Virginia, No. 2X, Jersey City	34.40
Virginia, No. 2X, Boston	34.70
Gray forge, valley. Pittsburgh	27.15
Gray forge, Buffalo	25.75 to 27.50
Gray forge, eastern Pa.	28.00 to 29.00
Silveries. 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago.	44.05
Low phos. standard, Phila.	38.50 to 39.00
Low phos. Lebanon, furnace	35.00
Low phos. standard. Pittsburgh	40.00
Charcoal, Superior, Chgo., last half	31.75

Coke

(At the ovens)

Connellsville furnace	$3.90 to 4.50
Connelsville foundry	4.75 to 5.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports.	105.00
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.15 to 1.25
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	32 to 34 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.75c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, refined, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, refined, New York	2.62c to 2.77c
Bar iron, extra refined, Pittsburgh	3.00c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	38.00 to 40.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts. Pittsburgh	4.35c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.025c
Coated nails per count keg, Pitts.	2.85c to 3.10c
Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.50c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1588.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black	Galv.
	Per cent off	
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1588.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Full tube schedule page 1588.

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$56.80
Six-inch and over, Chicago	53.80
Four-inch, New York	55.70
Six-inch and over, N. Y.	52.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Shafting, Pitts., carloads	28 off list

Cotton ties, lots of 1000 to 3000 bundles, $1.75 per bundle, mill.

Cotton ties, 3000 bundles and over, $1.73 per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(¾ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–50 off

MACHINE BOLTS

(¾ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	3.10c off
Hot pressed, square tapped	2.85c off
Hot pressed, hexagon blank	3.10c off
Hot pressed, hexagon tapped	2.85c off
Cold pressed, square tapped	3.00c off
Cold pressed, square blank	3.25c off
Cold pressed, hexagon blank	3.25c off
Cold pressed, hexagon tapped	3.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Aug. 6, 1919	Average prices July, 1919	May, 1919	August, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	31.75	31.75	31.75	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
*Southern, No. 2, Birmingham	26.75	25.00	26.25	33.00
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa.	27.00	26.50	28.80	51.00
**No. 2X, Virginia, furnace	31.00	26.50	27.50	51.90
*No. 2X, eastern del., Philadelphia	29.50	29.50	30.10	53.40
Ferromanganese, 80 per cent, delivered	110.00	111.00	130.00	400.00
Bessemer billets, Pittsburgh	38.50	37.30	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	40.80	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	40.80	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	37.30	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	4.914

	Prices Aug. 6, 1919	Average prices July, 1919	May, 1919	August, 1918
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.62	2.62	2.50	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	4.914
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	10.164
Sheets, blk., No. 28, Pittsburgh	4.35	4.31	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.51	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.71	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	3.90	4.00	3.72	6.00
Connellsville foundry coke	5.00	4.90	4.35	7.00
Heavy melting steel, Pittsburgh	22.00	19.90	15.45	29.00
Heavy melting steel, eastern Pa.	20.00	18.85	15.30	32.80
Heavy melting steel, Chicago	22.00	19.40	15.40	29.00
No. 1 wrought, eastern Pennsylvania	27.50	24.70	21.90	46.24
No. 1 wrought, Chicago	24.50	21.20	17.05	33.50
Rerolling rails, Chicago	32.00	24.70	17.45	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Iron Advances More Numerous

Cleveland Interests Put Up Schedule 50 Cents—Higher Schedules Also Adopted by Producers at Buffalo, Eastern Pennsylvania and in the South—1920 Malleable Sold $1 Up—Supplies for this Year More Restricted

Chicago, Aug. 5.—June and July transactions in pig iron by Chicago producers have brought furnace books to a position where the present rate of selling will exhaust 1919 production before the end of this month. The inquiry now in hand is sufficient to take up a large part of the unsold tonnage for last half. Melters are seeking to book as much iron as possible before an increase is made in price, which seems imminent. Some instances have been known where buying for last half delivery has been much in excess of melting requirements and buyers are planning to pile this iron for use next year. Buying for 1920 delivery at $2 over present quotations is not active and seems to be limited to melters who desire to protect castings contracts. A malleable consumer in Wisconsin has closed for 5000 tons of that grade. A stove manufacturer in Wisconsin has taken 500 tons of malleable and wants 2000 tons of foundry. A Chicago machinery manufacturer wants a round tonnage of basic. Another basic inquiry calls for 500 tons. An Illinois manufacturer of sewing machines wants 500 tons of fourth quarter foundry. A machine tool builder in Wisconsin is seeking 500 tons of foundry for first quarter. Inquiry for silveries is active, and the grade is difficult to obtain. An inquiry for 500 tons for prompt delivery has not been placed. One Jackson county furnace is selling for fourth quarter, subject to strike adjustment. A sale of 500 tons of low phosphorus iron was made here recently and this grade is around $41 delivered. One large maker of southern iron has issued a new schedule, starting at $27.50 for silicon 1.75 to 2.25, and advancing for each 0.50 silicon as follows: $28.60; $29.75; $30.95; $32.20; $33.50; $34.85. The highest figure applies to 4.75 to 5.25 silicon. This is an increase in silicon differentials over the prevailing scale. The Illinois Steel Co. has sold the production of its idle stack at Milwaukee and will blow it in immediately. The strike of railroad shopmen is limiting shipments of coke and iron to foundries. Coke supply to blast furnaces is safe for the time being.

New England Situation Mixed

Boston, Aug. 4.—The pig iron market here is erratic and spotty. Some dealers report stiffening prices and others report a softening tendency. A few orders of comparatively large tonnage have been placed during the week and this brings the aggregate of total sales through Boston dealers above that of any other week in July. However, the buying generally, that is from jobbing foundries, has noticeably dropped off. This week's inquiries were good. A Massachusetts machine manufacturer is asking for 1500 tons for first half delivery and another Massachusetts consumer wants 1000 to 2000 tons of 2.75 to 3.75 silicon iron. The Worcester foundries are all back in operation again; in many cases after long periods of idleness due to labor troubles. Some of the foundries are not yet working on anything like a normal basis. Two sales of Buffalo No. 2X 2.25 to 2.75 silicon are reported at $28.50 furnace, and a sale of 2.50 to 3 silicon eastern Pennsylvania iron sets a new figure for that territory at $31 furnace. Many small tonnages have been placed for 1920 delivery but these are kept as quiet as possible for furnaces are reluctant to establish any price for the new year. Most sales have been at practically the same figure as for last quarter although small sales at above $1 concession are reported, while others have been placed at a premium.

The aggregate of the past week's sales through New England dealers is approximately 10,500 tons. The 20,000-ton inquiry of the E. & T. Fairbanks Co., St. Johnsburg, Vt., is thought to cover the requirements of several eastern plants under Fairbanks control, for the annual consumption of the Vermont foundry is less than the amount of the inquiry.

New York Market Active

New York, Aug. 4.—A greatly improved tone characterizes the eastern pig iron market. Inquiries are out for 30,000 to 40,000 tons for delivery during the first half of 1920. Although some first half foundry has been sold during the past week, there is no anxiety to quote for such shipment. In fact, the majority of the furnaces will not quote on first half, due to the uncertainty generated by the labor situation and the lack of assurance as to future costs. Indications are multiplying that the pig iron market is well sold up for the next few months. Export inquiries for fully 50,000 tons could not be quoted on owing to the lack of iron. Of four southern furnaces, only one had some tonnage to spare for third quarter, and this represented only a limited amount. Prices continue to show a tendency to advance. One Buffalo maker has advanced to $28, furnace, for No. 2 plain (1.75 to 2.25 silicon), $29 for No. 2X (2.25 to 2.75 silicon), and $30 for No. 1 (2.75 to 3.25 silicon). The same interest now is asking $29, furnace, for malleable. A Pennsylvania maker has sold a large

tonnage of foundry at the equivalent of $31.75, delivered, New Jersey tidewater, for No. 2 (2.25 to 2.75 silicon). Western charcoal iron producers have retired from the market. Quite a few eastern furnaces are out of the market on foundry and few are willing to sell. While the Worthington Pump & Machinery Corp. closed on a portion of its inquiry and several sales were made in excess of 1000 and 2000 tons each, bookings have not been as large during the past week as in the preceding week. Therefore, there has been little opportunity to ascertain whether prices such as $30.20, delivered, which the Crane Co., Bridgeport, Conn., is reported to have paid for 2.25 to 2.75 silicon could be duplicated. Extensive business has been transacted here at $29 eastern Pennsylvania furnace, for No. 2 plain (1.75 to 2.25 silicon). The latter figure does not yet represent the minimum on eastern Pennsylvania iron. Included in export business were some small tonnages of foundry which brought the equivalent of $32.75 and $32.25, delivered Newark, for 2.25 to 2.75 silicon. One moderate tonnage of foundry was included for China. The Virginia Iron Coal & Coke Co., has sold some iron on the list which it sent out July 26. This iron involves mainly high manganese and high silicon foundry, based on $27.75, furnace, for 1.75 to 2.25 silicon, but the minimum in case the extras do not bring it above that figure, is $30, furnace.

Prices Show Much Firmness

Pittsburgh, Aug. 5.—While pig iron sales lately have been on a considerably smaller scale than they were last week, consumers are no less interested and a fairly good day-to-day business is in progress. A sale of 1000 tons of malleable for first half at $28.25 furnace or $1 advance is noted. Higher prices are asked here and there but in at least one instance the higher figure is sought as a desire to forestall further business as the producer is well booked over the remainder of the year. Few of the furnaces now have much surplus tonnage, while among consumers the tendency is to be protected on supplies over the remainder of the year. Consumers of low phosphorus pig iron are particularly active in preparing for the future for while the steel foundries, the principal users of this grade, at present are far from busy, owners seem to fear higher prices later. Several thousand tons of low phosphorus have been placed by a Pittsburgh district consumer in the past week or 10 days. The business has gone chiefly to a valley producer and is understood to have brought from $39 to $40 furnace for copper-free iron. An inquiry for 2000 tons of this grade which has been before makers for several weeks, has not been closed. Not much has been done lately in bessemer iron, but one inquiry for 500 tons for last half from a Pittsburgh district user is current. Another sale of 3000 tons of basic to a Pittsburgh district steel manufacturer for last half at the full market price of $25.75 valley is noted. Foundry iron sales are fewer than they have been not because of a lack of demand, but because makers serving this territory are well booked. The stack of the Clinton Iron & Steel Co., Pittsburgh, was blown out last week for relining, but the furnace of the Sharpsville Furnace Co., Sharpsville, Pa., which has been down for about two months, was blown in yesterday. Announcement that the ocean freight rate on pig iron to United Kingdom ports has been cut from $16 to $12 per ton is viewed here with much interest for it means that producers even as far west as the valley can land basic iron in the English market at less than the last quoted price of the home makers. It is figured that $25.75 valley would mean about $31 on board ship, Atlantic seaboard or $43 laid down in England, which is $1 below the recent quotations of English producers.

Prices Spread at Buffalo

Buffalo, Aug. 6.—Though two furnace interests are out of the market for this year's delivery, business is fair. One interest reports bookings of about 5000 tons of foundry and 4000 tons of malleable. The malleable was sold at the old price of $27.25, although the price has been increased by at least one other interest to $28. The furnace selling the iron reports having very little more iron for last half delivery. Inquiry is good, one being for 4000 tons, another for 2000 tons and two others 300 and 550 tons, all for foundry iron. This particular maker is deliberating whether to open his books for 1920 delivery and may decide within a week. Another interest has already accepted 1920 tonnage at an advanced price. Its prices now are as follows: Malleable, $29; No. 2 foundry, $28; No. 2X foundry, $29; gray forge, $27.50. As other interests have not advanced this leaves a perceptible spread in the schedule.

Cleveland Producers Advance

Cleveland, Aug. 5.—Two Cleveland producers of foundry and basic have advanced their prices for delivery this year 50 cents to $27.25 furnace for the base grade of 1.75 to 2.25 silicon, effective Aug. 4. No sales yet have been made at the new level. These producers are not quoting for next year. New business has come out freely during the past week as the reports of impending or actual advances seem to have caused many consumers to come rather hurriedly into the market. One interest sold 14,000 tons, principally foundry grades. Another has booked as much business since Aug. 1 as during all July when sales were in fair volume. Another seller whose business mainly is outside the Cleveland district closed 12,000 tons of foundry and malleable in the week. There is an active inquiry for first quarter of 1920 and beyond but only occasional sales are being made for that delivery. Some of the larger buyers numbered among the automobile builders are sounding out the market on round tonnages. The aggregate of this business is probably 20,000 to 25,000 tons. A scale manufacturer has inquired for 10,000 tons of 1.75 to 2.25 silicon for last quarter and first quarter for eastern delivery and for 3000 tons for a Michigan plant. The Westinghouse Electric & Mfg. Co. is inquiring on a nominal tonnage of foundry iron for first quarter for its Cleveland plant. It is learned the large inquiry for basic from the Trumbull Steel Co. has been satisfied, and it is reported it went to a Pittsburgh seller at a slight concession. A northern Ohio consumer has been figuring on 5000 to 6000 tons of basic for this year. Shipments are increasing and furnace stacks are declining, the reduction in this respect being the greatest the past week of any recent weeks. The B stack of the Detroit Iron & Steel Co. has gone out. The A Buffalo Union furnace and the Cherry Valley and Dover stacks are about to resume.

Inquiries for 1920 Increase

Cincinnati, Aug. 4.—Business in pig iron is slowing down, although more southern furnaces have made it known that they are willing to accept last quarter orders at the regular schedule of $26.75, Birmingham, for 1.75 to 2.25 per cent silicon. Reports that iron is growing scarcer in all districts are being received here. Several southern producers are trying to relieve the situation by blowing in idle stacks. The situation in southern Ohio is unchanged. Complaints are heard of a car shortage. Inquiry for first quarter foundry iron is growing but so far neither northern nor southern melters have formally opened their books for that delivery. It is stated that such quotations as have been made are at an advance of $2 per ton. An inquiry for a round tonnage of basic for first half shipment has been received from the St. Louis district, but so far has not been acted upon. A little more interest is being taken in malleable for first quarter shipment, but none has been sold recently for that delivery at any price.

St. Louis Market Active

St. Louis, Aug. 2.—Several important producers of pig iron and selling agencies report the past week by far the most active since the recent movement set in. Buying is general with all melters of foundry iron, and the character of business closed is reassuring. The tonnages changing hands are large in the aggregate, although single sales are only of medium size. Most of the buying is by interests well covered over the balance of the year on estimated requirements, but which need additional metal to fill out on new business. A Granite City steelmaker has been figuring on 10,000 tons of basic for this year. Prices are strong. In one or two instances southern furnace interests are unwilling to sell heavily for last quarter, and none has opened books for 1920 business. Available tonnages, both North and South, are rapidly disappearing, and sales are well in excess of production. Steady purchasing during the past few weeks has cut deeply into stocks, and the relighting of idle furnaces will be necessary. A leading Birmingham interest sold 2000 tons of No. 2 foundry (1.75 to 2.25 silicon) which went to consumers in the St. Louis district. Total sales for the seven-day period amount to between 6000 to 7000 tons, including all grades. Southern sellers now refuse to absorb any part of the freight charges. Their quotas for this market for the

balance of the year are much smaller than a few weeks ago, due to the steady stream of small transactions, and buyers are showing anxiety to cover on new business. Stove makers and other specialty manufacturers have been seeking low-grade pig iron to use in place of cast scrap and stove plate, but there is relatively little iron of this class available, either northern or southern.

Southern Market Gains Strength

Birmingham, Ala., Aug. 5.—The pig iron market in the South is gaining strength. Sales are being made for delivery during the third quarter of the year, and a few for the fourth quarter. All quotations are f.o.b., furnaces, and there is no longer any absorption of freight charges. The make has been increased by the blowing in of two furnaces, a charcoal stack of the Shelby Iron Co., and a furnace of the Alabama Co. at Gadsden. During July the Sloss-Sheffield Steel & Iron Co. started up a North Birmingham furnace, and the Jenifer furnace also went into blast. Two more furnaces may resume operations this month. No business has been booked in the South for delivery during 1920 although inquiries still come in. A few sales of iron of special analysis have been made at from $3 to $3.50 per ton above regular quotations, which are on a basis of $26.75, for No. 2 foundry (1.75 to 2.25 silicon). Reports from other territories of an increase of $2 per ton in iron prices have had a stimulating effect and considerable buying is expected to come out.

Tin Plate

Specifications Liberal, But New Orders Are Few and Small

Pittsburgh, Aug. 5.—While new orders for tin plate are few and small, makers still have a considerable amount of unfilled tonnage on their books upon which they are receiving liberal specifications. Supplying these demands keeps the plants of both the American Sheet & Tin Plate Co., and the independents running close to 90 per cent of capacity. It is doubtful, however, if this rate can be maintained to the end of the month, for the principal requirements of the manufacturers of containers for perishable foods have been largely provided for and it is not considered probable that many new demands will develop until well into the fourth quarter of the year. Export business lately has not been large, but this condition may be ascribed more to the fact that consuming countries have pretty well covered their needs rather than to the foreign exchange situation, as most of the business has been with nations having a fairly favorable rate of exchange. As is the case with the sheet mills, the scarcity of sheet bars tends to keep the tin mills from reaching scheduled operations. No important cutting of prices is noted, although stock sales, which are made at 25 to 50 cents per box below base, include a comparatively large amount of standard plate.

Spot Coke Market is Easy

Furnaces and Foundries Well Supplied, as Loaded Cars Accumulate in Yards — Contract Business Active

Pittsburgh, Aug. 5.—An accumulation of loaded cars in the Connellsville district, and an extremely limited demand form a combination that is keeping the market here for spot coke easy. Blast furnaces and foundries are protected against coke requirements by shipments against contracts booked several weeks ago for last half. Current requirements of both grades are limited and while operators generally are asking $4, ovens, for standard furnace, too much "stranded" fuel is available at around $3.90, ovens, to allow much acceptance of the higher figure. Spot sales of foundry coke are being made generally at $4.75 to $5, although some of the larger operators who are in a position to curtail or increase production in keeping with consumption are inclined to ask for more. The market is a little stronger than it was last week, for while sales are impossible at any advance, it is a fact that some producers of foundry coke lately have been able to do $2.40 on coal and that figures out about $4.10 on coke, or 20 cents a ton above the present spot market. The contract market in furnace coke is a little more active, one contract for about 5000 tons a month to run from Aug. 1, to Dec. 31, having been placed by a valley furnace interest, whose stack went into blast yesterday. Although details as to the price are withheld, it is understood that the contract is a flat price one and that it was less than $4.50, ovens. An inquiry for 10,000 tons a month or more for the remainder of the year from a valley steel manufacturer having his own by-product coke ovens is in the market. Much speculation is current as to the motive behind this inquiry; some interpret it as meaning that the steel company is anticipating the failure to get sufficient supplies of coal because of a car shortage, while another theory is that the company is not obtaining its full requirements from its ovens. An inquiry for 10,000 tons a month for first half shipment also has come out, but operators are disinclined to quote that far ahead owing to the uncertainty over the labor situation. Contract foundry coke is quotable from $5.25 to $5.50, ovens, but no important sales have lately been concluded. Production of Connellsville coke in the week ended July 26, according to the *Connellsville Courier*, was 190,025 tons, compared with 164,220 tons in the previous week.

Domestic Fuel is Advanced

Boston, Aug. 4.—The softness in southern beehive coke market has not been reflected in the trading here. Some beehive coke is reaching this market, but it is hard to obtain and delivery is uncertain. The local by-product producer reports good business. During the week several shipments were made to New Brunswick foundries, among which the one to Sackville, N. B., has particular interest for the order was received by wire and was declared to be urgent. Domestic coke advanced on Aug. 1 to $11 and an advance in industrial coke is looked for in the near future.

Complain of Car Shortage

Cincinnati, Aug. 4.—From all producing districts there are complaints as to growing car shortage. Connellsville prompt coke developed a weak spot last week but now is regaining strength, and furnace coke today is quoted around $4.25, ovens, while foundry grades are quoted at $5.50. New River foundry coke is very firm at $8 and Wise County and Pocahontas 72-hour grades are held around $7.50. A little foundry coke is being sold for shipment during the first half subject to price revisions.

More Coke Needed in South

Birmingham, Ala., Aug. 5.—Foundry coke producers in this section are receiving inquiries as to how soon they will be able to take contracts. Quotations have not changed on any grade.

Fair Volume

Of Ore Sales Made in Small Tonnages—Dock Men Strike

Cleveland, Aug. 5.—Sales of Lake Superior ores to independent furnace interests during the past week approximate 250,000 tons, a gain of about 100,000 tons over the new tonnage placed in the preceding week. While some improvement is shown, a large proportion of the sales are in small lots, some of special grades, to round out supplies already on hand at the furnaces.

One interest sold 80,000 tons, all of which sales were made up of orders ranging from 5000 to 20,000 tons. Another placed 60,000, mostly of a special grade of manganese ore. A third placed 40,000 tons, mostly bessemer, while another sold something in excess of 50,000 tons, made of various grades, including considerable low silicious ore.

Shipments from upper lake ports picked up during the last few days of July and the month's total amounted to about 9,173,000, two shipments being estimated and exact figures still being in the course of compilation. This is 1,193,000 tons in excess of the June shipments, but 1,486,000 less than shipments in July, 1918.

The strike of workmen on the iron ore docks at Marquette, Escanaba and Ashland has suspended all shipments from those docks, and some apprehension is felt that it may extend to the mines and interfere with operations. The present monthly wage base of the dock workers as established last year is $154 for day and $161.50 for night work. The men demand an increase of 33⅓ per cent in wages.

Steel Scrap Goes Higher

Reports Persist of $22 to $23 Sales at Pittsburgh and Valleys—Cast Above Pig Iron at St. Louis—Chicago Market Up

FOR COMPLETE SCRAP PRICES SEE PAGE 400

Philadelphia, Aug. 5.—While sales of scrap in this district are not so heavy, the market is advancing by reason of buying in other territories. Several thousand tons of heavy melting steel have been sold here for Pittsburgh shipment at $23 delivered. A round lot of rerolling rails also has been sold at $28, Pittsburgh. The most important developments in the east were the purchase by the Worth Steel Co. of 1000 to 1500 tons of heavy melting steel at $20 delivered and the decision of the Alan Wood Iron & Steel Co. to accept several thousand tons of heavy melting steel due on old contracts closed last year at $29 delivered plus the commission. Sales in this market consist almost entirely of small lots. However, all scrap is scarce and this applies even to wrought despite the inactivity of the puddling plants.

Sell for Future Delivery

Boston, Aug. 4.—The scrap iron and steel market here has continued on the even keel established some weeks ago. No. 1 machinery has been more active than other grades. A sale of 300 tons for fourth quarter was made at $28 delivered. This is not only of interest for its price indication but it is unusual for scrap to sell here for future delivery; and although the transaction is not large it points to the fact that higher prices are expected by some scrap consumers. Other No. 1 machinery scrap sold from $25 to $26.50, delivered. One order at the higher figure went to a western Massachusetts concern. A slight break in the competition among dealers has been in evidence and the feeling is that the speculative buying cannot continue at a price level above that now offered until the steelmakers enter the market in earnest. Labor conditions among foundries are improving.

Some Grades Are Advanced

New York, Aug. 4.—A better demand is in evidence in the local scrap market for borings and turnings, and as a result, prices on this material have advanced. Machine shop turnings and clean cast borings are now holding at $11 to $11.50, f.o.b. New York, and mixed borings and turnings at $9.50 to $10. Quite a little of this material is being bought by blast furnaces, it is stated. No particular change has been noted in the demand for heavy melting steel, both eastern and western Pennsylvania consumers continuing in the market for fairly good tonnages. As high as $22 has been reported as having been paid by Pittsburgh consumers in this market; however, it is believed that the tonnage bought at this figure is negligible. Dealers nevertheless are making slightly higher offerings, the market now being around $16 to $16.50, f.o.b. New York.

Quieter But Still Strong

Pittsburgh, Aug. 5.—While dealings in scrap iron and steel here have diminished considerably in the past few days, due to the fact that several of the steel companies recently in the market for heavy melting steel have covered their present requirements, it cannot be said that the slowing down of buying has produced any weakness. The market appears as strong as it has been at any time recently, for holders have unbounded faith in the future. One of the larger of the independent steel manufacturers is about to make further purchases, and since Pittsburgh consumes vastly more scrap than it produces, prices here are subject to the influence of those in outside markets. All other consuming markets are strong and news from the East that government shell steel has been sold for delivery into the Pittsburgh district at from $24.50 to $25 per gross ton, delivered, is considered significant. Business has been done recently in heavy melting steel at $22 and $22.50, delivered, and while a quotation of $23 as yet has not been established by sales, that price is being asked. Bundled sheets are at least $1 a ton higher than a week ago and an even greater rise has occurred in baled sheets, both grades being in demand because heavy melting steel is not freely offered. Steel foundries are not heavy buyers of low phosphorus scrap and $25 is a maximum on sales, notwithstanding shell steel scrap sells at a higher figure. Higher prices have been established on all kinds of railroad scrap, with iron axles now quoted up to $31. As much as $32 has been offered, delivered valley, for the latter. Blast furnaces are taking a good many lots of borings and this demand largely accounts for a substantial advance in that grade.

Sell Buffalo Scrap in Valley

Buffalo, Aug. 6.—Demand for heavy melting steel, machine shop turnings, cast borings and stove plate is strong. Local mills, however, are not active in the market with prices of heavy melting close to $20. Dealers claim valley mills are paying $22.50, delivered, although outside demand has diminished. Dealers are very active in the market at present. No. 1 machinery cast is quoted at $24.50 to $25.50 and No. 1 railroad wrought at $23 to $23.50.

Cleveland Market Puzzling

Cleveland, Aug. 5.—Scrap iron and steel prices here have grown firmer and the market more puzzling. The market is being kept active largely through dealers' trading, although rumors are afloat that one large melter here has paid $23 for a round tonnage of melting steel. One user reports having obtained at $19 to $20. Bundled sheets, old steel rails, turnings, borings, No. 1 country mixed steel, pipes and flues, heavy cast, agricultural malleable, No. 1 railroad wrought, rerolling rails and No. 1 busheling all participated in pipe advances in the past few days. Dealers continue to offer the quoted or higher prices for fair-sized lots. As for the past few weeks, the market continues strong, even with the larger melters quiet, giving a foretaste of what may be expected when some real buying is done in the future.

Chicago Market Stronger

Chicago, Aug. 4.—Quotations on iron and steel scrap in the Chicago market have moved up $1 on practically all grades, while some have been advanced $2 to $3 per ton during the past week. No. 1 cast, which has passed the price of pig iron, has remained stationary. Rerolling rails continue to be unusually scarce and have climbed rapidly, at least $3 per ton advance being registered during the past few days. A western railroad recently sold a small lot at $33 per gross ton on track. An independent steelmaker which has not bought much heavy melting steel for several weeks is in the market for a round tonnage. Under present circumstances this is likely to send the market much higher as the supply of this grade is not sufficiently large to make dealers safe in committing themselves for heavy tonnages at the present level. A recent sale of 6-inch gothic billets by the government at Chicago in which 5000 tons was awarded to each of three bidders has been rejected by headquarters at Washington, and the material will be offered on new bids. The bids ranged from $24.67 to $24.88. Railroad offerings are unusually scarce. The Santa Fe has just closed a list containing 1400 tons, and the Southern offers 1250 tons in which is included 150 tons of rerolling rails.

Cincinnati Market Quiet

Cincinnati, Aug. 4.—There is very little buying of scrap either by foundries or steel mills, and the market is quiet. Some inquiry for first half supplies has come out but dealers are slow in making figures. Recent advances now appear to be well established. Receipts of country scrap are heavier, but little is coming from the railroads. Steel turnings are not much in demand.

Cast Scrap Near Pig Iron

St. Louis, Aug. 2.—Higher prices and continued speculative activities among dealers are the principal features of the scrap market. Dealers are bullish, and are throwing down all varieties of old material. Steel works are not purchasing and declare they will not do so until they have more orders. Rolling mills are making some purchases, but most of them are fairly well covered, and all are refusing to pay prices asked by the dealers. The market here has almost reached a point where rolling mill grades may be shipped profitably to other districts. During

the week a tonnage of busheling was sold for shipment to Chicago. Many dealers' yards are heavily loaded, and the same is true of a number of the storage yards of industrial plants. A close observer of the scrap market here remarked that there is no doubt outside capital has become interested in scrap iron and steel speculation. No scrap is arriving from the country. Railroads are the chief producers, but most of them are selling in comparatively small lots. No lists are before the market, although the Wabash railroad and the St. Louis Terminal Railway association are expected to have one each within the next day or two. Cast scrap and stove plate are in great demand, and almost impossible to get. The price of cast scrap is very near that of pig iron. Cast at around $28 per gross ton seems to be too expensive, and foundries are seeking low grades of pig iron to substitute for scrap. Bids are to be taken by the St. Louis district ordnance office on 1184 gross tons of cast steel ingots for forging 240-milimeter common shells which are at the plant of the Curtis & Co. Mfg. Co., and on lots of 975, 661 and 248 partially completed 155-milimeter and 8-inch common steel shells.

Southern Market Still Lags

Birmingham, Ala., Aug. 5.—While it is not declared there has been an upward turn in the scrap iron and steel market, the increased optimism now prevailing is significant. Dealers are selling a little scrap. A statement emanating from one of the larger interests is that present quotations represent the prices at which dealers are buying. Heavy melting steel is being held for $20 while current quotations are around $15 to $16. Shortage of railroad cars is causing some concern.

Sheet Bars

Shipped to Pittsburgh From Chicago—Supplies Scarce—Canada Wants Rods

Pittsburgh, Aug. 5.—Demands from the sheet and tin plate mills for sheet bars are so heavy and insistent that manufacturers are experiencing considerable difficulty in keeping abreast of their specifications. Actually, most of them are behind in their deliveries and open market offerings are practically nil. The shortage of sheet bars, while not really acute, is serious and operations of some of the sheet mills are somewhat restricted because of the lack of sheet bars. Illustrative of the condition of the market is the fact that the American Sheet & Tin Plate Co. recently was obliged to bring sheet bars from Chicago to the Pittsburgh district at a freight rate of $4 a ton as compared with $1 a ton, the average freight on tonnages from the usual sources of supply. A good demand is noted for small billets, especially from the bar mills, and forging billets, while not particularly active, are doing somewhat better than they did recently. The latter are strong at $51 Pittsburgh. Wire rods are in demand especially for export, an inquiry from Canada calling for 5000 tons. Makers, while holding to a base of $52, Pittsburgh, for soft rods for domestic consumption are quite generally quoting $57, Pittsburgh, against export inquiries. Most makers have some rods for sale due to the fact that their finishing mill operations are restricted by a shortage of labor.

Sheet Bars in Demand

Cleveland, Aug. 5.—A shortage of sheet bars continues to be indicated by the active inquiring some of which is coming from companies which ordinarily produce their own supplies. Specifications against contracts are heavy. Billets and slabs are not as active as sheet bars but they are being called for in an increasing amount.

Demands Are Growing

Pittsburgh, Aug. 5.—Demands for strip steel have further expanded in the past week or so. While hot rolled continues to lead, cold rolled in sales, both grades are sharing in the improvement. Mill operations, which a few weeks ago ranged from 60 to 70 per cent of capacity, now are around 80 per cent. While the principal demand still is from the automobile manufacturers, other consumers are buying more freely. Provision of supplies has been made by consumers who have been out of the market since the war crowded them out. Some shading on prices on both hot and cold rolled steel is going on but an increased proportion of the business is at full quotations.

Sheet Record

Closely Approached in July—Specifications Greatly Exceed Output

Pittsburgh, Aug. 5.—Last month was one of the biggest in sheets in the history of the industry, and with specifications greatly exceeding production, practically all of the manufacturers have carried into this month a considerable tonnage from July. Manufacturers are well sold for the remainder of the year, and new demands from domestic consumers and also from abroad are heavy. No letup has come in the Japanese demand for tin mill black sheets, while lately Holland, South America, and Norway and Sweden have been providing a large volume of business in the various kinds of sheets. Practically no shading of prices now is observed; on the contrary, talk persists of advances although the American Sheet & Tin Plate Co., is adhering to the March 21 levels on business for the remainder of this year. Apparently some of the buyers of sheets who recently placed some sizable contracts below the regular market quotations have some doubt about deliveries against these orders and are seeking protection from other manufacturers against such an exigency. Sheet mills are running around 87 per cent of capacity and would schedule even a higher rate if difficulty was not being experienced in securing supplies of sheet bars.

Chicago Demand is Heavy

Chicago, Aug. 4.—Consumers of steel sheets are in need of large supplies and are inquiring heavily, while producers are turning down much business. The leading independent in this market is selling nothing, having obligations practically sufficient to carry through the present year. Other sheet mills are choosing from among the inquiry and thousands of tons are being refused.

Pick Orders

In Wire Products and Many Are Refused—Price Ad vanced Continues

New York, Aug. 4.—The situation in the wire market is beginning to resemble that which prevailed during the war. Mills are carefully scrutinizing business they place on their books, and this is true in the case of regular customers. Orders for amounts in excess of the customers' usual requirements are declined. Mills in practically all cases have enough business on their books to keep them busy for at least three months. Despite this advantage, the leading interest is not expected to follow the advances which recently were made by independent wiremakers. In view of the extent to which this interest is refusing business, however, it is not expected that there will be any dislocation of the present relations of buyers and sellers. It is considered likely that before long, business will be going at two sets of prices—that which is being quoted by the leading interest and that which the independents are asking.

Supplying Only Regular Trade

Pittsburgh, Aug. 5.—Wire mills have so much business in sight that those who have not advanced prices practically are out of the market and are entertaining only such inquiries as are coming from regular customers. Demand is as urgent as ever and the advances sought by most of the independent manufacturers would be paid promptly if this would insure prompt shipments. Manufacturers are having such difficulty in bringing up mill operations to the rate demanded by present bookings that only a small part of the new business offered at the higher prices is being accepted. Practically all manufacturers are feeling a scarcity of labor, and find it almost impossible to attain scheduled operations. Deliveries are falling behind orders constantly. Makers of cut nails are swamped with business and the principal one in this district has virtually withdrawn from the market. This manufacturer no longer is quoting carload lots, but on less than carloads has a price of 5.025c, Pittsburgh.

Still Quotes Old Prices

Chicago, Aug. 4.—Although advances in quotations on wire and wire products on the part of independents were made several weeks ago, the leading interest continues to quote at the lower price, and has not given any indication of going to a higher level. Under the circumstances, it is entertaining a heavy inquiry and is picking carefully such business as it can take. Jobbers are specifying heavily on their contracts. Most mills are filled as far ahead as they desire to take business.

Bar Demands Are Heavy

Consumption in All Directions Continues to Increase—Rerolled Bars Are Higher—Large Rivets and Bolts Up

Chicago, Aug. 4.—Inquiry for soft steel bars is stronger than has been the case for a long time, demand coming from all sorts of consumers, one feature being a heavy demand for concrete reinforcing bars. In spite of the absence of railroad demand the mills are well filled in this department and find they have about as much on their books as they desire. An exporter has been inquiring in this market for 1000 tons of soft steel bars for August delivery at San Francisco, for export to the Orient. While 2.35c, Pittsburgh, was offered, delivery could not be guaranteed, and the business has not yet been placed. A like quantity for September delivery probably will be taken by an independent mill.

Bar iron continues steady at 2.62c, Chicago mill, but inasmuch as an increase of about 5 per cent has been made in labor costs on the new card, an increase is expected shortly. Orders are in good volume, mostly for spot business and mills have business ahead for about three weeks.

Hard steel bars rerolled from rails have been advanced $2 per ton to 2.55c, Chicago mill. Bookings on the new basis are satisfactory, coming from general manufacturers. Scarcity of rerolling rails is limiting the tonnage makers can take on.

Inquire for 1920

New York, Aug. 4.—Steel barmakers have received a number of inquiries from consumers in this district for steel bars for first half of 1920. The consumers figure, it is said, that costs are going to increase and so they feel that they would not be able to duplicate the present prices if they waited until the end of the year. The mills in all cases, however, refuse to quote on first half. Current demand continues brisk and the mills are receiving good specifications for current delivery.

Mills Pretty Well Sold Up

Pittsburgh, Aug. 5.—Demands for merchant steel bars still are large with makers here and the mills rapidly are filling up. Comparative little demand ever comes to Pittsburgh from the agricultural implement manufacturers and the present is no exception, but other users are ordering and specifying quite freely. Larger sizes hitherto in lighter demand than the smaller sizes lately have been moving more freely. The market for iron bars is showing increased strength due to the fact that scrap rapidly is rising in price and labor costs have gone up. Pittsburgh district makers of common merchant iron bars are quoting 2.75c base, Pittsburgh, while for refined iron bars, they are asking 3c and holding firmly to those prices. Demand is larger than it has been at least for iron bars.

Specifications Are Liberal

Cleveland, Aug. 5.—Buyers of steel bars are specifying freely against contracts and every sign points to a continuing growth of consumption of this product. Contracting is going along steadily mostly for the last quarter. On some sizes deliveries are up to eight and nine weeks. Some makers of reinforcing bars are promising deliveries in eight weeks and have virtually withdrawn from the market. Scarcity of rerolling rails is an increasing factor in this market and prices are firmer. The Truscon Steel Co. has taken 200 to 300 tons for the Henderson-Overland garage, Youngstown, O.

Rivets and Bolts Up

Pittsburgh, Aug. 5.—Expectations of higher prices for rivets have been fulfilled, and makers this week have announced an advance of $4 per ton effective Aug. 1, putting boiler rivets to 4c per pound Pittsburgh, and structural rivets to 3.90c. Small rivets, which were advanced a few weeks ago, are not affected. Further advances are noted in carriage and machine bolts, of from 5 to 10 per cent, also effective Aug. 1. No material changes have been made in nut prices. Makers of these products are heavily booked, bolt business being especially large. Full plant operations are the rule where labor shortages are not interfering.

Bolt Demand is Strong

Chicago, Aug. 4.—With an advance of 10 per cent by manufacturers of bolts and nuts in Ohio, western mills are likely to follow shortly. This is in addition to the 5 per cent increase made a fortnight ago. Western mills are operating at about 90 per cent capacity, which is as full as usual conditions will warrant. Inquiry for business in this line is strong and bookings are in proportion. This appears to be the strongest department of the steel market.

Mills Keeping Busy

Pittsburgh, Aug. 5.—Hoop and band mills in this district are well engaged and are not promising better deliveries than three weeks. Not only is there a fair amount of business in the narrower widths from the packing-case and cooperage interests but makers of automobile accessories also are free buyers of band steel. Most makers are holding to the March 21 base of 3.05c, Pittsburgh, for both hoops and bands. One maker has advanced bands to a basis of 3.50c, Pittsburgh, but this is regarded in the trade as merely an announcement of the withdrawal of the manufacturer from the market.

Large Rivets Are Advanced

Cleveland, Aug. 5.—Operations of manufacturers of nuts, bolts and rivets continue at a satisfactory rate. Specifications from jobbers continue to be received for third quarter. Prices are firm on nuts and bolts. Rivet makers say it is too early to witness the effect of the advance of about $4 per ton but claim that sufficient business is on hand to keep them busy the remainder of the year. This advance in rivets became effective Aug. 1. Boiler rivets now are $4 per 100 pounds instead of $3.80, Pittsburgh, and structural rivets $3.90 instead of $3.70. Small rivets remain unchanged at the advanced level of several weeks ago. Two or three inquiries from abroad for nuts, bolts and rivets come in each week and some export business is being booked. Wages have been increased in nut, bolt and rivet plants. Some difficulty is being experienced by makers in obtaining satisfactory deliveries of bars and wire.

Demand Could be Better

Pittsburgh, Aug. 5.—While much better off than they were a few weeks ago in the matter of orders, makers of cold-rolled shafting still are far from being busy. The great bulk of the demand comes directly or indirectly from the automobile and tractor builders. The March 21 base of 28 per cent off list is fairly closely observed.

Quiet Market

Continues in Ferroalloys—Italy is Buyer of Spiegel Tonnage

New York, Aug. 4.—The spiegeleisen market, which for a time was relatively more active than ferromanganese, has quieted down. Some large sales of spiegeleisen for export to Italy were made last week. Prices are unchanged at $35 a ton for 18 to 22 per cent alloy.

The market for special steelmaking ferroalloys shows little change. Some lots of English ferrotungsten and ferrochrome and an offer of carbon free ferrovanadium from France are in the market, but so far as known there has been little buying of foreign alloys, despite the lower prices mentioned.

One American maker of ferrotungsten continues to quote below $1.20 a pound contained, but other makers are asking this price to $1.30.

There are many inquiries for small lots of ferrochrome. The price of this alloy is unchanged at 32c per pound contained for alloy of 4 to 6 per cent carbon.

The ferrovanadium situation remains strong, a leading maker being unable to obtain sufficient supplies of high grade mineral. However, prices are unchanged at $6.50 to $7 a pound contained, for alloy running 35 to 40 per cent.

Little Going On

Pittsburgh, Aug. 5.—Hardly enough business is going on in ferromanganese to give much basis to quotations. While domestic makers are quoting $115, delivered, for 78 to 82 per cent material, it is probable that they would accept $110. Most consumers are well protected against their requirements over the next few months and the fact that English ferromanganese, although of lower content than American, can be bought at around $109, delivered, Pittsburgh district,

also tends to depress the market for the domestic product. Domestic manufacturers appear fairly confident of holding prices around present levels. Of course, if the English manufacturers make a further reduction, it might be necessary for them to meet such a cut, but in well-informed quarters it is believed that the English material now is as low as it will be, and little fear is entertained that any considerable quantity of German ferromanganese will come into the country. The latter runs high in phosphorus and this renders it unsuitable for domestic consumption. The possibility of an import duty on foreign ferromanganese also is advanced as a reason for expectations that current quotations will not be materially shaded. Both the inquiry for and sales of speigeleisen are small. This alloy is quoted from $31 to $35, furnace, from 18 to 22 per cent material. Not much has been done recently in 50 per cent ferrosilicon but most makers are pretty well sold ahead, and it is doubtful if a price of less than $85 could be done. Carload lot sales of bessemer ferrosilicon are being made at $49.75, furnace, for 10 per cent.

Expect Ship Plate Order

Release of Five Ships to Pacific Yards Calls for 15,000 to 20,000 Tons Additional—Car Tonnage Coming Out—Market Improves

Chicago, Aug. 4.—Notice has been received from the government of the release of five ships being built at Pacific coast yards, but the tonnage of plates and other material required for their construction is not known. It appears that the builder has some material on his yard which will be utilized, but it is believed between 15,000 and 20,000 tons will be required to complete the craft. Material for car repairs is an important factor in the market at present, and a total of about 20,000 tons has been placed in this market recently. About 3000 tons is now pending for the same purpose. A recent purchase of plates and other car material for the construction of tank cars amounted to somewhat more than 10,000 tons, of which about half was taken by the leading interest. A carbuilder in the vicinity of St. Louis is inquiring for 5000 tons of steel for refrigerator cars. The leading independent producer of plates is sold up for the remainder of 1919, and cannot accept more than a small additional tonnage. Considerable inquiry is being entertained now from exporters to the Orient, but they are finding difficulty in placing this business.

Demand Drags in East

New York, Aug. 4.—Plate demand has reflected no marked improvement in this district. In fact, this is about the only finished steel product for which demand still is dragging. Such orders as are being placed now involve only small tonnages. A few good-sized lots have been under negotiation for some weeks but there is no assurance as to when they will be closed. The export inquiries which were reported as having come out a few weeks ago, and which involved considerable tonnage in the aggregate, have not yet been closed.

Demand Still Improving

Pittsburgh, Aug. 5.—Although plate mill capacity here is not heavily taxed at present, operations are heavier than they were recently and the demand still is improving. Universal plates, however, are not sharing to any considerable extent in the betterment. Makers of tanks still are busy and large tonnages in grooved and sheared plates are being taken in connection with the demand for the larger sizes of line pipe. Car builders are getting few orders but the repairs ordered by the railroad administration to old cars is expected to bring out some business. The Memphis Steel Construction Co., Pittsburgh, recently took an order from the Beacon Oil Co., Boston, for 2500 tons of steel for tanks, condenser boxes and other refinery equipment.

Pipe Mills Are Delayed

Large Volume of Orders Seeking Acceptance—Leading Interest Sold Up Five to Six Months—Differential on Cast Pipe Raised

Pittsburgh, Aug. 5.—Pipe manufacturers are so heavily booked on lapweld sizes as to be indifferent to new business, a large volume of which still is seeking takers. The leading interest is sold from five to six months ahead on lapweld pipe and the position of the independents is pretty much the same. The advance announced by the Wheeling Steel & Iron Co. some weeks ago has not yet been followed by other producers, but the market is strong at the March 21 figure. Buyers in their anxiety to secure supplies are not paying much attention to prices. Improvement recently noted in buttweld pipe continues and practically all manufacturers now are shipping more than they are producing. Boiler tubes also are selling better but mechanical tubes, except for seamless stock, are in fair demand only.

Large Pipe is Placed

New York, Aug. 4.—The placing of 1500 tons of 16-inch pipe constitutes the largest municipal tonnage to be awarded in the eastern cast iron pipe market of late. The name of the successful bidder has not been announced. No other municipal business of size has been active for some time. Another sizable tonnage awarded recently is for South America, involving about 1000 tons and this went to the United States Cast Iron Pipe & Foundry Co. at around $47 f.o.b. New York, a figure well under the eastern domestic market. This company is said to have taken several fair sized export tonnages within the past month. Sellers continue to report a good volume of private demand. These interests state that their operations at present are limited only by the shortage of labor. Most shops in the east are now operating at 50 to 60 per cent of capacity, and in a few instances are doing as high as 75 per cent.

Class Differential Raised

Chicago, Aug. 5.—An increase in the differential between class B and class A cast iron pipe from $1 to $2 per ton has been put into effect, thus raising the price of class A pipe $1 above the previous level. The base quotation on class B pipe remains unchanged. Western sales offices are entertaining few inquiries requiring public bids but routine inquiry and sales make a fair total. Most demand is for small sizes and shops are much in need of orders for the heavier pipe. The United States Cast Iron Pipe & Foundry Co. has taken 125 tons at Decatur, Ill., and 200 tons of specials at Sterling, Col., and is low bidder on 1250 tons at Akron, O. The Colorado Fuel & Iron Co. has taken 800 tons at Sterling, Col., and the American Cast Iron Pipe Co., 350 tons at Portsmouth, O.

Southern Makers Talk of Increase

Birmingham, Ala., Aug. 5.—Pipe makers express themselves in favor of an advance in cast iron pipe, and intimate that before 1920 selling is begun an increase will be in effect. A labor shortage is felt, especially at soil-pipe plants. Demand for sanitary pipe is more active than it has been in many months, and this activity is expected to continue. Both cast-iron and soil-pipe plants are melting larger quantities of iron.

Small Jobbers Advance

New York, Aug. 5.—Although at least two leading warehouse interests are adhering to old prices a new schedule has been put into effect by a number of small jobbers. An advance of 25 cents per 100 pounds has been made in shapes, plates and bars, these descriptions now holding at 3.72c, 3.92c and 3.62c, respectively, and an advance of 50 cents in bands and hoops to 4.57c. No change has been made in sheets or structural rivets. The adoption of the new schedule, it is asserted, has not been due to any particular increase in demand but rather to the fact some jobbers were finding the former differential insufficient to meet higher operating costs. While similar advances have been made in Philadelphia and Baltimore it is understood that the new levels have not been rigidly adhered to. No reports of shading by local jobbers have been noted.

Awards Are of Fair Total

New Contracts Somewhat Less in Volume But General Showing is Good—Big Cleveland Job in Prospect

New York, Aug. 4.—No large volume of business characterized the local structural market during the past week; in fact, trading for the time being at least, appears to be undergoing a lull. However, as this is a seasonal development no particular significance is being attached to this inactivity. Aside from the lot of 6000 to 7000 tons, mentioned last week for a government hangar at Lakehurst, N. J., specifications for which since have been issued, an inquiry for 1200 tons for a bank building in Jersey City appears to be the largest new business to come out. Included in the week's awards is a lot of 650 tons for a shop for the American Locomotive Works at Schenectady, N. Y.

New England Awards Delayed

Boston, Aug. 5.—The new structural steel work in New England is marking time at present. Plans for many sizable buildings and at least six steel bridges are now completed in architects' offices in Boston; but there is a great reluctance on the part of owners to give the word for actual work to start The cause of this is largely traceable to unsettled labor conditions and to the difficulty of obtaining funds. The actual tonnage on the books of New England construction companies is larger now than two weeks ago. Construction on the Nelson buildings in Brighton, Mass., which will take approximately 1500 tons of steel has been held up on account of financial negotiations.

Big Bank Job in Sight

Cleveland, Aug. 5.—Demand for structural shapes in this territory is moderate, and fabricating shops are still operating at about 50 per cent of capacity. The Massillon Bridge Co. took 675 tons for a new building for the White Automobile Co., Cleveland, and the King Bridge Co., 554 tons for the Paul building, Cleveland. The county building commission has decided to reject all bids submitted recently for the Cuyahoga county jail and to readvertise. On this job the King Bridge Co. submitted a bid of $111.90 a ton for fabrication and erection of 1700 tons. This was in excess of the county architect's estimate on a tonnage basis but the total was $41,000 less than the estimate, which called for 2100 tons. The commission has not decided on the tonnage on which new bids will be taken. The Foote-Burt Co. will require 900 tons for a new manufacturing plant, while the largest job offering in this territory is the new bank building for the Citizens Savings & Trust Co., and the Union Commerce National bank, which, preliminary estimates show, will require between 12,000 and 15,000 tons of steel.

Prices Are Softer Again

Pittsburgh, Aug. 5.—Structural lettings lately have been fairly numerous and include one or two of good size, but the market on fabricated material, which recently was beginning to develop some strength, has had a recurrence of the softness of a short time ago. This is due to the fact that hardly enough business is passing to give all shops a share and competition for jobs has been pretty sharp on the part of those lacking orders. The bridge across St. John's river, Jacksonville, Fla., involving about 4000 tons, bids on which recently were taken, has been awarded the Bethlehem Steel Bridge Co. The new Baltimore & Ohio railroad bridge to cross the Monongahela river at Third street, Pittsburgh, has not yet been placed. The American Bridge Co. has taken 700 tons for a bridge over Sandy river in Kentucky, while the McClintic-Marshall Co. has received 2400 tons of miscellaneous work which includes 800 tons for the new mill buildings of the Youngstown Sheet & Tube Co., Youngstown, O., and 300 tons for a new building for the Superior Steel Corp., at Carnegie, Pa. The shape mills here are not crowded with business, but in the main the March 21 prices on plain material are being well maintained.

Chicago Selling is Slow

Chicago, Aug. 5.—Continuance of the building strike in Chicago keeps the structural market much below its natural volume and contractors are slow to take on new business until they have some assurance of the wage scale. Business coming from outside the immediate Chicago district is fairly good, but is being received mostly in small lots with request for immediate delivery. Some of this material is being ordered for fabricators' stocks. The largest tonnage placed in the west recently involves 661 tons, which will be furnished by the Missouri Valley Bridge & Iron Co., to the Montana State Highway commission for various state bridge. Bids are being taken on 1200 tons for the Blackhawk hotel, and an equal tonnage for an addition to the store of the Stix, Baer & Fuller Dry Goods Co., St. Louis. Plans for the John Crerar library building, Chicago, which originally called for 2500 tons are being given a further revision.

CONTRACTS AWARDED

Loew theater, Cleveland, tonnage indefinite; general contract let to Craig-Curtiss Co.

Buildings for Timken Roller Bearing Co., Columbus, O., about 900 tons; bids being taken.

India street pier, Brooklyn, 500 tons, to an independent shop.

Cotton mills in New England, 500 tons, to the American Bridge Co.

Shop for American Locomotive Co., Schenectady, N. Y., 650 tons, to McClintic-Marshall Co.

Pier shed No. 218, New York barge canal terminal, New York City, several hundred tons, to the Lehigh Structural Steel Co.

Factory building for the West Virginia Pulp & Paper Co., Tyrone, Pa., several hundred tons, to the Lehigh Structural Steel Co.

Number of buildings for American Valve Co., Coxsackie, N. Y., several hundred tons, to the Lehigh Structural Steel Co.

Paul building, Cleveland, 554 tons; to King Bridge Co.

Building for White Automobile Co., Cleveland, 675 tons; to Massillon Bridge Co.

High school for Cleveland Heights, O., 200 tons; to T. H. Brooks Co.

Plant addition for Harrison Radiator Corp., Lockport, N. Y., 100 tons of reinforcing bars; to John W. Cowper Co., Inc.

Service station for Kelly-Springfield Tire Co., West Fifty-fourth street, New York, 500 tons to Hinkle Iron Works.

Apartment house, West Manhattan, 700 to 800 tons to Hinkle Iron Works.

Two schools Jersey City about 500 tons to Fagan Iron Works.

Warehouse for Pittsburgh Gage & Supply Co., Pittsburgh, 900 tons; to the McClintic-Marshall Co.

New mill buildings for the Youngstown Sheet & Tube Co., Youngstown, O., 800 tons; to the McClintic-Marshall Co.

Service station in New York for the White Motor Co., 400 tons; to the McClintic-Marshall Co.

New buildings for the Superior Steel Corp. at Carnegie, Pa., 300 tons; to the McClintic-Marshall Co.

Bridge over St. John's river, Jacksonville, Fla., 4000 tons; to the Bethlehem Steel Bridge Co.

Bridge for the Pittsburgh Coal Co. across Sandy river, Kentucky, 700 tons; to the American Bridge Co.

Foundry addition and engineering building for Kohler Co., Kohler, Wis., 500 tons; to Worden-Allen Co., Milwaukee.

Erecting shop and office building for Koehring Machine Co., Milwaukee, 150 tons; to Wisconsin Bridge & Iron Co., Milwaukee.

Pig casting machine for Thomas Furnace Co., Milwaukee, 100 tons; to Worden-Allen Co., Milwaukee.

Bridges in Montana for the Montana State Highway commission, 661 tons, to Missouri Valley Bridge & Iron Co.

The Drake Hotel, Lake Shore drive and Walton place, Chicago, 442 tons, to the Vanderkloot Steel Works.

Extension to the Robert Dollar building at San Francisco, Cal., 173 tons, to the California Steel Co.

Cotton Mills at West Warren, Mass., 200 tons, to American Bridge Co.

Globe building, Boston, 250 tons, to New England Construction Co.

CONTRACTS PENDING

Bank building at Jersey City, 1200 tons, bids asked.

Abattoir for the United Dressed Beef Co., New York City, 600 tons, contracts pending.

Building for Foote-Burt Co., Cleveland; 900 tons; bids being taken.

County jail, Cleveland; tonnage indefinite; new bids to be taken.

Bank building for Citizens Savings & Trust Co., and Union Commerce National bank; 12,000 to 15,000 tons; bids to be taken soon.

Blackhawk Hotel, Chicago, 1200 tons. Bids being taken.

Addition to store of Stix, Baer & Fuller Dry Goods Co., St. Louis, 1200 tons. Bids being taken.

John Crerar Library, Chicago, 2500 tons. Plans being revised.

Car Buying

Has Not Yet Made its Appearance—Light Rail Demand Good

Chicago, Aug. 4.—An inquiry for 400 refrigerator cars for a Chicago packer has come out. Other inquiries for cars which have come out recently have not resulted in sales. Demand for light rails is increasing and some inquiry is being received for delivery over entire last half. The total tonnage is satisfactory, the average lot being about 500 tons. Some inquiry is being received for

standard steel rails in small tonnages for builders of frogs and switches, and also from industrial concerns and industrial railroads. Buying of track fastenings has increased somewhat.

Demand Only Fair

Pittsburgh, Aug. 5.—Small orders for standard rails are coming from American railroads but they are chiefly for repairs and do not bulk large. Some foreign business also is being rolled here but the combined tonnage is proving no tax on mill capacity. Fair demands are coming out for light section rails, chiefly in connection with coal mining operations. The market is somewhat stronger on light rails to the extent that few manufacturers now are quoting less than 2.45c Pittsburgh. Jobbers are ordering small spikes quite freely. Little activity is noted in standard spikes as the railroads are buying close to actual needs.

Spiegel is Sold

The St. Louis district ordnance office has sold 476 tons of spiegeleisen to a Chicago interest, the accepted price being $32.76 per ton. This material was located at the Scullin Steel plant, and under terms of the sale must be removed within 15 days.

Pipemaker Buys Tonnage

Eastern Pig Iron Market Tends Upward—Plate and Shape Orders More Liberal—Japan and England Are Buyers

Philadelphia, Aug. 5.—Heavy purchases by the leading cast iron pipe maker has been one of the features of the week in this district. Foundry iron still can be had at $28 and $28.50, eastern Pennsylvania furnace for No. 2 X, but these figures are becoming less frequent. A Lehigh valley maker has a minimum of $30 furnace for 2.25 to 2.75 silicon and another after selling 1500 tons at $28 furnace from 1.75 to 2.25 and $29.25 for 2.25 to 2.75 silicon, has advanced $1. On central Pennsylvania foundry iron, $27 furnace for 1.75 to 2.25 silicon and $27.50 to $27.75 on 2.25 to 2.75 silicon are minimum. As high as $28 and $29 furnace has been done on 2.25 to 2.75 silicon. A Virginia maker has made sales mostly for prompt shipment at a minimum of $30 furnace for 1.75 to 2.25 silicon with a $1 differential for 2.25 to 2.75 silicon and for 2.75 to 3.25 silicon. The volume of foundry business the past week was fairly large. A western inquiry for 2000 tons of low phosphorus is current. Copper-free iron is from $35 to $38 furnace according to analysis. One eastern maker quoted $30 furnace on 6000 tons of basic for export.

Steel plate demand reflects some upturn as result of which eastern mills are operating on fuller schedules. The largest pending lot in the market is 21,000 tons of plates and 7000 tons of shapes and some bars for battleships Nos. 49 and 50 to be built at Brooklyn. Bids will be opened Aug. 15. Considerable tonnage now in the market originates in inquiries for tank cars and for oil tanks. The Ball Locomotive Works is placing 4500 to 6000 tons of plates for 150 locomotives for the Polish government. Included in the new plate orders are round tonnages for Japan and England.

Eastern shape demand continues to improve so that some makers in this section now are rolling to capacity while the schedules of others reflect great improvement. There is great increase in the number of structural projects. Bids are to be taken on tonnages for new buildings for the Republic and Northwestern Trust companies here. A lot of 1200 tons of ship shapes for France have been practically closed as well as 1500 tons for domestic yards.

The American Locomotive Co. has an order for 25 new locomotives for the railroad administration, making a total of 35 received recently.

The Sun Oil Co. has an inquiry out for a large tonnage of lapweld pipe. Practically all mills are out of the market on both lapweld and merchant pipe except to regular customers.

A new foreign spiegeleisen inquiry calls for 1500 tons of 18 to 20 per cent.

The Nonferrous Metals

	Copper	Future Straits N. Y.*	‡Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony
July 30	23.75	53.25	6.00	7.55	33.00	9.25
July 31	23.75	54.00	6.00	7.45	33.00	9.375
Aug. 1	23.75	53.50	6.00	7.35	33.00	9.25
Aug. 4	23.75	54.25	6.00	7.55	33.00	9.25
Aug. 5	23.50	54.25	6.00	7.65	33.00	9.25

‡American Smelting & Refining Co.'s price.
*July shipment from Singapore, c.i.f. New York.

NEW YORK, Aug. 4.—The nonferrous metal markets were quiet last week, while the market tone generally was soft, due to resale offerings of copper, lead and zinc by speculators who were anxious to take their profits. Producers, however, maintained a firm position and as this week opened there were signs that speculators were about cleaned out of metal. The zinc market, in particular, suffered from the activities of second hands, declining from 8c on July 25 to 7.35c on Aug. 1. On Aug. 2, however, the market turned and by Aug. 4, sellers were quoting 7.65c. An item in the action of the zinc market may have been the closing of the Anaconda Copper Mining Co.'s electrolytic zinc smelter at Great Falls, Mont.

The month of July was the most active this year from the standpoint of sales. Producers sold over 225,000,000 pounds, as against 200,000,000 pounds in June and 207,000,000 pounds in May. Production in 1918 averaged 200,000,000 pounds monthly, but output has been so curtailed this year that monthly production now is not much over 50 to 60 per cent of capacity. In other words, sales and probably consumption are far in excess of production. The producers did not do much business the past week, being comfortably sold up for August and September and not having opened their books for October. However, some of them are opening up their books for October shortly. The producers have been quoting 23.50c for electrolytic copper for spot, August and September delivery. The quotation for October is about 24c. Outside sellers offered electrolytic copper for spot delivery as low as 22.75c but little metal was available at this price. A more general quotation in the outside market for spot and August was 23c.

The lead market reflected profit taking activities of dealers, who offered metal for prompt shipment as low as 5.75c, New York, as against the leading producer's quotation of 6c, New York. Independent producers did not attempt to meet the outside price.

The tin market advanced sharply in London the past week or 10 days, due to large buying of futures and to scarcity of spot tin in the United Kingdom. The market here also strengthened. The first cargo of Lamb & Flagg tin to arrive after the lifting of restrictions on imports came last week on the steamer Port Bowen. This grade of tin was permitted to enter from England after Aug. 1. Straits and Banca tin in England and Canada will be entered after Aug. 15. There has been a good deal of buying of Straits tin for shipment from the East Indies, at prices about as follows: July shipment (due to arrive October), 54.25c to 54.50c; August shipment, 54c to 54.25c; September shipment, 53.75c to 54c. Spot high grade tin is quoted 69c to 70c; spot 99 per cent tin 66c to 67c.

The antimony market continues strong at 9.25c to 9.50c, duty paid, New York. Germany has bought about 500 tons for shipment from New York; several hundred tons for shipment from the Far East and also some for shipment from England.

Buy Ordnance Plant

The Tacony Steel Co. has purchased the plant of the Tacony Ordnance Corp., Philadelphia, and the two companies have been consolidated. The ordnance corporation was organized in August, 1917, by J. B. Warren, then secretary and now president and general manager of the Tacony Sheel Co., and George Satterthwaite, vice president and treasurer. A modern steel-making plant was built in about seven months and the corporation made large caliber gun forgings for the army. The Tacony Steel Co. manufactures a variety of products but specializes in carbon and alloy steels in rolled bars, forgings and special shapes. With the acquisition of the ordnance plant, having an open-hearth equipment, the company will control the quality of its product from melting to shipment. District sales offices are located in New York, Cleveland and Boston.

The Baldwin Locomotive Works has closed contracts for the sale of 150 locomotives to Poland, the third sale by this company to Poland within the last several weeks. Payments will be made in seven annual installments, the first due in three years.

Warn Exporters of Higher Prices

Can Undersell England on Rods in Denmark — Some Foreigners Resent Advances in American Market — China Purchases Merchant Stocks—Germany In Market Both As Buyer and Seller

NEW YORK, Aug. 4.—Although England continues a fairly active purchaser, the Orient and South America offer the most promising markets for American iron and steel exports. The European situation grows daily more desperate and in one instance it is known that the British have conditioned their proposal to purchase in the United States upon a fixed rate of exchange. Despite the declining interest in the European trade situation due to the impossibilities of continued selling against the declining rate of exchange, exporting houses are optimistic and declare that the total business for the country is running in excess of normal despite the temporary slump. Inquiries in the market for 25,000 tons of pig iron find difficulty of fulfillment despite advancing prices. Coke sales to Italy and Belgium are balked only by high freight rates.

The Orient is the most active customer. Some important sales have been made to China. Among these have been noted 15,000 kegs of nails, 250 tons of wire, 150 tons of plates, 300 tons of bars, and 10 carloads of pipe. China also is buying tin plate and other miscellaneous products. These purchases, while individually small, show satisfactory totals. They represent only the normal commercial business, and today the greater percentage of that business is coming to the United States. Some important projects are in view in China and large inquiries, depending upon credit extensions, are in the market. Among such inquiries are 20,000 tons of rails and 15,000 tons of shapes. China also has sent in an inquiry for 2000 tons of ingots, but some question is raised in connection with this. It is difficult for the exporters to understand how the Chinese can use such material. Another inquiry is for 1000 tons of light rails.

One house has sold India 2000 tons of bars, and a more recent sale of 100 tons of bars was reported. India also has purchased 2000 kegs of nails, 50 tons of plates and a small tonnage of sheets. Another sale of 700 tons of sheets and smaller tonnages of plates and structurals to that destination was noted.

Japan is still doing business by cable and not a week passes without some sale of importance being consummated. That country has been purchasing sheets, tin plate, bars, plates and wire. While the tonnages of the individual orders are small they are larger than the normal individual orders received from South America. A sale of 3000 tons of blue annealed sheets to Japan was completed last week. Japan has also purchased 1000 tons of light rails.

The Dutch East Indies have purchased three carloads of pipe, 50 tons of plates, 70 tons of sheets, and 2000 kegs of nails. Holland has purchased for the Dutch East Indies a little over 500 tons of miscellaneous products from one house.

New Lines in Latin-America

Porto Rico has bought 300 tons of sheets. Argentine is practically a dead market although sales are being made to other South American countries. Brazil is buying corrugated sheets, nails, barbed wire, rails, etc., whereas Colombia and Peru are sending in orders for barbed wire, staples, horseshoe nails, tin plate and similar merchant stocks. A sale of 100 tons of bars, 100 tons of angles, 2000 cases of tin plate and 20 tons of sheet copper to Brazil is reported.

Of all Europe, England is still the best market. British purchases consist chiefly of the essentials. Their domestic billet price is said to be less than our export price and as a consequence no longer are the British attempting to obtain any of that material on this side of the Atlantic. The British have been filling up on tin plate orders, however, and their prices have been advancing.

Among the orders for finished material recently placed is noted 500 tons of hoops and box strapping. This is typical of the kind of material England is now seeking here. A few important sales during the past week have been made. England has purchased 1000 tons of pipe, 1500 tons of iron bars, and 2000 tons of steel bars. The reason for the rod and bar purchases is easily seen. American rods, it is said, can be sold at $81 c.i.f. Liverpool, as against an English domestic price of $87.50. Based upon this price quotation an American house has made a quotation on an inquiry from Denmark for 3000 tons of rods, believing that he can better the English competition.

Americans also have invaded the English market with nuts and bolts and some interesting sales are reported. A sale of 300 tons of steel joists has been made to British clients.

France continues to send in many inquiries but very little business is being done. Some machinery has been sold as well as some sight samples. The individual inquiries received are for pipe, hoops, sheets, bars, and structurals. They are for tonnages varying from 500 to 1000. A sale of 200 tons of plow shapes to France was reported. It is not only the decline in exchange and the straining of credit that is placing a check on the sales to France, but it also is a question of import regulation by the French themselves. American salesmen and prospective French customers are harassed over the arbitrary regulations and are interested in seeing the French adopt some permanent trading policy. At the present time Switzerland is selling the French much machinery, Germany is selling her finished iron and steel products, and both England and Belgium are making sales in France.

That American export agencies appreciate the fact that France will turn to buying American iron and steel before many months is attested to by the activities now underway. It is known that one important agency is planning the construction of huge warehouses in one of the French ports. These warehouses have been projected however merely upon the assumption that French import restrictions cannot last forever, that reconstruction must be started sooner or later, and that money for the work will be provided. At present the agency is even forbidden to bring into France the material with which to construct its desired warehouses. Italy has purchased 1000 tons of bars, and some spiegeleisen. Germany has purchased a quantity of copper.

Export iron and steel prices are stiffening up, although no definite changes in quotations were noted during the past week. It is expected that within the next month the price of sheets will be advanced and later bars will go up.

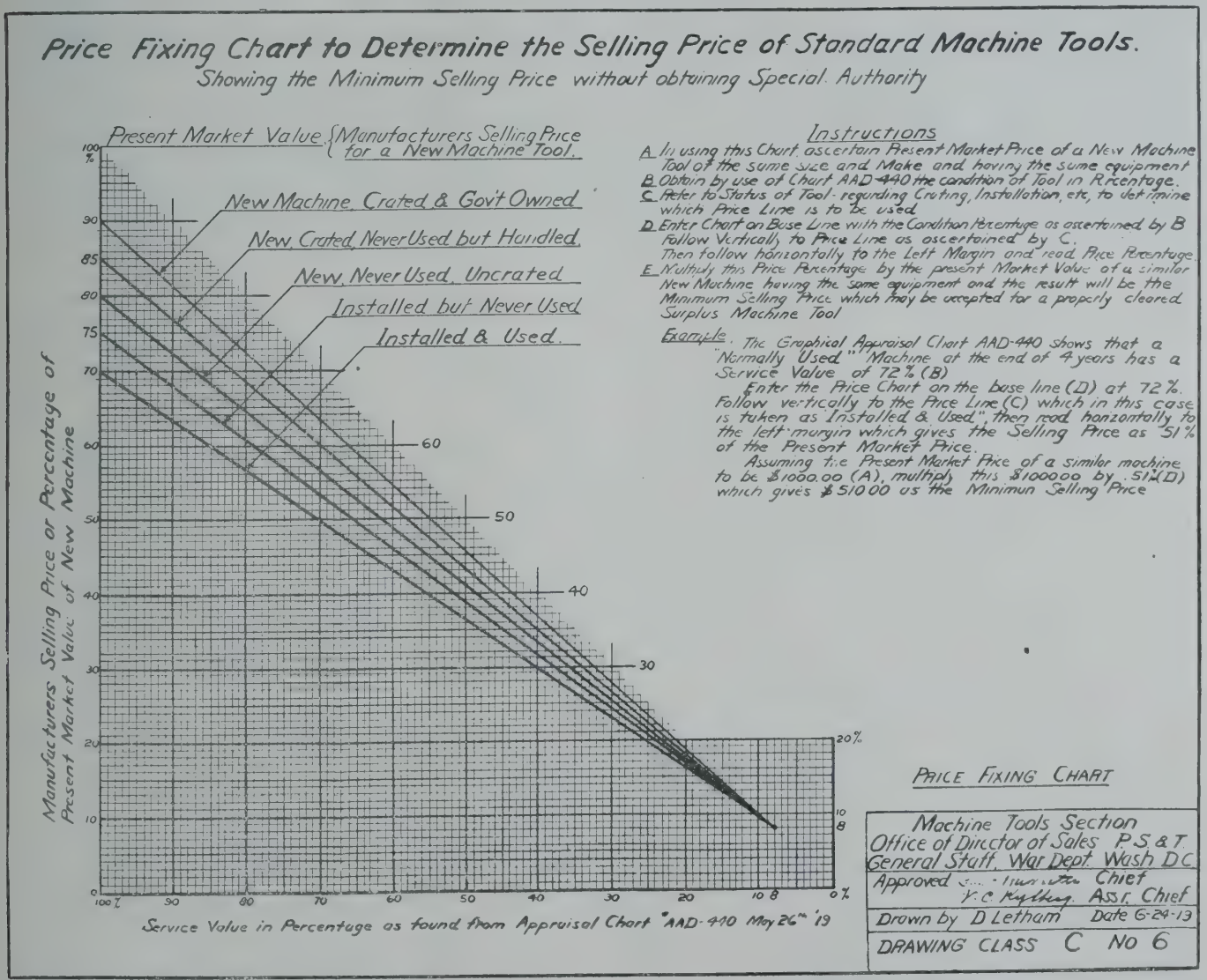
Adopt Plan to Fix Tool Prices

War Department Announces Price Chart to be Used in Conjunction With Appraisal Chart Published June 12 in Disposing of Government-Owned Machine Tools—District Offices to Make Sales Under 72-Hour Option

WASHINGTON, Aug. 5.—The problem of fixing prices for machine tools to be disposed of by the war department is believed to have been solved by the adoption of a price-fixing chart. This is to be used in connection with the graphical appraisal chart explained in THE IRON TRADE REVIEW of June 12. Price fixing of machine tools is the third distinct step in the disposition of this equipment, following inventorying and appraising which in turn follows settlement of contractors' claims. The explanation accompanying the chart tells how it is to be used.

The war department, in determining the minimum sale price of any machine tool, will do so by having the machine tool section, in co-operation with representatives of the various bureaus having machine tools for sale, compute the selling price from the chart based upon the present market price of a similar new tool. Actual selling is to be done by the district office of the bureau holding title to the machine and in the bureau district in which the prospective buyer is located. Each district sales force is empowered to sell all materials listed

(*Concluded on page* 350)



THE use of the price-fixing chart is dependent upon two things: first, the present condition of the machine tool, i.e., the remaining service value as determined from the graphical appraisal chart published on page 1562 of THE IRON TRADE REVIEW of June 12, 1919; and, second, the present market price of a new machine tool as determined from the manufacturers' net prices on file in the machine tool section of the office of the director of sales.

Having ascertained the percentage condition of the machine tool from the graphical appraisal chart, enter the price fixing chart on the base line at the corresponding point. Now read vertically to the price line which corresponds to the present status of the machine tool, such as "installed and used," "new machine crated," etc. At the intersection with this line read over horizontally to the left and this will give the selling price in percentage of the present market value of a similar new machine.

Then ascertain the current manufacturers' selling price for a similar new machine tool from the files of the machine tool section of the director of sale office and multiply this price by the percentage previously derived from the chart.

Attention is called to the fact that when a new machine has been in storage for less than a year no allowance is made for obsolescence, as the service value of the machine is considered to be 100 per cent, but when a new machine has been standing for more than one year its service value falls below 100 per cent and the exact percentage must be computed from the graphical appraisal chart using the line "light use, best upkeep" for a new machine.

Iron Output Gains 13.3 Per Cent

July Increase of Production After Turning Point in June is Large—Merchant Output Shows Gain of Over 20 Per Cent—48 Stacks Blown in of Which 37 Are of Steel Works Class

REPRESENTING the second month of recovery after an 8-month steady decline, July production of coke and anthracite pig iron made a large gain and almost equalled the figure for April of this year. An increase of 13.3 per cent over the June production is shown compared with the 3.6 per cent increase of June over May. The July output represents 70.6 per cent of the high mark production of September, 1918.

Production for July reached 2,474,654 tons, an increase of 360,626 tons over the June figure of 2,114,028 tons. Daily production was 79,827 tons, 9360 tons more than the 70,467-ton daily output of June. Production is climbing at a much greater rate than that by which it fell up to June and at

MONTHLY PRODUCTION

	1919	1918	1917
January	3,306,279	2,403,227	3,159,839
February	2,947,555	2,318,242	2,649,935
March	3,088,023	3,209,996	3,255,813
April	2,474,374	3,273,355	3,328,061
May	2,107,729	3,451,884	3,413,677
June	2,114,028	3,316,148	3,260,234
Total 1st half.	16,037,988	17,972,852	19,067,559
July	2,474,654	3,408,584	3,337,442
Total 7 months.	18,512,642	21,381,436	22,405,001
August		3,378,479	3,238,970
September		3,413,223	3,140,742
October		3,482,392	3,296,286
November		3,347,844	3,198,597
December		3,434,114	2,885,380
Total 2d half..		20,464,636	19,097,417
Grand total..	18,512,642	38,437,488	38,164,976

the present rate of gain the indications are that production will closely approach the high point in a relatively short time.

Although the output of steel works or nonmerchant furnaces was responsible for the gain in production in June, the merchant furnaces largely were responsible for the sharp gain

AVERAGE DAILY PRODUCTION

	1919	1918	1917	1916	1915
Jan.	106,654	77,523	101,930	102,319	51,323
Feb.	105,270	82,794	94,641	106,157	59,521
March	99,614	103,548	105,026	107,343	66,009
April	82,479	109,112	110,936	107,517	70,484
May	67,991	111,351	110,119	108,535	72,747
June	70,467	110,538	108,675	107,127	78,998
July	79,827	109,954	107,659	103,907	82,687
Aug.	.....	108,983	104,483	103,156	89,510
Sept.	.....	113,774	104,691	106,935	94,478
Oct.	.....	112,335	106,332	113,167	100,656
Nov.	.....	111,595	106,620	110,593	101,174
Dec.	.....	110,602	98,077	102,715	103,278
Av.	87,471	105,293	104,562	106,610	81,022

in July. Steel works produced 1,909,541 tons compared to 1,647,085 tons in June, an increase of 262,456 tons. Merchant stacks produced 543,943 tons to 436,359 tons in June, an increase of 107,584 tons. Daily production of the nonmerchant furnaces was 61,598 tons, 6695 tons greater than the 54,903 tons in June or an increase of 12.2 per cent. The daily production of merchant stacks was 17,546 tons compared to 54,903 tons in June. The increase, 3001 tons, is a gain of 20.6 per cent.

Active stacks in blast on the last day of the July numbered 247, a gain of 48 over the 199 active on June 30. The gain of June over May was only two stacks. The putting into blast of 37 nonmerchant furnaces is responsible for the large gain while no stacks of this class were blown out. Of merchant stacks, 17 were relighted in July and six were blown out thus making a net gain of 11 stacks.

Production for the first seven months of this year totals 18,512,642 tons, 2,868,794 tons less than for the same period in 1918 and 3,892,359 tons less than for the first seven months of 1917.

Ferro production for July with 13,340 tons was 3883 tons less than the 17,223 tons in June. Spiegeleisen output also dropped from 13,361 tons in June to 7830 tons in July.

Silicon Range Is Set

A silicon range of from 1.75 to 2.25 per cent has been adopted as a standard description of No. 2 foundry iron by leading southern foundry pig iron producers. This formerly was the range for No. 3 foundry in the South as up to the adoption of a general classification of No. 2 foundry as 1.75 to 2.25 silicon by the war industries board in the days of price regulation during the war. Since the lifting of government regulations there has been some confusion over what constituted this grade.

Adopt Price Fixing Plan

(*Concluded from page* 349)

as belonging to its bureau even though the machine tools may be in other districts. For this reason all materials are subject to prior sale.

To avoid duplicate sales the district office making a sale requests the bureau office here for a serial number covering the materials being considered by the prospective buyer. In granting this sales number it is understood it is regarded as a 72-hour option to the district office for its customer. The sale must be completed within that time, beginning at the time the number is issued here, or the number and option are canceled. A certified check from the buyer for the amount of the sale and in possession of the district office consummates the deal. The bureau office here is notified and the surplus material checked off. Under the plan the machine tool section is kept constantly informed as to the progress of the sale in all bureaus and can control the sale of surplus machine tools by making such revisions in the price chart as may become necessary.

JULY PIG IRON

States	No. of stacks	No. in blast last day of month: July	June	Total tonnage made: Merchant	Nonmerchant	Totals: July	June
Pennsylvania	159	94	75	195,052	769,339	964,391	803,624
Ohio	80	56	48	83,493	539,556	623,049	535,476
Alabama	45	20	17	75,149	67,623	142,772	128,411
Virginia	19	5	3	14,870	.....	14,870	15,617
New York	28	19	15	68,096	106,953	175,049	121,526
New Jersey	5	2	2	8,853	.....	8,853	8,034
Illinois	25	18	12	14,916	176,512	191,428	170,753
Colorado	6	3	3				
Indiana	16	15	11				
Maryland	4	1	1	32,638	228,709	261,347	246,539
Wisconsin	6	2	2				
Kentucky	7	2	1				
Tennessee	16	2	2				
West Virginia	5	2	1	19,385	9,144	28,529	18,224
Washington	1	..	..				
Georgia	2	..	..				
Texas	3	1	1				
Minnesota	3	2	2	31,491	11,705	43,196	35,240
Michigan	3	3	3				
Missouri	1	..	..				
Spiegel—All states	..	..	..	.....	.....	7,830	13,361
Ferro—All states	..	..	..	.....	.....	13,340	17,223
Totals	434	247	199	543,943	1,909,541	2,474,654	2,114,028

Modernizing Freight-Handling Methods



Portable Conveyors are Adapted to Many Purposes

TOO much economic importance cannot be attached at this time to the educational campaign looking toward the development of the country's facilities for speedier and more efficient handling of freight recently begun by American manufacturers of equipment serviceable to this end. That there are mechanical means for coping with the deplorable situation existing at most terminals throughout the country is known to the engineering profession, but exporters and civic and federal authorities generally have yet to be aroused to the vital necessity for more adequate provision or to be brought to a realization that mechanical facilities are to be had for such programs.

For years the tendency in this country has been to point to the excellent conditions prevailing at many of the leading terminals abroad, and then deplore the lack of interest manifested in this problem by the engineering profession on this side. In a measure, this assumption, until recently, has not been without foundation. The brunt of the burden of studying terminal conditions in the United States and devising mechanical means for facilitating various much-needed improvements has been carried by the few, and it was not until the costly traffic congestion of the past few years that engineers and equipment manufacturers became alive to the importance of the question and its tremendous possibilities.

However, by the aid of the exceedingly valuable work long carried on by a relatively few able and public-spirited engineers, the progress in recent months has been rapid. It has been through their unstinted cooperation with equipment manufacturers that methods for promoting the movement of material have now become so modernized as not only to compare most favorably with those abroad, but to surpass them. This has been demonstrated by records made at the newer terminals in this country, and is further indicated by the foreign demand for American material-handling equipment. In fact, there has scarcely been an important development at any of the larger terminals throughout the world within the past two years which has not resulted in the installation of American machinery to the exclusion of practically all other equipment.

Work is Only Begun

While constructive action has finally been taken at some of the leading shipping centers throughout the United States, the work of improving freight-handling methods in this country has only been fairly begun. This fact is appreciated when it is realized that in addition to the numerous terminals in the south and along the eastern and western seaboards, there are now more than 6000 inland waterway terminals. This number, according to leading authorities, will be increased at the present rate of development to more than 10,000 before another year has elapsed. It is stated that there are now more than 250,000 railroad terminals throughout the country.

It undoubtedly has been the growing realization of the vast potentialities of this branch of the equipment field that has contributed so greatly to the widespread interest manifested by manufacturers of material-handling machinery in recent months, and a concrete instance reflecting this awakened interest may be found in connection with the recent proposal of the city of Providence, R. I., to install at a municipal pier a number of special gantry cranes on which more than 17 companies submitted bids. Prior to the war or even during hostilities when plant capacity in most instances was absorbed to the utmost by more standard work, it is doubtful if there would have been more than three companies to display interest in this kind of a project.

Owing to the urgency for building up a large export trade, it is probably at the ocean terminals that the most acute need of adequate



INCLINED ELEVATOR AT PIER IN NEW YORK HARBOR

facilities prevails. During the war efforts bearing on the establishment of a merchant marine were concentrated largely on the construction of ships, and the expense of operating them was a matter of second consideration. However, with the attention of the country again directed to commerce and trading, the question of costs assumes an aspect of primary importance, and the handling of freight at the marine terminals has been so large an item of expense in the past that attention to this phase of the export problem falls little short of a national duty.

The great trouble all along at many of the larger seaboard terminals, particularly at New York, has been in the handling of miscellaneous freight. The problem of moving bulk freight, such as coal, ore and grain, has been successfully solved, and the cost rates, established along the Great Lakes, have long been the lowest in the world. But the handling of bulk cargo is one thing and the movement of package freight is quite another, and it took the shock of war to bring equipment manufacturers to that point of concentration on the subject which resulted in rapid advance.

In their study of the package freight question, one of the first and perhaps the most vital problems confronting equipment manufacturers was that pertaining to the direct loading of ships. This is done in the instance of ocean-going vessels through the deck hatches, and in the case of coastwise vessels and also boats carrying general cargo on inland waters, through side ports. Heretofore, in this latter instance, the transference of material has been done almost entirely by manual labor, thus entailing considerable expense through loss of time in port, resulting in extra dock charges, etc. To overcome this difficulty some ingenious methods have been devised.

Breakages Reduced to Minimum

One of the most popular methods entails the use of the portable conveyor. This device has been described as an animated gang plank, which can be pushed from the wharf into the vessel. It is designed to move packages of medium size and weight and the service it will perform is limited only by the speed with which the freight can be fed, unloaded and stored. By use of gravity conveyors in assisting in this latter work, it is asserted that not only the loading, or unloading, time can be cut in half, but that the breakage which usually represents a large item of expense can be reduced to a minimum. The conveyors are usually operated by a 3-horsepower motor.

Another device to have proved quite satisfactory at some of the terminals where installed is one commonly referred to as the inclined elevator. It is an endless chain, run on motor-driven sprockets and provided with lugs for engaging the axle of a truck on an incline haul. This installation has been found particularly desirable at terminals where there is a variation in water level due to tides, and where the wharves to accommodate coastwise vessels have been built with adjustable ramps. At the Weehawken, N. J., piers of the New York Central railroad, where a number of these inclined elevators have been installed, an increase of from 20 to 40 per cent is reported in the amount of material handled. A reduction in labor cost of two to three cents per ton on freight moved also is reported.

Gantry Cranes Economical

In the handling of material through deck hatches, as is necessary in the instance of ocean-going vessels, gantry cranes are not infrequently used to advantage. It is generally conceded that where volume of tonnage warrants it the gantry crane is probably the most economical and efficient of all transfer equipment. Where conditions do not justify the installation, there is little left to do but use the cargo mast, where the

ship's tackle and wharf winches can be employed together, or the ship's tackle only, where there is no wharf equipment.

Another factor in deciding the advisability of installing cranes is the question of space. To obtain the utmost efficiency, it is necessary that the sheds set well back from the water's edge. This gives a greater area of deposit for the freight as it comes from the hold, and is in itself an advantage in the operation of the crane. In estimating the economy of the crane, the fact also is to be considered that the service is not limited alone to the brief period a ship is in port. Between times, the crane can serve the craft which collects or distributes the cargo of a ship. In fact, the lack of equipment on most craft of this description makes machinery on shore highly necessary.

Tier Conveyors Find Favor

With the advent of various mechanical devices for the direct loading or unloading of ships, it has been necessary to devise means for expediting movement of freight from the unloading machines and means for stacking it. For this work, tiering conveyors have come into favor, especially where the freight is of standard size. By the use of these machines, the freight not only can be handled more speedily, but considerable more storage space can be utilized. In most instances the space employed is increased more than 200 per cent.

Overhead tiering machinery also is producing excellent results. This equipment is run on overhead side rails, and with one or more traveling cranes spanning the floor space, forms an adjustable loop system. While many of the pier sheds are as yet unequipped with apparatus of this general character, steps are being taken toward equipping them. Undoubtedly the greatest advantage to be derived is in the acceleration of the ship's turnaround.

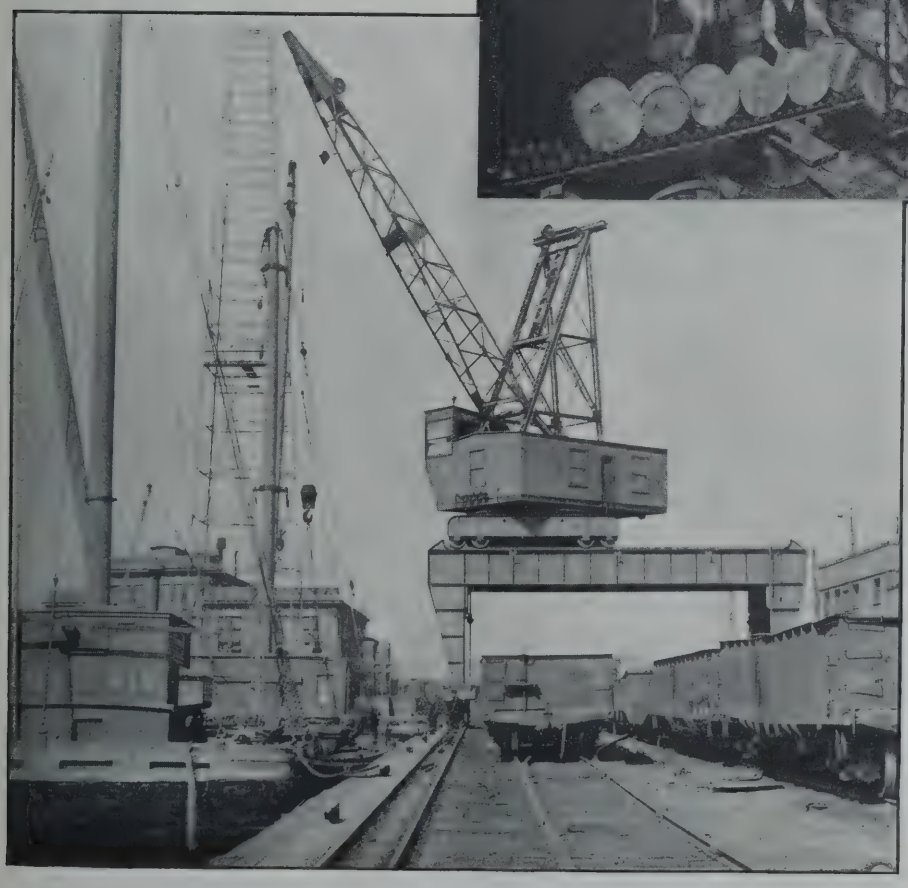
A vessel in port is considered a liability, and where manual labor is relied upon a ship is forced to remain in port, according to figures supplied by the United States shipping board, from 20 to 30 per cent of the time. This period, it is claimed, can be reduced to less than 5 per cent by the adoption of proper mechanical methods.

Conveyor in Operation 25 Years

Electrically operated trucks also are used to considerable advantage, particularly where the hauls are of some length. For the shorter movements, up to 200 feet, engineers concede that the hand truck is still supreme.

Possibly the oldest mechanical conveyor system in commercial operation may be found in the warehouses of the Federal Sugar Refining Co., Philadelphia. The equipment has been in continuous operation for more than 25 years, and is of particular interest inasmuch as it reflects the progress made by some American manufacturers years ago in the development of mechanical devices for the handling of package freight. The conveyor was designed to have an average speed of hoist of 40 feet per minute and an average speed of travel of 600 feet. The average load at the Federal warehouses is 3000 pounds.

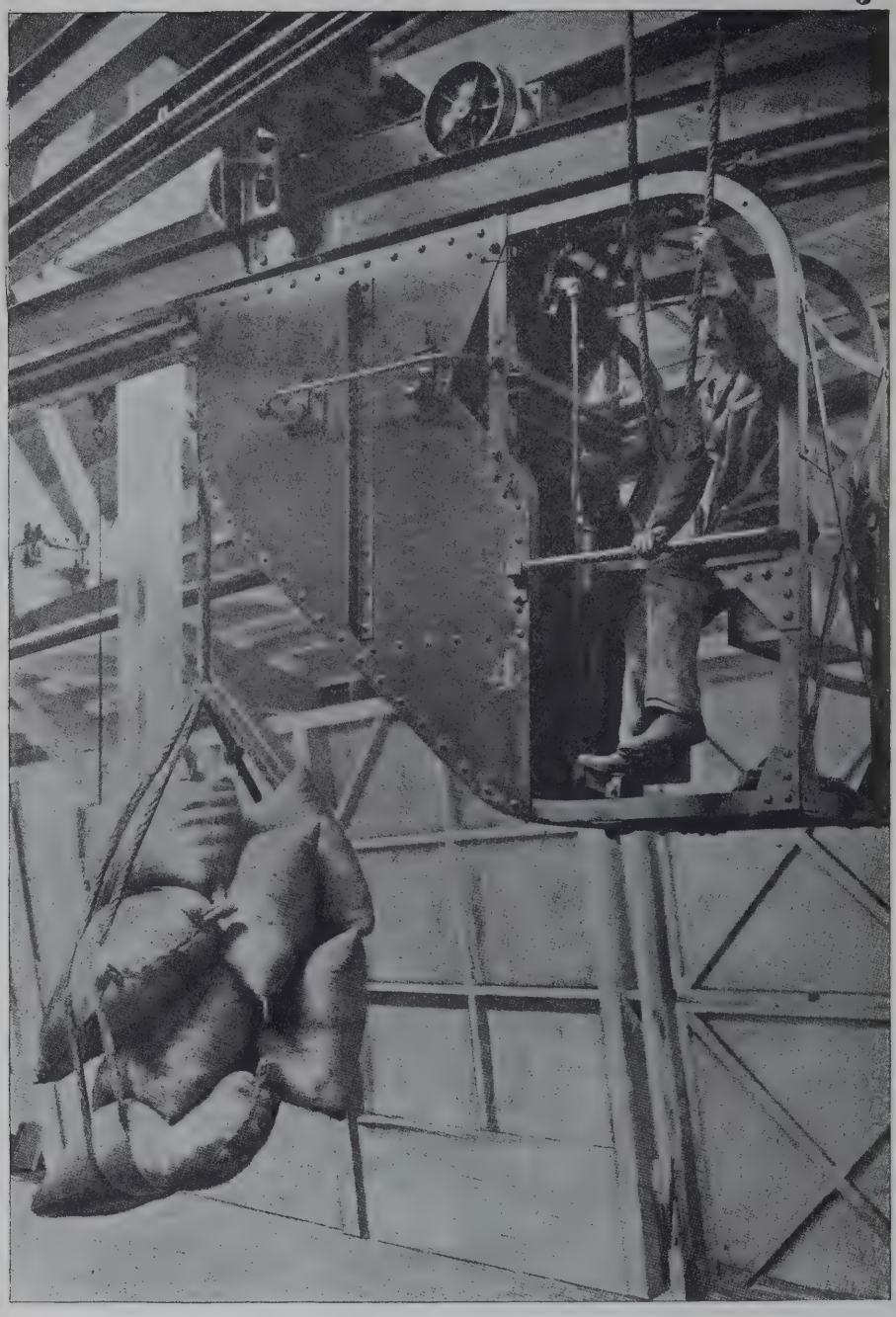




THIRTY-TON GANTRY CRANE AT DELAWARE & LACKAWANNA PIERS IN HOBOKEN, N. J., AND, ABOVE, NOVEL METHOD OF HANDLING PACKAGE FREIGHT

Norfolk to Have Great Terminal

Perhaps the most modern terminals in the country at present may be found at Seattle, Wash., and Galveston, Tex. At the latter port, it is said a ship's turnaround can be facilitated more speedily than at any other marine terminal in the United States. Great improvements are being made at Norfolk, Va. It is asserted that upon completion of the



MECHANICAL CONVEYOR HAS BEEN IN OPERATION 25 YEARS IN WAREHOUSE OF FEDERAL SUGAR REFINING CO., PHILADELPHIA

work now under way, Norfolk will be the most modern of all seaport terminals. Here every effort is being made to unite mechanical, engineering and architectural construction, all parts being designed and laid out in relation to the whole.

Hog Island Has Great Facilities

Among the best equipped piers in the country are those now engaged in fitting out ships at Hog Island. At these piers, seven in all, there are 28 locomotive gantry cranes, with a capacity of about 30 tons each. M. C. Brush, president of the American International Shipbuilding Corp., operating the Hog Island yard, states that at no other commercial pier in the country does there exist 50 per cent of the modern appliances for the handling of cargo that now are in operation at Hog Island. In the opinion of some experts, Hog Island is the greatest potential terminal in the United States, but whether the yard will be converted into a terminal upon the completion of its shipbuilding program is a question still to be decided.

It was brought out at the recent meeting of the Material Handling Manufacturers' association in New York City that plans have been formulated and adopted for considerable terminal development at several other large ports. San Francisco, it was stated, will spend about $8,000,000; Portland, Ore., approximately $5,000,000, and Los Angeles, $4,500,000. Other large expenditures will be made along the Pacific coast.

It would seem as if it were in the West that the greatest progress is being made at this time, but a number of cities along the eastern seaboard are becoming more thoroughly alive to the importance of this movement, and much interest is being displayed at the port of New York. Through this port passes more than 40 per cent of the country's export commerce, and consequently the work to be undertaken will be of benefit to the entire country. Some engineers express the belief that the most important part of the project is not the improvement and reconstruction of the pier sheds and warehouses already in existence, but the new plans proposed for Staten island and other points around the harbor. Nevertheless, they believe the greater use of mechanical equipment at many of the warehouses and pier sheds along the North and East rivers will go far in solving the question of handling freight at the port of New York.

Railroads Plan Improvements

Possibly the most important improvement now under contemplation at New York is one calling for the expenditure of more than $200,000,000 by the Central railroad of New Jersey and the Lehigh valley rail road. According to the plans recently approved by the officials of these railroads, 1100 acres will be developed in what is known as the New Jersey flats, at the mouth of Newark bay. Actual construction is now awaiting approval of the war department, which, it is believed, will be granted without considerable delay.

The principal features of this project include a coal-handling plant, mechanical dumping towers, coal thawing plant, ship repair plant, dry docks, oil supply plant, warehouses, grain elevators, barge terminals, car storage tracks and switching yard, locomotive roundhouse and repair shops, pier storage sheds, ground storage area and free landing zone. The coaling dockage provided in the plans gives room for fifty 500-foot vessels.

As a general proposition, however, public carriers, such as the railroads and steamship lines continue to view the problem of port development more or less passively. And it would seem that for the time being at least little can be expected of these interests. As in the past, the major expense of the handling of material at the ports is paid by the shipper,



PIERS AT HOG ISLAND ARE AMONG THE BEST EQUIPPED IN THE COUNTRY FOR THE HANDLING OF MATERIAL

and ultimately by the consumer. Some excellent work has been accomplished by private interests, but results most to be desired will not materialize until city, state and federal authorities have begun constructive action.

Properties Give Monel Metal Broad Uses

While the strength of monel metal rods has been an important factor in many instances, there are other distinctive peculiarities of this natural product of the nickel-copper sulphide ores of Ontario, Can., which have carried considerable weight in their selection, according to a paper by Hugh R. Williams, technical research department, of the International Nickel Co. The ultimate strength of rolled monel metal, rounds, squares, rectangles and hexagons frequently has been shown in tests to exceed 100,000 pounds per square inch.

Permanency of finish has increased the use of this metal particularly for articles of hardware. When polished it has a handsome color similiar to that of burnished nickel and does not tarnish readily. It offers great resistance to chemicals, especially those of an acid nature, which permits its use in a number of industries such as the dye industry where parts of the machines are made from monel metal and in the dairy industry in milk handling apparatus. The metal has been used for pickling pins, tie rods, pump rods, bolts and nuts. Although nitric acid will attack the metal, other acids virtually do not affect it. It is interesting to note in this connection that a piece of metal immersed in cold 40-degree sulphuric acid for 56 days showed no loss in weight and that fine metal turnings when placed in a vessel of the same acid and kept at boiling temperature for 48 hours showed a loss of less than half of 1 per cent.

The metal retains its strength to a large degree when under high temperatures and the coefficient of expansion is practically the same as that of steel. Thus it may be used as a component part of mechanisms without danger of warping or deformation which sometimes occurs under thermal strains where metals of different coefficients of expansion are used. This property makes monel metal suitable for engine parts and steam turbine and impeller blades. In internal combustion engines, the low heat conductivity, the resistance to hot gases and high temperatures and the thermal expansion and contraction make this. metal adaptable for exhaust valves.

Audible Electric Signals for Shop Calls

A paper entitled "Audible Electric Signals in Industrial Plants," recently presented at a meeting of electrical engineers at Rochester, N. Y., by V. Karapetoff, professor of electrical engineering, Cornell university, deals with automatic devices for locating important executives and employes in noisy plants such as rolling mills or boiler shops. Powerful electric horns, designed to operate on the shop lighting circuits, are installed throughout the plant while the control is located adjacent to the telephone switchboard. When a person is desired, the telephone operator is requested to send out his call. By simply setting the code number of the desired party on the device and pulling a lever, the proper call is sounded in all parts of the plant. After the device has sounded the call for the desired number of times, usually three, it ceases to operate. When the party being summoned hears his call, he goes to the nearest shop telephone and reports, whereupon the operator connects him with the calling party or delivers the message. Should the first series of calls fail to locate the person wanted, the series can be repeated by pulling the lever again.

The electric horn gives a very suitable signal for noisy shops but depending upon their location, electric gongs, bells, buzzers, air whistles, or incandescent lamps may be substituted. By means of such signals, a fire call may be sounded throughout the entire plant at one time. A further application of loud electric signals is that of extensions to telephone bells in noisy shops. The small bell operates a relay which in turn sounds the loud signal. Electric signals are also used in some plants for warning signals on cranes and hoists, for calling a locomotive, or for indicating the beginning or end of an operation.

Examine Workmen Before Hiring

Thorough Physical Examination Measures Men's Fitness For Jobs to Be Filled—Rejections Reduced to Minimum Due to Hospital and Surgical Treatments — Accident and Death Insurance Part of Plan

BY CHARLES F. WILLIS

PHYSICAL examinations of workmen previous to employment started with an effort to prevent the spread of tuberculosis, for tuberculosis may be detected in its early stages and cured. But it was soon found that many other diseases were detected and the saving of lives made possible. The physical examination does not mean the elimination of the unfit but rather the measuring of a man's physical fitness and placing the man where he can do the best for himself, his fellow worker, and the company.

The objects of physical examination are: The early detection of illness, particularly at a time when a full restoration of health is possible; the protection of employes from infection caused by working in contact with contagious diseases; the discovery of a man's physical limitations, in so far as his possibility for rendering good service is concerned; assistance to the safety movement by eliminating association in hazardous occupations with men whose physical condition renders them likely of accident to themselves and others; and the lessening of time lost by sickness.

Illness Prevention Has Advantages

Statistics published by the United States department of labor show that 22.54 per cent of idleness is caused by sickness, with an average number of 7.71 weeks idle; whereas only 1.66 per cent is caused by accident with an average number of 8.98 weeks lost. Sickness is responsible for almost one quarter of the economic losses due to unemployment.

The physical examination, however, will not stand as a preventive of illness and accident unless followed by the most minute detail. The employment of healthy men to do work in unhealthy surroundings is nothing short of criminal.

Many mine managers have recognized for some time the importance of illness-prevention work, but they have appreciated that illness cannot be prevented by the physical examination alone any more than by improvement in sanitation, sick benefits, free medical advice alone, or any one of the other factors entering into it, and that only by the combination of all of these factors can results be secured and the benefits obtained. The experience of those who have been active in illness-prevention work is that it has paid big dividends in money, satisfaction, continuity of work, and contentment.

May be Provided by State

Another reason for the lack of adoption of the physical examination has been the financial unpreparedness of the average employe to meet the exigencies of sickness, which delays early detection and treatment. While without doubt this some day will be cared for by the state with some form of insurance, there are many ways of caring for it at the present time, and the mines where physical examination is in vogue do not allow that feature to stand in the way of its success.

The Copper Queen branch of the Phelps Dodge Corp., operating in Bisbee, Ariz., has had the physical examination as part of its general plan for prevention of illness and accident and the improvement of the physical caliber of its workmen for a number of years. The methods adopted have been very beneficial to the operators and more so to the employes.

In the early days of the Copper Queen mines, sickness was common, epidemics not infrequent, and accidents an everyday occurrence. Soon, however, a plan was devised which not only included better health for the employe, better working conditions, and better living conditions, but also better social and recreational facilities.

Hospital Not Self-Supporting

A contract-hospital system is a common factor in nearly all mining communities today, but the ordinary hospital of the mining camp is not aimed so specifically at illness prevention as is the one at the Copper Queen. Its desire is to be as liberal as possible, and does not, by many thousands of dollars, support itself by its fees. The loss is more than made up by the greater satisfaction given the employes and in the knowledge of the officials of the company that the hospital is performing the best service possible and that the doctors are not using their positions to obtain money from the men on various pretexts. As is usual in contract-hospital systems, elective operations are charged for, and occasionally disputes arise as to what constitutes an elective operation. As the object is not merely to cure men but to keep them well, in the Copper Queen hospital any operation that will improve health is ordinarily considered necessary and is performed without extra charge.

The liberality of the hospital policy would not be possible if it were not for the physical examination. It would not be feasible for a company to employ men irrespective of their physical condition and allow all the same hospital privileges. The physical examination becomes to some ex-

Gompers Is Answered

ONCE again the subject of physical examinations prior to employment has been brought into the limelight. At the recent meeting at Pittsburgh of representatives of 24 international unions of iron and steel workers, the abolition of the physical examination was made one of 12 points upon which to call a general strike in the iron and steel trades. In the accompanying abstract of a paper to be presented before the September meeting of the American Institute of Mining and Metallurgical Engineers in Chicago, the author who is consulting supervisor of the department of industrial relations, maintained by the Phelps Dodge Corp., at Bisbee, Ariz., takes up and disposes of the five objections to physical examinations raised by President Samuel Gompers of the American Federation of Labor. Mr. Willis discusses the methods inaugurated for physical examination of prospective workmen at his company's Copper Queen mines and shows that only those men are rejected for whom work cannot be found or whose physical condition would prove hazardous to their fellow workmen.

tent the selection of risks, and because of this selection the very liberal policy is made possible.

The Copper Queen also maintains a beneficial association for its employes, which is nothing more nor less than a cheap form of insurance against sickness and death outside of work. This insurance only costs the workmen 1¾ per cent of his daily wage up to a maximum of $2.19 per month; and in case of death by accident or sickness while off duty, one year's wages are paid the dependents, not exceeding $1500. In case of the loss of time by accident, one-half wages are paid during disability, not exceeding $62.50 per month. In case of the loss of a hand or a foot, both hands or both feet, or both eyes, one year's wages are paid, not exceeding $1500; and in the case of the loss of one eye, one-half year's wages are paid, not exceeding $750.

The support of the employes' beneficial association comes from the recognition of the Copper Queen officials that the health of the workmen and their continuous employment is worth money to the company. Without doubt it is worth more to the men themselves, but the company is willing to pay a proportion of the necessary expense, the percentage depending on the number of the employes who are members of the association. It is a cheap form of insurance, but the physical examination makes it possible.

The physical examination was also made a part of the general plan for the improvement of conditions for workmen due to its relation to the safety movement. In no other industry, as in mining, is the safety of a man more interwoven with that of his fellow workmen.

In line with the general improvement in health and physical fitness of their employes, the Copper Queen has installed every sanitary convenience that seemed practical.

Gompers Objects to Examinations

Samuel Gompers, president of the American Federation of Labor, is responsible for the following arguments against physical examinations: (1) The apprehension in the minds of the workers that if their deficiencies are ascertained, they will be discharged and will have to walk the streets in idleness and thus aggravate their situation and condition. (2) The rejection of the unfit, which practically means condemnation and suffering for those depending on him for support. (3) The fact that many applicants for work have been weakened and enfeebled by long periods of unemployment, lack of proper nourishment, etc. (4) That there is a tendency on the part of the companies working in illness prevention to extend their sphere of jurisdiction into the homes. (5) That there is no provision for the care of industrial cripples.

Doubtless some of these objections would be tenable if the physical examination were carried out with those objects in view. But the employer who carries out the examination for the purpose of building up a physically perfect working force rather than for the benefit of the employe himself, will ultimately defeat the real purpose and object desired.

Two years later, however, as chairman of the committee on labor, Mr. Gompers recommended to Secretary of Labor Wilson that medical examination of applicants be made one of the functions of the government recruiting agency. This recommendation was the outcome of a conference held in New York, July 15, 1918, and embodies the consensus of opinion of exphysicians and public health workers.

Methods at the Copper Queen

The method of carrying out the physical examination by the Copper Queen answers well the arguments against such examinations. The large number of cases that come to the attention of the medical examiner are not cases of illness that require hospital or sanitorium treatment or necessitate the laying off of the man. Full preservation of the rights of the employes is maintained and the matter of following up the results of the examination by re-examination and treatment is strictly optional with the men. The examination does not increase the authority of the employer over the workman, and, except in a few cases, it has been the desire of the employe to correct defects and maintain good health.

To secure privacy, the examiner's room is fitted with five private rooms, all of which open directly upon the doctor's room but are not open to each other.

The attitude of the examiner is important. Dr. R. B. Durfee, who conducts the examinations of the Copper Queen, emphasizes the fact that the examination is done in order that the workman may have a better knowledge of his own condition. He is told of his condition as the examination progresses, wherein he can help himself, where treatment is necessary, and where changes in his living conditions would improve his health. Many of the men are given information that is invaluable to them.

During the six months' period, ending June 30, 1918, the medical examiner of the Copper Queen mines examined 2342 men, 88 of whom were rejected. Of these 88, 20 were conditionally passed by the mine superintendent and put to work. Therefore, the rejections amounted to about 30 in 1000, as against several times that number in the army. It readily can be seen that the Copper Queen policy is not the rejection of the physically unfit, but rather the placing of men where they are best fitted and where the safety and health of their fellow employes is not impaired. A careful examination is made of the heart, for this has its influence upon safety. Mining is arduous work and involves much heavy lifting; therefore a careful examination is made for hernia, a serious natural weakness common in every walk of life. A comparatively simple operation cures the disease in a short time. Out of over 2300 examined, 48 were found to have severe cases of hernia. Practically all of the 20 men conditionally passed by the mine superintendent were men having hernia, which was to be corrected by an operation later.

It is only in the case of active tuberculosis that rejection is made; in ordinary cases of lung weaknesses men are placed in out-of-door work where the danger of contagion is small and where the likelihood of cure is large. But seven men were rejected for tuberculosis. Men with this disease in an active stage are unable to do a day's work and, what is more important, they are likely to extend the disease to other workmen when working in a confined place. But six men were turned down because of their eyes. Those with ordinarily poor eyesight are not rejected—practically every case amounts almost to blindness. If eye tests had been common in industries in the workman's early life, the sight of the now useless eyes could have been saved in many cases. Occasionally cases of trachoma are found, which call for special care in order to protect other workmen from the contagion of the disease.

Two Rejected for Defective Hearing

The rejection on account of defective hearing is a matter of degree. But two men were turned down for this cause during the six months, both of whom were cases in which there would have been considerable danger to themselves.

It is not uncommon to have men making application for work who have one arm, one leg, or who have not the use of their arms or legs; and while there are occasional positions in which these men might be placed, and it is the policy to do so whenever

possible, usually rejection has to be made. But one man was rejected on this account.

Men having venereal diseases in an acute and contagious state are rejected, although there was but one case of this in more than 2300 men examined.

Drugs, alcoholism, and morphine were responsible for the rejection of four men. Such men are dangerous to others.

Bright's disease accounted for one man, fever for three, measles for one, and teeth for one. Bad teeth lead to indigestion, which in turn clogs the mental and physical powers and makes a person stupid and inefficient. They also send germs in increased quantities to the lungs and heart, tighten joints, and cause rheumatism. Rejection is only in extreme cases, however, for this reason.

It can be seen then from the foregoing that the Copper Queen method is by no means the rejection of the unfit, but rather the rejection of those almost totally crippled and those who are a menace to their fellow employes. There can be no question of the advisability of the physical examination, whether it is considered from the humanitarian standpoint, or the selfish cash-conserving standpoint. It adds to the workers' physical comfort, gives them better employment for longer periods, removes as far as possible danger from contagion, and improves conditions in their homes and in the community. By paying attention to physical defects in time, defects that would be overlooked if such physical examinations were not made, hundreds of employes have been refitted for work who would otherwise be jobless because partly incapacitated. Moreover, the health education imbibed by the workers extends to their families.

The fear that has been expressed that the practice of applying the rule of physical fitness will rule some men out of industry is shown, by the records of the Copper Queen, to be of little weight, because very few applicants are barred from industry because of their physical defects.

Roll-Scouring Copper

By M. E. Duggan

In sheet and other mills, the rolls are scoured by holding a copper block between each pair of rolls while they are rotating. Owing to the nature of the service these blocks perform they are soon worn out and have to be discarded. As shown in Fig. 1 when the working face of the copper is worn out, there is still a large piece of copper remaining. It is of no further use and has to go back to the pot for remelting. This involves waste and extravagance, so the holder shown in Fig. 2 was adopted. Here we have just the necessary amount of copper placed where it is needed. When the blocks wear out it is a simple and inexpensive matter to replace them.

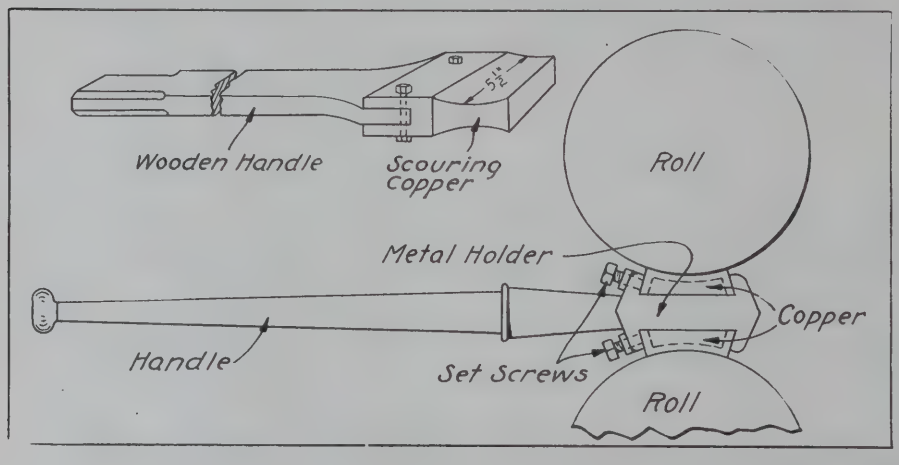


FIG. 1—ROLL SCOURING COPPER AS USUALLY MADE. FIG. 2—IMPROVED TYPE OF SCOURING COPPER

The holder is made with a cored and tapering hole into which is fitted a round wooden handle. This arrangement makes the tool quite easy to manipulate and is a feature which is much appreciated by the operator. The copper scouring pieces fit into dovetailed recesses and are held in position by the set screws as shown.

New Shape Book Issued By Cambria Steel Co.

The Cambria Steel Co., Philadelphia, has recently published the twelfth edition of Cambria Steel, a handbook of information relating to structural steel. The edition of 1919 is revised to conform with modern practice and a wider range of structural shapes and contains much new and useful information.

The table of steel ingots has been modified by the addition of more sizes and styles. A number of new cross-sectional illustrations have been used to show new sections, particularly of bulb angles, car channels, ship channels and a wider range of T-bars. Some space has been devoted to drawings and tabulations of standard ship sections and angles selected as standards for shipbuilding on Nov. 20, 1918. Rolled safety floor plates and buckle plates are newly listed. To correspond with the new standards of connection angles, all former tables relating to them have been modified. The tables of weights for various substances and materials have been considerably enlarged and specifications for structural and boiler steel have undergone revision.

Some of the tables and information which has been added to the new addition pertain to flat and corrugated steel sheeting, roof truss dimensions and stresses, moments of inertia or rectangles, sizes of wrought spikes and wood screws, wire gages shown in a combined table, decimal equivalents of nonbinary fractions, square roots and cube roots of fractions, weights of circular steel plates, trigonometrical formulae, squares and cubes of numbers and fractional intervals, combinations and factors of π (Pi), relations in circular segments, volumes and surfaces of solids, minutes and seconds expressed in decimals of a degree and vice versa, and metric and customary measure conversion.

Cadmium As Substitute For Tin

During the war practically every belligerent nation was hit by a shortage of tin and campaigns for its conservation and the discovery of a substitute were carried on extensively. Germany was probably the first nation to use cadmium as a substitute for tin. Solders containing as high as 30 per cent of cadmium and 2 per cent of tin instead of the customary 40 or 50 per cent were used.

According to a bulletin recently issued by the United States geological survey, there are about 600 tons of cadmium accumulated annually in this country as dusts and residues, by-products of the lead and zinc industries. About 100 tons of metallic cadmium is recovered from these by-products. If all the cadmium dusts and residues were treated, the output of metallic cadmium would be small in comparison to the 19,000 or 20,000 tons of tin annually used in this country in solder.



Fig. 1—View of Fabricating Plant of Birmingham Steel Corp., Showing Wood Construction Necessitated by Inability to Secure Steel

South Has War-Built Fabricating Shop

ERECTED during the latter part of 1918 to furnish structural work to shipbuilders engaged on government contracts, the plant of the Birmingham Steel Corp., Birmingham, Ala., now is one of the largest fabricating shops in the south. The organization of this company was a result of the placing of a second order for twelve 5000-ton steel cargo vessels with the Mobile Shipbuilding Co. by the Emergency Fleet Corp. early in the summer of 1918. Inasmuch as practically all of the fabricating capacity of the Mobile company already was engaged on essential government work, it was necessary to look elsewhere for the needed facilities. By arrangement with the Emergency Fleet Corp., it was agreed that the company was to build a fabricating plant in Birmingham. In September contracts were awarded for a plant of structural steel designed to deliver 4000 tons of fabricated work per month. Owing to the shortage of steel, the war industries board refused to grant a permit for the structural shapes required for the buildings, whereupon the plans were immediately revised, wood being specified instead of steel. Approximately 1,000,000 feet of lumber and 650 tons of iron work were used in the construction of the main building. A general view of the plant is shown in Fig. 1. The arrangement of the various departments of the plant and the disposition of the larger machines and furnaces are indicated in Fig. 2.

The material crane runway, shown at the left of Fig. 1, is 100 feet wide and 600 feet long, and straddles a standard gage railroad track on which 12 to 15 cars of raw material can be stored at one time. The bridge is of the curved chord Pratt truss type and supports two 5-ton, 2-motor electric hoists. The plans contemplate two bridges but at present only one is in use. The office building is a 2-story, 50 x 120-foot brick structure the second floor of which is used as a drafting room. The ground floor contains general and private offices.

The main shop building, approximately 250 x 400 feet, comprises three 80-foot units, each traversed by two 36-inch gage industrial tracks extending to the centers of the raw and finished material storage yards. Turntables have been installed at convenient intervals. Structural work is fabricated in the west half of the building, while the east half of the central unit and the west half of the east unit are devoted to plate work. The angle shear and friction saw are in an extension to the west unit and are served by a traveling crane of 32-foot span. Material will be delivered to the layout marking skids either by the industrial tracks or the 32-foot traveling cranes and, after being layed out, will be handled by the 30-foot jib cranes on which 3-ton electric hoists are mounted. It is the purpose to handle the material by the jib cranes from the marking skids adjacent to the machines and from these skids, the material will be handled by 2-ton chain hoists suspended on trolleys from the 12-inch I-beams arranged longitudinally over the center of the punches. All three of the

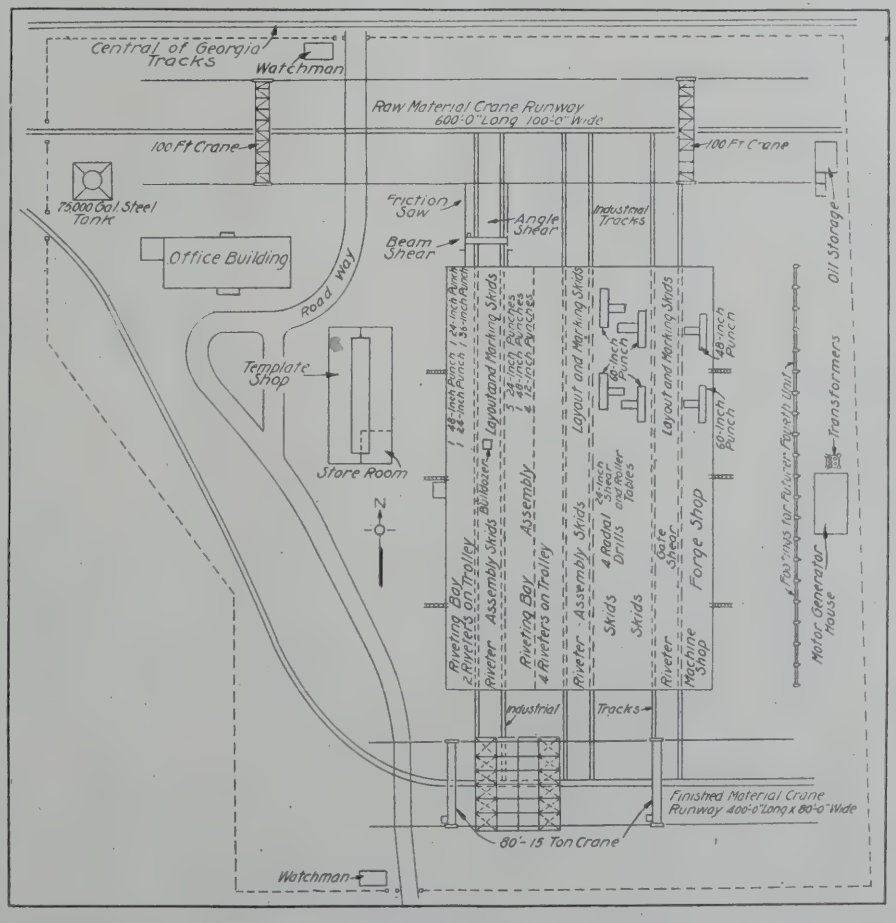


FIG. 2—LAYOUT OF THE PLANT SHOWING GENERAL ARRANGEMENT OF THE YARDS AND MACHINERY

units for a length of 180 feet at the north end of the building are of low construction. An 80-foot 10-ton electric traveling crane is operated in each unit of the higher portion of the shop, and accounts for the difference in height. It is expected that material weighing more than three tons will be handled in the lower portion of the building.

The plate shop is equipped with five 60-inch and one 48-inch punches, each equipped with a Lysholm table and a 32-foot, 3-motor traveling crane to handle the material from the plate marking skids to the table and from the table to the industrial tracks or to the high portion of the shop. A 30 x 60-foot machine shop for the maintenance of shop equipment occupies the southeast corner of the building. In the south portion of the third unit on the east side are blacksmith tools and furnaces. A 10 x 30-foot plate furnace with a bending floor at each end has also been installed.

Three 4500-gallon tanks secured from second-hand tank cars and placed in a concrete pit on the northeast corner of the property provide ample facilities for oil storage. The tanks are just low enough that a tank car standing on the adjacent siding can drain into the tank by gravity. Adjacent to the tank pit is an oil pump house, the floor of which is at such a level that the oil flows to the pumps by gravity after first passing a twin strainer. Two vertical, single-acting triplex pumps, arranged for motor drive by means of a counter shaft, are employed to force the oil from the storage tanks to the distributing system. It is planned to use only one pump at a time, the second being for emergency. An accumulator, with a chamber of about 50 gallons capacity is set to maintain an even pressure of about 15 pounds per square inch on the oil at the nozzles of the burners. All pipe is laid to grade so that it will drain to a pump at the pump house.

Electric power is secured from lines of the Birmingham Railway Power & Light Co. Current is supplied to motor-generator sets and the air compressor at 2200 volts while the plant machinery uses power from a 220-volt line. A 75,000-gallon steel water tank on a 100-foot tower and a complete system of 6 and 8-inch mains affords fire protection for the plant.

The design of the various structures and the machinery layouts were under the supervision of G. S. Bergendahl, chief engineer. M. E. Allen, assistant general manager, was in charge of the construction. H. L. Brittain and Frank McLaughlin are president and general manager, respectively.

Novel Arrangement Of Uptakes

NOVEL construction and arrangement of the uptakes and their manner of connection with the downcomers are the main features of the blast furnace shown in the accompanying illustrations which recently was patented by Julian Kennedy, Pittsburgh. Fig. 1 is an elevation of part of the furnace while Fig. 2 is an enlarged sectional view showing two of the uptakes and a portion of one of the downcomer branches.

Mr. Kennedy sets forth that one object of this blast furnace is to provide a construction and arrangement of the uptakes which will prevent the discharge of an undue amount of the finer material in the burden or charge of the furnace. Another object is to provide an arrangement that will permit the downcomer being carried underneath the skip track.

The blast-furnace structure is shown at *2*, while *3* is the superstructure at the top of the furnace, *4* the skip track and *5* the dust catcher. The top of the furnace is equipped with a number of uptakes, *6*, which are arranged in pairs at opposite sides of the furnace. In the illustrations, however, the uptakes at but one side are shown. The downcomer is shown at *7*. This unit is provided with a branch pipe, *8*, with which one pair of uptakes are connected.

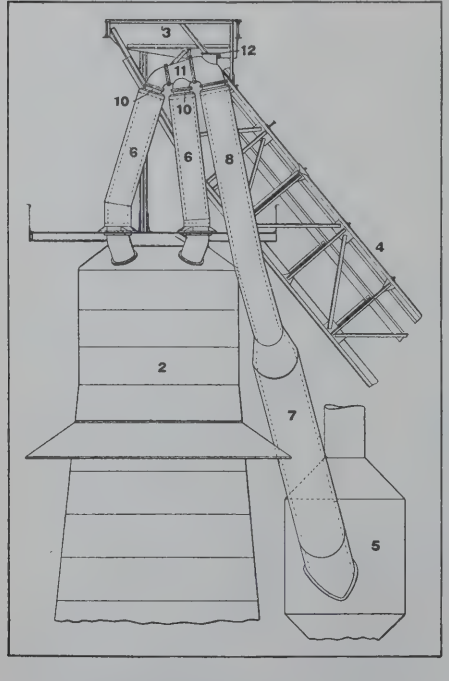


FIG. 1—BLAST FURNACE WITH UPTAKES AND DOWNCOMERS ARRANGED IN PAIRS

Inner Walls Act as Baffles

The two uptakes of each pair are equipped at their upper ends with restricted outlets, *10*, which are arranged to discharge into a common connection, *11*. This is elbow-shaped and leads to one of the downcomer branches as shown in Fig. 2. Both uptakes of each pair are connected behind the corresponding branch of the downcomer and their general arrangement is such that the downcomer may readily extend across the furnaces underneath the skip track. The uptakes are inclined so that they are oblique to the vertical axis of the furnace. Through this design, it is pointed out, the inner walls of the uptakes act as baffles to catch and throw down a part of the finer material which forms the furnace charge, particularly in the case of explosions.

The discharge of such material is further limited by the restricted outlets, *10*, at the upper ends of the uptakes. The combined effect of these two features, it is said, is to throw back into the furnace a considerable portion of the fine material which would otherwise find its way into the downcomer.

By placing both uptakes of each pair at the same side of the downcomer branch with which they connect, it is pointed out that there will be no confusion of the draft currents in these connections, the discharge from both uptakes of each pair passing in the same direction into the downcomer. The connections, *11*, are made of gradually increasing cross sectional area to accommodate the added volume discharged from the inner uptake of each pair. Each of the connections, *11*, is equipped with a relief valve, *12*.

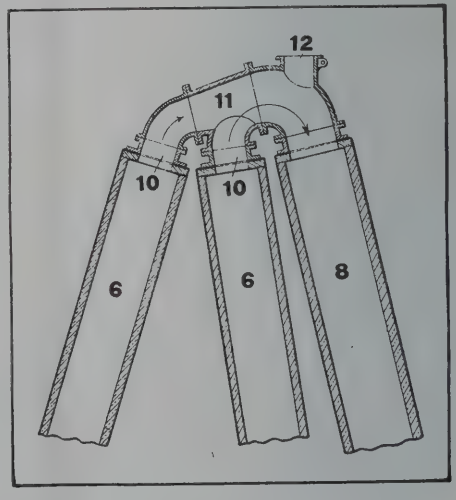


FIG. 2—SECTION OF UPTAKES ELBOW AND RELIEF VALVE

Classifying Indirect Expenses

General Outline of Modern System For Apportioning Expenses is Given — Factors Figured on Floor Area, General and Individual Factors Explained — Value of Standard and Comparative Bases

BY M. H. POTTER

THE advantages of grouping all indirect expenses into their specific classes instead of treating them in accordance with the ordinary accountancy method has been dealt with in previous articles in THE IRON TRADE REVIEW. Inasmuch as indirect expenses are incurred in connection with the carrying out of certain functions it follows that each indirect expense can be classified under the production factor of which it is an inactive part.

Indirect expenses, whether assumed by the manufacturer or purchaser, can be expressed as manufacturing factors. It is self-evident that indirect expenses are all chargeable to actual production either in one department or another, and that they are in some measure fundamental to the work.

This is the sixth article in a series written by M. H. Potter for THE IRON TRADE REVIEW on the application of modern accounting methods in industrial plants.

Fig. 1 shows the factors which are figured on the floor area and percentages which are chargeable to the amount of floor area used by the various departments in production. The remaining factors which are chargeable to all production factors and are known as general factors, are shown in Fig. 2. Apportioning of these factors will be dealt with in detail later. Factors which are chargeable to certain production departments and which are known as individual factors are shown in Fig. 3.

Two Distinct Elements

As the object of the system is to divide and subdivide all expenses of an indirect nature and to apportion them to actual production costs, Fig. 4 may be referred to to cover expenses of an indirect nature which are generally found in most manufacturing enterprises. It is important, however, that indirect charges which are related to certain departments only be so tabulated that they are not confused with any of the general factors.

It is obvious that the cost of production should include both direct and indirect expense, and that idle machinery and similar wastes caused by the absence of work should not be included. To determine such actual costs proper and definite methods of apportioning indirect expenses also will be explained later. It should be remembered that there are two distinct elements, actual expense, indirect but chargeable to actual production, and indirect expense chargeable to idle machinery, idle floor space, etc.

This feature of the system described in THE IRON TRADE REVIEW illustrates its practical value as a standard and comparative basis for figuring

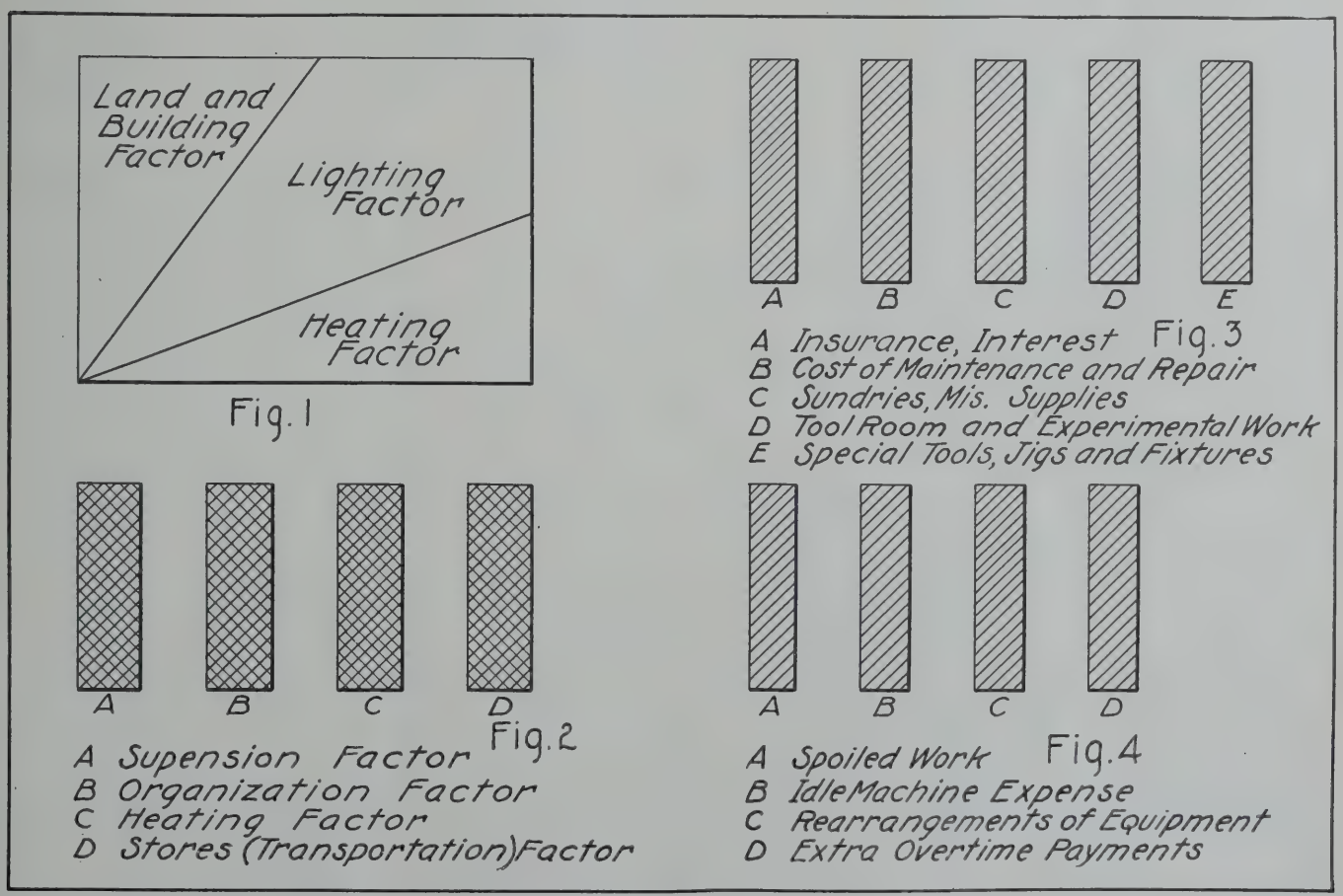


FIG. 1—FACTORS FIGURED ON FLOOR AREA. FIG. 2—GENERAL FACTORS. FIG. 3—INDIVIDUAL FACTORS. FIG. 4—SOME INDIRECT EXPENSES

production costs, inasmuch as only directly related indirect expenses are charged to production costs. No argument is involved when only indirect charges are figured and added to production costs, but this is seldom accomplished by the regular methods of accountancy. From a practical viewpoint machine rates when accurately figured are of more value to the manager of an industrial establishment than department rates. Therefore, the next article in this series will deal with the apportioning of the indirect factor to machine rates.

Building Morale In Industrial Relations

BY GEORGE E. HOLMES

THE element of morale in industry has so long been ignored by many manufacturers that its sudden appearance as such an important factor has led many to believe that it is something born of the war.

As morale is the oil that has made the wheels of commerce turn smoothly and permitted men to launch personal ambitions in the form of large enterprise since the founding of industry, the only excuse one would have for ignoring its existence would be a lack of perception.

In the earlier days of industry the words "interest" and "confidence" were more in use in describing this spirit of an organization. The employer and his men were in daily contact. They realized that the part they both played in the functioning of the establishment spelled its success or failure. There was a unity of purpose that precluded misunderstandings. They met on equal ground and their discussions were always carried on as constructive suggestions from both parties.

Owing to the tremendous growth of industry and loss of this old-time personal contact there has been created a feeling as of two distinct classes. This feeling has been accentuated to such a degree that in place of friendly tolerance there has come about decided feelings of suspicion and ill-will.

The management class, or capitalistic, as it is commonly called, has in many instances made enormous expenditures in its efforts to secure again that old-time spirit of friendly co-operation from its employes. Systems of most every conceivable nature have been tried out with varying results, but the fundamental principle underlying the creation of a lasting morale seems to have been overlooked in most every instance.

Morale, being a condition entirely of the mind, must be considered from its psychological aspect only. The physiological bearing that bonuses, profit-sharing, welfare or betterment service will have upon this should be examined only in their relation to the effect they will have upon the mind of the recipient.

Regardless of the motive that has prompted the act, the first consideration must be just what viewpoint the worker is likely to assume when anyone of the previously mentioned plans are instituted by the management, without first having prepared his mind for its reception. The criticism that has been made at all times of these different attempts at a creation of morale in industry has in no way been aimed at the motive or the idea, but rather at the method of application.

It is a simple matter to satisfy one's self as to the average quantity of mentality possessed by our workers in industry. Works managers, superintendents and foremen, the men who are in personal daily contact with the worker, realize that with few exceptions they have progressed mentally beyond the stage where they are satisfied with being told that they should show more interest in their work and put more "pep" into their arm "because the boss wants them to."

Owing to the loss of the old-time personal contact, the boss is unable to explain to them just why he asks this. If it were possible today for him to sit down and have a heart-to-heart talk with each of his workers, and also listen to their side of the question, there would be little doubt of the return of that morale that is so much in need today. He could undoubtedly convince the foremen that the employment department was their biggest asset, and convince the workers that medical and dental clinics, safety and sanitary commissions, and the clubhouse and its recreational activities, were investments that were paying them handsomely.

That form of plant activity, commonly called industrial democracy, has for its foundation a belief in the need of a man having a chance for expression, that through expression on the worker's part will be opened the door to his consciousness, so that his view if wrong may be corrected, and, if beneficial, be taken advantage of, to the betterment of himself and all concerned. Its objective is a lasting morale gained by knowledge on the worker's part that the management desires to co-operate with him in his work, to remove the fear of arbitrary discharge, to assist in creating continuous employment and to provide for sickness, old age and death.

Money being the high point in man's consciousness, the first spark of interest has been kindled by creating new sources of profit for both the management and the worker. Such matters as labor turnover, loss in supplies, tools, etc., idle machinery and breakage, and, in some instances, quality of production, have been discussed. Instead of considering these matters as necessary losses, the managements have completed itemized statements to be prepared, and the figures have been submitted to the workers with a proposition to split "fifty-fifty" in any saving they are able to effect. If it is possible to create sufficient interest on the part of workers in such matters, the percentage of losses thus sustained will be greatly reduced. Both the workers and the management will secure considerable additional profit, but their chief profit will be the establishment of a firm friendship and a channel through which they can equitably adjust all their differences. After such friendship and co-operation are established, energy previously expended in argument will be directed to constructive thought and that will result in the building of an industrial morale of everlasting qualities.

The author of this article is general manager, Industrial Relations Service, New York City.

Book Review

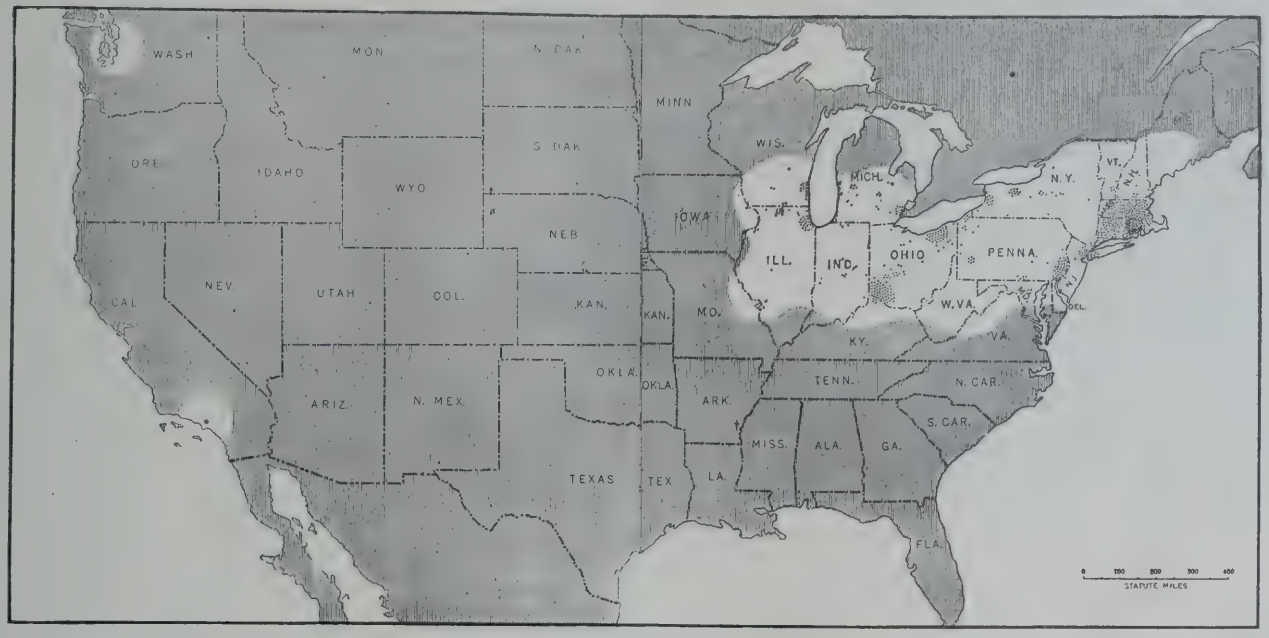
The Turnover of Factory Labor, by Sumner H. Slichter; cloth; 442 pages, 5½ x 8¼ inches; published by the D. Appleton & Co., and furnished by THE IRON TRADE REVIEW for $3 net.

Dealing with the present-day labor unrest and its resultant high cost of operation and production, this book seeks to furnish reasons and explanations for the various conditions and to offer methods to minimize labor turnover. It is

said that in the average plant annual terminations of employment by discharge, resignation, or other causes approximate the average number of workers employed. Such a turnover involves a large expense and it becomes necessary for the business man and manufacturer to adopt preventive measures which are based on sound principles in the employment and training of employes and the proper attitude to be taken in their handling.

The author was special expert on labor turnover of the federal commission on industrial relations and as a result of extensive investigation for the commission together with many private inquiries, he has compiled complete statistics which bear out his statements. He maintains that a definite and well planned labor policy is as necessary as standardized methods of manufacture and that means are necessary to provide for the formulation and execution of such a policy. Briefly this might be said to be the fundamental principle on which the treatise is built. The book is well arranged and the tabulated figures are so distributed as to be clearly associated with the text matter for ready reference.

Machine Tool Output Increased In Wartime



Map reproduced by courtesy of the Allied Machinery Co. of America, New York.

STATISTICS compiled and published by the machine tool section of the war industries board show a phenomenal growth of the tool building industry under war conditions. In 1914, 310 companies in the United States were engaged in the manufacture of machine tools. They employed 30,082 persons and turned out a product worth $50,000,000. In four years, or by 1918, the value of the annual output had grown 10 times to approximately $500,000,000, while 68 additional companies had entered the industry and the total number employed had increased to 77,154. This shows a percentage of increase of 22 per cent in number of companies engaged, 156 per cent increase in number employed and 900 per cent increase in value of product.

The geographical center of the machine tool industry gradually has been shifting from the East to the Middle West. Ohio unquestionably is now the greatest tool building state, with Cincinnati and Cleveland, respectively, the two largest tool producing cities in the country. With the number of employes as a basis, the 10 largest cities in the United States follow:

	No. firms Oct., '18	No. employed Oct., '18
Cincinnati	39	9150
Cleveland	21	6227
Providence, R. I.	4	5647
Hartford, Conn.	9	4072
Worcester, Mass.	16	3521
Philadelphia	15	2494
Hamilton, O.	5	2173
Bridgeport, Conn.	9	2090
Rockford, Ill.	12	2026
Rochester, N. Y.	8	1873

Cincinnati employs more persons in the manufacture of machine tools than does the entire state of Massachusetts. That city, with 39 establishments in the industry, has 9150 persons engaged while Massachusetts with 48 plants, employs but 8111. Ohio employs 3421 more than does Connecticut and Massachusetts together. The six largest toolbuilding states, judging from the standpoint of number employed, follow:

	No. firms Oct., '18	No. employed Oct., '18
Ohio	94	20,895
Connecticut	33	9363
Massachusetts	48	8111
New York	33	6880
Pennsylvania	36	6467
Rhode Island	6	6382

In the interval between January, 1914, and October, 1918, one tool manufacturing establishment was started in each of 21 towns which up to the end of 1913 had had none. These gave employment to 1069 people.

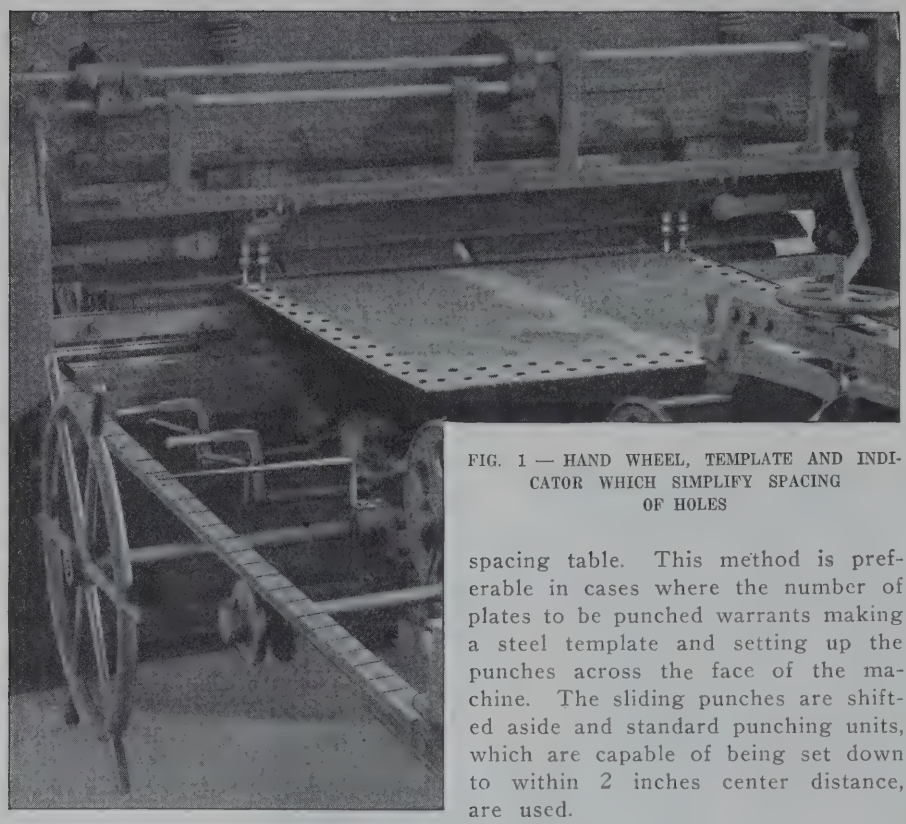


FIG. 1 — HAND WHEEL, TEMPLATE AND INDICATOR WHICH SIMPLIFY SPACING OF HOLES

Punch Irregularly-Spaced Holes in Plates

A specially designed machine for punching irregularly spaced holes in plates recently was built by the Thomas Spacing Machine Co., Pittsburgh. The machine, shown in Fig. 2, was installed at the plant of the Great Lakes Engineering Works, Detroit.

The wide plunger of the machine is fitted with sliding punches permitting it to punch one or more holes in any predetermined location without shifting the plate sidewise. The machine may be used in any one of three ways, depending upon the nature of the work. When it is used as a simple punch the holes to be punched are laid out and marked. The sliding punches of the machine are moved from side to side in the plunger by means of hand levers. It is not necessary to shift the plate sidewise.

The machine also may be used in connection with a template and indicator as shown in Fig. 1. In this case the plates are not marked beforehand, the spacing lengthwise being derived from a wooden template which travels with the plate. The crosswise spacing is determined by a template moving with the punches. The movement of the plate is controlled by a hand wheel and that of the punches by hand levers.

The machine also may be used as a multiple punch with a hand operated spacing table. This method is preferable in cases where the number of plates to be punched warrants making a steel template and setting up the punches across the face of the machine. The sliding punches are shifted aside and standard punching units, which are capable of being set down to within 2 inches center distance, are used.

The punches are of the floating type. The point of the punch rests on the plate until the correct register is made. This is done by shifting the plates lengthwise and moving the punch crosswise. When the mark is reached, an electric contact controlled by a foot lever operates the punch through the medium of a magnet. The table is similar to that of an ordinary hand operated spacing table except that the operator remains stationary near the punch. The movement of the plate is controlled by a traveling carriage to which the plate is clamped. The carriage is made of light weight steel, its length being a little in excess of that of the largest plate to be fabricated. The carrying rolls are fitted with ball bearings and are independently mounted on the shaft. The plates are carried through the punch in a straight line by means of side and rail guides. Centering clamps are provided to enable the operator to position the plates properly.

Recovers Lubricating Oil

A method of recovering oil which has been used for lubricating purposes is described in a recent issue of the *American Gas Engineering Journal.* During the war it became necessary at the works of the Mid-West Engine Co., Indianapolis, to recover as much oil as possible. The lubricant was contaminated with carbon, gasoline, water, metal filings and chips from machinery and miscellaneous dirt.

The oil is collected in barrels and left to stand for a time to deposit by gravity as much of the foreign matter as possible. It is then drawn off into reclaiming tanks. Gas burners under these tanks drive off the water and the lighter oils. This heating agitates the oil and makes it lighter, thereby causing a rapid separation of the matter still held in suspension. Great care must be exercised in boiling the oil in the tank to prevent overflowing upon

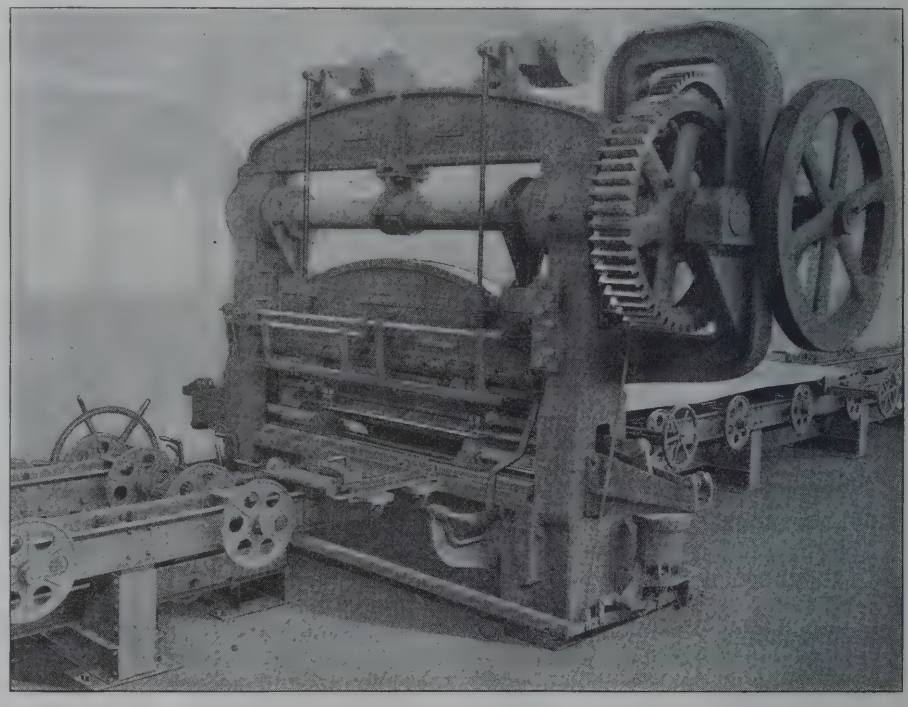


FIG. 2—MACHINE EQUIPPED WITH SLIDING PUNCHES WHICH ELIMINATE NECESSITY OF SHIFTING THE PLATE CROSSWISE

the burners. When the oil reaches the agitated state it is kept under control by playing a gas flame from a torch upon it. Recovered oil treated in this manner is almost identical in composition to new oil, according to comparative analyses that have been made.

Calls Automobile Builders Largest Tool Users

An attractive 16-page pamphlet entitled "Metal Working Machinery" has just been issued by the Allied Machinery Co. of America, New York. The development of the machine tool industry is traced from its beginning in New England to the present time and a map showing the centers of machine tool production in the United States is reproduced. In commenting upon the rapid growth of the industry in the past decade, the writer of the article attributes a considerable amount of this increase to the influence of the automobile industry which has superseded the railroads as the largest user of machine tools. According to the booklet, the present annual production of 1,153,000 automobiles and motor trucks, coupled with the maintenance of 2000 general machine shops by the railroads of the country, has done much to stimulate the growth of the machine tool industry. A map showing the location of foreign sales offices of the Allied Machinery Co. appears in the booklet.

Makes Oil Cupola Ligher

An oil-burning machine, which is adapted for cupola lighting, recently has been developed by the Clayton & Lambert Mfg. Co., Detroit. The equipment consists of a seamless tank, 15 feet of air hose and 15 feet of oil hose, oil and air control valves, and the burner. The



FASTENER FOR HEAVY BELTS

burner can be operated with compressed air or steam, under pressures varying from 30 to 100 pounds. This apparatus, equipped with a 2½-inch burner nozzle, is said to consume approximately 6½ gallons of oil per hour and about 58 cubic feet of free air per minute. It produces a full flame of 18 inches. Burners having nozzles of 2½ inches in diameter are recommended for lighting cupolas ranging from 42 to 70 inches in diameter and burners having nozzles of 3 inches in diameter are preferable for cupolas from 80 to 96 inches in diameter. The burners also are adapted to various kinds of work in foundries, railway shops, shipyards, etc., boiler shops, and in many other types of industrial plants.



OIL BURNER FOR LIGHTING CUPOLAS



FIG. 1—MACHINE WHICH GUIDES BLOW PIPE AND ENABLES OPERATOR TO FEED IT AT UNIFORM RATE

Blowpipe Performs Work Of Machine Tools

Slots which ordinarily are cut by means of machine tools recently were made in a large slip socket by an oxy-acetylene blowpipe. The sections, removed from the socket, which is shown in Fig. 2, each measured 3 inches wide, 3 inches thick and 26 inches long. The socket, which weighs 1600 pounds, is used in connection with tools employed in fishing for drills which have broken loose from the drilling cable in oil and gas wells. The work on the socket was performed at the plant of the Acme Fishing Tool Co., Parkersburg, W. Va.

The equipment used on this job consisted of an ordinary oxy-acetylene blow pipe and a straight line cutting machine, both manufactured by the Oxweld Acetylene Co., Newark, N. J. The cuttng machine, which is shown in Fig. 1, consists of a holder for the blowpipe which moves along a lead screw and is capable of crosswise adjustment. This device enables

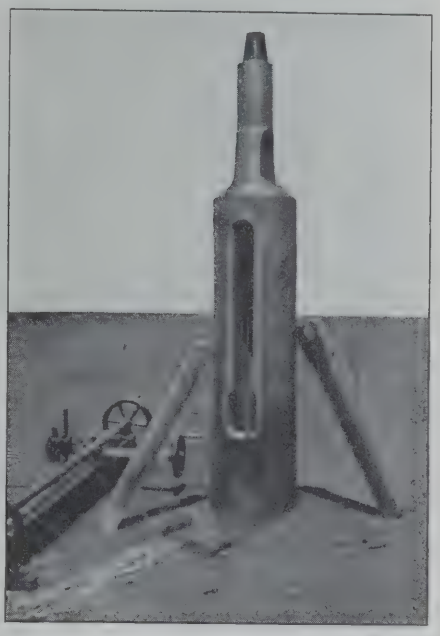
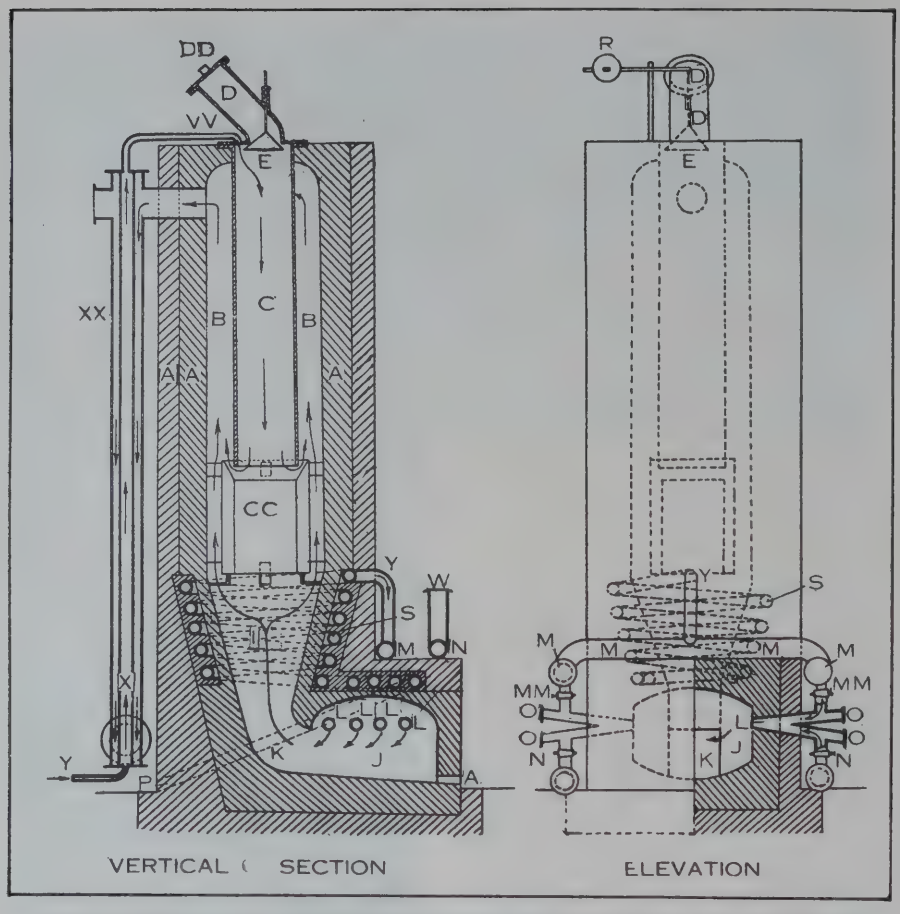


FIG. 2—SLOTS CUT IN SLIP SOCKET BY CUTTING BLOW PIPE

the operator to move and guide the blowpipe along a given line and to feed it at a uniform rate of speed. In the case of the slip socket, the cutting was done so smoothly that no finishing was necessary. The time stated for completing each cut is 8 minutes.

Designs Belt Fastener

A new belt fastener, designed for belting varying from ⅜-inch upward in thickness, recently has been perfected by the Flexible Steel Lacing Co., Chicago. The fastener consists of two rectangular steel plates which clamp on either side and are connected by bolts which go through the belt. The top plate has two round holes which are countersunk to hold special cone-shaped nuts, while the bottom plate has two special square seats which fit around the square heads of the bolts. The accompanying illustration shows the construction of the upper and lower plates and the position of the special bolts and nuts. It is stated that this fastener gives a joint of exceptional high tensile strength combined with the essential features of smoothness.



VERTICAL SECTION AND ELEVATION OF APPARATUS FOR MAKING STEEL DIRECTLY FROM IRON ORE

Invents Way To Make Steel Direct From Ore

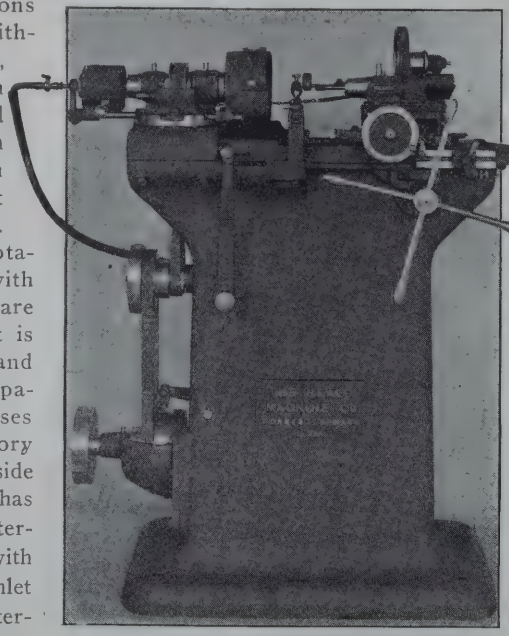
For the manufacturing of steel directly from iron ore, a Spanish inventor, Luis Tegero Grouselle, recently devised and patented the apparatus shown in the accompanying illustration. He sets forth that his object is to obtain the same reactions as in blast-furnace practice, but without any contact with free carbon, in order that the operation when completed will produce steel and not cast iron. The illustration shows a vertical section and an elevation in a plane at right angles to the vertical section. The apparatus consists of an adaptation of a blast furnace provided with a hearth, the dimensions of which are governed by the quantity of ore it is desired to smelt. The reducing and fusing functions are entirely separated and are brought about by gases of a different nature. The refractory masonry body, *A*, is armored outside and contains a chamber, *B*, which has an extension of the refractory material, *C. C.* Chamber *C* is charged with ore through the hopper, *D*. The inlet door, *D D*, and the bell, *E*, open alternately. The bell *E* is opened by means of a lever with a balance weight, *R*. The object of the sealed-top arrangement is to prevent air from getting in, or gases from escaping during the charging operation.

Hydrogen or hydrogenated gas is admitted through the pipe, *V*. The gas circulates in an upward direction in the pipe, *X*. This pipe is equipped with internal-radiation ribs which are heated by the hot escaping gases of the furnace circulating in a downward direction in the flue, *X X*. The gas enters the chamber, *C*, through the pipe, *V V*. It filters through the ore in a downward direction and escapes through the annular space left between the chamber, *C*, and *C C*, and through the chimney, *X X*.

The ore reduced in the chamber, *C*, follows its path through *C C* and arrives at the stack, *I*. Here it is heated by the heat generated in the tuyeres, *L*, which are supplied with nonhydrogenated gases generated separately through the orifice *P*. This air is heated by waste heat as it circulates in the coils, *S*. It is admitted cold at *P* and escapes hot at *Y* in order to pass to the collector, *M*, which distributes it to the tuyeres, *O*. The nonhydrogenated gases for fusion are admitted at *W* and pass to the collector, *N*, which also distributes them to the tuyeres, *O*.

After the hearth, *J*, has received sufficient metal, this is cast through the opening, *A*. The gases coming from the tuyeres, *L*, circulate in the fusion chamber, *J*, and pass through *K* and *I* into the chimney *X X* after having filtered through the reduced ore.

Production of the gas, the admission of air and the temperature are regulated by valves in the tuyeres and by the greater or less admission of hydrogen or of reducing gas into the reducing chamber.



GRINDER EQUIPPED WITH AUTOMATIC WATER AND WORK-HEAD STOPS

Builds Internal Grinder for Small Work

Extensive tests have just been completed by the Heald Machine Co., Worcester, Mass., on a new internal grinder designed for small work. As indicated in the accompanying illustration, the work head is driven by a cross belt through the base from a four-step cone pulley. The flow of water and the revolving of the work head automatically stop when the grinding wheel is withdrawn from the work. This is accomplished by a friction clutch in the base of the machine operated by a lever which is tripped by a small dog on the table. When the operator desires to resume work he simply pushes the lever to the vertical position, thereby starting the work head and water.

The machine is equipped with a collet chuck having a capacity for material from ⅜ to 3 inches in diameter. The feed to the cross slide is calibrated to 0.00025 inch. The feed lever controlling movement of the slide is at operator's left, the pilot wheel actuating the movement of the table is at the right. The grinding wheel head has a solid

adjustable taper bearing at the wheel end and revolves in ball bearings at the pulley end. The machine is equipped with an automatic wheel guard which covers the wheel as it is drawn from work. The grinder is designed for work ranging from ¼ to 2 inches in diameter and 4 inches long.

Grinder Has Rockershaft Of Novel Design

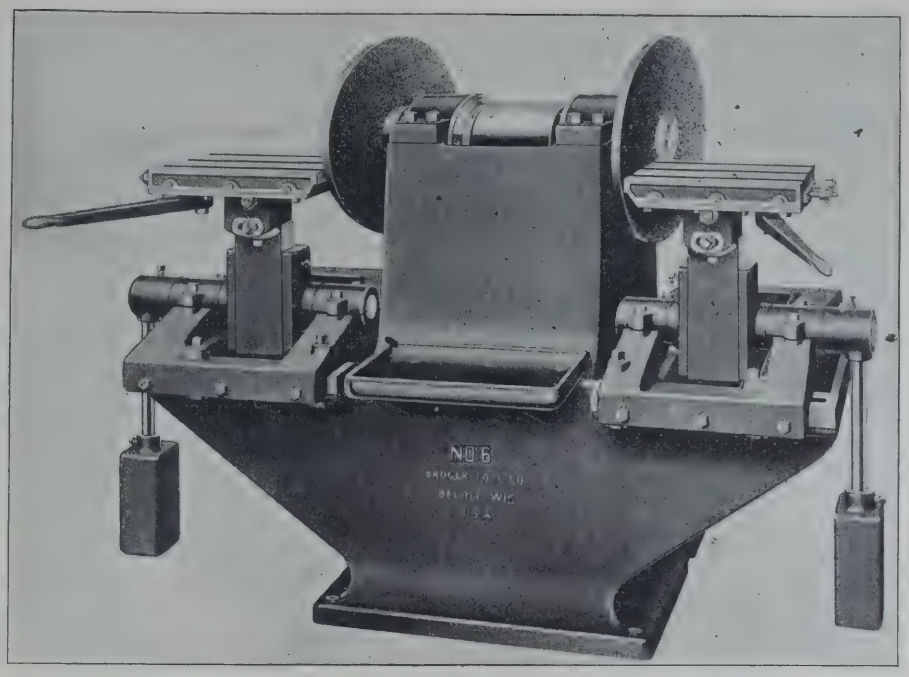
A single-spindle type disk grinder, embodying several unusual points in the design of the lever feed work table, ball bearing spindle mounting and rockershaft construction, is being manufactured by the Badger Tool Co., Beloit, Wis. The feed table of the machine, which is shown in the accompanying illustration, is equipped with a back stop and micrometer screw stop, and is provided with a wheel truing attachment. The leverage obtained through the toggle joint action minimizes the physical energy required on the part of the operator when heavy cuts are being taken. The toggle joint and lever are designed with a view of increasing the pressure exerted on the table as it approaches the grinding disk. It is said that this is a very important feature inasmuch as the cut is started when the pressure is light and the leverage is increased after the sharp points have been removed from the work. This practice is claimed to preserve the life of the grinding disks.

The spindle revolves in ball bearings which are mounted in boxes designed to eliminate trouble caused by dust or grit. Provision has been made for draining off the lubricant and cleaning the housings.

The rockershafts are mounted in saddles so that the ends have rigid bearings on each side of the box supporting the lever feed work table. This construction is said to impart rigidity to the table, make it practicable to do accurate grinding, and increase the life of the abrasive disks.

Talk Of Steel Plant

Construction of a steam plant adjoining the present plant on Lake Union has been authorized by the city council of Seattle, the bill having been passed authorizing the issuance and sale of $1,250,000 of light and power utility bonds to cover the cost. J. D. Ross, superintendent of lighting presented a communication to the council setting forth an inquiry from the Tivani Steel Co. asking if the city would be in a position to supply 20,000-horsepower at $10 a year per horsepower for fine years' as an inducement for the company to begin the construction of a steel plant. It is declared the first unit would cost $5,000,000.



DISC GRINDER WITH ROCKERSHAFT WHOSE ENDS ARE MOUNTED IN SADDLES

Fire Brick Output of 1918 Sets Record

According to a recent bulletin of the United States geological survey, department of the interior, the production of firebrick in 1918 showed a decrease in quantity and increase in value over the figures of 1917. The quantity produced in 1918 was equal to 1,373,674,000 nine-inch equivalent brick, which when compared with the quantity produced in 1917, shows a decrease of 257,642,000 or 16 per cent. The value of firebrick marketed in 1918 was $63,637,000 which when compared with the value in 1917, shows an increase of nearly 10 per cent. This is the largest value ever recorded by the geological survey for firebrick and is more than twice as great as that in any other year, except 1917, and more than three times as great as that in any other year prior to 1916. The quantity reported for 1918 was the greatest recorded except that for 1916 and 1917. The average price per thousand during 1918 was $46.33. Stove lining, another refractory, also showed a large increase in value when compared with 1917.

PRODUCTION OF REFRACTORIES

		1917	1918
Fire brick:			
Quantity	M..	1,631,316	1,373,674
Value		$58,012,264	$63,637,000
Average value	per M..	$35.56	$46.33
Stove lining		$619,882	$730,000

Mining Properties Merged

Consolidation of the Lock Haven Mining Co., Inc., and the Lock Haven Fire Brick Co., both of Lock Haven, Pa., for which papers have just been filed, will give the new company control of extensive coal and clay sites. The property of the two companies adjoins on the Tanguas Scootack creek at the headwaters of the Susquehanna river, about 7 miles west of Lock Haven. The combined tracts will include over 3000 acres of high-grade fire clay and coal land.

Mining operations have already been started on the property, a coal mine being opened up within a few hundred feet of one of the oldest mines in Pennsylvania and is near the location of the first blast furnace in the state at Farrandsville. The old mine was operated in 1842, when the coal was hauled by wagon to the Susquehanna river where it was put on barges. No railroads were available then. Now the Pennsylvania railroad has a switch through the property and the New York Central railroad has purchased a right of way and will lay tracks soon.

Controls Weeks Patent

The American Metallurgical Corp., Philadelphia, recently has come into control of the Charles A. Weeks patent issued Feb. 15, 1910, on a rocking type of furnace for manufacturing nonferrous alloys. The corporation expects immediately to commence on the production and installation of furnaces of this type.

Price Investigation Far Reaching

Principle of Government Control, Brought to an Issue by Demand for Lower Cost of Food and Clothing, May Finally Include Iron and Steel—President's Cabinet Studying Problem Raised by Railroad Employes' Ultimatum

WASHINGTON, Aug. 5.—Whether price fixing or control over the distribution of necessities, or a combination of both, is essential to the economic welfare of the country is one of the questions which probably will be settled through the concentrated efforts now being made by the government to solve the problem of the high cost of living. Ideas as to the solution are many, varied and more or less confused and it may require two or three weeks more for deciding on a tentative course to pursue. Among the ideas advanced are price fixing and regulation of distribution of supplies, and it seems certain the advisability of adopting both or either as a national policy will be settled once and for all.

That some solution of the high-cost-of-living problem will be found is generally believed here. With the question uppermost in the minds of every American from the President down, and with him leading the fight for betterment of conditions, opinions are almost unanimous that this time a way out will be found.

Whether additional legislation will be needed has not been determined, but judging from the number of bills and resolutions proposed in congress the statutes may require amendment. It is on this as well as other phases of the general question that time is needed by the President, his cabinet and advisers and the law makers.

The question whether or not the railroad employes are entitled to another increase in wages seems secondary in importance in the opinions expressed here that if the trainmen's brotherhoods and unions had not raised the question sharply the living problem might have brought about dire results. As it is, the new demands so astounded Director General Hines that he felt the authority given the President under the railroad act of 1918 would not be sufficient, and he took the matter to the President with the suggestion congress provide additional legislation. That brought to the President's mind the seriousness of the situation, with the result he asked the house to defer its five weeks' recess and take up problems related to the high cost of living and the railroads.

It has long been recognized that an increase in freight rates alone would meet the continuous deficit shown in government operation of railroads. The director general, however, always pointed out that an increase in rates would only further advance living costs. Before he had time to decide what to do the railroad brotherhoods made it plain that the 25 per cent freight advance of June, 1918, had more than offset the wage increases allowed during the year. While the director general's suggestion, passed on by the President to congress, that a board of higher authority than the interstate commerce commission be created to handle both wage and rate matters crystallizes the railroad problem it has served to show that something else must be interjected to decide the vexing question.

Submits Bill for Commission

Commissions, boards, committees, etc., are being suggested and urged; resolutions and bills have been introduced; investigations and studies are already being made; suggestions and plans are pouring in, and from them all may spring the answer. Limiting profits, elimination of middlemen, punishing profiteers and conspirators, control of distribution, price fixing, marking cost prices on all commodities, and numerous other solutions are being considered.

The President's suggestion, now being studied by his cabinet officers under the chairmanship of Attorney General Palmer, will be made in a week or 10 days, it is expected. Congressional investigations will not be completed for two or three weeks, if then. At that time the final course will probably be determined.

Congressman George Huddleston, of Birmingham, who recently said price fixing was the only solution, backed his words with action and introduced a bill which would create a trade commission. This commission would have power to fix prices of the necessaries of life and basic commodities, could forbid all combinations among producers and dealers to fix prices or to limit production. It also could forbid the sale of any commodity at a higher price than in effect on Nov. 11, 1918, or above any price the commission might fix. It would require that the cost price and the sale price be legibly marked on every article offered for sale.

The commission would be composed of five members appointed by the President and their nominations would not have to be confirmed by the senate. Salaries of these officials would not exceed $5000 annually. They would serve five years and penalties under the act would be a maximum of five years in prison or a fine of $5000 or both. The bill would appropriate $1,000,000 to carry out its provisions. It defines necessaries to include:

Iron and steel, coal and coke, tools, building materials and supplies, gas, electricity, transportation, food, feeds, clothing, medicines, furniture, furnishings and dwellings and apartments for hire.

Many Express Views on Basing Problem

WASHINGTON, Aug. 5.—The federal trade commission's announcement of its intention to investigate the economic value of the practice of the iron and steel industry of selling steel products based on Pittsburgh appears to have met a nationwide response. Views of consumers and communities already have begun to reach the commission, although most of the communications received have been requests for copies of the application filed by the Western Association of Rolled Steel Consumers for issuance of a complaint against the group of principal producers in the Chicago district. The time limit set by the commission for the submission of statements of views is Sept. 1 and preparations are being made for

docketing hundreds, and perhaps thousands of them.

Just what steps will be taken after Sept. 1 cannot be determined now but among them will be the consolidation and grouping by the commission of the various views submitted and the complaints and arguments accompanying them. It is intended to have public hearings, but just when these will begin and on what detailed topics, are dependent upon the volume and diversity of the submissions. The commission is convinced the problem presented is of prime importance to the industry and the nation and realizes its ultimate settlement will require long, careful and detailed study.

Before the basing point question reached the commission it had received the attention of William C. Redfield, secretary of commerce, who had considered complaints made by iron and steel consumers. Secretary Redfield was powerless to act, however, and referred the subject to E. H. Gary, chairman of the United States Steel Corp. What Judge Gary said in reply has not been disclosed, but prior to receipt of the secretary's communication the corporation's chairman had been in communication with John S. Miller, counsel for the Western association. It was in an informal conference with the federal trade commission that Judge Gary and Mr. Miller arranged for the procedure in the present case.

Redfield Points Out Difficulties

In his letter to Judge Gary Secretary Redfield expressed the following views, which he had previously stated to a complainant after consulting some of his advisers:

"While the practice of using Pittsburgh as a basing point on all iron and steel shipments cannot be defended as a strictly logical proposition, the custom dates back into the early history of the trade and any change would be very disturbing to the entire industry. If the iron and steel business cuts loose from Pittsburgh as a basing point there is no logical reason why every community in the country where iron and steel are produced should not be made a basing point. This would include among others Chicago, Birmingham, Buffalo, Youngstown, Cleveland, Philadelphia, Duluth, Wheeling, Milwaukee and Colorado.

"There is no stable ground between adhering to the present custom, arbitrary and illogical as it may appear, and a wide open readjustment between producers and consumers, which would result in chaos for a considerable time. The consuming interests have established their business to meet existing conditions and any radical change would seriously disturb their relations with the plants as well as with the customers. The ultimate result would be that every producer and consumer would be largely limited to their own particular zones and cut off from other centers by freight rates.

"It is said that the only company which would have any advantage under such conditions would be the steel corporation which, in addition to present advantages, is the only company having producing units in nearly all the above mentioned centers. This in itself is advanced as a grave reason for not disturbing the present arrangement. While theoretically every community should enjoy the advantages and suffer the disadvantages of its natural geographical location, our industries not having been established upon this basis the question becomes one of weighing the advantages which would be derived from a change against the disturbances which would result, especially at a time when industries are faced with a solution of many disturbing factors resulting from war conditions."

Liquidation Board Is Reduced

Washington, Aug. 5.—The personnel of the United States liquidation commission in Europe has been reduced from five to three as a result of the intention of the war department to have C. W. Hare, director of the division of sales, handle the disposition of surplus material belonging to the American expeditionary forces. Mr. Hare is now in Europe, accompanied by a staff which includes Alfred LeMar in charge of machine tools. Edwin B. Parker, chairman of the commission, and formerly commissioner of priorities in the war industries board, will continue with Henry F. Hollis, ex-enator, and Col. James H. Graham. The resignations of Brig. Gen. Charles G. Dawes and Homer H. Johnson have been accepted.

Battleship Contract Let

Washington, Aug. 5.—Contract for the construction of battleship No. 54, to be named the MASSACHUSETTS, has been awarded by the navy department to the Fore River Shipbuilding Corp., Quincy, Mass. This ship, which will be of 43,200 tons displacement, is the last of the authorized battleships to be contracted for.

May Build Steel Plant

Texas City, Tex., Aug. 4.—It is reported that as a result of the recent purchase of 3000 shares of the American Iron & Steel Co. by Peabody, Houghteling & Co., of Boston and Chicago, the deferred plans of that company for the construction of an iron and steel plant here will be carried out. Financing of the project was under way at the time the war began. The company was incorporated in 1913 with a capital stock of $10,000,000. It owns valuable iron ore beds in the northeastern part of Texas.

At the time the transaction was made the holdings of the Texas City company, including the townsite of Texas City, with 3000 town lots and 3000 acres of adjacent land, were sold at receiver's sale to Peabody, Houghteling & Co. This company also purchased 500 shares of the Texas City Electric Light & Water Co., 150 shares of the Texas City Passenger & Pier Co. and 351 shares of the Texas City Street Railway Co.

Report Ferroalloy Plant Possible in Washington

The Spokane, Wash., school of mines reports that a ferroalloy plant is possible in the state, not only from a theoretical but a commercial viewpoint. Ores in central and eastern Washington have been examined, and mineralogists believe there is a supply sufficient to justify the beginning of a new industry. Ores of manganese, chromium, molybdenum, tungsten and iron in Stevens, Ferry, Okanogan and Chelan counties were tested by Dean Howard and Prof. C. G. Warfel. Results showed that there is considerable hematite in the Kulzer property at Valley, and that it is of suitable grade for use in ferroalloys. The examination also convinced them that there is no likelihood of mines of chromium or manganese being opened in the near future, and that, considering Washington deposits alone, the only alloying metals of importance of which there promises to be a supply in reasonable quantities are tungsten and molybdenum.

Erie Builders Organize

Leading builders, contractors and supply dealers of Erie, Pa., have reorganized the Erie builders' exchange, which has been inactive since 1909. Headquarters have been established at 208-209 Commerce building, and the following officers have been elected: President, C. A. Constable; vice president, Karl E. Morrison; secretary, B. W. Schafer; treasurer, D. S. Milloy; business manager, Harry A. Holmes. One hundred and fifty firms are identified with the new organization.

The Connecticut Metal & Chemical Co., New Britain, Conn., has increased its capital stock from $200,000 to $300,000.

Coal Development

In Kentucky on Big Scale—Corporation Subsidiary Building City

(*Special Correspondence*)

Whitesburg, Ky., Aug. 4.—The United States Coal & Coke Co. is proceeding rapidly with the building of the new city of Lynch, and more than 5000 men are employed on this work. The company, which is a subsidiary of the United States Steel Corp., has started the development of 20,000 acres of Black mountain coal lands, and it is planned soon to have a daily capacity of 10,000 tons, according to an announcement of the company. The coal will be shipped to South Chicago, Joliet, Ill., and Gary, Ind., for coking. It is said to be one of the best grades of coking coal in eastern Kentucky.

Nearby is the big plant of the Wisconsin Steel Co., a subsidiary of the International Harvester Co., which is mining a fine grade of by-product and coking coal. Millions of dollars are being expended in development work around Benham and Lynch.

The Louisville & Nashville railroad is considering a further extension of 20 miles up Cumberland river, terminating in Letcher county, the center of an extensive coal field. A large part of the properties of the Virginia Iron, Coal & Coke Co. will be reached along the headwaters of the river.

Bailey P. Wooten, J. G. Green and H. T. Taylor have organized the West Virginia & Kentucky River Power Co., with $6,000,000 capital, taking over the Kentucky River Power Co., the Logan County Electric Power Co., and the Tug River Electric Co. It is the purpose of the company to begin at once to rebuild the transmission lines reaching practically every section of the Kentucky coal fields. A new plant will be built, probably in the vicinity of Hazard, near the center of the Elkhorn coal fields.

Grace Stack Out After Seven Years Run

The Grace furnace of the group of three stacks of the Brier Hill Steel Co., Youngstown, O., has been blown out, after seven years continuous operation, during which time more than 1,000,000 tons were made. This is the first time the furnace, which has a daily capacity of 450 tons, has been blown out for relining. This stack and the furnace of the Struthers Furnace Co., Struthers, O., are now the only stacks in the Mahoning valley district which are out for relining. It is expected the Grace stack will be placed in blast the latter part of August. Orders for relighting No. 1 furnace of the Haselton furnaces at Youngstown, have been issued by the Republic Iron & Steel Co. This furnace was recently relined. Relighting of this stack brings into service all furnaces of the Haselton group, and the only Republic furnace in Youngstown now inactive is the Hannah stack.

Settlement is Reached

New York, Aug. 3.—A tentative settlement of the 5-week's strike at the plant of the National Conduit & Cable Co., Hastings-on-Hudson, New York, was reached yesterday afternoon, the strikers promising to return to work this morning if $1000 cash bail put up by a few strikers when they were arrested a few days ago was returned to them and the charges dropped. When the money is returned, the men will go back to their old jobs, but instead of the increase of 13 cents they demanded, they will receive three cents with a promise of more later on if they speed up production.

Change Firm Name

The South Halsted Iron Works, Chicago, has changed its name to the Vanderkloot Steel Works, the change becoming effective July 15. No change has been made in the officers and personnel of the company. P. S. Vanderkloot is president and William J. Vanderkloot is secretary and treasurer.

Ask Police Protection

The Wharton Steel Co. has asked the Morris county, New Jersey, authorities to furnish police protection because of the disorder of strikers. Vice Chancellor Stevens has granted an order directing the mine, mill and smelters' union to show cause why they should not be enjoined from interfering with employes of the Wharton company. Labor disputes have caused considerable trouble at the plant since April 8.

Install Converter

Victor R. Browning & Co., Cleveland, manufacturers of cranes and hoists, have installed a steel converter at their Mansfield, O. plant.

The Chester Shipbuilding Co., Chester, Pa., carefully is investigating its water front on the Delaware river with a view to constructing a large drydock there, at an approximate cost of $2,000,000.

Conference Board Makeup Displeases Foundrymen

Chicago, Aug. 4.—Objection is made by the National Founders' association to the personnel of the national conference on labor proposed in resolutions introduced in the house and senate. In a protest sent to Washington it is claimed that the representatives of capital as named in the senate resolution do not represent manufacturers and that the manufacturers of the country would be without a voice in the proceedings. The senate resolution proposes as the representatives of capital Charles E. Hughes, John D. Rockefeller, J. Pierpont Morgan, E. H. Gary, J. Ogden Armour, Williak K. Vanderbilt, Daniel Guggenheim, Francis S. Peabody and E. T. Stotesbury. A letter sent out by the association says:

"There is not a representative of the manufacturing interests of the country named in this personnel. Union labor is represented by eight officers of unions, by Frank P. Walsh, and also by the secretary of labor. The government is directly represented by the secretary of the interior and the other nine men are identified with gigantic financial operations, with the exception of Charles E. Hughes. The backbone of our industry is the comparatively small manufacturer and the great corporations do not properly represent the prosperity of the country. Furthermore, John D. Rockefeller, J. Pierpont Morgan, J. Ogden Armour, William K. Vanderbilt, Daniel Guggenheim, Francis S. Peabody and E. T. Stotesbury are not in actual touch with manufacturing. E. H. Gary is directly concerned in an active way with a great corporation, but he is chairman of the board only, and is a lawyer by profession. The manufacturers of the country who are represented in the great employers' associations, have no representation whatever. It is imperative, therefore, that manufacturers should take a very direct interest in these resolutions and should submit a most emphatic protest against any conference which excludes those who are vitally concerned with the result of the conference.

"This resolution is another evidence of the fact that our manufacturers are ignored in matters in which the government proposes to interfere in industry. Due deference to the financiers mentioned in the resolution, who are patriotic citizens, does not alter the fact that they are not representatives of the manufacturing interests. This is a particularly opportune time for registering the views of the manufacturers with the government and stating plainly that the findings of any such conference will not be tolerated. It is a case of pseudo-legislation and interference upon the great body of industry which has been given no representation."

The General Welding & Mfg. Co., Milwaukee, has increased its capital stock from $10,000 to $20,000.

June Imports and Exports Gain

Tonnages Reach the Highest Point Since Fall of 1917—Semifinished Exports More Than Doubled in One Month While the Imports Show a Corresponding Decrease

EXPORTS and imports of iron and steel products for June continued their progressive gain according to the monthly statistics of the bureau of foreign and domestic commerce. As a result, exports reached the highest point since December, 1917, and imports were the largest since August of the same year. The June total for exports reached 561,020 gross tons compared with 422,282 tons for May, an increase of 138,738 tons or 32.9 per cent. The high record point for exports in the country was in December, 1917, with 653,344 tons. The large rise in June was due in a considerable measure to the increased foreign shipments of semifinished material which increased from 20,771 tons in May to 46,016 tons, a net increase of 25,245 tons or 121 per cent. Pig iron exports, while showing a gain of 7.2 per cent, were not unusual. The June figure was 39,758 tons, an increase of 2671 tons over the May total of 37,087 tons.

The gain in imports was 17.7 per cent, the June figure of 21,056 tons being 3171 tons greater than the 17,885 tons in May. The previous high figure, which was in August, 1917, was 26,129 tons. With the exception of ingots, blooms and billets and steel rails, gains were shown in all imports. Pig iron imports rose from 2428 tons in May to 7684 tons in June and tin scrap rose from 5 tons to 555 tons. Gains in other products were not relatively large.

While the importation of steel billets, ingots and blooms declined, the exports of these semifinished forms increased and more than doubled the May figure. The exports of wire rods and steel bars also were more than twice those of the preceding month, while wire, sheets and plates and pipes and fittings showed substantial gains. The figures show that 1732 tons of ship and tank plates were exported during the month compared to 3354 tons one year ago.

Iron ore imports increased from 28,164 tons in May to 30,605 tons in June.

IMPORTS AND EXPORTS
(Gross Tons)

1916	Imports	Exports
January	15,824	360,102
February	20,279	368,980
March	15,159	438,649
April	20,176	384,452
May	32,114	538,657
June	26,885	515,214
July	14,774	502,330
August	23,255	571,401
September	25,559	643,762
October	30,169	588,892
November	42,545	554,219
December	44,134	580,988
Total	310,891	5,947,646
1917—		
January	40,910	608,281
February	24,947	449,099
March	37,943	606,559
April	48,213	519,397
May	26,479	582,303
June	29,080	629,305
July	28,859	346,393
August	26,129	503,075
September	19,058	499,067
October	14,310	571,868
November	13,995	473,549
December	14,642	653,344
Total	324,565	6,442,240
1918—		
January	12,475	490,259
February	12,941	438,848
March	14,345	379,924
April	11,371	462,887
May	14,387	488,515
June	13,913	418,605
July	11,511	452,759
August	12,520	512,104
September	8,440	473,688
October	15,744	426,767
November	11,582	471,427
December	28,996	356,641
Total	168,225	5,372,424
1919—		
January	16,913	371,570
February	12,302	344,180
March	17,632	367,224
April	16,560	396,813
May	37,087	20,771
June	39,758	46,016
Total, six months	173,638	108,452

IRON AND STEEL EXPORTS
(Gross Tons)

	June 1919	June 1918	Twelve months ending June 1919	Twelve months ending June 1918
Pig iron	39,758	22,896	345,412	377,012
Scrap	1,843	318	5,478	22,385
Steel billets, ing. and bl'ms	46,016	139,377	911,695	1,970,831
Wire rods	13,911	8,241	144,826	186,622
Steel rails	67,028	25,069	621,728	430,347
Steel bars	91,183	33,581	529,954	613,125
Iron bars	3,079	5,225	81,782	50,241
Struc. iron and steel	49,842	17,308	340,584	240,384
Hoops, bands and scroll	5,727	3,709	56,577	58,846
Sheets and plates	117,595	75,272	1,049,306	791,459
Tin and terne plate	19,663	30,562	235,472	250,030
Barbed wire	10,943	22,921	197,418	185,911
All oth. wire	29,912	11,393	186,777	168,571
Cut nails	172	514	3,467	5,202
Wire nails	11,451	5,476	93,944	108,990
All other nails incl. tacks	2,276	1,032	18,416	13,106
Pipes and fit'gs	41,159	11,670	223,377	180,812
R. R. spikes	4,342	1,048	20,755	15,547
Bolts, nuts, rivets and wash.	4,493	2,066	40,275	30,161
Horseshoes	220	250	2,594	9,012
Cast radiators	407	250	3,559	2,842
Total	561,020	418,178	5,113,396	5,711,436

IRON AND STEEL IMPORTS
(Gross Tons)

	June 1919	June 1918	Twelve months ending June 1919	Twelve months ending June 1918
Pig iron	7,684	5,885	40,133	54,776
Scrap	10,830	3,163	95,263	66,207
Bar iron	104	236	1,342	2,596
Ingots, blooms and billets	108	2,317	27,150	45,701
Structural shapes	171	154	2,453	7,287
Rails	1,453	400	16,447	8,385
Sheets and plates	96	53	830	2,098
Tin and terne plate	21	...	70	32
Tin scrap	555	397	6,652	7,919
Wire rods	34	1,308	1,968	7,110
Total	21,056	13,913	192,308	202,111

IRON ORE IMPORTS
(Gross Tons)

From:	June 1919	June 1918	Twelve months ending June 1919	Twelve months ending June 1918
Spain	6,394	.....	73,591	26,093
Sweden	11,992	.....	28,981	17,718
Canada	702	16,360	95,139	186,476
Cuba	11,517	42,465	460,902	605,625
Other countries	.....	.....	1,989	1,634
Total	30,605	58,825	660,602	837,546

IMPORTS VARIOUS ORES AND FERROALLOYS
(Gross Tons)

	June 1919	June 1918	Twelve months ending June 1919	Twelve months ending June 1918
Ferromanganese	1,800	5,739	24,006	33,259
Ferrosilicon	196	146	6,091	5,419
Manganese ore	31,550	38,427	472,452	558,018
Tungsten-bearing ore	338	656	10,898	51,646
Nickel ore	845	2,987	42,866	58,776
Total	34,729	47,955	556,318	707,118

EXPORTS PIG IRON AND SEMI-FINISHED
(Gross Tons)

1916—	Pig iron	Semi-finished material
January	19,319	55,315
February	15,061	87,406
March	19,439	107,675
April	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
August	60,264	160,921
September	64,122	163,104
October	92,756	162,669
November	106,781	120,883
December	105,195	162,901
Total	607,236	1,504,563
1917—		
January	69,146	183,656
February	49,018	131,566
March	69,629	193,469
April	44,783	162,209
May	61,112	168,158
June	83,406	190,907
July	32,305	106,085
August	62,083	170,503
September	44,287	148,932
October	47,115	209,667
November	25,733	150,120
December	67,593	203,085
Total	656,210	2,018,357
1918—		
January	20,581	195,385
February	10,540	173,272
March	9,849	144,443
April	11,282	177,128
May	22,567	159,299
June	22,896	139,377
July	20,265	139,612
August	26,028	189,851
September	34,494	135,450
October	35,452	125,023
November	30,825	150,024
December	24,577	63,890
Total	269,356	1,792,754
1919—		
January	36,757	11,594
February	20,840	10,407
March	22,158	8,176
April	17,038	11,488
May	17,885	422,282
June	21,056	561,020
Total, six months	102,348	2,463,089

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

FORREST E. CARDULLO has been appointed chief engineer and designer for the G. A. Gray Co., Cincinnati, manufacturer of planers, to fill the vacancy caused by the resignation of Ernest Richter. Mr. Richter served in that capacity for 31 years and recently retired from active service.

W. F. Pollock, manager of the Victor Saw Works, Springfield, Mass., has returned from a business trip to England.

R. Sanford Riley, president of the Sanford Riley Stoker Co., Ltd., Worcester, Mass., and Detroit, has gone to Europe for a two months' business trip.

William H. Holt, for the past four years assistant superintendent of the Woonsocket Machine & Press Co., Woonsocket, R. I., has resigned owing to ill health.

Thomas P. Davis has been appointed chief engineer of the Duquesne Steel Works of the Carnegie Steel Co., at Duquesne, Pa., to succeed William Ahlen, who resigned recently to return to his home in Sweden.

Arno W. Gaebelein, formerly captain in the ordnance department of the United States army, now is in charge of the recently established New York office at 50 Church street, of the New Britain Machine Co., New Britain, Conn.

Jerome R. George, vice president of the Morgan Construction Co., Worcester, Mass., who has been in Europe since the first of the year, was 52 year old, Aug. 2. He was scheduled to have sailed for this country July 21.

Walter H. Penfield, treasurer of the Colt's Patent Fire Arms Mfg. Co., Hartford, Conn., was recently elected a vice president of the corporation in addition to F. S. Nichols and S. G. Stone. Mr. Penfield will continue as treasurer.

Ralph S. Gildart, for several years advertising manager of the P. B. Yates Machine Co., Beloit, Wis., and Kitchener, Ont., has become associated with the Kelvinator Co., Detroit, manufacturer of mechanical refrigerator units for domestic purposes. Mr. Gildart has just been released from the army after 18 months' service.

Charles F. Morgan, vice president and assistant treasurer of the Morgan Spring Co., Worcester, Mass., now a part of the Clinton-Wright Wire Co., of that city, has resigned to become assistant treasurer of the Morgan Construction Co., Worcester.

Melvin Hart, of the Stanley Works, New Britain, Conn., is going to Japan to take charge of the works branch purchased there several months ago. Mr. Hart who is the son of George P. Hart, president of the Stanley Works, was discharged from the army recently with the rank of lieutenant.

Robert F. Herrick, Milton, Mass., president of the Reed-Prentice Co., Worcester, Mass., and several other Massachusetts industries, and Charles G. Washburn, Worcester, prominent in the wiremaking industry, have been appointed by Gov. Calvin Coolidge, of Massachusetts, as members of a commission to study the street railway situation in that state and to report to a special session of the legislature to be called in November.

S. J. Thomas recently was added to the sales force of the Biggs-Watterson Co., Cleveland, dealer in machine tools, etc. Mr. Thomas has had many years experience in designing and building machinery, fixtures, etc. He spent several years in the engineering department of the Fosdick Machine Tool Co., Cincinnati, but left last year to do war work for the Peters Cartridge Co., as engineer in its Cincinnati works.

Horace S. Baker, late colonel of the 111th engineers in service in France, has associated himself with Frank D. Chase, Inc., Chicago, as engineer in charge of work for the General Motors Corp., Janesville, Wis. He is a graduate of Northwestern university and Boston Tech., the latter in 1903. He was engaged in railroad work several years and from 1906 to 1917 was employed in various capacities as engineer by the city of Chicago.

Harry M. Giles, who recently succeeded Oscar Otto as general superintendent of the Westinghouse Electric & Mfg. Co.'s plant at South Philadelphia, Pa., was the guest of honor at a banquet given July 31 at the Hotel Adelphia, Philadelphia, by officers and heads of departments of the company. Mr. Giles, who is 50 years of age, has been associated with the Westinghouse company since 1907, and before that was connected with the Corliss Engine Co., in an engineering capacity. Prior to his promotion to his present office, he was superintendent of the marine erection department of the company.

John McGrath, formerly connected with the Ingersoll-Rand Co. and the Bethlehem Steel Co., who has just returned from foreign service in the engineering corp of the American expeditionary forces, has associated himself with the D. M. Osborne Machinery Co., Cleveland, in the capacity of salesman and expert production engineer. The sale and demonstration of heavy-duty production lathes will receive Mr. McGrath's personal attention.

Gregory Brown has been engaged to take charge of the engineering department drafting room of the Norton Co., Worcester, Mass., succeeding Howard W. Dunbar, former assistant chief engineer of the Norton Grinding Co., promoted to sales manager of the grinding machine department of the Norton Co. Mr. Brown is a graduate of Stevens institute and has been occupying a responsible position with the Western Electric Co.

Phillips F. Jarvis has resigned his position as sales manager for the territory controlled from the St. Louis office of the Sullivan Machinery Co., Chicago. The territory has been divided up and new appointments announced. Marion C. Mitchell, has been appointed sales manager for the territory in Indiana and Illinois with a temporary office at No. 2006 Railway exchange, St. Louis. Don M. Sutor, formerly manager of the El Paso office, has been appointed sales manager for Kentucky, Tennessee, Missouri, Arkansas, Oklahoma and Kansas with offices in St. Louis. Daniel H. Hunter has been made sales manager for the oil territory with headquarters in Dallas, Tex.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

J. H. SCHOENLY who recently succeeded R. L. Kift as vice president and general manager of the Bethlehem Construction Co., Bethlehem, Pa., at one time was the southern and southwestern sales agent for the Phoenix Iron Co., with headquarters at Baltimore. He left this position to become receiver of the Roanoke Bridge Co., Roanoke, Va., and after completing his work there, was appointed assistant sales manager of steel products for the Simonds Mfg. Co., Lockport, N. Y. He left the latter company to become associated with Joseph F. A. Comstead in the capacity of domestic sales manager. Mr. Schoenly became identified with the Bethlehem Construction Co. on July 1.

W. H. Perry Jr., is in charge of equipping a small foundry for the Simmons Mfg. Co., Racine, Wis., manufacturer of metal beds.

Karl G. Roebling, president of the John A. Roebling's Sons Co., Trenton, N. J., has been elected a director of the American Ship & Commerce Corp., New York City.

Captain F. W. Shackelton, who was superintendent of construction in the new plant to be erected by the Truscon Steel Co., Youngstown, O., in Japan, has departed for that country.

H. M. Steele, former vice president and general manager of the Liberty Steel Co., has been appointed operating manager for the Newton Steel Co., which is erecting a plant at Newton Falls, O.

W. F. Reulman has been appointed local manager in charge of the new Detroit office and warehouse of the Edgar T. Ward's Sons Co., steel merchants. The Detroit address will be 660 West Fort street.

A. E. Braum, president of the Farmers' Deposit National bank, of Pittsburgh, has been elected a director of the Pressed Steel Car Co., Pittsburgh, to fill the vacancy caused by the death of T. H. Given. J. H. Beal of the firm of Reed, Smith, Shaw & Beal, of Pittsburgh, was elected a director to succeed J. H. Reed who is resigning from all industrial boards on account of the present status of the co-director act. Mr. Reed is president of the Bessemer & Lake Erie railroad, subsidiary of the Carnegie Steel Co.

Lieut. M. J. Carpenter recently returned from Archangel, Russia, where he spent last winter with the 339th infantry, and has resumed his duties as manager of the Foundrymen's Supply Co., Inc., Milwaukee.

I. L. Bergvall, superintendent of the Cumberland Shipbuilding Co., Portland, Me., has resigned to accept a similar position with the Fore River Shipbuilding Co., Quincy, Mass., a subsidiary of the Bethlehem Shipbuilding Co., Ltd.



B. L. COGSHALL
Who, as Announced in THE IRON TRADE REVIEW of July 24 and 31, Was Made Assistant to the President of the Pittsburgh Steel Co., Pittsburgh.

William T. Paquin, who has been connected with the Osgood Bradley Car Co., Worcester, Mass., since he was discharged from the service in February, is now superintendent of storage for the Middletown Car Co., in La Rochelle, France.

Vincent A. Lambiase, who has been engaged for a number of years in the sales promotion work of the Celite Products Co., 11 Broadway, New York City, will represent the interests of the company in the Bronx, Brooklyn and Long Island districts.

H. G. Faskbinder, formerly foundry superintendent of the Minneapolis Steel & Machinery Co., Minneapolis, recently was appointed to fill a similar position with the Stover Mfg. & Engine Co., which also controls the Stover Engine Co., Freeport, Ill.

L. H. Elliott, secretary and treasurer of the Bourne-Fuller Co., Cleveland, will retain these offices, although he has been made vice president and secretary of the Upson Nut Co., Cleveland. In the latter position he succeeds Norris J. Clarke, who has become president of the Lake Erie Bolt & Nut Co., Cleveland.

W. T. Gregory, formerly pattern shop superintendent, has been appointed manager of the foundry of the Michigan Motor Castings division of the General Motors Corp., Buick plant, Flint, Mich. He succeeds W. H. Goldstein, who recently became foundry superintendent of the Nash Motors Co., Kenosha, Wis.

D. B. Stokes, eastern sales manager of the United States Cast Iron Pipe & Foundry Co., has been made western sales manager with headquarters in Chicago. He succeeds A. J. Goodhue, who was made sales manager emeritus Aug. 1. W. G. Savage, assistant western sales manager, has been made eastern sales manager with headquarters at Philadelphia.

W. B. Douglas has been appointed superintendent and A. E. Nyberg production manager of the W., & B. Douglas Co., Middletown, Conn., maker of pumps. Mr. Douglas is vice president of the company and Mr. Nyberg formerly was cost, production and stock expert with the Remington Arms-Union Metallic Cartridge Co., Inc., Bridgeport, Conn.

A. H. Dillon, vice president of the Liberty Steel Products Co., New York, who has just returned from abroad on business matters, reports that there is developing a better understanding on the part of the French people who are beginning to realize more and more the assistance that the United States has rendered them. He expressed the opinion that the French are very resourceful people and that they are destined to work out a proper and successful solution of their reconstruction problems.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JOSEPH G. BUTLER JR., Youngstown, O., has announced that he will begin work on the history of the Mahoning valley in the near future. R. J. Kaylor, publicity manager of the Youngstown Sheet & Tube Co., Youngstown, and Albert A. Reilly, editor of the *Youngstown Telegram,* will collaborate with Mr. Butler in the preparation of data for the volume. Since this history will deal extensively with the valley's industries and with biographical matter relating to founders and leaders, the iron and steel industry will occupy a prominent place.

F. S. Easterly, secretary of the Stalmaker Steel Co., Pittsburgh, recently resigned and has been succeeded by M. B. Summers.

Kenneth R. Hare has been made district manager for the Transportation Engineering Corp. of New York, with headquarters in Chicago.

E. O. Johannson, originator of the tools which bear his name, recently was elected honorary president of the American Society of Mechanical Inspectors.

Frank McLaughlin recently was promoted to the position of vice president of the Mobile Shipbuilding Co., Mobile, Ala., retaining his duties as general manager.

Charles L. Fitz has assumed charge of the new works of the Drop Head Projector Co., Fond du Lac, Wis., manufacturing portable motion picture machines for schools, colleges, salesmen, etc.

William Lewis, former superintendent of the sheet plant of the Western Reserve Steel Co., has been appointed to take charge of operations for the Falcon Steel Co., which is building a plant at Niles, O.

A. H. Stolzenbach, secretary and treasurer of the Diamond Coal & Coke Co., will join the organization of the Hillman Coal & Coke Co., Pittsburgh, which has acquired a controlling interest in the Diamond company, it is reported.

Lawrence B. Chapman, for the past four years on the technical staff of the Electric Boat Co., New London, Conn., engaged on technical problems of submarine design and construction, has been appointed associate professor in the new course of ship construction and marine transportation which has been instituted in the department of civil engineering of the Lehigh university, South Bethlehem, Pa.

W. H. Goldstine has resigned his position as manager of the gray iron foundry of the Michigan Motor Castings Operating Co., Flint, Mich., the plant of the Buick Motor Co., to accept a position with the Nash Motor Car Co. of Kenosha, Wis.

William H. Hart, who was president of the Stanley Works, New Britain, Conn., for 31 years and treasurer for 51 years, having been identified with the company since its organization, celebrated his eighty-fifth birthday anniversary on July 25.

P. McDonald has retired after many years as proprietor of the Grand Rapids Boiler Works, Grand Rapids, Mich., having sold his interest to R. C. Loosemore and A. A. Brown, who will continue the business, which was established almost 50 years ago.

A. E. Braun, president of the Farmers Deposit National bank, Pittsburgh, at the regular quarterly meeting of the board of directors of the Pressed Steel Car Co., held in New York last Thursday, was elected a director to fill the vacancy caused by the death of T. H. Given.

R. C. Gosrow, electrometallurgist to the North American Co., New York, and sales manager of the Pittsburgh Furnace Co. and the General Steel Co., Milwaukee, has gone to Seattle to engage in electrometallurgical engineering work and metallurgical and industrial sales engineering.

Hon. George M. Wright, chairman of the board of directors of the Clinton-Wright Wire Co., Worcester, Mass., was a speaker at the dedication of the bridge across Lake Quinsigamond, Worcester, July 31, he having been mayor and signed the contract for the construction of the bridge.

J. B. Highland, for 18 months general factory superintendent of the LaCrosse Tractor Co., LaCrosse, Wis., has resigned to assume active charge of a large wheat ranch near Kirwin, Kans. Factory and office executives presented Mr. Highland a gold watch at a farewell dinner given in his honor.

Nathaniel G. Burleigh, assistant director of the department of industrial engineering of the Winchester Repeating Arms Co., New Haven, Conn., has been appointed to the professorship of industrial organization and management of Dartmouth college, Hanover, N. H. He graduated with the class of 1911.

M. F. Marcuse, has assumed charge of the publicity department of Rownson, Drew & Clydesdale, 68 William street, New York. Mr. Marcuse is of English parentage but of American citizenship. He had been engaged in the export business for the past seven years, having traveled through western Europe, South America and the Far East. He was formerly with the International Oxygen Co. and the Prest-o-Lite Co.

M. J. Gregory, who since 1916 has been foundry superintendent for Dodge Bros., Detroit, has been appointed to a like position with the General Motors Corp. He will operate the foundry department of the new Samson Tractor division, Janesville, Wis., when completed. At present he is located in the main offices of the General Motors Corp., Boyer-Campbell building, Detroit. Prior to 1916, Mr. Gregory was affiliated with the Brown & Sharpe Mfg. Co., Providence, R. I.

J. Leonard Replogle, president of the American Vanadium Co., has been named one of the directors of the American Ship & Commerce Corp., which will be the holding company for Cramps, Kerr Steamship Co., and other interests in the big eastern ship building and operation merger. Other directors named to date are H. F. Kerr, president of the Kerr company; Parmely W. Herrick, Cleveland; G. M. Dahl, vice president Chase National bank, New York; Joseph W. Harriman, president Harriman National bank, New York; John L. Ogden, F. B. Keech & Co., and P. M. Chandler, banker.

France Offers Pig Iron to Britain

Quotes Equivalent Of $31.75 On Foundry Iron, f. o. b., Antwerp, Agreeing to Ship 10,000 Tons A Week—"Lorraine In Competition For World Markets," French Declare—Higher Prices For Iron at Paris

BY FRANCIS MILTOUN
Paris Correspondent of The Iron Trade Review

FRANCE has an ambition to be an exporting country. It is a new role for her in the metal industries. Products of the Lorraine mines and plants are being sold in England. It is an innovation for France.

The French government has made an offer to the British government to send each week 10,000 tons of No. 3 foundry iron, made in Longwy, at a price of 217 francs, 50 centimes per ton, f.o.b. Antwerp. This at the present rate of exchange is close to £7 10s, and the equivalent of $31.75 per ton at the ruling price of the dollar in Paris.

The high sterling exchange makes this, from the point of view of the English, a practical export bonus on behalf of French producers. A well-informed journal states: "This is but the commencement, and it is possible that the results will be most dire for British furnaces. Lorraine competition is already making itself felt in world markets."

Various plants of Lorraine and Luxemburg have sent a representative to England, a former important official of the Stahlwerksverband, particularly having in view the possibilities of entering the English market with rolled plates and bands. The "new current of trade" is manifesting itself, and there is much conjecture as to England's attitude.

Jobbers were offering Longwy pig iron (1.5 to 3.25 per cent silicon and 1.5 per cent of phosphorus) delivered in the Paris district at $43.30 per metric ton in 10-ton lots recently. This corresponds to normal prices. Ferrosilicon is offered by the electro plants of the Alps, around Grenoble, at $54.70 a metric ton, net with prompt deliveries. This figure is considered interesting from the fact that the best quality of hematite is quoted at $51.60.

* * *

Favor French-Belgian Alliance

The finances of the Belgian metallurgical industry are in excellent condition. Reserves of Belgian companies were such before the war that with aid which is to come from reconstruction and readjustment in various quarters they will be on a productive basis before any other country of continental Europe.

A quasiofficial project for the establishment of a cartel between French and Belgian metal industries is receiving favorable consideration in Belgium and it is not wholly unacceptable on the French side of the border. It foresees the economic possibility of a combination which shall make the best possible use of the minerals of France and the coal of Belgium, the product to be marketed for joint account in its proper relative proportions. *Pourparlers* have been begun and are said to be progressing favorably.

The following comparison shows the physical condition of Belgian industry and progress made toward recovery:

Production in tons	May, 1913	May, 1919	Per cent
Coal	1,800,000	1,100,000	60
Coke	125,000	36,000	28.8
Iron	210,986	4,065	1.9
Steel	154,821	7,351	4.7
Steel (Martin)	17,717	7,579	42.
Semifinished material	127,075	3,431	2.7

* * *

Iron Production Reduced

Strikes in the metal trades show no signs of abatement in districts where the workmen have gone out for adjustment of relations bearing upon the new 8-hour law. Modifications in some instances have enabled many companies to operate on part time, whereas a fortnight ago their plants were shut down. The automobile industry, in particular, has suffered and it seems impossible for any automobile manufacturer in France to meet his program for the present year.

Prices have been affected by the reduction of working time to eight hours and the increase of wages. To a great extent the trade refuses to make prices for iron and steel for future delivery without a clause admitting readjustment of price, and has where possible, cancelled obligations for deliveries at prices which were fixed before the present stringent conditions were imposed by labor.

Blast furnaces are seeking to increase production but are hampered by difficulty in obtaining coke. The 8-hour law has reduced production, and additional shifts have added 50 per cent to the labor cost, and also have caused a labor shortage.

* * *

Strike Leaders Germans

The recent unrest in the metal trades and mining industries in old France naturally spread to the reoccupied regions. It is a question if the strikes there were not engineered by German sympathizers.

At Metz electrical energy was lacking, and for a part of a day street cars and lights were out of commission. Employes of the electric generating plant quit when the workmen of the factories went out. On the following day the Hagondange works of the Thyssen company shut down, and then the Paix plant at Knutange. At the latter plant, of the 2000 strikers, by far the majority were German. The French administrator of the district, summoned the strikers to return to work or they would be expelled from the territory of Thionville.

As at Knutange, the strikers at Hagondange were mostly German subjects, striking for what reason no one seems to know since the 8-hour demand had been granted the first of June, three weeks previous.

At the Forges de la Paix, in Knutange, the strikers committed considerable sabotage. They succeeded in drawing the fires of two blast furnaces, burning out the stoves and in allowing 15 tons of steel to solidify in the converters, in addition to seriously damaging the electric equipment throughout the plant.

At Rombas a detachment of French troops from Metz occupied the plant and was forced to take into custody many German leaders among the strikers. These were transported to the fortress of Metz and later expelled from French territory. Next day the strike at Rombas was ended.

* * *

Metal Institute Formed

There is being organized at Nancy, the center of the Lorraine industry, a metallurgical and mining institute. Its organization is being pushed by Mon-

sieur Petit, the doyen of the faculty of sciences of Nancy, and Monsier Leprince-Ringuet, engineer-in-chief of mines. It is proposed to work in close co-operation with the chamber of commerce of Nancy with a view to furnishing economic and industrial information throughout the region.

The Normandy iron ore mines, which were first brought to efficient production by the Germans just previous to the war, are being kept in operation by the French, and numerous plants for utilizing the ores have been erected while still others are planned. One of the most important is that of the Societe Normande de Metallurgie, which ultimately is expected to rank with the first steel producers of France. Its new plant at Mondeville is expected to be completed before the end of the year and will be capable of producing 400,000 metric tons of steel per annum. Its location is on the banks of a canal leading to the sea.

* * *

German Production Wanes

The German Steel and Iron Industrial association publishes the following statistics on production in Germany:

	April, 1918	March, 1919	April, 1919
Pig iron, tons.....	819,340	554,138	434,971
Steel, tons 1,192,148		654,893	442,442
Rolled steel and forgings, tons	849,381	493,544	337,378
Semisteel, tons ...	67,997	62,477	44,809

* * *

Form Export Body

With a capital of $2,000,000 a new association has been formed in France for the export of metal products. It is composed of middlemen and dealers in metals and metal products, of which the chief are Beraud-Sudreau et Cie, of Bordeau; Jacques Marchand et Cie, of Paris; Pichard, Pezieux et Cie, of Paris; the Societe des Fers et Metaux, of Rouen, and Gros, Pere et Fils, of Chalon-sur-Saone.

This is the first concerted action of French iron and steel manufacturers in seeking foreign markets on a scale of wide application, rather than in specialized lines.

With the acquisition of Lorraine, French steel production probably will exceed 11,000,000 tons, which leads the French to believe that with Germany's production at but 10,000,000 and that of England about the same, and the fact that the normal consumption of France is estimated at not more than 6,000,000 tons, 5,000,000 tons will be available for export.

Those best qualified to judge state emphatically that the exportation of iron and steel and their products is vital to the prosperity of the country, and the only means of liquidating, even in part, its debit balances abroad. It is unlikely that any of France's exports will go to the United States because for years to come France will be more or less dependent upon the United States.

* * *

Italy's Ore Dwindles

Italy's reserves of iron ore are estimated to be only 14,000,000 metric tons, distributed as follows: Traverselle, 1,000,000 tons; Val de Cogne, 5,000,000; central Italy, 2,000,000; Sardinia, 6,000,000. Production of pig iron at present is at the rate of 400,000 tons per annum.

This situation is not without concern for Italy's metal industry as it is thus shown that in about 20 years its reserves will be exhausted. On the other hand, it is believed that the Elba and Appenine discoveries will lead to a very considerable increase, if prospects are sustained.

Italy is not particularly endowed with minerals, but her metallurgical industries have recently advanced considerably. The creator of its steel industry was Benedetto Brin, a former minister of marine, the first to suggest steel ships for the fleet. Italy's production of 846,000 tons of steel per annum is shown to have been possible only by the importation of more than the equivalent of its own supplies of pig iron. The Elba ore mines made a profit of $1,900,000 in 1917.

The coal crisis also is disconcerting to Italian manufacturers. Great Britain promised Italy 750,000 tons of coal per month soon after the armistice, but is reserving the right to reduce this to 100,000 tons.

* * *

Ballbearing Plants Merged

The tendency of French automobile manufacturers is toward specialization. An organization has been formed to be called the Compagnie d'Applications Mecaniques. It is an outgrowth of the Societe Francaise de Roues Automobiles and the Societe Francaise des Roulements a Billes, manufacturers of removable wheels and ball bearings. Among the directors of the new company are Rene de Knyff, of the Panhard Co.; Robert Delaunay-Belleville, Robert Peugeot and Louis Renault.

The company is manufacturing ball bearings in its Ivry factory in the suburbs of Paris, employing 2500 workmen, and has just established another plant near Lyons.

Before the war ball bearings used in France chiefly came from Germany. Germany almost had a monopoly of the industry in Europe. The new organization is manufacturing 200,000 sets a month already, and is seeking to make French industry independent of foreign bearings. An export business is looked for, and a favorable market already has been found. In two years of operation the two parent companies, on a combined capital of $2,400,000, made profits of about $1,200,000.

* * *

Swiss Repair Equipment

The minister of public works recently was questioned in the French parliament as to whether it was true that French railway locomotives had been sent to a Swiss firm for repairs to the detriment of French labor. The reply was as follows:

"These locomotives have been sent to the shops of the Swiss federal railways by virtue of an accord passed with the Swiss government during hostilities for the repair of locomotives for the P. L. M. railway. The agreement dates from 1917, and it is a fact that the facilities offered by private industry in France at the present time are not sufficient to permit us to renounce this exterior aid."

* * *

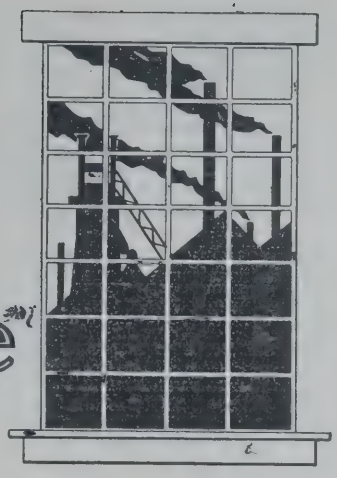
May Lose Spanish Ore

England is concerned over the possibility of the shutting off of Spanish iron ore because coal shipments to the peninsula are so considerably curtailed, owing to a lack of English coal and tonnage. Unless coal can be sent to Spain, Spanish ores cannot be sent to England. The return cargo is necessary for successful overseas shipping, whether by tramp or liner. The foundries have appealed to the board of trade in England to establish some means whereby the reciprocal traffic may be continued. Spain demands coal in exchange to the extent of 174,000 tons per month, which is a minimum. The return cargo amounts to something like 2,000,000 tons of Spanish ore in a year. England is badly in need of this ore, at least until France can spare ores from her Briey fields to feed British furnaces.

The Supply Manufacturer, the official publication of the American Supply and Machinery Manufacturers' association, now appears in magazine form, instead of as formerly on a mimiograph, and contains much of interest to the trade as well as being neat and attractive of appearance in get-up. F. D. Mitchell, secretary-treasurer of the association, is the editor of the publication.

Little Stories of Business Life





RAIL LIFE IN SUBWAY

UNDER the heading, "Your Life and the Life of a Rail," the *Subway Sun,* published by the Interborough Rapid Transit of New York, gives some facts about the rails it uses. It says:

"The subway is the safest railroad in the world. And we keep it safe. One thing, for instance, steel rails. The life of a subway express rail is about three years, one-third being replaced each year. It is done at night. Such rails, on the big steam railroads, last about 10 years. On sharp subway curves we replace rails in 90 days. We have been using about 38 miles, 3000 tons, of the best open hearth rails a year on the subway and about 30 miles on the elevated. Subway rails cost $30 a ton in 1914 but they cost $47 a ton now."

Incidentally, the *Subway Sun,* copies of which are posted in each subway car for the enlightenment of the passengers, has about the largest circulation of any publication in the world, provided most of the 2,000,000 daily riders are readers. The editor must be concise, as he is limitem to 50 or 100 words. The name of Theodore P. Shonts is signed to each article, so he presumably is the editor of the *Subway Sun.*



PLAYING SAFE

WOULD a New York chauffeur, skilled in threading the dangerous traffic of the big city, be good material for an airplane pilot? Early in the war it was sometimes said that these men, with their quick eyes and steady nerves, would be admirably qualified to make fliers. On the other hand, there were those who maintained that success in air work depended to a large extent on education and mentality. At any rate, there is one New York chauffeur who wouldn't be a howling success in the air. His name is Joseph and his hue is almost ebony. Not long ago he walked into the office of his employer, E. L. Goldschmidt, well known in the metal trades, on the seventeenth floor of the office building at 90 West street, New York. He was puffing and blowing so vigorously that a visitor asked him what was the trouble. And Joseph replied, between gasps:

"I jes done walk up all them sebenteen stairs. Yo-all don't catch dis nigger ridin' in none of them there elebators!"



MAKING LIGHT OF CLAMS

BUTTONS and acetylene would seem to be widely separated in the scale of industrial operation, yet they may have a close connection if experiments now under way at Keokuk, Iowa, yield results that are expected. Keokuk has cheap electric power from the great dam in the Mississippi river and thus offers advantages for operations in which cheap electric power is a factor.

In the making of calcium carbide from which acetylene gas is produced, one of the raw materials is calcium or lime, which is charged with coke and sawdust and other ingredients into a retort and heated in the electric arc. Nature has stocked the Mississippi river with millions of clams, harvested for their shells, from which scores of button factories punch out the button blanks. The remainder of the shell, usually more than half, is waste and small mountains of this material are found along the river. Now it is proposed to use the almost pure lime in the shells for making carbide. The resulting gas has a thousand uses in industry to which the clam never could become a party otherwise.



ASSURANCE WINS FAITH

AN employe who had saved $1000 in our employes' building and loan association fund came in one morning and asked for the full amount," said W. A. Grieves, assistant secretary of the Jeffrey Mfg. Co., Columbus, O. "He got the money. In about an hour he appeared at the window with it saying he wished to redeposit it. On being asked if the deal for which he said the money was needed had fallen through he replied that he did not have a deal on, but he just wanted to see whether he could get the money or not."

Mr. Grieves tells this story to illustrate the point that in industrial relations workers do not always care for what they seem to want—that in many cases all they want is the assurance that they can have what they want if they really want it. As for instance, employe representation.



CLOTHES DON'T COUNT

LIEUT. JEFFREY METZEL, chief engineer of the United States destroyer SHUBRICK, was discovered recently in a not altogether pleasant mood. He was examining a glaring streak of white paint across the blue blouse of a newly pressed suit which he was wearing. Investigation proved

the grouch to be against the government. The SHUBRICK, which is the latest boat to be accepted by the navy, was turned over before the paint was dry. It seems that the contractor's insurance policy on the destroyer ran out at noon two days before the paint would be dry and to cover the extra two days the insurance company asked for an additional $1000 in premium. By contract the government must pay the insurance while boats are in civilian hands and the extra $1000 looked a lot bigger than the cost of a navy blouse or two so the boat was accepted with the paint wet.



USING EVEN THE SQUEAL

PACKERS of meats have been said to have utilized everything about the hog except the squeal. Breaking up coal into its derivatives has gone this one better and not even the squeal is left when the process is completed. After the great variety of medicinal and mechanical compounds which cover most of the domain of chemistry in the organic field are extracted the residue from which nothing else can be taken under present knowledge is a pitch which is used for pavements and the like. But before the point of fractioning is reached an interesting development has been brought about. Gasworks have been developed of a type called "balanced" in which coal is treated in a retort for the production of gas for commercial use, coke being one of the by-products. In many plants this latter is sold for fuel but in the balanced plant it is used in a further process for the production of more gas. The entire carbon content thus is utilized in the making of gas by applying the two processes in succession.

Gary Believes We Cannot Be Isolated Nation

At a luncheon at the Hotel Vanderbilt, New York, July 30, given by Marcel Knecht in honor of four French journalists who recently arrived in this country and two other Frenchmen who will depart next week, Judge E. H. Gary, chairman of the United States Steel Corp., emphatically stated his belief that this country cannot remain independent on questions affecting the destinies of the world.

In beginning his address Judge Gary said he was a member of the Republican party. "I say that," he added, "not in way of apology but because some of those present, after they hear the few words I may utter, might suppose I was like the ordinary Democrat who is bound to approve everything and anything that the President says or does.

"I believe the American people, taken all in all, are about as affectionate in feelings of friendship toward France as the French people themselves. The friendship between these two countries has been so long continued and of such firmness that there is no fear of any interruption or limitation in regard to it.

"I was very much delighted by the letter which our President wrote to congress in transmitting the alliance or agreement, or anything that you may call it, which was signed before he left France. I know I am contrary to the supposed opinions of George Washington, Thomas Jefferson, and other statesmen of many years ago, but I think the doctrine of bewaring entangling alliances with foreign countries has ceased to be fashionable. Whether we like it or not we are entangled with foreign countries. The fact is that Germany tangled us up with France and England against our will and there was no alternative for us at the time.

"I doubt if the time will ever come again when this country can, or ought, to stand absolutely alone, acting independently of all foreign countries on questions affecting the destines of the world.

"There is a biblical quotation which says: 'No man liveth unto himself alone.' That will hereafter be applied to nations and read: 'No nation liveth unto itself alone.'

"This country might be independent in some respects, but in matters concerning world importance it cannot ever stand alone. And I am very glad to say that a very large majority of the people of this country are in favor of the league of nations and believe in the fact that President Wilson signed with France, in which America will forever lend its support to that country."

Much Steel Offered

Bids will be received by the Detroit district ordnance office up to 11 a. m. Aug. 8 on 21,986 tons of 155 millimeter shell forgings. Bids are to be accepted on lots of 300 tons or all. This material is at the plant of the Detroit Shell Co., Detroit.

The surplus property division of the office of purchase and storage division of the war department, will take sealed bids Aug. 14 on about 550 tons of horseshoes and 447 tons of mule shoes now in storage in various government warehouses. Bids will be taken at the office of the chief of the surplus property division, Munitions building, Washington.

Consolidate

Interests of Foundry Equipment Manufacturing Concerns

Elmer A. Rich Jr., president and principal stockholder of the Rich Foundry Equipment Co., Chicago, and V. E. Minich of the American Foundry Equipment Co., 52 Vanderbilt avenue, New York, have consolidated their interests with the result that Mr. Minich becomes president and Mr. Rich vice president of the latter concern. The American Foundry Equipment Co. operates a plant at Cleveland and has controlled the Sand Mixing Machine Co. for some years. These three corporations are now consolidated under the name of the American Foundry Equipment Co. Manufacturing headquarters will be continued in Cleveland, with general offices at 52 Vanderbilt avenue, New York City. The Rich Foundry Equipment Co. manufactures sand blast apparatus. Hammer core machines, charging trucks for malleable foundries and other types of foundry equipment. The Sand Mixing Machine Co. and the AmericanFoundryEquipment Co. manufacture sand cutting machines, sand blast apparatus of various types, and other devices. The Chicago plant of the Rich company will be moved to Cleveland and sites for a large new plant are now being examined. V. E. Minich of New York, has been in charge of the interests of the Sand Mixing Machine Co. and the American Foundry Equipment Co. for a number of years. He is also a director of the American Foundrymen's association and president of the Foundry Equipment Manufacturers' association. Mr. Rich is a director of the latter organization. He has been prominently identified with the manufacture of foundry equipment for many years. The officers of the American Foundry Equipment Co. as reorganized are as follows: President, V. E. Minich, New York; vice president, Elmer A. Rich Jr., Cleveland; secretary, R. A. Kelley; treasurer, O. A. Pfaff.

Additional warehouse space was recently leased on Small street, Pittsburgh, by the Hanlon-Gregory Galvanizing Co., Twenty-fourth street and the Allegheny Valley railroad, that city.

Shopmen's Strike Affects Mills

Inadequate Supply of Cars and Motive Power Forces Banking of Blast Furnaces at Chicago—Treadwell Engineering Co. Adopts Business Creed — Employment Service Advocates Continue Fight—General Labor News

CHICAGO, Aug. 4.—An acute condition has been created among steel mills in the Chicago industrial district by the strike of railroad shopmen, which went into effect Aug. 1. This interferes greatly with the supply of cars and motive power and inasmuch as steel mills are unable to produce unless they can also load on cars and ship immediately, it has been found necessary to curtail plant operations severely. As a result the Illinois Steel Co. has banked all but four of its blast furnaces at the Gary plant and the same number at the South Chicago plant. Unless the strike is settled and railroads are able to furnish cars and locomotives, these plants must be shut down entirely by the end of the week. The Indiana Harbor plant of the Inland Steel Co. has not been affected to an equal degree at this time, but preparations are being made to meet a similar emergency within a few days.

While both these interests have been operating close to 70 per cent of ingot capacity, the present situation makes their schedule of operation uncertain but the decline is entirely unrelated to market conditions. As a result of the steel plant curtailment, other steel concerns producing sheets, fabricated structural material and wire will be affected equally.

Plant Shut Down

Chicago, Aug. 4.—Following a strike by machinists and roll turners the plant of the Calumet Steel Co., Chicago, has been shut down for two weeks, and the plant will be gone over and necessary repairs made while the strike situation is being resolved.

Engineering Company Has Business Creed

An annual code of business ethics is embodied in the so-called "creed" of the Treadwell Engineering Co., Easton, Pa. The creed is as follows:

To respect my work, my associates and myself. To be honest and fair with them as I expect them to be honest and fair with me. To be a man whose word carries weight. To be a booster, not a knocker; a pusher, not a kicker; a motor, not a clog.

To base my expectations of reward on a solid foundation of service rendered; to be willing to pay the price of success in honest effort. To look upon my work as opportunity, to be seized with joy and made the most of and not as painful drudgery to be reluctantly endured.

To remember that success lies within myself; in my own brain, my own ambition, my own courage and determination. To expect difficulties and to force my way through them, to turn hard experience into capital for future struggles.

To interest myself, heart and soul in my work, and aspire to the highest efficiency in the achievement of results. To be patiently receptive of just criticism and profit by its teaching. To treat equals and superiors with respect, and subordinates with kindly encouragement.

To make a study of my business duties; to know my work from the ground up; to mix brains with my efforts and use system and method in all I undertake. To find time to do everything needful by never letting time find me or my subordinates doing nothing. To hoard days as a miser does dollars; to make every hour bring me dividends in specific results accomplished. To steer clear of dissipation and guard my health of body and peace of mind as my most precious stock of trade.

Finally, to take a good grip on the joy of life; to play the game like a gentleman; to fight against nothing so hard as my own weakness, and endeavor to grow in business capacity, and as a man, with the passage of every day of time.

Job Bureau's Union Allies File More Charges

Washington, Aug. 5.—Efforts of advocates of the continuation on a permanent basis of the United States employment service last week included filing with the joint committee of the house and senate considering the Nolan-Kenyon bill of letters from the heads of the international association of machinists and the union of boilermakers and shipbuilders charging the National Association of Manufacturers and the National Metal Trades association with not seeking the public good in their opposition to the bill. In the letters it was stated the associations are opposed to the federal employment service because it would hamper the success of their "black lists," "conducted in the guise of employment agencies."

William H. Johnston, president of the machinists, and Charles McGowan, representing the boilermakers, sent the letters to John M. C. Smith, of Michigan, chairman of the house committee on labor and also of the joint committee. They bear out substantially the expression of Peter F. Colon, an officer of the machinists' union, who, in testifying before the committee, said that if the federal service is taken away, "the blacklisting by the metal trades employment bureaus will be more effective."

4000 Shipbuilders Strike

Approximately one-half of the 8500 employes of the Sun Shipbuilding Co., Chester, Pa., went on strike July 31, for recognition of the union and for free access to the yard by labor representatives. President Pew received a committee of the men and it was decided to hold the question under advisement for a decision in a few days.

LABOR NOTES

A number of manufacturing plants in and near Scranton, Pa., are idle temporarily by reason of the strike of employes of the Scranton Electric Co., resulting in cutting off the supply of electric current.

Representatives of laborers at the Steelton plant of the Bethlehem Steel Co., on July 21, presented to Frank A. Robbins Jr., general manager, a request for a further increase in the wage scale. The men received a reply saying that it was impossible to grant their demands.

Molders at the plant of the McDonough Mfg. Co., Eau Claire, Wis., have returned to work after a strike of 10 weeks' duration to enforce a demand for 80 cents an hour. The men came back when the company offered to pay 67 cents. The former rate was 62½ cents.

The Dominion Sheet Metal Corp., Hamilton, Ont., has inaugurated a profit sharing plan. Eight per cent preferred stock will be offered to employes at par, although the stock has been selling at from 110 to 112. The employes are to pay at the rate of 2 per cent per month and will be credited with the 8 per cent dividend at the rate of 2 per cent each quarter.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Lunkenheimer Co., Cincinnati, manufacturer of valves and engineering appliances, at a cost of $2,000,000 will greatly increase and improve its manufacturing facilities by building a complete new plant. The site selected for the undertaking, comprises about 70 acres in Carthage, a suburb of Cincinnati, on the Toledo division of the Baltimore & Ohio Southwestern railroad. Plans for the new buildings are being prepared and it is expected that work on the new structures will be started within the next few months. The new plant will have triple the floor space of the present works at North Fairmount, Cincinnati. The buildings will be of the 1, 2, and 3-story types, of steel and concrete construction, and there will be provided all modern devices for the manufacture, handling, and transportation of raw materials, part finished and finished products. The welfare of the employes will be given special consideration. About eight acres, opposite the main plant site, has been reserved as a recreation center, upon which will be erected an assembly hall, club rooms, base ball grounds, tennis courts, swimming pool, etc. Upon this site will also be erected a dining room capable of accommodating 1000 employes at one time.

The Lunkenheimer Co. moved to its present location in 1900. Its plant then comprised two manufacturing buildings. Many additional buildings have been erected since that time.

* * *

THE Metal Hose & Tubing Co., Raymond and Tillary streets, Brooklyn, N. Y., will build a 3-story, $75,000 building as a result of increasing its capital. It will install about $50,000 worth of equipment, none of which has yet been placed. A new power house will require two 150 horsepower return tubular boilers, feed water heaters, etc. New equipment will be installed in the machine shop, brass shop and brass foundry.

* * *

CONSTRUCTION has been started on a new 12-ton open-hearth furnace, two core ovens and a double annealing furnace for the Pittsburgh Rolls Corp., Forty-first street and the Allegheny Valley railroad, Pittsburgh. Foundations for the new units have been laid. The open hearth and the double annealing furnace are being built by the S. R. Smythe Co., Inc., Pittsburgh, while the Pittsburgh Rolls Corp. is building its own core ovens.

* * *

THE Norton Co., Worcester, Mass., is nearly ready to ship to the Buffalo plant of the Aluminum Co. of America the fifth roll grinding machine of its class, the largest in the world. It weighs more than 62 tons and will take rolls 54 inches in diameter and 21 feet long that weigh 50,000 pounds.

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AN electric furnace for melting and refining aluminum has just been shipped to the Dayton Engineering Laboratories, Dayton, O., by the Electric Furnace Co., Alliance, O. This furnace has a hearth capacity of 500 pounds and a melting rate of 200 pounds of aluminum per hour. It is equipped with a double charging door in the front and rear.

* * *

THE foundry operated by Lord, Stone & Co., Otter River, Mass., and recently purchased by W. L. Shaughnessy and J. P. Carney, of the William L. Shaughnessy Co., Gardner, Mass., manufacturer of casket hardware, will be incorporated with a capital stock of $50,000 and known as the Otter River Foundry Co. The new company will continue the manufacture of stoves which the foundry has produced for years.

* * *

FABRICATED structural steel will be produced by the Ohio Structural Steel Co., recently incorporated in Ohio with a capital of $75,000 by J. M. Heltzel and others of Warren, O. The company will double the capacity of a plant recently purchased at Newton Falls, O. Mr. Heltzel and others connected with the enterprise are officers of the Heltzel Form & Iron Co., of Warren, manufacturers of steel concrete forms for construction purposes.

* * *

THE Kissel Motor Car Co., Hartford, Wis., has started the retooling of the original body shop, which was abandoned several years ago with the completion of a new factory as an addition to the main works. Since then the body shop was used as a storehouse. A force of 150 to 200 men will be added at once. The additional space will be used largely for making sheet metal bodies for the speedster types of passenger cars and cabs for motor trucks.

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INCORPORATION of the Lumen Bearing Co., Youngstown, O., with a capital stock of $250,000 by H. P. Parrock and others has been announced. A short time ago Mr. Parrock purchased a manufacturing site of several acres in Youngstown and it is understood that construction of a plant will be begun at an early date. Mr. Parrock formerly resided in Youngstown but went to Buffalo where he engaged in the manufacture of bronze bearings used in steel mills.

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THE Smith Gas Engineering Co., Dayton, O., has received a duplicate order for a gas producer for the Kellogg Toasted Corn Flake Co., Battle Creek, Mich. The plant when completed will replace 450,000 cubic feet of city gas per day.

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CONTRACTS have just been awarded to B. Floersheim & Co., Farmers bank building, Pittsburgh, for all piping materials and its construction for the new steel plant being erected by the Weirton Steel Co., Weirton, W. Va. Included are high and low pressure steam, water, air, oil, gas and hydraulic systems for boiler and power houses, seven 100-ton open-hearth furnaces, blooming and bar mills as well as seven waste heat boiler installations. This company has just completed all piping contracts for the Weirton company's blast furnace installations which now are in operation. A similar contract recently was awarded the Floersheim company by the Crucible Steel Co. of America, for piping contracts for its Midland, Pa., plant. It recently completed a sizable contract from the McKeesport Tin Plate Co., McKeesport, Pa.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE American Ore Reclamation Co., 71 Broadway, New York City, which controls the Dwight & Lloyd process for the treatment of iron bearing materials, has issued a license to the Marting Iron & Steel Co., Ironton, O. Work already is under way on a sintering plant for the treatment of blast furnace flue dust, pyrites cinder and roll scale. The plant will consist of one standard Dwight & Lloyd machine. Throughout it will be of the latest type and will be constructed of steel. Practically all of the important units will be at or near ground level. The plant will have a capacity of 150 tons of sinter daily when treating flue dust alone, and a considerably larger capacity when pyrites cinder or roll scale is mixed with the flue dust. The American Steel & Wire Co. has placed in operation the Dwight & Lloyd sintering plant, which has just been completed, at its Donora, Pa., works. The installation throughout is of steel construction and contains one Dwight & Lloyd double-length sintering machine, the capacity of which is 300 tons of sinter daily from blast furnace flue dust. The Carnegie Steel Co. at its Farrell, Pa., works is constructing a Dwight & Lloyd plant of similar design and capacity.

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WITHIN the past month the McLain-Carter Furnace Co., Milwaukee, has installed 5-ton oil-fired open-hearth furnaces in the plants of the Lima Steel Casting Co., Lima, O., and the McDougall-Duluth Co., Lima, Minn.

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BRICK for relining its furnaces at Cumberland Furnace, Tenn., has been ordered from the Ashland Fire Brick Co., Ashland, Ky., by the Warner Iron Co., Nashville, Tenn. The Ashland company will soon ship a complete blast furnace lining to the Illinois Steel Co.'s plant at Joliet, Ill.

* * *

THE Montreal representatives of H. Boker & Co., New York, which were operating under the name of H. Boker & Co., have changed their name to the Pilot Steel & Tool Co., Ltd. The company is now a Canadian corporation, although continuing to represent H. Boker & Co. It also will act as Canadian agents for Jonas & Colver, Ltd., Sheffield, Eng., makers of high-speed steel and steel products.

* * *

THE A. M. Machine Works, 721 West Washington boulevard, Chicago, has been formed and has established a plant for cylinder grinding and general machine shop work. The plant has been equipped with new machines and is up-to-date.

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IMPROVEMENT in new business booked by the Western Malleables Co., Beaver Dam, Wis., has made it desirable to reopen the South street foundry, which has been idle several months. During that time, though, the Elm street foundry was worked at full capacity, a sufficient overflow of orders has developed to make possible the resumption of the South street plant at approximately normal output.

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THE Detroit Reamer Salvage Co., Detroit, has changed its name to the Grinding Process Tool Co. The business of this company when it was organized six years ago was to remake wornout reamers, but the business has since expanded until it now deals with all kinds of precision metal-cutting tools. Old tools are remade into smaller new ones. The capital of the company has been increased substantially. Officers of the company are: S. A. Cogsdill, president; W. W. Blakely, secretary-treasurer, and R. G. Lambe, sales manager.

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P. H. JOYCE, president of the Illinois Car & Equipment Co., Chicago, and also interested in the Steel Car Co., of Cleveland, the Liberty Car Co., of Chicago Heights, the Illinois Nut & Bolt Co. and the Southern Wheel Co., of St. Louis, is bringing about a consolidation of all these interests, probably under the name of the Liberty Car Wheel Co., of Indiana. A site has been purchased at Hammond, Ind., on which a large plant is to be built. Associated with Mr. Joyce in this consolidation are John E. Fitzgerald, vice president of the First National bank of Hammond; Peter W. Meyn, president of the Lake County Savings & Trust bank, Hammond; Bryan Tighe, vice president of the Englewood State bank, and John W. O'Leary, former president of the Chicago Association of Commerce. An issue of securities to float the new company is now being negotiated.

* * *

THE stockholders of the Moline Iron Works, Moline, Ill., until recently known as the H. W. Cooper Saddlery Hardware Mfg. Co., have decided to double the present capacity and to erect suitable factory buildings. The first unit will be a 2-furnace malleable foundry and work upon the extension will start at once. Capital stock of the company is to be increased to $500,000 to take care of the rapidly growing business. H. W. and C. J. Cooper have retired from the active management of the company. Officers chosen for the coming year are as follows: President, L. E. Nutt; vice president, J. J. Creedon; treasurer, J. T. Miles; and secretary, L. E. Dorman.

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TWO 105-kilowatt electric furnaces of the tilting type with hearth capacities of 1500 pounds each recently were installed at the plant of the Capital Brass Works, Detroit, by the Electric Furnace Co., Alliance, O. The Buick Motor Co., Flint, Mich., has just purchased an electric furnace of the same type for melting phosphor bronze. The Electric Furnace Co. also has installed a 50-kilowatt rectangular tilting type electric furnace in the jobbing foundry of the Akron Bronze & Aluminum Co., Akron, O. This furnace, which has a hearth capacity of from 300 to 500 pounds, will be used to melt gunmetal, phosphor bronze and red and yellow brass. A furnace has just been shipped to the Dayton Engineering Laboratories, Dayton, O., to be used for melting and refining aluminum.

Wall Street Feels Money Demand

Federal Reserve Board Will Not Take Action to Check Call Loans if Latter Do Not Threaten Essential Needs — Glass Outlines Financial Program — High Living Cost Agitates — General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

DENIAL by the federal reserve board of the report that it was to take drastic action to curb the call money market did not suffice last week to reassure Wall street with respect to the available supply of money for speculation. As a matter of fact the tremendous drains upon capital funds and banking credit predicted some months ago are beginning to be felt, with the result that time money in the New York center is getting scarce and call money rates are leaping to high levels, reaching 20 per cent on one day.

The money for stock market purposes has been coming from the surplus reserves of interior banks. But now with the rising tide of demands for credit to move the crops, to finance business to meet maturing and new foreign loans, and to provide the government with operating funds, interior banks are calling their money back home, with the result that the stock market is threatened with something of a money stringency. Naturally the high prevailing call money rates will attract funds to Wall street, but banks would hesitate to desert the legitimate needs of business and industry to cater to the wants of the stock market. It is only in the event that the call loan market shows a tendency to absorb more than its rightful share of credit, that the federal reserve board probably will take direct action to frustrate it, thereby following up its already openly expressed disapproval.

Outlines Federal Disbursements

In connection with the treasury's requirements Secretary Carter Glass has sent out a statement showing that disbursements for the fiscal year of 1920 should not exceed $6,500,000,000 which according to his present estimates will be entirely covered by revenues from various sources.

Many are inclined to doubt if business will yield such a huge amount of taxation in view of the passing conditions and reduced earnings in many lines. An encouraging feature of Mr. Glass' report is that indicating the reduction in government expenditures, which reached a maximum $2,060,000,000 in December, 1918, and fell in June to $809,000,000 and in July to a still lower level.

The total public debt on June 30, he predicts, when the whole cost of the war presumably will have been financed, will be $26,516,506,160. About $10,000,000,000 of this represents loans to the allies, leaving a net debt of more than $16,000,000,000.

For the rest of the calendar year the treasury at intervals will issue a total of $3,500,000,000 certificates of indebtedness. During this same period there will mature and be paid loan and tax certificates to the amount of $2,997,540, making the net increase but $502,459,000. If revenues fail to cover these certificate issues, a short time note offering to banks will be made.

High Cost of Living Problem

Agitation over the high cost of living was crystallized last week by the appearance of a committee of railroad brotherhood heads before President Wilson with a warning that unless steps were taken to reduce the cost of living a further wage increase would be asked by the railroad employes. The railroad employes received an increase of $900,000,000 last year over their 1917 wages. One of the chiefs later issued a statement in which he denounced "profiteering" and declared the country is nearer war now than when the "kaiser threw down the gauntlet," and that workmen are ready to follow the "red flag or anything else."

To the credit of the brotherhood chiefs they openly recognize the futility of continuing the vicious cycle of wage increases followed by cost of living boosts and then more wage increases. They complain of the depreciated purchasing power of the dollar, $5 being worth now, they say, just 215 cents. Oct. 1 is fixed as the date by which wages must be increased or the cost of living lowered.

Will the President or his administration aids be able to lift the dollar to its old value? It is doubtful. High costs have been created by deep fundamental economic causes which will not vanish at the waive of a magic wand. Only the operation of long corrective processes will suffice to bring results. Many economists contend we are on a high price level, which will be lowered only gradually. Cases of profiteering by food distributors or otherwise when discovered of course, should be corrected by law, but generally speaking the same economic causes are behind all high prices. The government itself by maintaining the price of wheat at $2.26 is doing more than any other agency to keep food prices high, assuming that with a free market for wheat the world market price would be less than the United States guaranteed price, an assumption not accepted by all authorities.

Facts Underlying High Prices

What are the causes for the present high prices? During the war the prices soared because government and the public competing against each other bid up goods and labor which both wanted. This sent up the cost of living and labor demanded and received more wages, which put a prop under producing costs. Since the war wages have remained high, while the world with a tremendous shortage of goods has either entered the American markets or is expected to do so soon. This worldwide "scarcity demand" is largely responsible for continuation of high levels. Would American labor be willing to pay for cheaper living the price of checked exports and all this might mean in business distress and unemployment? Would not this remedy be disastrous both at home and abroad? That is the big question which underlies the whole problem.

Prices in America, it is true, are near the peak for all times, but in England, Italy, France, Germany and many other nations of the world they are even higher. An exhaustive study by experts of the war industries board has established this fact. So long as prices remain high in the rest of the world they can not easily fall here. Not until normal conditions are restored, and the world's stock of goods is replenished can prices drop materially. Labor can help in this task by increasing its efficiency and speeding up production and avoiding wasteful, uneconomic strikes, and capital can aid by employing every means at its command through scientific man-

agement and improved machinery toward the same end. Deflation of the excessively expanded currency and economy by government and the individual also will prove powerful aids.

Allis-Chalmers Net Less

Slight falling off in earnings is reported by the Allis-Chalmers Mfg. Co., Milwaukee, for the quarter ended June 30. Profits after federal taxes were $926,945 compared with the net profits of $996,024 for the preceding quarter, and net profits of $1,883,755 for the June quarter 1918. The company had unfilled orders on hand June 30 totaling $14,756,197 against $17,921,117 on March 31 and $28,962,096 on June 30 last year. The statement for the quarter ended June 30 and for the half year ended the same date compares with corresponding periods of 1918 as follows:

	1919	1918
Sales billed	$7,734,025	$9,238,079
Net profits for quarter	*926,945	†1,883,755
	1919	1918
Sales billed	$16,336,917	$15,827,906
Net profits for half year	*1,922,969	†3,279,993

*After federal taxes.
†Before federal taxes.

Savage Arms Gains

Although the second quarter report of the Savage Arms Corp. shows a decline in total earnings of $2,300,786, the surplus for the period as compared with the corresponding quarter of 1918 discloses a gain of $133. This is because the item for tax reserves was tremendously reduced while dividends also were less. The income account for the three months follows:

	1919	1918
Total earnings	$793,883	$3,094,669
Interest		7,253
Taxes, etc.	350,272	2,621,801
Net	$443,611	$465,615
First preferred	175	8,750
Second preferred	3,910	6,262
Balance	$439,526	$450,603
Common dividend	116,222	127,432
Surplus	$323,304	$323,171

Taxes Are Less

The General Chemical Co. reported a surplus of $1,780,432 after charges and federal taxes for the six months ended June 30. This compared with the $3,262,468 for the corresponding period one year ago. Dividends were maintained but the insurance fund reserve dropped $130,000 and the depreciation and tax reserve was less by $800,000 than the first half of 1918.

Buys Plant Site

The Verona Steel Casting Co., a branch of the Standard Steel Car Co., has purchased a tract of nine acres near Verona, Pa., and it is reported the company will build an additional plant.

Brazilian Trade Gains

The United States during the last five years has become the chief factor in Brazil's import trade, according to the National Bank of Commerce, New York. In 1918, when Brazil's total imports aggregated $247,000,000, the United States supplied commodities valued at $89,000,000. British shipments to Brazil amounted to $50,000,000; Argentine, $47,000,000, and French, $12,000,000. In 1913 the United Kingdom led in exports to Brazil, supplying her with goods valued at $80,000,000 out of total imports of $326,000,000. Germany sent goods amounting to $57,000,000; the United States, $51,000,000; France, $32,000,000, and Argentina, $24,000,000.

Financial Crop Ends

The Bull Tractor Madison Motors Corp., Anderson, Ind., has increased its capitalization from $1,000,000 to $3,000,000.

* * *

Increases of capital stock and debt have been filed at Harrisburg, Pa., by the following companies: Christiana Machine Co., Christiana, stock $40,000 to $125,000; Lancaster Iron Works, Lancaster, stock, $300,000 to $500,000, and Susquehanna Collieries Co., Philadelphia, debt, $8,300,000 to $11,900,000.

* * *

The business of the Howlett Construction Co., Moline, Ill., builder of Williams, White & Co. coaling stations, has been bought by the Bay City Foundry & Machine Co., Bay City, Mich. W. E. Howlett, manager and engineer of the Howlett company, will be manager of the railroad coaling station department of the new company.

* * *

Douglas Bros. Foundry, pioneer industrial plant at Aberdeen, Wash., has been sold to a combination of local and outside capitalists represented by H. P. Hoonan Jr. and S. P. Knight, who will manage the plant. The consideration was $100,000. The company established in 1897, does a large foundry business for logging camps and mills.

* * *

Sale of the Robert Lanyon Zinc & Acid Co. to the Eagle-Picher Lead Co. has been announced in St. Louis. The consideration was $360,000. The deal was made between William Lanyon, of St. Louis, president and sole owner of the company, and G. S. Picher, of Chicago, president of the Eagle-Picher Lead Co. The Lanyon company operates a plant at Hillsboro, Ill.

Buying Starts

In Sulphate of Ammonia by Fertilizer Interests—Await Phenol Offering

New York, Aug. 2.—After remaining out of the market for a number of weeks, fertilizer manufacturers are again taking interest in their sulphate of ammonia requirements. No large orders have been placed, but inquiries are more numerous. With somewhat of an improvement in activity, prices are better defined now around $3.25 to $3.40 on contract business, and $3.40 to $3.65 on spot, on 100 pound lots at producers' plants. Buying for shipment to Java and Japan has tended to keep prices at the Pacific coast firmer than those for export business along the Atlantic seaboard. Sulphate of ammonia in double bags at the Pacific is holding around $4.60, a comparatively slight decline, as against $4 at the Atlantic seaboard, where shipments until of late went around $4.60 to $4.75. Export business in the East at no time this year has been active and sellers state that European buying in this country at present is exceptionally small.

Delay continues in the marketing of government phenol, and while it is pretty generally conceded that this material will be sold through one or two producers, no official announcement has been made to this effect. For the time being, trading in phenol has virtually been suspended, and the market is purely nominal.

A fairly good amount of trading in naphthalin continues, with the market unchanged at 6½ to 7½ cents for flakes, and 8½ to 9½ cents for balls. The situation in benzol, toluol and solvent naphtha is largely unchanged, with demand good and supplies scarce.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.24 to .28
Toluol	.25 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

Obituaries

BENJAMIN F. BARNES, inventor of machine tools and especially drilling machines, and president of the Barnes Drill Co., Rockford, Ill., died suddenly July 29, while on a train at Eau Claire, Wis., on his way home from a vacation. Mr. Barnes was born in Mount Morris, N. Y., March 5, 1853, and for about 25 years prior to 1899, he was superintendent of the W. F. & John Barnes Co., Rockport. He then organized the B. F. Barnes Co., and was president from 1899 until 1907, when he organized the Barnes Drill Co., of which he was president from the start. Mr. Barnes was noted for having four hobbies, one for each season of the year. In the spring he hunted mushrooms; in the summer, his chief diversions were automobiling and fishing; in the fall, he spent much time hunting and in the winter, cabinet making received much of his attention.

William Segar Phillips, of Phillips, Doup & Co., Brooklyn, N. Y., manufacturers of steel barrows, died of heart disease, July 29, at his home in that city.

Michael P. Berglas, president of the M. P. Berglas Mfg. Co., Brooklyn, N. Y., makers of plumbers' supplies, died July 31, at his home in that city, aged 50.

Maj. John Aldrich, for many years superintendent of the Wardwell Needle Co., Laconia, N. H., and at one time an owner of the Cole Mfg. Co. of that city, died at his home in Lakeport, N. H., July 29, aged 95 years.

Henry B. B. Yergason, formerly advertising manager for Rogers, Brown & Co., Cincinnati, died on July 29, in New York City. For some time he has been sales manager for the Kerner Incinerator Co., Cincinnati. He was 43 years old.

Janes Nelson Raymond, founder and retired president of the Raymond Lead Co., Chicago, shot and killed himself at his home Aug. 1. He was 72 years of age, born in New York, and in 1880 organized the Raymond Lead Co. About 10 years ago he sold the company to the United Lead Co., of which he had been a director since.

Edward Doud, one of the pioneer ironmasters of the South, died at the home of his son, R. B. Doud, Allen's Creek, Tenn., July 21, at the age of 84. He was born in Newhaven, Vt., Nov. 8, 1834, and was graduated from the Middlebury academy in civil engineering. In 1854 he went to the Minnesota frontier where he made a number of the original surveys in the southeastern part of the state. Later in 1873 he moved to Chattanooga, Tenn., to become associated with the old Chattanooga Iron Co., operating the second coke furnace to be built



BENJAMIN FRANKLIN BARNES

in the South. He afterward built the Sewanee furnace at Cowan, Tenn., and Citico furnace at Chattanooga, which were among the first coke furnaces in the South. He also built and operated plants at Sheffield, Ala., Poughkeepsie, N. Y., Hamilton, and Midland, Canada, retiring from active blast furnace work in 1900.

Henry H. Roberts, Philadelphia business manager of *The Iron Age*, and prominent in the field of trade paper advertising, died July 26, at Atlantic City. Misfortunes having overtaken his family in his childhood, Mr. Roberts was educated in an orphange in Philadelphia, his native city. As a young man he became connected with the Philadelphia office of *The Iron Age*, where he displayed marked ability as an advertising man. Subsequently he was placed in charge of the St. Louis district for that publication. His jurisdiction later was extended to cover the Chicago territory. In 1897 he was given the title of Chicago manager. Returning to the Philadelphia district in 1905, he severed his connection with *The Iron Age* after one year and later became advertising manager of *The Hardware Reporter*, St. Louis. When that publication was consolidated with *The Hardware Age*, in 1913, he was again placed in charge of the Philadelphia office of *The Iron Age*. Mr. Roberts enjoyed a wide acquaintance and a position of standing in his chosen field.

Adopts Democracy Plan

A plan for industrial democracy has been inaugurated by the Doehler Die-Casting Co., Brooklyn, N. Y. At a recent meeting of the Executive club, composed of executives of the company, H. H. Doehler, president of the company, outlined the company's policy with reference to the plan. "Financial success alone brought about by denying others health, happiness and justice is like tainted money and is not the kind of success I care for," he said, emphasizing the point that employes are to be given a square deal. The plan is carried out through an employes' association, and in addition to representation it provides for sick and death benefits. To further assist in its success the company has begun publication of *Doehler Topics*, a monthly paper with items relating to the association and its members.

Between 350 and 400 employes of the Power & Mining Machinery Co., Cudahy, Wis., are out on strike because of the refusal of the company to grant an increase of 10 cents an hour to all employes. The company, which is a branch of the Worthington Pump & Machinery Corp., expressed a willingness to bring the entire payroll up to the level of the prevailing rates for each class of work in Milwaukee shops.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, recently purchased a tract of about 110 acres, situated in Wilkins township, not far from its research laboratory, on which it proposes to construct houses to accommodate 50 families. The houses are to be sold on easy terms to employes.

July Shatters Tool Precedents

Usual Dull Period Supplanted This Year by Miscellaneous Buying Which Rolls up Sizable Aggregate—Purchases Made by Varied Industries—General Motor Corp. Files Large Orders—Many Cranes Sold

SHATTERED precedents followed each other in quick succession in the machine tool industry during the recent world war. It would seem that some precedents are being broken in peacetime. Unlike other July periods which notably have been dull, the past month has rolled up large totals in machine tool and equipment sales. The forepart of the month lagged somewhat but lately trading took a decided spurt and in many districts exceeded that of June. It is stated by one prominent tool dealer in the Middle West that a curve or chart of June sales as compared with former years would show a decided upward turn.

Small orders have predominated and these mostly have been for light machinery for rounding out machine shop and toolroom equipment. Throughout the month there appeared to be a marked hesitancy to close on the part of large buyers. No explanation is offered for this disinclination to buy although it has been stated that a real start by the railroads would encourage other large buyers. Advancing prices from 5 to 20 per cent on different types of machinery seem to refute the judgment of various tool users that prices are to come down.

Many Industries Make Purchases

FROM diversified industries rather than from one particular line, came the machine tool orders in July. Steel manufacturers occupied a prominent place. The Bethlehem Steel Corp. bought 10 machines for a plate shop. The Truscon Steel Co., Youngstown, O., purchased several tools. The Hydraulic Pressed Steel Co., Cleveland, issued a list of 12 machines. The Standard Steel Corp., Milwaukee, wanted a complete list of metalworking equipment. Many other industries came into the market as is indicated by the following names: The Ohio Oil Co., Findlay, O., bought pipe machines; the Marion Steam Shovel Co., Marion, O., purchased considerable equipment in Cleveland; the A. B. See Elevator Co., Jersey City, N. J., bought $70,000 worth of machines in the East; the Chelsea Screw Co., Chelsea, Mich.; the American Can Co., Newark, N. J.; the Singer Mfg. Co., Elizabeth, N. J.; and the Morris Fertilizer Co, Atlanta, Ga., all issued fair sized lists. The General Electric Co., Schenectady, N. Y., bought turret lathes, grinders, etc., while the Victor Mfg. & Gasket Co., Chicago, doubled its original request for 10 punch presses.

Automobile and Accessory Manufacturers Buy

AUTOMOTIVE industries which have occupied first place among tool buyers for many months, continue to take large numbers of tools. Confirming orders in large numbers came to Cleveland from the General Motors Corp., Detroit, on its huge purchase made in June. The Studebaker Corp., South Bend, Ind., made some purchases but is understood to be still in need of 65 or 70 turret lathes. The Paige-Detroit Motor Car Co., Detroit, installed equipment to double its output. The Allen Motor Co., Columbus, O., purchased $50,000 worth of machines and announced its intention of buying $50,000 worth more. The Chandler Motor Car Co., Cleveland, the Buick Motor Co., Flint, Mich., and the Ford Motor Co., Detroit, all made sizable purchases. The Midwest Engine Co., Indianapolis, bought turret lathes and inquired for automatic screw machines and multiple spindle drilling machines. The Wright Roller Bearing Co., Philadelphia, bought 32 grinders, several lathes and other new and used equipment.

Many Cranes Bought in July

MOST of the heavy equipment sold in July consisted of cranes. Steel manufacturers in the Pittsburgh and other districts, however, who are expanding extensively, bought much mill equipment. Perhaps the largest purchase of this kind was made by the Eastern Rolling Mills Co., Baltimore, which purchased $700,000 worth of mill and crane equipment. The Weirton Steel Co., Weirton, W. Va., also made a large purchase. The largest crane award of the month was made by the Charlestown, W. Va., ordnance plant. It is understood this amounted to $2,000,000. The Bethlehem Steel Co. issued several crane inquiries during the month and has awarded 19 for its various plants. Crane builders look for an announcement of large crane needs for Staten Island docks, since New York City announced an appropriation of $15,000,000 to erect cargo-handling piers.

Tool Exporters Have Good Month

EXPORTING of machine tools is on the increase. Frequent orders come from England and France. A few orders reached Cincinnati from Spain and South America. Norway and Sweden also are asking for American-made machinery. The Wern Machinery & Engineering Co., New York, sought 10 overhead bridge cranes for the Swedish Royal railways. The Standard Oil Co., New York, revived its list of 40 tools for Roumania after much revising. The Framerican Industrial Corp., New York City, distributed a list of 28 large tools for a steam turbine plant in France. Anthony Gibbs, 61 Broadway, New York, closed bids on five cranes for France and Viehle, Blackwell & Buck, 49 Wall street, New York, issued a list of mine cranes for South Africa. The Southern Sales Corp., New York, wanted three large tools for Cuba, and Armour & Co., Chicago, bought several for export to Brazil. Cleveland, Chicago and Detroit dealers were asked to bid on a list of 16 tools for Japan.

Scattered Buying by Railroads and Shipbuilders

RAILROAD buying has not been much of a factor for some time, while the shipbuilding industry has seen a little revival. The Pennsylvania railroad ordered a few turret lathes for Logansport, Ind., but it is understood not to have closed on its eight cranes for Stark, O. The New York Central issued a small list of tools in the East, as did the Chicago, Burlington & Quincy, the Santa Fe and Atchison, Topeka & San Francisco in the West. The Newport News Shipbuilding & Dry Dock Co., Newport News, Va., issued a list of 24 machines for Richmond, Va. The Charleston Dry Dock & Machine Co., Charleston, S. C., was incorporated at $2,225,000 and is expected to issue a list soon. The Mare Island, Cal., navy yard bought seven bridge and 20 wall cranes.

Big Tool List Out in Cleveland

Sellers Hope Other Manufacturers Will Follow The Lead of White Motor Co.—300 Machines Are Wanted—Miscellaneous Demand Keeps Lively in all Market Centers—Lathe Prices are Again Advanced

ISSUANCE by the White Motor Co., Cleveland, of a list of 250 to 300 tools constitutes the biggest development of the past week's machinery market. Sellers are interested in seeing if the action by this large interest will lead into the market a number of other important buyers who apparently have been waiting for somebody to make a start. Other automobile and tractor manufacturers are in the market or soon will be.

While the demand in all tool-selling centers continues merely for lighter equipment a bettered movement of heavier types is noted, especially in Chicago. Trading in all districts comprises miscellaneous orders from varied industries and in the east good sales of fabricating equipment have been made to such companies as the Winnisimmet Shipyard Co., the Gould Construction Co., and Fraser, Brace & Co., as well as a number of smaller plants in the vicinity of New York City. Of great interest to the machinery trade in general is the announcement carried elsewhere in this issue of the plan for arriving at selling prices on the machine tools owned by the government. This supplements the plan for inventorying this equipment announced exclusively in the IRON TRADE REVIEW of June 12.

Out of Washington comes the report of a sale by the British government of 632 tools in war munition plants, 307 of which originally were made in this country. This is indicative of the extent the tool builders of the United States contributed aid to England during the first years of the war. The American Multigraph Co., Cleveland, is offering a large list of war plant tools for sale. It is understood the Winton Co., that city, desires to dispose of a large number of machines made idle with the coming of peace.

Advancing prices continue to be noted. Lathes have gone up again between 10 and 15 per cent and a reason given in Pittsburgh is an advance in wages to machinists. This is coupled with a notice of a possible strike by the machinists for higher wages at Cincinnati. This lathe increase has resulted in some buyers closing on their requirements. An advance of 20 to 25 per cent on fabricating equipment is expected soon.

The crane market continues to manifest considerable life. The Mare island navy yard is reported to have contracted for 27 bridge and wall cranes. The largest crane inquiry current has been issued by the American Locomotive Co., which wants 15 overhead cranes. Steel manufacturers bought a number of cranes the past week in Pittsburgh, Cleveland and elsewhere.

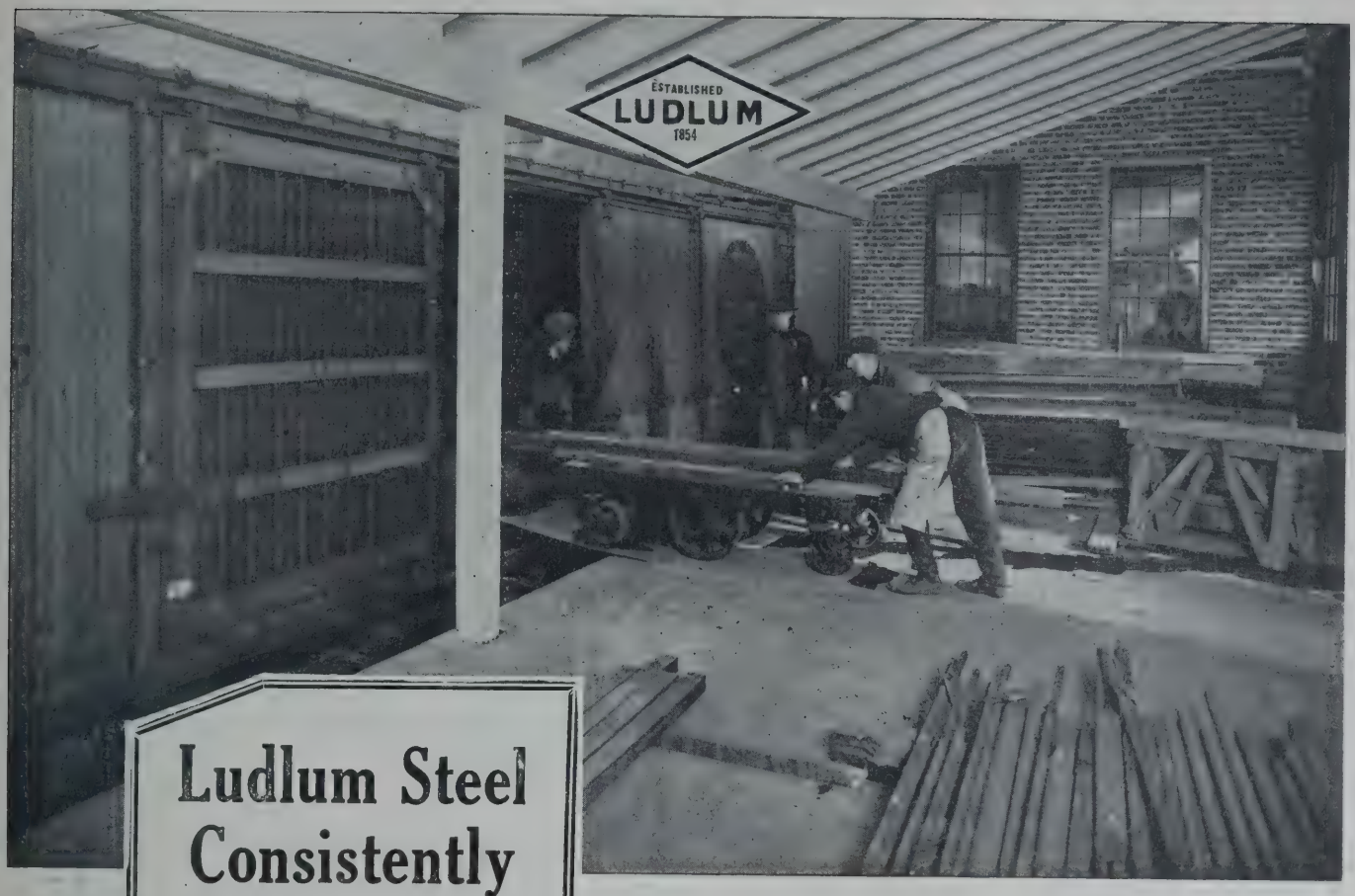
Much Fabricating Equipment Sold in the East

A BETTER undertone continues in evidence in the eastern machine tool market, despite an almost total lack of large lists. Some dealers report that the past week has been the most active in several months. As intimated, however, trading has been comprised almost entirely of small, miscellaneous orders. A feature at the present time is an improved buying of fabricating equipment. Among the larger buyers of this equipment are the Winnisimmet Shipyard Co., Chelsea, Mass., which closed on eight machines; the Gould Construction Co., Long Island City, which bought five machines; and Fraser, Brace & Co., 1328 Broadway, New York, which also closed on five. Another buyer is the American Smelting & Refining Co., which bought some light equipment for a boiler shop in Alaska. Several other orders, involving one and two tools, have been placed of late. Some of these, sellers state, have been pending for a number of weeks. A number of small fabricating shops established in the vicinity of New York within the past few months, it is said, are contributing to the present activity. Prices on fabricating equipment are tending strongly upward, and it is considered likely that an advance of 20 to 25 per cent will be put into effect by some manufacturers within the near future.

Quotations on other lines of machinery are also moving upward. Lathes now are being advanced from 10 to 15 per cent, and a leading line of presses has just been increased 10 per cent. This latter advance followed a similar advance in June. In the heavier equipment, such as cranes, it appears to be generally conceded that the minimum for this year has been passed.

It has just been announced that the plant of the Standard Aircraft Corp., at Elizabeth, N. J., has been purchased by Simmons Bed Co., whose principal plant is at Kenosha, Wis. The sale price has not been made public, but it is understood that the figure is around $1,500,000. The sale of about 150 tools at the Elizabeth plant recently aroused considerable interest, owing to the high bids which were offered.

Considerable activity continues in evidence in the crane market, and the award of a large contract is again a feature. The Cleveland Crane & Engineering Co. was the recipient, being awarded a number of cranes for the Mare island navy yard. Provided the order was in accordance with the original specifications, the Cleveland company booked one 80-ton, two 5-ton, and four 15-ton bridge cranes, and six 3-ton and fourteen 5-ton wall cranes. Other awards included a 5-ton overhead crane, with a 40-foot span, for James Shewan & Sons, Brooklyn. It is understood this business went to the Columbia Hoist



Ludlum Steel Consistently Uniform

Mohawk Extra
High Speed Steel

Pompton
Carbon Tool Steel

Albany
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Oneida
Oil Hardening Steel

Huron
Alloy Die Steel

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Ball Bearing Steel

Yuma
Chrome Magnet Steel

Seminole
"Foolproof" Chisel Steel

Loading a Car with LUDLUM STEEL

The transportation facilities from our mill have been very effectively laid out. A double track enters our yard, and from this, branch lines lead to every mill building.

The Shipping Department transportation is by means of a sunken track passing under the rolling mill floor and in front of the shipping platform. The steel is loaded in 4 freight cars at same time and drawn out to the main line which is adjacent to the mill.

We can make shipment by three different railroad systems, or by the Erie Barge Canal or Hudson River.

Over night shipments to New York made by boat.

Prompt Shipments from our warehouse stock at Watervliet, N. Y., Detroit, Mich., Chicago, Ill., or Cambridge, Mass., handled through our District Offices.

LUDLUM STEEL COMPANY, General Offices and Works: WATERVLIET, N. Y.

Branch Offices: New York City Philadelphia Chicago Detroit
Cleveland Pittsburgh Cambridge, Mass. Cincinnati Buffalo

& Machine Co., Hunters Point, L. I. The Darling-Slade Construction Co., New York City, through a subcontract, placed a 15-ton overhead crane with the Niles-Bement-Pond Co., for a government project at Newport, L. I. The Universal Winding Co., Providence, R. I., recently reported as having placed a 5-ton crane, awarded this order to the Whiting Foundry & Equipment Co. The Blaw-Knox Co., Pittsburgh, placed a 5-ton crane, with a 56-foot span, with the Champion Engineering Co. The Mansfield Foundry & Machine Co., Mansfield, Mass., awarded a 10-ton bridge crane to Pawling & Harnischfeger. The Treadwell Engineering Co., Easton, Pa., bought a 35-ton crane from the Thaw Electric Crane Co.

The largest inquiry of the past week is that of the American Locomotive Works, calling for 15 overhead cranes. Specifications follow: One 10-ton, with 61-foot span; one 10-ton, with 45-foot, 3-inch span; and one 20-ton, double trolley, with 72-foot span, all for Montreal; one 10-ton, with 72-foot span; one 30-ton, with 67-foot span; and one 15-ton, 47-foot span, all for Schenectady; two 30-ton, 71-foot span; three 10-ton, with 71-foot, 8-inch span; two 10-ton, 54-foot, 10-inch span; one 20-ton, 54-foot, 10-inch span, and one 10-ton, with 67-foot span, all for Chester, Pa. These cranes are in addition to the two 50-ton cranes reported last week as having been awarded to the Champion Engineering Co. Westinghouse, Church, Kerr & Co. have withdrawn their inquiry for a 10-ton electric crane for the Franklin, Pa., shops of the Chicago Pneumatic Tool Co., and are now inquiring for a 5-ton handpower crane with 36-foot, 6-inch span. Barr, Thaw & Frazer, Hoboken, N. J., will probably not act upon their inquiry for a 5-ton crane for several weeks.

Locomotive crane awards include 30-ton Ohio for the Lehigh Electric Navigation Co., Allentown, Pa.

Of interest to crane builders is the announcement of plans for a $6,000,000 water front improvement at Baltimore by Frank A. Furst, New York City, and others. Specifications by F. W. Kesselbaum, engineer of the Baltimore Dry Dock & Shipbuilding Co., call for an initial installation of about $150,000 worth of cranes and special pier equipment.

Chicago Maintains Splendid Buying Rate

SELLERS of machine tools in the Chicago district find the volume of sales continues high, although records made during 1918 are not being broken and some believe they never will be. However, totals for July class with those attained in the best months of war selling. The peculiar feature of this business is that it is impossible to determine just the source from which the demand is coming, as there is no large buying, and most transactions are comparatively small. Heavy tools, which have been rather slow, seem to be moving better at the moment, and one concern moved a 9-foot boring mill, two large planers and a heavy press within a few days. Demand continues to be largely for lighter tools, a recent sale including 12 hand millers. Demand for planers is excellent.

Strikes in various machine shops are having the effect of limiting production and slowing up the tendency of manufacturers to buy further equipment until the situation becomes more settled. A general advance in the price of lathes amounting to between 10 and 15 per cent has been made and this has resulted in hurrying some buying which promised to be more leisurely. Giddings & Lewis, Fond du Lac, Wis., are buying additional equipment for the manufacture of tractor transmissions.

Keen Demand Exists for All Types

BRISK business is being done in the Pittsburgh district machinery market, for both light and heavy equipment and inquiries are numerous. Users evidently no longer entertain the idea that prices will be reduced, but on the contrary have concrete evidence that the tendency is in the other direction. This has developed through the announced increase of 15 per cent in the prices for high grade lathes, an advance that has been a source of some disturbance to dealers who had hoped it would not take place, at least for the present. According to reports the increase was made because of higher wages granted machinists, but despite this it is reported that machinists in the Cincinnati district are talking of going on strike for still higher wages. The increased prices on high grade lathes now brings the level within 7 per cent of the high war prices, these prices having been reduced 22 per cent since the armistice was signed.

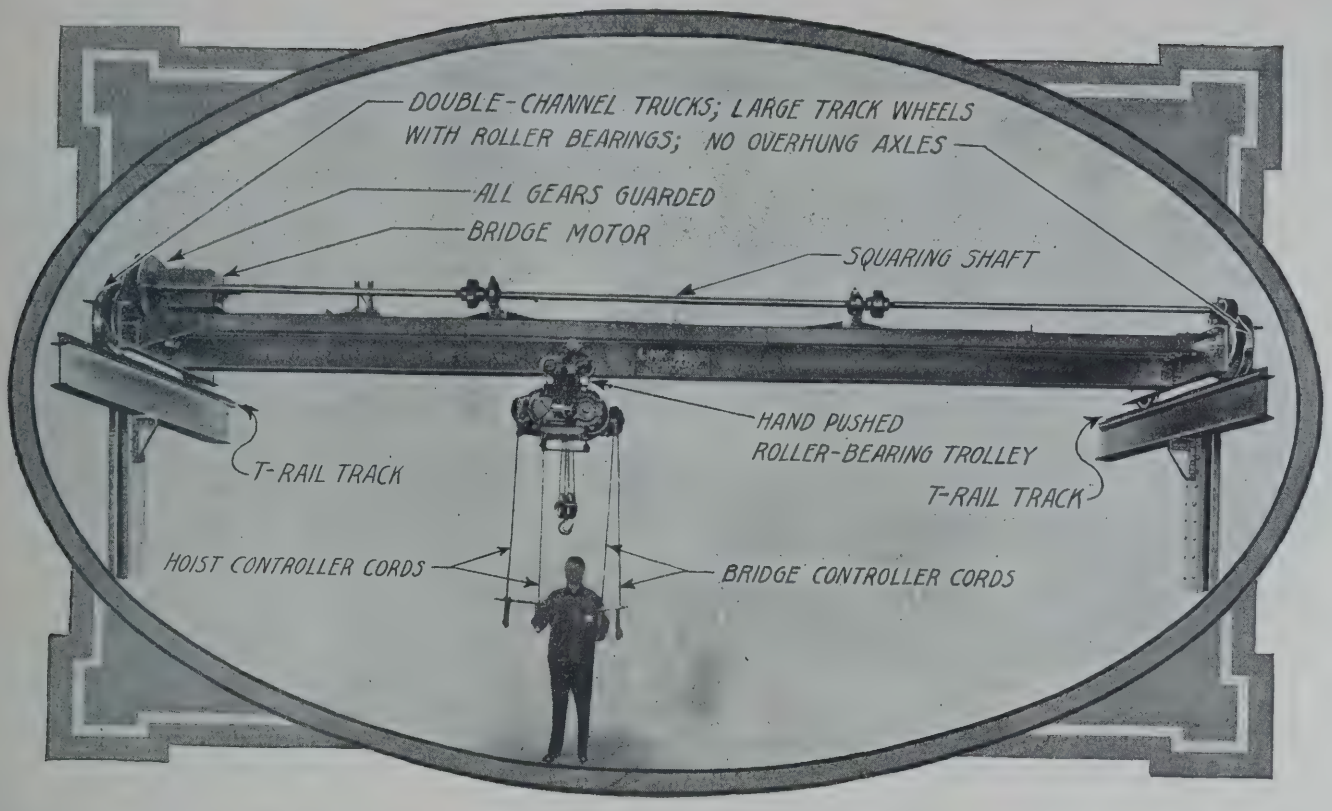
Demand for machinery and machine tools is marked in almost all lines, including lathes, radial drills, regular upright drills, planers, pipe machines, cranes and general rolling mill equipment. Shipments already are being extended and it is not improbable that deliveries will continue to grow less satisfactory. Large pipe machines for oil well work on 8, 10 and 12-inch pipe have been added to the list of equipment on which delivery has been deferred and are being shipped in two to three

Great Britain Selling Many American-Made Machines

WASHINGTON, Aug. 5.—The monthly report of Robert P. Skinner, consul general at London, to the bureau of foreign and domestic commerce, contains a list of the surplus machine tools offered for sale by the British government beginning June 17 last. The list is accompanied by an introductory statement by the consul general in which he comments on the "definite indication of the enormous importance of American contribution to the munitions manufacturing industry in this country (England) during the first years of the war.

"It will be noted that almost all of the automatic milling machines are of American manufacture," commented Mr. Skinner, "and that a number of the more important lathes and grinding machines are likewise of American manufacture." Of 126 milling machines, 112 are of American make and of 106 automatic machines offered, 45 are American. The following list gives the number of additional machines in the list and designates the number of those made in America:

Lathes, 59; 15 American.
Turret lathes, 28; 16 American.
Capstan lathes, 104; 59 American.
Grinding machines, 61; 22 American.
Drilling and tapping machines, 49; 26 American.
Shaping machines, 11; three American.
Slotting machines, 13.
Planing machines, two.
Gear cutting machines, six.
Woodworking machines, 11; one American.
Miscellaneous machines, 56; eight American.



Here's The Ideal Crane for Side Bays

IT'S just the thing for machine shops, foundries, structural shops, mills, etc. The time it will save in a machine shop by quickly and economically serving machine tools with castings, etc., will soon pay for the crane. After that, the saving is "pure velvet".

Important Advantages

1. Crane always ready for service. Any shop hand can operate it. No need for keeping an operator up in a cage.
2. Pull a cord to operate hoist or crane; let go, and it stops. Simple as A, B, C.
3. All operating cords handy, both controllers mounted on hoist—right where the load is being handled.
4. Load is handled with greater precision and safety, than when operator is carried in a cage near ceiling and must depend on signals.
5. Like our mono-rail electric hoist and other Link-Belt products, this crane embodies Quality, Reliability, Accessibility, and High-Efficiency.

Built in 1, 2 and 3 Ton Capacities. Write for data blank. Let us figure on your requirements.

LINK-BELT COMPANY

284

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Cleveland 429 Rockefeller Bldg.
Detroit 932 Dime Bank Bldg.
New Orleans C. O. Hinz, Hibernia Bank Bldg.
Kansas City, Mo. 306 Elmhurst Bldg.
Seattle 576 First Ave., S.
Portland, Ore. First and Stark Sts.
San Francisco 682 Market St.
Huntington, W. Va. Robson & Prichard Bldg.
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Floor-Operated Cranes

We Also Make

- ☐ Elevators and Conveyors
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- ☐ Truck and Tractor Chains
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- ☐ Locomotive Cranes
- ☐ Portable Loaders
- ☐ Coal and Ashes Systems
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Write for Catalogs
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months. Deliveries on cranes, which have been bought in large numbers during the past week by steel manufacturers and other users, also are becoming more extended. Makers of rolling mill equipment report that they are taking heavy bookings and some are exercising more caution about taking new business.

White Motor Wants 300 Machines

AUGUST starts out well in the Cleveland machinery market. One of the largest machine tool lists issued in recent months is now before dealers and comprises approximately $400,000 worth of equipment. It is issued by the White Motor Co., Cleveland, which wants between 250 and 300 machines, taking in everything from vertical boring mills to hand milling machines. It is understood that the White company has closed on about $30,000 worth of lathes as well as other machines on this list. Since this company had been quietly making purchases from time to time, it was thought that it was well equipped and the issuance of this list came somewhat as a surprise. The hope is expressed that other large prospective tool buyers now will come out and follow the White company's lead.

Other automobile companies are either in the market or are expected shortly to enter it. The General Motors Corp., Detroit, continues to file its confirming orders on the contract made in June. The Ford Motor Co., Detroit, and the Buick Motor Co., Flint, Mich, also are purchasing from time to time. The Cleveland Automobile Co., Cleveland, has not yet closed on all of its requirements, and the Grant Motor Car Co., that city, is expected to issue a list shortly for additional needs in machine tools for a new addition, 62 x 262 feet, it is building at a cost of $60,000. It is reported that the Winton Co. is to manufacture a lighter car and if it goes into production, more tools will be required, including some special machines. At present, however, it is desirous of disposing of a number of its tools made idle with the cessation of its war work.

Following the war, many announcements appeared concerning entrances into the tractor-building industry. Several of these have turned out to be merely flashes in the pan. Several companies however are well established and continue to expand, because of demands made for their output. These expansions necessitate tool purchases. It is understood that the Cleveland Tractor Co., Cleveland, is going in for quantity production and is in the market for additional equipment. The Star Tractor Co., Findlay, O., recently increased its capital from $100,000 to $135,000 to provide funds for an addition. Its list is expected at an early date.

Most of the demand at present continues to come from varied lines of industrial activity and this is taken as a hopeful sign by sellers of machinery. Practically all dealers are optimistic regarding the month's prospective business. The Chisholm & Moore Mfg. Co., Cleveland, recently purchased two 36-inch Fellows gear shapers. The Geometric Tool Co., Cleveland, is in the market for a 90,000-pound press and the Byrne Mfg. Co., Cleveland, wants additional punch presses. The Allegheny Forging Co., Pittsburgh, is circulating a list of about a dozen tools. D. Lowenstein, the Arcade building, Cleveland, is in the market for a line of metal-working machinery, including two 16-inch lathes and three buffing and polishing lathes. The Columbia Axle Co., Cleveland, recently purchased a grinder and is negotiating for additional equipment. The MacDonald Ticket & Ticket Box Co., 5015 Wellesley avenue, Cleveland, is in the market for a lathe. The Firestone Tire & Rubber Co., Akron, O., announces that it is going to build a $1,000,000 steel rim factory and will probably issue its list of press equipment, etc., at an early date. At present it is endeavoring to locate a special machine for painting 2-inch white lines on factory floors. R. S. Scobell, business manager of the board of education, Erie, Pa., recently took bids on woodworking machinery for the Wayne school, that city.

An item of interest to Cleveland dealers is the list of machines offered for sale by the American Multigraph Co., that city. The list comprises from 50 to 75 different machines, which were rendered idle after the company's war contract expired.

Building projects continue to interest sellers of equipment. Some of those announced recently include a large building for the Hoover Suction Sweeper Co., North Canton, O. This unit will care for the company's increasing business and will be larger than any present unit in the plant. Two machine shops, 90 x 176 and 52 x 88 feet, respectively, are to be erected by George B. Lambert & Co., East Chicago, Ind., who are expected to announce their machinery requirements soon. The Fulton Foundry & Machine Co., Cleveland, will probably need a few tools for the $35,000 factory it is about to erect. The Erie Foundry Co., Erie, Pa., manufacturer of trip hammers is to double its output by erecting an addition 80 x 200 feet. Equipment for it has not yet been placed, so far as can be learned.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

AUGUSTA, ME.—The Ingram Motor Co. has been incorporated to build engines, motors, machinery, etc., with $4,000,000 capital by I. S. Kearney and E. Maynard Thompson.

PORTLAND, ME.—The Consolidated Manganese Co., Inc., has been incorporated with $1,000,000 capital by Griffith H. Riddle and Leonard A. Pierce.

PORTLAND, ME.—The Lewis Rim Co. has been incorporated to build motor vehicles with $200,000 capital by Gerry L. Brooks and H. P. Sweetser.

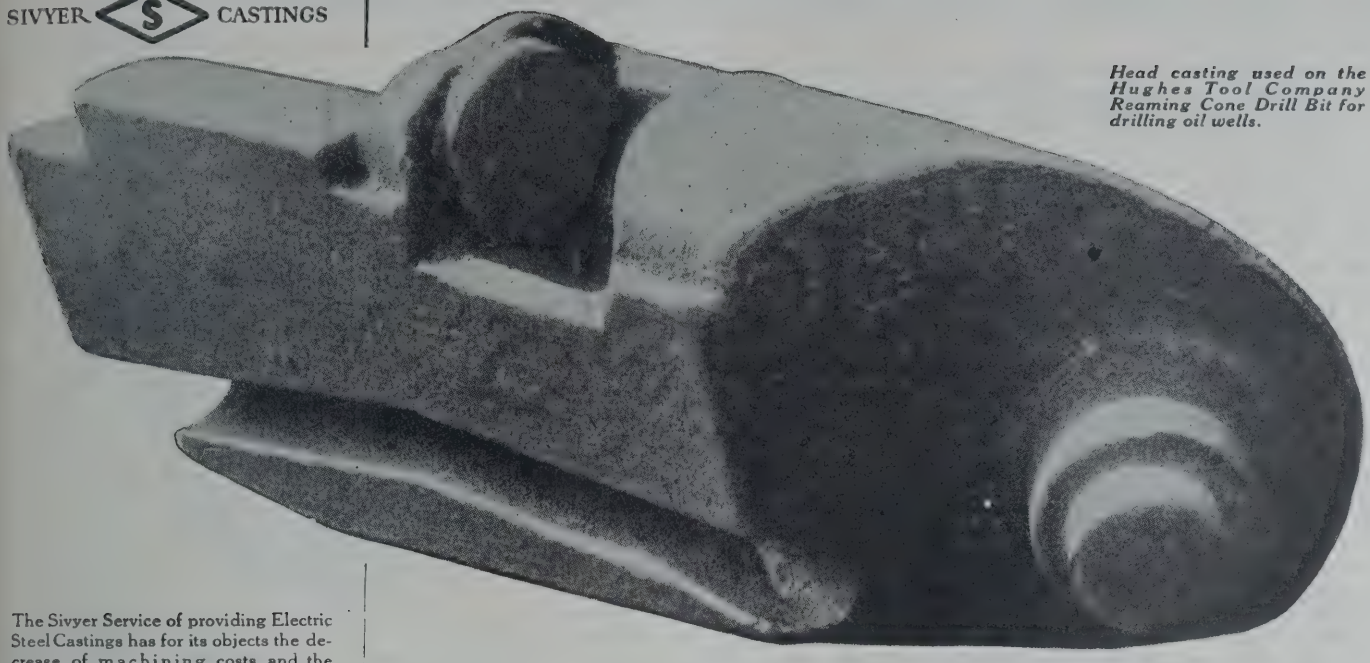
PORTLAND, ME.—A 4-story, 220 x 240-foot factory building and a 3-story, 42 x 112-foot service building will be constructed by the American Can Co., 120 Broadway, New York City, at Deering Junction. The total cost will be $300,000.

BENNINGTON, VT.—The Martin-Wasp Co., recently organized with a capital of $100,000, will establish a plant here for the manufacture of a 4-cylinder automobile.

AMESBURY, MASS.—The Bryant Body Co. has been incorporated to build automobile bodies with $50,000 capital by James H. Walker, Frank A. Bryant and James Miller.

BOSTON.—The Atlantic Radio Co. has been in-

SIVYER S CASTINGS



Head casting used on the Hughes Tool Company Reaming Cone Drill Bit for drilling oil wells.

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly, Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly, Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly, Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

THE special Sivyer service of determining and producing the proper composition for heavy duty castings has produced for the Hughes Tool Company the unusual results with which so many others have long been familiar. The head casting shown above is of a special nickel alloy of Sivyer Electric Steel. The function of the casting is to hold the cutters which cut the rock in oil-well drilling. The whole bit operates at the bottom of the well, often thousands of feet deep. Breakage under such circumstances would cause heavy losses. But the special Sivyer nickel alloy is so much tougher and stronger than common steels that it is giving results long thought unattainable. The Sivyer service in providing proper alloys is only one of the features that have won for Sivyer Castings their national market.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

corporated to make electrical apparatus with $25,000 capital by Frank Wigglesworth, Everett P. Gordon and Stafford Wentworth.

BOSTON.—The Automotive Products Corp. has been incorporated to make parts of automobiles with $15,000 capital by Herman A. Mintz, Ira A. Stone and H. W. Sexton.

BOSTON.—The International Abrasive Corp. has been incorporated with $3,000,000 capital by Arthur W. Leavitt, Everett, Mass., Raymond D. Smith, Waltham, Mass., and M. B. Wilson.

BOSTON, MASS.—The Nelson Corp. has been incorporated to operate a foundry and machine shop with $50,000 capital by Albert H. Nelson, Mason H. Stone, Newton, Mass., and A. C. Bartlett. It will build a plant in Cambridge, Mass., for the making of tractors.

BROCKTON, MASS.—Kimball Bros. & Sprague, Inc., has been incorporated to build machinery with $40,000 capital by George W. Sprague, Harold W. Sprague and Michael H. Lyons.

BROCKTON, MASS.—The Killian & Yancey Co., Inc., has been incorporated to make wire appliances with $5000 capital by James H. Yancey, George A. Barrett and W. E. Killian.

CAMBRIDGE, MASS.—Flynn Roofing & Metal Co., Inc., has been incorporated with $5000 capital by Edmund T. Flynn, Caleb Faden and E. M. Butt.

CHELSEA, MASS.—Bids will close Aug. 2 for a brick, 3-story, 99 x 62-foot mill and machine shop for the Everlastic Co., Inc.

FARNUMSVILLE, MASS.—A 4-story machine shop, 36 x 52 feet and costing $20,000, is being planned by the Wuskanut Mills.

GREENFIELD, MASS.—The American Tap & Die Co. has let the contract for a brick, 2-story, 44 x 65-foot factory addition.

LYNN, MASS.—The Davis Lynn Storage Battery Mfg. Co. has let the contract for a 1-story, 75 x 100-foot plant addition.

LYNN, MASS.—Joseph E. Knox & Co., Inc., has been incorporated to make dies with $20,000 capital by James V. Knox, Joseph E. Knox and Roy M. Knox.

LYNN, MASS.—The S. W. Mfg. Co. has been incorporated to make mechanical devices and machinery with $5000 capital by S. G. Warner, Robert F. Smith and M. A. Smith.

LYNN, MASS.—W. H. Kay, Inc., has been incorporated to make metal products with $25,000 capital by W. Herbert Kay, Swampscott, Mass., H. G. Mills and Charles A. Babcock.

OTTER RIVER, MASS.—The foundry operated by Lord, Stone & Co., and recently purchased by W. L. Shaughnessy and J. P. Carney of the William L. Shaughnessy Co., Gardner, Mass., manufacturer of casket hardware, will be incorporated with a capital stock of $50,000 and will be known as the Otter River Foundry Co. The new company will continue the manufacture of stoves.

SOUTH SALEM, MASS.—Peter Leonard is having built for his own use a concrete, 1½-story, 56 x 103-foot iron foundry.

SPRINGFIELD, MASS.—Contracts for two additions, 1-story, 100 x 100 feet and 40 x 50 feet, have been awarded by the Springfield Foundry Co.

SPRINGFIELD, MASS.—Russell & Gray, Inc., has been incorporated to make automobiles with $5000 capital by M. J. Russell, Alfred J. Burke and H. C. Wisenburn.

SPRINGFIELD, MASS.—The E. S. Stacy Supply Co. has been incorporated to deal in machines and supplies with $250,000 capital by Harry W. Stacy, Alfred H. Chapin, Frank D. Fuller, John M. Williams, the Moore Drop Forging Co. and John M. Collins, West Springfield, Mass.

WORCESTER, MASS.—Storage capacity for iron and coke at the foundry of the Crompton & Knowles Loom works will be increased at a cost of $50,000.

WORCESTER, MASS.—The contract for a 2-story, 60 x 212-foot addition to the factory of James Smith & Son, 99 Hope avenue, has been awarded to the E. J. Cross Co., 82 Foster street. The cost will be about $38,000. A boiler house is also to be built.

WORCESTER, MASS.—The Ciampa Press Co. has been incorporated to make presses with $10,000 capital by Agostino Ciampa, Sabatini Ricci and Patsey Lombardi.

AUBURN, R. I.—The Kenney Mfg. Co. has let the contract for a 1-story factory, garage and boiler plant.

AUBURN, R. I.—The United Wire & Supply Co. has let the contract for a brick, 2-story, 40 x 250-foot factory addition to cost $100,000.

EAST GREENWICH, R. I.—Plans have been drawn for a brick, 1-story, 36 x 36-foot and 20 x 20-foot office addition for the Boston Wire Stitcher Co.

PROVIDENCE, R. I.—The Victory Mfg. Co. has been incorporated to build machinery with $90,000 capital by J. Warren Lander, Warwick, R. I., Benjamin F. Tefft Jr., and Eugene Fuller.

PROVIDENCE, R. I.—The Peerless Wrench Co. has been incorporated with $50,000 capital by Anthony M. Cunha, F. E. Allen and William D. Whipple.

VALLEY FALLS, R. I.—The repair shops of the New York, New Haven & Hartford railroad were destroyed by fire July 26, with $500,000 loss.

BRIDGEPORT, CONN.—The Bridgeport Brass Co. will build a brick and steel foundry extension to cost $100 000.

BRIDGEPORT, CONN.—The Efficiency Machine Tool Products Co. has been incorporated with $25,000 capital by Frank B. Carlson, Elmer O. Goordman and A. Emil Josefson.

BRIDGEPORT, CONN.—The Efficiency Machine Tool Products Co. has been incorporated with a capital stock of $25,000. The organizers are Frank B. Carlson, Elmer O. Goordman and A. Emil Josefson.

GROTON, CONN.—The shipbuilding plant of the Groton Iron Works, valued at $1,600,000, will be taken over by the government.

HARTFORD, CONN.—The Trotter-Patterson Corp. has been incorporated to deal in iron and steel with $50,000 capital by H. R. Trotter, West Hartford, Conn., W. J. A. London, Springfield, Mass., and R. P. Butler.

MIDDLETOWN, CONN.—The Russell Mfg. Co. will build a reinforced concrete, 3-story factory and power house to cost $60,000 at its Rockfall plant.

NEW HAVEN, CONN. — The Interlock Hardware Co. has been incorporated with $150,000 capital by Henry G. Voight, Edward W. Sibley and Louis B. Zacher, Bridgeport, Conn.

PORTLAND, CONN.—The Lindquist Engineering Works, Inc., is receiving bids for a new factory.

SOUND BEACH, CONN.—Several acres of land have been purchased by the Dalton Mfg. Corp., 1915 Park avenue, New York, and the contract awarded for the construction of four factory buildings and a power house. A number of individual motor drives will be installed for the large machines and group drives for the smaller ones.

WATERBURY, CONN.—A 2-story plant, 40 x 165 feet and costing $30,000, is planned by the Simonsville Mfg. Co., manufacturer of metal products.

North Atlantic States

BROOKLYN, N. Y.—The Twinomatic Machine & Tool Co., Inc., has been incorporated with a capital of $150,000 to manufacture machinery.

BROOKLYN, N. Y.—The Eismann Magneto Corp. has been incorporated with $1,650,000 active capital, by S. C. Worthen, C. F. Bailey and W. S. Sawyer, 111 Broadway.

BROOKLYN, N. Y.—The Peerless Metal Bed Co. has been incorporated with $5000 capital, by D. Neustadt, S. Danenberg and N. Wexler, 741 Stone avenue.

BUFFALO.—The Buffalo Forge Co. will erect a factory addition.

BUFFALO.—The Buffalo Weaving & Belting Co. is building a 1-story addition, 42 x 150 feet. The extension will cost $15,000.

BUFFALO.—Work has been started on the machine shop of the new plant of the Donner-Union Coke Co., at Abby street and the Lackawanna railroad.

MANHATTEN, N. Y.—The Ampyr Mfg. Co., Inc., has been incorporated with a capitalization of $25,000 to manufacture machinery.

NEW YORK.—The Continental Steel Corp. has been incorporated with $10,000 capital, by M. Seinfeld, A. Dreier and S. A. Cohen, 299 Broadway.

NEW YORK.—The Atlantic Chain Corp., 168 Madison street, has been incorporated for $60,000 to manufacture chains. The incorporators are H. Grill, M Birnkrant and J. Stitch.

NEW YORK.—The Press Machine Corp., 1451 Broadway, has been incorporated with a capital stock of $30,000 to manufacture machinery. Incorporators are A. F. Lafrentz and A. E. Sheridan.

NEW YORK.—The Universal Condenser Corp. has been incorporated with a capital stock of $100,000 to manufacture condensers. Incorporators are P. G. Chichester, E. Nolan and D. T. Howell.

NEW YORK.—The Reed Iron Works, Inc., 52 Hamilton Terrace, has incorporated with a capitalization of $25,000. The incorporators are J. A. Netzel, R. Adams and A. F. Mulvihill.

NEW YORK.—The Gourland Typewriter Mfg. Co. recently was incorporated with $250,000 capital, by P. Kardon, A. A. Greenhoot and M. J. Gourland, 120 Broadway.

NEW YORK.—The Reed Iron Works has been incorporated with $25,000 capital, by R. Adams, 126 South Oxford street, A. F. Mulvihill, 53 Hamilton terrace, and J. A. Netzel.

NEW YORK.—The Thoro-Electric Products Co. recently was incorporated with $100,000 capital, by L. C. Ochs, A. A. Wadsworth and H. A. Mackie, 59 West Sixty-fifth street.

NEW YORK.—The Sunshine Steam Iron System, pressing devices, recently was incorporated with $10,000 capital, by N. Rubenstein, T. G. Jasper and M. Sunshine, 59 East Eighth street.

NEW YORK.—The Inter-Ocean Metal Corp., 138 Fifth avenue, has been incorporated with a capitalization of $20,000. The incorporators are M. M. Corcoran, G. Cohen and A. Heymsfelt. The company will manufacture metal specialties.

NEW YORK.—Incorporation is announced of the Crump & Lungren, Inc., 160 Broadway, with a capital of $20,000 to manufacture metal products. The incorporators are B. E. Crump, H. T. Lungren and H. B. Weil.

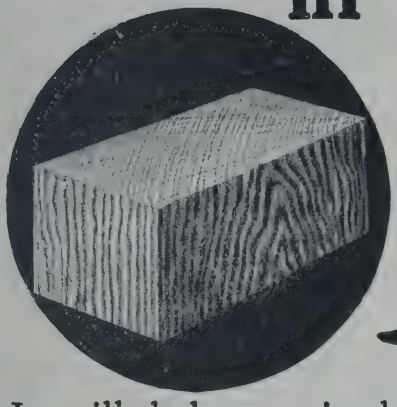
OGDENSBUAG, N. Y.—The Continental building, recently acquired by the Massey Automobile Co., will be altered and remodeled to manufacture steam automobile trucks. The improvements will cost $50,000.

SYRACUSE, N. Y.—The H. H. Franklin Mfg. Co. has called in a $600,000 issue of preferred stock for the purpose of making a substantial plant expansion.

SYRACUSE, N. Y.—Announcement has been made of the sale of the property of the Van Wie Pump Co., consisting of a foundry, to the United States-Hoffman Co., pressing machine manufacturer.

SYRACUSE, N. Y.—The Van Wie Pump Co., which

The most rigid specifications in the world, fit



Kreodone EVERLASTING Wood Floor Blocks

It will help you in deciding upon the wood blocks you will use for your floors if you know a wood floor block that meets the most rigid official and industrial specifications.

The following specification is standard with the Navy Department of the U. S. Government:

"The blocks shall be of the best commercial quality, long-leaf yellow pine, and shall be treated with preservative of such a kind and amount that decay will be prevented, *'bleeding' of the blocks prevented*, and be in all respects suitable for the floor of a machine shop."

A great Pittsburgh industrial corporation guards against tar adulteration and consequent bleeding thus:

"Wood blocks shall be manufactured from selected, well-seasoned, long-leaf yellow pine, free from bark, loose or rotten knots, or other serious defects. All blocks shall be treated with a preservative composed of a pure grade of creosote oil. *The surface of the blocks after treatment shall be free from deposits of objectionable substances.*"

Kreodone Interior Floor Blocks not only meet these rigid specifications but go still farther. For they are preserved with Kreodone Oil—a pure creosote oil that is far superior to any other creosote oil in permanency.

Kreodone Blocks are always made from long-leaf yellow pine. And they can never bleed tar or show objectionable deposits on the surface of the blocks, for they contain no trace of tar.

We made the first wood block floor. And we have developed and perfected wood floor blocks until today we challenge the world to show a wood floor block that can equal Kreodone quality in any particular.

Put your floor problems up to our engineers, without obligation or expense. Send us your blue prints for an estimate. Write now for our new illustrated catalog and standard specifications.

Republic Creosoting Company

Indianapolis, Indiana

Branch Offices at: Cleveland Minneapolis Detroit Chicago Buffalo Norfolk Seattle Mobile Toronto

sold its plant to the United States-Hoffman Co., will erect a new foundry and machine shop as soon as a site can be located.

TONAWANDA, N. Y.—A 1-story addition to the rolling mill, 80 x 170 feet, and a 1-story extension to the tumbling department, 40 x 340 feet, will be made to the plant of the Buffalo Bolt Co.

UNION, N. Y.—The Universal Instrument & Metal Co. has been incorporated with $75,000 capital, by J. Sloan, E. Nehlich and D. S. Mersereau.

UTICA, N. Y.—Plans have been prepared for a 1-story, 76 x 140-foot addition to the plant of the Brunner Mfg. Co., manufacturer of air compressors. The cost will be about $15,000.

AMBRIDGE, PA.—The Cold Drawn Steel Co. has started work on a plant here.

BANGOR, PA.—A 2-story, 46 x 104-foot addition costing $12,000 is being built to the plant of the F. H. Reichard Mfg. Co., manufacturer of farming implements. Wire-forming machines and much other equipment will be needed.

ERIE, PA.—The Erie Foundry Co. recently let a contract for an addition, 80 x 200 feet, to cost $75,000.

GROVE CITY, Pa.—This city will vote Sept. 16 on a bond issue of $45,000 for a steam turbine, boiler and engine power plant.

HARRISBURG, PA.—The Capital City Iron & Steel Co. has been incorporated with $60,000 capital, by Wolf Freedman and others.

INDIANA, PA.—The Indiana Foundry Co. has been incorporated with $150,000 capital, by Thomas, John W. and R. S. Sutton.

JOHNSTOWN, PA.—The Johnstown Slag Co. recently was incorporated with $150,000 capital, by Fred W. Sheesley, C. F. Englehart and A. Lloyd Adams.

MACUNGIE, PA.—An addition is being made to the foundry of the East Penn Foundry Co., and plans for a second addition are being prepared. More equipment will be provided.

PHILADELPHIA.—A. Schoenhut & Co. closed bids Aug. 6 on a factory building and boiler house.

PHILADELPHIA.—The bureau of yards and docks, navy department, Washington, has awarded the contract for a pattern shop to be erected here.

PHILADELPHIA.—Connery & Coine have the general contract for a 1-story assembling shop addition, 75 x 90 feet, for J. F. Eberle & Sons.

PHILADELPHIA.—Bids are being taken for a 2-story, 60 x 70-foot addition to the plant of the L. H. Gilmer & Co., manufacturer of belting.

PHILADELPHIA.—The Wright Roller Bearing Co., Twentieth street and Indiana avenue, is planning a 1-story addition, 26 x 80-feet, to its plant.

PITTSBURGH.—The United Fuel & Iron Co. has been incorporated with $50,000 capital, by Lawrence Snapp, Beaver, Pa., Charles Yon, Corapolis, Pa., and Robert M. Steffler.

PHILADELPHIA.—The Camden Motor Corp. has awarded the contract for a 1-story shop, 301 x 751 feet, to cost $100,000. It will be built on the Whitehorse pike along the Pennsylvania railroad.

PHILADELPHIA.—Bids are being taken for a 1-story, 40 x 88-foot, and a 2-story, 36 x 54-foot additions to the factory of the Wright Mfg. Co., 131 Master street, manufacturer of metal goods.

PHILADELPHIA.—S. W. Mather & Sons have been awarded the contract for a machine shop 70 x 300 feet with 25-foot balconies for the John E. Thropp's Sons Co., Trenton, N. J., manufacturer of tire-making molds and special machinery. A foundry with a capacity of 40 tons per day will be built later.

PUNXSUTAWNEY, PA.—Work has been started on the new factory building for the Kauffman Metal Parts Co. here.

READING, PA.—Contracts for a 1-story, 50 x 50-foot power house for the Philadelphia & Reading railway have been awarded to Robert E. Lamb & Co.

SCOTTDALE, PA.—This town is planning an aluminum plant.

SHARON, PA.—The Pennsylvania railroad plans improvements to its buildings at Wheatland.

TAMAQUA, PA.—This borough will vote shortly on a bond issue of $100,000 for a waterworks extension.

WASHINGTON, PA.—The Duncan-Miller Glass Co. has started work on a $60,000 gas producer plant here.

YORK, PA.—Plans are being prepared for a new industrial plant which will consist of a machine shop, foundry, iron working and erection shop and offices to be erected by Harry Read.

Central States Activity

BEAVER DAM, WIS.—The Malleable Iron Range Co. is preparing to build an annealing shop, 50 x 115 feet, costing $30,000.

CUDAHY, WIS.—The board of education has commissioned Architects Rosman & Wierdsma, Milwaukee, to prepare plans for a high school and vocational training institute.

DE PERE, WIS.—W. E. Ule, Stevens Point, Wis., has the general contract to build a machine shop, paper mill and power plant costing $120,000, for the George Diamond Economy Process, Milwaukee.

GREEN BAY, WIS.—The Northern Paper Mills Co. will build a 3-story beater room, 80 x 106 feet; 3 3-story paper machine building, 80 x 250 feet, and a 2-story mill and warehouse addition, 80 x 138 feet. Perry S. Wagner is general manager.

GREEN BAY, WIS.—The Heigeson Foundry Co. has been organized to manufacture gray iron and steel castings. A plant costing $100,000 will be built and equipped. Organizers of the company are Andred Heigeson, A. L. Cannard, William Hoberg and Charles H. Greilling. A. W. Gregg, formerly with the Bucyrus Co., Milwaukee, will have charge of the metallurgical work.

JANESVILLE, WIS.—A large foundry 322 x 500 feet is being constructed by the General Motors Co., and will be completed before Jan. 1. The foundry will manufacture all parts for the Model M Sampson tractor and is designed to permit future extensions.

JANESVILLE, WIS.—A $25,000 corporation is being formed by George H. Hawks, Charles A. Enslow and Will T. Axon to manufacture steel traffic direction posts, tobacco splitters and other special metal devices.

JANESVILLE, WIS.—In addition to the tract of 125 acres of land purchased here two years ago by the General Motors Corp. for its Samson tractor plant, now half completed, two adjacent tracts, embracing 63 acres, have been acquired for future extensions. A foundry will be erected.

KENOSHA, WIS.—The Arneson Foundry Co., O. Arneson, president, 319 Exchange street, will build a 1-story foundry, 70 x 200 feet to cost $30,000.

LUXEMBURG, WIS.—The Liebl & Retzlaff Machine Shop has been purchased by Edward Srnka. The shop will now be known as the Luxemburg Garage & Iron Works.

MADISON, WIS.—The Madison Tool & Stamping Works has been incorporated with a capital stock of $10,000. The incorporators are T. Rosten, G. A. Lyman, G. Wheeler and R. S. Witte.

MILWAUKEE.—The Harley-Davidson Motor Co. has a permit to build a 2-story fireproof oil house, 48 x 80 feet, costing $20,000.

MILWAUKEE.—A 1-story addition is being built to the fabricating and erecting shop of the Wisconsin Bridge & Iron Co.

MILWAUKEE.—The Motor Casting Co., Fifty-sixth and Greenfield avenues will build a 110 x 180-foot foundry costing $40,000. The company manufactures cylinder castings.

MILWAUKEE.—Redner & Essen, machinists and automobile repairmen, 938 Robinson avenue, started work Aug. 3 on a new shop building, 1-story, 40 x 60 feet.

MILWAUKEE.—The Clum Mfg. Co. has purchased a 4-story building, 100 x 152 feet, and will make alterations and equip it for the manufacture of electric controlling devices.

MILWAUKEE.—The Standard Steel Corp. broke ground Aug. 1 for its new plant. The first building will be a general machine and assembling shop, 1-story, 120 x 150 feet, and will cost $30,000.

MILWAUKEE.—Architect Stanley F. Kadow, 451 Mitchell street, is preparing plans for a garage and machine shop, 70 x 110 feet. The name of the owner is withheld.

MILWAUKEE.—The Surf Mfg. Co., organized with $100,000 capital to make electric washing machines, has leased 15,000 square feet of space at 109-113 Clinton street and will equip a factory. O. F. Fischedick is president.

MILWAUKEE. The Fulton Co., 1910 St. Paul avenue, manufacturing automobile accessories, garage equipment, etc., will build a new plant in West Allis, to be 60 x 160 feet, part two stories, and cost about $45,000.

MILWAUKEE.—The Milwaukee Mfg. Co. has been incorporated with a capital of $200,000 by Edwin W. Strauss, Louis J. Schneider and Max J. Leutermann to manufacture water heaters, etc. Arrangements are being made for a plant.

MILWAUKEE.—The plant of Smith-Parry Co., Thirty-seventh and Lincoln avenues, damaged $200,000 by explosion and fire in May, will be rebuilt by the Burrell Engineering & Construction Co., 327 South LaSalle street, Chicago. Much of the equipment will have to be replaced.

MILWAUKEE.—The Great Lakes Malleable Co. has awarded contracts for remodeling work and additions to its plant at 710-716 Reed street, formerly owned and occupied by the Maynard Steel Foundry Co. New work includes a 1-story building, 60 x 65 feet, to be used as an annealing shop.

MILWAUKEE.—Articles of incorporation have been filed by the Triumph Stove & Heater Co., to manufacture and deal in stoves, ranges, furnaces, etc. The capital stock is $120,000. The organizers are represented by Schmitz, Wild & Gross, attorneys, First Wisconsin National bank building.

MILWAUKEE.—The Milwaukee Stamping Co., Sixty-fourth and Pullen avenues, West Allis, Milwaukee county, has let a contract to William F. Tubesing, Wauwatosa, for a three-story brick and concrete factory addition, 80 x 142 feet, to cost about $80,000. The company manufactures metal stampings, hardware specialties, etc. A. J. Petrie is president.

MILWAUKEE.—Improvements costing in excess of $125,000 and providing facilities for the manufacture of metal coffins as well as metal parts for wooden caskets, will be made this year by the Northern Casket Co., Fond du Lac, Wis. Plans are being prepared for a 3-story factory addition, 100 x 200 feet, of brick and reinforced concrete; an engine, boiler and power house, 80 x 80 feet, and a private garage and machine shop, 45 x 75 feet. William Mauthe is president and general manager.

ORFORDVILLE, WIS.—The establishment of a high school, provided with vocational training facilities, has been approved by the electors.

FOND DU LAC, WIS.—The Galloway-West Co. will build a 2-story building, 85 x 200 feet, combining a steam generating plant and boiler house with a dairy products plant, the whole to cost about $100,000.

RACINE, WIS.—A new light, power and heating


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plant costing about $50,000 is contemplated by the Racine Auto Tire Mfg. Co. A. N. Becker is consulting engineer.

RACINE, WIS.—The Wisconsin Stove & Range Co., capitalized at $10,000, has been chartered to manufacture heating apparatus by Horace R. Sims, John B. Simmons and R. L. Williams.

RACINE, WIS.—Nelson & Co. have taken the contract for erecting a 2-story factory addition, 45 x 120 feet, for the Racine Mfg. Co., manufacturer of automobile bodies. With new machinery the improvement will cost about $55,000.

RACINE, WIS.—The Hamilton-Beach Mfg. Co. has awarded contracts for a $60,000 warehouse and nickel plating building, 60 x 125 feet, and about Sept. 1 will be ready for bids on a 3-story factory addition, 52 x 400 feet, estimated to cost $200,000 with new tools. The company makes electric motored appliances for factories, workshops and the home. Fred J. Osius is president and general manager.

RHINELANDER, WIS.—The Rhinelander Iron Works, founder and machinist, will build a new cupola and make other extensive repairs of damage done by fire ten days ago. John Dedier is president and manager.

RIPON, WIS.—The Kangaroo Toy Co., Chicago, has decided to relocate its plant and offices in Ripon. A new factory will be erected.

SCHLEISINGERVILLE, WIS. — The Vim Tractor Co. has bought seven and one-half acres adjoining its present site and will start additions, the first unit to cost $50,000.

SHEBOYGAN, WIS.—The Wald Mfg. Co., E. Pawsat, Eighteenth street and Martin avenue, will build a 3-story plant, 80 x 115 feet, costing $30,000.

STOUGHTON, WIS.—M. A. Kildahl & Co. have taken the general contract for erecting a central heating plant, including a manual training school and gymnasium, for the Stoughton high school and graded schools. The cost will be $50,000. The dimensions are 65 x 123 feet.

WAUKESHA, WIS.—The plant of the Safety Truck Brake Co. will be moved to Appleton, Wis., the company having been sold to A. M. Steinborg and W. K. Miller of Appleton.

ALBION, MICH.—The Gale Mfg. Co. will erect a foundry and enlarge its plant. M. T. Conklin is president.

ANN ARBOR, MICH.—The Production Foundries Co. has been incorporated for $100,000 by the Ann Arbor Machine Co.

BAY CITY, MICH.—The Dafoe Shipbuilding Co.'s plant was destroyed by fire July 22 with a loss of $50,000. The company has been at work on the construction of eight steel tugs for the government.

FLINT, MICH.—The Dort Motor Co. will build a heat-treating plant.

DETROIT.—A 1-story factory will be erected by the Production Tool Co., of America.

DETROIT.—The Charles B. Bohn Foundry Co. has let contracts for a power house.

DETROIT.—The Buhl Malleable Co. will build a shipping and sorting room.

DETROIT.—The plant of the Wadsworth Mfg. Co. was damaged by fire recently.

DETROIT.—The Cadillac Motor Car Co. has let contracts for a 6-story service building.

DETROIT.—The Central Forge Co. has let the steel contract for its plant additions to the Atlas Iron Works and the Whitehead & Kales Co.

DETROIT.—The Peninsular Brass Works is awarding contracts for its new brass works and foundry buildings.

DETROIT.—A factory and office building will be erected by the Detroit Pressed Steel Co. at 1800 Mt. Elliott avenue.

CHICAGO.—The Vibrating Machinery Co., 546 West Jackson boulevard, has been incorporated with a capitalization of $50,000.

CHICAGO.—The Mutual Die Casting Co., 1352 West Fifty-ninth street, will erect a 1-story brick factory costing $5000.

CHICAGO.—Hoeft & Co., maker of dies and metal specialties, Kinzie street and Ashland avenue, are building an addition 120 x 122 feet.

CHICAGO.—The Wahl Co., 1800 Roscoe street, manufacturer of adding machines is receiving bids on a 5-story factory 124 x 150 feet.

CHICAGO.—The Railway Motor Car Co. of America, will build a plant at Hammond, Ind., 100 x 300 feet, for the manufacture of railway equipment.

CHICAGO.—The Baker Iron & Metal Co., Sixteenth and Arnold streets, has been incorporated with a capital of $1,750,000. The incorporators are C. B. O'Neil, M. J. Atkinson and Frank P. Page.

CHICAGO.—The Florentine Art Metal Works, 1819 North Spaulding street, has incorporated with a capital of $3600. The incorporators are John S. Kandel, William T. Darden and Walter E. Heller.

CHICAGO.—The Dallas Brass & Copper Co., D. D. Dallas, president, 225 North Jefferson street, will build a 5-story plant, 100 x 138 feet, costing $600,000. Bids are being taken.

INDIANAPOLIS.—In following an extension policy, the Nordyke & Marmon Co. will erect two new buildings at the present plant. One will be 5 stories, 80 x 600 feet and the other 1 story, 100 x 800 feet. With the completion of the new buildings, the company will cover 45 acres.

LEBANON, IND.—The Dairy Cream Separator Co., capitalized at $420,000, has been chartered to manufacture cream separators by Paul Honan, James K. Risk and Cecil G. Fowler.

LOGANSPORT IND.—A new erecting shop for the Pennsylvania railroad will be among the improvements to be made on the Pennsylvania lines west.

MADISON, IND.—The Ben Schroeder Co., capitalized at $10,000, has been chartered by Charles W., John P., and Leo B. Schroeder, to manufacture metallic devices.

MUNCIE, IND.—The Muncie Tool & Supply Co., capitalized at $150,000, has been chartered by Max Zeigler, A. W. Killian and J. L. Moore.

MUNCIE, IND.—Several lots have been purchased near its plant by the Muncie Foundry & Machine Co. to permit of expansion in the future. At present, however, only one building, 40 x 140 feet, will be constructed at a cost of about $5000 to accommodate immediate plant needs.

SOUTH BEND, IND.—The Atkins Safety Automatic Gate Co., capitalized at $100,000 has been chartered to manufacture gates and other devices by Harry A. Engman, Joseph B. Atkins and Edward W. Sykes.

WABASH, IND.—The Wabash Foundry Co. intends to enlarge its plant two and one-half times its present capacity in the next 90 days. The improvements will cost $30,000. When completed, the floor space will be 30,000 square feet. A new cupola is being added and additional machine shop equipment will be installed.

AKRON, O.—An announcement recently was made by Mayor I. S. Meyers, in which he stated H. S. Firestone of the Firestone Tire & Rubber Co. was contemplating erecting a plant here for the manufacture of steel automobile rims.

CLEVELAND.—The Rith Brass & Aluminum Castings Co., 1378 West Thirty-third street, will build a 1-story, brick factory costing $3000.

CLEVELAND.—The Grant Motor Car Co. recently took out a permit to erect a plant addition, 62 x 262 feet, to cost $60,000.

CLEVELAND.—The Stevens Iron Works recently was incorporated with $50,000 capital, by W. B. Alexander and others.

CLEVELAND.—A $30,000, 2-story, 35 x 136-foot factory addition will be constructed by the Willard Storage Battery Co., 246 East 131st street.

CLEVELAND.—A $12,000 factory building will be erected by the Galvanized Products Co., 8410 Lake avenue at 123rd street and the Erie railroad.

CLEVELAND.—The Fulton Foundry & Machine Co. will build a $35,000 factory building at West Seventy-fifth street and Morgan avenue.

CLEVELAND.—A 3-story reinforced concrete factory and office will be constructed by the National Malleable Castings Co., at Quincy and Woodhill road. The cost will be $315,000.

CLEVELAND.—The Drew Electric Mfg, Co. contemplates a plant, two stories, 80 x 204 feet, to cost $35,000. D. W. Morrow, Garfield building, is architect.

CLEVELAND.—The Standard Brass Foundry Co. will erect a 2-story, 59 x 37-foot office and shop at 990 East Sixty-seventh street to cost $9000.

CLEVELAND.—The Carnegie Pattern Works Co., with a capital stock of $10,000, has just incorporated The incorporators are Joseph Dernbe, H. R. McManamon, J. M. Hardy, W. M. Monroe and John M. Bell.

CLEVELAND.—Work on the first unit of six has been started for the P. A. Geier Co., on 105th street between Barrett and Elk avenues. A large piece of ground was purchased recently for the proposed expansion. When finished, the buildings will include a foundry, electric light plant, a machine shop, an assembly plant and a nickel plating plant at a cost of $50,000. The company manufactures vacuum cleaners and electric washing machines.

CINCINNATI.—A factory addition costing $40,000 will be built to the Herschede Hall Clock Co., at McMillin street and Essex place.

COLUMBUS, O.—The Farber Iron Co. has been incorporated with $20,000 capital, by Max Farber, Edwin F. Hoover, Max H. Grumble and Benjamin F. Silberstein.

DELAWARE, O.—Two additions, 1 and 2-story, 85 x 100 feet and 43 x 85 feet, will be built to the factory of the Sun Ray Stove Co. The cost will be $25,000.

HAMILTON, O.—The American Frog & Switch Co., according to a current rumor, contemplates a modern steel foundry.

IRONVILLE, O.—The Industrial Electric Steel Castings Co. is reconstructing a building here for its needs. When completed the work will provide space 120 x 180 feet besides the office and will have cost $60,000. The company which was only recently organized will install four electric furnaces for producing steel for automobiles and other purposes.

MANSFIELD, O.—A new foundry, office and stockroom has been started by the Fate-Root-Heath Co. The work will be completed about Nov. 15.

MANSFIELD, O.—The Farm Power Machinery Co. reecntly was incorporated with $50,000 capital, by George L. Buchan and others.

MARYSVILLE, O.—The Regent Brass Foundry Co. has started extensive improvements on its plant which will more than double its present capacity. The addition will contain a new polishing room, shipping room, nickel plating room and a lunchroom for the employes.

MASSILON, O.—A 2-story brick, steel and concrete foundry, 35 x 193 feet, will be constructed for the Russell & Co. by the Wendling Construction Co.

NEWARK, O.—The Moore Mfg. Co., of Indianapolis, Ind., is installing its new machinery and equipment in its new factory here. The company will manufacture machine tools and do all kinds of machine work.

NILES, O.—A new plant has been started for the Youngstown Steel Car Mfg. Co., of Youngstown, O., at a cost of $100,000. The two largest buildings will be 80 x 400 feet.

SPRINGFIELD, O.—The Automatic Metal Products Co. has been incorporated with a capital of $50,000. The incorporators are R. E. Westfall, O. C. Burmeister, F. H. Andrews, E. K. Merwine and Louis Spencer.

SPRINGFIELD, O.—A foundry and factory addition,

45 x 50 feet and costing $2500 will be made by the Duplex Mill Co. A. G. Samuelson has been named the contractor. A 61 x 63-foot addition costing $3000 also will be made.

TOLEDO.—The Swartz Electric Co. is preparing plans for a factory addition which will practically double the floor space.

TOLEDO.—A $100,000 factory is to be erected by the O'Neill Machine Co. at West Bancroft and Auburn streets. The construction will be 2-story and of brick and concrete.

TOLEDO, O.—Work has started on a plant here for the Industrial Electric Steel Casting Co. The plant will be equipped with four electric furnaces. L. S. Dukes is president.

WARREN, O.—Ground will be broken shortly for a plant for the Ohio Structural Steel Co.

WOOSTER, O.—William Long has been awarded the contract for a 3-story, 110 x 140-foot factory building for the Buckeye Aluminum Co.

WOOSTER, O.—The Buckeye Aluminum Co. recently took over the contract of F. H. Blake with the Wooster board of trade for the building of a plant here for the manufacture of aluminum specialties.

YOUNGSTOWN, O.—Ground was recently broken for a plant for the Youngstown Pressed Steel Co.

Throughout the West

DULUTH, MINN.—The McDougall-Duluth Co. is reported contemplating a steel casting plant.

DULUTH.—The Duluth Foundry & Faucet Co. $50,000 to manufacture water faucets and other has been incorporated with a capital stock of castings.

MINNEAPOLIS.—A 1-story warehouse, 132 x 214 feet, will be constructed at 3236 Snelling avenue by the Minneapolis Steel & Machine Co. The cost will be $6000.

KANSAS CITY, MO.—The Butler Mfg. Co., tanks, etc., has purchased land on which it plans to erect an addition.

ST. LOUIS.—The Inland Machine Works which just recently became under the complete control of O. G. Stark, the president, is building a new plant at Kins highway and Slevin avenue where the company owns 15 acres of land.

ST. LOUIS.—The Michigan City Foundry Co., Michigan City, Ind., will build a 1-story, 100 x 107-foot foundry here. J. M. Hirschste, 5777 De Giverville avenue, St. Louis, is the architect.

DALLAS, TEX.—The American Machinery & Supply Co. has been organized to manufacture machinery by George H. Ford and Henry H. Horr.

ELKHART, KANS.—Bonds for $60,000 have been voted to improve the waterworks and electric lighting systems, including a new powerhouse.

GREELEY, COLO.—The commercial club here is trying to create sufficient interest to construct a small foundry to handle the work of the agricultural community. It is estimated that such a foundry would cost $4000.

SPOKANE, WASH.—A small fire in the shipping room and main building of the Union Iron Works recently damaged the plant to the amount of $1500.

PORTLAND, OREG. — Fire destroyed the Wood-Ewing Iron Works at 1371 Macadam street, recently causing a loss of $5000 to $8000.

PORTLAND, ORE.—A general foundry building will be erected by the Pacific Brass & Steel Foundy at a cost of $6000. Additional equipment will be installed.

SEATTLE.—The Paragon Tool Co. has awarded a contract to McRae Bros. for construction of a two-story building to cost about $50,000. John Graham is the architect.

LONG BEACH, CAL.—The Riblet Carburetor Co., 319 East Broadway, plans to build a plant estimated to cost $25,000. E. S. Beggs is manager.

LOS ANGELES.—The Moreland Motor Truck Co. is reported planning to build a branch plant in Fresno, Cal., to cost $12,000.

LOS ANGELES.—The Vim Mfg. & Sales Corp., capitalized at $25,000, has been chartered to manufacture machinery by H. C. Wallace, Henry E. Bean and J. S. Wallace.

LOS ANGELES.—The Dohrmann-Walker Co., capitalized at $200,000, has been chartered to manufacture magnesite products by W. W. Morgan, Albert R. Walker and Frank E. Martin.

LOS ANGELES.—The American Engine & Airplane Co., 2869 West Pico street, has been organized to manufacture airplane parts, etc., by Ralph Burdick, 1855 North Kingsley drive, and others.

LOS ANGELES.—The American Engine & Airplane Co., 2869 West Pico street, is being organized by R. M. Burdick and David R. Davis, 1855 North Kingsley drive, to manufacture aircraft and motors.

LOS ANGELES.—The Electro Thermal Control Corp., capitalized at $100,000, has been chartered to manufacture temperature regulation equipment, by E. B. Foster, Frank W. Foster and R. R. Whitcomb.

LOS ANGELES.—The Automatic Machine Co., 808-10 West Sixteenth street, has been organized and will engage in the manufacture of automobile parts. Allan Ranson and Corbin F. Fitzgerald are among the officers.

LOS ANGELES.—The Axelson Machine Co., Boyle avenue and Randolph street, has been incorporated with $750,000 capital, by C. F. and D. F. Axelson, South Pasadena, Cal., and J. C. Axelson. The company will manufacture oil well pumping equipment, etc.

LOS ANGELES.—The Keystone Iron & Steel Works, 937 North Main street, is building the first unit of its new plant to be erected on 37th street and Santa Fe avenue, consisting of a 2-story pattern shop and office. The cost including the equipment will be $200,000.

OAKDALE, CAL.—The Calavears Copper Co. is making plans for a reservoir and power plant to supply current for its plant at Copperopolis.

OGDEN, CAL.—The Western Tool Mfg. Co. has been incorporated with $99,000 capital, by George L. Smith, G. H. Stalker and others.

RED BLUFF, CAL.—An election will be held July 1 on a bond issue of $807,000, included in which is $521,000 for bridges.

SACRAMENTO, CAL.—The Reeder Welding Co. plans to enlarge its plant. The company is now erecting a foundry.

SACRAMENTO, CAL.—The city of Sacramento has voted $1,800,000 in bonds to build a filtration plant and pumping station on Sacramento river. F. C. Miller, City Hall, is engineer.

SANTA MONICA, CAL.—The City Forge & Spring Works, Main and Hill streets, has filed notice of organization to engage in the manufacture of forgings, etc., by A. A. Generaux, 560 Rose avenue, Venice, Cal., and N. W. Hamilton, Villa and Allen avenues, Pasadena, Cal.

Business in Canada

MONTREAL, QUE.—The Phoenix Construction Co., Ltd., has been incorporated to manufacture iron and woodworking tools, machinery, implements, etc., with $100,000 capital stock; by Francois P. Braise, Laura M. Smith, Ella M. Jackson and others.

MONTREAL, QUE.—D. H. McDougall, president of the Nova Scotia Steel & Coal Co., has completed for his company the purchase from the English ministry of shipping, represented by Director J. B. Whyte, New York, the coal handling plant on the Canadian National Railway terminals at Halifax, N. S.

SHERBROOKE, QUE.—Pressure Proof Rings, Ltd., have been incorporated to manufacture pistons, piston rings, engines, motors, machinery, etc., with $100,000 capital stock; by Edward L. Mills, Sylvester W. Jenkes, George D. MacKinnon and others.

ST. HYACINTHE, QUE.—The Southern Canada Power Co., Ltd., is having plans prepared for the reconstruction of its gas plant here. Work will be started on the plant in August. General manager, James B. Woodyatt, Coristine building, Montreal, Que.

THREE RIVERS, QUE.—The Three Rivers Shipyard Co. has started work on the erection of a machine shop on Notre Dame street.

THREE RIVERS, QUE.—A firm in Montreal has been awarded the contract for a $150,000 factory for the Page Wire Fence Co.

BRANTFORD, ONT.—The Cockshutt Plow Co. will build extensions to its plant costing about $100,000.

CHATHAM, ONT.—The contract for the construction of a new waterworks plant here has been awarded the James, Loudon & Hertzberg, Excelsior Life building, Toronto, Ont. The undertaking will cost between $150,000 and $200,000. None of the equipment in the old plant will be used in the new works but entirely new machinery will be installed.

COLLINGWOOD, ONT.—The stockholders of the Imperial Steel & Wire Co. have decided to rebuild the plant which was destroyed by fire recently.

HAILEYBURY, ONT.—The United Iron & Machinery Co. will very shortly call for bids for the erection of a foundry and machine shop to cost about $100,000.

KITCHENER, ONT.—The F. W. D. Auto Co. will start building operations immediately on the erection of a plant here for the assembling of motor truck parts and for the manufacture of truck bodies, etc.

LONDON, ONT.—Plans are now being prepared for a $500,000 plant to be erected here by the Republic Motor Truck Co.

SARNIA, ONT.—Rapid progress is being made on the erection of a $50,000 foundry here for the Romeo Foundry Co., Port Huron, Mich.

TORONTO, ONT.—The Wolverine Co., Ltd., has been incorporated with a $60,000 capital to manufacture plumbing supplies and equipment and to do general contracting.

TORONTO, ONT.—The Canadian Stoker Co., Ltd., has been incorporated with a capital stock of $40,000 to manufacture machinery and tools and to engage as machinists and engineers.

TORONTO, ONT.—L. E. Dowling, 167 Yonge street, has been awarded the general contract for the erection of a manufacturing plant here to cost $50,000 for the Anchor Cap and Closure Corp. of Canada, Ltd., 50 Dovercourt road.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.35c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.35c
Iron bars, New York	3.37c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.45c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.65c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.50c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.33c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	6.75c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.68c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.70c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25

Chicago to:

Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.

Lengths—72-84-96-120 and 144 inches.

Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½

Lap Weld

2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½

Lap Weld

2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½

Lap Weld

2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric GG Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$22.00 to 22.50
Chicago	22.00 to 22.50
Eastern Pennsylvania	19.50 to 20.50
Cleveland	21.50 to 22.00
St. Louis	20.50 to 21.00
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.50 to 16.00
New Jersey points	**14.00 to 14.50**
Cincinnati	18.00 to 18.50
Birmingham	18.00 to 20.00
Valleys	**16.50 to 17.50**
Boston (dealers)	16.00 to 17.00

BUNDLED SHEETS

Pittsburgh	$16.00 to 16.50
Eastern Pennsylvania	15.00 to 16.00
Cleveland	16.00 to 16.50
Buffalo	14.50 to 15.00
Cincinnati	13.00 to 13.50
St. Louis	11.00 to 11.50

STEEL RAILS, SHORT

Chicago	$24.50 to 25.00
Cleveland	24.00 to 25.00
Boston (Dealers)	14.00 to 14.50
St. Louis	22.50 to 23.00
Birmingham	18.00 to 20.00
Cincinnati	18.00 to 18.50

STOVE PLATE

Pittsburgh	$18.00 to 19.00
Chicago	25.50 to 26.00
Eastern Pennsylvania	19.00 to 20.00
Cleveland	19.25 to 20.25
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New Jersey points	18.25 to 19.25
Cincinnati	16.00 to 16.50
Birmingham	**18.00 to 20.00**
Boston (consumers)	17.50 to 18.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	25.00 to 26.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$21.50 to 22.00
St. Louis	19.50 to 20.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$22.00 to 22.50
Chicago	$21.50 to 22.00
St. Louis	22.50 to 23.00

BALED SHEETS

Pittsburgh	$19.00 to 20.00
Chicago	17.50 to 18.00

FROGS, SWITCHES, GUARDS

Chicago	$22.50 to 23.00
St. Louis	21.00 to 21.50
Eastern Pennsylvania	19.50 to 20.50

BOILER PLATE, CUT

Chicago, No. 1	$20.00 to 20.50
St. Louis, No. 1	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$24.50 to 25.00
St. Louis	21.50 to 22.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$22.00 to 22.50
Pittsburgh, No. 2	21.00 to 21.50
Chicago, No. 1	24.50 to 25.00
Chicago, No. 2	23.00 to 23.50
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	24.00 to 24.50
St. Louis, No. 1	21.50 to 22.00
St. Louis, No. 2	20.50 to 21.00
Buffalo	23.00 to 23.50
Cincinnati, No. 1	20.00 to 20.50
Birmingham, No. 1	14.50 to 15.50
New York No. 1 (dealers' price)	21.50 to 22.50
Valleys No. 1	**18.00 to 19.00**
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$20.00 to 21.00
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.50 to 16.00
Boston (dealers)	**14.50 to 15.00**

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers' price)	$18.00 to 18.50
New York, special	16.00 to 16.50

BUSHELING

Chicago, No. 1	$21.00 to 22.00
Chicago, No. 2	15.50 to 16.00
Cleveland, No. 1	21.00 to 22.00
Cleveland, No. 2	17.50 to 18.50
St. Louis, No. 1	20.50 to 21.00
Buffalo, No. 1	16.50 to 17.00
Cincinnati, No. 1	15.00 to 15.50
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.50 to 14.00
Chicago	11.50 to 12.00
Eastern Pennsylvania	14.00 to 15.00
Eastern Pennsylvania (blast furn.)	12.00 to 13.00
Cleveland	12.50 to 13.00
Buffalo	12.00 to 12.50
New York (dealers 'price)	9.50 to 10.00
St. Louis	12.50 to 13.00
Cincinnati	8.00 to 8.50
Birmingham	9.00 to 10.00
Valleys	**11.00 to 11.50**
Boston (dealers)	9.50 to 10.50
Boston (blast furnace) (dealers)	7.50 to 8.00

CAST IRON BORINGS

Pittsburgh	$16.00 to 17.00
Chicago	15.00 to 15.50
Eastern Pennsylvania	14.50 to 15.00
Cleveland	15.25 to 15.65
St. Louis	12.50 to 13.00
Buffalo	13.50 to 14.00
New York (dealers' price)	10.50 to 11.00
Cincinnati	10.00 to 10.50
Birmingham	9.00 to 10.00
Valleys	**11.50 to 12.00**
Boston (dealers)	9.50 to 10.50
Boston (blast furnace)	8.00 to 8.50

IRON AXLES

Pittsburgh	$30.00 to 31.00
Chicago	35.00 to 36.00
Eastern Pennsylvania	35.00
Cleveland	35.00 to 36.00
St. Louis	34.00 to 34.50
Buffalo	28.00 to 29.00
Cincinnati	26.50 to 27.00

IRON RAILS

Chicago	$25.00 to 26.00
Cleveland	27.00 to 28.00
St. Louis	23.50 to 24.00
Buffalo	24.00 to 25.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$19.00 to 20.00
Cleveland	19.00 to 19.50
St. Louis	18.50 to 19.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$23.50 to 24.00
Cleveland	19.50 to 20.50
Buffalo	20.00 to 20.50
New Jersey points	16.75 to 17.25
Eastern Pennsylvania	17.50 to 18.50

FORGE FLASHINGS

Cleveland, large	$16.00 to 16.50
Cleveland, small	19.00 to 19.50
Chicago, small	18.50 to 19.00
Boston (dealers)	**10.00 to 10.50**

FORGE SCRAP

Chicago	$23.00 to 23.50
Eastern Pennsylvania, No. 1	14.50 to 15.50

ARCH BARS AND TRANSOMS

Chicago	$30.00 to 31.00
St. Louis	25.50 to 26.00

ANGLE BARS—IRON

Chicago	$28.50 to 29.00
St. Louis	25.50 to 26.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.50 to 17.50
Eastern Pennsylvania, iron	16.00 to 17.00
Boston (dealers)	9.50 to 10.00
Cleveland	17.00 to 18.00
Buffalo	15.00 to 16.00
Chicago	18.50 to 19.00

STEEL CAR AXLES

Pittsburgh	$27.00 to 28.00
Eastern Pennsylvania	32.00
Cleveland	34 00 to 35.00
St. Louis	31.50 to 32.00
Buffalo	28.00 to 29.00
Chicago	31.50 to 32.00
New York (dealers' price)	21.25 to 22.25
Birmingham	20.00 to 22.00
Boston (dealers)	25.00 to 26.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	19.75 to 20.75
Chicago	30.00 to 31.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$24.00 to 25.00
Pittsburgh, steel	23.00 to 24.00
Chicago, iron	27.00 to 27.50
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, iron	24.50 to 25.50
St. Louis, iron	24.50 to 25.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	20.00 to 21.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$24.00 to 25.00
Chicago, cupola	28.50 to 29.00
Eastern Pennsylvania, cupola	23.50 to 24.00
Cleveland, cupola	23.50 to 24.50
New York, cupola (dealers' price)	20.50 to 21.50
Cincinnati, No. 1, cupola	22.00 to 22.50
Birmingham, cupola	22.00 to 23.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	25.50 to 26.00
Buffalo	24.50 to 25.00
Boston	23.50 to 24.50

HEAVY CAST

New York (dealers' price)	$20.50 to 21.50
Buffalo	**21.00 to 22.00**
Pittsburgh	21.50 to 22.00
Cleveland	19.50 to 20.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$19.00 to 20.00
Pittsburgh, agricultural	18.00 to 19.00
Chicago, railroad	24.50 to 25.00
Chicago, agricultural	24.00 to 24.50
Eastern Pennsylvania, railroad	18.00 to 19.00
Cleveland, railroad	22.00 to 23.00
Cleveland, agricultural	19.00 to 19.50
St. Louis, railroad	20.00 to 20.50
St. Louis, agricultural	19.50 to 20.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	16.00 to 16.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	32.00 to 33.00
Eastern Pennsylvania	22.00 to 23.00
Cleveland	26.00 to 27.00
St. Louis	28.50 to 29.00
Birmingham	**15.00 to 16.00**
Boston (dealers)	16.50 to 17.00

LOCOMOTIVE TIRES

Chicago	26.50 to 27.00
St. Louis	21.50 to 22.00

BOILER PUNCHINGS

Chicago	$26.00 to 27.00
Eastern Pennsylvania	23.00 to 24.00

Announcement

to Buyers and Sellers of Scrap

Whatever your connection in handling Scrap, you expect three things:

Right Price
Quick Action
Courteous Treatment

Established over five years, with a complete and able staff of experienced Scrap men, our organization is ready to serve you.

— The James S. Miller Co
McCormick Building
Chicago

We can give especially efficient service to

— Steel Foundries { Open Hearth and Electric
— Rolling Mills
— Blast Furnaces
— Iron Foundries { Gray and Malleable

New Trade Publications

TOOL STEEL.—A booklet entitled "Tool Steel Efficiency" has just been issued by the Century Steel Company of America, Poughkeepsie, N. Y. The evolution of tool steel is traced from its earliest beginning to its present highly developed state. The various brands of steel manufactured by the Century company are described and type analyses of most of the brands are given.

DRILLS.—A booklet of 32 pages is being circulated by the Sullivan Machinery Co., Chicago, in which it describes and illustrates a number of drills for rock excavation in mines, quarries, etc. The various drills are fully described and illustrated and specifications are given. A number of air compressors, manufactured by the company and which produce the power with which the drills are operated, are also illustrated.

METAL HOSE.—The Breeze Mfg. Co., Newark, N. J., has published an interesting 36-page booklet dealing in detail with flexible metal hose. This, according to the company, is the only booklet ever published in this country on the subject. The descriptive matter covers metal hose in detail for every type and method of winding, showing how it is applied, etc., and the trades and industries which use it are given. The booklet is replete with information which should prove not only interesting but valuable.

CABLEWAYS.—A new 16-page bulletin issued by the Blaw-Knox Co., Pittsburgh, describes an automatic single rope cableway manufactured by that company to eliminate the necessity for three cables as used previously. By this arrangement a clamshell bucket requires only a standard single drum nonreversible hoist and a single hoisting rope, both for operating the bucket and for conveying it along the cable. Stops may be placed on either or both ends of the cable. When the carriage comes in contact with a stop, it is securely held steady while the bucket is released and the load dumped. For dumping loads at intermediate positions on the cable a tripping stop is provided. This stop which is a small carriage may be run along the cable to any desired position where it is clamped to the cable by means of pulling a small tag line attached. As the carriage approaches, a "swivel bar" comes in contact with the bucket to trip it. By means of this arrangement even distribution of dumping can be maintained.

ROLLING MILL EQUIPMENT.—The Mesta Machine Co., Pittsburgh, has issued a 127-page booklet giving a brief description and containing illustrations of its plant and products. Printed on glossed paper, the descriptive material is painstakingly presented, while the illustrations are unusually clear in detail. The introduction sets forth the location of the company's plant and the domestic and world markets which the firm supplies. Then follow concise descriptions of the various departments and the process of work in each. The book gives a list of the principal products manufactured as well as a careful description of the different kinds of equipment made. Products thus dealt with include gas blowing engines, steam blowing engines, automatic plate valves, gas power engines, uniflow engines, corliss engines, reversing engines, air compressors, barometric condensers and vacuum pumps, blooming mills, slabbing mills, plate mills, merchant bar and structural mills, wheel mills, tire mills, jobbing mills, sheet mills, tin plate mills, cold mills, pickling mills, gear drives, double helical cut tooth mill pinions, double helical cut tooth gears, straight cut tooth gears, machine molded rolling mill pinions, rope drives, flywheels, steam-hydraulic forging presses, steam-hydraulic shears, plate shears, bloom shears, vertical bar shears, lever shears, double shears for tin plate, squaring shears for tin plate, squaring shears for sheets, saws roll turning lathes and rolls. The book not only is well arranged and illustrated, but contains information of value to engineers and others for reference. The booklet is printed in English and French.

FORGINGS.—Walter Somers & Co., Ltd., operating the Haywood Forge, Halesowen, near Birmingham, England, have issued a handsomely illustrated catalog which contains not only views of this well equipped plant, but of the miscellaneous product manufactured. This plant is equipped to produce steel and iron forgings up to 100 tons in weight and during the period of the war it was engaged almost exclusively in the production of 15-inch shells. The plant was founded in 1866 by the late Walter Somers and in 1895 it was converted into a private limited company, Walter Somers having occupied the position of chairman until his death in 1917. The works cover an area of 15 acres and consist of forges and machine shops. The forges are equipped with 12 steam hammers, ranging from 10 cwt. to 12 tons, and 7 hydraulic presses, ranging in capacity from 600 to 3600 tons. This equipment permits of the production of forgings up to 100 tons in weight. The machine shops are modernly equipped throughout and the tools have sufficient capacity to handle shafts of over 120 feet in length. Among the forgings produced and illustrated in this catalog are steel stern frames of very large size, marine-type built up crank shafts, three-throw crank shafts for reversing mill engine, hydraulically-pressed steel crank shaft, a steel screw 84 feet 7 inches long, 11½ inches in diameter, with a 2-inch pitch forged from one ingot for 150-ton sheerlegs at the Chatham dockyard. A steel built-up two-throw crank shaft having 2 foot 6 inch centers, for driving large reversing rolling mills with a finished weight of 38 tons 14 cwt. also is illustrated. Hydraulically-pressed steel rol's with a forged weight of 22 tons each, also are shown as well as housing pins and boxes for rolling mills, large rotary wheels, forged steel gear wheel disks and rims, forged propeller brackets, rudder frames, etc.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A firm in Spain desires to purchase all kinds of hardware, cutlery, tableware, flatware, hollow ware and house furnishing goods of all sorts suitable to the hardware trade. Quotations should be given f.o.b. New York. Correspondence should be in Spanish. Opportunity No. 30091.

Quotations are desired immediately c.i.f. port in Ireland, on best quality bituminous coal and earliest date of delivery of 10,000 tons. Opportunity No. 30092.

An American firm which is sending a representative to establish agencies in Argentina, Paraguay, Uraguay and Brazil desires to secure the representation of manufacturers of contracting machinery, farm machinery, hardware and automobiles and accessories. Opportunity No. 30094.

A party from Gibraltar who is in this country for a short time desires to secure an agency for the sale of motor cars and trucks, hardware and tools. Opportunity No. 30072.

The purchase or agency for the sale of rolled steel and iron, sheet iron and tin is desired by a firm in Belgium. Quotations should be given c.i.f. Antwerp. Opportunity 30081.

The representative of an English firm is in this country and wishes to purchase and secure the agency for the sale of electrical goods, leather goods, rubber goods, hardware and agricultural machinery in Siberia. Opportunity No. 30042.

An Italian company wishes to form a combination with an American concern manufacturing controllers, steel wheels and entire electrical trucks minus the batteries. Correspondence should be in French or Italian. Opportunity No. 30043.

A company in Argentina wishes to represent American firms dealing in machinery in general, electrical and construction materials, automobiles and trucks. Correspondence should be in Spanish. Opportunity No. 30057.

Catalogs and price lists of pastural equipment, including wire fencing, are desired by a party in Australia. Opportunity No. 30046.

A company in England wishes to purchase or to secure the agency for the sale of all kinds of machinery. Opportunity No. 30048.

A party in Switzerland would like to secure a general agency for France, Italy, Spain and Switzerland. Opportunity No. 30049.

The agency on a commission basis for all of Italy, of wrought iron pipe, malleable iron pipe fittings, steam and water cocks and valves, machinists tools, electrical supplies and mechanical lines in general, is desired by a firm in that country. Opportunity No. 30058.

A firm in Switzerland wishes to secure the agency for the sale of stationary motors and engines driven by gasolene, kerosene and electricity (horizontal 20 to 120 horsepower), compressors, cranes, rigs and mining machinery. Opportunity No. 30060.

The representative of a firm in Sweden, who is at present in this country, desires to secure an agency for the sale in Scandinavia of boring, milling and drilling machinery, shipyard machinery, locomotive building machinery and tools of all kinds. Opportunity No. 30063.

The agency is desired by a man in France for the sale of electrical, sanitary and plumbing material. Correspondence should be in French. Opportunity No. 30064.

A mechanical engineer of the State railways of Finland is in this country and desires to purchase car and locomotive repairing machinery and tools, working clothes and railway equipment and supplies. Opportunity No. 30065.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, August 14, 1919 *No. 7*

Mills Hard Pressed to Fill Orders

Makers of Finished Products Unable to Take Prompt Business—July Output of Ingots and Unfilled Tonnage of Corporation Reflect Trade Growth —Labor Situation Affects Ore Shipments

EVIDENCE of trade growth introduced last week by the announced increase in pig iron production is further emphasized by the encouraging gains in the output of steel ingots and unfilled tonnages of the United States Steel Corp. The July production of ingots surpassed that of June by 288,957 tons, exceeding the gain of June over May. Unfilled orders of the Corporation on July 31 amounted to 5,578,661 tons, an increase of 685,806 over the total for June 30, appreciably topping the June advance over the last day figures for May. In view of these gratifying reports, the accelerated improvement which began with the notable recovery of business in June, bids fair to continue unless the influence of labor unrest, which now menaces certain districts, is more generally felt by the industry. President Wilson's stern rebuke to the striking shopmen has checked, temporarily at least, what promised to be an alarming development.

Specifications against contracts in many lines of semifinished and finished products are rapidly cutting down the opportunity for mills to accept orders for prompt delivery. New business, although far from being sensational, is of moderate volume and is featured by inquiries for export material.

Mills Are Sold Up

Valley sheet mills have sufficient orders to warrant steady operation into the fourth quarter. The failure of the leading Pittsburgh steelmaker to deviate from March 21 quotations is delaying a general upward move in prices. Orders are being booked in Pittsburgh at the rate of 25,000 tons daily. Although the leading bar manufacturer in Pittsburgh is quoting steel bars at 2.35c base, talk of higher prices is heard. A Buffalo barmaker is reported to have advanced the price to a base of 2.40c, Pittsburgh. Structural awards show gains in all districts except Pittsburgh, where specifications are slow. In New York, inquiries are reported for 4000 tons for the proposed Hotel Linnard and 20,000 tons for the Tata Iron & Steel Co., India. Pipe and wire makers are well supplied with orders, the latter being virtually out of the market. It is reported that the railroad administration contemplates placing an order for 100,000 tons of standard rails.

Iron Prices Tend Upward

Brisk buying of pig iron is reported in various markets. From 5000 to 10,000 tons of foundry iron was purchased by the Central Foundry Co. for delivery over the remainder of this year and the first half of 1920. Important inquiries include 2000 tons for 1920 for the Essex Foundry Co., 7000 tons for the Worthington Pump & Machinery Corp., and amounts estimated from 50,000 to 200,000 tons for export, including 10,000 tons for Italy. About 40,000 tons of foundry and malleable iron were booked by two Buffalo interests during the week. Sales aggregating about 7500 tons are reported by New England dealers, and Philadelphia reports sales of 2000 tons. In the Alabama district the Republic, Sloss-Sheffield and Woodward companies each are planning to blow in an additional furnace this month. The price advances in Buffalo, reported last week, have become general. No. 2X is quoted at $28 to $29; malleable, $27.25 to $29; basic, $26.75 and No. 2 plain, $26.75 to $28.

Good Sales For Export

Export business for the first week of August equalled that for the last week of July. Agents of the Chilean government are negotiating for $50,000,000 of railway supplies, contracts for some of which have been signed contingent upon a satisfactory credit arrangement.

During the past week strikes by railroad shopmen impaired freight service in Chicago and northwestern points, and in New England. The activities of shippers and consumers in these districts were seriously hampered. Labor difficulties which curtailed production and had a sentimental effect on local sales were reported in Cincinnati, Cleveland and other cities. The most far-reaching manifestation of unrest appeared at the ore docks of Minnesota, where a strike of 17,000 railroad and dock workers tied up 200 bulk freighters. Unless this situation is remedied within a few days, many furnaces and steel works depending on lake ore will be embarrassed next spring.

AUGUST 14, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Production is the Cure

FRANK A. VANDERLIP'S epigram, "this is a country of economic illiterates," was made several years ago, but the force of his remarks is being brought home more and more forcibly every day. A course in elementary economics should be a part of every public school curriculum. Every newspaper and editorial writer, every school teacher, every preacher and every other person whose duty it is to lead or teach others, should be compelled to pass an examination on this subject. In this country of equal political suffrage, where ignorance votes shoulder to shoulder with intelligence on matters of common importance, it is imperative that the public have a deeper understanding of economic causes and effects.

Recently the country viewed the spectacle of an organization of labor unions passing an ultimatum upon the government of the United States. The railroad brotherhoods want either more money or more commodities for their money, although they are already the highest paid class of labor. So the government is about to undertake an investigation. Legislators are railing against an impersonal, mysterious group of "profiteers" called "big business" by some, "Wall Street" by others. The fact of the matter is that the real malefactor is not a person, or a corporation but a condition—inflation. The government printed a lot of money to pay its war expenses. Europe sent a lot of money over here for goods. There is about twice as much money in circulation now as before the war, but only the same amount of commodities is being produced, while we continue to feed a large part of Europe. The amount of money one draws per week or per month is comparative. It is the amount of commodities one can buy with that money that is important.

The railroad brotherhoods hinted at the truth when they asked for a reduction in the living cost as an alternative to increased wages. It is production that counts. Now is the time when the country should be straining every nerve to produce all the goods possible to rehabilitate the world and to bring prices down. Meanwhile, the railroad shopmen have gone on strike and the brotherhoods have set dates when they also will walk out and starve the public into submission if their demands are not granted. Some day the public will wake up.

Give Hard Work Its Reward

FOUNDRIES, machine shops, toolmakers, in fact users of iron and steel all over the country have been effected by labor unrest. Strikes have and still are costing both workers and owners enormous sums and yet no general corrective movement is being made. Each owner or plant manager as the problem comes to his door handles his own case as best he can.

As one manager said recently, "It is not the exorbitant price which I have to pay my men, nor the short hours demanded, which is my worst trouble; it is the fact that a man will no longer work faithfully under any conditions." The danger is not so much in the cost of an hour's work as it is in the attitude of the worker during that hour. Arrogance and laziness are creeping over the country. All stable prosperity—all healthy and normal business—in the last analysis, is founded on hard work. If we are going to work half as effectively as we used to and at the same time are going to demand twice our former comforts, then sooner or later we must starve, for regardless of money, food and comfort cost hard work.

What then is the solution? Many reforms are continually being suggested but these are nearly all theoretical and contain little of practical value. The labor unions are powerful organizations and if rightly directed could correct the very faults they have brought about. Why not ask organized labor to adopt a system which will reward, instead of discourage, hard work? Could any faction afford to overlook such a request if it were intelligently presented?

New Lines for Export

IF President Wilson's plan to curtail the exportation of foodstuffs is carried out an important change is likely to result in the foreign trade of the United States. Such a move will not be without its benefits to the iron and steel industry, inasmuch as metal products have been crowded off the outgoing ships by the heavy demand in Europe for food. The domestic economic crisis may contain some things which are of grave concern to our own citizens, but whatever drastic measures are adopted to meet that situation will not be without their compensation even in our foreign trade.

European credits have been strained as evidenced by the decline in exchange rates. Such a decline has been brought about by the constant and predominant exports from the United States to Europe during the past five years. These exports have been primarily munitions and food during the period of belligerency and foodstuffs alone since the signing of the armistice. Sales of essential machinery to enable the peoples of the devastated regions to produce have been hampered by the dollar selling at a premium. Any check placed upon the exportation of foods undoubtedly will broaden the opportunity to sell Europe machinery and the iron and steel products so greatly needed.

Promoting the Thrift Habit

PROMOTION of thrift among the masses is classified by the United States government as one of the important steps in the rebirth of Europe. In a booklet issued by the council of national defense outlining various measures proposed or in effect for reconstruction it is pointed out that one large firm in England has adopted a "new" method of paying its workers so as to encourage the habit of saving. Instead of paying the workers by means of checks, cash or currency, the firm has the amounts of their wages placed to their credit at a conveniently situated bank. The wage-earners are urged to draw out only sufficient money to pay their living expenses and to leave a certain amount of their wages in the bank. As a further incentive, the firm deposits a certain amount to the workers' credit in addition to regular wages, the amount being governed by the sum which they leave on deposit for a definite period.

Experiences gained during the war caused many employers to revise their opinions regarding the value of thrift among workers. Years ago it was believed that the man who had no money could be depended upon to work hard to earn a living and that just as soon as he acquired a bank account his independence tended to unfit him for his work. Now it is perceived that the man who economizes and saves is the man on whom the most reliance can be placed; the man who can and does not save is careless in his habits and is likely to be a careless worker. The sale of Liberty bonds and thrift stamps did a great deal to encourage the instinct to lay aside a little for a rainy day, and employers have given considerable thought to fostering the habit.

Now a movement has been started to "nationalize" the thrift habit, to systematize it and put it on a firm basis to increase the individual wealth of the nation as the "baby bond" system increased the wealth of the French. A corporation has been formed with bankers, lawyers and financiers, as sponsors to sell "baby bonds." This corporation is to deal with employers and provide a method whereby the employers may extend the offer to employes. Employes would authorize employers to withhold from their pay envelopes certain amounts and credit them to their accounts. When $10 are saved a bond for that amount would be issued, and when 10 bonds are accumulated a bond for $100 would be issued, all bearing interest. The method was explained recently to employes at one of the plants of the General Electric Co., and they, through their works council, decided to adopt it. This is an indication of the attitude employes may be expected to take with regard to constructive plans for the encouragement of thrift in view of the injunction of thoughtful bankers that the only way to overcome present high cost conditions is to save and produce more, the movement is highly important and timely.

Crane Business Makes the Turn

JULY in all likelihood will stand out in the annals of the electric crane industry as the turning point to more normal conditions following the end of the world war. During the past month trading was more active by far than at any time this year, and the volume of business transacted compared most favorably with some of the more active months during the war. In three orders alone, more than 60 cranes were awarded, ranging in capacity from 3 to 250 tons, and the volume of smaller and miscellaneous business placed, it is believed, will run well over that total.

A significant feature of the business placed last month is the fact that two of the larger orders awarded were for government account. This does not throw much light upon the disposition of standard cranes already in the possession of the government. Nevertheless, it does lend strength to the belief that no serious hardship will be worked upon the industry by the cranes thus held. At the same time, there was sufficient business for private account to indicate most strongly that industry is beginning to take a new lease on life.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 474 AND 476

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	26.75 to 27.25
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	30.00 to 31.15

FOUNDRY IRON SILICONS

No. 2 Northern	$1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$30.50 to 31.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 28.00
No. 2 Northern, Boston	31.90
No. 2 foundry, Cleveland furnace	27.25
No. 2 foundry, Ironton furnace	26.75
No. 2 foundry, Chicago furnace	26.75
No. 2 fdry., Chgo. fce., 1920 del.	28.75
No. 2X, eastern del., Phila.	29.25 to 30.75
No. 2X, eastern, N. J. tidewater	29.35 to 30.85
No. 2X eastern, Boston	30.90 to 32.40
No. 2X foundry, Buffalo furnace	28.00 to 29.00
No. 2 foundry, del. Philadelphia	28.25 to 29.75
No. 2 foundry, N. J. tidewater	28.35 to 29.85
No. 2 southern, Birmingham	26.75
No. 2 southern, Cincinnati	30.15
No. 2 southern, Chicago	31.75
No. 2 southern, Phila.	33.25
No. 2 southern, Cleveland	31.75
No. 2 southern, Boston	34.75
No. 2 southern, St. Louis	31.00
Virginia, No. 2X, furnace	28.00
Virginia, No. 2X, Philadelphia	32.10
Virginia, No. 2X, Jersey City	32.40
Virginia, No. 2X, Boston	32.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 27.50
Gray forge, eastern Pa.	28.00 to 29.00
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	39.80 to 41.80
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	40.00
Charcoal, Superior, Chgo., last half	32.75

Coke

(At the ovens)

Connellsville furnace	$4.00 to 4.50
Connellsville foundry	5.00 to 6.00
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	105.00
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.20
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	32 to 34 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.75c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.62c to 2.77c
Bar iron, refined, Pittsburgh	3.00c
Bar iron, common, Pittsburgh	2.35c to 2.50c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	38.00 to 40.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.025c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.50c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1588.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1588.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Full tube schedule page 1588.

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$56.80
Six-inch and over, Chicago	53.80
Four-inch, New York	55.70
Six-inch and over, N. Y.	52.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Shafting, Pitts., carloads	28 off list

Cotton ties, lots of 1000 to 3000 bundles, $1.75 per bundle, mill.

Cotton ties, 3000 bundles and over, $1.73 per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	3.10c off
Hot pressed, square tapped	2.85c off
Hot pressed, hexagon blank	3.10c off
Hot pressed, hexagon tapped	2.85c off
Cold pressed, square tapped	3.00c off
Cold pressed, square blank	3.25c off
Cold pressed, hexagon blank	3.25c off
Cold pressed, hexagon tapped	3.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Aug. 13, 1919	Average prices July, 1919	May, 1919	August, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	32.75	31.75	31.75	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
*Southern, No. 2, Birmingham	26.75	25.00	26.25	33.00
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa.	27.00	26.50	28.80	51.00
**No. 2X, Virginia, furnace	28.00	26.50	27.50	51.90
*No. 2X, eastern del., Philadelphia	29.75	29.50	30.10	53.40
Ferromanganese, 80 per cent, delivered	110.00	111.00	130.00	250.00+
Bessemer billets, Pittsburgh	38.50	37.30	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	40.80	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	40.80	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	37.30	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	4.914
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.62	2.62	2.50	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	4.914
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	10.164
Sheets, blk., No. 28, Pittsburgh	4.35	4.31	4.35	5.00
Sheets, blue annl., No. 10, Pittsburgh	3.55	3.51	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.71	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.00	4.00	3.72	6.00
Connellsville foundry coke	5.50	4.90	4.35	7.00
Heavy melting steel, Pittsburgh	21.50	19.90	15.45	29.00
Heavy melting steel, eastern Pa.	20.00	18.85	15.30	32.80
Heavy melting steel, Chicago	21.00	19.40	15.40	29.00
No. 1 wrought, eastern Pennsylvania	27.50	24.70	21.90	46.24
No. 1 wrought, Chicago	23.50	21.20	17.05	33.50
Rerolling rails, Chicago	28.50	21.70	17.45	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Iron Prices Follow Upward Trend

Recent Advances Are Firmly Established and Prices Stiffen in All Selling Centers —Markets Gaining Strength in Mid-West and East While Prices in South Are Hazy

New York, Aug. 11.—Brisk buying of pig iron has featured the past week in this district. Although less spectacular than in previous weeks, the single tonnages closed comprised a large total. The most important transaction involved 5000 to 10,000 tons of foundry purchased by the Central Foundry Co., for delivery over the remainder of this year and the first half of 1920. Because of the deferred delivery of this iron not many furnaces quoted. Among current inquiries is one for 2000 tons for first half of 1920 shipment to the Essex Foundry, Newark, N. J. The Worthington Pump & Machinery Corp. has purchased most of the 7000 tons for this year and first half for which it recently inquired, but still wants some miscellaneous lots. In addition to domestic business in foundry there is a fair amount of foreign business. Sales of foundry to the United Kingdom during the past week involved several thousand tons. Live inquiries from Italy aggregate 10,000 tons of which 1000 tons are on the point of being closed. Current export inquiries involve a good many indefinite tonnages, and it is estimated that all the way from 50,000 to 200,000 tons are involved but no one has any idea how much of this inquiry will be closed. Prices show a materially strengthening tone. One eastern Pennsylvania interest advanced its prices by $1 last Friday night and since then has sold several thousand tons of foundry at its new figures, $30, furnace, for 2.25 to 2.75 per cent silicon and $29, furnace, for 1.75 to 2.25 silicon. Several eastern Pennsylvania makers are holding to approximately the same level. It continues possible, however, to obtain eastern Pennsylvania foundry iron at as low as $27.25, furnace, for 1.75 to 2.25 silicon and $28.25, for 2.25 to 2.75 per cent silicon on attractive business. However, it does not seem possible to shade these figures. In addition to the action noted a week ago by one large Buffalo maker in advancing, a second Buffalo furnace has advanced its prices and now has a minimum figure of $28, Buffalo, on 1.75 to 2.25 silicon foundry. Virginia iron continues to be had at $26.75, furnace, on 1.75 to 2.25 silicon foundry, with the usual differentials. A number of Virginia furnaces are handicapped in making shipments by reason of the embargo on the Chesapeake & Ohio railroad. Incidentally, all furnaces are unable to ship into New England at this time owing to the embargo due to the strike of shopmen on New England roads. On central Pennsylvania foundry, the minimum now appears to be $28 furnace on 1.75 to 2.25 silicon foundry. A southern furnace has increased its prices to $27.50, Birmingham, on 1.75 to 2.25 silicon, $28.60 on 2.25 to 2.75 silicon, $29.75 on 2.75 to 3.25 silicon and $30.80 on 3.25 to 3.75 silicon. A western Pennsylvania maker has sold a few thousand tons of foundry in the east during the past week at $28 furnace for 2.25 to 2.75 silicon, and since has advanced his price $1. A western Pennsylvania maker has sold malleable in the east at $28, furnace. A Virginia maker which recently withdrew from the market after considerable selling again has some tonnage to sell for the next 30 to 60 days, but is not offering generally; its price now is $29, furnace, for 2.25 to 2.75 per cent silicon. New York state, copper free, low phosphorus pig iron now is being held at $35 to $38, furnace, depending on the quality. A Tennessee maker of this grade has sold some tonnage in the neighborhood of $40 at the furnace. Some of the copper free, low phosphorus iron at Burnham, Pa., which recently was sold by the ordnance department has been offered at resale at $33 delivered to a western Pennsylvania point. Business of the past week in this district included a sale of several thousand tons of basic by a Buffalo maker at higher than $25.75, Buffalo.

Price Tendency is Upward

Boston, Aug. 11.—Pig iron prices for New England delivery continue to advance and although some furnaces are selling at the old prices, by far the larger proportion have established definite schedules above the $28 Buffalo basis for No. 2X Eastern (2.25 to 2.75 silicon) iron. Some of the larger Buffalo furnaces have advanced to $29 for the balance of the year. The Donner Steel Co. has established a price of $29.50 for the 2.25 to 2.75 silicon iron and $30.50 for the 2.75 to 3.25 silicon iron. Birmingham and Virginia furnaces are still reluctant to come into the market except for immediate delivery and for special analysis iron. One southern furnace is understood to be entertaining a proposition to store a considerable tonnage for a New England consumer, payment to be made on basis of present prices with additional charge for storage. The Bethlehem Steel Corp. and the Brooke Iron Co. have each had representatives canvassing the New England consumers. They have been offering No. 2X Eastern (2.25 to 2.75 silicon) for delivery for balance of the year and first quarter of next year at $28 furnace. Both of these furnaces have a $2.90 freight rate to points in this territory and their delivered price of $30.90 is lower

than has been reported for any other furnaces with the exception perhaps of the Crane Co. order in Connecticut. Although many dealers report quiet conditions there has been evidence in the orders placed during the past week of the start of a new year buying movement. A Massachusetts machine manufacturer bought 3000 tons of 2.75 to 3.25 silicon iron at $29.75 for the balance of the year and for first quarter 1920 delivery. A Boston consumer bought 500 tons of No. 2X Virginia (2.25 to 2.75 silicon) at $29 at the furnace which, with the $4.70 freight rate, means $33.70 delivered. This was for next 60-day delivery. A central Massachusetts consumer bought 4000 tons of northern iron during the week, which is understood to have been placed with several furnaces. The same consumer is contemplating the purchase of some southern iron for mixture purposes. In spite of the decrease in the usual run of small tonnage business many inquiries for balance of the year and first quarter of next year are out. A Rhode Island consumer is asking for 1000 to 1500 tons of malleable and a Boston consumer wants 400 tons of malleable. A St. John's, N. B., foundry has requested quotations on 300 tons of foundry iron. Other consumers in Rhode Island and Massachusetts are asking for from 1000 to 2000-ton quotations for the first half of 1920. A local foundry received seven replies in answer to an inquiry covering 1000 tons for first half of 1920 delivery and the prices quoted showed a spread of over $2 a ton. The estimated total of pig iron sales handled during the past week by New England dealers is 7500 tons.

Consumers Fear Higher Prices

Pittsburgh, Aug. 12.—Considerable uneasiness appears to exist among consumers of foundry iron as to the future course of prices, for while the market as a whole must be said to be rather dull, some business is being done every day in foundry iron and inquiries, not a few of which are for first half of 1920 delivery, are fairly numerous. Some foundry interests actually have come to believe that a price of $35 is possible and at least one case is known where it was necessary to assure an insistent buyer that his requirement would be entered as soon as the producer had opened his books for the period. Makers of foundry iron serving this territory are well booked over the remainder of this year and since considerable uncertainty exists with regard to labor, and fuel and oil supplies, not to mention the possibility of railroad rate advances and of transportation difficulties during the winter, they are discouraging 1920 business. A Pittsburgh district maker recently took 10,000 tons of iron for last quarter delivery. A small part of this purchase was malleable, but the bulk of it was foundry grade. the business being taken at full prices. The Standard Sanitary Mfg. Co. has closed for 4000 tons of foundry for last quarter shipment for its Allegheny and New Brighton, Pa., plants, paying the full market base of $26.75 furnace for No. 2 foundry. This company also bought a small tonnage for its Louisville, Ky., plant, paying $26.75 Birmingham, for regular No. 2 grade. Several producers are reported to be well sold up on foundry iron and to have strong price ideas. A small sale of No. 2X foundry (2.25 to 2.75 silicon) is reported to a western Pennsylvania melter at $28.50, a premium of 50 cents a ton over the regular base. A sale of 3000 tons of No. 2 foundry is reported for last quarter shipment at $26.25 and a smaller lot of the same grade, delivery of which runs into 1920, brought a premium of about 75 cents a ton. A small lot of malleable for early 1920 delivery recently changed hands at $1 a ton above the regular market on this grade, or $28.25 furnace. Outside of a sale of 1500 tons of standard bessemer for last quarter delivery, no important sales of the steelmaking grades have been made. It is said that concessions from $25.75 furnace were made on some of the recent big bookings of basic iron. Only two of the Shenango valley merchant furnaces now are idle, the Claire and Ella, operated by E. W. Mudge & Co., Pittsburgh, and they will be lighted early next month. The Carnegie Steel Co. still has 46 of its 59 stacks in blast but expects to blow in four more in the course of the next two months.

Chicago Demand Holds

Chicago, Aug. 12.—Although northern producers of pig iron are practically sold to the extent of production for the remainder of 1919, inquiry continues and selling is being done as far as circumstances will permit. Some instances have occurred indicating that regular customers are being given preference and that selling is being done judiciously with respect to possibilities of delivery. Although the strike of railroad shopmen is interfering with shipments, it has been possible to keep foundries supplied with both pig iron and coke so that up to this time no curtailment of melt has taken place from this cause. Inquiry now current is not heavy, largely due to the fact that selling is done mostly without inquiries being considered more than a day or two. This makes a rapid market. Of iron now on contract by far the greater part is gray iron and malleable, with basic in fairly light tonnage. Most southern makers are now quoting $1 higher on last half delivery, $27.75, Birmingham. The American Radiator Co. recently closed for 4000 tons of southern iron for its Birmingham plant. Some sellers have found a better demand for spot iron, possibly dictated by the possibility of the railroad situation limiting shipments on older contracts. Lake Superior charcoal makers have advanced 1920 deliveries $2 and are also quoting $1 over the former schedule for 1919 delivery. Comparatively little iron is available for this year's shipment and only occasional lots are being booked.

Buffalo Advance Now General

Buffalo, Aug. 12.—Advances in the prices of pig iron have left the March 21 schedule far behind, and Buffalo furnaces now quote the following: Basic, $26.75; No. 2 plain, $26.75 to $28; gray forge, $26.75 to $27.50; malleable, $27.25 to $29; No. 2X, $28 to $29. Buffalo furnaces have booked during the past week not less than 40,000 tons of iron, and possibly 50,000. Delivery will be made in the last half except for five small tonnages which were booked for 1920. One furnace booked 20,000 tons, most of which is foundry and the remainder malleable, while another furnace booked 20,000 tons. Advance in prices does not seem to affect buying. Orders are being placed at a faster rate than producers can handle.

Marks Time in Cincinnati

Cincinnati, Aug. 11.—The southern price situation is somewhat hazy. There is practically no prompt iron to be had in the Birmingham district, and for that reason sales are now confined to some odd lots of off iron that the furnaces wish to get off their hands. Most of the iron sold has been above the schedule all the way from 50c to $1 a ton. One southern interest has advanced to $27.50, Birmingham basis (silicon 1.75 to 2.25), and has sold a little iron for nearby shipment at this figure. Another furnace has established $28 as its minimum, and even higher figures are asked for last quarter business. Northern foundry iron is very quiet but no formal advance has been made by all producers in southern Ohio. A little northern iron has been disposed of for first quarter shipment at the old price of $26.75, Ironton, but it is understood that all quotations for that delivery have now been withdrawn.

The silvery iron situation is becoming more acute. The Jackson county, Ohio, furnaces are not able either to repair their idle furnaces or to load out much iron that they have piled and which is due on old contracts. No indications are in sight as to any early settlement of the labor difficulties now existing in that district. It is stated that the St. Louis inquiries for basic are still unclosed. Malleable is very quiet and no inquiries are out for any delivery. The market all the way through may be characterized as a waiting one. Virginia furnaces have advanced prices to a point that makes it temporarily impossible for them to get any business around here.

Book More Orders for First Quarter

St. Louis, Aug. 11.—The past week has not developed any great increase in buying in the St. Louis territory, so far as pig iron is concerned, but sales have been satisfactory. A number of small orders have been placed by foundries who two or three months ago estimated they had enough iron under contract to take care of their needs during the third quarter, all of which indicates an increase in business. There is some buying being done for the last quarter and first quarter of next year. The market seems to be holding firm on a basis $26.75 for 1.75 to 2.25 silicon, differentials being maintained on higher grades.

Southern Market Gains Strength

Birmingham, Ala., Aug. 12.—The southern pig iron market is showing strength, and an advance in prices has not interfered with spot selling. The aggregate of the business is good. With a basis of $27.75 for No. 2 foundry (1.75 to 2.25 per cent silicon) all quotations are firm. Iron of special analysis has been sold at

higher prices. Furnace companies are making no effort to sell through the fourth quarter, although one company has made a tentative offer to take on a little tonnage at $28.75. Inquiries for iron for 1920 delivery are still unheeded. Furnace operations are being increased, 23 furnaces now making iron in Alabama. The Republic, Sloss-Sheffield and Woodward companies are each planning to blow in another furnace this month.

Market Strong in Philadelphia

Philadelphia, Aug. 12.—The pig iron market here continues to reflect a strengthening tone. Furnaces generally are asking higher prices than before while $27.25 eastern Pennsylvania furnace on No. 2 plain and $28.25 on No. 2X are the minimum. These figures are exceptional and a large part of current business is going at higher prices. The leading cast iron pipe maker continues in the market. A Delaware river shipbuilder bought 1600 tons and several other nearby consumers bought around 1000 tons each. While business of the week reached a fair total it was much less than in preceding weeks. Several eastern Pennsylvania makers now are practically out of the market. Sales of the week included about 2000 tons. Virginia foundry iron is quoted mainly at $28 furnace for No. 2 plain and $29 for No. 2X but Virginia iron continues to be held at $26.75 furnace for No. 2 plain by an interest which sells mainly high manganese in this district. Prices on central Pennsylvania iron, considering freight rates, now are considerably higher delivered in east than eastern Pennsylvania iron.

Several thousand tons of copper free low phosphorus iron sold at $35 eastern furnace to average up with tonnage due on high priced contracts but regular quotations on this grade now are $36 to $38 furnace, depending on analysis. Copper bearing low phosphorus iron continues at $35 eastern furnace and this price has been quoted on western inquiries for about 2500 tons but without getting the business.

Ore Sales Light

All New Business Being Taken Subject to Delay Through Strike

Cleveland, Aug. 11.—Current sales or ore are much less than during the preceding week, when 250,000 tons were sold. One company has recevied several orders aggregating about 75,000 tons, while another reports having received orders for about 60,000. Most of the business done was for rounding out tonnages previously placed. All new orders are being taken subject to possible delays caused by the strike of railroad shopmen and dock workers at the upper lake ports. An account of the strike will be found on page 446 of this issue of THE IRON TRADE REVIEW.

Up to Aug. 1, Lake Erie docks handled 18,496,231 tons of ore, compared with 21,896,414 tons up to the same period in 1918. On Aug. 1, 1919, the docks were holding 7,069,893 tons, and on the same day in 1918, 7,228,721 tons. Receipts in July amounted to 7,090,666, as compared with 8,311, 629 in the same month last year.

Foundry Coke Marked Up

Price Range of $5.25 to $6 Now $1.50 Above Furnace Grade —Market For Latter Fuel Shows Strength

Pittsburgh, Aug. 12.—An unusually wide spread now exists between the prices of foundry and furnace grades of coke. At one time this year the difference between the two grades was but 75 cents per ton, and during the period of government control the premium was limited to $1 a ton. Now it is at least $1.50, and it is claimed that spot sales of selected 72-hour fuel have been made as high as $6, ovens, or $2 a ton above the present spot price of furnace coke. Several conditions contribute to the situation. Unsettled labor conditions have created fear of a shortage among consumers and they have been buying for stock. Most producers of foundry coke are well sold for the remainder of the year and are quoting extreme prices for the purpose of discouraging buying. It is claimed, also, that producing costs warrant a larger premium than formerly, as fuel suitable for foundries cannot be handled by machinery and hand labor is scarce and costly. A range of $5.25 to $6 ovens will cover the present market in foundry coke, but both prices are extreme and $5.50 to $5.75 are the bases of most business. The contract market on this grade is nominal in the lack of new business, the range being on contracts in effect. The market for furnace coke has strengthened, $4 being a general base of spot sales. Efforts have been made to get the price up to $4.25, but no direct business to speak of between producers and consumers has been done at better than $4. The accumulation of loaded cars still is large in the Connellsville region, but the larger operators have been able to reduce their stocks by applying some of them against contracts and shipping coal, which is in strong demand. Sales of third quarter gas and coking coal are reported as high as $3.25 and $3.50, while for mine-run grades $2.50 and even higher has been obtained. Figuring that it takes about 1½ tons of coal to produce a ton of coke, these prices make coal shipments extremely attractive. Production of coke in the Connellsville region for the week ended Aug. 2 is estimated by the *Connellsville Courier* to have been 209,100 tons, compared with 190,025 tons in the previous week.

Consider Flat Rate

Boston, Aug. 11.—Foundry coke is now at $10.40 delivered to New England points for all new business covering balance of the year. This advance in price follows similar action on the part of by-product producers in the Middle West. The first of August the local producer announced a price of $9.90 governing August delivery on existing sliding scale contracts. This price still continues but no new contracts will be taken at anything below the $10.40 price. The sliding scale contracts have been subject to much criticism on the part of consumers and it is doubtful if this form of contract will be continued after those now in effect have expired. Eastern by-product producers met in New York last week for the purpose of discussing the policies and interests of the by-product industry. It is understood that the question of a flat price to govern the entire year of 1920 was considered and that there is a possibility of booking all by-product business on such a basis, independent of Connellsville market fluctuations.

Sell Coke for Export

New York, Aug. 11.—An unusual feature of the coke market is the sale of fair tonnages of by-product coke for export. One cargo of 1150 tons of by-product foundry coke left Baltimore during the past week for Italy and another of 1500 tons left for South America. This coke was sold by the northern New Jersey maker. There is a likelihood that considerable inquiry now pending will be closed. The northern New Jersey maker has advanced its price on by-product foundry coke to $6, Connellsville, which is equivalent to $9.10, delivered at Newark and other northern New Jersey points.

The principal interest in the coke market at present from a domestic standpoint is the desire of consumers to obtain deliveries on contracts. Consumers in New England, particularly, are worried by reason of the general embargo on the New England roads. A sale of 3000 tons of beehive furnace coke was reported here during the past week. Among new inquiries is one for 3000 tons of foundry coke for Mexico.

Good Demand for Coke

Cincinnati, Aug. 12.—Prices of coke are stiffening. Both furnace and foundry coke is in good demand but the supply of labor is short and production costs are said to be advancing. The growing scarcity of cars is giving concern. Where the fuel can be loaded promptly it generally brings a premium, as for instance a little spot shipment Connellsville furnace coke brought $4.50 per ton at oven last week. Foundry grades range from $6 to $6.50. Wise county foundry coke is also scarce and is held at $7.50. New River foundry coke readily brings $8, when any of the fuel is to be had.

St. Louis Market Gains Strength

St. Louis, Aug. 11.—The coke market is stronger, one of the largest producers of the merchant foundry grade in the Connellsville district having withdrawn. This does not mean that this interest is sold up, but indicates that when it opens its books for an additional tonnage it will be at an advanced price, not less than 50c per ton over previous quotations. Better grades of Connellsville foundry are being quoted at $6 per net ton, f.o.b. ovens, prompt and future shipment.

Scrap Market is Unsettled

Business Good in East But Mid West Markets Show Weakness—Labor and Rail Troubles Affect Sales

FOR COMPLETE SCRAP PRICES SEE PAGE 476

Boston, Aug. 11.—The Pittsburgh steelmakers made their debut in the local scrap market during the past week and although reports in other districts indicate a slight weakening in heavy melting steel all sales for Pittsburgh delivery were made at good prices. One dealer sold 3000 tons of heavy melting steel at $22 delivered Pittsburgh, and other sales ranged from $21 to $22.50 for the same delivery point. The total of sales to steelmakers during the week is thought to have passed the 6000-ton mark in this territory. Conditions among local foundries are decidedly cheerful. The Worcester foundries are now all on an operating basis and orders from these for scrap have been prominent among the week's sales for local consumption. No. 1 machinery has been particularly active and is quotable for spot delivery at $27 with $28 being paid in several instances for future use. Almost all grades of scrap are tightening up and many dealers report orders which they are unable to cover. Rerolling rails have advanced to $23 delivered to consumers and slight advances are reported for other grades. Heavy melting steel is selling to dealers as low as $15 but higher prices are reported in some instances. A report reaches this market of shading in heavy melting in the eastern Pennsylvania district; some steelmakers being known to have bought at a $1 concession on the usual price.

Tie-up Weakens Market

Philadelphia, Aug. 12.—The labor situation and especially the tie-up on some railroads has somewhat weakened the scrap market, especially steel. There have been some transactions in steel between dealers at around $1 less than prices dealers were quoting a week ago. However, several buyers are reported as ready to place tonnages of steel at the old level of $20. The greatest activity during the week has been in cupola scrap which now is bringing from $25 to $26 for No. 1 cupola cast. At least two interests bought heavily of stove plate and grate bars, the former now bringing from $20 to $21 and the latter from $18.50 to $19.50.

Business Good in East

New York, Aug. 11.—Although consumers in the Pittsburgh district have withdrawn from the local market for heavy melting steel, a good demand for this material continues to come out from eastern Pennsylvania. The heaviest buyer in this latter territory is the Bethlehem Steel Co., which is purchasing heavy melting steel at around $15.35, f.o.b., New York. Good tonnages are also going to Coatesville, Pa., with the result that the local market on heavy melting steel may be quoted around $15.35 to $16.50, f.o.b., New York, according to the mill requiring shipment. A fair volume of buying of clean cast borings also is in evidence, and during the past few days, quotations have advanced to $11.50 and $12, f.o.b., New York. No. 1 railroad wrought, as a result of an improved amount of buying, has moved upward to $22 and $22.50, a gain of about 50c. While the labor situation is thought to have been the cause for the temporary withdrawal of the Pittsburgh consumers from the local market, this factor has not greatly lessened activities of easterners. There is however, a tendency among buyers to move more slowly.

Dullness Weakens Prices

Pittsburgh, Aug. 12.—Declines of $1 a ton, and in some cases more, have occurred in prices of scrap iron and steel. Steel mills not only have fairly liberal supplies, but also are inclined to stay out of the market until the labor situation clears up. Heavy melting steel, which recently sold at $22 to $22.50, delivered Pittsburgh, and even slightly higher on some purchases made in the East now is not quotable at higher than $21.50. No sales have been made lately. Dealers did not sell that which came into their hands recently, and since some of them have to move it they probably would not refuse $21. Bundled and compressed sheets will not bring within a dollar a ton of the prices at which they recently sold, and dealers also have modified their price ideas on other kinds of steel-mill material. Low phosphorus scrap is scarce, but neither this fact nor the high prices which have been obtained recently on government holdings of shell steel has been sufficient to sustain prices. A Pittsburgh steel company recently took a good-sized tonnage of shell steel, for which it paid $24.50, delivered Pittsburgh. Rerolling rails are lower for want of demand, users being well protected against their immediate requirements and now out of the market.

Strike Talk Affects Market

Buffalo, Aug. 12.—Railroad strike talk has resulted in depressing the scrap market. Dealers feel present conditions are but temporary, although speculators received a shock. Shipments are being made in good volume against previous orders, and there has been no break in prices. Dealers believe that renewed demand for heavy melting steel will be experienced soon.

Cleveland Market Weaker

Cleveland, Aug. 12.—For the first time in months scrap iron and steel prices here have been reduced. The market is decidedly weaker, but apparently not dangerously so for dealers. Continued refusal of the larger consumers to buy, high-cost agitation and the expected slowing up following the long rise are blamed for the reaction. Dealers, however, see the slump one of only a few weeks' duration. Pig iron and steel are moving fast and demand is heavy, so scrap will reflect the continued prosperity of the entire industry as soon as it recovers its footing, they claim. One of the largest users of heavy melting steel is reported having bought a tonnage of heavy melting steel, believed to be in the neighborhood of 50,000 tons, from a large yard interest. The price is said to have been graduated from $23 to $19. This yard interest now is offering $21 for steel. Melting steel, short steel rails, No. 1 and No. 2 busheling, turnings, borings, car wheels and No. 1 and heavy cast are the grades that have been scaled down.

Chicago Market Waiting

Chicago, Aug. 12.—Always sensitive to business conditions, the iron and steel scrap market is waiting until uncertainties now present in the industrial world have somewhat cleared. After an uninterrupted advance from the low figures of last spring, a halt took place a few days ago and quotations have receded somewhat from the highest mark. These quotations however, apply to spot business for immediate shipments and are lower than those prevailing a fortnight ago because consumers are not taking on new contracts for this raw material. On scrap held in yards former quotations may be said to apply, because dealers are unwilling to sell this material at prevailing quotations, and it is undoubtedly true that any resumption of buying would carry prices back at least to the former level. An inquiry for 40,000 tons of low phosphorus shell scrap is current in Canada and dealers in this district have been sounded in the effort to make up this tonnage. Railroad lists are somewhat more numerous this week than usual, but the total tonnage offered is not large. The Northern Pacific offers 1400 tons, the Wabash 700 tons, the Chicago, Milwaukee & St. Paul 450 tons, the Chicago, St. Paul, Minneapolis & Omaha 200 tons and the Burlington 75 tons of punchings.

Buyers Holding Back

Cincinnati, Aug. 12.—Somewhat unsettled labor conditions, including the railroad shopmen's strike, has caused buyers to hold back. Dealers are also somewhat lukewarm about piling up any large stocks, and are slow in buying up outside iron that may be held up in being delivered to their yards. Cars are scarce and for that reason outside shipments are moving more slowly. All prices are unchanged but are not near as firm as they were at this time last week. A little better demand has developed for old locomotive tires, but the railroads are not offering any at the present time. Stove plate is holding its own fairly well.

Southern Prices Holding Firm

Birmingham, Ala., Aug. 11.—Quotations of scrap iron and steel in the Birmingham district show strength, although buying is not heavy. Heavy

melting steel is quoted from $3 to $5 per ton above what one of the largest consumers in this district wants to pay for it.

Sheet Bars

Given Preference Over Billets in Mills—Rods for Export

Pittsburgh, Aug. 12.—Although the Carnegie Steel Co. is running close to 95 per cent of ingot capacity it is having some difficulty in keeping abreast of the demands upon it for sheet bars and is only slightly better situated with regard to billets and slabs. Production of the latter is being curtailed for the benefit of sheet bars and billets, on which this company now is sold well into the last quarter of the year. Independent manufacturers also are well booked ahead and specifications are such that they have little or no tonnage for disposal on the open market. Open market activities in semifinished steel for some time have been extremely limited as nonintegrated manufacturers, having established direct connections with producers of steel during a portion of the war period, are inclined to follow this plan instead of dealing through middlemen. While no special change is noted in prices, some consumers of sheet bars would gladly pay a premium if that would insure early shipments. A valley maker of sheets and tin plate, ordinarily self-contained on steel supplies, has been in the market lately for 18,000 tons of sheet bars. A better supply of finishing mill labor has increased consumption of wire rods, and offerings are somewhat smaller than they have been, though by no means scant. Export inquiries for rods are numerous, one being for 500 tons for shipment to Melbourne, Australia. Quotations against export inquiries for semifinished steel are not so heavy as recently as licenses still have to be secured for shipments to some countries and credits not infrequently expire before permits can be obtained.

Semifinished Market Slow

Philadelphia, Aug. 12.—The demand here for semifinished steel continues poor because of the poor business of consumers. The demand for billets is mostly in carload lots, one consumer inquiring for 1000 tons for forging as a speculation against future requirements. Some billet business has been turned away because present prices were considered unprofitable. A conconsumer inquiring for sheet bars recently has had difficulty getting mills to quote. An eastern plate mill has bought some slabs.

Good Steady Demand Noted

Pittsburgh, Aug. 12.—Demands for strip steel are of sufficient size to keep the mills in this district running about 80 per cent full. Orders, however, still are rather poorly distributed, those for hot rolled being much better than those for cold rolled, although a pretty steady increase is noted in the demand for the latter. Concessions from the March 21 prices are much fewer than they were a few weeks ago.

Alloy Market is Inactive

European Sellers Offering Their Products in United States —Japan is Buying

New York, Aug. 11.—Sales of English 80 per cent ferromanganese at less than $105 c.i.f. Atlantic ports featured the ferroalloys market during the past week. These sales were made as a result of firm bids of lower prices by domestic consumers and they involved large tonnages. Altogether several thousand tons of English metal changed hands during the past week at less than $105. The sellers however, have not changed their quotation and continue to name $105, c.i.f. on new inquiries and they will consent to consider lower prices only where they are named in a firm bid on an attractive tonnage, in which case these bids will be cabled to the principals in England. Round lots of domestic ferromanganese also have been sold during the past week at lower than the prevailing market of $110, delivered, but this business was also done on firm bids and producers have not lowered their quotations.

Competition continues keen in 50 per cent ferrosilicon, but prices below $80 a ton, delivered, have disappeared. Little resale alloy now appears available. Several small transactions for middle western delivery have been done lately at $80, or about the general market level. The premium on such deliveries apparently has been eliminated, whereas previously because of the higher freight rates to those points they had commanded a premium.

The attention of makers and consumers of ferroalloys used in special steels has been called of late to foreign offerings of these alloys. British sellers have offered both ferrochrome and ferrotungsten in this market at concessions from the domestic prices but so far as known American consumers have not bought these foreign alloys to any extent. On the inquiry for 500 tons of ferrochrome for a Pittsburgh consumer a bid of 25c was submitted on English material, as compared with the published domestic quotation of 32c per pound contained for alloy of 4 to 6 per cent carbon. Some English ferrotungsten has been offered $1 a pound contained New York and this price might have been done delivered Pittsburgh. This compares with prices ranging from $1.10 to $1.20 quoted by domestic makers. A French offering of ferrovanadium, said to be carbon free and analyze 35 to 40 per cent vanadium was made here recently. American makers have sold a further lot of ferrovanadium to Japan. The ferro- Both Italy and Belgium have bought some spiegeleisen, the tonnage involved reported as amounting to 1500 to 2000 tons. Some makers now are quoting $37.50 on higher grades of spiegeleisen, as compared with the general market of $33 to $35 on 18 to 22 per cent.

Sells Ferromanganese

Philadelphia, Aug. 12.—It has been reported here that a large tonnage of ferromanganese has been sold by a domestic producer at less than $110, delivered. This report cannot be confirmed. A current ferromanganese inquiry includes 2000 tons for Italy.

Prompt Ferrosilicon Wanted

Pittsburgh, Aug. 12.—Fifty per cent ferrosilicon is being inquired for quite freely here, but demands in all cases are for small tonnages for prompt shipment. While some makers of this alloy are quoting as high as $100, furnace, freight allowed, the more general basis is around $85 and some manufacturers need orders too badly to insist on that price. No business has been reported here lately at higher than $85, while it is known that less than that figure has been accepted on some orders. Only a moderate turnover of the lower grades of ferrosilicon are noted, but this cannot be ascribed to lack of demand, which actually is good, but rather to the lack of production, due to suspension of the Jackson, O., furnaces on account of labor troubles. Inability of consumers to secure ferrosilicon of the lower content in adequate quantity finds reflection in a brisk demand for silveries. Among inquiries is one for 200 tons from the Youngstown Sheet & Tube Co. The market remains inactive on ferromanganese and while $110, delivered, on 80 per cent material still is generally quoted, it is not believed that makers are so well off in the matter of bookings as to be indifferent about firm bids somewhat below that figure. On 76 to 78 per cent material domestic producers are matching the price of English producers, of $105 in the East, and $109, Pittsburgh.

Wire Makers

Largely Out of Market—Labor Trouble Hampers Cleveland Plant

Pittsburgh, Aug. 12.—Manufacturers of wire and wire products are for the most part out of the market. One large independent now is not taking new business even from its regular customers and those having tonnage available for their regular trade are cutting the orders. The leading interest is hampered through labor troubles at its Cleveland plants, but is having no difficulties at its Pittsburgh district plants. Independents here are better off in the matter of mill labor and have been able to increase production slightly.

Take New Orders Carefully

New York, Aug. 11.—Wiremakers are proceeding with great care in adding new business to their order books. Due to the embargoes prevailing on various railroads they are not assured that they will be able to maintain present plant operations and as a result do not know to what extent they will be able to meet schedules.

Bar Demand Still Heavy

Prices Reflect Upward Tendency—Activities Not Greatly Affected by Labor and Car Situation—Bolts Up

Chicago, Aug. 12.—Although business conditions are far from satisfactory as a result of the labor situation, business of steel mills is not adversely affected to the extent most sellers would expect. As a rule, selling organizations find that the demand has not fallen off as much as such a situation usually would cause. Mill operations about Chicago are unchanged from last week, when the leading interest was able to keep about 50 per cent of production active. The leading independent has not been affected to the same degree and has been able to keep up its activities without much interference. Smaller mills have felt the effect of car shortage in various ways but their activities have not been greatly interfered with. Buyers of soft steel bars continue to be in the market and specifications against contracts already booked have not fallen off materially, although occasional instances are found where the general situation has caused a curtailment of consumption.

About 2000 tons of reinforcing bars for the Drake hotel, Chicago, has been placed with the Inland Steel Co. and the American System of Reinforcing.

Hard steel bars, which were advanced $2 per ton a few days ago, now being quoted at 2.55c, Chicago, are being specified in large tonnages and demand is excellent, although the restricted supply of old rails limits the new business which can be booked with safety. Present supply of rails is considerably less than the tonnage necessary for continuous operation of mills. Bar iron is being inquired for at unchanged rate and new business is being booked about on a par with production. Strike conditions have interfered with shipments and with buying, but as soon as that matter is settled, demand is expected to increase considerably.

Early Estimates Proved Small

New York, Aug. 11.—Much of the new demand for steel bars which is being entered daily is comprised of requirements of consumers who previously had placed contracts for good sized tonnages, but who now are finding that their earlier estimates proved too small to meet their actual needs. In some cases, consumers are placing new tonnages which are two and three times as large as the entire third quarter tonnage for which they had contracted. Export orders for bars have been good lately, particularly for shipment to Japan. Numerous inquiries have come from Norway and Sweden lately but show no haste about being converted into orders.

Mills Are Well Sold Up

Cleveland, Aug. 12.—Specifications against contracts for steel bars are progressing in such volume as to cause certain sellers to predict an acute shortage of this product if the present demand continues over a period of several weeks. Mills are well sold up on most sizes, deliveries in very few cases being promised for earlier than the last quarter.

Eastern Market is Strong

Philadelphia, Aug. 12.—Steel bars continue to be the strongest of steel products from a market standpoint. Numerous consumers now are finding their requirements larger than first anticipated, and are increasing the tonnage due on contracts. It has been learned that a large maker has booked considerable contract tonnage for first half delivery at the current price. Several mills now are taking business only from regular customers because of filled schedules and are careful about making delivery promises because of the bad railroad situation.

It is understood that nut prices are to be advanced from 3.10 to 2.70 off list for blank nuts and from 2.85 to 2.45 off list for tapped nuts.

Larger Sizes Rather Slow

Pittsburgh, Aug. 12.—Steel bars running 3 inches and larger are in rather moderate demand, but an excellent business is doing in the smaller sizes and mill capacity in this direction is heavily taxed. Much talk is heard of higher prices and the leading interest is inclined to regard the March 21 figure as having been made to remain in effect until the end of the year and is accepting business at 2.35c, Pittsburgh. This company's attitude is holding other producers in check. It is reported that the Donner Steel Co., Buffalo, has advanced its price to a base of 2.40c, Pittsburgh, but this report cannot be verified. Pretty constant demands are coming out for concrete reinforcing bars, and while sales are small individually, it bulks fairly large. New steel bars of this class take the same base as mild steel bars, while sales are small individually, it bulks fairly large. New steel bars of this class take the same base as mild steel bars, while rerolled bars are quoted at 2.33c, mill, and some business is reported to have been taken at that figure. Pittsburgh makers of common iron bars are quoting them at 2.75c, Pittsburgh, and refined bars at 3c. Demand for iron bars is not heavy, but is larger than it has been.

Sales Hit by Embargo

New York, Aug. 11.—While a number of bar iron mills are quoting on a basis of 2.50c, Pittsburgh, material still is said to be easily available at 2.35c. In the instance of some mills, however, it is asserted that only the older customers are being favored with the lower figure. It appears that most all export business is being booked at a figure not under 2.50c.

Western Bolts Are Up

Chicago, Aug. 12.—Following an advance of about 10 per cent in quotations on nuts and bolts in the Cleveland district, makers in the West have begun quoting on the same basis. This advance follows shortly after a previous advance of 5 per cent. Despite this advance the market is holding strongly. Specifications show no falling off, and a reasonable quantity of new business is being booked. Most mills find themselves with as much business as they care to have at present.

Fair Business in Cleveland

Cleveland, Aug. 12.—Operation of nut, bolt and rivet plants at normal capacity is being maintained in this district. Fair-sized inquiries and orders continue to be received. New business is coming from diversified industries, changing the aspect of the trading which prevailed for several weeks. For a long time the automobile and truck industries took the product of these mills, but now other consumers are forging to the front and taking their quota as well. Most of the rivet business is coming from shipbuilders. The advanced scale of prices is being obtained without difficulty although considerable business now on the books was written up before the increase. Some scattered buying is being done by railroads, but it is understood they still are limited in their purchasing power despite large known needs.

Mills Are Fairly Busy

Pittsburgh, Aug. 12.—Hoop and band mills are fairly busy, but the load is unevenly distributed, with band steel doing much better than the narrower widths. Cooperage interests are making only moderate demands compared with makers of accessories and automobile parts. Prices hold steady, with most manufacturers quoting both hoops and bands at 3.05c, base, Pittsburgh. One company is quoting bands at a higher price, but this company is well filled up with bar business and not eager for band purchases. Specifications for cotton ties are fairly good, but all requirements probably will be easily met as the latest government report suggests a crop of less than 12,000,000 bales, while tiemakers calculated production on a crop of between 12,500,000 and 13,000,000 bales.

Rail Order

For 100,000 Tons Rumored—Car Buying Continues to Lag

Washington, Aug. 12.—The railroad administration again is in the market for rails, this time for 100,000 tons, either of bessemer or open-hearth steel. Bids are asked to be submitted by Aug. 16. This tonnage, with the 200,000 tons ordered about two months ago at prices previously rejected as having been "fixed" too high by the now-defunct industrial board, makes a total of 300,000 to be bought this year and the only tonnages for rails placed by the administration.

According to estimates made two months ago, if the bids on the 100,000 tons are accepted, and the tonnage allocated, the administration will have

to order only 200,000 tons more in order to have the railroads in as good repair when turned back to private ownership as when they were taken over.

Denmark Wants Rails

New York, Aug. 11.—Among current inquiries for rails is one from the Danish government for a good tonnage. It is not known when this business will be closed.

New Rail Order Rumored

Pittsburgh, Aug. 12.—Washington advices suggest the possibility of another railroad administration order for 100,000 tons of standard rails, but no inquiry has reached this market. Aside from export orders and demands in connection with repair work, rail makers have little business before them and much rail mill capacity is being used to roll sheet bars. A fair demand is coming out for light sections in connection with coal mining development. The West Virginia-Pittsburgh Coal Co. is planning to construct about 2 miles of track at its La Belle mine near Wellsburg, W. Va. Heavy demands recently for small spikes have filled up makers' books for the remainder of this year, but standard spikes are moving only as needed. With generous stocks on hand, makers guarantee prompt shipment. Fair demands are coming out for track bolts in connection with track repairs, with makers quoting an advance of $3 per ton over the recent base, putting the price to 4.50c, Pittsburgh in carload lots.

Car Buying is Slow

Chicago, Aug. 12.—Although inquiries are before the market for cars to go to Chili and Poland, the Havana Central railroad in Cuba and the Atlantic Coast line in this country, nothing definite has resulted from these negotiations and the entire business is still pending. No important new inquiry has come out in this department recently. The only activity in cars is confined to tank cars, the General American Tank Car Corp., Chicago, having taken an order for 1400 cars from the Island Refining Co., and 500 cars from the Texas Oil Co. Half the latter order will be furnished by the Pennsylvania Tank Car Co., Sharon, Pa. The Texas & Pacific railroad has been in the market for 110 tank cars. The H. C. Frick Coke Co., Pittsburgh, is inquiring for 1260 mine cars. The American Car & Foundry Co. will build 20 tank cars for the Lubrite Refining Co., St. Louis, and two tank cars for the Kendall Refining Co., Bradford, Pa.

Charles M. Schwab, of the Bethlehem Steel Co., will be a speaker at the banquet of the American Institute of Mining and Metallurgical Engineers during the institute sessions in Chicago, Sept. 22 to 26. About 150 papers will be presented during the sessions and arrangements are made for trips to zinc smelting districts near by, the steel works at Gary and oil refineries at Whiting and East Chicago. The fifth annual exposition of chemical industries will be held in Chicago at the same time.

Sheet Orders Swamp Mills

Valley Makers Booked Ahead and Are Slow to Take Prompt Business —March 21 Prices Not Generally Exceeded

Youngstown, O., Aug. 11.—Enough business is booked by sheetmakers in this district to warrant steady mill operation into the fourth quarter. Black and galvanized are in strong demand. Some sales of these grades were made recently at 2 and 4 cents respectively above the market price. Where this was the case the customer was willing to pay a premium in order to obtain an early shipping date. A few makers in this territory, which, shortly after the armistice was signed booked some business at lower than market quotations, now have closed enough premium business to equalize whatever losses were suffered at that time. Inquiries are light. Many buyers are on their vacations, they having taken care of their needs before going. Practically no spot business is coming out. Buyers are fairly well acquainted with the sold up conditions of the mills here and hence realize the uselessness of trying to obtain any tonnages for shore-time delivery. Several good-sized orders for highly-finished sheets sent out by automobile and desk manufacturers were closed with mills in this district during the past three weeks. Mills catering to this class of the trade are well booked over the next two months. The assembly of the mill motor at the DeForest plant, Niles, O., of the Republic Iron & Steel Co. is progressing and it is expected this plant will be in operation in about three weeks. A stock list sent out recently by a dealer in this district includes 164 tons of black wasters, 7 to 30 gages, assorted, $3.25, Pittsburgh 770 tons of galvanized wasters, 20 to 29 gages, assorted, 24 x 60 inches and larger, $3.75, Pittsburgh; 100 tons of regular pickled wasters, 10 to 26 gages, 20 x 60 inches and larger, $3.60, Pittsburgh; 250 tons auto body seconds, oiled, open-hearth stock, 18 to 20 gages, $4.65, Pittsburgh; 10 tons of cut downs, 14 to 28 gages, unassorted, $3.50, Youngstown, and several tons of one-pass coated long terne sheets, blue annealed single pickled, blue annealed primes and cold-rolled pickled and annealed.

Prices Still Being Shaded

Pittsburgh, Aug. 12.—Although some makers of sheets have advanced their prices, failure of the leading interest to deviate from the prices of March 21 has prevented a general movement in that direction, and also has made it difficult to sell any considerable tonnage at higher quotations. As a matter of fact, while a tremendous volume of business is coming to manufacturers, comparatively little of it is at prices higher than those of March 21. Concessions from $2 to $5 per ton are being made by some makers, among them being those who are talking most about advances. Orders are coming along at the rate of close to 25,000 tons a day. Since this is almost double theoretical productive capacity, all manufacturers are accumulating a backlog of business. The American Sheet & Tin Plate Co. is practically sold up for the remainder of the year and has quite a little business in automobile sheets for shipment over the first half of 1920. The independents also are booked practically to the end of the year on the present rate of operations, which though below theoretical capacity, are practically full when rated by the average attained by the mills. The leading interest is running better than 90 per cent of capacity. Its schedules call for a higher rate, but sheet bars are not in adequate supply.

Hard to Make Deliveries

Philadelphia, Aug. 12.—The demand for sheets although somewhat curtailed by reason of the present labor situation is sufficient to keep eastern makers engaged nearly to capacity. Due to the brisk demand mills are having difficulty in making deliveries with the result that they are being asked by customers to attend to their urgent needs. Several mills have requests for 1920 contracts but will not sell so far ahead.

Tin Plate Mills

Entertain Heavy Demands—Canmakers Buy—Export Business Increases

Pittsburgh, Aug. 12.—Demands on tin plate manufacturers still are heavy, and while the bulk of them are specifications against old orders, new business, especially for export, is of substantial proportions. Requirements for perishable food containers for Pacific coast crops have been only partially met. Packers underestimated the size of the crops in that section. Although large shipments of cans have been made to the coast to meet the emergency, this is expensive practice to the canmakers and they are buying tin plate wherever available. Preserving crops generally are yielding heavier than expected, and it is believed that the can companies will close the year's business with almost no carry-over, either of tin plate or cans. Present bookings of most of the tin plate manufacturers are sufficient to carry them at full capacity well into October. The leading producer is sold even further ahead. Meanwhile, export demands steadily are increasing, with Japan and China free buyers, good-sized shipments being made to South America and some business coming from Europe. An export inquiry for 100,000 boxes recently came out, but it is not yet in definite shape, since the time of shipment has not been specified. Heavy drafts are being made upon stock plate and with the depletion of supplies, concessions from the regular base of $7 per base box, Pittsburgh, are not as heavy as they were a few weeks ago.

Shape Market More Active

Good Structural Tonnages Let in New York—20,000 Tons Involved in Inquiry From India

New York, Aug. 11.—Trading in the local structural market has been somewhat more active during the past week. A better volume of tonnage has been coming out, and several sizeable contracts have been placed. The largest new inquiry to be issued is one involving 4000 tons for the proposed Hotel Linnard, Fifty-first street and Park avenue, New York City. Another inquiry calls for 1000 tons for a government warehouse in Philadelphia, the bureau of yards and docks being in charge of this project. In the export market, the inquiry of the Tata Iron & Steel Co., India, involving about 20,000 tons for plant additions, is absorbing the most interest. The Roumanian commissioners, with headquarters at the Cumberland hotel, New York City, are negotiating, but have not as yet accomplished anything, due, it is said, to lack of credit. Their most important project is a bridge over the Danube river. No action has yet been taken on the 7000 tons for the dirigible hangar at Lakehurst, N. J., and it is considered likely in some quarters that all bids will be rejected. The government, it is said, expected to be able to go through with the project at a cost of not more than $2,000,000. The lowest bid was $2,747,000, submitted by Irwin & Leighton, Philadelphia. Of the 14 bidders on this work, all but four were over $3,000,000. A source of some trouble to fabricators at this time is the embargo now in effect on various railroads.

Embargo Delays New England Work

Boston, Aug. 12.—A freight embargo is delaying construction work in this district. Thousands of tons of fabricated steel are tied up on the road to New England. Aside from the railroad situation, construction companies believe local conditions are improving. A contract for an automobile building at Brighton, Mass., calling for 75 tons of structural shapes was let to the Berensen Construction Co. Another contract for an addition to a large paper mill at Mettinique, Mass., was awarded to Daniel O'Connell & Sons. The New England Structural Co. obtained about 400 tons of new steel work during the week. This company reports considerable tonnage now being figured.

Structural Awards Decrease

Pittsburgh, Aug. 12.—Shapes still constitute one of the quiet spots in the present steel situation, for while a good deal of business has been booked by the fabricating interests, specifications are slower than usual in reaching the shape mills. This may be accounted for in part by the fact that the end of the war found the fabricating shops well stocked with plain material as a result of the cancellation of much government work. The only important award announced by structural interests here during the past week was a new power house for the Detroit Edison Co. at Conners Creek, Mich., involving 1400 tons.

Let Many Small Jobs

Philadelphia, Aug. 12.—Numerous structural jobs have been let in this district during the past week, but tonnages in all cases have been small. Several good sized contracts are expected to be closed here shortly.

Lettings at Cleveland Increase

Cleveland, Aug. 12.—Structural lettings in the Cleveland district show some increase in volume, and new business in sight is encouragingly large. One of the largest general contractors in this district who specializes in office and industrial buildings reports he has a larger amount of business pending at present calling for structural steel bids than at any time since the war. The Canton Bridge Co. was awarded the contract for 900 tons for the buildings to be erected by the Timken Roller Bearing Co., at Columbus, O. The Berger Iron Co. took 600 tons for the Goodyear Tire & Rubber Co., Akron, O. Bids are being taken on 900 tons for a factory for the Firestone Steel Products Co., Akron. The Lakewood Crane Co., Lakewood, O., is understood to have received a contract for several cranes for government use at Charleston, W. Va.

West Takes More Tonnage

Chicago, Aug. 12.—After the lull of the past few weeks, buying of structural material has come to the front again and an unusual number of projects have been closed recently. Practically all these are for structures outside the Chicago district where the lockout and strike of building trades is preventing any activity. The largest tonnage closed recently is 1168 tons for the United Verde Copper Co., at Jerome, Ariz., which will be fabricated by the Kansas City Structural Steel Co. The Decatur Bridge Co. has taken 1106 tons for the Stix Baer & Fuller Co., at St. Louis.

CONTRACTS AWARDED

Machine shop addition for Gisholt Machine Co., Madison, Wis., 250 tons; to Worden-Allen Co., Milwaukee.

Extension of open-hearth building and 600-foot craneway for Interstate Iron & Steel Co., Chicago, 500 tons; to Worden-Allen Co., Milwaukee.

Apartment hotel for Oscar Brachman, Milwaukee, 400 tons; to Northwestern Bridge & Iron Co., Milwaukee.

School for Hazelton, Pa., 300 tons; to Kellogg Structural Steel Co., Buffalo.

Plant for Star Worsted Mill, Pittsburgh, Mass., 120 tons; to New England Structural Co.

Gray-iron foundry addition for A. E. Martin Foundry Co., Milwaukee, 150 tons; to A. F. Wagner Iron Works, Milwaukee.

Power house for the Detroit Edison Co., Conners Creek, Mich., 1400 tons; to the American Bridge Co.

Roaster building and power house for the United Verde Copper Co., Jerome, Ariz., 1168 tons, to Kansas City Structural Steel Co.

Addition to building for Stix, Baer & Fuller Co., St. Louis, 1106 tons, to Decatur Bridge Co.

Steel bins and conveyor bridge for the Standard Oil Co., Schoper, Ill., 750 tons, to Decatur Bridge Co.

One 111-foot riveted truss span and four 36-foot deck girder spans for the Missouri Pacific railroad, 310 tons, to American Bridge Co.

Manufacturing building for the Hill Pump Valve Co., Chicago, 251 tons, to Hansell-Elcock Co.

Store building for the L. F. Beach & Co., Joliet, Ill., 290 tons, to Joliet Bridge & Iron Co.

Highway bridges over Canon Diablo and Little Colorado river for the United States government, 200 tons, to Omaha Structural Steel Co.

Warehouse for the California-Hawaiian Sugar Co., San Francisco, 500 tons, to California Steel Co., San Francisco.

Mill building for Columbia Steel Co., San Francisco, at Pittsburgh, Cal., 500 tons, to Dyer Bros., San Francisco.

Addition to plant of Hershey Chocolate Co., Hershey, Pa., 550 tons; to L. F. Shoemaker-Satterthwait Bridge Co.

Transfer bridges for Lehigh Valley railroad, 750 tons; to American Bridge Co.

Crane bridges for Niles-Bement-Pond, 250 tons; to American Bridge Co.

Addition to Brighton Mills, near Passiac, N. J., 300 tons; to Fagan Iron Works.

Bridge for Norfolk & Southern railroad, 300 tons; to American Bridge Co.

Building for Schmidt bakery, Allentown, Pa., 130 tons; to Bethlehem Construction Co.

Building for Philadelphia & Reading Coal & Iron Co., Pottsville, Pa., 130 tons; to Bethlehem Construction Co.

Building for Goodyear Tire & Rubber Co., Akron, O., 600 tons; to Berger Iron Co.

Buildings for Timken Roller Bearing Co., Columbus, O., 900 tons; to Canton Bridge Co.

Plant for Adirondack Steel Foundry Co., Watervliet, N. Y., 1050 tons; to Ferguson Steel & Iron Co.

Foundry for Dunham Co., Berea, O., 60 tons; to Fort Pitt Bridge Works.

Machine shop for S. A. Wood Machine Co., South Boston, Mass., 100 tons; to New England Structural Co.

Theater, Springfield, Mass., 135 tons; to Eastern Bridge & Structural Co., Worcester, Mass.

Weave mill, Watertown, Mass., 125 tons; to American Bridge Co.

CONTRACTS PENDING

Boat storage, Philadelphia navy yard, 1000 tons, bids to be taken Aug. 15.

High school for Bethlehem, Pa., 300 tons, general contract to Cramp & Co.

Butterwick building, New York, 3000 to 4000 tons, Ballinger & Perrit, Philadelphia, taking bids.

Loft building, Twenty-first and Broadway, New York, 1700 tons, bids being taken.

Repairs to furnace building, charging floor, etc., of Worth Steel Co., Claymont, Del., 500 tons, bids being taken.

Garage for Buffalo street department, 150 tons; C. F. Ernst & Sons, Buffalo, low bidders.

Warehouse for bureau of yards and docks, Philadelphia, 1000 tons, bids being asked.

Power house for Eclipse Gas Stove Co., Rockford, Ill., 600 tons, bids pending.

Foundry for Pettibone, Mulligan & Co., Chicago, 400 tons, bids asked.

Hotel Linnard, Fifty-first steet and Park avenue, New York City, 4000 tons, bids pending.

Factory for Firestone Steel Products Co., Akron, O., 900 tons, bids being taken.

Addition to government military prison, Ft. Leavenworth, Kans., 300 tons. Bids being taken.

Building for Kerr Steamship Co., 1000 tons; contract pending.

Office building, Twenty-ninth street and Broadway, 1500 tons, bids being taken.

Building for Butterwick Publishing Co., Spring street, 3500 tons; likely to be awarded within a week.

Three bridges for the state of New Hampshire at Concord, N. H., 100 tons; bids being taken.

Warehouse Prices

In East Rise as Dealers Adopt New Methods

Philadelphia, Aug. 12.—Demand for iron and steel out of warehouses since the signing of the armistice has been only about 50 per cent of normal and hence the cost of conducting store business has been comparatively high. Reports from warehouse interests generally throughout the country show that almost without exception, they have done business with little, if any, profit since Jan. 1. In order to improve the situation, many of the warehouses have been forced to restore the spread of $1 per 100 pounds which was operative during the war period.

Philadelphia and Baltimore warehouses apparently are quoting on the basis of the $1 spread. The new prices in Philadelphia are 3.60c on iron and steel bars, 3.90c on plates, and 3.70c on shapes. In Baltimore the new level is 3.58c on iron and steel bars, 3.88c on plates, and 3.68c on shapes. These prices are obtained by adding $1 plus the freight rate from Pittsburgh, to the mill base at Pittsburgh. In the case of Philadelphia, however, 25 cents per 100 pounds is employed as the rate from Pittsburgh, in order to avoid the inconvenience of computing prices from the actual rate which is 24½ cents per 100 pounds.

About a month ago many Eastern warehouses began to observe on out-of-town shipments, an equalizing system similar to that prevailing in the West. By this system, Philadelphia, New York, Baltimore, Boston, and other large cities were regarded as major basing points and on out-of-town shipments the prices quoted by warehouses at these basing points were equalized to the extent of the difference between the freight rate from one major basing point to the destination and the freight rate between another nearby basing point and the same destination.

Another plan for arriving at a delivered price at consumers destinations on out-of-town business has been proposed. The warehouses which already have adopted it are said to be adding to the Pittsburgh mill price the warehouse spread of $1, plus the actual freight from Pittsburgh to the consuming destination. In quoting this delivered price, the dealers are allowing the actual freight from the warehouse to the destination. As the new system is applied, therefore, a consumer in Trenton, Newark, Wilmington, or any other smaller center, will be called upon to pay a price for bars, for instance, obtained by adding to the mill price of 2.35c base Pittsburgh, the warehouse spread of 1 cent per pound, plus the actual freight rate from Pittsburgh. For carload shipments, the carload freight rate will be used, while where the shipments are less than carload, which is characteristic of the majority of purchases, the less than carload freight rate from Pittsburgh will be applied.

Stick to Old Lists

New York, Aug. 11.—Several of the larger warehouse interests continue to adhere to the old schedule of prices, which was in effect generally until the first of this month. In one or two instances they assert that no upward revision in prices will be made in the near future unless a higher schedule goes into effect at the mills. At the present time, the bulk of trading is being confined principally to bars and sheets.

Plate Market

Shows Some Improvement — 21,000 Tons Needed for Battleships

Philadelphia, Pa., Aug. 12.—It is reported that portion of 8000 tons of plates, recently bought by the Pennsylvania railroad, was obtained at $2.50, Pittsburgh. However, this price has since been withdrawn, and another eastern railroad which now is in market is unable to get quotations less than the equivalent of $2.65 Pittsburgh. While one large interest reports better plate business from the entire country, eastern mills still find demand quiet. Nothing has materialized on inquiries for steel for merchant vessels on which various yards were figuring. The largest inquiry in the market is for 21,000 tons of plates for battleships to be built at Brooklyn. Bids for this tonnage will be opened Friday. The Bethlehem Shipbuilding Corp. is reported to have taken a contract for one battleship, and the Newport News Shipbuilding Co., one. The American Locomotive Co. has placed some tonnage for the railroad administration locomotives, while a round tonnage of plates has been placed for export to England.

Slow to Catch the Stride

Pittsburgh, Aug. 12.—Plate-mill activities are greater than they were a few weeks ago but demands outside of those from the makers of tanks and in connection with oil-land developments, leave much room for improvement. Neither car nor ship builders are in the market for big tonnages and locomotive manufacturers have insufficient business to be free buyers. Some business probably is ahead for the Carnegie Steel Co., in connection with the contracts recently awarded by the United States Steel Corp. for several 10,000-ton boats. Figuring each boat to take between 3000 and 3500 tons of steel, requirements will be between 30,000 and 35,000 tons, about 65 per cent of which will be plates.

Cars and Ships Help

Chicago, Aug. 12.—Although demand for steel plates for general manufacturing purposes has been excellent, considerable tonnage has been taken for car repair work by car building companies. The Ryan Car Co., Chicago, has increased its recent purchase of this material by 3000 tons additional and has an inquiry out for 2000 tons more. The Liberty and Illinois Steel Car companies are inquiring for 5000 tons each. Shipbuilding on the Pacific coast calls for considerable tonnage, mostly plates, an order being placed with the leading interest recently for 1200 tons for a tanker to be built on the Pacific coast. The same maker has received an order from a Pacific coast shipbuilder for about 2800 tons of ship material, mostly plates.

Pipe Makers

Are Heavily Committed on Lapweld Sizes—Prices Are Firm

Chicago, Aug. 12.—Although inquiries on the part of cities for cast iron pipe are not large, the number and tonnage at present being figured is somewhat above the average for this summer. The preponderance of small sizes and lack of larger pipe continues to interfere with efficient shop operation. The United States Cast Iron Pipe & Foundry Co., has been given 212 tons at Clarinda, Iowa. Bids will be opened Aug. 11 at Edgeley, N. Dak., on 350 tons; Aug. 14 at Dover, O., on 80 tons; Aug. 18 at Fairmont, N. Dak., on 200 tons, and Aug. 20 at Chicago on 1700 tons.

Quotations have been advanced $2 per ton, making four-inch now quoted at $58.80, delivered Chicago, and six-inch to 16-inch inclusive, $55.80, delivered Chicago.

Expect Higher Prices

New York, Aug. 11.—The city of Fulton, N. Y., which recently received bids on 1200 tons of cast iron pipe, has postponed action indefinitely. Few other municipal tonnages are noted, and those which are up involve only small lots. Private demand, however, holds up well, and the market, all things considered, appears stronger than in many weeks, despite the seriousness of the labor situation. Talk of higher prices is becoming more widespread, and an advance of at least $2 is expected by some sellers within the near future.

Still Heavily Committed

Pittsburgh, Aug. 12.—Makers of pipe, both steel and wrought iron, still are heavily committed on lapweld sizes. On oil country goods makers of steel pipe are sold ahead over the end of the year, while wrought iron pipe interests say that current bookings will keep them busy until next February or March. Few manufacturers of either line are taking new orders for early delivery save possibly from regular customers and some have not the available tonnage even for such demands. Business in buttweld pipe steadily is expanding with practically all makers now reporting shipments to be running ahead of production. Mill order books are beginning to fill up. The Riverside plant of the National Tube Co., Benwood, W. Va., at which small pipe is the chief product, is about ready to start up.

Pipe Business Improving

Birmingham, Ala., Aug. 12.—Cast iron pipe business in the south is improving rapidly, despite the recent advance in prices and announcement that another would be made soon. Machinists and other workers at the plant of the United States Cast Iron Pipe & Foundry Co., at Bessemer, near here, went on strike while officials of the corporation were here, and the demands of the men were promptly met, only three days being lost. This company, together with the American Cast Iron Pipe Co., the National Cast Iron Pipe Co., and several soil pipe makers are melting more pig iron now than for many months.

Great Activity in Export Trade

With Proper Credits Chileans Prepare to Spend $50,000,000 for Railway Equipment— France Joins England in Placing Orders in United States— Foreign Demand is Broadening

NEW YORK, Aug. 11.—Export business during the first week of August will equal the business done during the last week of July, according to opinions expressed by sales agents. This is further tangible proof that the slump in exports during the first two weeks of July was but temporary. The exchange situation, however, continues bad and inasmuch as the dollar sells for a premium in Europe, England is offering to sell us metals. Ferromanganese, ferrochrome, ferrovanadium, ferrotungsten are being quoted by British sellers at prices slightly below our domestic prices and it is most likely that an important movement will be developed.

A heavier import movement, not necessarily of metal products, undoubtedly will contribute to the correction of the exchange. The larger steel export agents are giving serious consideration to the credit situation. They are inclined to extend greater financial aid to purchasers. Some sales upon long credits have been made, and this practice is likely to extend.

Oriental business has continued prosperous and South Americans, although individual orders are small, are buying without experiencing any trouble with the exchange situation. The most notable development of the market during the past week was probably the return of the agents of the Chilean government to purchase railway supplies and equipment. Following the example set in the case of the Poland purchases of railway equipment, the manufacturers are said to be contemplating making sales to the Chilean government under a similar plan. The Chileans say they are ready to spend $50,000,000 for their projects, and, contingent on a credit arrangement, they have already signed contracts for some of this material.

Smaller export houses have been complaining recently of their inability to get business in competition with the United States Steel Products Co., and the Consolidated Steel Corp. They say larger export agents have been able to quote a lower c.i.f. price. But it was discovered that the larger agents were getting specially attractive ocean rates. The conference steamship lines immediately agreed to cut the rates to $12 on pig iron to United Kingdom ports, to $13 on bars, plates and sheets, and to $14 on wire and similar finished goods. It is expected that the lower rates will stimulate English business.

France Selling Iron to England

Heretofore independent sales to England have been chiefly specialties, although the British have purchased quantities of bars and sheets. The new ocean rates, it is hoped, will stimulate business in heavy goods, semifinished and raw materials. Scotland has been inquiring for low carbon billets, one inquiry being for 5000 tons, and England, it is believed, still desires a large tonnage of pig iron. On the other hand, the French are producing iron in a quantity in excess of their domestic needs. The French are storing this iron and are selling some to England. England has been buying from us wire rods, bars, screw stock and pig iron.

Among British inquiries noted recently was one for 500 tons of light rails. The English requirements for pig iron have been estimated anywhere from 50,000 to 200,000 tons, which is a tonnage that the French probably could not fill in its entirety, and even though the French selling price in England is lower than our c.i.f. price, some of that business should come here. A recent inquiry from England for 25,000 tons of pig iron was refused because the British wished to get too low a price on it to satisfy the American producer.

Prospects for sales to France are not so bright as might be wished, although American producers are being told that they can sell some machinery for the restoration of the French plants. Representatives of the French plants at Homecourt and Hautmont have been sounding out the American producers and have conducted preliminary negotiations with the sales agents in New York. So far as can be learned these representatives are anxious to purchase the machinery for complete plant equipment. They have the promise of the French government to permit the importation of such goods into the country, despite the fact that imports of finished products are practically prohibited.

French inquiries for wire rods now in the market would probably total 5000 tons or more. An order for 1000 tons of wire rods has been signed by French purchasers. France also is in the market for a few thousand tons of black sheets, and a lot of 1200 tons of ship plates. A number of inquiries for plates, shapes and bars have recently come from Norway and Sweden, and Denmark has inquired for a little more than 10,000 tons of rails. Holland has sent in an inquiry for 10,000 tons of ship plates.

South American orders have consisted chiefly of wire, sheets, pipe and bars. Demand for steel pipe and other oil country goods comes principally from Brazil and Argentine.

India has been a consistent buyer of American iron and steel. That country now is inquiring for 20,000 tons of structural steel. Among the recent sales made to India were 500 tons of bars and 300 tons of nails.

The United States Steel Products Co. has taken an order from the Japanese for 6000 tons of 30-gage sheets in one lot. The Japanese also have bought 500 tons of plates and 500 tons of sheets. They have been sending in new inquiries for iron bars, steel bars and billets.

A sale of 1000 tons of wire rods to Japan has been reported, and it is learned the Japanese have sent in a new inquiry for 3000 tons of rails. One agency is handling Japanese orders for 4500 kegs of nails, 3000 cases of tin plate, and 100 tons of zinc sheets. Japan also has placed orders for 4500 tons of plates, and 400 tons of shapes.

Heavy orders have been taken for the Dutch East Indies, consisting of plates, shapes, sheets and similar goods. These orders have ranged in size from 20 to 2000 tons each.

Prices on iron products have advanced. Iron bars which have sold for $2.35 are now bringing $2.50 and $2.60. Iron shapes have advanced from $2.45 to $2.65. The price on bolts and nuts has been advanced 15 per cent. New quotations on malleable fittings show an advance of 30 per cent, and on cast iron fittings 20 per cent.

Pacific rates are reported weak. One of the large steel producers, it is understood, is able to ship out of San Francisco to Japan for $11.

Prepare for German Competition

British Buying Raw Materials in United States to Enable Them to Retain Markets Against Teutons—Gas Strip, Slabs and Billets In Demand—Strikes Tie Up Industries in England

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., July 25.

MORE is being heard of American successes in overseas markets, and attention at present is centered on the international tube situation. British tube makers, who have been very successful in this class of competition, are not disposed to stand idly by while America appropriates this trade. At present there is no specified export price for British tubes. It is well known that American gas strip and slabs for making tube are being bought extensively at favorable prices, and by means of this the Staffordshire tube makers hope to make a good fight for the retention of their foreign markets.

It is fully recognized that Germany may soon have to be reckoned with in this department, as before the war Germany engaged successfully in international tube competition.

The increase in the price of coal already is responsible for keener foreign competition. Prior to the increase, Welsh billets could be sold at works for £13 10s ($64.80), a price which did not give much opening for American competition, but steelmakers have had to put their prices up to £14 10s ($69.60). American billets, delivered at Liverpool, at £13 5s ($63.60) c.i.f. now offer a decided advantage to the British buyers, who have placed orders for large tonnages. The stoppage of the Ebbew Vale works will compel Midland buyers to get their material from America, as nearly all the British-made billets come from the South Wales district.

America is reported to be shipping tin plates to Liverpool 2s (48c) per box cheaper than the Welsh tin plate makers, while in several steel lines, British material is being undersold.

Americans Underselling British

In this district there is hardly one product which is not being substantially undersold by America. Several large firms believe that in regard to some large foreign contracts lost to this country Germany is the successful competitor. An order has been placed from Birmingham with a Belgian exporter for steel to be delivered here, but there is a strong suspicion that this material really comes from Germany.

Steel wire of 24 gage made in America is being offered here at £35 ($168) per ton, compared with £45 ($216) for the British material. British makers, however, do not specialize on very small gages and they claim to be holding the market for wire of 8 to 10 gage, standard sizes, for which there is a great demand.

Reports from the Manchester market show that America is getting a firm hold of business there in steel and finished iron, although local makers have as much work as they can cope with. The total make of foundry iron does not increase to any extent.

Strikes Handicap British Works

Business is in suspense owing to a combination of labor difficulties. About 300,000 miners are on strike in a district which is the center of the pig iron industry. Lloyd George has made the men an offer which they may accept, but if they do not, and the strike extends, there is not much doubt that every blast furnace in the kingdom will be either damped down or blown out.

At present there is neither selling nor buying of pig iron. The addition of 6s ($1.44) per ton to the price of coal has put a damper on all new business. In the North of England a strike of railwaymen has stopped deliveries. In the same district there is a strike of furnacemen. But despite these difficulties shipments of pig iron generally have improved. Exports are still controlled and few licenses are issued. It is expected, however, that in view of the great increase in shipping accommodation, exports will soon return to their normal volume, provided the furnaces resume operations.

West Coast hematite producers have raised the price of all grades of pig iron 12s ($2.88) per ton on account of the increase in the price of coal. In the North ordinary forge material has been advanced 15s ($3.60) per ton, while Staffordshire pig iron has been advanced £1 ($4.80) per ton.

The moderation of the makers of hematite is attributed to their anxiety over foreign competition, now felt keenly by all branches of the steel trade. It is significant that Northamptonshire and Derbyshire smelters have not thought it worth while to change their quotations. This is partly due to an idea that the recent increase of ½s ($1.44) may not be confirmed, while they consider themselves protected by the agreement whereby customers are required to pay whatever may be added to the cost of production. At the Birmingham meeting there was scarcely a transaction in pig iron, nearly all the selling agents stating that they had received instructions to decline business for the present.

The coal strike has found steelmakers also unprepared.

The Birmingham district, which is the center of the wrought iron industry, is not directly affected by the coal strike, as the colliers in this district are remaining at work. But a strike talk is common, and anything may happen. Two days ago a gang of youths managed by threats to stop all the North Staffordshire collieries, the men being brought up from the pits. The officials on the surface were greatly outnumbered, but preferred to bring up the men rather than run the risk of damage to life or property. Some stoppages have taken place at Cannock, the great coal district a dozen miles outside Birmingham, but the trouble is insufficient to shut down the works. The result, however, is the same, as the district gets the great bulk of its pig iron from Northamptonshire and Derbyshire, where nearly all the collieries have been stopped.

Talk Strike in Birmingham District

The great steel district of Sheffield is largely reduced to idleness, such great works as Hadfields, Cammell, Laird & Co., and Vickers, Ltd., not having more than a few days' supply.

A drastic step was taken at Ebbew Vale where a wage dispute was in progress. Two days ago the general manager made the men an offer for a settlement, with the warning that if it was rejected the furnaces would be blown out, causing a suspension of work in the steel plant for at least three months. It is reported the men rejected the offer and that 6000 will be idle.

Unfilled Orders

Of Steel Corporation, Make Gain in July of 685,806 Tons

Unfilled bookings of the United States Steel Corp. made a decided gain in July, according to the regular monthly statement recently issued. The unfilled orders on July 31 amounted to 5,578,661 tons, or an increase of 685,806 tons. This increase came as a surprise to the trade, which looked for a substantial gain, but not one so large. The showing last month is taken as an indication that the turn in steel market has been made, and that confidence among buyers is rapidly becoming restored. Following is a comparative statement:

Date	Total	Change, tonnage	Change, per cent
July 31, 1919....	5,578,661	685,806+	14.00+
June 30, 1919....	4,892,855	610,545+	10.70+
May 31, 1919....	4,282,310	518,375—	10.80—
Apr. 30, 1919....	4,800,685	629,887—	11.58—
Mar. 31, 1919....	5,430,572	580,215—	9.65—
Feb. 28, 1919....	6,010,787	673,481—	10.07—
Jan. 31, 1919....	6,684,268	694,884—	9.41—
Dec. 31, 1918....	7,379,152	745,511—	9.17—
Nov. 30, 1918....	8,124,663	228,630—	2.74—
Oct. 31, 1918....	8,353,293	55,388+	.668+
Sep. 30, 1918....	8,297,905	461,137—	5.26—
Aug. 31, 1918....	8,759,042	124,759—	1.40—
July 31, 1918....	8,883,801	35,065—	.39—
June 30, 1918....	8,918,866	581,243+	6.90+
May 31, 1918....	8,337,623	404,259—	4.60—
Apr. 30, 1918....	8,741,882	314,522—	3.47—
Mar. 31, 1918....	9,009,675	232,049—	2.49—
Feb. 28, 1918....	9,288,453	189,400—	1.99—
Jan. 31, 1918....	9,477,853	96,135+	1.02+
Dec. 31, 1917....	9,381,718	484,612+	5.44+
Nov. 30, 1917....	8,897,106	112,569—	1.24—
Oct. 31, 1917....	9,009,675	823,802—	8.37—
Sep. 30, 1917....	9,833,477	573,572—	5.51—
Aug. 31, 1917....	10,407,049	433,115—	4.16—
July 31, 1917....	10,844,164	539,123—	4.74—
June 30, 1917....	11,383,287	503,304—	4.24—
May 31, 1917....	11,886,591	296,492—	2.43—
Apr. 30, 1917....	12,183,083	471,439+	4.02+
Mar. 31, 1917....	11,711,644	134,947+	1.16+
Feb. 28, 1917....	11,576,697	102,643+	0.90+
Jan. 31, 1917....	11,474,054	73,232—	0.64—
Dec. 31, 1916....	11,547,286	488,744+	4.43+
Nov. 30, 1916....	11,058,542	1,043,282+	10.41+
Oct. 31, 1916....	10,015,260	492,676+	5.18+
Sep. 30, 1916....	9,522,584	137,133—	1.42—
Aug. 31, 1916....	9,660,357	66,765+	.69+
July 31, 1916....	9,593,592	46,866—	0.48—
June 30, 1916....	9,640,458	297,340—	3.09—
May 31, 1916....	9,937,798	108,247+	1.11+
Apr. 30, 1916....	9,829,551	498,550+	5.34+

Steel Corporation Building 20 Ships for Exports

New York, Aug. 12.—The United States Steel Corp. is building 20 10,000-ton cargo boats, of transverse construction type, suitable for long voyages. Ten are being built at the Federal shipyard of the corporation at Kearney, N. J., and 10 at the corporation's shipyard at Mobile, Ala They will be employed in the foreign trade of the corporation.

Will Not Affect Steel

Washington, Aug. 12.—The government's fight against the cost of living will not extend to iron and steel, it is believed, because known activities so far are being confined to foods, fuel, clothing and shoes, the more intimate personal necessaries. Steel prices, due to voluntary reductions by producers on Jan. 1 and later under the sanction of the short-lived industrial board, are said to be not in particular disfavor with the administration.

The Huddleston bill, which would regulate steel, coal, lumber and other basic industries for a period of five years after the proclamation of peace, so far has remained in committee without action.

Carnegie Funeral to be Held Aug. 14

Lenox, Mass., Aug. 12.—In conformity with a wish oft-expressed by Andrew Carnegie, the world-famed ironmaster will be laid to rest with the simplest of funeral services at 10:30 o'clock Thursday, Aug. 14. Only about 20 of his most intimate friends, including Charles M. Schwab, will attend. Others who sent condolences were acquainted with Mr. Carnegie's wish. A special train will convey the body to Tarrytown, N. Y., and it will be interred in a plot in Sleepy Hollow cemetery, the plot having been selected by Mr. Carnegie several years ago. The following epitath, written by Mr. Carnegie, will be inscribed on his tombstone:

"Here lies a man who knew how to enlist in his services better men than himself."

Launch 47 Ships in Year

The following statistics representing the accomplishments of the Hog Island shipyards from Aug. 5, 1918, the date of the yard's first launching, to Aug. 5, 1919, were recently given out by the shipping board:

Ships launched, 47; deadweight tonnage, 367,775. Ships delivered, 36; deadweight tonnage, 281,700. Keels laid, 47 "A" type; 12 "B" type.

The Nonferrous Metals

	Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony
Aug. 6	23.50	54.50	6.00	7.40	33.00	9.25
Aug. 7	23.50	54.50	6.00	7.35	33.00	9.125
Aug. 8	23.50	54.25	6.00	7.30	33.00	9.125
Aug. 11	23.50	53.25	6.00	7.25	33.00	9.00
Aug. 12	23.50	53.50	6.00	7.25	33.00	9.00

*July shipment from Singapore, c.i.f. New York.
†American Smelting & Refining Co.'s price.

NEW YORK, Aug. 12.—The nonferrous metal markets were further unsettled and disturbed the past week by the general indications of widespread labor unrest and specifically by the ultimatum of the railroad brotherhoods to the government. Speculators and dealers became more anxious to realize on holdings of metals which they had accumulated in the recent bull market in metals and offered supplies at greater concessions. This condition widened the gap between the "outside" or dealers' market and the producers' or major market. The producers, confident in the statistical position of their industries, stood pat and refused to meet the outside market, but they booked little business.

Thus, in copper, the producers continued to quote 23.50c for electrolytic copper for spot, August and September deliveries, and 24c for October. But second hands gradually marked down their prices until as low as 21.25c was quoted for spot electrolytic. Casting was marked down to 21c and lake to 22c in the outside market. A considerable tonnage, in the aggregate, was turned over in the outside market, more copper being in second hands than was generally realized. However, sales of copper the past three months have far exceedd production, while it is believed consumption now also has passed production. Stocks of refined copper are steadily being diminished. The recent sale of 1000 tons of copper to Germany is regarded as the first taste of a large amount of such business.

Germany has been selling zinc in England, which has reduced the level there far below parity with our market and removed an immediate prospect for resumption of zinc exports from here to Europe. The zinc market has been in the hands of speculators here and has been fluctuating widely. After dropping from 8c, East St. Louis, for early shipment, to 7.35c, the market recovered to 7.60c, then back to 7.25c at the close of last week, this price still existing Monday and Tuesday. Producers have not been meeting the outside prices as a rule. Grasselli Chemical Co. smelters have just been reopened after labor troubles, while the Anaconda electrolytic zinc works at Great Falls, Mont., remains closed. High grade zinc prices are unchanged at 9c, New York.

The lead market is unchanged. Producers have booked little business lately, while producers have cut prices greatly in their efforts to realize. The leading producer continues to quote 6c, New York, 5.75c, St. Louis, but some outside offerings as low as 5.65c, New York, are reported, and the market is 5.70c to 5.75c. The government stocks of pig lead as of Aug. 1 were about 300 0tons, a reduction of 27,000 tons since Jan. 1. Stocks of refined lead in the hands of smelters were estimated at 14,000 tons as of Aug. 1.

The tin market has declined, due to strike troubles the world over and the uneasy view taken by foreign traders in the economic condition of our own country. Ninety-nine per cent tin broke 12 cents yesterday and today on account of English importations. Premiums have been commanded on high grade tin for shipment from England and Canada with the lifting of the embargo on such shipments Aug. 15, as high as 57.25c having been paid for tin for shipment from Canada. Straits tin shipped in July from Singapore and now afloat is quoted about 53.50c, while August sihpment is quoted 53.25c. Spot high grade tin is quoted 60c and spot 99 per cent tin 53.75c to 54c.

The antimony market is slightly easier, at 9c to 9.12½c duty paid New York, for spot metal. Demand has fallen off.

Third Stack Now in Operation

Three of Five Furnaces Planned by Bethlehem Steel Co. Completed at Steelton—Storing Facilities Designed for Cuban Ore Now Serving for Lake Ore—Cast House Floor is Elevated

COMPLETION of the new "A" blast furnace at the Steelton plant of the Bethlehem Steel Co. marks the realization of 60 per cent of the plan which some years ago was adopted for modernizing the Steelton blast-furnace department. This plan called for the erection of five modern furnaces to replace the old hand-filled stacks. The first of these modern furnaces, "E", was completed in 1916 and "B" in 1917. Therefore, only two furnaces out of the five specified in the general plan still remain to be built. Erection of these two stacks was held up by the war. While no decision has been reached as to when their construction will be undertaken, it is considered likely that such action will be taken as soon as market conditions justify. In the meantime, the four hand-filled stacks which still are a part of the Steelton blast-furnace plant will be maintained, although two of them ultimately will be dismantled in order to make room for the two proposed new units.

Much more than the erection of new furnaces is embodied in the work under execution at Steelton. When the reconstruction plan originally was drafted, all factors entering into the production of pig iron were considered carefully in order to effect a maximum reduction in operating expenses. Proper location and arrangement of the furnaces with respect to each other, as well as with respect to all other parts of the plant, were recognized as essential, and the question of transportation, which has a larger bearing upon pig-iron costs than any other single item, received prime attention. It confidently is expected that when the reconstruction plan has been entirely carried out at Steelton, the cost of pig-iron production there will compare favorably with production costs at any other blast-furnace group in the country.

Arrangement of Plant

As provided in the general reconstruction plan, the blast-furnace plant at Steelton is arranged in parallel lines to insure continuous and efficient operations. The first of these lines, nearest to the Susquehanna river, comprises the gas-blowing engine department, a gas-electric plant, and a Theisen, secondary gas-washer department. These units now are housed in separate structures, but ultimately they are to occupy sections of a long continuous building. The second line comprises two railroad tracks located on the pouring side of the blast-furnace group. These tracks are continuous and one serves as auxiliary to the other. The old dead-end tracks have been replaced by switches connecting at both ends, so that the cars may be pushed on the switch at one end and pushed back on the main track at the other. This eliminates much unnecessary switching of cars and greatly reduces the cost of transportation.

In addition, the elimination of dead-end sidings has resulted in a great reduction in maintenance costs, since cars no longer are damaged by being pushed off the tracks, against brick walls, etc. When the entire reconstruction program has been carried out, there will be no dead-end tracks in any part of the plant. The switches at each furnace connect with the nearer of the two through tracks, the second-through track serving to a large extent as a through track, and as an auxiliary to the first. The rolling stock on these tracks is comprised of ladle cars which transport the hot iron from the furnaces to the hot-

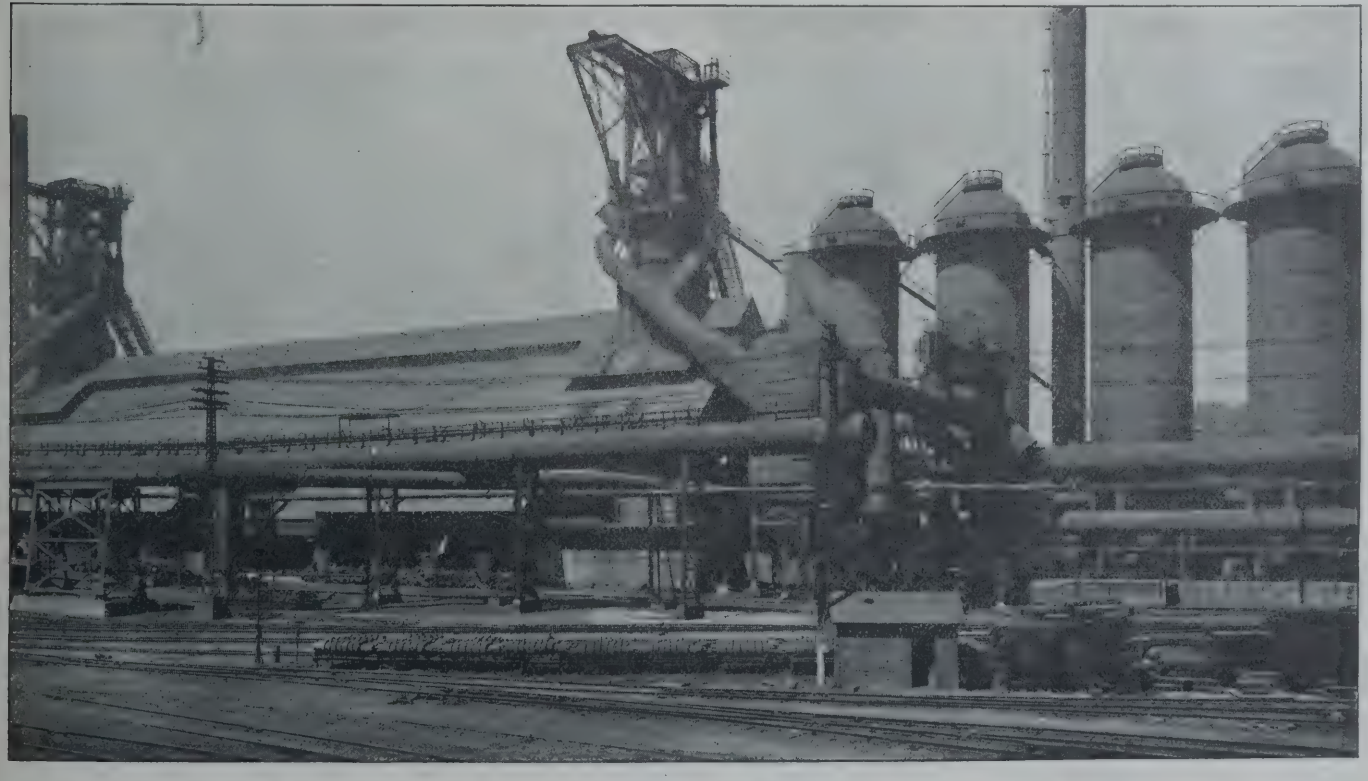


FIG. 1—GENERAL VIEW OF FURNACE AND STOVES SHOWING HOT-METAL LADLES IN POSITION. TOP OF STACK IS EQUIPPED WITH A MONORAIL WHICH IS USED IN TIME OF REPAIRS

metal mixers in the steel plant, or, when the supply of hot metal is greater than the mixers can accommodate, to the pig-casting machine where it is cast into pigs and then stored in the stock yard.

Adjacent to the hot-metal tracks are the blast furnaces and on the cinder side are two through tracks, one for transporting cinder and slag to a dump, 1½ miles from the blast furnace group, while the other track serves for the handling of coke breeze and for auxiliary purposes. Next come the ore and coke bins, the ore yard, 187 x 1620 feet, and then the ore classification yard. The ore bins and trestle are built of concrete and are surmounted by four through tracks; two of these are for the discharge of ore and limestone from railroad cars into the bins; the third, which is nearest the ore yard, is equipped with two electrically-driven transfer cars which are employed for bringing ore to the bins from any part of the stockpile, in order to obtain the desired mixture; and the fourth track commands the ore pile and is employed for unloading ore from railroad cars into stock. Bins and ore piles are commanded by two ore bridges, each equipped with a 7½-ton bucket and having a span of 187 feet. When the reconstruction plan was developed, it was based on the expectation that the furnaces at Steelton would operate almost entirely with Cuban ores.

Practice With Foreign Ores

With Cuban ores it is necessary to carry only enough ore to last approximately 60 days, since the ocean-navigation season never closes and it is possible to maintain a steady movement of this ore from the receiving port at Sparrows Point. For this reason the ore yard was made narrow. Furthermore, no car dumper was installed owing to the fact that Cuban ore is dry and granular and flows easily from the cars which are positioned on the unloading track on the trestle. Since the original plan was drafted, however, this plant has become a large user of lake ore. In fact, at present, it is operating 100 per cent on these ores and for some years to come is likely to use 50 to 60 per cent in the furnace mixtures. Lake ore is fine and moist and does not flow readily so that considerable hand labor is required. In using lake ore, it is necessary to carry nearly seven months' supply, or more than three times as much ore as the yard originally was designed to store. Until the company reverts to its original plan of using Cuban ore, therefore, the ore yard at this plant necessarily will continue to be congested.

To each furnace are allotted one large coke bin and 10 ore bins, which were designed to accommodate sufficient stock for a turn of 12 hours. Each coke bin is about 94 feet long and 35 feet wide and holds approximately 400 tons. In the stockhouse underneath the bins is a continuous track on which scale cars of the single-hopper type are operated, two to each furnace. These cars are filled by gravity through hand-operated gates in the bottoms of the bins. The ore is weighed on the scale cars before going into the skips; the coke is charged by volume over a screen directly into the skip, the breeze being removed by a pneumatic elevator. The operation of the latter recently was perfected at this plant. The stockhouse, which runs the length of the entire group of furnaces, is of concrete construction and due to the fact that the sides adjacent to the furnaces are open, it is exceptionally well illuminated by natural light.

The new furnaces originally were laid out for operation in couples and this arrangement, as realized in the location of the "A" and "B" furnaces, has resulted successfully in reducing overhead expenses. By this arrangement it is possible to provide the "A" and "B" cast houses jointly with one overhead crane and with an open-pit space between the two cast floors for storing the heavy castings needed for replacements in both furnaces. In this way, considerable duplication of equipment is done away with. Where the cast floors of the old hand-filled furnaces are solid, the cast floors for the new stacks are elevated, so that the space underneath them may be used for the storage of firebrick linings and other accessories, thus resulting in economy of ground space.

Furnace is Spray Cooled

Furnace "A", which was blown in Nov. 7, 1918, is similar in construction to furnaces "B" and "E" which were described in the Jan. 6, 1916 issue of THE IRON TRADE REVIEW. However, "A" furnace has slightly larger dimensions. The hearth is 17½ feet diameter, the bosh 22 feet diameter, the stockline 16 feet diameter and the height 88 feet. The top is equipped with an automatic revolving distributor of the McKee type, and the operation of the skips and other equipment of the furnace is auto-

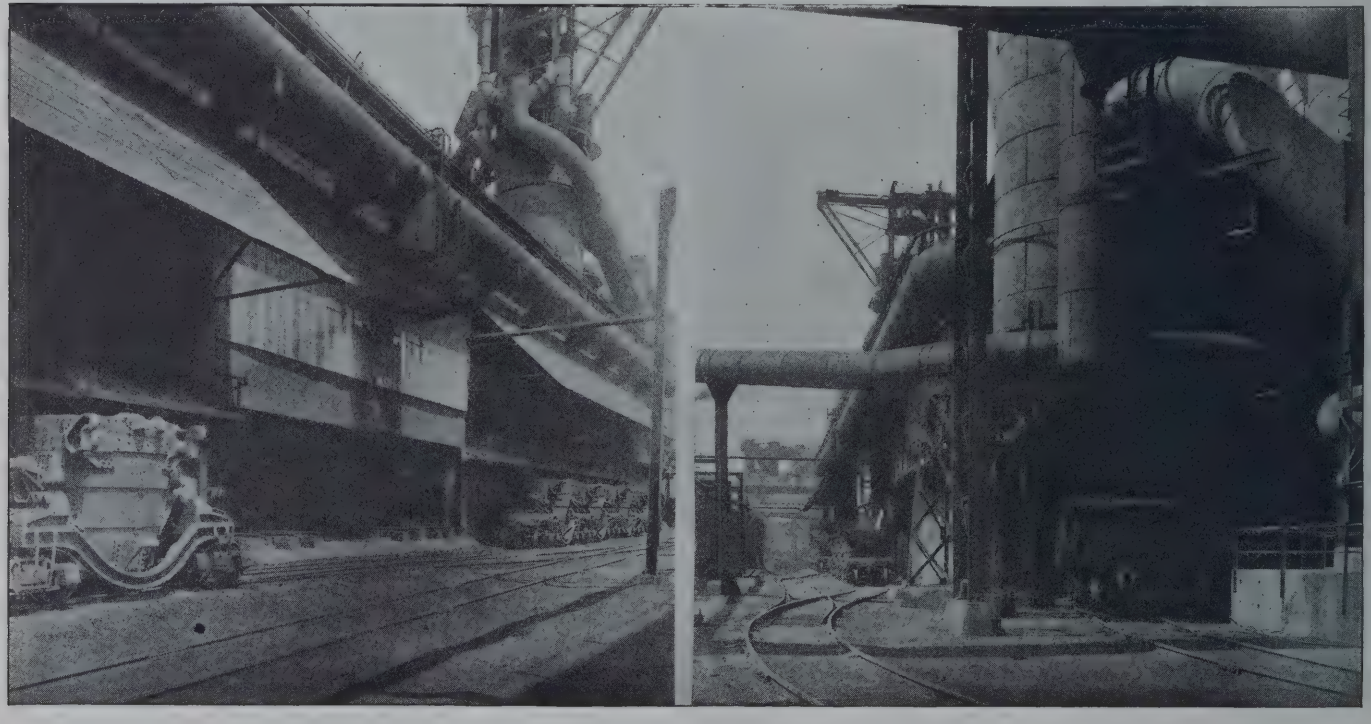


FIG. 2—CLAY, SPARE PARTS, ETC., ARE STORED IN THE ARCADE UNDER THE CAST FLOOR. FIG. 3—HOT-METAL AND DUST-CATCHER TRACKS. HIGH-PRESSURE, RELIEF VALVE IS SHOWN ON COLD-BLAST MAIN



FIG. 4—GENERAL VIEW OF FURNACE AND STOVES FROM THE TRESTLE

matically controlled. The furnace is semithin lined, the lining being 27 inches thick. It is cooled by spraying the shell and by four rows of cooling plates above the mantle. The capacity of the furnace is 500-600 tons per day on lake ore mixtures.

Dirty gas from all of the furnaces at the Steelton plant is fed into a general system which in turn feeds a gas washer located at "B" furnace. The excess gas goes either dirty to the boilers, or to another primary washing plant through which it passes on its way to the Theisen rotary gas washer. From the Theisen washer the cleaned gas goes to the gas engines. Gas for the "A" furnace stoves is supplied from the washer at "B" furnace. "A" furnace is equipped with four 25-foot stoves, 100 feet high. These are of the side-combustion type and have 4½-inch checkers as compared with 6½-inch checkers in the "E" furnace stoves.

Cools Drinking Water for Mill Workers

THE new drinking water system in use at the main plant of the Youngstown Sheet & Tube Co., Youngstown, O., is designed to supply pure water, cooled to a proper temperature, and in sufficient quantity to each department independently of all other departments. Each department has its own circulating system, with one, two or three cooling stations along the line.

The water is obtained from wells located in such a way that a 3-inch belt supply line, running completely around the plant, passes each well and receives the water produced from the well. If the pressure in the line at the well is 40 pounds, a pressure-operated electrical controller shuts down the well pump, which automatically starts when the pressure in the line falls to 20 pounds. The water from the wells is subjected to a bacteriological analysis daily and any well showing any evidence of pollution is immediately cut out of the line. Each well is enclosed by a brick building, into which none except those having duties therein may enter.

Circulation System

The cooling stations are small brick buildings, about 13 x 20 feet and are each equipped with cooling machine and circulating pump. The cooling machines are connected by belt to 7½-horsepower motors. Each machine has a capacity of 36,400 British thermal units per hour with condensing water at 77 degrees Fahr. at the overflow. Assuming 95 degrees as the maximum temperature through which the line will pass, 50 degrees as the temperature of the drinking water when leaving the machine and 65 degrees as the temperature of the supply from the wells, this machine will cool 2 gallons of water per man for 750 men in 12 hours, through a line 2000 feet long. This will utilize the capacity of the machine for 20½ hours per day. This allows the capacity for 3½ hours for emergency duty or for any period when it may be necessary to have the machine shut down. If a less number of men are to be supplied, a longer line can be installed, or *vice-versa*.

The water is taken from the machine by a 3 x 3-inch pump and discharged into the circulating line, which is a 1½-inch galvanized steel pipe, insulated with hair felt 1½ inches thick. The circulation of the water carries it directly past every fountain, the line forming a loop down to the fountain and up again to the line. There are no dead ends at any place in the system. This circulating line discharges back into the machine, a float in the cooling tank operating a valve to admit water from the supply line from the wells to make up for the water which

has been used since leaving the machine.

Where more than one machine is required for a department this circulating line discharges into the second machine and after passing through the second machine the water is pumped through the next section of the system and the water discharged into a third machine from which it is pumped and returned to the first machine.

Any number of machines may thus be connected up in series, of which any number may be inactive during cool weather, the water either being by-passed around the machine into the discharge line without passing through the machine, or by discharging into the tank of the inactive machine and being pumped from the tank into the next section of the system.

Temperature Kept at 50 *Degrees*

It was intended to allow a 5 degree rise in the temperature of the water in the length of the lines, the temperature being 50 degrees when leaving the machine and 55 degrees when returning to the machine or discharging into the next machine. This variation has been maintained, even in extreme hot weather. By a thermostatic control the water can be discharged at any temperature desired, but as the range of temperatures, 50 to 55 degrees, has been generally accepted as the most desirable from a pathological standpoint, the machines were set to deliver at this primary temperature of 50 degrees, and the length of the lines and thickness of the insulation designed to prevent a higher temperature than 55 degrees. The results have been evident in all departments, especially those where employes were obliged to work under severe heat, by the marked decrease, amounting almost to complete elimination, of exhaustion from cramps.

The fountains are of the sanitary, bubbling type, with spring closing valves. Where the employes are distributed evenly through a department, the fountains have been located about 250 feet apart.

350,000 *Gallons Pumped in Day*

The system is in charge of one man, who, with a helper, is employed by the safety department. The electrical equipment is looked after by the electrical department, and the pumps and other mechanical equipment by the mechanical department, both of which departments have one man on each turn, to attend to the equipment. In each building is a printed form, upon which each inspector makes a record of the time and the condition of the machinery at the time of each visit.

The use of thermostats and pressure regulators makes the equipment so nearly automatic in its operation that the constant attendance of anyone to operate it is unnecessary. The visits of the inspectors are arranged in such a way that each building is visited about every hour of the day and night. The identity of each cooling station and well house is established by numbers.

The following table gives data for the various departments:

Department	No. of Men	No. of Machines	No. of Fountains	Length of Pipe in Feet
Sheet mill and shops	1000	2	35	4575
Skelp mills	750	2	24	4525
Tube mills	3600	3	36	7000
Blast furnaces	750	2	15	4100
Blooming mills	600	2	18	4000
Puddle mills	600	1	18	2950
Open hearth	800	2	24	4880
Plate mill	400	1	9	2400
Locomotive repair shops	500	1	12	3000
Totals	9000	16	191	37,430

Allowing for waste, it requires about 2 gallons of water per man so that nearly 18,000 gallons of water are required per day for drinking. The amount of water pumped through the drinking water lines in one day is approximately 350,000 gallons. The total consumption of water which includes that for condensing purposes will vary from 75,000 gallons in 24 hours in cool weather to 150,000 gallons in 24 hours in extremely hot weather.

Labor a Factor in Manganese Industry

THE economic pressure of competition must either depress wages or else the manganese industry must be abandoned," is one of the significant statements contained in a report on the cost of producing ferro-grade manganese ores issued by the bureau of mines. On the subject of wages in relation to cost, the report which was prepared by C. M. Weld and W. R. Crane, continues: "If it be assumed that wages will drop, to fall in line with the cost of living and that the latter will not decrease, then the drop in wages will be equivalent to 25 per cent of the war wage.

"In line with this assumption it will be further assumed that the cost of supplies will decrease in like proportion; whereas better practice will offset much of the inefficiency of labor which has unfortunately developed under war conditions. The net result is an estimated future reduction in cost of manganese ore on board railroad cars of 25 per cent."

The following summarizes the investigations on the average cost of domestic ores in 1918:

Ore	Carbonate	Oxide	Average
Estimated production	63,000	231,500	294,500
Estimated cost on cars	$5.00	$19.00	$16.00
Railway freight	$11.35	$10.70	$10.85
Total cost delivered	$16.35	$29.70	$26.80
Manganese, per cent	36.5	41.0	40.0
Unit cost, cents	45.0	70.7	65.0

While the cost per long ton of domestic carbonates in 1918 was $16.35, delivered, and that of oxides, $29.70, the cost of Cuban ore delivered in this country was $23.50 and that of Brazilian ore, $30. The domestic ores contained 36.5 and 41 per cent of manganese, respectively, while Cuban ore contained 38 per cent and Brazilian ore 45 per cent.

"This comparison indicates that the oxide ores were at a disadvantage in competition with foreign ores even when protected by high ocean freights," the report continues. "Had foreign ores moved freely and been sold at strictly competitive prices the domestic manganese industry could not have developed except, perhaps, in certain more favored districts in the southern states, and as to carbonate ores of the Butte district. The comparison further shows that when ocean freight rates return to more nearly their normal level even the most favored oxide ores, as well as the carbonate ores, will have hard going in a competitive field."

It is estimated that in the near future the average of domestic carbonates, averaging a manganese content of 36.5 per cent, will be $14.75, delivered. As to domestic oxides, it is estimated the cost of ore containing 41 per cent will be $24.65, delivered. Cuban ore containing 41 per cent of manganese will cost $16.50, delivered, and Brazilian ore, containing 46 per cent of manganese, $18.50. Therefore, unit costs will be as follows: Domestic carbonates, 40.4 cents; domestic oxides, 60 cents; Cuban, 40 cents; Brazilian, 40 cents.

"It must be remembered that at the same price per unit the higher grade ore will always have preference," the report concludes. "Domestic ores are generally of lower grade than foreign ores and for that reason command a lower price."

Preventable Defects in Fire Brick

Lack of Uniformity of Product Has Much to do With Lining Failures—Irregularities in Bricks May be Detected by a Careful Visual Inspection and by Other Means

BY C. E. NESBITT AND M. L. BELL

REFRACTORIES are essential to the metallurgical industries because the output of iron, steel and kindred products is largely dependent on the life of the furnaces and ovens. Under stress of great demand the refractory manufacturers during the past few years were called upon to produce rapidly great quantities of brick under conditions which seriously interferred with the quality of the product. This was immediately reflected in decreased life of furnaces and loss of tonnage in various industries.

The life of the furnace, which may be expressed in terms of tons of material produced, number of heats, or weeks or years of service, is determined largely by the ability of the refractory used to resist numerous destructive agencies, such as temperature, slag, load and abrasion. In blast furnaces the refractory comes in direct contact with the charge and is destroyed largely from abrasion, slagging and softening. In open-hearth furnaces the silica refractory does not come in direct contact with the charge, but the roof, side walls and ports are destroyed chiefly by variations in temperature, slagging and abrasion due to particles of iron and lime carried by the moving gases. The slagging action due to material carried by gases is also a serious factor in the destruction of clay bricks used in soaking pits, reheating furnaces and air furnaces. The effects of abrasion and partial fusion of walls are shown in the illustrations of the walls of a soaking pit and a blast furnace, Figs. 4 and 5.

From a paper presented by C. E. Nesbitt and M. L. Bell at the Philadelphia meeting of the American Society for Testing Materials, June 24-27, 1919.

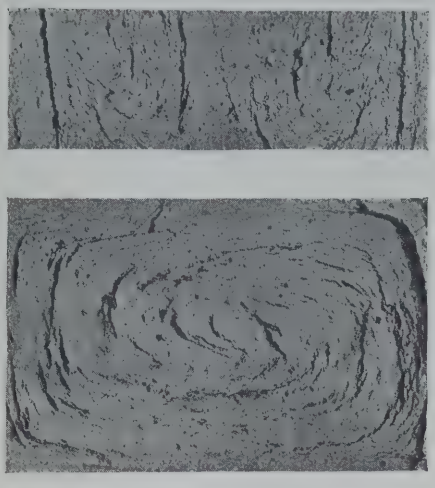
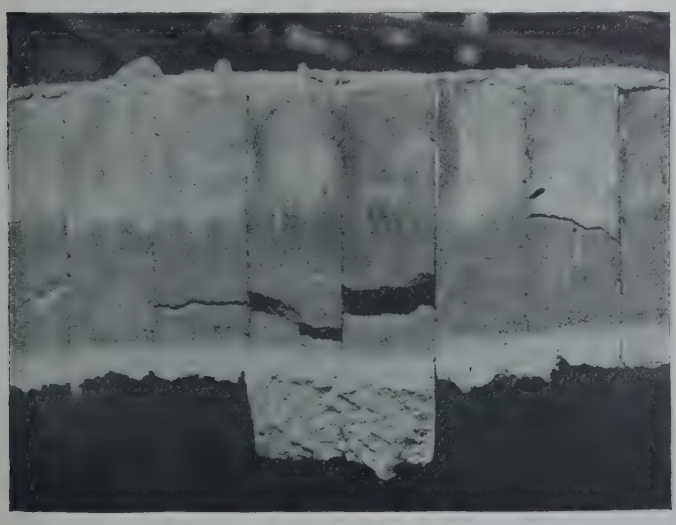


FIG. 2—LAMINATIONS IN AUGER-MADE CLAY BRICK

Bricks Are Weakened by Slag

The corrosive action of slag on refractories is recognized by all, but the fact that the strength of a brick is greatly reduced by penetration of slag is not generally known. In order to illustrate the point, four silica bricks were heated to 1350 degrees Cent. and a quantity of heating-furnace slag approximately analyzing silica 35 per cent, alumina 6 per cent and ferrous oxide 56 per cent, was placed on the surface. At intervals the bricks were turned and the slag placed on other surfaces until it had penetrated all portions of the brick. These bricks, together with four others similiarly heated but not treated with slag, were crushed on end separately while hot and the number of pounds necessary to fracture determined. The results obtained on the slag-free bricks averaged 1451 pounds per square inch, while the slag-penetrated bricks averaged 775 pounds per square inch or a reduction in strength of 46 per cent. The appearance of the treated bricks when removed from the crushing machine was in no way different from that of the original bricks, except for discoloration, so that the decrease in strength can be accounted for only by the action of the slag which had attacked and weakened the original bond.

In order to overcome this difficulty, a dense brick is advocated. It has been suggested that by proper sizing of the ground quartz, and by pressing instead of hand molding, a more dense brick can be secured, which is more resistant to slag penetration. Tests made for slag resistance on experimental power-pressed silica brick show approximately 25 per cent less penetration by heating furnace-



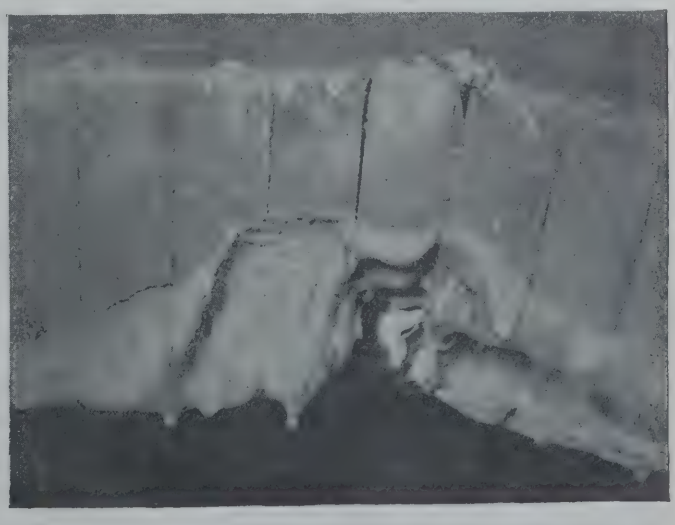


FIG. 1—ROOF FAILURES DUE TO SPALLING IN AN OPEN-HEARTH ROOF. FIG. 3—A MORE ADVANCED STAGE OF UNIT BRICK FAILURE CAUSED BY SPONGY OR CRACKED BRICK



FIG. 4—INTERIOR OF SOAKING PIT FURNACE SHOWING DETERIORATION OF WALLS BY ABRASION AND PARTIAL FUSION

slag than hand-molded brick. Silica brick shows a marked falling off of from 50 to 60 per cent in crushing strength when heated to 1350 degrees Cent. Hence, defects in molding, setting and burning become serious factors, as they lower the mechanical strength of the product which in itself becomes weaker by heat alone. Defects of this nature are illustrated in Fig. 7. In open-hearth furnace roofs, where the bricks must withstand considerable pressure due to the weight of the bricks in the long arch and expansion due to heat, a careful selection of bricks is necessary. A few defective bricks in a roof are liable to cause premature failure. Although actual crushing of the unit brick may not result, spalling or cracking will occur, so that a hole or pocket is formed and the adjoining bricks are thus more completely exposed to destructive agencies. Figs. 1 and 3 illustrate roof failures caused by spalling or cracked bricks.

Defects Caught by the Eye

Fully 80 per cent of the defective bricks received by the consumer can be detected by a careful visual examination. A group of 85 standard 9-inch silica bricks was subjected to visual inspection. Of this number 16 were judged to be of low strength because of visual defects, 18 were considered to be of medium strength, and the remainder were passed as being good. These bricks were then subjected to a hot crushing test. All bricks were crushed at 1350 degrees Cent., with the result that the average strength of the 16 defective bricks was 677 pounds per square inch, of the medium 861 pounds, and of the good bricks, 991 pounds.

The presence of fire or kiln cracks in roof bricks, however minute, is a real menace, especially if the crack





FIG. 5—WEAR AT TOP OF UPPER INWALL OF BLAST FURNACE DUE TO IMPACT AND ABRASION. FIG. 6—VARIATION IN RESISTANCE TO THERMAL CHANGE AS SHOWN BY SPALLING TEST OF SILICA BRICK RECEIVED IN SAME CAR. PERCENTAGE LOSS IS MARKED ON EACH BRICK. FIG. 7—DEFECTIVE SILICA SHAPES DUE TO IMPERFECT MOLDING, SETTING AND FIRE CRACKS

occurs near the center of the brick. Examples of failure of this nature can be found in nearly any open-hearth furnace roof of the present day. While this sort of defect is more common in silica brick, it may also occur in clay brick and cause the failure of arches as is shown in Fig. 8. It has been suggested that true specific gravity and porosity may be used to determine the quality of silica brick, but these tests only indicate the degree of burning. They are useful in determining the uniformity of burn of various shipments, but tell nothing regarding the actual mechanical strength of the bricks, particularly as regards the crushing strength at high temperatures. It is easy to prove that bricks which have the same true specific gravity do not have the same crushing strength or spalling value.

The importance of uniformity in refractories is not generally recognized. In a car of silica brick recently received, it was found that the quality of the roof bricks and the 9-inch straights were widely different. The roof bricks showed a true specific gravity of 2.39 with an average spalling loss of 17 per cent, but the individual losses varied from 9 to 24 per cent. The average hot crushing strength was 863 pounds per square inch. The 9-inch bricks showed a true specific gravity of 2.53 with an average spalling loss of 29 per cent, the individual results varying from 26 to 30 per cent. The hot crushing strength was 1268 pounds per square inch.

Bricks Are Not Uniform

In the case of some roof bricks received during one shipment, it was found that the straights had a hot crushing strength of 665 pounds per square inch, while the No. 1 wedge bricks failed at 1044 pounds per square inch. It is recognized that these two sizes might not have been made at the same time, but they were presumably of the same quality. In another case it was necessary to use bricks from two different makers in an open-hearth furnace roof. The tests showed the spalling loss was 30 per cent for one make as against 10 per cent for the other, though the hot crushing strengths for the two makes were about equal. Such differences in bricks made in the same district, of the same raw material and by approximately the same methods, should not exist. The nonuniformity in resistance of brick from the same shipment is illustrated in Fig. 6.

Roofs of 90-ton open-hearth furnaces, working under normal conditions with producer gas, should last for at least 200 heats. Tests for resistance to spalling made on bricks taken from such a furnace after 261 heats have shown an average spalling loss of 20 per cent. Another roof which made 221 heats showed a loss of 23 per cent. In a similiar roof, the average spalling loss was 47 per cent. Of two silica bricks found side by side in an arch leading to the regenerator chamber of a furnace, one was badly spalled, apparently due to thermal changes or crushing, and the other showed no trace of spalling or crushing. Both were of the same make and presumably made at approximately the same time. Subjected to a spalling test, the poorer of the two bricks showed a loss of 42 per cent against 27 per cent for the other brick.

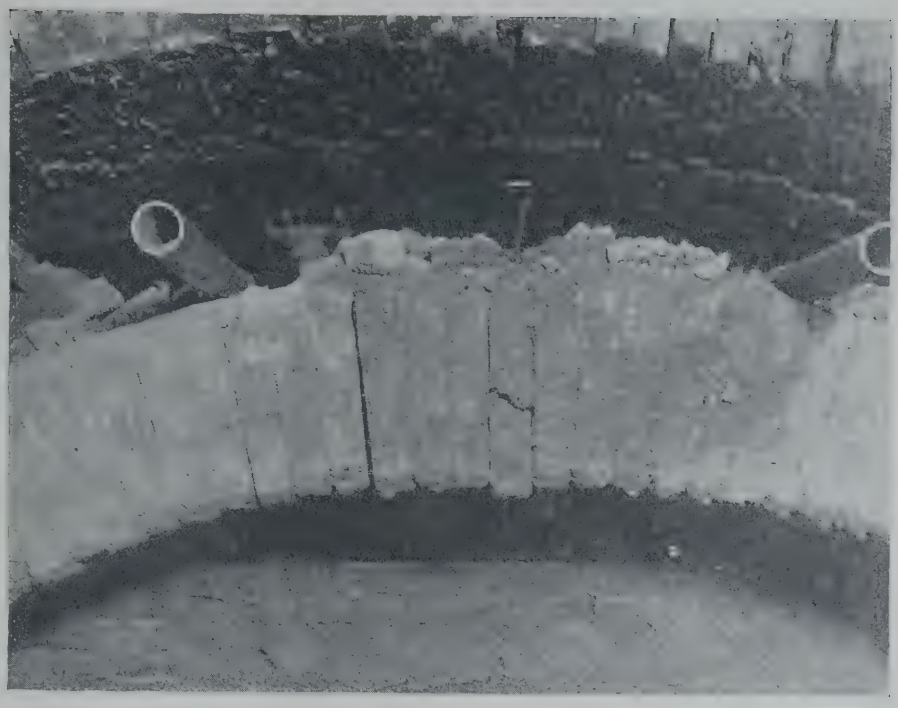


FIG. 8—SPALLING OF CLAY BRICK IN SOAKING PIT ARCH SHOWING UNIT BRICK FAILURE

In shipments of clay checker brick great variation in degree of burning was observed. Spalling tests were made on those of average burn which showed a loss of 14 per cent, while the hard blocks showed 60 per cent loss. Examples of nonuniform products are shown in Figs. 2 and 9.

Among users of refractories there is a growing demand for a product of uniform quality, especially with regard to defects which are preventable if the material is properly handled.



FIG. 9—VARIATION IN CLAY BRICK AS SHOWN BY SPALLING IN AIR FURNACE ROOF

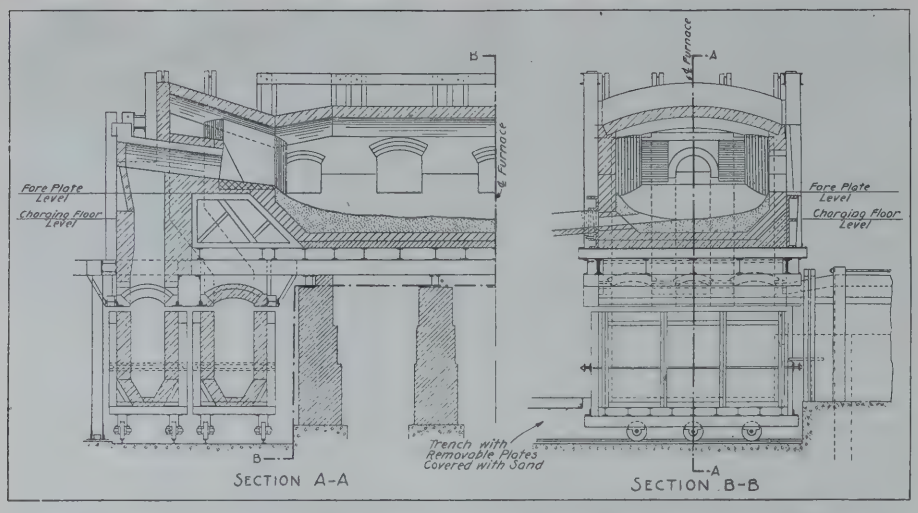


FIG. 1—INDESTRUCTIBLE PORT AND REMOVABLE SLAG POCKET FOR OPEN-HEARTH FURNACE

More attention to visual inspection will help remedy the situation. Users of bricks are quick to recognize that certain firms invariably deliver goods which on the whole are uniform in quality.

The buying of bricks on specifications has not been universally followed, and it is partly through the ignorance of the consumer in not understanding what he wants and why he should ask for certain qualities, that the quality of refractories is not always maintained at a higher level. In using refractories, the consumer assumes that the bricks he purchases will be of the same average quality as those he has formerly received. That this assumption is not always correct is unfortunate. The material from which bricks are made largely determines the heat-resisting qualities, but it is the method and care in manufacture which determines the uniformity and reliability of the finished product.

Japan is determined to become independent in its steel supply, and among the concerns already engaged in this industry, the Oriental Steel Co., which is incorporated for $25,000,000, began turning out its products in April. The works, which cover an area of 260 acres, are located at Tobata, one of the principal industrial centers of Japan, on the northern coast of Kyushu.

Valve and Port Minimize Operation Loss

To minimize the time lost in operation while making repairs and to make the furnace capable of greater continuous operation, the Blair Engineering Co., New York, has devised a combination of valve, port and slag pocket so designed that they may be easily inspected and repaired.

The Blair valve operates as a switch in the flue, similar to the switch in a railway track. To replace the old brick port, which is distorted rapidly from the effect of heat causing deterioration of the furnace structure and waste of fuel, a self-contained port, claimed to be relatively indestructible, has been introduced. A slag pocket entirely separate from the main furnace structure and independently supported, which may be quickly removed and readily replaced, it is said, during the burning out of the flues without causing loss of time in furnace operation, also has been designed.

With this installation, front and back walls are replaced without material delay and the roof, it is said, can be replaced in six hours while the flues are being burned out on Sunday. The ports require no repairs except shaping up the blocks with chrome ore. The slag pockets may be changed in a few hours on Sunday. Air chambers in the checkers ordinarily clog sooner than the gas chambers, therefore, when shutting down for burning out, the air slag pockets are removed and the bulkheads in both ends of the air chambers are knocked out. The checkers may then be replaced, entailing the loss of less than a day beyond the Sunday shutdown. The gas chambers may be repaired the same way during another week end.

By application of this port, which has been in use a decade, it is claimed that the furnace can be operated at greater speed due to the mixing chamber producing a higher temperature. Furthermore, it is claimed that this temperature may be increased to a point where the ordinary port of silica brick, whether water-cooled or not, would be destroyed. Since the port is longer lived than the furnace walls, the latter are used to their limit. The roof and side walls are replaced independently as the necessity arises.

The construction of the valve as shown in Fig. 2 makes impossible a leak of gas or air to the stack or between the gas and air. All parts are cool, exposed and always accessible, making it possible, to repair or replace parts without shutting off the gas. Reversing is accomplished so quickly that gas is back on the furnace without waste into the stack.

A single tube, of area equal to the combined area of the gas and air tubes, diverts the products of combustion to boiler or stack, when waste-heat boilers are used and provides a continuous, brick-lined flue from the furnace to the boiler with no exposure to water or a possibility for leakage. A tube 30 inches in diameter is used for burning out flues. It is operated by a hand winch and does away with the sand damper or inclosed valve commonly used. The slag pocket, as shown in Fig. 1, is a separate structure from the main furnace.

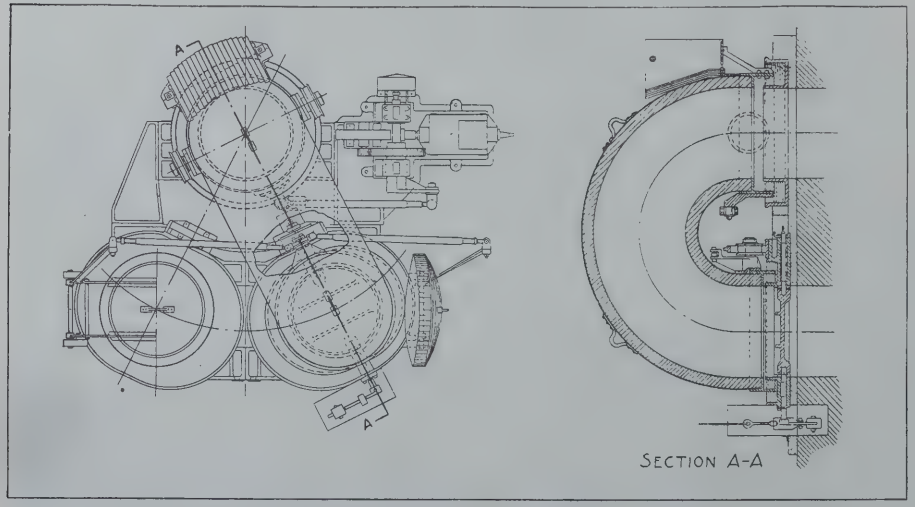


FIG. 2—GENERAL ARRANGEMENT OF THE OPEN-HEARTH REVERSING VALVE

Using Pyrometers in Steel Works

Modern Methods of Determining Temperatures in Forging and Heat-Treating Furnaces Give Results Superior to Those Obtained by Estimation—Pyrometers Are of Doubtful Value in Assisting Experienced Melters

BY A. H. MILLER

TEMPERATURE considerations are of prime importance in the manufacture of steel products from the time the metal is produced in the melting furnace, where the chemical reactions have a direct dependence on the temperatures of the bath, to the final machining of work on which the expansion due to the rise in temperature of the forgings during machining must be allowed for.

In the regulation of steel melting temperatures, open-hearth furnaces will be taken as presenting typical difficulties in temperature determination. If accurate methods of temperature determination can be evolved for use in the open-hearth furnace, the same methods will be as successful in the crucible or electric furnace process. Temperatures may be determined by means of optical pyrometers, thermocouples, or by arbitrary standards which possibly may employ either of the other two methods as an auxiliary.

Trials Are Made on Samples

Lack of black-body conditions is responsible for considerable inaccuracy in taking measurements by means of optical pyrometers, although this source of error may not be great enough to condemn the method. The fact that the steel itself cannot be observed is, however, of prime importance. Such data as has been obtained indicates that the slag covering of the bath may differ in temperature from the steel by as much as 200 degrees Fahr., and that the walls or roof of the furnace may show even a greater variation. Temperature determinations, by means of the optical pyrometer, may be made on small samples of the steel lifted from the furnace and poured with the optical pyrometer sighted on the stream. Having measured the elapsed time between taking metal from the bath and sighting the optical pyrometer, the tempertaure of the bath may be deduced by extrapolation. A series of such measurements should be taken in order to arrive at a close approximation of the temperature of the bath.

From a paper to be presented at the annual meeting of the American Institute of Mining and Metallurgical Engineers to be held at Chicago, Sept. 22-27, 1919.

Another method of obtaining similar measurements is to lift a spoon of metal from the bath and pour it immediately into a small test mold, readings being taken on the surface of the metal in this test mold at definite intervals of time until the surface of the metal freezes. Having taken time intervals with a stop watch simultaneously with the optical-pyrometer-readings a curve can be drawn which, extrapolated back to the time when the metal was removed from the bath, will give an approximation of the bath temperature. It is probable that these two methods arrive at as close an approximation to an accurate bath temperature as we may at present obtain.

Using Thermocouples

The use of the thermocouple in determining open-hearth furnace temperatures is attended by the difficulty of inserting the thermocouple to the point at which the temperature is desired. The best use for the thermocouple seems to be the secondary one of obtaining temperatures elsewhere than in the bath itself, and deducing temperatures of the bath from these. The method of placing the thermocouple in the slag pocket and at various points in the checkers and at the base of the stack has been tried, but because of variations in the furnace operation it is not believed that bath temperatures can be accurately deduced from data at these points, although useful knowledge as to the furnace working may be obtained.

The use of arbitrary standards has been widely employed. Metal may be poured from a test spoon into certain standard molds and the temperature of the bath deducted from the observing of this metal. This may be done by measuring the rise of temperature of a protected thermocouple inserted in the molten metal, by sighting an optical pyrometer on the surface of the metal in the test ingot or on the stream from the spoon while pouring, by measuring the length of time required for the surface of the metal in the test ingot to freeze, etc. All of these methods present numerous inaccuracies.

It is fortunate that in the melting and pouring of open-hearth steel certain natural phenomena give temperatures with great accuracy, that are a very close approximation to the desired temperatures. During the first part of the melting, while the first elimination of impurities is in progress, it is well to have the temperature as high as possible, with safety to the furnace. The melting point of the firebrick employed in the furnace roof is therefore a very close measure of the temperature to be attained. A skilled operator can, by observation, determine the point where the firebrick will glaze slightly but will not actually melt, and will run his furnace to this heat. In teeming a heat, on the other hand, correct temperatures of pouring may be accurately regulated by the appearance of the film or crust that forms on the surface of the metal rising in its molds. The appearance of this film is quite characteristic and, with practice, the temperature, or rather, the fact that the metal is at, above, or below the correct temperature, may be very accurately stated. It may also be regulated at this point, to a certain extent, by varying the rapidity of pouring, according to the appearance of the metal rising in the mold. By careful observation of such natural phenomena, temperature differences may be estimated to within 10 to 20 degrees Fahr.

Determining Forging Temperatures

In the determination of forging temperatures, optical pyrometers or thermocouples are used. If the thermocouple is used, either a platinum-rhodium or a nickel-chrome alloy couple is valuable. It is quite difficult to regulate accurately the temperature of the pieces to be forged, because the hot gases and flame in the furnace affect the couple much more rapidly than they do the piece. For reasons of economy and because of the size of ingots in heavy work, this difference is of much greater importance than it is in heat-treatment work. Iron-constantan couples have been successfully used, but the life of this couple at forging temperatures is very short and the accuracy of the couple is lower than at temperatures to which it is better fitted.

The optical pyrometer seems to be a good type for measuring forging

temperatures. With some of the later improved types, temperatures can be determined with a very fair degree of accuracy, probably within 25 degrees Fahr., in ordinary works practice. To reach this accuracy, the operator must have had a certain amount of experience (2 weeks is ample for a man of average intelligence) and must sight his instrument on parts of the forging that will give an approach to black-body conditions. He must avoid the influences that cause inaccuracies in his readings; such as a flame playing so that it is reflected directly from the piece to his instrument or the presence of smoke in the furnace. This is not difficult in a good forge furnace.

Pyrometers for Heat Treatment

The forging temperatures of various grades of steel differ quite widely. A skilled heater can, by observation, regulate his forging temperatures fairly well. He cannot, however, reach the uniformity and accuracy that may be attained by the use of the optical pyrometer.

The temperatures involved in the heat treatment of steel objects must be very accurately determined and uniformly followed. This temperature is within the range that is difficult to estimate by the eye and at the same time it must be most accurately followed. Most of the higher grades of steel require treatments that involve a quench; most of the alloy steels require a preliminary treatment before the final quench is given and also require a drawing treatment after the quench. With the preliminary treatment, which is ordinarily at a temperature in the neighborhood of 1550 to 1650 degrees Fahr., the limits of accuracy are not so close as they must be in the final quench, which for the purpose of obtaining the best possible grain refinement must be above the critical temperature but as close to it as is possible. The temperature of the draw, also, must be quite accurately approximated, especially if the results desired are to obtain the maximum degree of softness. The general tendency has been to rely entirely on the thermocouples for this work, at least for temperatures above 90 degrees Fahr. For lower temperatures, if the pieces are small enough to be treated in a bath of oil or melted salts, a direct reading gas or vapor expansion thermometer is simple, accurate, and gives but little trouble.

The true optical pyrometer is adapted to works use because imperfection of black-body condition or smoky conditions do not affect its readings seriously. The Morse or Wanner types of optical pyrometers are reliable, and particular care must be exercised to select an instrument of the simplest and most rugged construction possible.

In steel works practice, where the work is generally large, almost all the couples are at least 4 feet long and the majority are from 5 to 7 feet, in some they are as long as 17 feet. The practice with platinum-platinum-rhodium couples therefore involves the recalibration of the couple after each failure of the silica or porcelain tube; and couples over 5 feet long must be recalibrated after every heat. Although this recalibration became a quite simple matter, the work is considerable and the contamination of the couples and consequent breakage made their operation very expensive. The calibration is performed by taking a check temperature at the gold melting point, using a small electric furnace and the wire method.

Use of Base-Metal Couples

With the advent of base-metal couples, of which the iron-constantan couple or the nickel-chrome type seem to be the most popular, the use of long platinum couples is eliminated. In using base-metal couples, however, certain precautions must be taken. All couples, and particularly base-metal couples, are subject to errors due to parasite currents induced by heterogeneity in the wire of which the couple is made. This lack of uniformity is almost invariably set up at a point between the hot and cold junctions of the couple somewhere in the furnace wall, due to the conditions of strain set up at this point. Once established this condition is almost impossible to eliminate. However, while these parasite currents exist in practically all couples that have seen long service, the error involved is small enough to be negligible if the position of this strained portion is unchanged or if it is continually advanced from a lower to a higher temperature. In practice, this means that the accuracy of the couple is unchanged as long as the couple remains immersed to the same depth in its furnace, or as long as it is advanced deeper and deeper into its furnace. Errors, however, are often caused if the couple is partly withdrawn from its furnace. Because of this fact, if couples are removed from their working position and checked in a laboratory, the checking often shows an error whereas the couple in its working position was actually giving accurate readings. If careful attention is given to these provisions and to the electrical insulation of the couple, an iron-constantan couple will give constant readings to the approximation of 10 degrees Fahr. until it is completely worn out by oxidation or other causes.

For any approach to accuracy on the part of any type of thermocouple, cold-junction temperatures must be allowed for and corrected, or controlled. Control may be by means of an ice bath or other method of keeping the cold junction at a uniform temperature. One of the more simple and widely used methods is to place the cold junction underground to a depth at which the temperature is assumed to be uniform. This method is quite desirable, but for the highest degree of accuracy is inadequate. Temperatures even 5 feet underground may vary considerably with the season of the year and with the previous working of the furnace. An excellent method of taking care of this cold-junction correction is to employ lead wires of the same composition as the couple wires, which virtually lengthens the couple to the combined length of couple and leads, bringing the resulting cold junction to the measuring instrument.

The measuring instrument is likely to be at a point where temperatures are more nearly uniform and where the cold junction can be more readily measured and cared for. There is the added advantage that, where a number of couples are being read on one instrument, the correction for these couples will be identical. A number of measuring instruments at present on the market take care of this correction, either automatically or by means of a simple adjustment on the instrument, with highly satisfactory results.

Calibration and Checking

All temperature-measuring apparatus must be frequently checked for accuracy in works practice. In a large installation, it is well to have a primary temperature standard that is used only under the best laboratory conditions to check one or more secondary standards. This primary standard may consist of a platinum-platinum-rhodium thermocouple with an ice-bath regulation of the cold junction, the electromotive force being measured by an accurate potentiometer. This primary standard should have its calibration made by reference to well-determined fixed points. The melting point of gold and the freezing point of lead are convenient and well-determined points. The secondary standards may be either platinum-platinum-rhodium or base-metal thermocouples and may be carried from point to point of the installation to check the actual working couples under working conditions.

Optical pyrometers should be checked from time to time using a standard couple preferably in an electric furnace

(*Continued on page* 431)

Wood Patterns Made in a Factory

How a Shop Was Organized for the Quantity Production of Wood Patterns for a National Market—Labor Difficulties are Reduced and Production Costs Are Favorable

THE tendency in industry during the past decade has been decidedly toward the specialization of individual parts and processes. Large factories have been built to produce but one definite article on the theory that specialization increases quality and decreases manufacturing expense. Diversified plants have in many cases been forced to reduce the scope of their production for they have found they could buy certain auxiliary parts required in the construction of their apparatus more cheaply than they could make them in their own works.

One line of auxiliary equipment, however, has proved a marked exception to this tendency toward specialization. The making of wood patterns for metal castings has seemed so intimately a part of the foundry business that even today the thought of a wood pattern factory operating on a large scale and doing business over a wide area is decidedly unusual.

But the Johnston Pattern Co., Canton, O., has established such a factory and because of its unique field and its method of shipping patterns by express to nearly all parts of the country, it is interesting to examine this plant in some detail. H. P. Johnston—the originator of the plan—is a practical foundryman and patternmaker. For many years he watched the making of patterns in more or less indifferently equipped corners of foundries until one day a few years ago it occurred to him that patterns might be made satisfactorily and cheaply in a factory designed explicity for that purpose. On top of this idea came the question of where a market for such patterns could be found. Now patterns are light and easily shipped, so to Mr. Johnstons' inquiring mind the whole nation loomed up as the possible market for his proposed pattern factory.

Definite Cost Estimates

Faith in this national market brought the Canton factory into being. The original establishment, started only a few years ago, has undergone many changes and is today representative of factories producing more standard articles. The plant consists of two large rooms and an office. The office itself is modern and suggests business and system. All orders for patterns together with the blueprints and other data pertaining to each order are filed where they are accessible at all times so that in case of a repeat order only the pattern number is required. The data available in this file are also of decided advantage in estimating on new work, for the estimator has in mind in a general way the work which has gone through the factory and when a new job comes up for a quotation he refers to the file for some work of a similar nature which has already been done. From the records of that work he gets the actual cost of its production as a check on his new estimate.

One of the two main rooms is used for the pattern shop proper—here are located the woodworking machines, the work benches, cabinets of tools, shelves of screws, nails and special fittings and all other supplies necessary for patternmaking, except the lumber and the shellac materials. This shop is well lighted and the arrangement of machines and benches has been given a good deal of study. The routing of the work has been kept in mind and the machines have been placed as far as possible so that successive operations are accomplished on consecutive tools.

Departing from the practice in many pattern shops, this room is kept scrupulously clean. The lathes, band saws and other motor-driven tools are all painted a light, clean color and shavings are not allowed to accumulate anywhere. Running hot and cold water is convenient for the employes and a time clock at the entrance adds a note of efficiency to the place. "The big feature about all this neatness is that it pays," said Mr. Johnston. "Men do not waste time going around

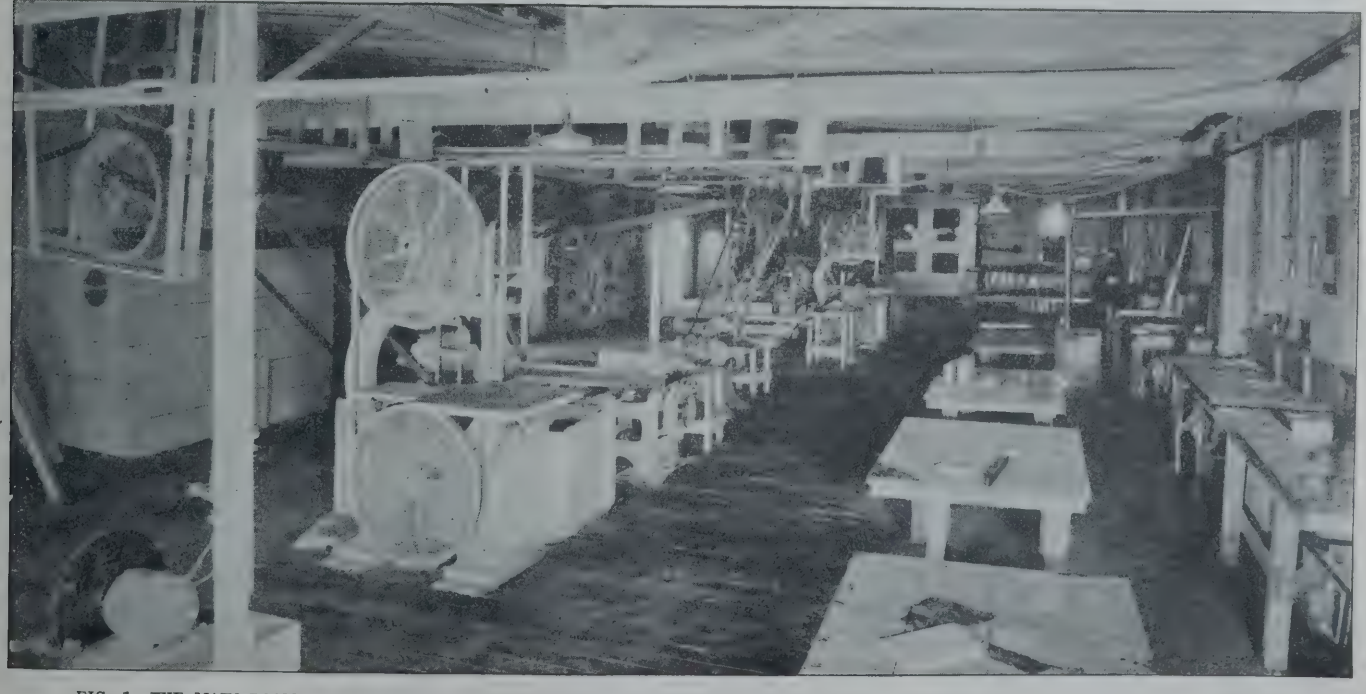


FIG. 1—THE MAIN ROOM. THE WOODWORKING MACHINES ARE ARRANGED IN TWO SIMILAR GROUPS TO AID IN ROUTING THE WORK

things which should not be in the way and the neat atmosphere induces neat work."

The other main room is used for lumber storage, for the shellacing and painting departments and for the shipping department. The lumber or wood stock is of two kinds—white pine and mahogany. It is very important in building patterns to exact sizes to use perfectly dry stock, for even a slight warping may make a casting useless.

Working to Close Dimensions

The Johnston factory claims to work to a sixty-fourth of an inch quite frequently, but it is not practical to attempt anything beyond that with wood patterns on account of the limitations of the wood itself. For all close work mahogany is used and often it is necessary to use small sections glued together with the grains of alternate sections at right angles, in order to still further reduce the tendency to warp.

It is easy to follow the progress of a pattern through the plant from the receipt of the order to the attaching of the shipping tag. The orders are received at the office where they are recorded. A work order is then made out and fastened to the blue print with whatever other information is necessary and this is then given to the foreman. The foreman must be familiar with foundry work and with the molder's trade for it is up to him to decide just how the casting is to be made and to design his pattern accordingly. The customer's wishes and recommendations in this connection are of course always borne in mind.



FIG. 3 — BAND SAWS ARE INVALUABLE FOR CURVED-LINE WORK. THEIR USE IN ROUGHING-OUT OPERATIONS OFTEN SAVES TIME AT THE LATHES

To one not familiar with pattern-making it is surprising to learn how much designing is necessary after the outside dimensions of the completed casting are all laid out. First there is the shrinkage during casting to consider and allow for, then comes the question of how the mold is to be divided between the cope and the drag. If at all possible patterns must have a straight draft. This determines the position the pattern takes in the mold and determines also whether it is to be split or solid. The next thing to consider is "Will it work?"—that is will the metal flow to all parts—will the shrinkage during casting cause the metal to crack, etc.? Difficulties of this nature are usually up to the foundryman but modifications of design are sometimes necessary in the pattern factory in order to make the casting possible. The last thing the foreman does is to design the pattern itself, that is, to determine what wood is to be used, how, in general, the pieces are to go together, and, if it is a large piece, what interior bracing is necessary.

Subdivision of Labor

The foreman after indicating his directions on the blueprint turns the matter over to a patternmaker, using some judgment as to the selection of different men for the different classes of work. The patternmaker lays out in full size scale, the work which comes to him, using a special rule which automatically corrects for shrinkage—he uses one scale for cast steel, another for brass, etc.—and then he submits his drawings to a lower priced man who gets the wood and roughs it out into the approximate sizes required. These roughed-out pieces are then finished and built into the desired pattern by a patternmaker (usually the same one who laid out the full sized drawings).

All work possible is done on machines, for which purpose there are motor-driven lathes, planers, circular and band saws, sanders, etc. But there is always hand work necessary and in the last analysis each job is an

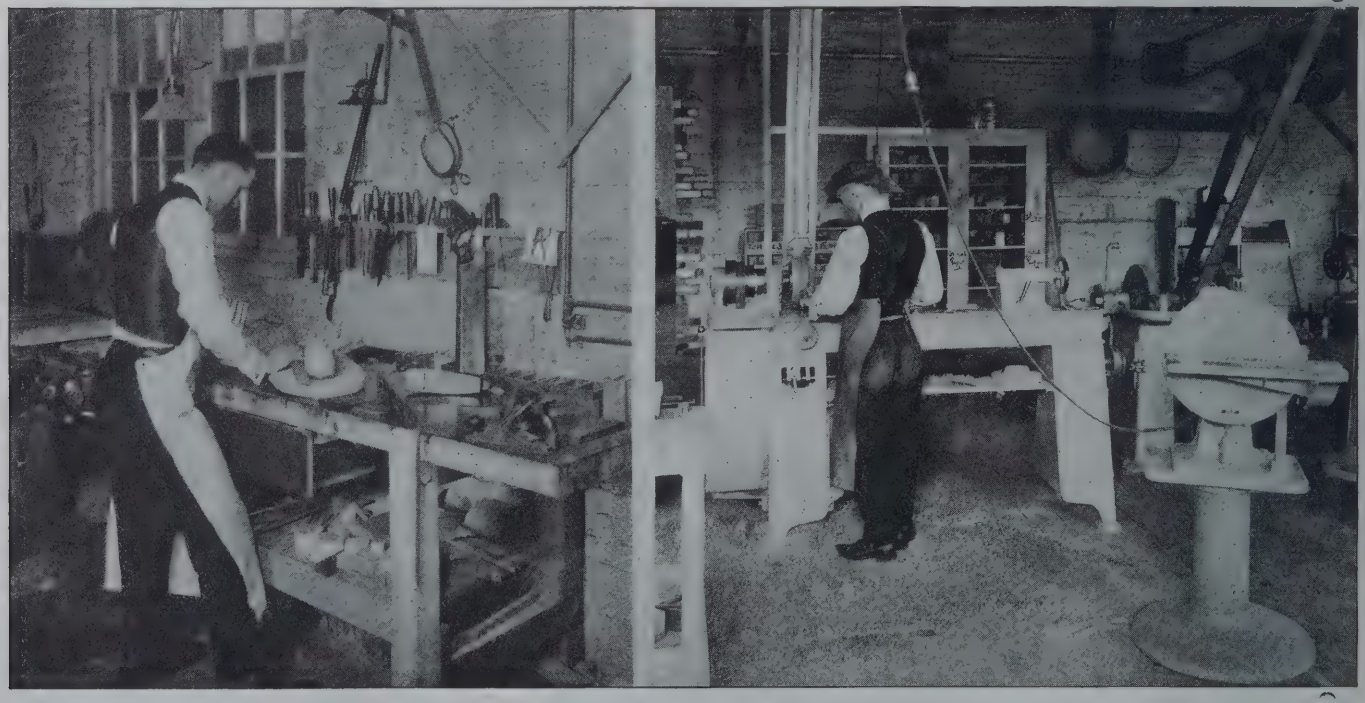


FIG. 2—DIMENSIONS OF SMALL PATTERNS ARE CHECKED AT THE WORK BENCHES. FIG. 4—MUCH OF THE PATTERN WORK IS DONE ON THE LATHES, FOR WHICH PURPOSE MODERN MOTOR-DRIVEN TOOLS ARE PROVIDED. A PORTABLE SANDING MACHINE IS SHOWN AT THE RIGHT

individual one and requires individual attention.

It is the aim to take all routine work away from the patternmakers and thus to increase their productive labor. After the pieces have been glued and constructed according to the drawings they pass to a man whose business it is to round the corners, and place fillets and dowel pins and in some cases iron rapping plates, and then to pass the retouched patterns on to the shellac department.

After receiving the first coat of shellac the pieces are dried and then sandpapered and again shellaced. This gives a hard, moisture proof surface which is important in a good pattern. The cored parts are painted black. Raised metal letters and numbers are fastened to each pattern to give the description necessary for identification. This usually includes the date of completion and the shop order number.

Everything is Checked Up

After each pattern has been completed and before it is crated for shipping it is given a final inspection. The dimensions are checked, the general rigidity is tested and the name of the consignee is verified. The preparation for shipping consists usually of simply furnishing good sturdy crating, but often in the case of small pieces, boxes or kegs are used with shavings stuffed around the patterns for protection.

All the way through the shop process, each pattern carries its individual work-order number to which all time and material in connection with its production are charged. Where the work has been accepted on a time-material basis, the charge is determined in this way and where the work is on a fixed sum agreement these charges furnish invaluable records for future estimating.

In a specialized plant of this sort, the labor problems are greatly simplified. The men are all engaged on the same class of work and any possibility of friction between different crafts is avoided.

Alloy Steel Process

A new process for making alloy steel was recently patented by Alan Kissock, Tucson, Ariz. The inventor points out that in the manufacture of alloy steel the usual practice is to add the alloying element, such as tungsten, chromium, molybdenum, vanadium, etc., to the steel while it is in a fused state. This material, which is added in an elemental form, or in the form of a high-grade alloy, usually consists of some ferrous alloy.

Attention is drawn to the fact that this procedure involves a preliminary step. In order to obtain the alloying material, reduction of the ores or salts of these elements to the metallic form is usually carried out in an electric or other suitable furnace.

The oxides of certain elements, which are members of the fifth and sixth groups of the periodic system such as molybdenum, tungsten, chromium and vanadium, each combine with the oxides of certain other elements, of which calcium oxide is an example, to form a salt of the general type known as molybdate, tungstate, vanadate, etc., of calcium or other such elements. In the case of the particular elements just enumerated, these salts would be of the general forms $CaOMoO_3$, $CaOWO_3$ and $CaOV_2O_5$.

In the process under consideration, the inventor employs the salts of calcium of the respective metals, either molybdenum, vanadium or tungsten, as the constituent element of the salt which reduces to produce the alloying material for the steel. It is pointed out that these salts of calcium can be produced from the ores of these elements without the use of a furnace and that often the salts are produced in the ore-reduction process. The inventor states that the ferro state of these elements may be obtained by furnace reduction of their calcium salts which have, in turn, been produced from the ores.

The inventor sets forth that his process obviates the preliminary reduction of the ores or salts of the desired alloying elements to the metallic state and provides for introducing the alloying material directly from the salt of the metal into the steel. Thus, instead of reducing the ores of the elements to the metallic state in an outside furnace and then introducing the alloying element into the molten steel, the calcium salt is added directly into the steel melting furnace.

The carbon content of the steel and its bath reduces the calcium salt of the alloying element, the element so reduced alloying directly with the steel. If desired, other carbon may be added to, or substituted for, the carbon content of the steel and its bath. The calcium oxide which is a constituent of the salt fixes the metallic alloy element and prevents its volatilization which avoids loss and presents the element capable of alloying directly with the steel in the melting process. It is stated that some other reducing agent aside from carbon, such as silicon, which may also be a previous alloy of the steel, may be employed in the melting furnace.

The inventor claims that the process does away with the outside reduction of the ores or salts of the elements, thereby saving time and labor cost, and also that substantial furnace losses of these comparatively expensive elements are likewise avoided.

Production is Growing

The National Federation of Iron and Steel Manufacturers, which came into existence during the war, is closely observing the relative positions of the principal steelmaking countries. A memorandum has just been published on "The World's Output of Iron and Steel in 1918," and this also gives the output of iron and steel in the United Kingdom during the first four months of 1919.

The general survey from 1900 to 1918 shows how poorly the United Kingdom compares with other steel-producing countries. British pig-iron production advanced from 8,960,000 tons in 1900 to 9,066,000 in 1918. During that period the output exceeded 10,000,000 on but four occasions. In the United States, in the same period, pig-iron production increased from 13,789,000 to 39,052,000 tons, while in Germany the 1900 production of 8,521,000 metric tons increased to 19,292,000 tons in 1913, dropping to 13,000,000 tons in 1917. In France the 1900 output of 2,714,000 steadily increased to 5,207,000 tons in 1913, but has averaged only 1,500,000 during the past three years.

Steel production has increased in even larger proportions. The figures for the United Kingdom, United States, Germany and France in 1900 were 4,901,000 tons, 10,188,000, 6,646,000 and 1,565,000, respectively, increasing to 7,664,000 tons, 31,301,000, 18,959,000, and 4,687,000 respectively in 1913. Production increased in the United Kingdom to 9,591,000, and to 4,073,000 in the United States in 1918, while in Germany and France the 1913 yields were decreased to 14,874,000 and 1,912,000 tons, respectively, in 1918.

The weekly output of pig iron in the United Kingdom during March, 1919, amounted to 156,000 tons, while in the United States it amounted to 3,068,000 tons.

Using Pyrometers

(*Continued from page* 428)

in which black-body conditions may be made nearly perfect.

If base-metal working thermocouples

Larry Operator _____

Daily Coke Oven Coal Charging Report

Date _____

Battery No.	Weight of Charge	Battery No.	Weight of Charge	Battery No.	Weight of Charge	Battery No.	Weight of Charge	Battery No.	Weight of Charge	Battery No.	Weight of Charge

Total Number of Charges ___ Weigher and Recorder _____

Total Weight of Charges ___ Foreman _____

①

Furnace Number _____

Daily Blast Furnace Production Report

Date _____

CHARGE				PRODUCTION				
Amt.	Description and Grade	Weight Lbs.	Weight Tons		Lbs.	Tons		
	Coke			Pig Iron			Total Pig Production	
	Limestone			Kinds or Grades %				
	Coal			Description Total			Yield _____	
	Flue Dust			Remarks			Loss _____	
	Cinder			Analysis			Gain _____	
	Scale %			No. Casting Machines				
	Borings %			C M P S S N				
	Grand Total			Hot Metal	Lbs.	Tons	Total Hot Metal Prod.	
	Stock Received			No Casts			Yield _____	
	Used or Shipped			Time Casts			Loss _____	
	Remaining on Hand			Remarks or Description			Gain _____	
				Number Ladle				
				Furnace Conditions				
				Analysis			Am't Pig Iron Shipped	
				C M P S Si N	Total	Prod	Am't Pig Iron Remaining or Stocked	
					Hot Meta	Pig Iron	Am't Hot Metal Shipped	
				Ordered for Open-hearth Furnace No.			Am't Hot Metal Remaining for Casting	
							Signed _____	

②

Daily Hot Metal and Casting Report

Buggy Nos.	Ladle Nos.	Cast Nos.	Fce No.	Weight Lbs.	Weight Tons	Ordered By	Shipped	Slag	
									Started Charge Finished Charge Tapped Tapping Conditions Furnace Condition Cu. Ft. Air Blown Remarks

Weigher _____ Foreman _____

③

FORMS FOR COKE-OVEN, BLAST-FURNACE AND CASTING REPORTS

are purchased with a calibration from the manufacturer, it is well to check this calibration to see that it corresponds to the works standard. If the base-metal couples are purchased or manufactured as wire, and are to be calibrated, the following method of procedure is simple and accurate. A sample should be cut from each end of each coil of wire as received, one of these samples selected at random, and each of the other samples of similar wire joined in turn to it and the electromotive force generated at approximately 1600 degrees noted. This electromotive force will be zero if the wire is uniform. Having checked the wire for uniformity, several sample thermocouples should be made up and are carefully calibrated, using one of the secondary standards in this calibration. A calibration curve may be drawn from the data thus obtained. One or more of these calibrated base-metal couples, properly protected, should be inserted in a pot of molten lead and all sample couples made from the coils to be calibrated inserted in the same pot and checked direct against the calibrated couples. It will be found that certain of the coils vary from the calibration curve already made. An arbitrary allowable variation from this curve may be selected, and all samples that vary from the standard by more than this arbitrary amount are discarded. In making such a calibration for a lot of base-metal couples, it is well to have this lot as large as possible, as it is an extremely difficult matter to reproduce results with any great degree of satisfaction.

The instruments used in determining the electromotive force of the working thermocouples should be frequently checked, even though they may be well cared for and of the most accurate type, not only because even the best of instruments are liable to go wrong but because of the moral effect such checking has on the workmen. This frequent checking of instrument and couples may seem to be troublesome and in some cases superfluous. In a large installation it will, however, pay well to have one or more men whose sole duty it is to perform such checks, and the accuracy of the resulting work and the confidence inspired by such careful checking will repay all the effort involved.

Keeping Coke, Iron and Steel Records

BY CLIFFORD E. LYNN

COAL which is charged into coke ovens is carried from the oven-storage bins by a larry to the ovens. In some instances a scale is attached to the larry and the operator weighs and records the charge before it is dumped. In others, a weigher is stationed on the floor leading to the coal chute, and the coal, placed on the floor scales at intervals, is weighed and recorded by him. After the coke is screened, it is loaded into cars and weighed and recorded by the general-track or yard-scale weigher, who usually bills it to destination. All stock inventories are kept by the production clerk, who computes production, orders switching of cars, and keeps a record of repairs, construction and time, for the superintendent.

When ore, coke, limestone, refractories or any other raw stock is received at a blast furnace a record showing the amount, kind and invoiced weight is made by the production clerk. Before the charge enters on the skip it is weighed and recorded by the larryman and posted on a daily production sheet by the production clerk, who also secures a record of furnace operations, analysis, repairs, etc., from the foreman, and a report showing the number of ladles to a cast, weight, analysis, skimmings, slag, etc., from the hot-metal weigher. If the iron is cast into pigs the casting-machine foreman will report the quantity and weight and description of that produced daily.

The production clerk issues orders for switching cars to the blast furnaces and usually makes out a report as to the number of cubic feet of air blown and other information for the superintendent. He deducts the amount of charges from amount of stock received to show the balance on hand and deducts shipment figures from production figures to show the amount of finished stock on hand. The hot-metal weigher makes out a report of hot metal shipped. If ore is shipped to any other plant he attends to the billing out.

The clerical organization of an open-hearth department consists of the senior and junior clerk, two furnace and floor recorders, two stock weighers, two ingot weighers and two steel chasers or ingot shippers who work alternately on day and night shifts, usually spending 24 hours in service each alternate Sunday when shifts are changed.

Duties of the Senior Clerk

It is the duty of the senior clerk to handle all repair records; chase spares; make out daily reports of raw stock received and used, ingots produced and shipped, showing amount of stock on hand daily; also to handle open-hearth orders, foreign shipments of ingots, correspondence, analyses and any other records of interest to the superintendent. He has charge of all weighers and recorders aand audits their daily production reports. He is assisted by the junior clerk who serves as an extra weigher and recorder, orders switching of cars, takes stock, etc.

The stock weigher secures from the melting foreman a schedule of heats to be tapped and the amount of scrap, limestone and ore to charged into each furnace. He passes this information to the stockhouse foreman who loads the scrap in charging pans or boxes and places them on trucks which are numbered. As these trucks pass over the scales they are weighed. Truck number, description of contents and weight are then written on a charging report. In some systems the weigher accompanies his charge to the furnace floor and directs the charging-machine operator to charge the scrap into the right furnace. He then weighs the buggies empty, or estimates the amount of scrap left, returns the pans to the stock yard after the charge has been made and deducts the same from the heat.

Copies of all charging reports are sent to the floor recorder, melter and first helper of the furnaces receiving the charges.

The ingot weigher weighs all ingots and makes a report showing the amount, size, description, analysis and weight of each heat. He also reports stickers, butts, ingots banked, ingot and mold numbers, and attends to the ordering and painting of heat numbers on the molds.

The steel chaser or ingot shipper records the number of molds poured, pouring conditions and ladle test of each heat poured. He also prepares from the weigher's production report a report of ingots shipped, which he gives to the blooming-mill pit recorder as each heat arrives at the blooming mill. The floor recorder orders all hot metal for heats and keeps a record showing the time of charging,

Open Hearth Daily Charging Report

Furnace No. _____ Date _____

Buggy Nos.	Description of Contents	Weight	
	Flashings		
	Turnings		
	Crop Ends		
	Borings		
	Bloom Butts		
	Total		
	Extra Charges		
	Limestone		
	Raw Dolomite		
	Burnt Dolomite		
	Soft Ore		
	Hard Ore		
	Total		
	Grand Total		

Weigher _____

Stocker _____

④

Daily Ingot Production Report

Furnace No. _____ Date _____

Buggy Nos.	Mold Nos.	Size and Description of Ingots	No. Ingots	No. Butts and Stickers	Weight	

tapping, melting and pouring, and additional charges made in the furnace or ladle. He obtains this data from the melters and first helpers. He secures a record of pit scrap and loss report from the pit foreman, keeps the stocker and stock weigher posted relative to furnace charges, computes production, yield, loss and gain, and makes up a daily production report from weighers' and foremen's reports. In some instances the stock weigher fills the duties of floor recorder in addition to his usual work, and the ingot weigher handles the duties of steel chaser. The latter system is adaptable to a plant of nine furnaces or less, as it reduces labor costs and keeps the weigher busy.

Local Committees

For Foundry Convention at Philadelphia—Special Entertainment

The convention and exhibition of the American Foundrymen's association at Philadelphia will easily exceed in size and importance any previous affair in the history of the association. A glance at exhibition figures of previous meetings shows that in 1916 at Cleveland 38,000 square feet of space were occupied by the exhibits, in 1917 at Boston, 44,000 square feet and in 1918 at Milwaukee, 42,000 square feet. As early as Aug. 10, 1919 the huge total of 60,000 square feet had already been reserved by exhibitors for this year's big show at Philadelphia.

Special entertainment features also are being arranged by the local committees with the aim of making the social features of the convention unusually attractive. Thomas Devlin, the veteran president of the Philadelphia Foundrymen's association, is chairman, *ex officio* of all committees, and Howard Evans of the J. W. Paxson Co., Philadelphia, is general secretary.

The members of the various local committees are as follows:

Clearing House Committee

Howard M. Bougher, Chairman, J. W. Paxson Co.
Charles W. Asbury, Enterprise Mfg. Co.
H. J. Bannister, George Oldham & Son.
G. H. Clamer, Ajax Metal Co.
Stanley G. Flagg III, Stanley G. Flagg & Co.
D. P. Hopkins, U. S. Cast Iron Pipe & Foundry Co.
W. J. Johnson, Baldwin Locomotive Works.
George C. Matlack, William Cramp & Sons Ship & Engine Bldg. Co.
Staunton B. Peck, Link Belt Co.
Charles Suess, Westinghouse Elec. & Mfg. Co.
Walter Wood, R. D. Wood & Co.
Thomas Kaveny, Herman Pneumatic Machine Co.
Frank Hodson, Elec. Furnace Construction Co.
Silas M. Tomlinson, Frank Samuel.

The chairman of each of the following committees is also a member of this committee.
Howard M. Bougher, chairman, J. W. Paxson Co.

Information Committee

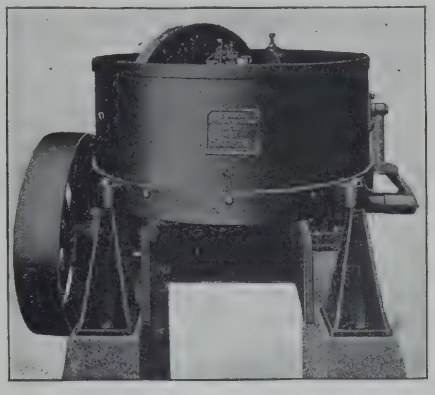
George F. Pettinos, chairman.
Cyrus Borgner, Cyrus Borgner Vo.
W. T. Dunning, Chester Steel Casting Co.
H. A. Ross, Ross-Tacony Crucible Steel Co.
Joseph E. Stutz, Thomas Devlin Mfg. Co.
R. C. Thum, Tetna Foundry Co.
W. G. Summers, Phoenix Iron Co.
W. J. Coane, Ajax Metal Co.
J. C. Childs, Austin Co.
J. H. Schwacke, William Sellers & Co.
T. C. Voorhees, Hickman, Williams & Co.

Reception and Hotel Committee

Hon. W. C. Sproul, governor state of Pennsylvania, honorary chairman.
Hon. Charles M. Schwab, vice chairman, Bethlehem Steel Co.
H. W. Brown, acting chairman, Tabor Mfg. Co.
G. H. Clamer, Ajax Metal Co.
George C. Davis, Chemist.
E. S. Dailey, William Adams Foundry Co.
Edwin Elliot, Midvale Steel & Ordnance Co.
J. S. Hibbs, J. W. Paxson Co.
W. S. Quigley, Quigley Furnace Specialty Co.
W. H. Ridgway, C. Ridgway & Sons Co.
W. J. Shennan, Foundry Dept. Bethlehem Steel Co
E. M. Taggert, J. W. Paxson Co.
C. H. Wollaston, Lobdell Car Wheel Co.

Visitation of Plants

George C. Davies, chairman, Pilling & Crane Co.
S. J. Croswell, S. J. Croswell Iron Works Co.
H. E. Mandell, W. W. Lindsay & Co.
S. W. Mitchell, Philadelphia Roll & Machine Co.
Walter T. MacDonald, Fletcher Works, Inc.
C. H. Newcomb, Crocker Brothers.



SAND MIXER WITH 3-FOOT SPAN

F. J. Ryan, American Metallurgical Co.
George Somermalder, Westinghouse Elec. & Mfg. Co
H. B. Taylor, George F. Pettinos.
S. R. Vandebeck, Whiting Foundry Equipment Co.
E. J. Decker, Paul S. Reeves & Son.
Thomas Holt, Camden Foundry Co.
George Fox, Philadelphia Sash Weight Works.
F. E. Schwarze, Cleveland Pneumatic Tool Co.
A. G. Hauck, Philadelphia Fire Brick Co.
A. F. Kempe, W. J. Rainey, Coal and Coke.

Publicity Committee

C. R. Spare, Chairman, American Manganese Bronze Co.
H. A. Bomberger, Verilite Metals Co.
T. Harold Brown, E. E. Brown & Co.
J. W. Graham, Kilton Co.
Charles E. Pettinos, 802 Abbott building.
A. G. Warren, J. W. Paxson Co.
E. Arthur Bernstein, Bernstein Mfg. Co.
Charles E. McEvoy, H. A. May Foundry Co.
George M. Benkert, Fairmount Foundry Co.
H. W. Gledhill, Shepard Elec. Crane & Hoist Co.
H. L. Henszey, Carborundum Co.
H. J. Winters, T. P. Kelley & Co.
H. L. Haldeman, Pulaski Iron Works
W. E. Wallace, Matlack Coal & Iron Corp.
M. R. Taggart, J. W. Paxson Co.

Finance Committee

C. P. Pond, chairman, David Lupton Sons Co.
C. T. Bird, Pangborn Corp.
Thomas M. Eynon, Eynon-Evans Co.
J. H. Golding, Autocar Co.
W. W. Hearne, Mathew-Addy Co.
W. S. Hollowell, Harrison Safety Boiler Works.
Charles E. Muend, Haines, Jones & Cadbury Co.
J. Harry Mull, William Cramp & Sons Ship & Engine Bldg. Co.
J. T. King, Harbison & Walker Refract. Corp.
E. H. Redmond, Fairmount Foundry Co.
James S. Stirling, Hilles Jones Co.
George R. Sullivan, Rogers, Brown & Co.
Josiah Thompson, J. Thompson & Co.
C. K. West, General Electric Co.
W. J. Davis, McHatton Foundry Co.
S. E. Hadley, W. W. Sly Mfg. Co.

Entertainment Committee

Frank Krug, chairman, White & Brother.
R. R. Belleville, Dixon Crucible Co.
C. D. Matthews, Camden Iron Works.
A. J. Myer, Abram Cox Stove Co.
F. J. Ryan, American Metallurgical Corp.
J. H. Sheeler, Sheeler-Hemsher Co.
C. M. Trivett, P. Isham.
Frank Overn, Federal Steel Foundry Co.
S. J. Beck, Supt. Foundry, Pusey & Jones Co.

Golf Committee

Otto W. Schaum, chairman, Fletcher Works.
Howard Evans, J. W. Paxson Co.
J. R. Neilson, Ajax Metal Co.
L. U. Park, Park & Williams.
C. B. White, White & Bro.
H. F. Rebmann, American Engineering Co.

Loan of Automobiles

Herbert J. Bougher, chairman

C. M. Benkert	H. W. Brown
C. F. P. Buckwalter	C. P. Pond
Wilfred Lewis	C. B. White
Charles E. McEvoy	J. W. Paxson Co.
Wesley Caskey	J. D. Johnson Jr.
Capt. J. L. Crawford	J. H. Sheeler
W. F. Sauter	H. M. Bougher
H. A. White	H. F. Rebmann
Howard Evans	Thomas Devlin
C. M. Trivett	R. C. Thum
G. H. Clamer	Frank Hodson
Otto W. Schaum	F. B. Patt
F. L. Webb	W. H. Ridgway
George F. Pettinos	J. H. Golding
M. L. Kirn	A. G. Warren

Manufactures Small Sand Mixing Machine

A foundry sand mixer, having a 3-foot diameter pan, has just been developed by the National Engineering Co., Chicago, which has been manufacturing mixers of a similar type in 4 and 6-foot diameter sizes for many years. The mixing machine is of the Muller type, having an automatic discharge, and mixes the sand by a combination of mullers and plows. The company is manufacturing the smaller size mixer because of the demand by smaller foundries in which mixers of greater capacity are not required. It is stated that this 3-foot mixer is also adapted to larger foundries where it is desired to use more than one machine. The mixing machine may be used in preparing various kinds of sand mixtures in foundries producing grey iron, steel, malleable, aluminum and brass castings.

Propose Rate Changes

Hearings for proposed changes in freight rates will be heard in the Chamber of Commerce building, Pittsburgh, Aug. 20, 1919.

On the Detroit, Toledo & Ironton railroad from the points of Wellston, O., to Superior, O., it is proposed to change the present rate of coke breeze in carload lots from 9½ cents per 100 pounds to 80 cents per net ton and to change the rate on the same product between Napoleon, O. and Cincinnati from 15½ cents per 100 pounds to $2.10 per net ton.

From Struthers, O. to Hubbard, O., on the Pittsburgh & Lake Erie railroad it is desired to reduce the rate of coke breeze from $1.60 per ton to 80 cents per ton in order to enable this line to compete with the Erie railroad which has an existing rate of 80 cents.

Belgian Industrial Tide Rising

Increasing Numbers of Workers Return to Task of Rebuilding Cities, Furnaces and Mills—Germans Giving Back Hundreds of Stolen Machines—Two Great Metallurgical Combinations Formed

BY FRANCIS MILTOUN
Paris Correspondent of The Iron Trade Review

BELGIUM is bilingual. Belgium is industrious. She is a mixture of Flemish, French and Walloon. The combination offers untold possibilities, the characteristics that proved so rugged and resourceful before and during the war now serving to strengthen the determination of her people.

Belgium is the most densely populated and, proportionately, the richest country in natural resources in Europe. Its railway system is the most complete of all in Europe, and its inland waterways in extent and utility are second only to those of Holland. Its highway system is excellent and remarkably close-woven; all of which features lend themselves admirably to the successful conduct of industrial life.

Belgium's earnest, hard-working and frugal population is asserting itself toward industrial and economic revival. Despite ravages of war, cities and towns are becoming peopled again. Brussel's population now is nearly normal, with 700,000 persons. At Antwerp the situation is different. The greatest of continental seaports, after Hamburg, it has lost some of its prewar population by the elimination of 50,000 of its former German residents, and today has a population of but 250,000.

The metal, coal and allied industries in Belgium lie in three distinctly grouped districts, Liege and the valley of the Meuse, Charleroi and Marchienne-au-Pont, and Mons and the Borinage. Iron, coke and shipbuilding industries also are grouped in oriental Flanders, comprising the districts of Bruges, Hoboken and Antwerp. New coal fields are being developed in the Campine.

Lack Raw Materials and Machinery

The present industrial situation in Belgium is aggravated by lack of raw materials at plants, and machinery. Power equipment, from engines and boilers to driving belts, was carried off with raw materials. Machine equipment at coal mines, which were operated to some extent by the Germans, is more nearly intact, but wear and tear were abnormal, and little effort was made to replace used parts. Hoisting cables, above all, require immediate replacement.

Steel plants in the Charleroi district, with the exception of two worked by the Germans, were dismantled, entailing a long period of idleness. Others elsewhere, which may have been spared, can only expect for the present to produce limited quantities of certain specialized lines.

In the Liege district there has been a partial return to activity, but production is far from adequate. Equipment in the zinc industry has suffered but small depreciation, but machine shops and metal-working industries are in the same condition as the steel plants. The loss pertains to locomotives and carpet tacks alike, and all that lies between. There was not a machine shop, however small, that did not suffer from German rapacity. Morlanwelz, Charleroi, Nivelles, Manage, Roeulx, Louvain, Buysinhen and scores of other busy industrial towns show deplorable depredation.

Belgian manufacturers look to the outside world to supply them the necessities with which to begin work, but a considerable number believe that Belgium should work out her own destiny, should it be proven that she is financially and economically able. But since Belgium has opened its doors to foreign trade, its policy is not the drastic one of isolation, under which France has suffered since the armistice.

Steel Producers Organize

The chief event of recent developments with respect to production and distribution is the founding of what is destined to be a Belgian steel "trust." A dozen of the greatest of Belgian companies will practically control production and trade in raw material and semimanufactured steel and iron products. The members of this combination are those organizations whose plants were laid waste by the Germans. They believe consolidation and specialization will enable them to recover more speedily from the blow. Chief among the companies are: Societe Cockerill, Societe Ougree-Marihaye, Societe de Thy-le-Chateau, Societe de Sambre et Moselle, Societe d'Angleur, Societe d'Esperence-Longdoz, Societe d'Athus-

Getting a "Close Up" of Belgium's Needs

WE in America have heard the details of the destruction of iron and steel works in Belgium; how the Germans sought to exterminate an industry that was the life of a nation, either demolishing on the spot its furnaces and mills, or dismembering them and carrying away its most valuable parts and equipment. Now what of the new day, the reconstruction, the efforts of that nation to re-establish itself, to overcome obstacles and achieve its ambition to become a great industrial power? To what extent will Belgium need the help of Americans, for funds, material or machinery? To what degree is she progressing in her great task? America's interest in her proceeds not only out of a possible opportunity to sell her millions of dollars worth of equipment, but in observing her ingeniousness and her capacity for effort. America has been surfeited with generalties about Belgium's rehabilitation; manufacturers and exporters have been confused by a tangled mass of information in regard to her needs. To get at the facts and to present them in such a way that they will be of real interest and genuine value to Americans who may be doing business with Belgians or contemplating offering their products in Belgian markets, THE IRON TRADE REVIEW *sent its Paris correspondent, Francis Miltoun, on a journey of investigation through that country. His position and connections in Paris have insured him access to industrial records in Belgium, and have placed him in touch with some of the leading iron and steel masters and manufacturers. This, his first article, is in the nature of a preamble, outlining the general situation. In subsequent articles he will give the regional resources and prospective developments of various organizations and plants.*

Grivegnee, Societe des Usines Metallurgiques de Hainaut, Societe de Montceau Saint Fiacre, Societe des Forges de Clabecq, Societe de la Providence, Societe des Usines de Chatelineau, Societe des Usines Boel (La Louviere).

The author of the project is Monsieur Trasenster, director-general of Ougree-Marihaye, on the Meuse below Liege, the neighbor of the great Cockerill plant, to which it is a close second in magnitude. The argument of Monsieur Trasenster is, in his own words:

"Great advantages will accrue to Belgain industry if each specializes in the product for which it is most favorably situated and equipped. The system will permit of a notable diminution in production and overhead costs, thus arriving at a lower sale price without invalidating prospective or actual profits."

The capital is to be 300,000,000 francs ($60,000,000), the participation of each establishment to be on the basis of specific value of assets contributed.

Representatives of the Ougree and Providence companies which have large mine interests demanded participation on the basis of the value of future mine output rather than on mere book value of concessions and investment. The point was conceded by the others, and a committee was appointed to estimate the prospective value of reserves.

New Consortium Organizing

A second Belgian trust, or, rather a consortium, just organizing is the Bourse Industrielle de Belgique. The various associated concerns were formerly linked, in 1874, under the name of the Metal and Coal exchange, and previous to that as the Brussels Industrial exchange. Evolution now gives the former organization and its scope a nation-wide application. In abandoning the name of Brussels it extends its activities to a field encompassed by the Bourse Industrielle de Charleroi and the Bourse Industrielle de Liege, without whose co-operation, which is expected to be forthcoming, no combination on national lines could hope to succeed.

The new organization is divided into four groups: Mining, metallurgy, construction, glass products, ceramics, cement, etc.

The resources of Belgium are such that her future position is assured beyond peradventure, in the opinon of all who know the history of the country's industries and who realize the Belgian's skill and capacity for labor.

Labor and labor conditions at present are in a more or less liquid state, but this is due to the disorganized condition of industry as a result of the war. Difficulties are being smoothed out daily and the strong efforts which have been brought to bear in the past few weeks by the willing labor of the returned population is surely bringing about desired results.

The Belgian restitution service, which has its headquarters at Wiesbaden, reports that the work of recovering stolen machines and material from Germany is proceeding so rapidly that 3000 tons per week are being shipped into Belgium. The machines are returned so far as possible to their original owners by those German concerns who had set them up in their own factories and were using them while saving their own machines against the possibility of such an outcome. One hundred and twenty-five machines of all types per day has been the average number returned during the past two weeks, the total tonnage returned up to July 1, being nearly 20,000. Certain difficulties were encountered in getting complete lists of the stocks of raw material which were taken. Belgian records were destroyed by the Germans. It now only remains for an adequate establishment of the physical inventories of the various Belgian plants to get them into production again. An authority writing in the *Basler Nochrichten* says:

"Belgium has reason, in spite of the present hard times, through which it is passing, to have confidence in the future. The country is very rich in products of the soil and subsoil, in capable men and in children. It will be years before the present generation has forgotten the horrors of the German invasion and occupation, above all what industry has suffered; but there are other generations coming forward to take the place of the present and bring Belgium again into the front rank of producing countries."

Belgium may yet be classed as a first class power, and this despite the lack of numbers of its population and the smallness of its area.

As this article is being written in Brussels at the time of the first great *Fete Nationale* which Belgium has celebrated in five years, France announces that her diplomatic representative at the court has been raised to the rank of ambassador; reciprocally, Belgium has appointed an ambassador at Paris.

The United Engineering & Foundry Co, Pittsburgh, recently received a contract for a reversing cross compound engine for the blooming mill of the new steel plant of the Wierton Steel Co., Wierton, W. Va.

New Jersey Foundries Increase Operations

New York, Aug. 12.—Material improvement is reflected in the gray iron castings industry in the northern New Jersey district. About a month ago Newark foundries were operating on the average at 50 to 60 per cent of capacity, but as a result of improved demand they are now operating at approximately 75 per cent. The price situation is unchanged, but it is said that owing to the pronounced tendency of all foundry costs to advance it will not be long before higher prices will be asked in the district of which Newark is the center. In the meantime, the market on ordinary heavy machinery castings averages 5 to 7 cents per pound, although occasional instances still are noted where some melters are cutting this range.

The situation in the metropolitan district is less favorable. Numerous foundries in Brooklyn and Long Island City are unable to find enough business in their regular lines to keep them occupied, and this is particularly true of those engaged in the production of castings for structural purposes. A number of the latter are taking such business at less than it costs them to produce.

Mexico Contracting for Electric Railroads

Monterey, Mexico, Aug. 9.—The department of communications and public works of the Mexican government has made a contract with the Mexican Tramways Co., Ltd., for the resumption of construction of the interurban electric line line between the City of Mexico and Pueblo, about 130 miles. The construction of this line was started about 12 years ago.

The government also has granted a concession to the National Norwegian Co. for the construction of an interurban electric railway between Tampico and Tuxpam, about 120 miles, with branch lines to smaller towns in the oil-producing territory.

The war department has established an office in the Chamber of Commerce building, Pittsburgh, in charge of Lieut. Basil Dolphin, which will be a sort of bureau for the placing of discharged officers and enlisted men, who by reason of professional or technical training, cannot be placed readily. Col. Arthur Woods, assistant to the secretary of war, is in charge of this work.

Business Men Offer Rail Plan

Corporate Ownership, Limited Number of Strong Competing Systems and Federal Regulation of Capital Expenditures and Rates, to be Urged in Place of Nationalization by Chamber of Commerce of United States

WASHINGTON, Aug. 11.—The railroad plan adopted by referendum vote by the business men of the country will be presented to the house committee on interstate commerce by George A. Post, of New York, chairman of the railroad committee of the United States chamber of commerce, who has arrived in Washington. With him is Dr. Emory R. Johnson, professor of transportation and commerce, University of Pennsylvania, also a member of the railroad committee. They will be heard as soon as the railroad brotherhoods finish their case.

"Our plan has been given careful consideration, section by section, and discussed in local communities by thousands of business men in 48 states, who had opportunity to study it 45 days before voting on it," said Mr. Post. "The section declaring against government ownership received 99 per cent of the vote cast.

"Appearing before the interstate commerce committees of congress, we shall bear a message from the business men of the country intended to be helpful to those entrusted with the important duty of making the laws. Representing the business interests as a whole, vitally dependent upon adequate transportation facilities, the dominant thought of the chamber, as shown in the votes of its organization members, is fairness to all with special favor to none. Our object is to draw to our plan calm and thoughtful attention. In our presentation there will be no tone of command, no boasting of numerical strength, no threats of political reprisals, no appeals to class prejudices, but an earnest appeal to all interests to counsel together with patience and good will for the common welfare.

"Our program calls for corporate ownership, with the return of the roads to their owners as soon as remedial legislation can be enacted. We urge consolidation of roads in a limited number of strong, competing systems. We want the big railroads of the future to be subject to the United States, with federal regulation of capital expenditures and security issues. We favor leaving rate-making in the hands of the interstate commerce commission under a statutory rule designed to bring in sufficient revenue to keep the industry going. We ask for the creation of a federal transportation board to execute in a constructive manner the new legislation to be adopted for railroad and other transportation facilities.

"I do not believe the people of the United States are ready to take even the first step toward the nationalization of industry. The experiments along this line in unfortunate Russia have been brought home too closely to the American people. I for one am confident tha there is enough economic common sense in the country to prevail over any plan of any one interest."

Lower Rates on Steel to British Ports

Washington, Aug. 12.—The peace time organization of the shipping board became effective Aug. 7 when John Barton Payne, Henry M. Robinson and Thomas A. Scott took office. Mr. Robinson was elected chairman. About the same time announcement was made by J. E. Cushing, acting director of operations, of reduced ocean freight rates on steel and other products, effective as of Aug. 1, shipped from North Atlantic ports to Liverpool, London, Manchester, Hull, Leith, Belfast and other ports of the United Kingdom. The new rates follow:

Boiler tubes, loose car wheels, iron pipe fittings, pipe up to 4 inches, outside measurement, scrap iron and structurals, $13 per gross ton; bolts and nuts, screws, steel hoops in coils, and wire in coils, $14 per gross ton; tin, $15 per gross ton.

Special rates now are quoted on application, on forgings, pig iron, plates, rails, rods, black bars, sheets, skelp, billets, and cold rolled steel in boxes. The rates compare with the following ones they supersede:

Pig iron, scrap and loose car wheels, $16; boiler tubes, black bars, rails, rods, billets, cold rolled steel, pipe up to 4 inches, steel hoops, wire and forgings, $17; tin, $18; bolts, nuts and screws, $20; iron pipe fittings, structurals, plates, sheets and skelp, $1 per 100 pounds.

Similar reductions were announced on nonferrous metals and their products.

Announcement was made that deliveries of completed ships to the shipping board had, on Aug. 1, reached a total of 1182 vessels, a combined deadweight tonnage of 6,513,372. Five hundred and one of these ships are of contract steel, aggregating 3,063,941 deadweight tons, and 338 are requisitioned steel, of 2,256,731 tons.

Navy Opens Bids on Steel Hangar for Dirigibles

Washington, Aug. 12.—The bureau of yards and docks, navy department, last week opened bids for the construction of a hangar for dirigibles at Lakehurst, N. J. Between 6000 and 7000 tons of steel, mostly structurals and bars, will be required for this work, it is estimated. The bids varied between $4,620,000 and $2,854,000 and the time for completing the job between 300 and 500 days. The bidders are Underpinning & Foundation Co.; Nugent Construction Co.; Post & McCord; McClintock-Marshall Co.; Snare & Triest Co.; John W. Cowper Co.; C. H. & R. C. Peckwith; George F. Pawling Co.; Pascher Bros.; John Gill & Sons; Bethlehem Steel Bridge Corp; Warren Moore & Co.; Irwin & Leighton, and D. L. Taylor & Co.

The foregoing bids include mechanical equipment. Firms which bid only on the mechanical equipment are Harry Alexander; Lord Construction Co.; M. A. Dame & Son; Thompson Bros.; Riggs, Distler & Stringer; Baker, Smith & Co.; Almirall & Co.; Austin Heating Corp., and Raisler Heating Co.

Federal Aid Proposed for Home Builders

Washington, Aug. 12.—Home building in the United States, already behind urgent requirements by $4,000,000,000, would go forward immediately despite an increase of 110 per cent in the cost of building materials and an advance of 39 per cent in the cost of labor over the respective averages in 1915 if it were possible to secure financial encouragement, according to Senator William E. Calder, New York. Senator Calder has two bills pending in congress, one creating a home loan banking system somewhat like the farm loan system, and the other exempting from federal taxation the income from mortgages held by individuals.

The need in this country today is for 1,000,000 homes, the senator de-

clared. Annually the American building bill is approximately $3,000,000,000 of which $2,000,000,000 goes into houses and the remainder into buildings for industrial and amusement purposes. Just now, he said, building requirements are doubled, but money being unavailable because of taxation, the absence of liquid funds, etc., the incentive to build is lacking. Before going to congress Senator Calder was head of the building department of New York City and has considerable data to back his arguments.

German Potash May Now be Imported

Washington, Aug. 11.—All wartime restrictions on the importation of potash directly or indirectly from Germany have been removed by the war trade board, effective Aug. 7. Potash may now be imported freely from every source except Hungary and those parts of Russia under control of bolshevik authorities. In amending the import regulations, the board points out that dyes, and dyestuffs, including bases, crudes and intermediates and all drugs and chemicals are still subject to the former restrictions.

Miners to Demonstrate Rescue Work

Washington, Aug. 12.—The largest gathering of coal and metal miners ever assembled is expected by the bureau of mines in Pittsburgh, Sept. 30 and Oct. 1, for the national first-aid and mine-rescue meeting to be held in connection with the dedication of the bureau's new laboratories, formal ceremonies for which will begin Sept. 29. Teams will compete for prizes offered by the National Safety council, the American Red Cross and others. Among the teams entered so far are those from the Oliver Snyder Steel Co., the Colorado Fuel & Iron Co., the Republic Iron & Steel Co., the Cambria Steel Co., the Alabama Fuel & Iron Co., Pickands, Mather & Co., the H. C. Frick Coke Co., the Raritan Copper Works, and the New Jersey Zinc Co.

Price Fixing Forbidden

Washington, Aug. 12.—The federal trade commission, by agreement with the Ruud Mfg. Co. and the Pittsburgh Water Heater Co., both of Pittsburgh, has issued an order requiring them to discontinue any practice whereby dealers were compelled to maintain standard fixed reselling prices for the public. The companies manufacture gas water heaters, and according to the commission their combined output is more than half of the total of the country.

Steel Lots Offered

Bids are to be received up to 2 o'clock, Aug. 20, by the Philadelphia district ordnance office on 1434 tons of forgings for 75-millimeter shells at the plant of the Worthington Pump & Machinery Corp., Hazleton, Pa., and on Aug. 26 on 1636 tons of 9.2-inch high explosive shells at the plant of Wm. Wharton Jr., & Co., Easton, Pa.

Bids will be taken by the Philadelphia district ordnance office until Aug. 18 on 1787 tons of 155 millimeter shrapnel forgings, located at the plant of Wm. Wharton Jr., & Co., Easton, Pa.

Bids will be accepted until Aug. 25 on 4500 tons of 9.2 high explosive shell forgings, located at the plant of Wm. Wharton Jr. & Co., Easton, Pa., and until Aug. 26 on 755 tons of 75 millimeter shell forgings at the Hazleton, Pa., plant of the Worthington Pump & Machinery Corp.

The Detroit ordnance office will take bids up to 11 a. m., Aug. 15 on 9266 gross tons of 155 millimeter high explosive forgings at the plant of the Jackson Munitions Corp., Jackson, Mich.

Government Sells Wire

Sealed bids will be opened on Sept. 3 at the office of the chief of the surplus property division, Munitions building, Washington, on 1930.2 tons of black painted barbed wire and 1464.5 tons of galvanized barbed wire. The minimum quantity on which bids will be accepted is 2 tons. This wire, purchased by the government for barbed wire entanglements, is stored in government warehouses at Columbus, O., where it may be inspected prior to the sale.

Erects Sheet Mill

The Falcon Steel Co. is erecting a new sheet mill at Niles, O., with eight stands of electrically driven rolls, which is to be of the most modern type. Powdered coal will be applied to the sheet and pair furnaces as well as a slabbing furnace, two double box double chamber annealing furnaces, three galvanizing kettles and power plant boilers. A blue annealing furnace will be included in the furnace equipment.

The initial installation of coal preparing apparatus will consist of a complete 5-ton coal pulverizing plant including the necessary coal crusher, elevators, crushed coal bin, dryer and mill, together with the powdered coal hoppers, for storing powdered coal at the furnaces, powdered coal feeders, burners, etc. The pulzerized coal will be transported from the milling plant through standard 4-inch wrought pipes to storage bins in the power house and throughout the mill by compressed air. Contract for the complete fuel equipment has been awarded the Quigley Furnace Specialties Co., New York. It is anticipated that this mill will be in operation by the first of January.

Developing Coal Deposits in Kentucky

Iron and steel manufacturers are looking toward a number of large new development factors in eastern Kentucky for their future supply of coal. The largest of these is the U. S. Coal & Coke Co., a subsidiary of the United States Steel Corp., which is completing one of the largest mining plants in the south at the Lynch mines near the Letcher-Harlan border on the Cumberland river. Within the next 60 days it is expected the mine will be producing 10,000 tons of coal a day. The coal in its raw state will be shipped to three subsidiary plants, at South Chicago, Joliet, Ill., and Gary, Ind., where it will be turned into coke.

The Wisconsin Steel Co., a subsidiary of the International Harvester Co., is extending operations in its plant at Benham, and within the next 30 to 60 days, the output of the mines will be doubled. Chicago and Cleveland interests are soon to develop new properties in the field. New territory further back in Big Black mountain district will be developed.

In the Wolf Pit Creek section of Pike county, the McKinney Steel Co., Cleveland, announces several extensions effective at once. The company has also acquired additional holdings on the Big Sandy river. It is also extending its transmission lines to adjacent mines and opening up a large power plant, and before the first of the year, it is expected the company will have doubled its output.

Yale and Towne Co. Wins Income Tax Suit

The new personal income tax law of New York state is unconstitutional insofar as it discriminates against nonresidents, according to a ruling handed down by Federal Judge John C. Knox, the result of action instituted by the Yale & Towne Mfg. Co.,

Stamford, Conn., to enjoin the state comptroller from compelling the company to deduct the amount of taxes from the salaries of employes working in New York state. The provisions of the law would have deprived nonresidents of several exemptions allowed residents. In its contention the company alleged unconstitutionality of that part of the law, objected to being made the state's collecting agent, and complained that if it withheld such money it would be subject to suit by employes for restitution. Prior to the decision several companies doing an interstate business, with offices or executive headquarters in New York, had stated their intention of moving their offices from New York if the law was enforced.

Improvements now being carried out to the Belfont furnace of the Belfont Iron Works Co., Ironton, O., will completely modernize that plant. Two new stoves, a gas washer, a downcomer, engine and boilers are being installed. The old trestle is being extended, steel bins are being constructed and the stack is being equipped with skip hoist. Machinery and equipment required for the steel trestle, steel bins and steel hoists now are being figured upon.

Would Bar American Steel

Australia Prepares to Pass Tariff Law—Parliament Aroused by Reports of "Dumping"—Manganese Production Revived

NEWCASTLE, N. S. W., Australia, July 8.—It is reported that America intends using Australia as a dumping ground for steel, and parliament is preparing to pass a tariff law and so encourage local production. Australia has one large steel works at Newcastle and another works at Lithgow, where a small amount of pig iron and steel is produced.

The Newcastle Steel Works is seeking to capture the Pacific steel trade but is severely hampered by freight charges. It costs as much to carry steel from Newcastle to New Zealand as it does to carry it there from America, but New Zealand is anxious to trade with Australia. A large quantity of steel has gone to Java, and the company has 25,000 tons more awaiting shipment.

A meeting of steel consumers has been called in Melbourne to discuss the advisability of adopting standard specifications for sections. It will be many years before Australian steel works can make all the sections engineers specify. In the meantime it is hoped to have engineers arrange their requirements to conform to contain standard sections that can be profitably rolled by various firms in this country.

The output of the Newcastle Steel Works for four weeks ending May 29 was as follows: Coke ovens, 13,890 tons of coke, 136,723 gallons of tar, and 232 tons of sulphate of ammonia; No. 2 blast furnace, 11,934 tons of pig iron (foundry furnace), 453 tons of spiegel and 30 tons of ferromanganese; open hearth, 25,004 tons; blooming mill, 17,204 tons; rail and finishing mill, 11,242 tons of 60 and 80-pound rails; and merchant mill, 4962 tons.

Neither the state nor federal government will take an interest in financing copper mining, and many plants are shutting down. This is considered a calamity for the Australian industry. No copper has been sold for many months and tons of copper ingots are stored here. Widespread unemployment in New South Wales has been caused by the shutting down of the plants of the Mount Morgan Mining Co., in Queensland and Port Kembla, affecting about 20,000 workers. The two districts produce large amounts of copper. The plants had to be shut down because of a shipping strike. Although the company has on hand copper which costs nearly $2,000,000 to produce, it is not saleable at anywhere near that figure at present.

There has been considerable activity in mining for manganese at Uralla, New South Wales. Two reefs were worked and 450 tons of manganese were raised. A state minister for mines, on the recommendation of the prospecting board, has decided to ask for a greatly increased appropriation for prospecting. As there are many valuable deposits not yet discovered in Australia, parties are to be equipped and supported by the state in their search for minerals.

Operations for the supply of raw material to the new cement works at Burswood island, Perth, have commenced on the properties of the West Australian Portland Cement Co., and a railroad is being constructed by the government from Waroona to Lake Clifton. A complete cement-making plant capable of producing 30,000 tons of cement per year has been purchased.

Panama Canal Workers Given a "Raise"

Announcement has been made by Chester Harding, governor of the Panama canal, that he has increased the wages of those employes working by the hour from 1 to 2 cents an hour, and has added $5 a month to those paid $40 a month, and $2.50 a month to those who receive from $42.50 to $57.50. A long list classifying government workers in the Canal zone and specifying the rates of pay affords an interesting basis of comparison with wages paid by private industrial establishments in the United States. Blacksmiths, boilermakers, car repairers, ironworkers, machinists, molders, pipefitters and riveters are classed as artisans, and of this class there are three grades. Those of the first grade are paid 22 cents an hour; second grade, 24 cents, and third grade, 27 cents. Laborers are similarly graded, and receive respectively 19, 20 and 22 cents an hour. Boys of the first grade receive 9 cents an hour and those of the second grade 11 cents an hour, there being but two grades.

Monthly rates for subsisted employes are established at $5 less than the monthly nonsubsisted rates. Subsisted rates are provided to take care of employes who are required for the good of the service to take their meals at their work.

The rates of pay as fixed in the governor's announcement are considerably below those of workers in similar lines in the United States.

Ore Firm to Retire

Announcement is made that the firm of Ennis & Co., Philadelphia, dealers in foreign ores, will retire and terminate their business existence Sept. 1. Ennis & Co. were the pioneers in the trade in foreign iron ore with eastern blast furnaces which was developed over a period of years until it reached a heavy total annually. Its representation included ore properties in Africa, Cuba, Spain, Greece, Brazil and other countries. Major E. J. Ennis, the head of the firm, has been prominent for many years in eastern iron and steel circles and is widely known as an expert on foreign iron ores.

J. H. Jackson, formerly production engineer for the Sharples Separator Co., West Chester, Pa., recently was discharged after 18 month' service as lieutenant in the army. He has been made sales manager of the Pittsburgh Gear & Machine Co., Pittsburgh, succeeding W. H. Thompson.

Price Level Won't Decline Much

President Wilson's Address to Congress on Cost of Living no Cause for Apprehension on Part of Legitimate Business—Labor Radicalism Hit—Says Force Will Defeat Self—General Financial News

PRESIDENT WILSON'S address offering his program for reducing prices, the outstanding development of the week as affecting business and industry, offered relatively little that should make capital apprehensive and much that should operate to prove groundless most of the fears born of the railroad brotherhoods' ultimatum and the consequent crystalizing of demand for a lower cost level. He proposed, in effect, nothing more radical than chastisement of profiteers. Legitimate business and industry will heartily second him there, for elimination of unfair profit makes for greater purchasing power on the part of the general consumer.

By far the most reassuring element to be discovered in the President's words is the firmness with which he sought to lower the rising hand of labor radicalism, a resoluteness all the more satisfying because not wholly expected. Proponents of the Plumb plan for operation of the railroads will hardly gain encouragement from the statement that "we cannot hastily and overnight revolutionize all the processes of our economic life; we shall not attempt to do so." And incipient bolshevism will secure not even a modicum of nourishment upon digestion of such words as these: "There must be no threats; let there be only intelligent counsel, and let the best reasons win, not the strongest brute force." To the brotherhoods he says: "Threats and undue insistence upon the interest of a single class make settlement impossible"; and to labor in general that "strikes undertaken at this critical time are certain to make matters worse, not better—worse for them and worse for everybody else."

True Reasons Apparent

Analysis of the address discovers the true causes of the present level of prices. That this level is not to fall appreciably at once is as much as admitted, and that the eventual trend will not be precipitately downward may be deduced from the President's own statement's, notwithstanding the verbiage heaped upon "profiteers" as a prominent factor in attainment to the present plane on which commodities of all sorts rest.

To the people he says the prices they are paying in order to live are not justified by a shortage in supply, either present or prospective, and are in many cases "artificially and deliberately created by vicious practices." To business and industry he says the "world must pay for the appalling destruction wrought by the great war and we must pay our share; not until there are the usual crops and the usual production of manufactured goods on the other side of the Atlantic can Europe return to the former conditions."

He points out that it was on these former conditions that our economic relations were built up, relations that did not contemplate such drains as Europe has for the past five years been making on the productive capacity of this nation. And if, as he says in his address, "we must keep Europe going or thousands of our shops and scores of our mines must close," can prices be expected to do otherwise than to obey the law of supply and demand while "keeping Europe going." On the one hand, closed factories have but one meaning for labor; on the other President Wilson says there is "no such thing as letting Europe go to ruin without ourselves sharing in the disaster." The deduction is irrefutable. The President himself recognizes the omnipotence of the law of supply and demand, although he expresses the opinion that at present it is being stretched by profiteers when he says that "no legislative or executive action can force processes of supply and demand into full and natural operation until there is peace." But he says nothing about going beyond that law to lower prices.

That these are critical times for industry and business cannot safely be denied, in view of social and labor unrest, and the persistent movement of the "vicious cycle" of wage advances and price increases. But reassuring signs are not lacking. Encouragement that the administration, notwithstanding the President's talk of federal control of corporations doing interstate business, does not hope to accomplish anything in bringing prices down that would prove so radical in regulation or control as to harm industry and business is furnished in his own statement that "to have brought it all into the open will accomplish the greater part of the result we seek." And none should realize better than the present congress that inflation cannot be reduced, war debts liquidated nor current revenues produced unless production be maintained to the maximum and capital be protected in its legitimate operations.

The railroad brotherhoods, precipitators of the present acute situation, will have to look further than the President's address to discover encouragement for their radical Plumb proposal, nothing more nor less than craft socialism in the making. There is little hope of anything like a 25 per cent decrease. It remains to be seen, therefore, what the brotherhoods may be able to force in the way of wage increases. Unquestionably the Plumb plan can be nothing more than a club, uncovered at the psychological moment, to be swung over the head of the federal government to enforce class demands which, if granted, can mean only another turn of the vicious cycle. They might well heed the President when he says: "All that is arbitrary and coercive is in the discard; those who seek to employ it only prepare their own destruction."

Midvale Steel's Quarter Earnings Decrease

The quarterly report of the Midvale Steel & Ordnance Co., Philadelphia, for the period ending June 30 shows a surplus after charges and war taxes amounting to $946,267, compared with net profits of $2,750,197 for the preceding quarter, the equivalent respectively of 47 cents a share compared with $1.37 a share on the $100,000,000 capital stock, par value $50. Net profits of $8,545,443 or $4.27 a share were earned in the corresponding quarter a year ago. The comparative account follows:

	1919	1918
Net earnings	*$3,138,650	$12,108,753
Interest	787,979	784,825
Depreciation, etc.	1,404,404	2,778,485
Net profits	$946,267	$8,545,443

*After provision for all taxes.

For the six months ended June 30, Midvale shows a surplus, after charges and taxes, of $3,696,464 or $1.84 a share on the stock as compared with $16,345,784 or $8.17 a share in the cor-

responding period of 1918. The comparative earnings for this period follow:

	1919	1918
Net earnings	*$7,840,184	$21,883,797
Interest	1,580,701	1,578,208
Depreciation, etc.	2,563,019	3,959,805
Net profits	$3,696,464	$16,345,784

*After provision for all taxes.

Asks More Federal Aid on Foreign Credits

New York, Aug. 11.—With the question of credits holding up considerable export business in the railroad equipment market, the recent confirmation of the report that the Baldwin Locomotive Works had arranged to accept an order for $7,000,000 worth of locomotives from the Polish government by extending credit over a period of 10 years has aroused much interest, and more or less speculation is rife as to what extent the Baldwin company will carry out this policy. It is generally believed, however, that the company will not attempt to extend credit even in part to all countries trying to place orders in the United States. The risk involved is thought to be too great, and the aggregate amount too vast to be handled by any one equipment company in this country.

Charles M. Muchnic, vice president of the American Locomotive Works, prepared a statement in which he referred to the vast amount of business now being held up by inadequate credit facilities, and suggested an amendment of the War Finance corporation act. Mr. Muchnic's statement, in part, follows:

"European government railways have been recently making inquiries for large numbers of locomotives and cars which are required for prompt delivery. The total value of these inquiries, if financial arrangements could be made to permit their purchase, would probably aggregate $200,000,000.

"Section 21 of the War Finance corporation act provides for the granting of a credit of $1,000,000,000 for financing the export of American manufacturers' products to Europe, but the limitation of this credit lies in the fact that the American manufacturer before he could avail himself of any financial assistance under this act, must furnish ample security for the loan and assume complete risk of the transaction. For the present American manufacturers would not be justified in accepting long term securities offered by these governments in large amounts.

"If section 21 of the act were amended whereby the corporation would be permitted to purchase either from manufacturers or form the European government railways their bonds or equipment notes to the extent above indicated, it would then be possible, and only then, to gratify the demand of foreign countries."

Pneumatic Tool Net Up

The Chicago Pneumatic Tool Co. for the six months ended June 30 earned a surplus of $299,190 after charges and taxes, the equivalent of $9.20 a share per annum on the $6,448,800 of capital stock, par value $100. Figures are not available to compare the first half of 1918, but earnings for the 12 months of last year aggregated $535,833, or at the rate of $8.32 per share per annum. Earnings in 1917 for the 12 months totaled $1,169,390, or at the yearly rate of $18.03 a share. Following is the income account for the first six months of 1919:

Manufacturing profits	$1,819,226
Expenses	976,314
Balance	$842,912
Other income	10,283
Total income	$853,195
Interest and taxes	284,853
Depreciation, renewals and sinking fund	269,152
Surplus	$299,190

Has Good Year

While net profits of the Ontario Steel Products Co., Gananoque, Ont., for the year ended June 30 were smaller than in the previous year, there was available for distribution to share holders a substantial sum in addition to the 7 per cent preferred dividend, and a portion of this was used to reduce liabilities. Here a payment of 2½ per cent reduced the cumulative liability to 3¼ per cent, while at a rceent meeting a further payment of 1¼ per cent was decided upon, reducing the net preferred liability to 2 per cent. Net profits amounted to $198,770 as compared with $208,107 in 1918 and $182,296 in 1917. The preferred dividend required $73,125, bond interest, $36,000, and the sinking fund was increased by $12,000, the balance of $77,645 being carried forward and increasing the available surplus to $359,374. The balance sheet shows assets of $2,698,366 as compared with $2,565,397 in the previous year. Current liabilities have been increased from $83,852 to $152,040, but include a provision for war tax of $34,234, and a preferred dividend of $22,500 payable in August.

Plan Power Plant

Pittsburgh, Aug. 12.—Work on a new power plant for the Duquesne Light Co., originally projected last year under government assistance for the purpose of increasing the supply of power for the plants in Pittsburgh engaged on war work, but suspended as a result of the ending of the war, will be started soon. Contract for the plant, which is to be located at Cheswick, Pa., and which with the distribution lines and substations will mean an outlay of approximately $15,000,000, has been awarded the Dwight P. Robinson Co., contracting and consulting engineers, 61 Broadway, New York. This company has opened Pittsburgh offices in the Home Trust building.

An initial capacity of 60,000 kilowatts is planned, but provision is made for increasing the output to 120,000 kilowatts in the original construction and ultimately a plant with a capacity of 300,000 kilowatts is probable. The site is on the bank of the Allegheny river and is about two miles from a large coal operation owned by interests allied with the Duquesne company. It is planned to drop the coal from this mine directly into the bunkers of the power plant, thus eliminating any possibility of plant interruptions from delayed coal shipments such as might occur if the coal had to come either by water or rail.

While complete plans have not yet become public, it is said that they call for the construction of a by-product plant.

Financial Crop Ends

The White Motor Co., Cleveland, plans to increase its capital from $20,000,000 to $30,000,000 to take care of its constantly expanding business, it is reported. The company recently increased its stock from $16,000,000 to $20,000,000.

* * *

The Southworth Machine Co., Portland, Me., has sold its plant at 79 Preble street in that city to the Miles B. Bank Motor Car Co., and purchased the plant formerly occupied by the Braun Co., in Deering Junction, Me.

* * *

The Cambria Steel Co. has filed a claim with the public service commission at Harrisburg, Pa., for the return to it of $132,673.41 alleged to be due from the Pennsylvania and Baltimore & Ohio railroads, through a system of charges for picking up cars at interchange points at its plant at Johnstown.

* * *

Judge Charles P. Orr of the United States district court, Pittsburgh, has named Aug. 12, as the date of a hearing on a petition by F. E. Markell having a claim against the J. V. Thompson estate. On Aug. 18 the court will hear a petition of the Thompson trustees asking that H. G. Rockwell, one of the debtors of the estate, be ordered to pay them $4566.67, the balance due on account of property bought by Rockwell. Markell has a mortgage, which he claims is due.

Foreign Tool Markets Smaller

France to Protect Tool Builders—Engaging More Extensively in Equipment Manufacture—England to Have 10 or 15 Per Cent Protective Tariff—Manufacturers Investigating Possibilities of Manufacturing Automatics

BY A. C. COOK

PROTECTION for the machine tool industry of France seems to be a possibility if the action now contemplated by the French government is carried out. As compared with American production the output of French shops is not large, but such protection is absolutely necessary in the minds of many makers. The concensus of opinion is that France and Switzerland will build practically all of the small lathes, shapers, planers and upright drill presses required in the French market and but few of these machines will be imported in the future. The Oerlikon Machine Tool Co., Oerlikon, Switzerland, recently built six large milling machines of the Ingersoll type. A few small screw machines also have been built in Switzerland and a few in France, but it appears that their manufacture will be discontinued.

Importation of machine tools by France during the war was only possible under a government license and at a regulated profit of 15 per cent over the price at New York City. While the price control has been removed the import restrictions still are in effect. When the latter first were enforced, several of the native French importers requested the government to form a bureau to take control of the situation. This resulted in the creation of the Comptoir d'Achat des Machines Ouitls. While French importers were well represented, "foreign" dealers were omitted and they formed an association of their own similar to the one organized by French importers before the Comptoir d'Achat des Machines Utiles became operative. The latter was discontinued after the armistice was signed but the other two organizations work together in harmony.

French Tool Imports Allocated

These two associations were asked by the ministry of reconstruction to ascertain the value of the machine tools their members would desire to import during 1919. The government reduced the figures submitted approximately 50 per cent so that the aggregate value of machine tools, agricultural machines and general engineering machinery to be imported during 1919 is $46,800,000. This means that $27,200,000 worth will be permitted to enter France from America; $12,000,000 worth from England and $7,600,000 from Switzerland. In addition certain large firms are permitted to order and import direct. When a government department places an order direct with an importer, the amount is not deducted from the importer's total permit. These permits for 1919 are allocated as follows:

Direct "foreign" importers, Allied Machinery Co., Herbert, etc.—		
From America	$6,800,000	
From England	1,440,000	
		$8,240,000
French importers, Fenwick, Chouanard, etc.—		
From America	$10,800,000	
From England	3,600,000	
		14,400,000
Agricultural and miscellaneous machines by the agricultural syndicate—		
From America	$2,400,000	
From England	800,000	
		3,200,000
Other syndicates and manufacturers importing direct —		
From America	$ 600,000	
From England	1,680,000	
		2,280,000
Reserved for manufacturers and other users importing direct instead of through dealers		18,680,000
Total		$46,800,000

Note—None of the syndicates asked for an importation from Switzerland but the government allotted a sum for this, which evidently is included in the total reserved for manufacturers who import direct.

Manufacturers located in the invaded districts, who desire to purchase equipment on extended terms, make their arrangements with the ministry of reconstruction, which arranges credit terms with the importer.

Reclaim Few Stolen Machines

Allied commissions, which have searched occupied territory in Germany, estimate that of the material and machines stolen from France and Belgium, only 10 per cent can be removed in good condition, 15 per cent is useless and the remainder has been totally destroyed. Approximately 50,000 machine tools were stolen or destroyed in the invaded district of France alone. A plan is being considered whereby machines owned by the American government in France, numbering between 5000 and 6000 will be turned over to the French government for the restoration of plants in the invaded territory. Many companies removed from this district to the southern part of France and it is questionable whether they will move north again, for while the government will reimburse them for their losses in the war, the amounts thus received

Made Exhaustive Study

INTERESTING sidelights on conditions in Europe after reconstruction work was well under way, are given in the accompanying article by A. C. Cook. When the Warner & Swasey Co., Cleveland, maker of turret lathes, screw machines, etc., desired to obtain first hand information regarding the situation abroad, particularly as relating to the machine tool industry, it sent one of the men in its organization best fitted by his experience in both the domestic and export trade, to make an exhaustive study. His findings in connection with the equipment market are particularly valuable because of his standing in the trade. For about 15 years he has been affiliated with the Warner & Swasey Co., and during the past 10 years of that period, he has held the position of general sales manager. Some idea of the extent of his duties can be gained from the fact that his company maintains branch offices in New York, Boston, Buffalo and Detroit and an office and show room in Chicago. It also has foreign agents in London, Birmingham, Manchester, Newcastle-on-Tyne and Glasgow; Paris, Turin, Barcelona, Zurich and Brussels; Rotterdam, Copenhagen, Gotenburg and Stockholm; Tokio; Sydney and Melbourne; Toronto, St. John, Winnipeg, Vancouver and Montreal. Its tool sales aggregate many millions of dollars annually. While this article does not include Mr. Cook's entire report, which was exceedingly extensive, it is a liberal extract of it and explains why not so many orders for American-made machines are being received from England and France as were expected.

will not, it is thought, justify them in moving again. It is estimated that machinery to the value of between $40,000,000 and $50,000,000 can be released from American and French shops and arsenals, for disposal to French manufacturers. Up to the time of our visit to France, no sales of this equipment had been made.

M. Loucheur, the minister of reconstruction has estimated that the restoration of invaded sections will cost $15,000,000,000, while pensions, etc., will require an additional $8,000,000,000. This estimate is considered by many to be low. These believe that the cost of the war to France will aggregate $63,000,000,000.

Great Britain's machine tool industry saw great expansion during the war. In 1914, the British machine tool output was valued at $20,000,000, while in 1917 on the same basis of figures, the annual production had reached a value of $32,500,000. To March 1, 1919, prices had increased 55 per cent on the average. Most of the advance took place prior to the time the government relinquished control of the industry. Some tool prices were advanced further subsequent to that action. During the war, by government order, machine tools had to be painted red, giving them their "war finish." Makers were not permitted to fill the castings but were allowed to clean them of the sand. During 1916, 1917 and 1918, no machine tools were exported from England.

Wages Greatly Increased

Wages in machine tool shops have increased greatly. In 1914, the day rate of the machinists' union, known as the Amalgamated Society of Engineers, was $9.12 for a 55-hour week, plus a bonus. Since almost all shops operated with the union, that rate was practically the standard for the entire trade. Slight variations prevailed in different localities depending upon the cost of living. After conferences, the Employers' Federation and the Amalgamated Society of Engineers agreed upon a day rate of $11.04, together with a bonus figure on the old rate of 9.12. During the war, the government induced the employers to reduce the working hours to 47 per week, and at the same time, the day rate was raised to $16.08 per week, the bonus averaging 30 per cent, based on the $9.12 rate, was retained, and an additional bonus of 7½ per cent on the total of the day rate and bonus was granted. This made the machinists' hour rate 43 cents with a total of $20.21 for a 47-hour week. Toolmakers received a slightly higher rate of pay but the same bonus. Overtime on the basis of time and one-quarter was limited to eight hours per week. At present in most shops the men will not work overtime.

Wage increases usually were made 1½ per cent at a time and for each five increases, totaling 7½ per cent, the manufacturers were allowed 4 per cent increase in prices. Originally manufacturers were permitted to make the same percentage of profits as in either 1912 or 1913, if such profit was reasonable. Experts were sent to some shops to examine costs and prices and manufacturers were allowed to make increases in addition to the 4 per cent noted, if the case warranted it.

Prices probably cannot be reduced in any machine tool line. If the 7½ per cent bonus added by the government is removed, the day rate will have to be increased to make up the deficiency.

Protective Tariff Desired

Much favorable sentiment exists among machine tool manufacturers for a protective tariff on imported machines and it seems probable that a duty of 10 or 15 per cent will be established within a year. Newspaper sentiment is divided, some favor free trade, while others want the tariff. The manufacturers who favor the tariff, believe that British tools are equal in quality to American tools and that on an equal basis, they can easily compete with them, but they resent the fact that America has a tariff against them.

It practically has been decided to hold a machine tool exhibition at Olympia, London, in 1920. While the details have not been decided upon, it will be similar to the exhibition held in 1912.

Prior to 1914 England exported approximately $40,000,000 worth of textile machinery each year. Formerly the Lancashire textile machinery manufacturers exported to every nation in the world, including America, in spite of a 45 per cent duty on their product. Because during the war these manufacturers devoted their entire effort to the production of war munitions they lost out to a certain extent in foreign markets. At the present time American manufacturers are quoting within 2 or 3 per cent of the English prices in Italian, French, Belgian and other markets.

British manufacturers are giving serious thought to the regaining and expanding of their foreign markets. Several associations have been formed including the British Manufacturers' Corp., and the Federation of British Industries. These have combined their effort to collect information about foreign trade and establish commissions of high commercial standing in foreign markets. The British Manufacturers' corporation has a membership of 300 firms and the Federation includes over 800 companies and 170 trade associations. The Anglo-Chinese Engineers' association also has been formed by 42 noncompeting firms of British engineers to work in China. Another organization which has for its members, some of the leading English manufacturers and shipbuilders is known as Representation for British Manufacturers, Ltd. It will operate in China and eastern Siberia. In addition, many trades and industries have formed and are forming export associations to secure for their members data regarding the different export fields. These for the most part are noncompeting and take up sales work in an active way for their members.

For two years the importation of motor cars was prohibited but until Sept. 1, 1919, foreign makers are allowed to send in each month at 33 1-3 per cent duty, a number equal to 50 per cent of their imports for the corresponding month of 1913.

To Go After Foreign Trade

On the other hand, British automobile makers realize that home demand cannot take up the present possible production from their factories and they are endeavoring to develop the foreign markets. Previously they have never made any real effort to obtain foreign business of this nature. Before the war about 3000 automobiles were produced annually and all well established firms are greatly increasing their outputs for 1919.

The principal new company to build motor cars is Cubitts, Ltd. Before the war it erected steel and concrete buildings. During the war, it produced large quantities of fuses and before hostilities ceased, it decided to enter the automobile industry. Sir Wm. Angus, Sanderson & Co., Newcastle, are putting on the market England's first good assembled car, with units built to their specifications. Production for 1919 is expected to reach 6000 and it sells for $2250. Austin Co., which made shells, forgings and fuse parts as well as armored cars during the war has returned to the manufacture of a medium-priced car to sell at $2425, and will endeavor to produce 30,000 during the present year. It claims to have orders for 20,000.

The Research Association of British Motor & Allied Manufacturers was formed recently to conduct research

work for its members. It comprises many of the larger automobile builders and will receive $25,000 annually from the government, which is half of the estimated expenses of its effort.

Machine tool buying by automobile makers is limited to machines to round up their present equipment. Cubitts, Ltd., sold its war equipment and bought some large presses for radiator shells, etc. Parts for assembled cars are purchased from makers who have practically all the necessary equipment.

Shell Plants Sell Machinery

During the war the British government established a number of National shell, fuse and ordnance factories, building some and leasing others. These together with warehouses, etc., cost $325,000,000. Last February a disposal board was created to sell these buildings, except those which were leased, together with equipment. These are being disposed of by auction and number of shops and equipments have been sold. Some of the machine tools have been purchased by users and some by used machinery dealers. The character of the equipment ranges all the way from good to bad.

England is awakening to the advantage of automatic machinery in many ways. Steel for wire formerly was imported from Germany and Belgium, but now automatic drawing mills produce 1500 tons of wire per week with the same staff formerly required for 35 tons weekly.

Production of war material has taught manufacturers not to fear quantity production and plants are being operated on this basis wherever possible. One manufacturer of gasoline motors advertises 12,000 automobile engines, all alike, to be produced in a certain time at a fixed price regardless of changing conditions in that period. Before the war such a quantity was not heard of and it means that production methods are changing. Work is being taken from hand machines and produced by automatics and from engine lathes to be turned out by screw machines and turret lathes. Practically every manufacturer is investigating the possibilities of automatics.

The control over raw materials exercised by the government until May 1, militated against the manufacturers speeding up reconstruction work. Uncertainty regarding labor and material cost also delayed this effort as did the uncertainty regarding the excess profits taxes. With the removal of government control over raw materials May 1, the prices on iron and steel advanced. Labor's attitude still is uncertain and prices of finished products are set sufficiently high to compensate manufacturers for such increases as they have to grant.

With some companies, particularly iron and steel manufacturers, reconstruction does not mean a change of product or equipment. Their problem is to find business to keep their equipment busy. Former munition shops now are manufacturing automobile parts and accessories, while some produce complete cars. Armament manufacturers naturally fear the result of armament reduction under the league of nations. In Sheffield alone are located four companies of this class, 50 per cent of whose peacetime products were for war. Sir W. G. Armstrong, Whitworth & Co., and Vickers, Ltd., also are in this class. Both are placing some of their funds in outside shops in various lines. Vickers, Ltd., either owns outright or controls the following: British Westinghouse Co.; Sir Wm. Beardmore & Co.; Electric & Ordnance Accessories Co.; Petters, Ltd.; Metropolitan Carriage & Wagon Co.; Arrol Johnston Co., and several others. It also recently took some stock in a new matchmaking combine and will build its machinery. Its peace program includes the manufacture of pianos, sewing machines, toys, locomotives, trucks, ships and machine tools. A plant has been erected with a weekly output of 12 tons of files. It also has commenced the manufacture of vehicle springs and drawn steel tubes.

Armament Makers Branch Out

Armstrong, Whitworth & Co. are engaging in a wide range of commercial engineering; they are building locomotives at the rate of 300 or 400 annually; they manufacture and machine brass and steel castings, rough and finished forgings; they produce pneumatic and general machine tools as well as marine engines. They expect to do much reconstruction work in Belgium. They control John Brown & Co., who have built a large number of Cunard boards and also control Cammell, Laird & Co., steel manufacturers and shipbuilders. They were negotiating for control of the Sideley-Deasy Co., builder of motor cars, airplanes and airplane engines, a short time ago.

Hadfields of Sheffield, England, completed a new heat treating, machine and forge shop at a cost of $2,000,000. This company was the successful bidder for United States navy projectiles several years ago. It now is prepared to take on rough and finished forging work up to 12 or 14 tons.

Evidence of a new era in British manufacturing is seen in the combinations now being formed in various lines, similar to those formed in America a number of years ago. Thus, the United Steel Companies, Ltd., formed from five separate companies, owns and operates coal mines, iron mines, blast furnaces and rolling mills. Some other combinations have been formed in iron and steel, though not so far reaching as the United. Several of the large agricultural implement firms have bought control or amalgamated with firms in similar lines. The English Electric Co., Ltd., includes the Coventry Ordnance works, whose principal product now is small motors; Dick, Kerr & Co., contractors for large electrical installations; the Phoenix Dynamo Works, large motors and dynamos; United Electric Car Co., electrical street cars, and Williams & Robbins, large direct connected engines and turbines. All these organizations are looking toward better manufacturing facilities and reduced costs.

Produce New Ferroalloy

Chicago, Aug. 8.—Production of a new ferroalloy containing silicon and aluminum has been achieved by the Shawinigan Electro Products Co., Baltimore. It is being handled by the Canada Carbide Sales Co., 30 Church street, New York, exclusive sales agents for the former concern.

A characteristic analysis of the new alloy shows silicon 47.70, aluminum 43.63, and iron 28.67. The process of manufacture, which is by the electric furnace, allows the relative proportions of silicon and aluminum to be varied to any extent desirable, as long as the silicon content remains somewhere near 50 per cent.

The alloy is intended for use in steelmaking as a deoxidizing agent and this combination provides silicon and aluminum at a lower price than they can be obtained separately.

Experiments now are being carried on by a number of steelmakers, both for rolling and casting, and the Canada Carbide Sales Co. offers to supply sufficient material to any inquirer to provide a test.

One matter which it is desired to have cleared up in establishing the usefulness of this alloy is whether foundry and mill practice is sufficiently uniform in the use of aluminum relative to silicon to make possible the production of a uniform alloy which will be useful to practically all users.

The compound is stable and shows no tendency to disintegrate after being cooled.

Strike Ties Up Ore Docks

Suspension of Shipments May Leave Some Furnaces Without Supplies Next Spring—Other Labor News

WITH all operations on the docks of the upper lakes districts suspended by the strike of dock workers and railroad shopmen, shipments of at least 2,000,000 tons of ore have been held up. Supplies on hand at lower lake ports and at furnaces are sufficient to meet all requirements for several months, but ore companies and furnace interests are apprehensive of difficulty next spring. They say that if the strike is protracted it may be impossible to bring down a sufficient amount of ore during the balance of the season to supply all furnaces and keep them in operation until next season's shipments begin. The United States Steel Corp. and several other interests have brought down their usual amount of reserves, but others delayed purchasing, not anticipating delays due to labor troubles.

About 17,000 men are on strike. Striking dock workers number but 2000, most of the others being railroad shopmen. The dock workers were the first to walk out at the largest ports a week ago, demanding wage increases amounting to 33 1-3 per cent. Then following the lead of the shopmen in the Chicago territory, the railroad men went out.

The first indication of a break came Monday, Aug. 11, when it was reported that some of the shopmen of the Duluth & Iron Range railroad, Duluth, Messabe & Northern railroad, and the Great Northern railroad were preparing to return to work, and that a few of them actually had applied for their jobs. Despite the plea of President Wilson that striking railroad men return as the first step toward consideration of their demands, the shopmen in the upper lakes district as well as those in Chicago and at other points remained out. Their leaders branded their strike as "illegal" and joined with the president in appealing to them to call it off, but more than a week later the shopmen announced they would meet in Chicago, Aug. 14 to deliberate on the advise of the President and their organization's officials. The shopmen at the head of the lakes are voting on the question of sending delegates to the conference.

A large proportion of the dock workers are foreign-born, foreign-speaking men, poorly organized, but encouraged by the actions of the shopmen. It is believed that if the latter decide to return to work pending an adjustment of their wage demands, the dock workers will quickly do the same.

Two ore vessels were loaded at one dock with crews brought from a lower lake port, and while no trouble was experienced the company decided not to continue, fearing an outbreak of violence. About 200 bulk freighters are tied up as a result of the strike, and one vessel company estimated that if the strike continues four more days, or until Aug. 15, practically the whole lake fleet will be laid up.

The Lake Superior Iron Ore association met Aug. 11, but no action was taken in regard to the strike, it being considered a matter between the railroad administration and its employes.

Strike of 200,000 Ties Up Italy's Metal Industry

Italy's metal industries are paralyzed by a strike of 200,000 employes demanding the same wages they received during the war. After two months of controversy and attempts at arbitration the workers walked out, forcing the suspension of operations in many machine shops, foundries, blast furnaces and steel mills. The strike has spread from Lombardy over the whole of northern Italy, to Tuscany and the larger part of central Italy. Iron and steel masters have proclaimed a lockout, declaring they will not attempt to reopen their works until given guarantees against further interruption.

Scarcity of coal and raw materials in Italy have deprived iron and steel works practically of all profit, according to the employers, and make it impossible to grant the workers' demands.

Toronto Machinists Strike is Settled

Toronto, Aug. 11.—Labor troubles which have held up business for the past three months are now being settled. About 60 shops in Toronto have resumed operations and machinists who were on strike have returned. While the strike is generally admitted to have been a failure in so far as all the strikers did not receive the 44-hour week and 50-hour pay demanded, it is pointed out by union officials that these conditions, as well as extra wages, have been conceded by 23 shops. The question of wages at 36 other shops will be settled at another conference. One of the union officials stated that the loss in wages was well over $1,000,000, while the union paid $500,000 in strike benefits.

Labor Turn-Over Cost is $2,500,000,000 Yearly

Yearly labor turnover in the United States costs employers $2,500,000,000, according to Col. Arthur Woods, assistant secretary of war. In commenting on the large number of discharged service men already employed who are applying for better jobs, Colonel Woods said: "A great deal of turnover can be directly attributed to the lack of a system of industrial training wherein men who are unskilled but have the ambition to become skilled can be trained for skilled work. Returned soldiers are certainly entitled to training. Even if they were not, it is to the advantage of the employer to give it to them. One of the largest electrical plants in the world has had such a system for some years, and outcome has been most satisfactory indeed."

Colonel Woods long has advocated the establishment of industrial training classes in plants, not only to upgrade present employes, but to make it possible for discharged soldiers who have no trade to become skilled workers.

Employers and Workers, Buy Army Foods

Employers throughout the country were quick to take advantage of the opportunity to aid their employes in coping with the high cost of living afforded by the sale of food supplies by the war department. In many instances arrangements were made whereby cars loaded with canned foods were sent direct to industrial plants. Companies purchased the goods through local civic authorities whom the government held responsible for payment, and then sold them to employes at prices fixed by the government. A number of companies went further in financing purchases and permitted their employes to make purchases with the understanding that the price was to be deducted from their wages at subsequent periods. Everything possible was done to facilitate the movement of the goods, and to get it into the hands of the consumers.

In Cleveland seven carloads of food were allotted to industrial corporations out of the initial shipment of 20

carloads. City officials were deluged with requests from companies seeking to help their employes, and many had to be refused after the limit of the first shipment was reached. The food was sold only by the case, making it inconvenient for some employes to obtain it, but where less than single carloads were taken employers used their trucks to see that quick deliveries were made.

Among the companies obtaining the goods were the Enterprise Tool Co., Electric Controller & Mfg. Co., Otis Elevator Co., McKinney Steel Co., Aluminum Castings Co., Guide Motor Lamp Co., National Lamp Works of the General Electric Co., the White Motor Car Co., and the Scott Co. These companies took goods valued at $9551, and it was estimated that their employes were saved $4775, the government sale price averaging about 33⅓ per cent less than the retail price.

Five out of the seven carloads of food allotted by the government to Youngstown, O., were shipped direct to manufacturing plants by arrangement between city officials and the Youngstown chamber of commerce.

LABOR NOTES

Employes of the Treadwell Engineering Co., Easton, Pa., held their annual outing Saturday, July 26, at Bushkill park, Easton.

One hundred employes of three Elkhart, Ind., foundries, including 60 molders, apprentices and laborers, are on strike to enforce the molders' demands for an 8-hour day, and a minimum wage of $6, instead of nine hours and $5. A fourth foundry granted the demands and continues in operation.

Club rooms have been opened for the employes' association of the Pratt & Whitney Co., Hartford, Conn. The rooms are equipped with bowling alleys, pool tables and a soda fountain, while another attractive feature is a comfortably furnished reading room. All of the social activities of the employes have been merged in the association.

In amending the Wisconsin workmen's compensation law by including occupational diseases as well as accidental injuries growing out of and incidental to employment, the state legislature appropriated $3000 for the employment of a sanitary engineer by the industrial commission. A campaign for the prevention of occupational disease will be started immediately. Special attention will be given to such hazards as lead poisoning, caisson disease, trade eczema and tuberculosis in sand blasting.

Obituaries

ALBERT VICKERS, who for 64 years was connected with Vickers, Ltd., the company which bears his family name, died at Eastbourne, Eng., July 12. Some time ago he succeeded his elder brother, Col. T. E. Vickers, as chairman of the company and continued in that position until December, 1918, when, at the age of 80 years, he retired on account of ill health. He was the third son of the late Edward Vickers, a partner in the firm Naylor, Vickers & Co., which in 1867 was taken over by Vickers, Sons & Co., Ltd. The concern became one of the most important iron and steel firms in the world. It has absorbed several other firms, including the Naval Construction & Armament Co.; the Maxim Nordenfeldt Guns & Ammunition Co.; William Beardmore & Sons, Ltd.; the Wolseley Motor, Ltd.; Electric & Ordnance Accessories Co.; and recently became united with the Metropolitan Wagon when its capital was increased to £26,000,000. The company has branches in London, Sheffield and Barrow-in-Furness. In 1854, when Albert Vickers joined the company it had a large American business and was sending to the United States annually 1500 tons of material for use in textiles. As the result of the financial crisis in America arising out of the recent war the firm had to find new markets for its products to take the place of its large business in the states. Some time ago the company introduced a successful process for the making of steel castings for a great variety of purposes. It played an important part in the industrial contribution to the success of the allies.

Daniel Watson Hildreth, secretary and treasurer of the Schutte & Koerting Co., died Aug. 4, at his home, 2037 North Eighteenth street, Philadelphia, aged 59.

Frank Poeppelmeier, aged 61, who for many years has been superintendent of the Platt Iron Works, Dayton, O., died Aug. 1, at his residence in that city, after an illness of four weeks, which followed a paralytic stroke.

Norris Elmore Clark, an inventor, one of the owners of the Clark Caster Co., Plainville, Conn., maker of steel corner, bead and hardware novelties, which was established by his father, died at his home in that town, Aug. 3, aged 41 years.

H. M. Shepler, who was well known in the sheet and tin plate trade through his 17-year connection with the sales department of the American Sheet & Tin Plate Co, died of pneumonia after a brief illness, at his home in Chicago, on Aug. 3.

Milton R. Wood, aged 79 years, purchasing agent for the Rock Island and Philadelphia & Reading railroads, died Aug. 4 at his farm estate at Plainfield, Ill. He was a veteran of the Civil war, and one of the principal promoters of the Outer Belt railroad system at Chicago.

John S. Shaughnessy, aged 55 years, connected with the construction department of Canadian Pacific railroad and brother of Lord Thomas D. Shaughnessy, chairman of the board of that railroad, died in Chicago, Aug. 10. He formerly was purchasing agent for the Soo Line railroad.

William H. Carter, who for many years had been in charge of the screw and bolt department of the Pratt & Whitney Co, Hartford, Conn., died recently at his home in that city after several weeks' illness. Mr. Carter became affiliated with the Pratt & Whitney Co. in 1881.

H. R. Moore, 63, general traffic manager of the Republic Iron & Steel Co., Youngstown, O., died at the Youngstown Country club, Aug. 8, after an hour's illness from heart disease and arterial sclerosis. Mr. Moore was born at Warrensville, near Cleveland, and at one time served the Lake Shore railroad as division freight agent at Cleveland. He had been affiliated with the Republic company since its organization 20 years ago. He was a member of the Youngstown and Country clubs, Youngstown ;the Duquesne and Traffic clubs, Pittsburgh, and the American Iron & Steel institute, New York City. In January, 1918, Mr. Moore was named Youngstown representative of the American Iron and Steel institute's subcommittee on traffic and transportation, which made daily reports to then Director General of Railroads McAdoo on carrier conditions.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

CAPT. A. W. THOMPSON resigned as president of the Inland Steel Co., First National bank building, Chicago, at the adjourned quarterly meeting of the board of directors held recently. P. D. Block was elected to succeed him. Other officers elected were L. E. Block, chairman of the board, a newly created office; G. H. Jones, first vice president; E. M. Adams, E. J. Block and H. C. Jones, vice presidents; D. P Thompson, assistant to the president, and J. W. Lees, works manager. All other officers remain the same.

James E. Strong resigned recently as superintendent of mines for the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.

Herbert S. Eades, formerly assistant mechanical engineer for the American Bridge Co., at Ambridge, Pa., has been appointed assistant mechanical engineer at its Pencoyd, Pa., plant.

C. Bateman Swasey recently was elected treasurer of the Belcher Malleable Iron Co., Easton, Mass. He formerly was superintendent of the Gorham Mfg. Co.'s Allen avenue plant, Providence, R. I.

W. L. Lindsley, who formerly was affiliated with the Trumbull Steel Co., Warren, O., now has offices in the Woolworth building, having organized the Lindsley Co., to deal in iron, steel and other metals.

Robert H. Young, Fort Worth, Tex., has resigned his position as purchasing agent of the Southwestern Mechanical Co., to become Texas district sales agent of the Alan Wood Iron & Steel Co., Widener building, Philadelphia.

Ernest P. Kipp, recently discharged from army service as a captain in an engineering corps, has been placed in charge of an office and warehouse, established at 1415 Wazee street, Denver, by the Hazard Mfg. Co., Wilkes Barre, Pa., wire rope, insulated wire, cables, etc.

I. C. MacKie, who for a number of years was chief chemist of the Dominion Iron & Steel Co., Sydney, N. S., recently was appointed metallurgist.

George C. Isbester has resigned as district sales manager of the Rail Joint Co., at Chicago, and has become district sales manager of welded and weldless products for the American Chain Co., Inc., with headquarters at Chicago.

H. C. Southgate, formerly local treasurer at the Chicago works of the National Malleable Castings Co., Cleveland, who has been absent from the organization since 1912, has returned to the Chicago works as assistant local treasurer.

J. M. Davis, manager of the New York properties of the Baltimore & Ohio railroad and formerly vice president in charge of operations, has resigned effective Sept. 1 to become president of Rock Hill Iron & Coal Co., No. 1 Broadway, New York City.

A. M. Conneen recently resigned as New York sales manager of the structural and plate departments of the Bethlehem Steel Co. to become vice president and manager of the Hedden Iron Construction Co., New York, steel fabricator. He succeeds A. E. Roberts, resigned.

E. C. Pierce, with his assistant, Charles E. Hale, now has charge of the new branch office in the Union arcade, Pittsburgh, established by the Baldwin Locomotive Works and the Standard Steel Works Co., Philadelphia. Mr. Pierce formerly was in the general sales offices in Philadelphia.

Col. Frederick Mears, general manager of the American railways in France and builder of the Panama railroad, has been appointed chairman and chief engineer of the Alaskan engineering commission in charge of the government railroad in Alasaka, with which he served prior to going to France.

T. J. Brown, general superintendent of the Nova Scotia Steel & Coal Co., Sydney Mines, N. S., recently was appointed chairman of a special committee of the Canadian Mining institute to consider the formation of a coal mining section of the institute. He is a member of the council of the Mining Society of Nova Scotia.

Sydney A. Foster will be placed in charge of a New York office to be established in the Tribune building, 5 Nassau street, on Aug. 15, by the L. B. Foster Co., and allied interests, including the Light Railway Equipment Co., Park building, Pittsburgh.

Charles E. Leedy, formerly assistant district manager for the United States shipping board at Youngstown, O., has been appointed manager of the Valparaiso, Chile, branch of the Federal Export Corp., New York. He expects to sail for South America early in September and at present is touring the United States for the Federal corporation.

Clifford L. Snyder, recently discharged as a lieutenant from the United States army, has become affiliated with the technical staff of the Detroit Testing Laboratory, 674 Woodward avenue, Detroit, as sales engineer. He received his commission at Fort Sheridan, Ill., and later was transferred to the nitrate division in charge of construction work at No. 1 plant, Sheffield, Ala.

George A. Paul and C. L. Jahn have become affiliated with the Pennsylvania Steel Export Co., Widener building, Philadelphia. Before Mr. Paul entered the United States army, from which he recently was discharged as lieutenant, he was connected with the Eastern Steel Co., Pottstown. Mr. Jahn, formerly was a salesman in the Philadelphia district for the Youngstown Sheet & Tube Co., Youngstown, O.

F. B. Gerard resigned recently as director of purchases for the Austin Co., Cleveland, engineer and builder. He now is general manager of the Thorold, Ont., branch of the Pilkington Bros. Co., St. Helens, England. He now is visiting the home office of the latter company becoming acquainted with its organization. He formerly was Indianapolis representative for the Austin Co., and prior to that time was manager of the former German-American Portland Cement Co., La Salle, Ill. As director of purchases for the Austin Co., he has been succeeded by F. W. Mettler, who formerly was chief engineer of the Hunkin-Conkey Construction Co., Cleveland, and later for the Crowell-Sherman Co., that city, now the Crowell, Lundoff, Little Co. For the past 10 years, however, Mr. Mettler has been in business for himself in Cleveland.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ARTHUR B. REYNDERS, formerly director of production of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been made works manager at its East Springfield plant. A. E. Kaiser, who has been his assistant since 1912, has been appointed to succeed to the position as director of production. Mr. Reynders was graduated from the University of Tennessee as a civil engineer in 1895 and one year later as an electrical engineer. He held various positions in his native state for three years and in 1899 he was employed by the Westinghouse company as a draftsman on switchboard and switchboard apparatus. In 1902 he was made an engineer on circuit breakers, switches and relays and at the end of two years became acting assistant chief draftsman. In February, 1906, Mr. Reynders became general engineer on insulation work and three and one-half years later was appointed assistant manager of engineering. In March, 1912, he was promoted to be director of production, which position he held until his latest appointment. At the present time, Mr. Reynders is supervising the installation of machinery at the new plant at East Springfield, which will manufacture small power motors, automobile starting, lighting and ignition equipment.

E. S. Chamberlain has been placed in charge of the New York sales office, established at room 553, 50 Church street, by the National Tool Co., Cleveland.

T. W. Carlisle has resumed his duties as treasurer of the Strong, Carlisle, Hammond Co., Cleveland, machine tool and supply dealer, having been discharged as a major in the government's service.

Charles F. Gilman now is general manager of Joseph Beal & Co., Boston, machine tool dealers. He succeeds A. P. Hanscom, who recently resigned and formerly was with the Factory & Mill Supply Co., that city.

John C. Moore, who has held a position of trust with the North & Judd Mfg. Co., New Britain, Conn., for the past 20 years, recently was elected vice president and director of exports. Fred J. Ward was made assistant treasurer. Other officers elected at the recent annual meeting are: President, Howard C. Noble; vice president and secretary, E. M. Wightman; vice president and treasurer, F. M. Holmes; vice president, Proctor Carr; assistant secretary, Samuel McCutcheon; directors, H. C. Noble, E. M. Wightman, F. M. Holmes, George M. Landers, A. J. Sloper, George C. Clark, Charles Glover and Proctor Carr.

Arthur J. Hayes, former sales manager of the Ford Motor Co. of London, Ont., has resigned that position to becomes sales manager of the Champion Spark Plug Co. of Canada, Ltd., Windsor, Ont.

Clarence E. Kinney has been made general manager and sales engineer with Ogden R. Adams Mfg. Co., Inc., Rochester, N. Y., lathes, etc. He formerly was identified with the Symington interests, that city

J. L. Canby has been made district manager of sales at Chicago for the Chicago Pneumatic Tool Co., Fisher building, Chicago. He succeeds Nelson B. Gatch, who has been transferred to New York, as district manager of sales.

H. W. Krehnbrink has been placed in charge of the recently established branch sales office at 724 Chamber of Commerce building, Detroit, of the P. B. Yates Machine Co., Beloit, Wis., manufacturer of woodworking machinery.

Philip T. King, recently discharged from the American expeditionary forces, in which he enlisted for overseas service, has resumed his duties as locomotive and traveling crane salesman for J. N. Kinney, 30 Church street, New York City.

E. J. Luster, mechanical engineer, who formerly was vice president and general manager of the Luster-Jordon Co., Inc., Philadelphia, now is head of the Luster Machinery Co., Widener building, Philadelphia, which represents over 78 companies in that city.

F. R. Mead, who recently was discharged as a captain in the ordnance department of the United States army, and who formerly was head of the gage section, inspection division, has become affiliated with the Wilton Tool & Mfg. Co., Boston, as eastern representative.

A. L. Valentine, who for 19 years was connected with the small tool department of the Pratt & Whitney Co., Hartford, Conn., the last 15 as superintendent, has resigned. He sailed for France recently to become works manager of the Societe des Usines Curial, Paris, France, manufacturer of small tools.

John McGrath has become affiliated with the D. M. Osborne Machinery Co., Cleveland, as salesman and production engineer. He formerly was with the Ingersoll-Rand Co., and the Bethlehem Steel Co., but has just been discharged from the United States army, having seen foreign service with an engineering corps of the American expeditionary forces.

W. G. Balph, formerly head of the fan motor division of the Westinghouse Electric & Mfg. Co., East Pittspurgh, Pa., and salesman in its New York office, has been made manager of the safety switch section of the Westinghouse Kranz factory, Brooklyn, N. Y. He will have charge of sales of all the plant's products as well as of the extension and development of safety switches.

Harry M. Giles, formerly superintendent of the marine erection department of the Corliss Steam Engine Works, Providence, R. I., has been selected to succeed the late Oscar Otto as general superintendent of the South Philadelphia Machine works of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. His father, Charles E. Giles, has been in charge of the Providence shops of the Corliss Co for the past 35 years.

George G. Porter has severed his active connection with the Porter-Cable Machine Co., Syracuse, N. Y., of which he was one of the founders, and has opened offices as consulting mechanical engineer and factory organizer in the new Keith theater building, Syracuse. Mr. Porter will engage in a designing and drafting of special and automatic machinery, tools, dies, jigs and fixtures and will conduct an engineering and sales service.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

RICHARD HUNT HALLSTEAD was elected president and treasurer of the Sheffield Steel & Iron Co., McCormick building, Chicago, at its recent organization. H. C. A. Mitchell was elected vice president and general manager, and John W. Taylor, vice president and sales manager.

William H. Campbell resigned Aug. 4 as superintendent of the drop forge department of the Page-Storms Drop Forge Co., Chicopee, Mass.

Howard Coonley, president of the Walworth Mfg. Co., Boston, has been elected a vice president of the Massachusetts Credit Union association.

M. J. McGarr has been placed in charge of an office established in Chicago by the Jackson Hill Coal Co., Terre Haute, Ind.

Harry M. Schaff, of the sales department of M. A. Hanna & Co., Cleveland, now is representing his company in the Pittsburgh district.

Thomas A. Arthur, vice president of Hickman, Williams & Co., Inc., Pittsburgh, recently motored to Spring Lake, N. J., where he is to spend the month of August.

Robert F. Whelan, for the past 25 years with the Pickering Governor Co., Portland, Conn., has resigned to accept a position with the Russell Mfg. Co, Middletown, Conn

C. O'C. Sloane resigned recently from the Allied Machinery Co. of America, New York City, to become identified with the Betts Machine Co., Rochester, N. Y.

Charles H. Hanson, for many years chief engineer of the York Mfg. Co., Saco, Me., has been appointed a member of the new Maine water power commission

L. H. Meyer has been placed in charge of an office recently established in the Oliver building, Pittsburgh, by the John W Cowper Co., Inc., Buffalo, engineer and contractor.

Guy D. Anderson has been appointed and has assumed his duties as general sales manager of the coke department of the Reilly-Peabody Fuel Co., Pittsburgh, succeeding T. J. Atkinson, who recently resigned and severed all connection with the company. Mr. Anderson has been with the Reilly-Peabody company for about two years and previously had been with the Poland Coal Co., Pittsburgh.

Capt. Giles S. Pease, formerly plant engineer of the Spencer Wire Co., Worcester, Mass., who has been in Palestine the past year and a half with the American Red Cross unit, has returned home.

Harry C. Owen, formerly assistant district representative of the United States fuel administration at Fairmont, W. Va., has become affiliated with the Bertha Coal Co., with offices in the Chamber of Commerce building, Pittsburgh.

Ralph T. Fuller who for the past 10 years has been affiliated with the sales department of M. A. Hanna & Co., Cleveland, has been elected vice president of the Producers Fuel Co., First National Bank building, Pittsburgh.

B. F. Affleck, president of the Universal Portland Cement Co, Chicago, and president of the Portland Cement association, recently was elected a director of the Great Lakes Trust Co., Chicago, which commenced business a short time ago.

J. Earl Myers, who for several years has been manager of the Pittsburgh office of Whitney & Kemmerer, resigned on Aug. 1, and has been made sales manager of the Westmoreland Fuel Co., Farmers Bank building, that city.

George C. Isbester has resigned as district sales manager of the Rail Joint Co., at Chicago, and has become district sales manager of welded and weldless products for the American Chain Co., Inc., with headquarters at Chicago.

Franklin Remington has been elected chairman of the board of directors of the Foundation Co., New York, shipbuilder. John W. Doty was elected president of the company and H. J. Deutschbein, first vice president and general manager

Don M. Sutor has been placed in charge of the St. Louis office of the Sullivan Machinery Co., as sales manager, succeeding Phillips S. Jarvis. R. S. Wiener has been appointed district manager at El Paso, Tex., in place of Mr. Sutor.

Guy D Anderson has been appointed general sales manager of the coke department of the Reilly-Peabody Fuel Co., Frick building, Pittsburgh. Mr. Anderson has been with the company for some time and now succeeds T. J. Atkinson, who recently resigned.

Paul Mitchell, recently discharged as a sergeant of the provisional supply depot, American expeditionary forces, France, has returned to Chicago and has resumed his duties as traveling representative for the Independent Pneumatic Tool Co., 600 West Jackson boulevard, that city.

H. G. Nash recently was made manager of the Huntington, W. Va., district mine car department of the Hyatt Roller Bearing Co., New York City, Harry D. Hynds also is assigned to the same district to represent the Hyatt company in the mine car field.

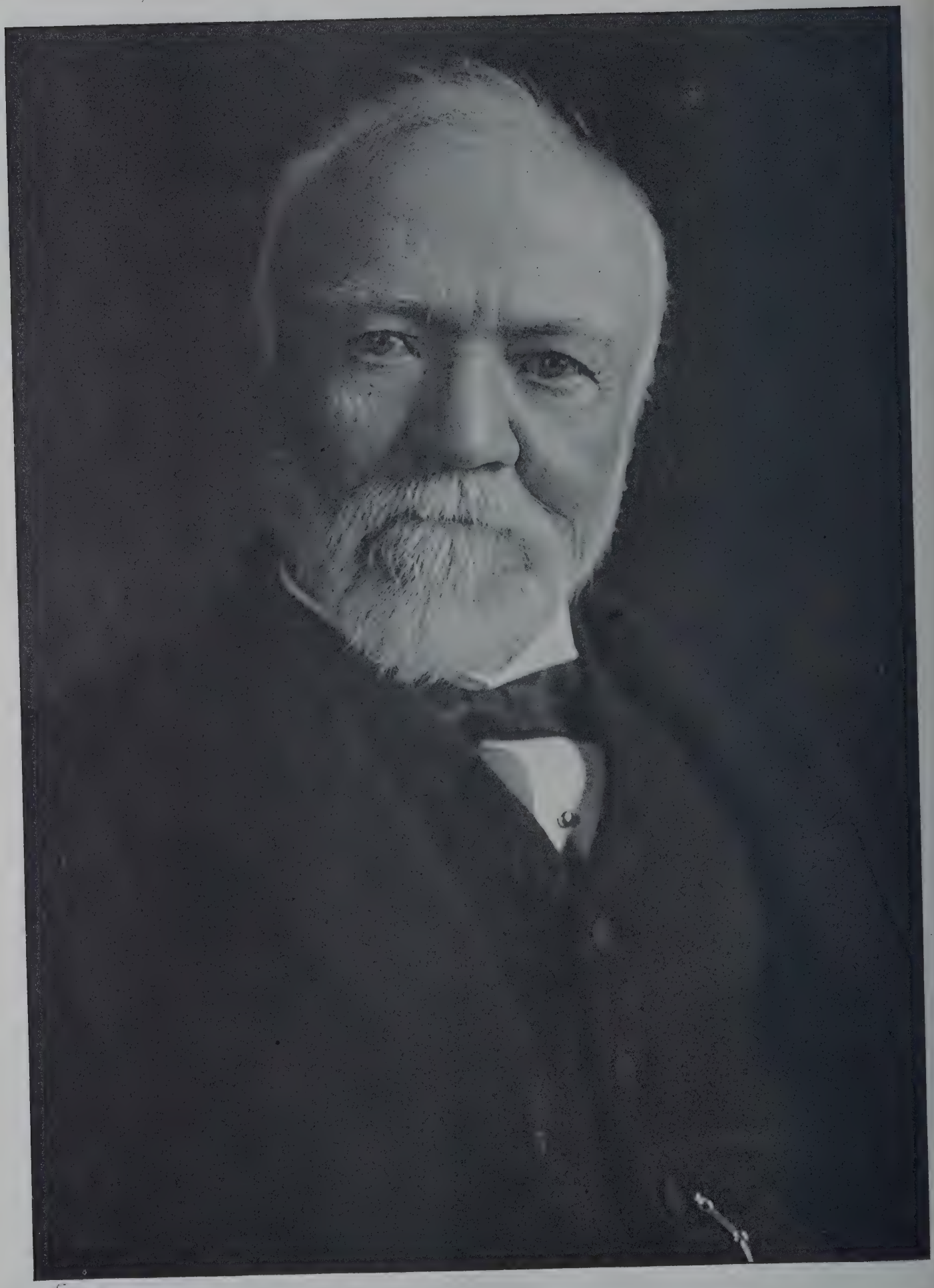
Harvey C. Bartel, formerly identified with the coke industry in the Connellsville, Pa., region for about 10 years, has been placed in charge of the branch office recently established in Uniontown, Pa., by Fairbank & Co., Wade building, Cleveland, for the purpose of dealing in coal and coke.

Tampton Aubuchon has resigned as general manager of the Louisville Industrial Foundation, Louisville, Ky., which has been active in locating many manufacturing enterprises in that city. Mr. Aubuchon has been identified with the organization since December, 1916, and has had charge of the Foundation's $1,000,000 factory fund.

M. W. McClane was elected president of the Aetna Foundry & Machine Co., Warren, O., at the recent annual stockholders' meeting, where M. W. McClane, W. M. McKee, G. P. Gillmer, V. E. Rehr were elected directors of the company. Mr. Rehr was made vice president, G. P. Gillmer treasurer and M. C. Boyd was elected secretary.

Andrew Carnegie

1837-1919



ANDREW CARNEGIE

World's Great Steelmaster Dies

Andrew Carnegie's Death Comes Suddenly at Summer Home—Follows Brief Illness With Bronchial Pneumonia—In 1849 Earned $1.20 Weekly—In 1902 Started to Give Away $25,000,000 Annually—Benefactions Widespread

ANDREW CARNEGIE, premier of steelmakers and world renowned philanthropist, builder of libraries, etc., died suddenly at his summer home, Shadow Brook, Lenox, Mass., early Monday morning, Aug. 11. He had been ill since Friday, Aug. 8, with bronchial pneumonia. His health, however, had commenced to fail several years ago, and the decline was particularly marked after the outbreak of the world war, which was a severe shock to him. For several years he has not been seen much in public. Prior to the war, his summers were spent at Skibo Castle, his Scottish estate, but the last three summers have been spent quietly at Shadow Brook. Last May, he with his wife and secretary removed to Lenox and up until a few weeks ago, he spent much time fishing in Lake Mahkeenac, which borders Shadow Brook, and in riding about the grounds. Latterly, however, he was confined to his home. The advanced age of 82 left but little vitality to withstand the attack of pneumonia. The accepted authorities give his birth as Nov. 25, 1837; others make it 1835.

Notwithstanding Andrew Carnegie's strenuous efforts to achieve his ambition to "die poor" it is generally believed that his income was so great, he essayed the impossible. Huge amounts are given in various estimates of the value of his estate. While he was born poor, he early in life, expressed the conviction that it was a sin to die rich. Since 1902, his benefactions have averaged in excess of $25,000,000 annually. A little over a half century before that Andrew Carnegie was a bobbin boy in a cotton factory earning 20 cents a day.

While not a pioneer in the American iron and steel industry as regards its founding, Mr. Carnegie's name is closely interwoven in the history of its progress. He was a mighty factor in the stirring industrial times which followed the Civil war and the Carnegie works at Pittsburgh formed the nucleus of the United States Steel Corp., organized by J. Pierpont Morgan. With the formation of that corporation, Mr. Carnegie retired from active participation in the steel industry with approximately $500,000,000 in Steel corporation gold bonds.

All through his business career, Mr. Carnegie maintained an original attitude and viewpoint on the problems of capital and labor and on the duties of men of wealth. In his later years, he gave expressions to these views as well as advice to young men in business. These views are condensed in the following summary:

* * * *

Explains What Business Means

IN an interview a few years ago, Andrew Carnegie answered the query, "What does business really mean to you," by saying, "Service to the community must be always the root of business. Dollar-making is not necessarily business. Speculation is the counterfeit of true business. It creates nothing. It is a parasite fastened upon the labor of all real business men. A modern corporation can manage a business more efficiently than can an individual or a government. Business to me has been the means to an end—nothing more.

"I confidently recommend a business career as one in which there is abundant room for the exercise of man's highest power and of every good quality in human nature.

"If a young man does not find romance in business, it is not the fault

Chief Events in Life of World-Famous Steelmaker

Born Nov. 25, 1837, at Dumfermline, Fifeshire, Scotland.

Brought to America with his parents in 1848, settling at Pittsburgh.

Became bobbin boy or weaver's assistant in an Allegheny, Pa., cotton factory in 1849 at $1.20 per week.

Employed as messenger in the Pittsburgh office of the Ohio Telegraph Co., at $3 per week, in 1851.

Thomas A. Scott, superintendent of the Pennsylvania railroad, hired him in 1854 as his private telegraph operator at $35 per month. Soon became Mr Scott's private secretary.

Made first investment, buying 10 shares of Adams Express Co. stock at $60 a share; his mother mortgaged the home to raise the money.

Invested in a sleeping car company and in an oil well farm, which formed the nucleus of the Carnegie fortune.

In 1864, purchased an interest in the Iron City Forge Co., Pittsburgh; with Andrew Kloman and Henry Phipps. Then the Cyclops Iron Co. was started.

On April 25, 1865, helped to organize the Keystone Bridge Co., and shortly after resigned from the Pennsylvania railroad.

On May 1, 1865, the Union Iron Mills Co., was incorporated whose product chiefly was purchased by the Keystone Bridge Co.

Purchased control of Carnegie, McCandless & Co., which dissolved on Oct. 12, 1874, to be succeeded by the Edgar Thomson Steel Co., Ltd., with works at Braddock, Pa., incorporated at $1,000,000.

Introduced the making of steel by bessemer process upon his return from Europe, and in 1877 built the second Lucy furnace, both of which furnaces furnished pig iron for the Edgar Thompson works.

Purchased Homestead Steel Co., and the Duquesne Steel Works, Duquesne, Pa.

The Carnegie Steel Co. was formed in 1899, with a capital stock of $100,000,000, employing 45,000 workpeople.

In 1901, he sold out to the United States Steel Corp., and retired.

Died Aug. 11, 1919, at Shadow Brook, Lenox, Mass., his summer home.







INADEQUATELY DO THE PICTURES SHOW THE IMPOSING MAGNIFICENCE AND GRANDEUR OF ANDREW CARNEGIE'S HOMES. BORN IN THE UPSTAIRS ROOM OF THE HUMBLE COTTAGE AT DUNFERMLINE, SCOTLAND, SHOWN IN THE CENTRAL ILLUSTRATION, NONE VENTURED THE THOUGHT THAT HE WOULD ONE DAY BECOME LAIRD OF STATELY SKIBO CASTLE, ILLUSTRATED AT THE TOP. NOBODY IMAGINED HE WOULD OWN AMERICAN MANSIONS. THE ONE ON FIFTH AVENUE, NEW YORK IS SHOWN ABOVE ON THE LEFT AND ON THE RIGHT IS HIS HOME IN STAMFORD, CONN. BELOW IS ILLUSTRATED SHADOW BROOK, LENOX, MASS., WHERE HE SPENT HIS SUMMERS SINCE THE BEGINNING OF THE WAR IN 1914.





of business. Business is not all dollars. These are but the shell—the kernel lies within and is to be enjoyed later, as the higher faculties of the business man, so constantly called into play, develop and mature."

* * * *

Surrounded by Big Men

IT is a well known fact that perhaps the greatest contributing factor to Andrew Carnegie's success, was his peculiar faculty for surrounding himself with enterprising, energetic and capable young men. He was always quick to recognize ability in others and that recognition always took a tangible character. Listed among those who have been styled "Carnegie partners" are many present-day millionaires. They have achieved success along with the success their efforts brought to Mr. Carnegie. To mention only a few, names like Charles M. Schwab, James H. Reed, Lawrence C. Phipps, William P. Palmer, Frederic H. Kindl, David G. Kerr, Alva C. Dinkey, W. B. Dickson and William E. Corey stand out in industrial history. They all owe much to their affiliation with Andrew Carnegie, who was always cognizant of the measure to which he was indebted to them.

Gave Success Formula

When asked at one time what was the secret of his success, he answered with spirit: "Concentration. It has been often written that I made money by taking chances—by scrapping machinery even though almost new for some improved inventions—but these explanations never appealed to me. Before I scrapped any machine, I took good care to have the working models of the new machines approved. The way I made my money was by concentrating—doing one thing at a time—trying to do it better and more efficiently than anyone else. The trouble with most business men is that they mix themselves up into too many things. There's nothing in it.

"The way to succeed is to select some definite line of work—however small and insignificant it may appear to be—to know more about that than anyone else knows and to let outside things alone. I succeeded by doing one thing at a time and doing it well. Then when I had accomplished one job—developed a certain kind of rail or angle iron—I would turn to something else. In the meantime, I saved my money and kept my health."

* * * *

Broad Views on Labor

MR. CARNEGIE'S attitude on the labor question is well known. Indicative of his success as one of the largest employers of men in the world, is his own statement: "With the exception of the strike at the Homestead mills, we have never had a serious disaster but that one was terrible indeed. If it became necessary for me to return to industrial life, I should not consider the problem of labor at all difficult. On the contrary, conferences with the men, a practice which we always pursued, would make the solution an easy one. Those conferences, I always enjoyed. We had one rule, come what may, we never thought of running our works with new men. Able, sober, well-behaved workmen, such as ours were, are not to be picked up on the streets. We wished no other kind. We always were particular in regard to drinking: First offense, men were excluded from work for 30 days; second offense, 60 days; third offense, we parted company.

Carnegiegrams

A MAN who dies possessed of millions of available wealth, which was ever ready in his hands, to be distributed, will die disgraced.

There is always a boom in brains—cultivate a good crop—you cannot overstock the market.

Man should always be money's master; he should keep money in the position of a useful servant.

To try to make the world in some way better than you found it, is to have a noble motive in life.

Common sense is the most uncommon and most valuable quality in man or woman.

Cultivate a taste for reading that you may know what the world has done and is doing.

The habit of thrift constitutes one of the greatest differences between the savage and the civilized man.

Business is a means to an end; the greatest end is service to the community.

Maintain your self respect as the only true way to win the respect of others.

A business career must widen and develop the intellectual powers of its devotee.

To use wealth in ways beneficial to the community requires no less ability than that which acquired it.

The main consideration of charity should be to help those who help themselves.

The highest title man can write upon the page of history is his own name.

One of the serious obstacles to race improvement is indiscriminate charity.

Capital, labor and business ability are the legs of a three-legged stool.

As an end, the acquisition of wealth is ignoble in the extreme.

Happy is the man who has to work, to work hard and to work long.

Put all your eggs in one basket; then watch the basket.

You cannot push a man up a ladder unless he is willing to climb.

The race in life is to those whose record is best at the end.

No amount of ability is of the slightest avail without honor.

The vital enemy of labor is labor not capital.

A man must be egoistic before he is altruistic.

Mutual ignorance ever breeds mutual distrust.

Considered Homestead Strike Lamentable

"Because I was in Scotland at the time of the lamentable Homestead riot, I did not hear of it until days after it had occurred. I cabled that I would take the first steamer home. My partners asked me not to come.

"Some of the men at the works cabled me: 'Kind master, tell us what you want us to do and we will do it for you.' It was too late. I believed from the cable dispatch that all had been settled and that it was best to conform to my partners' wishes. They made a most generous offer to the workmen. The new Homestead rolling mills increased the production 60 per cent. Rollers were offered a wage increase of 30 per cent, one-half the total gain. I would not have done more. The error was made in starting with new men, against our rule.

Selects Own Epitaph

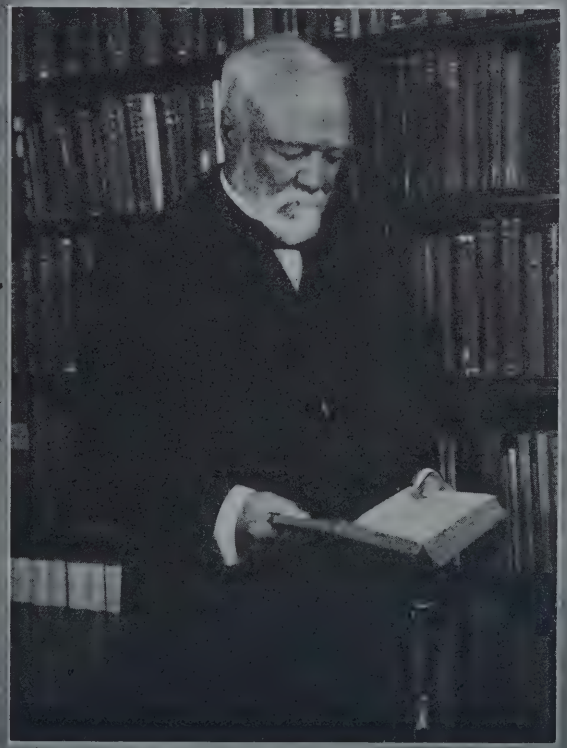
"The governor of Pennsylvania, I understand, wished certain of our workers arrested for riot and bound over for trial. Consequently some of these disappeared, among them the burgess of Homestead. Some time afterward my friend, Prof. Van Dyke of Rutgers College, was ordered to California for his health. Upon his return he told me that he had met the ex-burgess working as a laborer in a Mexican mine at Sonora. I asked him to offer McLuckie any help he might need, and upon his return to the west he did so. Meanwhile McLuckie had got a position with the Sonora railways, driving wells, and was succeeding admirably. The professor said: 'You don't know whose money I was told to help you with.' He said that he had no idea. 'Well, it was Mr. Carnegie's. Then came the slow, earnest response: 'That was damned white of Andy.'

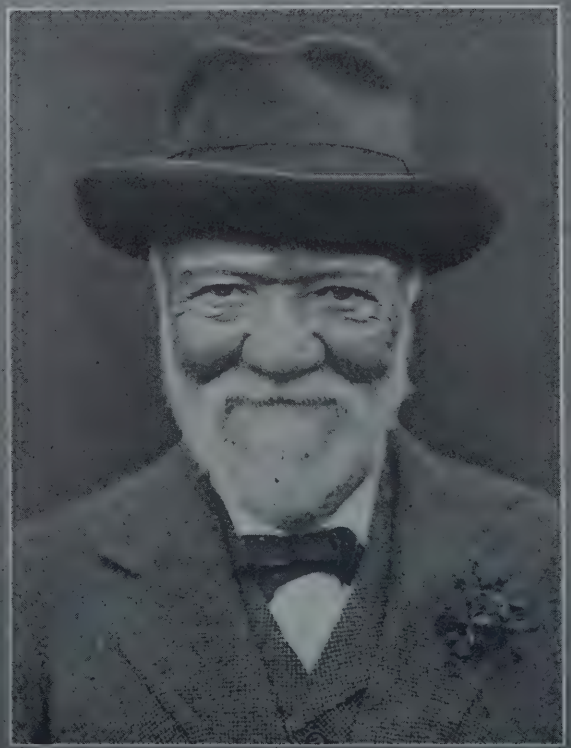
"When I heard this, I suggested to my friend Van Dyke that it wouldn't be a bad epitaph to grace one's tombstone. If it ever did, I hoped there would be no long blank

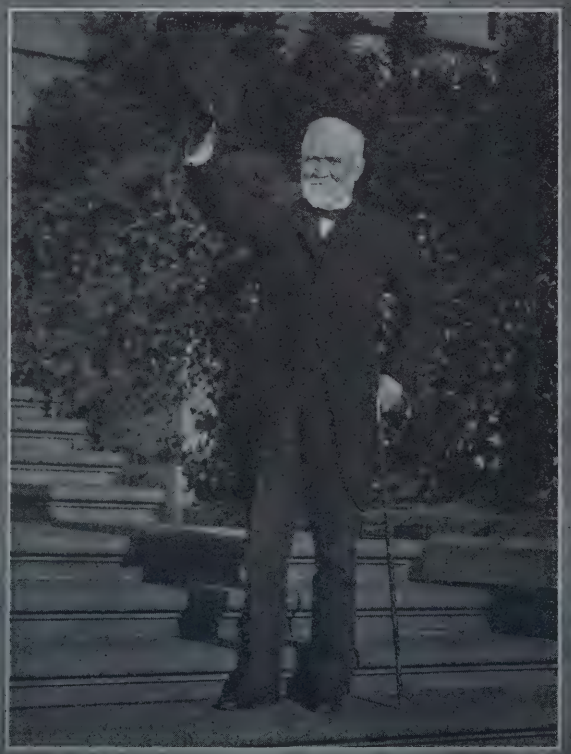
Personal Glimpses of Andrew Carnegie

MUCH OF THE FINANCIAL ACUMEN WHICH TOOK CARNEGIE, PHIPPS & CO., AROUND THE INDUSTRIAL ROCKS IN THE EARLY DAYS, CAME FROM ANDREW CARNEGIE'S FORMER PARTNER, HENRY PHIPPS. NATURALLY, THIS RESULTED IN A LIFETIME FRIENDSHIP. THE TWO OLD IRONMASTERS ARE SHOWN IN THE TOP ILLUSTRATION. ALWAYS A VORACIOUS READER, GOOD BOOKS WERE MR. CARNEGIE'S FRIENDS. THE ILLUSTRATION BELOW AT THE LEFT, SHOWS HIM IN ONE OF HIS SEVERAL PERSONAL LIBRARIES. HE ALWAYS DEVOTED A PORTION OF EACH DAY TO READING, NO MATTER WHERE HE RESIDED AND HE ENDEAVORED TO ENCOURAGE THIS PRACTICE IN OTHERS BY BUILDING THOUSANDS OF LIBRARIES. A PICTURE OF HEALTH AND VIRILITY, MR. CARNEGIE IS SHOWN IN THE CENTRAL ILLUSTRATION BELOW, READY FOR A GAME OF GOLF, WHICH WAS ONE OF HIS CHIEF HOBBIES. HE WAS AN EXPERT WITH THE GOLF CLUBS. IN THE ILLUSTRATION BELOW TO THE RIGHT IS SHOWN THE CUSTOMARY GENIALITY WHICH HE ALWAYS DISPLAYED WHEN HE CAME IN CONTACT WITH THE GENERAL PUBLIC.









space between the d's. Each letter should be put down to give McLuckie's proper expression.

"One or two partners out of our 40 may, as Mr. Phipps states, sometimes consider me foolish 'in always yielding to labor,' while I am satisfied that for every dollar so spent we had indirectly ample and more than ample reward. Frankly I consider that folly was one of my best virtues."

* * * *

Favored Tax on Incomes

SEVERAL years ago, Mr. Carnegie made a speech in New York favoring a graduated tax upon incomes. He lived to see its inauguration. At that time, he said: "It is hard upon millionaires in particular, but it is good for them. I believe in every citizen of this country bearing his share of the taxation in proportion to his ability to acquire money and in direct proportion to the amount he has. I for one welcome the income tax as one of the wisest steps which this republic has ever taken."

As to customs taxes, Mr. Carnegie said at that time: "It may be doubted if any tax is evaded so generally and with so few pricks of conscience as the customs tax on material brought from foreign lands to our shores. That is one of our people's glaring faults."

* * * *

His Views on Wealth

IN his testimony on the witness stand in February, 1915, before the federal commission on industrial relations, he said that his business in life was to "do as much good in the world as I can." Once he was asked what consideration weighed most with him in making his great public gifts and he replied: "Why, the gratification of the wish I have always had to leave the world a little better than I found it. If ever I have a coat of arms, my motto will be, 'All's well, since all grows better.' My theory is that there is nothing in the world that is not improving and there is no limit to the ascent of man."

Several years ago he said, and he has often repeated it since: "The day is not far distant when the man who dies, leaving behind him millions of available wealth which was free for him to administer during life, will pass away, unwept, unhonored and unsung, no matter to what use he leaves the dross which he cannot take with him. Of such as these the public verdict will be, 'the man who dies thus rich, dies disgraced.' Such, in my opinion, is the true gospel concerning wealth, obedience to which is destined some day to solve the problems of rich and poor and to bring peace on earth and good will to men."

* * * *

A Lover of Literature

FREQUENTLY, it has been said that one of Andrew Carnegie's mottoes was: "When in doubt, found a library." Mr. Carnegie had founded approximately 3000 libraries. They adorn cities all over this country and abroad.

He was always fond of reading and Shakespeare was one of his favorite authors. A few years ago at a birthday celebration in New York, attended by the members of the Young Men's Bible class of the Fifth Avenue Baptist church and by John D. Rockefeller Jr., he told, among other things, how his study of Shakespeare had benefited him throughout his life. He said that as a boy, when delivering a telegram in a theater, he had been admitted without charge. The play being enacted was one of Shakespeare's. It so impressed him that he secured a copy of the poet's works and began the study which he pursued all his life.

Andrew Carnegie's hopes for international peace became almost an obsession with him. At a cost of $1,500,000, he built The Hague peace palace, at which many peace parleys were held.

Carnegie's Hobbies

MUSIC: Mr. Carnegie has contributed over $6,000,000 for the installation of approximately 7000 church organs. His own magnificent organ at Skibo castle furnished music during the dinner hour. A piper marched around the castle each morning, playing stirring music on his pipes.

WRITING: Among the many works from Mr. Carnegie's pen are: "An American Four-in-Hand in Britain" (1883); "Round the World" (1884); "Triumphant Democracy" (1886); "The Gospel of Wealth" (1900); "The Empire of Business" (1902); "The Life of James Watt" (1906), and "Problems of Today" (1909). Many contributions to magazines have been made by him.

READING: He has always been a reader. Shakespeare has been his life study. As a boy he borrowed books and thus early resolved that should circumstances permit, he would make books accessible to all. The Carnegie libraries have done this.

SIMPLIFIED SPELLING: He always claimed that useless letters in words were misdirected energy. A few years ago he was riding this hobby horse. He said: "I convinced one man this afternoon. I told him to write 'tho' and then ask himself why as a rational man he should add 'ugh' to it." He has rigidly followed all rules for simplified spelling.

FISHING: Elaborate salmon and trout hatcheries were installed by him at Skibo castle. Fishing was one of his chief hobbies.

GOLFING: Before he became too feeble for it, he became an expert in playing golf. His private course at Skibo was noted as one of the best.

YACHTING: He has been the owner of several palatial private yachts, including the EVERGLADES, *the* SEABREEZE *and the* SURF.

GARDENING: He always spent considerable time in his gardens, where roses always grew in profusion, planting, trimming, cutting, etc.

A Millionaire's Duty

TO set an example of modest, unostentatious living, shunning display and extravagances; to provide moderately for the legitimate wants of those dependent upon him, and, after doing so, to consider all surplus revenues which come to him simply as trust funds, which he is called upon to administer, and strictly bound as a matter of duty to administer in the manner, which, in his judgment, is best calculated to produce the most beneficial results for the community. The man of wealth thus becomes the mere agent and trustee for his poorer brethren, bringing to their service his superior wisdom, experience and ability to administer, and doing for them better than they could or would do for themselves.

(Signed) ANDREW CARNEGIE.

Andrew Carnegie Gave With Lavish Hand

AMONG the many benefactions by Andrew Carnegie, the following is a diversified list which gave him ample proof that his was the correct theory, namely that a man to obtain the most out of his wealth should see to its disposal while yet alive:

The Carnegie Corp. of New York, which directs his endowments for the advancement of education and research	$125,000,000
Libraries	55,000,000
Carnegie Institute, Pittsburgh, which was considered by Mr. Carnegie himself as being his greatest gift	27,000,000
Carnegie Institution, Washington, designed for the purpose of original research in science, literature and art	22,000,000
Pension funds	15,000,000
Small colleges, United States	20,000,000
Carnegie Foundation for the advancement of teaching	16,125,000
Carnegie United Kingdom trust	10,000,000
Scotch universities	10,000,000
Endowment for international peace	10,000,000
Hero fund	10,540,000
Carnegie Steel Company's employes	5,000,000
Dunfermline endowment, to purchase a glen and convert it into a park where all children might play. He remembered that as a boy, he often looked longingly at it but admittance was forbidden	5,000,000
Miscellaneous in the United States	18,000,000
Miscellaneous in Europe	2,500,000
Total	$351,165,000

Master Minds Meet at Formation of Steel Corporation

Prior to the Exchange of These Historical Letters, All Arrangements for the Greatest Business Deal in History, Rested on the Spoken Word of the Two Principals

ANDREW CARNEGIE

FIVE WEST FIFTY-FIRST STREET

Messrs. J. P. Morgan & Co.,
Wall and Broad streets,
New York City.

New York, February 26, 1901.

Dear Sirs:

Referring to my conference with Mr. J. P. Morgan, and to your request that the results of that conference shall be stated definitely, so as to afford a basis for your further proceeding in connection with your negotiations with the United States Steel Corporation, I have to state to you as follows:

First: I understand that the United States Steel Corporation, a corporation organized under the laws of New Jersey, is about to issue and deliver its preferred stock for an amount approximating $450,000,000, *and its common stock for an amount approximating* $450,000,000, *and its 5 per cent bonds for the aggregate principal sum of* $300,000,000.

The stocks of the United States Steel Corporation are to be received by the syndicate represented by you, and a portion thereof is to be delivered in payment and exchange for stocks of the companies hereinafter named, provided that in no instance shall there be received less than two-thirds of the total outstanding capital stock of either of said companies, which two-thirds in each instance shall include two-thirds of the outstanding preferred stock of such company. The shares of the United States Steel Corporation to be issued in excess of the amounts deliverable for the aggregate amount of such shares of the companies hereafter named, are to be retained by and belong to the Syndicate which is to pay to the United States Steel Corporation certain cash sums.

Second:. That the other companies whose stocks are to be received in exchange for the stock of the new company are as follows:

The Carnegie Steel Co., Federal Steel Co., National Steel Co., American Steel & Wire Co. of New Jersey, National Tube Co., American Sheet Steel Co., American Steel Hoop Co. and American Tin Plate Co.

Third: I will deliver to you, or, upon your order for delivery, to the United States Steel Corporation 5 per cent bonds of the Carnegie Company of the par value of $86,145,000, *and 92,996 shares of the capital stock of that company of the aggregate par value of* $92,996,000, *and in payment therefor will accept the bonds for* $225,639,000 *(par value) of the United States Steel Corporation to be secured by a mortgage or pledge upon all its property now held or hereafter acquired (including bonds of the Carnegie Company as acquired), in general form similar to the mortgage or pledge now securing the collateral trust bonds of the Carnegie Company, and in form to be approved by my counsel, and providing for a sinking fund of 1 per cent per annum and minus redemption clause. It is understood, of course, that the charge of the collateral trust indenture upon property hereafter acquired by the company will be upon property so acquired, subject to the terms of the acquisition thereof, and also that such charge shall be so arranged as not to embarrass or limit the company in the use or disposition of property (other than stocks of the underlying companies and bonds of the Carnegie Company) not constituting an essential part and feature of the business of the company; and, further, that proper provision shall be made for the releasing from the lien of indenture property which may cease to be valuable to the company for the prosecution of its business, or which may be for the benefit of the company to exchange or alter for the business advantage. It is also understood that the charge of the indenture shall not apply to the current assets or receipts of the Corporation.*

Fourth: Knowing that upon the basis of this letter you are about to make a public offer, asking that the stock of the other companies be deposited on or before April 1, 1901, I will deposit, or cause to be deposited, with your firm, for the purpose of the transaction and against your receipt therefor, to be approved by my counsel, the stocks and bonds of the Carnegie Company above mentioned, it being understood that the bonds of the United States Steel Corporation to be received by me will be ready for delivery on or before the first day of July, 1901.

I am to receive a sum equal to my proportionate share as a stockholder of the monthly profits of the companies owned by the Carnegie Company until such time as the new bonds begin to bear interest, or the United States Steel Corporation, at its option, may pay interest on the new bonds from Feb. 1, 1901, in lieu of the interest on Carnegie Company bonds and profits on stock deposited by me.

The above proposition is conditional upon your taking from the other stockholders of the Carnegie Company, if they desire, their shares of stock at the same price per share as I am to receive, to be paid in preferred and common shares of the United States Steel Corporation, viz.: for each share of Carnegie Company stock 15 shares of preferred and 15 shares of common stock of the par value of $100 *each, and that the remainder of the bonds of the United States Steel Corporation shall be reserved and used to acquire bonds of the Carnegie Company.*

Yours very truly,
(Signed) Andrew Carnegie.

J. P. MORGAN & COMPANY

NEW YORK CITY

Andrew Carnegie, Esq.,
5 West Fifty-first street,
New York.

New York, March 2, 1901.

Dear Sir:

Referring to your letter of Feb. 26, 1901, we would say that upon the understanding (already confirmed by Judge Reed and Mr. Schwab) that our undertaking is based upon the completion of the transaction as stated in your letter or as approved by us jointly, and that (as arranged with you last evening over the telephone) the total bond issue may be $305,000,000, *we beg to confirm the arrangement as proposed by you.*

Very truly yours,
(Signed) J. P. Morgan & Co.

Ingot Production

In July Makes 13 Per Cent Gain Over June Output

Steel ingot production for July continued on the incline following the recovery in June after a steady drop since the first of the year, according to the statistics of the American Iron and Steel institute. A total of 2,508,176 tons were produced in July, against 2,219,219 tons in June, by the 30 companies which in 1918 produced 84.03 per cent of the output of the country. This is a gain of 288,957 tons or 13 per cent. Open-hearth production was 1,692,257 tons, 183,373 more than that of June, 1,692,257 tons. Bessemer totaled 625,246 tons, a gain of 103,612 tons over the 521,634 tons in June. Production of all other ingots was 7300 tons compared to 5328 tons in June, an increase of 1972 tons. The greatest percentage increase was made in the latter followed by bessemer and open-hearth.

Following are the institute's production figures from January, 1918 to July, 1919:

Months	Open hearth, gross tons	Bessemer, gross tons	All other, gross tons	Total, gross tons
Jan., 1918	1,763,356	429,588	10,901	2,203,845
Feb.	1,805,233	454,457	14,051	2,273,741
Mar.	2,331,048	763,255	16,078	3,110,381
Apr.	2,377,974	769,249	16,187	3,163,410
May	2,475,131	796,244	15,858	3,287,233
June	2,281,718	786,380	15,348	3,083,446
July	2,311,545	784,997	17,093	3,113,635
Total for 7 months	15,346,005	4,784,170	105,516	20,235,691
Aug.	2,299,177	766,860	17,643	3,083,680
Sep.	2,407,993	772,863	16,802	3,197,658
Oct.	2,527,776	807,043	17,377	3,352,196
Nov.	2,291,720	753,409	15,631	3,060,760
Dec.	2,273,189	706,844	12,273	2,992,306
Total 1918.	27,145,860	8,591,189	185,242	35,922,291
Jan., 1919	2,351,153	749,346	7,279	3,107,778
February .	2,043,635	655,206	5,842	2,704,683
March ...	2,100,528	555,332	6,405	2,662,265
April	1,732,447	500,770	6,494	2,239,711
May	1,506,015	414,392	8,617	1,928,024
June	1,692,257	521,634	5,328	2,219,219
July	1,875,630	625,246	7,300	2,508,176
Total for 7 months	13,301,665	4,021,926	47,265	17,370,856

Daily average production for the 30 companies during July was 96,468 tons or 114,801 tons for the whole industry. The same figures for June were 88,768 tons and 105,638 tons. The July production was at the rate of 35,243,907 tons annually or 2,813,041 tons greater than the June rate of 32,430,866 tons. When compared to the high-point production of October, 1918, when the rate was 45,359,250 tons annually, the July production represented 77.8 per cent, a gain of 6.2 per cent over June. The total for the first seven months of this year is 17,370,856 tons or 2,864,835 tons less than the 20,235,691 tons for the same period last year. Thus the 1919 production for seven months represents 84.8 per cent of the 1918 production for the first seven months. For 6 months the same percentage was 86.8 per cent.

Ore Tonnages Lower

Tonnages of iron ore mined and shipped from mines in the United States were less in 1918 than in 1917. This is revealed in the complete statistics of iron ore mining for last year, compiled under the direction of Ernest F. Burchard, of the United States geological survey, department of the interior.

The iron ore shipped in 1918 and 1917, aggregated 72,021,202 and 75,573,207 tons respectively, a difference of 3,552,005 tons or 4.7 per cent. The iron ore mines in the two years (exclusive of that containing 5 per cent or more of manganese) was 69,658,278 and 75,288,851 tons respectively, a difference of 5,630,573 tons or 7.5 per cent.

The following is a comparative table of iron ore tonnages shipped from mines in the United States in 1918 and 1917:

State	1918 Quantity (gross tons)	1917 Quantity (gross tons)
Alabama	6,121,087	7,101,586
California	3,121	2,207
Georgia	262,003	211,591
Maryland	6,070	10,730
Michigan	17,587,416	17,712,916
Minnesota	43,263,240	44,962,127
Missouri	71,968	38,770
New Jersey	375,238	474,708
New Mexico	275,266	231,604
New York	899,970	1,356,011
North Carolina	108,332	90,957
Pennsylvania	515,845	548,674
Tennessee	408,954	520,460
Utah	52,722	(a)
Virginia	400,135	472,337
Wisconsin	1,167,640	1,179,709
Other states (b)	502,195	658,910
	72,021,202	75,573,207

(a) Less than three shippers in Utah in 1917 and permission not granted to publish state total. Figures for this state, therefore, included in "other states."

(b) 1917: Arkansas, Colorado, Connecticut, Iowa, Massachusetts, Montana, Nevada, Utah, West Virginia and Wyoming; 1918: Colorado, Connecticut, Idaho, Massachusetts, Montana, Nevada, Texas, Washington and Wyoming.

Iron ore in 1918 was mined by 458 mines in 26 states while the previous year, 452 mines in 25 states contributed to the total output. The rank of the three states producing the largest quantity of iron ore, Minnesota, Michigan and Alabama remained unchanged in 1918. Last year Minnesota produced more iron ore than all other states together, furnishing a little more than 60 per cent of the total output of the country.

Shipments of ferroalloys of all classes in 1918 amounted to 750,868 tons, valued at $115,433,943, as against 634,021 tons in 1917, valued at $83,731,724. This means an increase in quantity of 116,847 tons or 18 per cent and in value of $31,702,219.

Benzol Prices

Influenced by Heavy Demand Reflect Upward Tendency—Phenol Inactive

New York, Aug. 8.—Owing to a continued heavy demand for benzol and phenol, an advance in prices may go into effect shortly. At present, pure benzol is holding at 24 cents to 29 cents with 90 per cent material at 23½ cents to 28½ cents, and pure toluol at 27 cents to 35 cents. Even in these quotations an upward tendency may be noted. Sellers state that the peak of the demand for motor benzol has been passed, and that, so active is the buying of benzol and toluol, the fuel is now being distilled for these latter products on a larger scale. A fairly good demand prevails for solvent naphtha, which continues to hold around 22 cents to 27 cents for spot and contract business.

Pending final arrangements for the marketing of government phenol, the trade continues to mark time. For the present, quotations are purely nominal. Trading in naphthalin remains of rather restricted proportions. Prices are unchanged at 6½ cents to 7½ cents for naphthalin in flakes, and 8½ cents to 9½ cents for naphthalin in balls.

Activity in sulphate of ammonia is increasing as a result of a better interest by the fertilizer manufacturers. As yet, buying hasn't assumed large proportions, but the volume of inquiry is steadily increasing and all indications point to an active market within the near future. Prices remain unchanged at $3.40 to $3.65 for spot and $3.25 to $3.40 for contract business.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.24 to .29
Toluol	.27 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.24 to .29
Toluol	.27 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Great Lakes Malleable Co., Milwaukee, recently incorporated with $100,000 capital, has perfected its organization by the election of the following officers: President, F. J. Vea, president of the Stoughton (Wis.) Wagon Co.; vice president, Olaf Hoff, Upper Montclair, N. J.; secretary, Raymond F. Ethier, Milwaukee; treasurer, C. M. Osterheld, Stoughton; general manager, W. T. Hercher, Milwaukee; directors, C. O. Egeland, Stoughton, and Matt Hoff, Upper Montclair. Mr. Hercher formerly was superintendent of the malleable foundry of the Chain Belt Co. and previously in the business at Bridgeport, Conn. Mr. Ethier also is a former Chain Belt Co. employe. The company is rebuilding the former Maynard steel foundry at 710-716 Reed street and erecting a new annealing building. It hopes to be ready to pour metal by Sept. 1.

* * *

INCREASE of from $150,000 to $300,000 in the capitalization of the Guide Motor Lamp Mfg. Co., Cleveland, is being used for financing a factory addition and new equipment for manufacturing automobile equipment.

* * *

AN order has been received from the Dodge Steel Co., Philadelphia, which recently built a steel casting plant, by the Electric Furnace Construction Co., that city, for a 3-ton electric furnace.

* * *

ORDERS for practically all of the machinery needed for its factory addition have been placed by the Rockford Milling Machine Co., Rockford, Ill., which recently tripled its $300,000 capitalization.

* * *

GEORGE W. BOOKER, president of the F. B. Stearns Co., automobile manufacturer, Cleveland, announces the company plans immediate construction of an addition to its plant to cost approximately $300,000.

* * *

NEW plant additions, which are being rushed completion, when completed will make the melting capacity of the Saginaw Malleable Iron Co., Saginaw, Mich., 160 tons per day. The additions consist of annealing room, 95 x 300 feet and a 2-story core building, 80 x 200 feet, the second floor of which will be equipped for rest and locker rooms, and a restaurant sufficient to feed 1000 persons ini 45 minutes. All new equipment needed for the extensions has been purchased, according to C. F. Drozeki, president and general manager.

* * *

THE West Virginia-Pittsburgh Coal Co. has awarded a contract to Roberts & Schaefer, Chicago, for improvements involving an outlay of $100,000. A new power plant is planned for the company's LaBelle mine, two miles of 70-pound rails on the main haulage from LaBelle mine and three new steel tipples.

* * *

THE Kirk Supply Co., Farmers' bank building, Pittsburgh, has become representative for western Pennsylvania, Ohio and western New York for the Chesapeake Iron Works, Baltimore, crane builders, and also the eastern district representatives for the International Clay Machinery Co., Dayton, O., for the sale of industrial cars made by that company.

* * *

IN order to care for its growing business the Decatur Bridge Co., Decatur, Ill., recently increased its capital. Various extensions to the company's plant have been made during the past few years and no addition to its facilities are contemplated at this time, although according to R. D. Wood, assistant manager, the company is planning to enlarge its facilities during 1920.

* * *

ORDERS for some new machinery have been placed by the Rickert-Shafer Co., Erie, Pa., manufacturer of machinery and machine tools, for the new wing it will add to its plant, but much of the equipment will not be ordered until construction is well under way or completed. An up-to-date hardening department will be installed and the company expects to market a number of new tools.

* * *

THE Kelsey Wheel Co., of Detroit, will invest $1,000,000 to increase its manufacturing facilities in Memphis, Tenn., and afford employment to 4000 men. Wheels and bodies for motor cars are the Kelsey product. Forty acres of land have been purchased as site for the additional buildings. The knocked specialties from the Kelsey works will be shipped to Detroit automobile plants for assembling.

* * *

ERECTION of a reinforced concrete foundry building is being rushed to completion by the Keystone Foundry Co., Plymouth, Ind., which was recently incorporated to manufacture small and medium sized gray iron, brass and aluminum castings. The company is capitalized at $10,000. J. E. Forgarty, formerly superintendent of the Electric Steel Co. of Indiana, Indianapolis, is president, and George Phol, who was connected with the Hill Pump Co., Anderson, Ind., is treasurer of the company.

* * *

CONTRACTS have all been let for the construction of the plant being erected by the Inland Motor Co., Evansville, Ind., incorporated recently at $250,000. It will build and assemble gasoline and steam trucks. Contracts for machinery, machine tools, etc., have yet to be placed and requirements include lathes, shapers, drill presses, arbor presses, cutter and drill grinder, power hack saws, etc. The company's address at present is 513-515 Sycamore street, but the plant will be located at the corner of Nevada avenue and Stringtown road.

* * *

ORGANIZATION of the Byron Engineering Works, Louisville, Ky., with a capital of $175,000, is announced by J. Stoddard Johnston Jr., who is acting chairman of a syndicate of Louisville business men who are backing the project. The company will manufacture pole and 4-wheel trailers and 3, 5 and 7-ton semitrailers for distribution throughout the United States. Present plans contemplate an annual output valued at approximately $750,000. O. E. Byron, automotive engineer, formerly identified with a truck trailer manufacturer, will be one of the chief officers of the company. Offices are to be established in Louisville and the company shortly will start development of its products, tools, jigs, and dies and its sales department will soon be organized.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

ORGANIZED by Warren W. Baker, Francis S. Carr, L. Norris Hall and Stephen J. Carroll, officers of the Pennsylvania Steel Export Co., Widener building, Philadelphia, W. W. Baker & Co., will engage in a steel jobbing business. They have acquired a 3-story concrete building at 940 Front street, Philadelphia, which has 16,000 square feet of warehouse space. Eventually it will house both Baker & Co., and the Pennsylvania Steel Export Co. While at present W. W. Baker & Co., will handle only hot rolled bars and wire products, later it will job miscellaneous steel products.

* * *

WORK of getting the Riverside plant of the National Tube Co., at Benwood, W. Va., ready for operation is progressing steadily. Fires have been lighted in No. 1 blast furnace of the plant and it is expected to be pouring metal in a few days.

* * *

THE Snell Mfg. Co., Fiskdale, Mass., one of the largest makers of augers and bits in the United States, began operations on a 9-hour day schedule, Aug. 4, this being the first time in its history of 85 years that the plant has been operated less than 10 hours a day.

* * *

THE Woodruff Coal & Iron Co., Oliver building, Pittsburgh, recently was appointed exclusive sales agent for the Chaplin Collieries Co., and the Scott Run Coal Co., Morgantown, W. Va. The mines of the two companies operate in the Pittsburgh and Sewickley seams.

* * *

THE resignation of H. L. Wadsworth from the American Foundry Equipment Co. and the Sand Mixing Machine Co., Inc., will not interfere with the manufacture of sand blast equipment by those combined companies. It has become a permanent branch of their business.

* * *

THE Kaukauna Machine Works Co., Kaukauna, Wis., recently shipped 17 power hammers to Paris, France, rounding out the largest month's business in the history of the company. The shipment comprised five each 25 and 50-pound hammers, three 100-pound and two each 250 and 500-pound machines.

* * *

INCORPORATED at $2,500,000, the Van Sicklen Speedometer Co., Chicago, will expand its manufacturing facilities and its business considerably. Eventually the plan is to furnish speedometers for the Willys automobile plants as well as to many other automobile manufacturers on contracts which have been negotiated.

* * *

EXTENSIVE alterations and improvements are being made to its plant by the Dayton Steel Co., Dayton, O. When they are completed, the company will be able to turn out approximately 600 tons of structural steel monthly. It contemplates the carrying of a large stock of shapes and plates so as to be in a position to take care of local contractors' requirements quickly, and be able to render the required service on heavier jobs.

* * *

PLANS now are being drawn for an artificial ice plant for the Minneapolis Sanitary Ice Co., 535 Metropolitan Bank building, Minneapolis, and the latest types of machinery will be installed. The main building will be one story, of brick and concrete construction and will be 75 feet wide x 800 feet long. It will have an addition, 50 x 150 feet high for permanent ice storage. It is expected that the plant will be in operation by Jan. 1, 1920.

* * *

WITH the purchase of 106 acres in the eastern extremity of Elyria, O., the Willys-Overland Co., that city, has announced its intention of building the largest engine works of the kind in the world. The property faces Abbey street and the New York Central railroad. The product of the plant will be sleeveless engines and engines for home lighting plants. The company contemplates the employment of 9000 men when the plant is finished.

* * *

OFFICERS of the Sheffield Steel & Iron Co., McCormick building, Chicago, recently organized are: President and treasurer, Richard Hunt Hallstead; vice president and general manager, H. C. A. Mitchell; vice president and sales manager, John W. Taylor. The object of the company is to buy and sell raw, semi-finished and finished steel products and carry stocks of steel bars, flats and sheets. The company advises it ultimately plans to build its own rolling mill.

* * *

WITH its plant working to capacity, the Ottawa Body Co., Ottawa, Ill., manufacturer of automobile bodies, which was recently incorporated with $100,000 capital, is now appointing distributors and dealers throughout the country. Officers are: President, A. Richards, Ottawa, Ill.; secretary, H. J. Mitchell, Joliet, Ill., and general manager, A. F. Scott, Detroit, who formerly was connected with the Packard Motor Car Co. and the Kelsey Wheel Co., both of Detroit.

* * *

FOR the designing and manufacturing of machine tools, the Hanson-Whitney Mfg. Co., Hartford, Conn., has been organized by B. M. W. Hanson, who until recently was vice president and works manager of the Colt's Patent Firearms Mfg. Co., that city. Clarence E. Whitney and F. W. Young, also of Hartford, are affiliated with the new company, of which Mr. Hanson is president. Prior to his connection with the Colt company, Mr. Hanson was connected with the Pratt & Whitney Co.

* * *

CONSTRUCTION of a modern plant to replace one recently damaged by fire will be undertaken by the American Beauty Stove Co., Erie, Pa., as soon as the company has adjusted all matters pertaining to the fire. For the present the company plans to repair its damaged machinery and equipment and plans to be operating in its old plant shortly pending the erection of the new plant. According to W. E. Jordan, general manager, the demand for the company's goods has been increasing and resumption of a selling campaign will be taken up within ten days.

Labor Unrest Hits Tool Trade

Some Inquiries Withdrawn—Wage Increases Mean Price Advancements—Standard Oil Chief Inquirer and Purchaser In East—Several Fair Sized Inquiries Out In Cleveland—Crane Awards Small

UNREST in the realm of labor is having its effect on the machine tool market. Prospective purchasers in the east have withdrawn their inquiries and state they will not make purchases until the present crisis is past. The granting of wage increases to machinists in the Pittsburgh district foretells additional advances in tool prices. Thousands of machinists are on strike in Bridgeport, Conn., Paterson, N. J., etc., and some tool builders have announced they will shut down their plants in the event of further trouble. In the Middle West, some manufacturers are curtailing their promised expansions and a holding back of expected machine tool inquiries is noted.

Notwithstanding these adverse conditions however, sellers of equipment are optimistic and prominent dealers in Cleveland see an era of tool selling ahead which will bear a resemblance to prearmistice days. In addition to the large inquiry from the White Motor Co., noted last week, on which some dealers still are busy, inquiries before Cleveland dealers include one for 50 tools from the Foote-Burt Co., Cleveland; three others call for 10 from the B. F. Goodrich Co., Akron; eight from the Aultman & Taylor Machinery Co., Mansfield, O., and six from the Burke Electric Co., Erie, Pa. The largest inquiry in the east comes from the Standard Oil Co., New York, for its various building projects. This company also is featured among the week's buyers of equipment. It is reported to have purchased $400,000 worth for its various plants, as well as about 80 machines for shipment to Roumania. Much buying lately has been done by the New England textile machinery manufacturers.

Small inquiries and sales are the rule in Chicago. In fact every tool distributing center reports an active movement of small amounts of light equipment. Many of the recent buildings erected have been constructed by well established companies, who already were well equipped and it only has been necessary to purchase equipment for filling in.

Two manufacturers of light equipment have announced their intention of increasing prices soon and a manufacturer of planers in the east states that an advance of 20 per cent on his product will go into effect Sept. 1. Increases on lathes and shapers are noted in Chicago, but other tools have not reached a higher level as yet.

The largest crane inquiries of the week are noted in Pittsburgh. The Carnegie Steel Co., and the Youngstown Sheet & Tube Co., each asked for four. Small inquiries for cranes are out from the A. Garrison Foundry Co., and the Duquesne Light Co., Pittsburgh. In the east, the majority of the inquiries now current, call for one crane only, trading not being as active as in recent weeks. The Bethlehem Steel Co. is inquiring for two additional cranes for its Sparrows Point plant and the Lehigh & Wilkesbarre Coal Co., Wilkesbarre, Pa., wants a 15-ton locomotive crane. Orders for cranes recently placed came from the Springfield Foundry Co., Indian Orchard, Mass.; the Wheeling Mold & Foundry Co., Wheeling, W. Va.; Acme Machine Tool Co., Cincinnati; Whitaker, Glessner Co., Wheeling, W. Va.; Ohio Seamless Tube Co., Shelby, O.; American Tube & Stamping Co., Bridgeport, Conn.; Abendroth Bros., Port Chester, N. Y., and the Singer Mfg. Co., Elizabeth, N. J.

The Eddystone Munitions Co., Eddystone, Pa., is selling about 300 machine tools and the salvage boards of the war department are offering approximately $2,500,000 worth of machinery in 17 cities.

Miscellaneous Demand Makes Good Tool Trade

OUTSTANDING in the activity of the eastern machine tool market is a heavy volume of buying by the Standard Oil Co., 26 Broadway, New York City. At the present time, this company through its New York office is said to be closing on approximately $400,000 worth of machine tools for numerous plants and new projects throughout the country. Various inquiries have been issued, and one of the latest orders to be placed involved several thousand dollars worth of miscellaneous equipment for a repair shop at Long Island City. Two plant projects, involving $1,000,000, for Trenton and Camden, N. J., respectively, have been announced recently, but so far as can be learned no lists have as yet been issued. Undoubtedly, the largest single instance of buying by the Standard Oil Co. of late is an order for about 80 machine tools for shipment to Roumania. It is understood the list went, almost in its entirety, to a New York concern.

While the improvement noted during the past two or three weeks is still in evidence in some sources, the increasing seriousness of the labor situation is acting as a damper on considerable business. Sellers of equipment state that in a number of instances, buyers who were in the market or else contemplating purchases in the near future have decided to postpone all action until the present crisis has passed. Some manufacturers,



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it is said, have made plans for closing up their shops completely and indefinitely in the event of any further trouble. Two storm centers in the east at the present time are Bridgeport, Conn., and Paterson, N. J. In both cities, thousands of machinists are on strike.

Despite this situation, some dealers report the best business in a number of weeks. No large lists are in evidence, yet they assert there is a good volume of miscellaneous demand. One particularly active source of demand at this time is said to be the textile equipment industry. Manufacturers of textile machinery, are said to be fairly overwhelmed with business, not only for account in this country but abroad, and are expanding their works as much as the scarcity of labor will permit. This situation is particularly true at the present time in New England.

The upward tendency in prices is still being noted. Two manufacturers of light machine tools have just announced they will advance their quotations 20 per cent in the near future. It is understood, also, that a leading manufacturer of planers has advised its representatives that a 20 per cent advance will be put into effect about Sept. 1.

The Eddystone Munitions Co., Eddystone, Pa., has issued for sale a list of more than 300 used machine tools. The bulk of the equipment is said to be of a special character. Reminiscent also of the war is a list of approximately $2,500,000 worth of tools now on sale by the war department at the district salvage boards of the army in 17 principal cities throughout the country. A fixed price has been set for each article, and complete details have been posted at the salvage offices. In New York City, there are six of these offices, as follows: Air service, 360 Madison avenue; chemical warfare service, 19 West Forty-fourth street; ordnance salvage board, 1107 Broadway; zone supply office, 461 Eighth avenue; signal corps, 8 and 10 Bridge street, and surplus property office, 109 East Sixteenth street.

Activity in cranes is not so pronounced. Inquiries have dropped off, and there isn't the volume of business being placed that there was recently. Included in recent awards is an order for a 5-ton electric crane, with 48-foot, 3-inch span for the Springfield Foundry Co., Indian Orchard, Mass. This business went to the Champion Engineering Co. Among other orders recently received by this company are two 20-ton cranes, with 5-ton auxiliaries, for the Wheeling Mold & Foundry Co., Wheeling, W. Va. One crane is to have a span of 46 feet, and the other a span of 26 feet, 10 inches. Further orders include a 5-ton crane, with 48-foot span, for the Acme Machine Tool Co., Cincinnati, a 10-ton electric crane for the Whitaker-Glessner Co., Wheeling, and two 10-ton cranes for the Ohio Seamless Tube Co., Shelby, O.

Abendroth Bros., Port Chester, N. Y., iron founders, placed two 3-ton cranes, with 30-foot spans, with Pawling & Harnischfeger. The Singer Mfg. Co. also placed two 3-ton cranes with this company. Both spans are 57 feet. The Lehigh & Wilkesbarre Coal Co., Wilkesbarre, Pa., is expected to close shortly on a 15-ton electrically-driven locomotive crane. The Bethlehem Steel Co. is inquiring for two additional cranes for Sparrows Point. One is of 15 tons capacity, with 61-foot span, and the other is of five tons capacity, with 33-foot span.

The American Tube & Stamping Co., Bridgeport, Conn., has placed a small overhead crane.

August Has Poor Start in Pittsburgh

AUGUST has gotten away to a rather slow start as compared with July in the Pittsburgh machine and tool trade. Manufacturers of steel mill equipment are fairly busy, but builders of cranes still wait the placing of several inquiries upon which they placed bids some time ago. The movement of light equipment also has tapered considerably from the July proportions. Plenty of business is in sight, but buyers probably are encouraged to put off placing orders by the uncertainty over the labor situation.

The Carnegie Steel Co. has an inquiry out for four cranes for its Edgar Thompson works. The Youngstown Sheet & Tube Co., Youngstown, O., also is in the market for four cranes and the A. Garrison Foundry

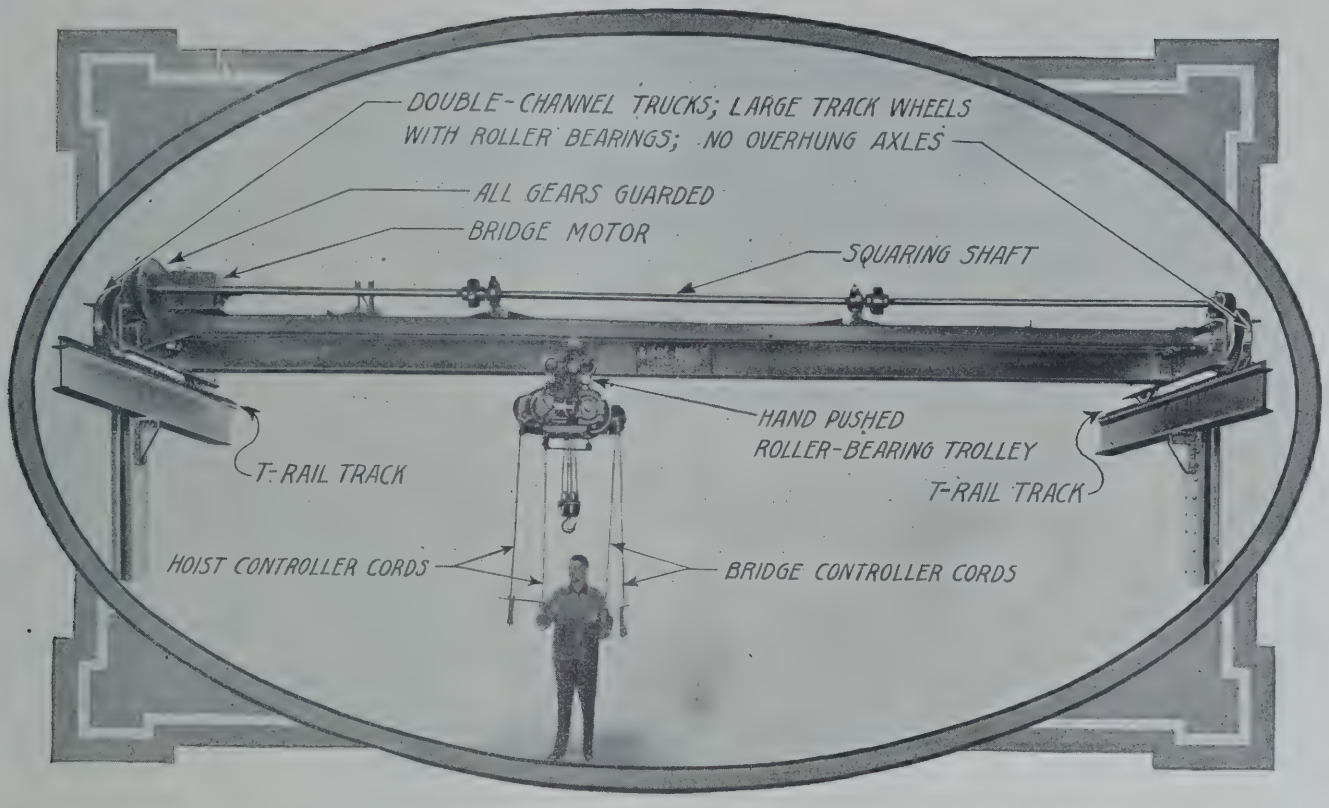
Sell British Machinery for More than Original Cost

SALES of British government war materials are bringing high prices, some machinery actually selling for more than it cost originally. Commenting on some recent sales, the *Ironmonger,* London, says:

"The most important lot in a sale of the plant of a national projectile factory at Thorncliffe Ironworks, Sheffield, last week, was a 3-crank 6-cylinder National gas engine of 750 brake horsepower which, together with a cooler, a starting set and a feeder panel, fetched £5500 ($28,400 normal rate), Newton, Chambers & Co. (Lim.), being the buyers. Electric motors sold readily, some of them fetching as much as £8 ($38.40 normal exchange) per horsepower, which is more than the cost of new machines. Sixteen vertical hydraulic forging presses of 150 tons power attracted no bidders, and these costly machines will probably be scrapped. A billet-breaking machine, nearly new, and valued at £1800 ($8640 normal), realized only £350 ($1680 normal). Four sets of horizontal 3-throw hydraulic pumps with automatic starting gear fetched £1000 ($4800 normal) each, or only £200 ($960) below the schedule price. Double-geared, self-acting screw-cutting lathes were sold at prices higher than the original cost, and in two cases profits of £60 ($288) and £65 ($312) were made. The prices varied from £128 ($614.40) to £285 ($1368). The lathes specially designed for special shell work did not sell. It is calculated that the government will net a substantial profit from the auction."

High prices for tools sold by British government boards also are noted by the London journal as follows:

"At a sale under the direction of the disposal board of the ministry of munitions, recently held at Halifax, £1050 ($5040 normal rate) was paid for a 6-ton Sentinel steam wagon which cost £750 ($3600 normal); a Churchill grinding machine which cost £368 ($1766.40) sold for £500 ($2400); a horizontal milling machine which cost £236 ($1132.80) was sold for £270 ($1296); and £180 ($864) was paid for a 20-inch stroke shaping machine, the original price of which was £130 ($624). A Brown & Sharpe type surface grinding machine which cost £120 ($576) was sold for £130 ($624). A sale of tools and machinery at the national projectile factory, Lancaster, realized about £150,000 ($720,000). This was the first sale held by the government in which the principle was followed that every second-hand machine before being offered should be put in such a condition that a purchaser could immediately set it to work. Buyers came from places as far apart as Greenock and Brighton, Yarmouth and Plymouth."



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Important Advantages

1. Crane always ready for service. Any shop hand can operate it. No need for keeping an operator up in a cage.
2. Pull a cord to operate hoist or crane; let go, and it stops. Simple as A, B, C.
3. All operating cords handy, both controllers mounted on hoist—right where the load is being handled.
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Wilkes-Barre . . . . . 2d National Bank Bldg.
Cleveland . . . . . 429 Rockefeller Bldg.
Detroit . . . . . 932 Dime Bank Bldg.
New Orleans . . . . . C. O. Hinz, Hibernia Bank Bldg.

Kansas City, Mo. . . . . 306 Elmhurst Bldg.
Seattle . . . . . 576 First Ave., S.
Portland, Ore. . . . . First and Stark Sts.
San Francisco . . . . . 582 Market St.
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Co., Pittsburgh, is inquiring for a crane. It is probable that at least one crane will be wanted for the new power plant of the Duquesne Light Co., which is to be erected at Cheswick, Pa., while the Phoenix Iron Works, Meadville, Pa., shortly will enter the market for a line of tools for its new machine shop. Competition on crane business is sharp and the willingness of some builders to sacrifice profits probably is keeping back orders, as buyers do not want to place them while the possibility of lower prices exists. Machine tools are firmly priced and with wage increases being sought from builders, it hardly is likely that lower prices will be seen.

Market in Cleveland is Fair

SEVERAL fair sized lists of tool requirements have reached Cleveland machinery dealers. These follow in the wake of the large one noted last week from the White Motor Co., Cleveland, for between 250 and 300 machines, several orders against which already have been placed. The Cleveland Duplex Machinery Co., Cleveland, received contracts which aggregated in excess of $25,000 on the White inquiry. Other dealers still are working on the list. One of the largest of the new inquiries comes from the Foote-Burt Co., Cleveland, machine tool builder. Its business growth has made necessary a new plant, for which it requires about 50 tools. The Aultman & Taylor Machinery Co., Mansfield, O., issues a list of eight tools at present and announces that more will be required later. The Burke Electric Co., Erie Pa., wants about six miscellaneous machines. The list of tool needs of the B. F. Goodrich Co., Akron, O., comprises 10 tools including an open side planer and will represent an outlay of about $25,000. The Firestone Steel Products Co., Akron, still is in the market for its large list announced a few weeks ago and the Firestone Tire & Rubber Co., that city, wants a shear for 4-inch x 1-inch stock.

Inquiries from territories outside the immediate vicinity of Cleveland continue to reach sellers of tools in that city. The Hardware City Mfg. Co., New Britain, Conn., is in the market for about $25,000 worth of tools and machinery. It will manufacture hardware specialties, steel and metal stampings. The Inland Motor Co., 513 Sycamore street, Evansville, Ind., is to manufacture gasoline and steam trucks. Its list comprises lathes, shapers, drill presses, arbor presses, cutter and drill grinder and power hack saws, etc. While the Rickert-Shafter Co., Erie Pa., manufacturer of machinery and tools, has placed some equipment orders for its new 2-story addition, a large number will not be placed until the building is completed.

Building activity on the part of manufacturers continues to promise large tool needs and announcements are expected soon. Unrest on the part of labor undoubtedly is holding up much business in machine tool trading. One of the largest projects to come to the attention of machinery sellers is the engine plant to be erected at Elyria, O., by the Willys-Overland Co. As announced it is to be the largest plant of its kind in the world and will employ 9000 men. Issuance of a list of its tool requirements is expected shortly. The F. B. Stearns Co., Cleveland, will construct a $300,000 addition immediately. The Guide Motor Lamp Mfg. Co., Cleveland has doubled its capital, to $300,000, to finance a factory addition and new equipment. The Kelsey Wheel Co., Detroit, is to spend $1,000,000 on expansions and improvements at Memphis, Tenn. The Lexington Automobile Co., Connersville, Ind., is building a plant 100 x 100 feet. B. F. Avery & Sons, Louisville, Ky., now are taking bids for the erection of a harvester plant 100 x 322 feet and a shear shop 100 x 120 feet, to cost $200,000. The American Radiator Co., Springfield, O., will require a miscellaneous lot of equipment for the machine shop it is building. The Spencer Metal Products Co., Spencer, O., has increased its capital from $100,000 to $1,000,000 to finance expansion and it probably will require considerable equipment.

Big Buying is Aggregate of Small Sales

ALTHOUGH the Chicago machine tool market has been almost barren of sizable inquiries for a number of weeks, its condition shows no sign of change. The heavy business which has kept up without interruption continues to be an aggregate of small buying. An occasional exception to this rule does not disprove it. Although a number of new plants have been built recently, it is a fact that in most instances they are for occupancy by established concerns which already have equipment and usually buying on account of the new plant is simply to fill in and round out the assortment.

Price advances have been made only on shapers and lathes up to this time and other tools have not yet been put on a higher level. Delivery is being pushed farther back and on most lines it is not possible to get new equipment in less than 60 to 90 days. Most buyers at present want immediate delivery and have been taking what they could get from warehouse floors, but the assortment thus offered is now much reduced. A recent sale in this district, which is larger than most, aggregated about $30,000 and covered a variety of light equipment.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

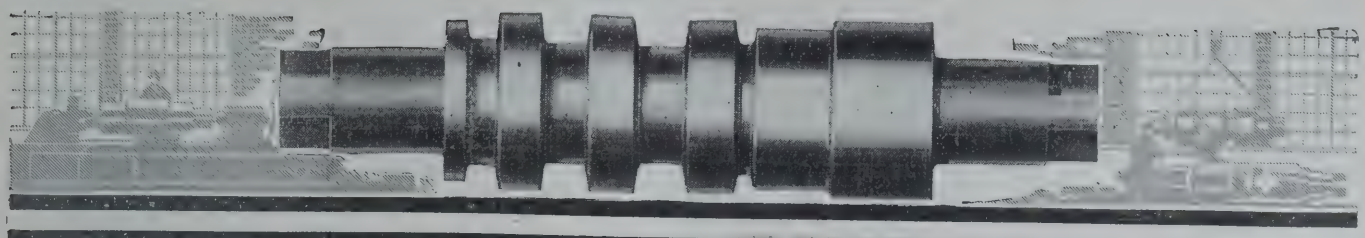
AUGUSTA, ME.—The Kistler Refining Co. has been incorporated to build refineries, wells, tanks, cars, pipe lines, etc., with $5,000,000, capital by D. A. Leland, R. W. Farris and C. L. Andrews.

BOSTON.—The McCulloch Mfg. Co. has been incorporated to make machinery and tools with $100,000 capital by Albert P. McCulloch, Daniel H. Sullivan and R. Berrenberg.

WINCHENDON, MASS.—The Alaska Freezer Co. has let the contract for a 48 x 72-foot addition to its foundry, a 3-story, 29 x 128-foot addition to its shipping building and a 3-story office building.

BOSTON.—The United Motor Equipment Co. has been incorporated with $25,000 capital by Leo. H. Dinner, H. B. Cohen and A. A. Cohen.

BOSTON.—Bids have closed for a brick, 2-story, 55 x 90-foot storehouse for the Holtzer-Cabot Electric Co.





Say, Fella's—

Just got off that boat I was tellin' y' about last week. Had some time! Rather roll with Hubbard Rolls than with these boats. Those rolls are steadier and as they're rollin' all the time they get to be a habit.

You'd better get the steady habit that comes with Hubbard Rolls.

So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



HOLYOKE, MASS.—The Cowan Truck Co., Canal street, has started work on a plant addition, 2-stories, 100 x 200 feet, to cost $100,000.

QUINCY, MASS.—The Pneumatic Scale Co. recently awarded contracts for a machine shop, 3-stories, 17 x 38 feet, to cost $75,000.

CRANSTON, R. I.—The United Wire & Supply Co. recently let a contract for a plant addition, 2-stories, 40 x 250 feet, to cost $100,000.

WOONSOCKET, R. I.—The French Worsted Co. recently let a contract for a boiler house addition to cost $35,000.

BRIDGEPORT, CONN.—The Bridgeport Brass Co. will take bids shortly for a foundry to cost $100,000.

PLAINESVILLE, CONN.—The Trumbull Electric Co. recently let a contract for a plant addition, 4-stories, 50 x 106 feet.

North Atlantic States

ALBANY, N. Y.—The Thatcher Foundry & Propeller Corp., will build a 1-story, 23 x 28-foot trimming shop and test pit to cost $8000.

BUFFALO.—The Johnson Rim & Parts Co. has been incorporated with $50,000 capital, by L. E. and H. R. and P. T. Large.

BUFFALO.—The Bilger Steel Products Corp. has been incorporated with $50,000 capital, by R. L. O'Brian, D. Rochester and E. E. Finck.

BROOKLYN, N. Y.—The Neptune Boiler & Machine Works, Inc., has been incorporated with $50,000 capital, by J. C. Wilcox, F. B. Johnson and M. J. McDade, 434 Forty-ninth street.

DUNKIRK, N. Y.—American Locomotive Co. will build additions to its Brooks plant.

FALCONER, N. Y.—The Falconer Iron Works is erecting an addition.

LOCKPORT, N. Y.—The Harrison Radiator Corp. has had plans drawn for a plant addition, 38 x 160 feet.

NEW YORK.—The Challenge Machinery Hardware & Tool Co. has been incorporated with $8000 capital, by E. S. Jones, C. P. Jochum and E. F. Licari, 505 Sixth street, Brooklyn, N. Y.

NEW YORK.—The Peters-Morse Mfg. Co., adding and listing machines, recently was incorporated with $125,000 active capital, by F. L. Morse, J. F. Miller and J. H. Barr, 374 Broadway.

NEW YORK.—The Century Metal Bed Corp. recently was incorporated with $25,000 capital, by M. Baumgarteb, C. Cartoon and M. Feldesh, 938 East Parkway, Brooklyn, N. Y.

SENECA FALLS, N. Y.—The Westcott Valve Co., Erie, Pa., will build a plant in this city.

SYRACUSE, N. Y.—The Syracuse Auto Parts, Inc., recently was incorporated with $35,000 capital, by W. B. Carroll, F. D. Russell and P. B. Schober.

WATERLOO, N. Y.—The Waterloo Wagon Co. will build a plant here to manufacture automobile and truck bodies.

WHITEHALL, N. Y.—The Whitehall Engineering & Machine Co. recently was incorporated with $10,000 capital, by M. and J. and S. J. Goodkin.

AMBRIDGE, PA.—The Ambridge Iron & Steel Co. has been organized by J. H. Hammond and others, and will erect a mill.

ERIE, PA.—The Lovell Mfg. Co. is considering an addition.

NANTICOKE, PA.—The Duplan Silk Co. is having plans drawn for a boiler house, 2-stories, 90 x 100 feet.

NEW CASTLE, PA.—The New Castle Rubber Co. is considering an addition.

PITTSBURGH.—The National Tube Co. is expected to start work shortly on a welding plant.

PITTSBURGH.—The Damascus Bronze Co. will build a 3-story service station to cost $40,000.

PITTSBURGH.—H. O. Swoboda, Inc., engineering, capital $15,000, has been incorporated by Hans O. Swoboda, Edward H. Stehlman, Edgewood; Sarah Fley, Millvale.

PITTSBURGH.—The United Fuel and Iron Co., capital $50,000, has been incorporated by Lawrence Snapp, Beaver, Pa.; Charles Yon, Coraopolis, Pa.; Robert M. Steffler, Pittsburgh.

YORK, PA.—The U. S. Chain & Forging Co. recently let a contract for a plant, 1-story, 150 x 200 feet.

WHEATLAND, PA.—Ground has been broken for a machine shop and power building for the Slick-Know Co.

WHEATLAND, PA.—The McClintic-Marshall Co. has a contract for a power plant and machine shop 70 x 250 feet for the Slick-Knox Steel Co.

WILKES-BARRE, PA.—The Wilkes-Barre Iron & Wire Co. has been organized by B. R. Jones, Thomas Meade, John R. Wilson of this city, with offices at 1008 Coal Exchange building and will enlarge and re-equip the plant of the Wilkes-Barre Structural Steel Co.

WILLIAMSPORT, PA.—The Williamsport Radiator Co. will erect a machine shop.

WILLIAMSPORT, PA.—The Northern Central Gas Co. will erect a gas plant.

WILLIAMSPORT, PA.—The Housel & Bair Machine Co. will enlarge its plant.

BLOOMFIELD, N. J.—The Simms Magneto Co. has had plans drawn for a plant addition, 2-stories, 70 x 120 feet, to cost $75,000.

EAST ORANGE, N. J.—The Key Bolt Appliance Co. has been incorporated with a capital of $250,000 to manufacture bolts and forgings. The incorporators are H. H. Picking, C. O. Guyer and E. R. Coburn.

ELIZABETH, N. J.—The Singer Mfg. Co., 149 Broadway, New York City, has awarded a contract for a 3 and 4-story foundry, 176 x 252 feet.

JERSEY CITY, N. J.—The Magneto Generator Starter Electric Co. has just been organized to manufacture electric starters. A. J. Weger, 2527 Boulevard, is manager.

MONTCLAIR, N. J.—Filtration Engineers, Inc., has been incorporated with $80,000 capital to manufacture engines, etc., by G. H. Caffrey, F. W. Young, Verona, N. J., and H. E. Kinner.

NEWARK, N. J.—A brick foundry will be erected by Gustave Schoener, at 80-84 Newark street.

NEWARK, N. J.—A permit has been granted the Seton Leather Co. for a $10,000 brick boiler room, and a $55,000 tannery.

NEWARK, N. J.—Kell, Hock & Co. has been incorporated to manufacture and deal in machinery, by Jacob Kell, Joseph Hock Jr., and David Kell. The company is capitalized at $75,000.

NEWARK, N. J.—The Atkinson & Long Mfg. Co., metal goods, etc., has been incorporated with $40,000 capital, by High Atkinson, R. D. Atkinson and A. T. Long.

NEWARK, N. J.—The Newark Metal Findings Co. has been incorporated with $25,000 capital, by William Bittner, Glenridge, N. J., C. S. H. Rich and P. H. Burr.

NUTLEY, N. J.—L. Sonneborn Sons, Inc., have had plans drawn for a 1-story factory building, 38 x 112 feet, with a boiler room extension, 40 x 52 feet.

PASSAIC, N. J.—The Passaic Metal Ware Co. recently purchased a tract of land on which it plans to erect houses for its employes.

PATERSON, N. J.—Benjamin Buckley's Son, Inc., has been incorporated with a capitalization of $10,000 to manufacture machinery. H. A. Tiffany, J. V. Barnitt and others are the incorporators.

PATERSON, N. J.—The Myers Auto Pump Co. has been incorporated with a capital of $100,000 to manufacture automobile pumps. G. F. Myers and E. M. Culp are the incorporators.

PERTH AMBOY, N. J.—A machine and general shop will be established by the Perth Amboy Hardware Co., 311 Madison avenue, to be 50 x 75 feet and cost about $10,000.

RIDGFIELD, N. J.—The Zestoy Mfg. Co. recently was incorporated with $75,000 capital to manufacture toys, etc., by Isadore Zion, Rose Zion and A. G. Fortwengle.

TRENTON, N. J.—The National Radiator Co. has awarded a contract to Aitken & Babbington, 115 South Stockton street for one-story addition, 60 x 250 feet, to cost $18,000.

WEST ORANGE, N. J.—The S. P. Townsend Co., 15 Central avenue, has been incorporated with $500,000 capital, to manufacture lawn mowers, steam rollers, machinery, etc.

WILMINGTON, DEL.—The Electric Steel Products Co., with a capital stock of $300,000, has been incorporated to manufacture and sell steel products of all kinds.

BALTIMORE.—The Hess Steel Co. is building two additions to its plant on Biddle street near Loney's lane.

BALTIMORE.—Bids are being received by the Reinhart Motor Car Co. for a factory building. Larry B. Rothschild is architect.

Central States Activity

ANTIGO, WIS.—C. F. Dallman has taken the contract to build a 2-story addition to the manual training department of the Antigo high school. With new machinery and tools, the work will cost $45,000.

BARTON, WIS.—Charles M. Stevenson, Chicago, designer and patentee of steel barn equipment specialties, has organized the Stevenson Mfg. Co. with a capital of $100,000. Architect J. F. Hennen, Fond du Lac, Wis., is preparing plans for a factory building, 80 x 128 feet.

BELOIT, WIS.—The South Beloit Stove & Mfg. Co. has been incorporated with $75,000 capital to take over the business of Charles H. Burgess & Son, and engage in the manufacture of gray iron castings, stoves, etc.

DE PERE, WIS.—The general contract for erecting a machine shop, paper mill and auxiliary buildings for the George Diamond Economy Process Co., has been taken by W. E. Ule, Stevens Point, Wis.

HARTFORD, WIS.—Bids are being taken by the board of public works for new boiler equipment for the municipal light and power plant.

JANESVILLE, WIS.—The General Motors Corp. is having plans drawn for a power house.

KENOSHA, WIS.—Another large bed spring plant was merged with the Simons Co., when it on Aug. 1 took over the plant of the Hirsch & Spitz Co.,



FARRELL-CHEEK

Quality Begins In The Laboratory

—and is verified there when the job is completed.

The Chemist and Metallurgist have the first and last word in regard to every order for Farrell-Cheek Steel Castings.

The very first step is the selecting of the correct type of steel for the particular conditions under which the castings are to be used, for herein lies the vital factor of *service*.

Even when metal specifications are furnished by the customer this procedure is followed, for we have frequently been able to suggest a more suitable metal than that specified, although, of course, the customer is not obliged to accept our suggestion.

Here also, in collaboration with the Foundry heads, are scientifically determined the proper positions for "gates," the correct sizes for "risers" and other important technical points upon which the ultimate quality of the castings depend.

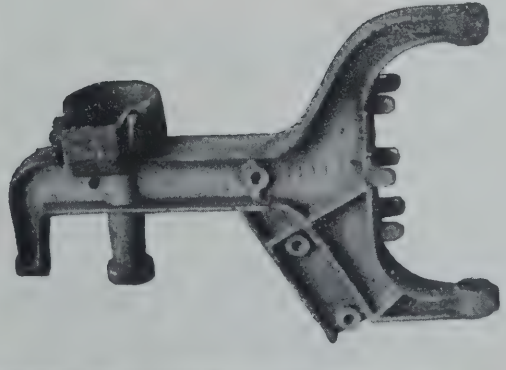
Then, when the run is completed, every single casting must pass the "examining physicians" and be certified as being up to Farrell-Cheek standards before being given "factory clearance."

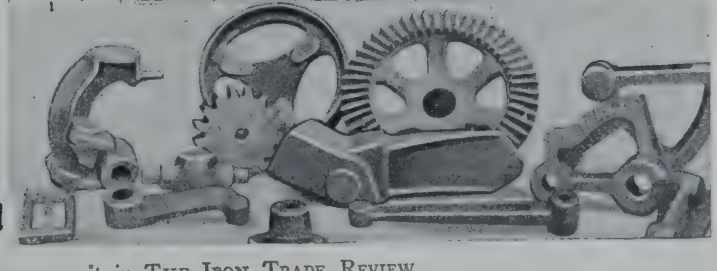
Send us your blueprints and let us tell you for how little more you can secure this super-quality.

Farrell-Cheek Steel Foundry Company
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Atlanta, Ga. The plant will be enlarged and new machinery installed.

KEWAUNEE, WIS.—The Leyse Aluminum Co., which is completing a large factory addition, has purchased the steam power plant of the Seyk Canning Co. and will provide additional motive power.

LANCASTER, WIS.—At a special election it was voted to issue $175,000 in bonds for the construction and equipment of a new high school, which is to have manual training and domestic science departments.

MADISON, WIS.—Articles of incorporation have been filed by the Madison Tool & Stamping Co. to manufacture tools, etc., with $10,000 capital. The incorporators are W. L. Woodward, T. Rosten and G. A. Benson.

MILWAUKEE.—The Thomas Furnace Co. has let a contract to the Warden-Allen Co. for a pig-casting machine.

MILWAUKEE.—The Standard Steel Corp. is taking bids for a plant, 1-story, 120 x 150 feet, and cost about $50,000.

MILWAUKEE.—The Milwaukee Paper Box Co. let the contract for a 5-story plant and power house, 120 x 145 feet, costing $275,000.

MILWAUKEE.—Work on the proposed bascule bridge over the Milwaukee river will be delayed 30 to 60 days by reason of the disapproval of plans.

MILWAUKEE.—J. M. Nash, 842 Thirtieth street, is taking bids for a plant addition, 33 x 125 feet, to be used for the manufacture of special woodworking tools and machinery.

MILWAUKEE.—The Koehring Machine Co., concrete mixers and paving outfits, is completing an assembling floor extension and will begin work shortly on an erecting shop, 75 x 326 feet.

MILWAUKEE.—The M. J. Skubal Co. has been incorporated with a capital of $10,000, to do welding and machinery repairing. The incorporators are Matthew Skubal, Joseph A. Stika and James Talatzko.

MILWAUKEE.—Application for a Wisconsin charter has been made in behalf of the Steel & Tube Co. of America, recently organized in Delaware as a merger of the Steel & Tube Co., Northwestern Iron Co. of Milwaukee and several other corporations in Wisconsin and upper Michigan. The application gives the capital stock as $42,500,000. Armin A. Schlesinger, First National Bank building, Milwaukee, is Wisconsin agent.

RHINELANDER, WIS.—John Dedier, proprietor of the Rhinelander Iron Works, plans to build a new molding building.

SHEBOYGAN, WIS.—The Vollrath Co., manufacturer of enameled ware, will eerct a 2 and 3-story office building, 60 x 147 feet, and remodel the present office quarters for production.

SHEBOYGAN, WIS.—The Kohler Co., Kohler, Wis., has started on plant extensions which will involve the expenditure of between $200,000 and $250,000. New construction includes a foundry, 160 x 300 feet and an engineering building, 130 x 275 feet.

TWO RIVERS, WIS.—A smelting and refining plant, 60 x 150 feet, will be erected by Sam Schwartz & Sons, scrap iron dealers, at an estimated cost of $20,000, including furnaces and other equipment. Architects Juul & Smith of Manitowoc are preparing plans.

WAUKESHA, WIS.—The Ludwig Stock Machine Co. will build a 1 and 2-story machine shop in the fall.

WAUPACA, WIS.—The Stewart Tractor Co., 906 First National Bank building, Milwaukee, will award contracts shortly for a machine shop, 80 x 125 feet.

WAUSAU, WIS.—The Wisconsin Valley Sheet Metal Co. and the Seeger Mfg. Co. have merged their interests in a new corporation styled the Metal Products Co., having a capital stock of $15,000. The principal line will be heaters for private garages, farm and isolated buildings.

WEST ALLIS, WIS.—Riesen Bros. Co., 425 East Water street, Milwaukee, are general contractors on the gray iron and semi-steel foundry, 111 x 180 feet, to be erected on Greenfield avenue by the Motor Castings Co., 86 Michigan street, Milwaukee.

WEST ALLIS, WIS.—Adam Ahrendt, machinist, 557 Seventy-third avenue, will build a one-story shop addition, 50 x 75 feet. Frank Gruetzmacher, formerly foreman of the machine shop of the Federal Malleable Co., has become a partner.

WEST BEND, WIS.—Bids are being taken by the common council for a 90-foot concrete and steel bridge, 44 feet wide, across the Milwaukee river estimated to cost $20,000.

WEST BEND, WIS.—Architects Foeller & Schober, Green Bay, Wis., have been commissioned to prepare plans for a $50,000 addition to the West Bend high school. Manual training equipment will be purchased later.

BATTLE CREEK, MICH.—Architect E. W. Arnold, 488 South Main street, has plans for a boiler house, 1-story, 33 x 36 feet. The name of the owner has been withheld.

DETROIT.—The Miller Lightning Rod Co. has had plans drawn for a plant, 2-stories, 75 x 100 feet, to cost $40,000.

DETROIT.—The Central Forge Co. is altering and building additions to its die shop. The Atlas Iron Works has the steel contract.

DETROIT.—The Detroit Gray Iron Foundry Co. is erecting a 2-story addition to its plant. The Daigle Iron Works has the steel contract.

DETROIT.—The Ruhl Malleable Iron Co. is taking bids for a plant addition and shipping room, 1-story, 144 x 232 feet to cost $75,000.

DETROIT.—The Detroit Pressed Steel Co., 1800 Mount Elliot avenue, is taking bids for a plant addition, 5-stories, 84 x 223 feet.

DETROIT.—Architect Fred A. Evans, Book building, is taking bids for a machine shop to cost $30,000. The name of the owner is being withheld.

DETROIT.—The Fruehauf Trailer Co., manufacturer of automobile trailers, has broken ground for a plant, 150 x 500 feet. The company recently increased its capital to $250,000. A. C. Fruehauf is president.

DETROIT.—The P. W. W. Mfg. Co. has been incorporated with $15,000 capital to manufacture tools, jigs and fixtures by Anthony Perry, 363 Sherman street.

DETROIT.—The Ex-Celle Tool & Mfg. Co. has been incorporated with a $40,000 capital stock to do general machine work by N. A. Woodworth, 135 Leicester court.

DETROIT.—Esselstyn, Murphy & Hanford, architectural engineers, announce that the new differential gear and hardening shop of the General Motors Corp., will be completed in September.

DETROIT.—Plans are being prepared by Raseman & Freer, 1302 Penobscot building, Detroit, for a 1-story, 240 x 240-foot plant to be erected on Conant avenue for the Swedish Crucible Steel Co.

DETROIT.—Contracts for the erection of two plant additions have been awarded by the Timken-Detroit Axle Co., Clarke avenue. One will be 30 x 300 feet and the other 60 x 120 feet. The cost will be $50,000.

EVART, MICH.—The American Logging Tool Co. will enlarge its drop forge plant.

GRAND HAVEN, MICH.—The Keller Pneumatic Tool Co. is reported contemplating a plant addition, 1-story, 100 x 180 feet.

GRAND RAPIDS, MICH.—The Kent Foundry Co. has incorporated with a capitalization of $5000 to do a general foundry business.

GRAND RAPIDS, MICH.—R. C. Loosemore and A. A. Brown have purchased the Grand Rapids Boiler Works.

GRAND RAPIDS, MICH.—The Leitelt Iron Works, which was recently taken over by a group of employes of the company, has been incorporated for $250,000. David C. McKay, identified with the works for the past 40 years, has been named the new president.

GREENVILLE, MICH.—The Moore Plow & Implement Co., D. H. Moore, president, will build a 1-story foundry 50 x 80 feet, costing $10,000. Charles C. Kawin Co., Chicago, is engineer.

HOLLAND, MICH.—The pattern shop of the Western Tool & Machine Co. recently was damaged by fire. The loss was estimated at $10,000.

JACKSON, MICH.—The Jackson Steel Furniture Co. recently awarded contracts for a plant addition, 1-story, 100 x 140 feet, to cost $75,000.

JACKSON, MICH.—Two new buildings costing $70,000 will be constructed by the Jackson Steel Products Co. Both buildings will be used for steel storage. The smaller will be 60 x 115 feet and the larger, 121 x 140 feet.

LANSING, MICH.—The Michigan Screw Co. will build a plant addition, 60 x 236 feet, at a cost of about $125,000.

LANSING, MICH.—The Lansing Body Co., manufacturers of metal motor car bodies, is spending $50,000 in plant additions, A shop 80 x 100 is under construction.

OWOSSO, MICH.—The Owosso Mfg. Co. is erecting a machine shop and warehouse, 40 x 140 feet.

PONTIAC, MICH.—The Pontiac Spring Works is rebuilding its plant recently damaged by fire.

PONTIAC, MICH.—A 60 x 200-foot addition will be erected for the Van Auken Machine Co.

PONTIAC, MICH.—The Standard Parts Co. has awarded the contract for 100 x 200-foot steel building with tile roof and steel sash and a 2-story office building. The 7000 feet of floor space thus obtained will be used for general offices, an assembly room, a first aid room and a dispensary.

RIVER ROUGE, MICH.—Henry Ford & Son, Highland Park, Detroit are planning to build a 1-story, 250 x 1700-foot and a 2-story, 250 x 400-foot addition to its Eagle plant. This plant is to be converted into an assembly plant for tractors.

CHICAGO.—The Pettibone-Mulliken Co., 140 South Dearborn street, has let a contract to Westinghouse, Church, Kerr & Co. for the construction of a steel foundry to cost $200,000.

CHICAGO.—The Economy Machine Products Co., August Kopinski, president, 4755 London avenue, is planning to build a plant 161 x 205 feet for the manufacture of air brushes, screws, tacks and wire.

CHICAGO.—The Baker Iron & Metal Co., Sixteenth and Arnold streets, Chicago Heights, Ill., has been organized recently to carry on a scrap business. The incorporators are C. B. O'Neil, M. J. Atkinson, and Frank P. Page.

CHICAGO.—The Gill Mfg. Co., Chicago, manufacturer of automobile parts, E. P. Chalfont, president, 351 West Fiftieth street, will build a plant, the first unit of which will cost about $100,000, at South Chicago avenue and Jeffery boulevard.

ELGIN, ILL.—The Van Sicklin Speedmeter Co. has been reincorporated under the laws of Delaware with $2,500,000 capital.

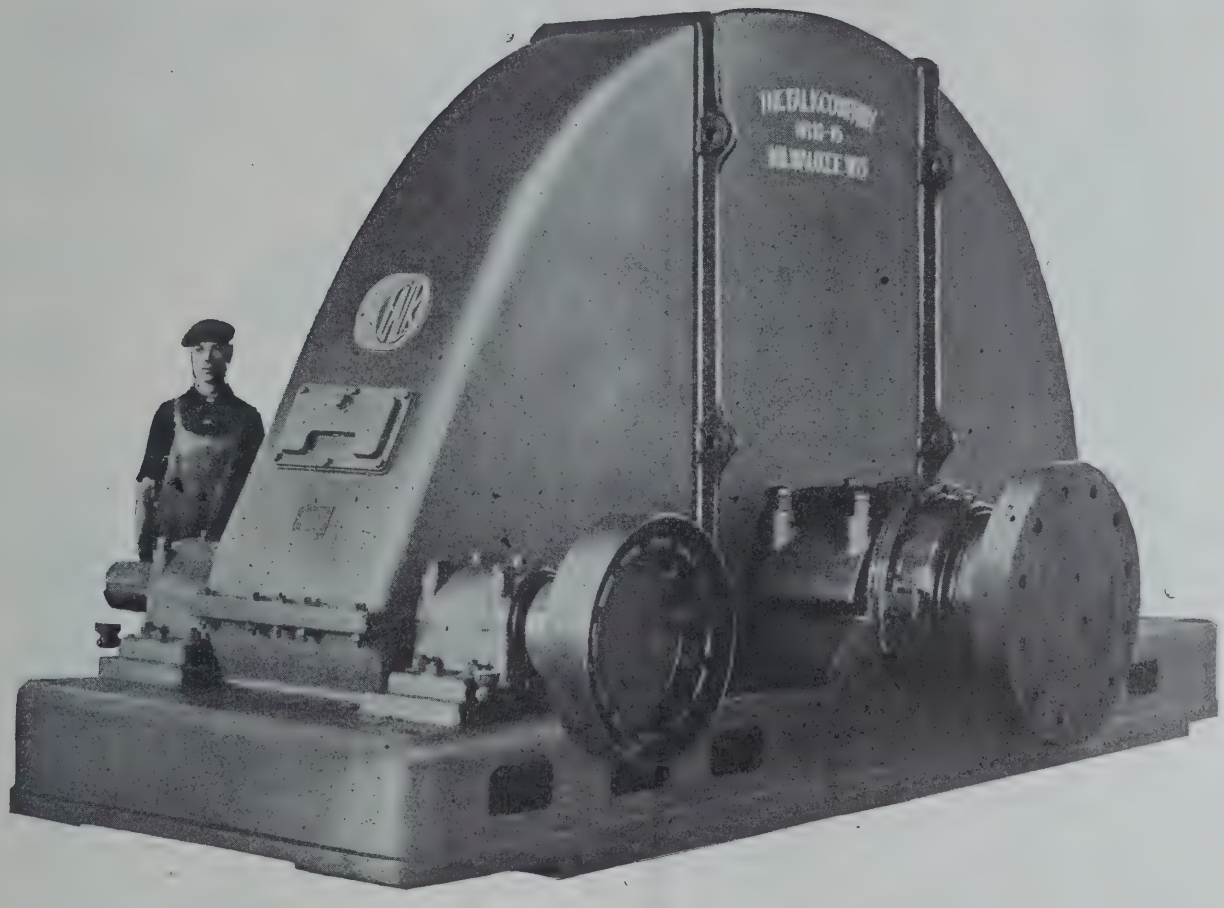
MOLINE, ILL.—The Moline Forging & Mfg. Co. has let a contract for a machine shop.

PEORIA, ILL.—The capacity of the Holt Mfg. Co. will be doubled. Five buildings, which were under construction during the war and on which work ceased with the signing of the armistice, will be completed.

ROCKFORD, ILL.—The National Lock Co. will build a 6-story addition 84 x 284 feet, costing $200,000.

ROCKFORD, ILL.—The Winnebago County Tractor Co., capitalized at $150,000, has been chartered to manufacture tractors and do a general foundry and

Herringbone Gears Units



Large steel mills have accorded WUEST Herringbone Gears universal recognition for their electric drives, and heavy shaft line drives.

They have found that these gears are absolutely dependable and eliminate all shock, noise and vibration. They reduce upkeep and consumption of power.

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From 1 Pound to 100,000 Pounds

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NEW YORK—M. P. Fillingham, 50 Church Street
SAN FRANCISCO—F. W. Grimwood, Rialto Building
DENVER, COLO.—Denver Engineering Works
WILKES-BARRE, PENNA.—Vulcan Iron Works

machine business, by George N. Whitford, N. C. Bement and Albert Weinke.

ROCKFORD, ILL.—The Rockford Milling Machine Co., has increased its capitalization from $300,000 to $900,000, which will provide for enlargement of the plant of the Sundstrand Adding Machine Co., one of its subsidiaries.

SPRINGFIELD, ILL. — The Brun-Mill Co., of Pittsfield, Ill., has filed petition for incorporation to manufacture metal goods of all descriptions. The capital stock is $25,000.

SPRINGFIELD, ILL.—The Illinois Pattern & Foundry Co., of Geneva, Ill., has been incorporated with a capital of $50,000 for the manufacture of patterns and castings. The incorporators are Richard H. Mather, Lawrence C. Trager and A. M. Odegaard.

ANDERSON, IND.—Consolidation of the Indiana Silo Co., this city, and the Star Tractor Co., Findlay, O., has been completed, and the new company will be known as the Indiana Tractor & Silo Co. W. M. Swain, Pendletin, Ind., is president.

CONNERSVILLE, IND.—The Lexington Auto Co. recently let contracts for an automobile manufacturing plant, 1-story, 100 x 100 feet.

CONNERSVILLE, IND.—The Teetor-Hartley Motor Co., Hagarstown, Ind., has purchased 10 acres near its plant and will erect a building 100 x 1500 feet and a 100 x 400-foot structure.

EAST CHICAGO, IND.—George B. Lambert & Co. recently let a contract for a machine shop to cost $80,000.

EAST CHICAGO, IND.—George B. Lambert & Co., Railroad avenue and 145 street, expect to erect two machine shops costing $80,000. One will be 1-story, 90 x 176 feet, and the other 2-story, 52 x 88 feet.

EVANSVILLE, IND.—The Inland Motor Truck Co., capitalized at $10,000, has been chartered to manufacture auto trucks by William Lightner, A. R. Schultz and Henry J. Graf.

EVANSVILLE, IND.—The Crown Chair Co. has been purchased by local interests and a new company will be incorporated with $150,000 capital. New machinery and equipment will be installed. Edward D. Wemyss is president.

GREENSBURG, IND.—The United Engineering Co. will erect a factory building 50 x 250 feet within the next 60 days. Reed & Glaser of Indianapolis announce that the company has received an order from a London firm for 3000 machines of light construction.

HAMMOND, IND.—The Railway Motor Car Co. of America, Chicago, will build a plant at Hammond, 100 x 300 feet costing $80,000.

INDIANAPOLIS.—The G. & J. Tire Co. has awarded contracts for a power plant.

INDIANAPOLIS.—The Collapsible Auto Rim Adjustable Tool Mfg. Co., capitalized at $100,000, has been chartered to manufacture tools by Dave Yorer, Paul P. Scharffin and Edward P. Bauman.

INDIANAPOLIS.—The Dunn Motor Co. has incorporated with a capital stock of $50,000, to manufacture merchandise of metal. Directors are Henry F. Dunn, Benjamin D. Aufderheide and George H. Rossebo.

INDIANAPOLIS.—The Equator Manufacturing Co. has incorporated with a capital stock of $20,000; manufacturing machines, tools and machine accessories. Directors are R. C. Berry, Lloyd Beckwith, T. H. Endicott, A. T. Potter and M. M. Poole.

LA PORTE, IND.—The Advance-Rumely Co. will build a number of new buildings, the largest of which will be a new storage shed, 125 x 1000 feet. Others will be three 2-story additions to the present machine shop, one 20 x 300 feet, one 20 x 187 feet and the third 20 x 160 feet. The case-hardening and heat-treating departments will be increased by an addition of 30 x 40 feet. Improvements will also be made in the boiler room and power house.

MARION, IND.—The Marion Foundry Corp. is erecting a plant at an estimated cost of $200,000.

OAKLANDON, IND.—This county plans the erection of a 1-story power plant.

ALLIANCE, O.—This city contemplates the erection of a gas producing plant.

CANTON, O.—The Canton Stamping & Enameling Co. has awarded a contract for a 2-story plant, to cost about $30,000.

CANTON, O.—The United Iron & Metal Co. recently was incorporated with $250,000 capital, by Charles S. Weintraub, Gus Deierling, William Beresin, Robert Heller and Abraham E. Levi.

CINCINNATI.—The Reliable Engine Co., Portsmouth, O., is reported planning to move its plant to this city.

CLEVELAND.—The Brown Fence & Wire Co. has a permit to erect a plant addition, 3-stories, 100 x 179 feet.

CLEVELAND.—The Collinwood Foundry Co. has taken out a permit for the erection of a foundry addition, 25 x 42 feet.

CLEVELAND.—The Neale Products Co., metal cleaners, etc., has been incorporated with G. C. Hafley, H. T. Hoffman, J. A. Brune and others.

CLEVELAND.—The Horsey Products Co., motor accessories, recently was incorporated with $105,000 capital, by E. T. Horsey, E. C. Henn, R. F. Henn and others.

CLEVELAND.—The Martin-Barriss Co. recently awarded a contract for a saw mill and power plant, 36 x 165 feet and 55 x 77 feet, to cost $100,000.

CLEVELAND.—The Roto Pneumatic Co. recently was incorporated with $100,000 capital, by W. C. Sly, R. J. Emerich, R. O. Bartholomew, E. W. Leeper and others.

CLEVELAND.—The Puley Die Casting Co. has been chartered with $10,000 capital, by G. B. Puley, G. A. Campbell, Harry E. Johnson, Arline Puley and G. H. Campbell.

ELYRIA, O.—The Garford Engineering Co. is reported contemplating the erection of an electric foundry.

KENT, O.—The Mason Tire & Rubber Co., Leader-News building, Cleveland, is having plans drawn for a 1-story steam power plant.

NEW FRANKLIN, O.—The New Franklin Electric Lighting Co. has been incorporated with $2500 capital, by O. C. Bates, Arthur Crowl and others.

RAVENNA, O.—The Perfection Piston Ring Co. has awarded a contract for a plant, 1-story, 60 x 160 feet, to cost $20,000.

SPRINGFIELD, O.—The American Radiator Co. is taking bids for a machine shop, 1-story, 50 x 50 feet, to cost $12,000.

WELLINGTON, O.—The Sterling Foundry Co. has been incorporated with $150,000 capital, by R. E. Clisby and others.

ASHLAND, KY.—R. Dysard, mayor, has taken bids for a pumping station and filtration plant here. Address Alboard & Burdick, 1417 Hartford building, Chicago.

LOUISVILLE, KY.—The Dow Wire & Iron Works has awarded contracts for remodeling its plant.

LOUISVILLE, KY.—B. F. Avery & Sons is taking bids for a harvester plant and shear shop, 100 x 322 feet and 100 x 120 feet, to cost $200,000.

FAIRMOUNT, W. VA.—The West Virginia Metal Products Co. is reported having plans drawn for a brass and copper plant.

Business in Canada

KENOGAMI, QUE.—Price Bros. Co. plans the construction of a power plant here. John Ball is manager.

MONTREAL, QUE.—The Western Quebec Power Co., Ltd., has been incorporated with $1,000,000 capital by William K. McKeown, George E. Chart, Thomas H. Onslow and others.

THREE RIVERS, QUE.—Plans have been prepared and bids will be called shortly for hydroelectric development here for the International Paper Co., New York.

HAMILTON, ONT.—The Dominion Sheet Metal Corp. is making preparations for a large addition.

HAMILTON, ONT.—The Carr Fastener Co., Boston, manufacturers of metal fasteners, etc., completed arrangements for the erection of a plant here to cost $100,000.

LONDON, ONT.—Plans are being prepared for a warehouse and boiler engine room for Green Swift & Co., to cost $30,000.

OSHAWA, ONT.—The Pedlar People, Ltd., manufacturers of sheet metal products, etc., contemplate disposing of their factory and securing a site on which to erect a new plant.

OTTAWA, ONT.—The Great Lakes Dredging & Contracting Co., Ltd., has been formed by the amalgamation of the Great Lakes Dredging Co., Ltd., and the Thunder Bay Contracting Co. The directors are Michael J. O'Brien, Lawrence T. Martin, Joseph L. Murray, all of Renfrew, Ont.

TORONTO, ONT.—The Jefferson Glass Co. has let the general contract for an addition.

TORONTO, ONT.—The Willys-Overland Co. has awarded the general contract for an addition.

TORONTO, ONT.—The Steel & Radiation, Ltd., is having plans drawn for the conversion of a factory building into a foundry.

TORONTO, ONT.—The National Conduit Co., Ltd., has been incorporated to manufacture conduits, etc., with $100,000 capital, by John A. Kent, room 43, 44 King street west; Maxwell C. Purvis, Guy M. Jarvis and others.

TORONTO, ONT.—The Canadian Steering Wheel Co., Ltd., has been incorporated with $150,000 capital to manufacture automobile accessories, etc., by Charles W. Livingston, room 301, 157 Bay street; Mark Devlin, James Parker and others.

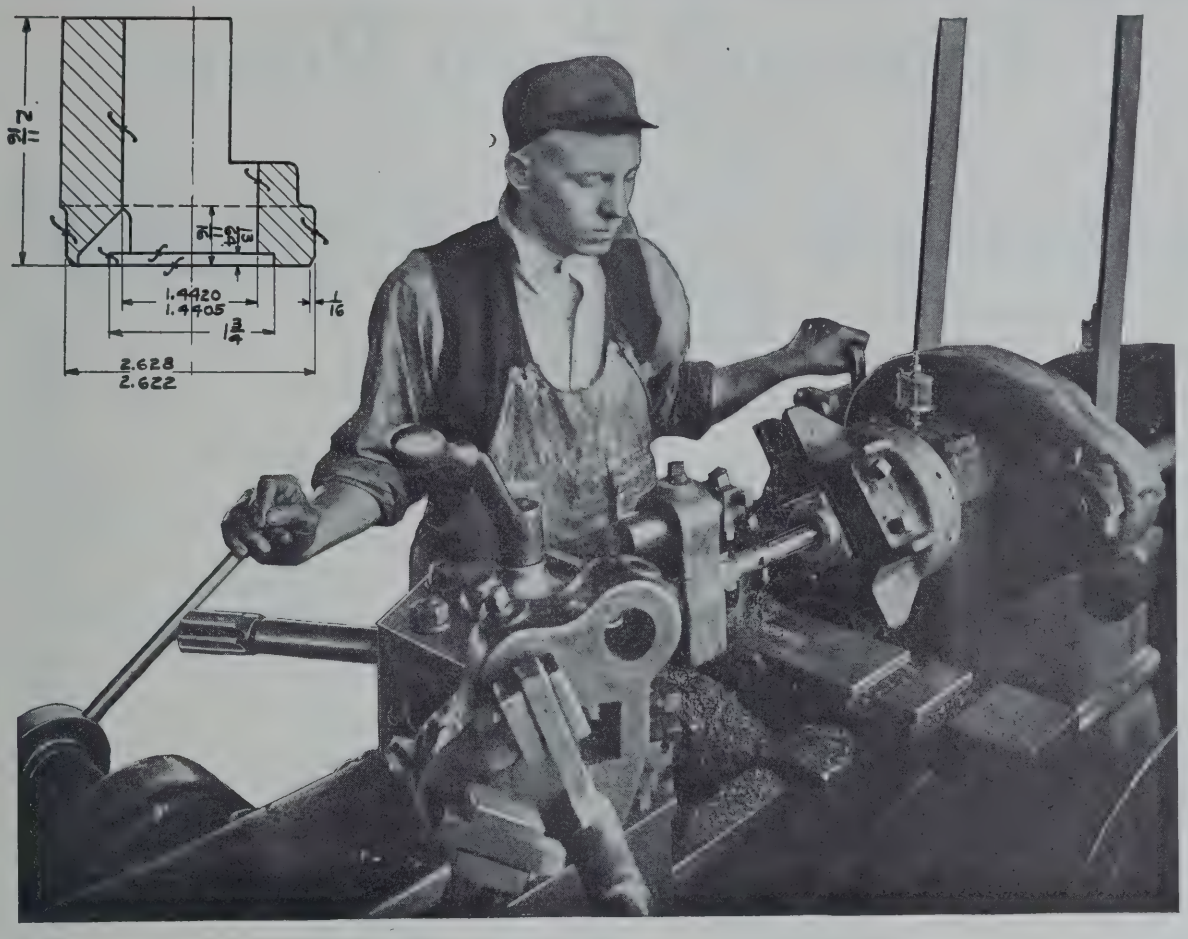
TORONTO, ONT.—The W. C. Hunt Mfg. Co., Ltd., has been incorporated with $40,000 capital, to carry on business as iron and brass founders, by William C. Hunt, 59 Paton road; Ambrose A. Crocker, 322 Symington avenue, and others.

WALKERVILLE, ONT.—The Canadian Products, Ltd., has been incorporated with $10,000 capital by Alexander Leslie, John E. Laughlin, Hugh L. McDowell and others for the purpose of manufacturing auto trucks, tractors, farm implements, machinery, etc.

WALKERVILLE, ONT.—The American Auto Trimming Co. has been incorporated with $500,000 capital, to manufacture accessories, etc., by Benjamin Gotfredson, Frank H. Joyce, Mark H. Coleman of Detroit, Water G. Bartlet of Windsor, Ont., and others. The company will build a plant.

WINDSOR, ONT.—Tenders for the building of the Walkerville sewage pumping station will be received until August 12, by the Essex border Utilities commission, room 14, Victoria block.

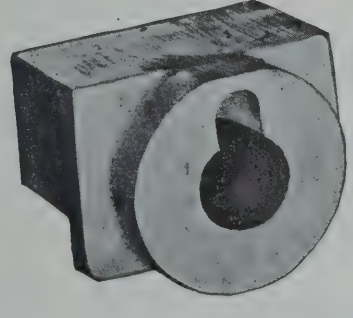
WINDSOR, ONT.—The Dominion Tractors, Ltd., has been incorporated with $500,000 capital by George N. Hickey, Elmer E. Theis, both of Detroit; Ernest S. Wigle, William Horne of Windsor and others.



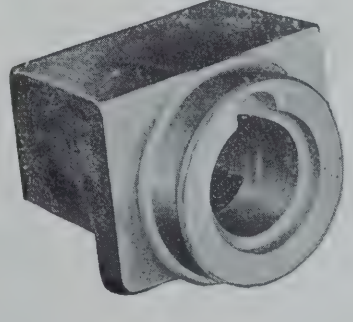
Cut Special Tool Expense

This No. 4 Universal operating at the Cleveland Tractor Co., Cleveland, was quickly tooled from the stock of Warner & Swasey standard tools to finish this odd shaped piece. You see here how the tools are designed to complete as many of the operations as feasible at one feed of the turret. This concentration means maximum output.

With W & S Standard Tools from Stock



Buy these machines, select your tools from the Small Tool Catalog and get a flying start without the costly delay of designing and making special tools that can be used for only one job. Our Engineers work with you in the selection of the best machine and tooling for your work. Result—Profit and Satisfaction.



Write for a catalog

Turret Lathes and Screw Machines from ⅝" x 4" to 4½" x 44".
Maximum Swing 21½".

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FOREIGN AGENTS: Chas. Churchill & Co., Ltd., London, Birmingham, Manchester, Newcastle-on-Tyne and Glasgow. Allied Machinery Company, Paris, Turin, Barcelona, Zurich and Brussels. Stokvis & Zonen, Rotterdam. Wilhelm Sonessen Co., Malmo, Copenhagen, Gotenburg and Stockholm. Yamatake & Co., Tokio. Benson Bros., Sydney and Melbourne. A. Asher Smith, Sydney. A. R. Williams Machinery Co., Ltd., Toronto, St. John, Winnipeg and Vancouver. Williams & Wilson, Ltd., Montreal.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37 to 3.62c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47 to 3.72c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67 to 3.92c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.50c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	6.75c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.70c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inche long. Gages Nos. 14 to 28 in addition to th foregoing, 36 wide by 96 inches and 120 inche long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25

Chicago to:

Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½

Lap Weld

2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½

Lap Weld

2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½

Lap Weld

2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric GG Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$21.00 to 21.50
Chicago	21.00 to 21.50
Eastern Pennsylvania	19.50 to 20.50
Cleveland	21.00 to 21.25
St. Louis	20.50 to 21.00
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.35 to 16.50
New Jersey points	**14.00 to 14.50**
Cincinnati	18.00 to 18.50
Birmingham	19.00 to 21.00
Valleys	21.00 to 21.50
Boston (dealers)	16.50 to 17.50

BUNDLED SHEETS

Pittsburgh	$16.00 to 16.50
Eastern Pennsylvania	15.00 to 16.00
Cleveland	16.00 to 16.50
Buffalo	14.50 to 15.00
Cincinnati	13.00 to 13.50
St. Louis	11.00 to 11.50

STEEL RAILS, SHORT

Chicago	$23.50 to 24.00
Cleveland	23.50 to 24.50
Boston (Dealers)	14.00 to 14.50
St. Louis	22.50 to 23.00
Birmingham	18.00 to 20.00
Cincinnati	18.00 to 18.50

STOVE PLATE

Pittsburgh	$18.00 to 19.00
Chicago	25.00 to 25.50
Eastern Pennsylvania	20.00 to 21.00
Cleveland	19.25 to 20.25
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New Jersey points	18.25 to 19.25
Cincinnati	16.00 to 16.50
Birmingham	19.00 to 21.00
Boston (consumers)	17.50 to 18.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$20.00 to 20.50
St. Louis	19.50 to 20.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.50 to 22.00
Chicago	23.00 to 23.50
St. Louis	22.50 to 23.00

BALED SHEETS

Pittsburgh	$19.00 to 20.00
Chicago	16.00 to 16.50

FROGS, SWITCHES, GUARDS

Chicago	$21.00 to 21.50
St. Louis	21.00 to 21.50
Eastern Pennsylvania	19.50 to 20.50

BOILER PLATE, CUT

Chicago, No. 1	$18.00 to 19.00
St. Louis, No. 1	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$23.00 to 24.00
St. Louis	21.50 to 22.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$22.00 to 22.50
Pittsburgh, No. 2	21.00 to 21.50
Chicago, No. 1	23.50 to 24.00
Chicago, No. 2	22.00 to 22.50
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	24.00 to 24.50
St. Louis, No. 1	21.50 to 22.00
St. Louis, No. 2	20.50 to 21.00
Buffalo	23.00 to 23.50
Cincinnati, No. 1	20.00 to 20.50
Birmingham, No. 1	15.00 to 17.00
New York No. 1 (dealers' price)	22.00 to 22.50
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$21.75 to 22.25
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.50 to 16.00
Boston (dealers)	14.50 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers' price)	$18.00 to 18.50
New York, special	16.00 to 16.50

BUSHELING

Chicago, No. 1	$20.50 to 21.00
Chicago, No. 2	15.50 to 16.00
Cleveland, No. 1	20.50 to 21.00
Cleveland, No. 2	16.00 to 16.50
St. Louis, No. 1	20.50 to 21.00
Buffalo, No. 1	16.50 to 17.00
Cincinnati, No. 1	15.00 to 15.50
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$14.00 to 14.50
Chicago	10.50 to 11.00
Eastern Pennsylvania	14.00 to 15.00
Eastern Pennsylvania (blast furn.)	12.00 to 13.00
Cleveland	12.00 to 12.50
Buffalo	12.00 to 12.50
New York (dealers' price)	10.00 to 10.50
St. Louis	12.50 to 13.00
Cincinnati	8.00 to 8.50
Birmingham	10.00 to 11.00
Valleys	13.75 to 14.00
Boston (dealers)	9.50 to 10.50
Boston (blast furnace) (dealers)	7.50 to 8.00

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	13.50 to 14.00
Eastern Pennsylvania	14.50 to 15.00
Cleveland	15.25 to 15.65
St. Louis	12.50 to 13.00
Buffalo	13.50 to 14.00
New York (dealers' price)	11.50 to 12.00
Cincinnati	10.00 to 10.50
Birmingham	10.00 to 11.00
Valleys	15.75 to 16.00
Boston (dealers)	9.50 to 10.50
Boston (blast furnace)	*8.00 to 8.50

IRON AXLES

Pittsburgh	$30.00 to 31.00
Chicago	33.00 to 34.00
Eastern Pennsylvania	35.00
Cleveland	35.00 to 36.00
St. Louis	34.00 to 34.50
Buffalo	28.00 to 29.00
Cincinnati	26.50 to 27.00

IRON RAILS

Chicago	$24.50 to 25.50
Cleveland	27.00 to 28.00
St. Louis	23.50 to 24.00
Buffalo	24.00 to 25.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$18.50 to 19.00
Cleveland	19.00 to 19.50
St. Louis	18.50 to 19.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$23.00 to 23.50
Cleveland	19.50 to 20.50
Buffalo	20.00 to 20.50
New Jersey points	17.75 to 18.25
Eastern Pennsylvania	18.50 to 19.50

FORGE FLASHINGS

Cleveland, large	$16.00 to 16.50
Cleveland, small	19.00 to 19.50
Chicago, small	18.50 to 19.00
Boston (dealers)	10.00 to 10.50

ORGE SCRAP

Chicago	$22.00 to 22.50
Eastern Pennsylvania, No. 1	14.50 to 15.50

ARCH BARS AND TRANSOMS

Chicago	$30.00 to 31.00
St. Louis	25.50 to 26.00

ANGLE BARS—IRON

Chicago	$28.00 to 28.50
St. Louis	25.50 to 26.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania, iron	16.00 to 17.00
Boston (dealers)	9.50 to 10.00
Cleveland	16.50 to 17.50
Buffalo	15.00 to 16.00
Chicago	17.50 to 18.00

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania	32.00
Cleveland	34 00 to 35.00
St. Louis	31.50 to 32.00
Buffalo	28.00 to 29.00
Chicago	31.50 to 32.00
New York (dealers' price)	21.25 to 22.25
Birmingham	20.00 to 22.00
Boston (dealers)	25.00 to 26.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	21.00 to 22.00
Chicago	29.00 to 30.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$24.00 to 25.00
Pittsburgh, steel	22.00 to 23.00
Chicago, iron	24.50 to 25.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, Iron	22.75 to 23.00
St. Louis, iron	24.50 to 25.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 22.00
Birmingham, tram car	20.00 to 22.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$24.00 to 25.00
Chicago, cupola	27.50 to 28.00
Eastern Pennsylvania, cupola	25.00 to 26.00
Cleveland, cupola	23.00 to 23.50
New York, cupola (dealers' price)	21.00 to 22.00
Cincinnati, No. 1, cupola	22.00 to 22.50
Birmingham, cupola	23.00 to 24.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	25.50 to 26.00
Buffalo	24.50 to 25.00
Boston	26.00 to 27.00
Valleys	23.00 to 23.50

HEAVY CAST

New York (dealers' price)	$20.50 to 21.50
Buffalo	21.00 to 22.00
Pittsburgh	21.00 to 21.50
Cleveland	18.50 to 19.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$19.00 to 20.00
Pittsburgh, agricultural	18.00 to 19.00
Chicago, railroad	23.50 to 24.00
Chicago, agricultural	21.50 to 22.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	22.00 to 23.00
Cleveland, agricultural	19.00 to 19.50
St. Louis, railroad	20.00 to 20.50
St. Louis, agricultural	19.50 to 20.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$24.00 to 25.00
Chicago	28.50 to 29.00
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	28.50 to 29.00
Birmingham	15.00 to 16.00
Boston (dealers)	18.00 to 18.50

LOCOMOTIVE TIRES

Chicago	$25.50 to 26.00
St. Louis	21.50 to 22.00

BOILER PUNCHINGS

Chicago	$26.00 to 27.00
Eastern Pennsylvania	23.00 to 24.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

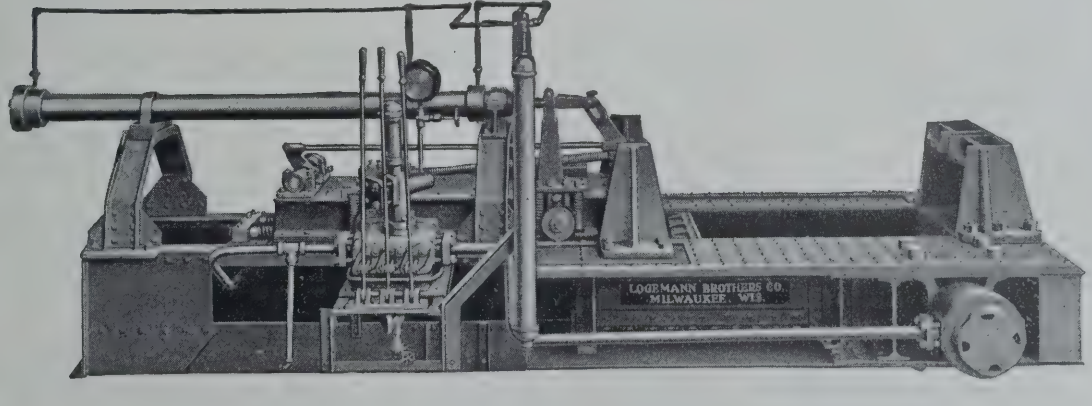
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

CUTTERS.—The Cleveland Milling Machine Co., Cleveland, is circulating its standard cutter catalog B, which was recently completed. This booklet contains 144 pages, and gives sizes, specifications, etc., of standard cutters and illustrations of machine tools, which the company manufactures. The booklet also contains a number of tables, including decimal equivalents, cutting speeds, weights of round bars of high speed and carbon steel, and other data of interest to engineers and plant executives.

HOSE COUPLING.—A newly designed hose coupling is described and illustrated in a folder being circulated by the Independent Pneumatic Tool Co., Chicago. This coupling can be disconnected instantly by a straight pull on the knurled sliding sleeves. The bevel jaws and locking shoulders are heavy, with large bearing surfaces, and according to the folder, cannot break, jar or work loose. The folder also describes a clamp, designed especially for hose couplings.

STEAM SHOVELS.—The Osgood Co., Marion, O., recently issued a large 32-page illustrated booklet, in which steam shovels, cranes, clamshell outfits and dredges, are described and illustrated. The shovels illustrated embody late features in steam shovel construction, such as steel gears, with machine cut teeth; manganese racks and pinions for dipper handle; cast steel swinging circle; large boiler and water tanks; steam hoisting friction and by-pass throttle. The illustrations, of which there are many, give the reader a comprehensive idea of the shovels, dredges and other equipment described. Many of the cuts show the shovels, etc., actually at work.

RELIEVING MACHINE.—A hack high-powered universal relieving machine is described and illustrated in a 4-page folder being distributed by the American Machine Tool Engineering Works, Chicago. It is a high production machine upon which hobs of straight or spiral gash, form cutters, counter-bores, face form cutters, taps and threading dies can be made. A side relieving attachment is supplied, which can be attached or removed at will. In this machine a self-contained countershaft forms a part of the head. Power is transmitted to the relieving machine directly from the line-shaft through one forward and one reverse belt. Other parts of the machine are thoroughly described.

PUMPS.—An 8-page catalog has been issued by the Michigan Machine Co., Detroit, in which a pump which it is said can be used on any machine, whether it is of low, high or medium speed, is described and illustrated. The principal moving parts are two rollers which rotate eccentrically in the pump chamber, causing the liquid to roll in front of the rotor. According to the booklet, it is self-priimng, requires no relief or check valves, or overflow piping. Although small in size, it is of large capacity and its power consumption is considered low. It pumps oil or water equally well. The pump can be furnished in either cast iron or bronze, and in sizes ranging from ⅛-inch to 2-inch intake and outlet with capacities from two quarts per minute to more than 150 gallons per minute.

STEEL CASTINGS.—A large cardboard-bound book of 62 pages, containing a pictorial portrayal of the plants at Attica, Ind., and Murphysboro, Ill., of the Harrison Steel Castings Co. and the National Car Coupler Co., and a brief description of their products, is being circulated. Printed on heavily coated stock, and well illustrated, the book is one of the most attractive trade publications of the year. A number of the illustrations are in colors. The first part of the book is devoted to a brief history of steel; then follows the history of the two companies. This is augmented by views of the plants, including the interior of the pattern shop, the foundries, the open-hearth furnaces at the Attica plant, the laboratory and other departments. The latter part of the book is devoted to a description of castings made by the companies.

OIL BURNERS.—Oil fuel burning installations for marine and land boilers are described and illustrated in a loose-leaf catalog of 44 pages, being circulated by J. Samuel White & Co., Ltd., 28 Victoria street, London, England. The first part of the booklet is devoted to a general outline of oil fuel burning equipment. These installations can be arranged to suit coal or wood fired boilers at present in use, for either land or marine service. To illustrate the system described in the booklet, 12 plates, the most of them line drawings, are presented. Part of the booklet is devoted to oil fuels, and the latter part of the catalog contains illustrations of British naval vessels, which are equipped with these installations. The booklet is printed on heavy stock and its appearance testifies to the pains taken in its preparation.

MINE EQUIPMENT.—An 8-page, 8½ x 11-inch booklet has been published by the Cutler-Hammer Mfg. Co., Milwaukee, in which reference to the mine-duty apparatus installed in the plant of the St. Louis Smelting & Refining Co. at St. Francois, Mo., is made. This includes a detailed description of handling the ore from the three levels of the mine until it is ready for shipment. Special emphasis is laid on the hoist and conveying machinery and the automatic control and safety apparatus with which this machinery is equipped. Illustrations show the mine hoist panel, master switches, limit switches, overspeed governors and electrically operated brakes as well as the automatic starters for the crushers and conveyors. The starters are controlled from push button stations and the speed of the conveyors and crusher is governed by armature regulators. The front and back covers of the booklet display a view of the buildings above the mine.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

The purchase of iron ond steel cable, steamship supplies and kindred lines, are desired by a firm in Norway. Opportunity No. 30146.

A commission agent in Guatemala wishes to represent manufacturers of various materials, including barbed wire. Correspondence should be in Spanish. Opportunity No. 30148.

The purchase of German silver, nickel, copper, brass, tin, ingots in sheets, tubes, scrap, etc., iron sheets for all purposes, and dynamos, galvanized and tin plates, is desired by a firm in Switzerland. Opportunity No. 30149.

A firm in Norway wishes to purchase drawn copper tubes. Opportunity No. 30150.

Transmission machinery for mining use, cables, wheelbarrows, mining cars, mining tools, pumps, compresses, punching machines, metal sheets, metal construction material, are required by a firm in Spain. Opportunity No. 30151.

The purchase of lawn mowers, clothes wringers, carpet sweepers, spoons, knives, forks, metal choppers, electrical material, etc., is desired by a firm in Denmark. Opportunity No. 30154.

The representative of a firm in Sweden, at present in this country, desires to secure an agency for the sale in Scandinavia of boring, milling, and drilling machinery, shipyard machinery, locomotive building machinery, and tools of all kinds. Opportunity No. 30063.

A party in France desires an agency for the sale of electrical, sanitary and plumbing material. Correspondence should be in French. Opportunity No. 30064.

A mechanical engineer of the State railways of Finland is in this country and desires to purchase car and locomotive repairing machinery, tools, equpment, etc. Opportuity No. 30065.

The purchase of steel tubes, 2 inches and 2½ inches in diameter, in quantities of 100 tubes, are desired by a firm in Portugal. Correspondence should be in Portuguese. Opportunity No. 30067.

The purchase and agency is desired by a firm in Belgium for the sale of electrical appliances, wrought iron and steel tubes, malleable iron fittings, gun metal and brass fittings for gas, water and steam; copper and brass wire, sheets, bars, rods, merchant iron, steel bars, plates and sheets, tin plates of all sizes, etc. Opportunity No. 30069.

A company in England is in the market for small grooved rolled iron bars in sizes No. 2 full, to be used in the manufacture of brass cased round stair rods. The amount used by this company averages 5 tons a week in assorted sizes. Opportunity No. 30070.

An exclusive agency is desired by a firm in Spain for the sale of automobile lighting generators, starting motors and magnetos. Opportunity No. 30071.

A party from Gibraltar, in this country, desires to secure an agency for the sale of food products, motor cars and trucks, hardware, tools, typewriters, etc. Opportunity No. 30072.

The purchase and agency for the sale of paper machinery, printing presses, automatic machines for cutting paper, etc., are desired by a man in Czechoslovakia. Opportunity No. 30075.

The purchase or agency for the sale of rolled steel, iron and tin is desired by a firm in Belgium. Opportunity No. 30081.

A party in Norway desires to represent American firms in the sale of building materials, including soft copper sheets, galvanized, corrugated and plain sheets, sanitary appliances, iron goods, etc. Opportunity No. 30108.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, August 21, 1919 *No. 8*

Labor Conditions Cloud Market

Acid Test of Workers' Loyalty May Follow Youngstown Conference—Production Gains Steadily and Prices, as a Rule, are Firm—Large Tonnages are Sold for Export

AN unusual situation confronted the steel industry Wednesday, when representatives of 25 steelworkers' unions were scheduled to meet at Youngstown to canvass a strike vote. If a walkout is called, as it most likely will be, much will depend upon the strength of the newly formed unions. If it develops that great numbers of steelworkers have refused to listen to the appeals of union organizers, plants no doubt will continue to operate. On the other hand, if it is found that the unions have effected a strong organization in the industry, it is not unlikely that the country will witness a complete shutdown, paralyzing the industry at a time when the production of urgently needed iron and steel is steadily gaining daily. The threat of a general strike is only vaguely reflected in business of the past week. Although dealers in pig iron, fuel and finished steel have shown some hesitancy in booking orders, the large volume of actual sales indicates a strong confidence in the future.

Argentina Asks Credit

Buying for export during the past week was brisk. England placed orders for pipe, bars and hoops aggregating about 3000 tons and is inquiring for billets. France made several small purchases and is asking for prices on about 22,000 tons of finished steel products, including 14,000 tons of rails. Italy bought 8000 tons of pig iron and is inquiring for 20,000 tons of hematite iron. Holland, Brazil, China and Japan are in the market for small tonnages of finished steel. Argentina is requesting a credit for $11,000,000 to purchase equipment for railway and other improvements.

Iron Buying is Lighter

Although the first rush of iron buying has subsided, the demand for all grades still is heavy. There is an apparent hesitancy on the part of many producers to book business for first half delivery. With the possible exception of certain furnaces in the South, the productive capacity of the country is largely sold out for the balance of the year. Sales for the week in New England amounted to about 4500 tons, the lowest figure in two months. Three sales in the Pittsburgh district, aggregating 25,000 tons of foundry iron, were made at the quoted prices. Approximately 10,000 tons of foundry grades were disposed of in small lots by a Buffalo dealer at an average advance of 50 cents over listed quotations. Sales amounting to about 10,000 tons were reported in New York. There is evidence in the buying of 1920 iron in eastern markets that prices for first half will be from $1 to $3 above present quotations. Iron is scarce in the South, where furnaces ask $27.50 and $27.75 for No. 2 foundry.

Mills Still are Busy

A surprisingly large demand for semifinished materials has sprung up in the Youngstown and Pittsburgh districts. A valley interest booked an order for 18,000 tons of sheet bars. Automobile makers are buying large tonnages of strip steel. Bar mills are working at nearly full capacity to keep up with the rush of orders. A sale of 5500 tons of this product to South America is reported by a Pittsburgh manufacturer. The encouraging condition of the structural market is reflected in the report of the Bridge Builders and Structural society which shows that in July contracts involving 74 per cent of the entire capacity of the bridge and structural shops of the country were let. This is equivalent to 133,200 tons, as compared with 117,000 tons, the corresponding figure for June. Several sheetmakers have been compelled to turn away business on account of the sold up condition of their mills. Tin plate makers are also well supplied with orders. Wire is now being exported at the rate of 10,000 tons monthly and the prospective production for the next ten weeks is already engaged. Practically all users of finished steel, with the exception of the railroads, are buying liberally. The Carnegie Steel Co. is offering the U. S. navy plate, shapes and bars at prices decidedly lower than the prevailing market. Conditions at Duluth, Gary and South Chicago, where strikes were in progress, have improved. Steel workers are still out at Cleveland, Sparrows Point and Peoria.

AUGUST 21, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - York St. and Western Ave.
NEW YORK - - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Churchill's Plain Words

IN these days when the air has become so filled with discussions of "social justice," "tripartite control of large corporations," "industrial democracy," etc., that even some of the ablest champions of existing conditions seem to be afraid to speak openly, it is both refreshing and stimulating to encounter a straight-from-the-shoulder defence of the capitalist system. Such a defense was made by Winston Churchill in a recent speech in London. There is, therefore, wine in the words of that great British statesman, who has never feared to say what he thinks. Mr. Churchill makes his point so clearly that no comment or explanation is necessary. At the conclusion of his speech, he simply made the following statement:

"I remember to have said some years ago, 'Socialism attacks capital; liberalism attacks monopoly.' That is a useful distinction to bear in mind.

"Then there is a capitalist system. I am astonished to see how people are afraid to defend it. The politicians are afraid, the newspapers are afraid, and they prefer to give the thing the go-by. As a matter of fact, the capitalist system is capable of sustained and searching defense. In fact, it is the only system that has ever been devised for regulating the economic relations between man and man and for appraising the value of services which men render to each other or exact from each other—the only system, apart from slavery. But if the capitalist system is to be successfully defended it can only be defended by showing that there is a moral basis for property and you will not establish a moral basis for property or obtain conviction from the masses of the people unless you are able at the same time to make just laws, regulating and bringing up to date the conditions under which property is acquired and enjoyed, correcting by taxation the evils of unmerited acquisition or indolent enjoyment."

The World Needs Production

IT IS extremely gratifying, in these trying days when scarcely an editorial is written that does not touch on the labor situation, to note that practically all of the writers who pretend to deal with that troublesome problem agree on at least one point. Without exception they recognize the fact that, come what may, the production of essential articles must continue in undiminished volume if the world is to ride out the present wave of discontent.

An unprecedented situation exists in connection with the production of iron and steel products. Although ten months have elapsed since the armistice was signed, scarcely any noticeable improvement has taken place in the industrial position of Europe. The work of reconstruction, except in Belgium, has received comparatively little attention. Not a single nation on the far side of the Atlantic is in a position to relieve the growing pressure of demand for iron and steel. The countries of Europe must look to foreign manufacturers for a large proportion of their requirements.

Of the important industrial nations of the world only two are now prepared to assist in easing the tension of the present situation. Japan, which in the past has been a consumer of British and American steel is fast approaching a state of independence. Already several observers foresee the end of that enterprising nation's dependence on imported products and predict that within a few years Japanese steel will be seeking an outlet in Pacific markets. At the present time, the unusual industrial activity of Nippon is significant because it reduces the demands of an important consumer of Anglo-American goods, which are so urgently needed elsewhere.

Until Europe recovers from its present state of helplessness, the United States must continue to carry the lion's share of the responsibility for producing the world's requirements. That its manufacturers of iron and steel products are assuming this burden in a remarkably encouraging manner, in spite of the most imposing difficulties that ever have threatened its industrial life, is shown by statistics of production

made public during the past two or three weeks. The output of pig iron in July exceeded that of June by 300,626 tons, and the statement that a large per cent of the United States Steel Corporation's stacks are in operation and that 40 of the 46 furnaces in the Youngstown district soon will be in blast give promise that the production of iron in August will not fall short of July's gratifying total, notwithstanding the fact that strikes were expected to greatly curtail operations. The July production of steel ingots surpassed that of June by 288,957 tons, exceeding the gain of June over May. Unfilled orders of the corporation on July 31 amounted to 5,578,661 tons, an increase of 685,806 over the total for June 30, and appreciably topping the June advance over the last day figures for May. As yet, industrial difficulties calculated to seriouslly affect the production of iron and finished steel in August have not developed.

It is by no means certain that this ability of American industry to weather the storm of unrest will continue. However, it is a source of deep gratification to know that in the United States, as in no other country except Japan, iron and steel is being manufactured on a scale comparing favorably with prewar performances.

Peaceful and Law-Abiding

REPORTS of organizers working in behalf of the International Association of Machinists afford interesting reading for those who would be informed in regard to union labor activities. They show how peacefully strikes and strike propaganda are carried on, in conformity with the public statements of trades union leaders that no violence is resorted to or unlawful efforts made to coerce workers who do not desire to join their organizations. In the current issue of the machinists' publication, an organizer, after glorying in the victory he says was won by members of his union in Norfolk, Va., proceeds:

"Between three and four thousand men were called out, demanding recognition and the right to collective bargaining. For seven weeks these men hammered the pavement, and out of the large number involved, only two weak sisters were found in the ranks who tried to go to scabbing. I say 'tried to go' for one of them landed in the hospital and the other in the police court. How the imported scabs were taken care of, the strike-breaking agencies beaten at their own game, the private detective agencies frustrated, and the score or more other things of more or less importance were taken care of, is another story, but let it be known that it was as clean a strike as ever happened."

Read in the light of organized labor's protestations of innocence of wrong-doing and desire to be peaceful and law-abidding official reports of this kind are instructive.

Wartime Control of Tin Ends

AUGUST 15 brought to a close one of the most unique chapters in the history of the tin industry since the Phoenicians steered their galleys to England's chalky cliffs in search of the white metal. On Aug. 15 the last restriction was lifted on the importation of tin into the United States, ending the wartime control of the metal. The control, which involved a buying pool by the allies and the United States to operate in the tin producing markets, together with control of distribution in the consuming markets, was fully instituted only about the time the war ended. Had the war continued a time longer, doubtless the interallied tin control would have functioned efficiently to maintain a steady supply of tin to essential consumers. Like various other industries and systems the tin market has experienced an aftermath of discrepancies. Thus the domestic tin market for months was higher by 20 cents a pound than the London market. But with the restoration of commerce in tin to its normal channels these price differences have disappeared and the world markets now are practically in their usual alignment. In the past two weeks the price of spot high grade tin has crumbled from the artificial level of 70c, to 55½c; and the price of lower grade (99 per cent) tin has dropped from 67 to 54c. From now on tin importations and distribution will be conducted in the normal prewar manner.

Government Pursues Sound Plan

AN intelligent policy is being followed by the office of the director of sales, war department, with regard to the disposition of surplus tonnages of steel. It is evident that those in direct charge of the disposition of supplies are thoroughly aware of the upward trend of prices and that, with complete propriety, the government is taking advantage of the situation. Not only are tonnages being offered after a careful survey of the market, with a view to obtaining the best figures possible but care has been taken not to resort to a process of dumping stocks on the market, a practice which would adversely affect the healthy conditions now prevailing, and likewise would work injury to the government in its effort to recover as far as possible the financial outlay represented in the enormous tonnages it bought for purposes of war. That this plan is a wise one is shown by the increasing prices the government is obtaining at present for its stocks as compared with those received for the first lots it sold, when the market was weak.

By pursuing this system the government has benefited and the market has not been disturbed. So far as known neither the pig iron nor scrap interests have had cause to complain of the rather large tonnages sold and being sold by the government,

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 538 AND 540

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	27.00 to 27.25
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	30.00 to 32.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$30.50 to 31.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 28.50
No. 2 Northern, Boston	31.90
No. 2 foundry, Cleveland furnace	27.25
No. 2 foundry, Ironton furnace	27.75
No. 2 foundry, Chicago furnace	26.75
No. 2 fdry., Chgo. fce., 1920 del.	28.75
No. 2X, eastern del., Phila.	29.50 to 30.50
No. 2X, eastern, N. J. tidewater	29.35 to 30.85
No. 2X eastern, Boston	30.90 to 32.40
No. 2X foundry, Buffalo furnace	28.00 to 29.50
No. 2 foundry, del., Philadelphia	28.50 to 29.50
No. 2 foundry, N. J. tidewater	28.35 to 29.85
No. 2 southern, Birmingham	27.50
No. 2 southern, Cincinnati	31.10
No. 2 southern, Chicago	31.75
No. 2 southern, Phila.	33.25
No. 2 southern, Cleveland	31.75
No. 2 southern, Boston	34.75
No. 2 southern, St. Louis	31.00
Virginia, No. 2X, furnace	28.00
Virginia, No. 2X, Philadelphia	32.10
Virginia, No. 2X, Jersey City	32.40
Virginia, No. 2X, Boston	32.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	28.00 to 29.00
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	39.80 to 41.80
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	40.00
Charcoal, Superior, Chgo., last half	32.75

Coke

(At the ovens)

Connellsville furnace	$4.50 to 5.25
Connellsville foundry	5.50 to 6.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, Engish c.i.f. Atlantic ports	100.00 to 105.00
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.20
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	32 to 34 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.62c to 2.77c
Bar iron, refined, Pittsburgh	2.75c
Bar iron, common, Pittsburgh	2.35c to 2.50c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	38.00 to 40.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK	
No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c
TIN MILL BLACK	
No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
GALVANIZED	
No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c
BLUE ANNEALED	
No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth Phila.	3.795c

Full sheet schedule page 538.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

	Black	Galv.
Base, Pittsburgh	Per cent off	
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1588.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$58.80
Six-inch and over, Chicago	55.80
Four-inch, New York	55.70 to 56.70
Six-inch and over, N. Y.	52.70 to 53.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.75 per bundle, mill.

Cotton ties, 3000 bundles and over, $1.73 per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS	
(¾ x 6 inches, smaller and shorter)	
Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off
MACHINE BOLTS	
(¾ x 4 inches, hot pressed nuts)	
Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off
NUTS	
Hot pressed, square blank	3.10c off
Hot pressed, square tapped	2.85c off
Hot pressed, hexagon blank	3.10c off
Hot pressed, hexagon tapped	2.85c off
Cold pressed, square tapped	3.00c off
Cold pressed, square blank	3.25c off
Cold pressed, hexagon blank	3.25c off
Cold pressed, hexagon tapped	3.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Aug. 20, 1919	Average prices July, 1919	May, 1919	August, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry Chicago furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	32.75	31.75	31.75	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
*Southern, No. 2, Birmingham	26.75	25.00	26.25	33.00
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa.	27.00	26.50	28.80	51.00
**No. 2X, Virginia, furnace	28.00	26.50	27.50	51.90
**No. 2X, eastern del., Philadelphia	29.75	29.50	30.10	53.40
Ferromanganese, 80 per cent, delivered	110.00	111.00	130.00	250.00+
Bessemer billets, Pittsburgh	38.50	37.30	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	40.80	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	40.80	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	37.30	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	4.914
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.62	2.62	2.50	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	4.914
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	10.164
Sheets, blk., No. 28, Pittsburgh	4.35	4.31	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.51	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.71	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.50	4.00	3.72	6.00
Connellsville foundry coke	6.00	4.90	4.35	7.00
Heavy melting steel, Pittsburgh	21.50	19.90	15.45	29.00
Heavy melting steel, eastern Pa.	19.50	18.85	15.30	32.80
Heavy melting steel, Chicago	20.00	19.40	15.40	29.00
No. 1 wrought, eastern Pennsylvania	27.00	24.70	21.90	46.24
No. 1 wrought, Chicago	23.00	21.20	17.05	33.50
Rerolling rails, Chicago	29.50	24.70	17.45	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Initial Rush for Pig Iron Subsides

Although Demand for All Grades Still is Heavy Sales of Week Fall Behind – Prices are Firm with Promise of Early Increase—Relighting of Stacks Forecasts Increased Production

Philadelphia, Aug. 19.—There still are sales of foundry iron at 28.50, eastern Pennsylvania furnace for No. 2X grades, but prices continue to strengthen and more furnaces now are regarding $29 as the minimum price for this iron with No. 2 plain at $1 less. On the other hand, sales are being made right along at higher prices. While there was a lack of spectacular business, individual orders comprised a large total. Much of this is for 1919 delivery although considerable first quarter business has been taken. Eastern furnaces are asking an advance of from $2 to $3 over present prices for 1920 iron. Current inquiries include 4000 tons of foundry iron for the J. L. Mott Co., Trenton, N. J., to be delivered in fourth and first quarters; 2000 tons for the Sanitary Co. of America; and many smaller ones. Sales of Virginia iron include 1500 tons at $29 furnace for No. 2X and $30 for No. 1X. The only basic sale reported was for 1000 tons for export. A tonnage of Buffalo malleable iron was sold here at $29, Buffalo.

Buying Falls Off in New England

Boston, Aug. 18.—Prices of pig iron remain firm in all localities although the flurry in 1920 buying has almost entirely ceased in the local market. Orders for the last quarter continue to come in although in no case has the tonnage been at all sizable. The majority of the furnaces still refuse to open their books for the next year's business and those that have been selling for first half have either sold as much as they originally intended to at this time, or else feel that it is wise to wait for still higher prices. In any case the first half quotations have jumped to an almost prohibitive mark and no orders for this delivery have been reported among the week's sales. At least two of the Buffalo furnaces report their books filled for the balance of this year. The eastern Pennsylvania furnaces are still booking last quarter orders but do not seem anxious enough for the business to shade prices. In one or two cases small tonnages from this latter territory have sold for $29 at the furnace for the No. 2X eastern (2.25-2.75 silicon), but a large number of sales of this iron at $30 at the furnace seems to establish the higher level as a market price. Southern furnaces continue to feel sufficiently independent of the New England market to refuse any freight concessions. One furnace is selling 2.25-2.75 silicon iron at $28 at the furnace and another concern is selling the same grade at $29. Some orders at these prices from both of these furnaces have been taken during the week for New England delivery. All sales have been small. A Boston consumer bought 400 tons of malleable iron from a Pennsylvania furnace which has a $4.70 freight rate into New England. The price was $27.50 at the furnace bringing it to $32.20, delivered.

An eastern Connecticut consumer bought 500 tons of Buffalo iron, 2.25-2.75 silicon, at $29 at the furnace for last quarter delivery. The central Massachusetts foundries in several instances bought small lots for the balance of the year. A Connecticut manufacturer bought 600 tons of No. 2X eastern from an eastern Pennsylvania furnace at $30.25 at the furnace for last quarter delivery.

Inquiries which are out at the present are all for 1920 delivery and none of them are for any exceptional tonnages. The total of the week's sales handled by New England dealers is estimated at 4500 tons which is a lower figure than for any week during the last two months. The 1920 business has as yet hardly been touched and the feeling is that this will start in earnest within a few weeks with lively market conditions.

Brisk Foundry Sales

New York, Aug. 18.—Sales of pig iron in this district during the past week involve well over 10,000 tons of foundry iron. Included in this business was some foundry for first-half of 1920 delivery to consumers who already had closed for the remainder of this year with the furnaces taking the first-half business. In view of the impending increased cost of manufacture, the business for first half was entered at the equivalent of slightly more than 32, delivered at New York and Brooklyn, for 2.25 to 2.75 silicon foundry; this is approximately $2 higher than can be done for this grade of foundry for this year. The market is strong and the minimum prices for foundry iron are $29.35, delivered Newark and Jersey City, and $30.05 delivered New York and Brooklyn for 2.25 to 2.75 silicon, while the minimum prices on 1.75 to 2.25 silicon foundry delivered at the same points are lower. At the same time, sales of round tonnages have been made in this district at as much as $2 higher than these figures for the same grade. Included in the business transacted was a good-sized tonnage in the aggregate of Buffalo iron for this year's delivery, at $29 Buffalo, for 2.25 to 2.75 silicon foundry. Export inquiry continues active, and although the major portion of the current in-

quiry disappears after floating around the market for a short while, no inconsiderable portion of it is being placed. During the past week, for instance, approximately 3000 tons of southern foundry were sold for export at the new prices, which are based on $27.75 Birmingham, for 1.75 to 2.25 silicon foundry. While there is nothing unusual with respect to current inquiry, it is of healthy proportions, and included is one lot of 5000 tons of foundry for this year and next year. New inquiries call for 4000 to 5000 tons of basic for England and Italy.

Week of Light Dealing

Pittsburgh, Aug. 19.—Not only has there been a considerable contraction in the demands for pig iron here, but talk of higher prices also has subsided to a large extent. Practically all of the consumers of foundry, forge and malleable iron now are well protected against the requirements over the remainder of the year, and seemingly few holes remain to be filled on the steelmaking grades. The big purchases a few weeks ago of basic appear to have filled the most pressing needs that existed for this grade, although the American Steel Foundries, as far as is known, has not yet covered against an inquiry put out recently for from 5000 to 10,000 tons for delivery over the last four months of this year at its Alliance, O., plant. Steel demand in the past few months for this grade has been from the steel foundries and they appear to be covered against their immediate requirements. In spite of advances of 50 cents to $1 per ton which were asked recently on foundry iron, it is noted that three sales aggregating close to 25,000 tons were placed at the regular market quotations. A shortage of pig iron does not seem imminent at the moment, for the increase in production lately has been keeping pace with the gain in the demand and a good many stacks still are idle and represent considerable prospective tonnage. Of course, if the coke continues to bring the prices it now commands and there is any boosting of labor costs, production hardly would be increased materially, unless a commensurate increase is established in iron prices. In the past week the Dover furnace of the Penn Iron & Coal Co., Canal Dover, O., and the Scottdale furnace of the McKinney Steel Co., Scottdale, Pa., were lighted and about the first of September, the Ella furnace, West Middlesex, Pa., is expected to go in. The Anna furnace, Struthers, O., is expected to be lighted next Sunday. The Cherry Valley furnace operated by M. A. Hanna & Co. will be blown out this week for relining and No. 2 stack of the Pittsburgh Steel Co. was blown out last Friday after being in continuous operation since June 14, 1915.

Business Good at Buffalo

Buffalo, Aug. 19.—From the producers' standpoint the pig iron market here during the past week has been in a healthy condition. One interest has been doing most of the selling, while another interest has made sales during the week at an advance over any price yet quoted in this district. Business would be done in greater volume if there was no fear of industrial disturbances. Two interests have been out of the market for the past month, and the field has practically narrowed to two makers. One of these booked about 10,000 tons of iron during the week. This was mostly foundry with only a small tonnage of malleable. This interest is now well supplied with orders for the balance of the year. An inquiry for 6000 tons of foundry and several inquiries for 100, 200 and 300-ton lots are reported. The other booking interest reports that the rush of last week has subsided, but that business is still very good, with a steady market for all grades. There seems to be a steady buying of the high silicon and high phosphorus irons, with considerable business being done in manganese and magnesite. An interest which has been to all intents and purposes out of the market for a month reports sales of approximately 400 tons at the following figures: No. 2 plain $28.50; No. 2 X $29.50; gray forge $28. This constitutes an average advance of 50c.

Volume of Sales Still Large

Cleveland, Aug. 19.—Sales of pig iron in the Cleveland district, although falling off slightly during the latter part of last week, recovered on Monday and Tuesday of this week. Dealers claim that the volume of inquiries give no evidence of a slump in business. As usual, makers of pig iron are assuming a backward attitude in accepting business for first half delivery, many of them feeling that it is unwise to book orders for material the manufacture of which may be involved by labor trouble and increase costs of both labor and raw materials. Although the aggregate sales amount to a rather imposing total, no exceptionally large single transactions are reported. Prices remain firm, but expected increases have not yet been announced.

Supply Scarce at Cincinnati

Cincinnati, Aug. 18.—Word has been received that the Milton furnace in Jackson county, O., has been closed down for repairs. The three other silvery iron furnaces in that district, shut down several weeks on account of labor disturbances, are still idle. High silicon iron is difficult to obtain, as the limited supply from the South is not sufficient for present requirements. Although foundry iron is growing scarcer in the South and nearly all furnaces are quoting $27.50, Birmingham, for 1.75 to 2.25 silicon, one selling agency has placed some iron at the former figure, $26.75. The supply of this low-priced iron is limited and is being distributed in small tonnages. Northern makers have advanced to $27.75, Ironton, for this year's shipment. No iron from either district mentioned can be had for first quarter shipment, and users of foundry iron are endeavoring to buy for last quarter shipment, intending to use the iron during the first quarter of next year. An expected advance in freight rates is inducing many buyers to urge forward shipments, but cars are too scarce to move the metal as fast as wanted.

Price Increased

St. Louis, Aug. 18.—Inquiry for p iron is confined mostly to small lots. One inquiry is out for 1000 tons of southern No. 2, another for 300 tons, and one for 100 tons, all for shipment during the next three months. The price of No. 2 iron has been advanced to $27.75, Birmingham. Furnaces are adhering to the silicon differentials.

Further Advances Expected

Birmingham, Ala., Aug. 19.—Inquiries for pig iron for 1920 delivery are still being received in the Birmingham district, and a statement of one interest that $30 will be the price in the first quarter next year is regarded as significant. Spot iron is the principal sellin feature, but not many sales are recorded. Not a large amount of the probable make of the fourth quarter has been sold. Quotations are firm, with $27.75 as the minimum for No. 2 foundry (1.75 to 2.25 per cent silicon). The Woodward Iron Co. has blown out one furnace for repairs, but another furnace was blown in. The Sloss-Sheffield Steel & Iron Co. and the Woodstock Furnace Co. may each blow in a furnace this month.

Iron Shipments Are Delayed

Birmingham, Aug. 18.—An important factor in this district right now is transportation. Shipments of iron from the furnaces of the Republic Iron & Steel Co. are being delayed. Several thousand tons of pig iron are stocked in the iron yard on account of the failure of the railroads to deliver cars. Little ground remains for future stocking. The situation has become serious and if not relieved soon, the only course remaining for the company to follow is to bank both stacks. It is heard a maker in this district took on recently an order for 5000 tons of foundry at $28.50, furnace, for December delivery.

Chicago Situation Strong

Chicago, Aug. 19.—With most producers, both north and south, well sold for last half production, the pig iron situation has elements of strength which promise higher prices before long. While not enough tonnage remains unsold in the north to make it worth while to raise quotations on ordinary grades of iron and producers are averse to making higher silicon analyses, it is believed more of the latter may be contracted but at a quotation $1 or more above the ruling differentials. Northern producers have comparatively little tonnage remaining for delivery during 1919 and are using this for the accommodation of their regular customers. Additional capacity will be available shortly as the Illinois Steel Co. is about to blow in the remaining stack at Bayview, Wis., and the remaining stack at Mayville probably will be in blast before the end of this week. This leaves one merchant stack at Iroquois furnace, and one at Federal furnace, both of which are undergoing repairs. Demand at present is principally for prompt shipment in small lots, although some inquiry for larger tonnages is being entertained. Iron from the Algoma Steel Co.'s stack at Sault Ste. Marie, is being sold here as it can compete with considerable advantage over southern iron. The quotation for this iron is $29.75, furnace, for 2.75 to 3.25 silicon. The freight rate is $3.20, to Chicago and the iron can be laid down here at

from $4 to $5 below prevailing cost for southern grades. General demand is somewhat slacker than it was a fortnight ago with most present activity in malleable and great scarcity of silveries, bessemer ferrosilicon and high silicon iron ranging from 2.25 to 3.25 silicon. It develops that southern makers had a large tonnage hanging over from second into third quarter and are not catching up, as a result going into fourth quarter with enough unfilled contracts to shorten materially the tonnage they can sell. An inquiry for 10,000 tons of basic iron for a plant of the American Steel Foundries in the Pittsburgh district is current here, but probably will be placed further east. Other inquiry for basic in this district is practically absent.

Ore Demands

Now Largely for Manufacture of Basic Iron—Current Orders Light

Cleveland, Aug. 18.—Ore for the manufacture of basic iron is in greater demand as furnaces devote more of their capacity to the production of this grade. Several fair-size sales made during the current week were to supply requirements of furnaces turning entirely to the manufacture of basic. New orders, however, are light, most furnace interests having closed contracts covering their requirements. While shipments to Virginia furnaces last year amounted to 325,000 tons, so far this season there is no record of any ore from the upper lakes districts going to Virginia. Southern interests report they cannot afford to pay the price of Lake Superior iron ore and manufacture pig iron at the present selling price. They are buying the cheaper native ores, and also saving freight charges, which to Roanoke is $1.70 a ton.

One of the largest iron ore operators reports having received no orders during the past week; another representative concern received several orders amounting in all to about 40,000 tons, while the week's business of another interest did not amount to over 5000 tons.

Independent furnace interests claim to have large tonnages on hand, or contracted for, sufficient to provide for their operations until next season. A few of the smaller interests are buying from hand to mouth and it is from these interests that a larger demand is expected toward the close of the season.

The strike of railroad shopmen and dockmen shut off shipments for about 10 days, and as shipments averaged 300,000 tons daily previous to the walkout it is estimated that loss in shipments will amount to approximately 3,000,000 tons. Ore companies were advised Wednesday, Aug. 20, that while the railroad shopmen at the head of the lakes had returned to work dock workers at Marquette, Escanaba and Ashland were still out. The strikers are holding conferences at Marquette to decide the question of returning, pending a settlement of their demands. Some of the strikers at Duluth and Two Harbors returned to work Monday, but not a sufficient number to permit of normal operations.

Coke Advanced Sharply

Minimum of $4.50, an Increase of 60 Cents, Now Quoted on Spot Business—Contract Fuel Held at $5.50

Pittsburgh, Aug. 19.—The market here for beehive oven coke has experienced a radical change in the past week or 10 days, and instead of being in the buyers' favor it now is tending strongly toward prices in effect during the period of government control. Operators generally are quoting $4.75, and some are even asking $5, ovens, against spot inquiries for standard furnace fuel. While these prices have not found really substantial basis in sales, the current market may be quoted at $4.50 minimum. This represents an advance of 60 cents a ton since a week ago, and an increase of 75 cents from the recent low point when unconsigned cars in the Connellsville region were numerous. Coke on contracts for the remainder of the year is held as high as $5.50 ovens, and it is doubtful if any of the producers at present would consider a bid of less than $5. It is claimed by some dealers that $5.35 has been refused on a good contract for the remainder of the year. Most of the contracts for the last half of this year which were made last June are on a sliding scale basis on a ratio of 6¼ to 6:1 on basic iron at $25.75, furnace. That scale meant a price of $4.12 to $4.28, ovens, and proved unsatisfactory to operators because of the failure of pig iron prices to go up. When quoting recently the operators have insisted on fixed price contracts. A week ago $4.75 was the highest named on future furnace coke, and measured by today's asking price the market is 75 cents a ton higher. As much as $6.50, ovens, is being asked by some producers of selected standard foundry coke on spot or for prompt shipment, and $5.50 is about as low as any of this grade may now be obtained. Nothing has been done recently in foundry contract coke, and prices are nominal. The transition in the coke market from a condition of weakness to one of strength may be ascribed to the fact that fear of a shortage later in the year has prompted considerable buying for stocking, as a result of which the recent accumulation of loaded cars has vanished. While production has been gaining steadily during the past few weeks in the Connellsville region it is not going ahead of contract obligations. In view of the fact that there is a strong demand for coal at far more remunerative prices than have been prevailing for coke, the outlook rather suggests a continued restriction of production. The production of coke in the Connellsville region for the week ended Aug. 8 is estimated by the *Connellsville Courier* to have been 222,170 tons as compared with 209,100 tons in the previous week.

Buying Coke for Storage

Boston, Aug. 18.—During the freight embargo which has just ended many foundries frantically doubled their orders for foundry coke hoping they would in this way stand a better chance of getting deliveries made. The fact that a comparatively few of them have coke in storage for any appreciable future requirements has been evident, and the embargo has had the effect of waking all foundries up to the seriousness of an interruption to the transportation facilities. The requirements for delivery are now exceptionally strong. Many concerns normally taking one car a week are now asking for two and in some cases three. This additional tonnage is undoubtedly for the purpost of storage, for the foundries, although busy, have not suddenly increased their production to the point of requiring double the amount of coke. The price of $10.40, delivered, coke.

More Export Business

New York, Aug. 18.—Two more cargoes of northern New Jersey by-product foundry coke have been sold for export. This was the most spectacular business during the past week in the coke market here.

Complain of Slow Shipments

Cincinnati, Aug. 18.—Complaints are coming in as to delayed shipments of coke, due to car shortage and scarcity of labor. Connellsville furnace coke is around $4 to $4.25, ovens, and foundry from $6 to $6.50. Wise county and Pocahontas foundry coke range from $7 to $7.50, and quite a number of carloads for filling in purposes are being sold. Supply is not equal to the demand in any field, with the possible exception of the Connellsville district, where producers seem to be more fortunate in filling orders and shipping on old contracts. New River foundry coke is unchanged around $8, but none can be had for nearby shipment.

Increase Southern Production

Birmingham, Ala., Aug. 19.—Coke ovens are being lighted up in this section, as demand for both foundry and furnace coke is improving. Spot foundry coke is selling well at $9. Contract foundry coke is priced at $9.50. Furnace operations are increasing and the need for coke has increased materially in the last four weeks. Some orders are being offered by western consumers. A car shortage is felt by the industry in this district.

Shipments Far Behind

St. Louis, Aug. 18.—Coke shipments, particularly from the Connellsville district, are away behind. The market is strong, ranging in price from $5 to $6.25, ovens, for Connellsville 72-hour foundry. Inquiry is good for both prompt and future shipment and spot coke is in demand. One order was placed recently for 2500 tons of furnace coke, for early shipment. An inquiry is out for 500 tons of Connellsville foundry, for western delivery, at the rate of two cars per week, and other scattering inquiries probably aggregate 1000 or 1200 tons, both foundry and furnace.

Scrap Market is Inactive

Majority of Dealers Are Not Tempted by Low Prices—Steel Plants Are Largely out of Market

FOR COMPLETE SCRAP PRICES SEE PAGE 540

Pittsburgh, Aug. 19.—So little is going on in the scrap iron and steel market here that it is extremely difficult to arrive at actual selling prices. Between the fact that they already are carrying good sized stocks and the possibility of labor troubles, steel manufacturers are only casually interested in the market. On the other hand, dealers, although most of them have liberal stocks, are inclined to look upon the dullness as merely temporary, and practically the only offerings that are coming upon the market are the cars which are thrown back on the hands of dealers who have no yard facilities. One important Pittsburgh steel plant lately has been holding up shipments of all sorts and in a number of cases has made rejections of shipments. This company is said to be melting scrap accumulations which were deteriorating and is refusing to accept further shipments until this material is out of the way. Heavy melting steel takes a range from $21 to $21.50, but these prices have found no recent basis in sales other than for rejected carload lots. The principal user of machine shop turnings in this district practically has withdrawn from the market by naming a price of more than $2 a ton below that of a week or 10 days ago and also below what holders generally consider this grade to be worth. Dealers show little sign of becoming stampeded by the dullness and one explanation for this condition is the fact that the salvage board lately has been rejecting bids on ordnance department material a little below what this material recently has been bringing.

Boston Market is Dull

Boston, Aug. 18.—After a general atmosphere of activity and lively price competition in the scrap iron market, the sudden dropping off in heavy melting steel comes as a surprise in most quarters. An unmistakable dullness exists in all grades excepting No. 1 cast scrap, and whether this is due to the recent railroad tie-up or not is a question which it is hard to answer. Some feel that the natural result of the freight embargo which has been in effect throughout New England would be toward advancing prices; however the shading in the heavy melting grade among eastern Pennsylvania consumers was immediately reflected in the local market here, and concessions of a dollar have been repeatedly made within the last few days. No. 1 cast scrap has been the unusual feature in the market. The price has advanced in spite of the lull in other grades. It is now difficult to obtain and is being purchased for $28.50 at the point of sale. Many foundries have offered to buy this grade for future delivery which in itself is an unusual action. An Everett consumer recently paid $23.50 for rerolling rails which is higher than has been reported at any time this season for this grade. The market established by other recent sales is $20 to $21, delivered to consumer. There is a general feeling among foundrymen that scrap dealers are a little worried over the high priced stocks which they have stored in their yards. Speculative buying has continued for weeks here with ever increasing prices, and any continued slump at this time would mean a loss to many dealers. However, the dealers themselves point out that a serious scrap slump is hardly possible with the present bullish condition of the pig iron market.

Easier Tone in Philadelphia

Philadelphia, Aug. 19.—The scrap market here reflects a distinctly easier tone and consumers seem less anxious to buy and are willing to pay less than heretofore. The Lukens Iron and Steel Co. is reported to have bought 2000 tons of heavy melting steel at $19.50, delivered. The same company now is said to be offering $19. The scrap business of the past week has been comparatively small. However, the actual condition of the market is strong as practically all grades are scarce.

Buffalo Market Firm

Buffalo, Aug. 19.—The market for scrap is good, with prices holding firm. Local mills are increasing production rapidly and are operating at 85 per cent of capacity. The vision of $25 heavy melting steel in the near future has gone glimmering, and dealers are not so insistent on high prices. One of the most potent causes of this is the fact that there has been no $22.50 scrap sold during the past week to Pittsburgh and Valley interests. No large orders have been placed during the week.

Eastern Market is Quiet

New York, Aug. 18.—The American Brake Shoe & Foundry Co., which has been a heavy buyer of stove plate in the east and freely has paid as high as $21 delivered, Mahwah, N. J., now has named $20.50 as the highest price which it is willing to pay for this grade of scrap. However, dealers are holding tight to their stocks and no sellers at this price are reported so far. The market in scrap iron and steel has been quiet here during the past week, mainly due to the fact that Pittsburgh no longer is seeking to buy scrap here. Owing to the fact that sales are being made in the Pittsburgh district right along, however, and that the supply there is a good deal less than what is needed, Pittsburgh interests again are expected to be buying here before long. As a result, the tone of the market here is strong. Wrought scrap is scarce and railroad wrought has been sold during the past week at $1 higher than during the previous week. Machine shop turnings also have gone up about 50 cents. A notable sale during the past week was one of 1000 tons of cast car wheels sold by an eastern railroad at $25 per gross ton along the line. There are inquiries right along for scrap for export but none of them are being closed. It is learned that a sale of several thousand tons of heavy melting steel which recently was made to England involved scrap which is to be shipped from Panama and not as at first understood, from this country.

Chicago Market Quiet

Chicago, Aug. 19.—After a rapid rise in quotations and a recession from the high mark, present prices on iron and steel scrap seem to have struck a balance and are remaining practically stationary. Consumers are not deeply interested in the market and dealers are not anxious to press their holdings for fear of bringing about lower prices. The general opinion is that resumption of buying will carry prices to higher levels and that scrap will be comparatively scarce. Settlement of the strike of railway shop men is bringing renewed activity to the plants of consumers and further buying is expected to follow before long. The ordnance department is asking for bids up to Aug. 21 on 15,000 tons of 6-inch gothic billets on which former bids were refused. From the same source 900 tons of steel bars are also offered. The Chicago, Burlington & Quincy railroad has issued a list containing 5600 tons, including 1500 tons of No. 1 steel rails and the Michigan Central railroad offers 4000 tons.

Slight Reduction at Cincinnati

Cincinnati, Aug. 18.—Another small price reduction has been made on many grades of scrap metal. There is little demand for heavy melting steel. No. 1 railroad wrought also is moving slowly. Shipments on contracts are held up by the scarcity of cars. The plant of the Andrews Steel Co., Newport, Ky., is still closed down on account of labor troubles and is not absorbing scrap. Local and nearby foundries are melting a fair tonnage and many of them are buying for last quarter shipment, but few contracts are reported for scrap to be shipped in the first quarter of next year.

Little Activity in Southern Market

Birmingham, Ala., Aug. 19.—With the exception of sales of No. 1 cast, there is little activity in the scrap iron and steel market in the South. Quotations show no change. Demand for cast scrap is strong because foundries using the product are unable to get all the pig iron they need promptly. Melters of heavy melting steel in this section refuse to pay prices dealers want.

Pipe Orders

For Prompt Delivery Refused—Butt-weld in Greater Demand

Pittsburgh, Aug. 19.—Manufacturers of pipe occasionally are able to accept a few tons of lapweld business from their regular customers to meet some

pressing need but as a general rule they are too heavily committed in this direction to be at all interested in the orders seeking them for early delivery. Deliveries against the present bookings of the National Tube Co. will keep that company busy until over the turn of 1920 and the independent manufacturers are equally as well provided with tonnage. No large line pipe inquiries recently have come out but a great number of small ones are seeking manufacturers. Improvement in the demand for buttweld pipe continues, due to the expansion in building operations. New building activities are especially heavy in New York and on the Pacific coast. The Riverside plant of the National Tube Co. at Benwood, W. Va., which is a buttweld pipe plant, went into operation yesterday after a long shut-down.

South America Buys Tonnage

New York, Aug. 18.—Prices on cast iron pipe continue to reflect a strong advancing tendency. Although some business is being taken at $52.70, New York, for 6-inch, class B, and at $55.70, New York, for 4-inch, class B, considerable business is being booked at $1 higher than the level. In fact, one interest has sold more tonnage at the $1 advance during the past week than during the two weeks before at the old level. The business which now is being booked is comprised principally of carloads which are being taken by the regular buyers and the latter are showing a disposition to buy what they need rather than wait, due to their expectation of further advances.

Detroit Wants Tonnage

Chicago, Aug. 19.—One of the largest cast pipe tonnages offering in the West recently is that of Detroit, 3080 tons, on which bids were to be opened Aug. 18. Several other tonnages are pending during the next few weeks, so that the market has a better air of activity than usual. The United States Cast Iron Pipe & Foundry Co. has been awarded 125 tons at Council Bluffs, Iowa, and 350 tons at Edgeley, N. Dak., has been given to a contractor who has not yet placed it with a maker.

Southern Demand Increasing

Birmingham, Ala., Aug. 19.—All pits in shape at the cast iron pipe plants in the South are being put to work, demand for pipe being good, with more business in sight. Activity at the plants is increasing weekly, but cast iron pipe and sanitary pipe makers report a shortage of labor. Cast iron pipe manufacturers are being asked to make early deliveries, municipalities and others being anxious to lay pipe before winter.

Maintain New Schedule

Philadelphia, Aug. 19.—Warehouses are reporting a better demand due to some extent to the fact that mills are crowded for shipment on most finished lines. Warehouses here are maintaining the new method of quoting which involves the $1 warehouse differential and the use of the Pittsburgh base plus the freight rate from Pittsburgh to destination on out of town shipments.

Semifinished is in Demand

Rush for Sheet Bars Springs Up Over Night—Valley Mill Books 18,000-Ton Order—Strip Steel Active

Youngstown, O., Aug. 19.—Prompt rolling of semifinished materials is out of the question in this district. The Republic Iron & Steel Co. has withdrawn not only from the sheet-bar market but from the iron and steel market in general. Few specifications can be squeezed into fourth quarter rolling schedules at certain mills here, so heavy is the demand for all grades. Makers state they do not recall a period in which the demand for practically all steel commodities has sprung up so quickly. A month ago mills here were in a position to promise an attractive delivery date, but during the past three weeks, business was booked in such volumes that mills in many instances are committed until the latter part of December. Among large orders of sheet bars booked here recently is one for about 18,000 tons. Delivery to a nearby consumer is to be scattered over next quarter.

No Surplus of Sheet Bars

Pittsburgh, Aug. 19.—The supply situation in sheet bars still is extremely taut as the demands upon the makers of sheets and tin plate show no diminuition and the latter constantly are in the market for additional supplies of steel. It is understood that a valley sheet manufacturer who recently put out an inquiry for 18,000 tons of sheet bars has covered on the greater part of this requirement with another valley producer. That any such a quantity of sheet bars was available is explained by the fact that the seller at present is rebuilding and enlarging his own sheet mills and did not need the sheet bars. It is possible that some tonnage of sheet bars will be made available through the suspension of a Canton, O., sheet manufacturer. Open market offerings of skelp also are scarce, due to the big demands before the pipe manufacturers. Demand for rolling billets is good but manufacturers are able to turn out ample tonnages. Fair sized offerings of wire rods are made available as a result of the fact that producers who have their own finishing mills have not been able to get finishing operations up to a point where they will take care of their output of rods. Export demand for rods is quite good and one sale of 400 tons for shipment to England, which included equal quantities of soft and high carbon rods, is noted at $55, base Pittsburgh. Although production of slabs is being curtailed in keeping with the demand for plates, supplies still are quite ample and the prompt market is not especially firm. In fact, it is reported that 3000 to 4000 tons of slabs recently were sold to a valley manufacturer at around $39, Pittsburgh.

Strip Steel is in Demand

Youngstown, O., Aug. 19.—Hot and cold-rolled strip steel makers here have withdrawn from the market. Three weeks ago the demand for both grades was so light that makers were obliged to go out after business in order to schedule mills satisfactorily. Conditions changed almost over night and makers soon found their commitments far enough ahead to warrant the closing of books. Practically no tonnages for fourth quarter delivery can be had from mills in this territory. It would seem from the heavy volume of last week's inquiries that certain consumers of this material are urging their brokers to cover their next quarter requirements immediately. Automobile makers are consuming a large per cent of the output of strip mills here. The demand from this class of the trade continues heavy.

Makers Well Filled Up

Pittsburgh, Aug. 19.—Strip steel manufacturers by contrast with their recent conditions when they were eagerly seeking business, now have practically all the business they care to accept and because of the unsettled labor situation are fighting shy of taking on additional tonnages. While hot rolled strip steel still is in much stronger demand than cold rolled, the latter is gaining steadily in activity, which would suggest that other consumers besides the automobile manufacturers were buying. Hot rolled strip steel can be used by automobile manufacturers without additional finishing. In order to give hot rolled strip steel stamping quality, it must be cold rolled. Prices on both grades are firm at the March 21 basis and demands for prompt shipment are so urgent that it is believed that slight premiums could be obtained if manufacturers were disposed to seek them.

Low Bids

Submitted by Carnegie Steel Co. on Big Navy Job

Washington, Aug. 19.—The Carnegie Steel Co. last week submitted bids with base prices of 2.50c for plates, 2.40c for shapes and 2.35c for bars, all f.o.b. Pittsburgh, in connection with the navy's receipt of tenders for 28,000 tons of steel for battleships 49 and 50 to be built at the Brooklyn navy yard. The Carnegie company's submissions for plates and shapes were 15 cents and 5 cents respectively under the bids of the Bethlehem Steel Co., the Brier Hill Steel Co. and the Midvale Steel & Ordnance Co. for the same material, the bids of the three companies being at the prevailing market level.

The total requirements involved are made up of 21,019 tons of plates, 5354 tons of shapes and 1403 tons of bars. The navy's schedule of supplies requires delivery at the rate of 5000 tons monthly to begin not later than Sept. 15, the navy reserving the right to buy more or less steel for the specified work as the actual construction may require. The Carnegie company offers to make delivery commencing immediately.

No Let-up in Bar Demand

Valley Interest Withdraws from Market—Steel Bars Sold for Export—Chicago Mills Resume Operation

Pittsburgh, Aug. 19.—Active demands are being made upon the makers of merchant steel bars particularly for rounds and squares of 1 inch and under. Demand is good in the sizes up to 1½ inches and fairly good up to 3 inches but rounds running 3 inches or more are going slowly. If there is anything unsatisfactory about the steel bar business at the moment it is the uneven distribution of orders which, of course, is carried to the mill operations. Prices are firm, with some makers demanding substantial premiums on the product of mills which involves considerable hand labor when specifications run too heavy to these sizes. Bars that can be rolled on continuous mills can be made without a loss at the base of 2.35c Pittsburgh, but on hand mills reports are coming that this price shows a loss. Export demands are brisk, especially in rounds and squares running 1 inch and smaller. Included in such business was one sale aggregating 5500 tons for South America which was extremely desirable because of the fact that no less than 100 tons of any one size was specified. Demands for concrete reinforcing bars have dwindled somewhat during the past week, but makers have a fair amount of business booked and prices hold quite firm at the recent levels. Demand for iron bars is moderate but is not confined to anyone class of consumers. Refined iron bars are quoted at 2.35c Pittsburgh in carloads and 3.00c for less than carloads.

Accept Orders With Care

Philadelphia, Aug. 19.—The demand for steel bars continues active and mills are accepting new orders with care. Some makers have work ahead for from 10 to 12 weeks and are practically out of the market, particularly on small sizes. Although 2.50c Pittsburgh is the usual price on bar iron, sales continue to be made at 2.35c Pittsburgh.

Chicago Mills Resume

Chicago, Aug. 19.—Return of railway shopmen to their duties pending settlement of their demands has given mills opportunity to resume operations on a larger scale. The leading interest has added seven stacks at its Gary and South Chicago plants, which felt the effect of the strike most keenly, and will render the remaining stacks active as rapidly as conditions will warrant. Backing up of business, due to slack operation, has given a large order book and consumers of soft steel bars have been put to some inconvenience by lack of supplies from mills. However, every effort has been made to avoid distress, and minimize the lack of material. Demand for soft steel bars is excellent but mostly in small tonnages. Specifications against contracts are being received in large volume. Inquiry for bar iron is somewhat less than present production and operation of mills over the next few weeks is uncertain. The quotation remains firm at 2.62c, Chicago. Good demand for hard steel bars exists and it seems to be growing better. Most of this is from manufacturers and reinforced concrete builders are not taking much of this material.

Brisk Demand in Cleveland

Cleveland, Aug. 19.—With the exception of the railroad companies, practically all users of finished steel are in the market for moderately large tonnages. One large manufacturer of bars and small shapes reports that sales for the last week surpassed those of any week for some time. Most of the business is coming from automobile builders for bars and from manufacturers and others who are erecting buildings for shapes. Prices remain unchanged. Except in a few sizes of bars and shapes, mills are unable to promise deliveries earlier than first quarter.

Orders Exceed Production

Youngstown, O., Aug. 19.—Steel bar sales have been so numerous during the past three weeks that mill commitments are now in excess of production. The Republic Iron & Steel Co. has withdrawn from the market. Implement makers are taking further tonnages and are specifying heavily against contracts. This class of the trade is well covered. Differentials on various grades of shafting materials have been revised by makers in general and the trade is now being notified to this affect. Specifications for screw-stock and shafting steel are heavy, makers having little to offer under six to eight weeks' delivery.

Good Export Demand

Buffalo, Aug. 19.—The export demand for bars is very strong. Local mills are working close to 90 per cent of capacity.

Bolt Demand Heavy

Chicago, Aug. 19.—Demand for bolts and nuts continues strong, and specifications on existing contracts indicate that consumers are using the material on hand at a rapid rate. Considerable new business is offered and most plants are operating at as high a rate as the labor supply will permit.

Specifications Are Slower

Cleveland, Aug. 19.—Full operations continue among the nut, bolt and rivet manufacturers. New business is received from diversified industries, although the widespread industrial unrest is beginning to have its effect and a slight slackening up of specifications is noted. Jobbers' requests for deliveries on contracts continue frequent. Rivetmakers claim they are enjoying a satisfactory business at present, with considerable business from the Emergency Fleet corporation. Outside of shipbuilders, demands for rivets are more or less spasmodic, with carbuilders running a close second.

Well Supplied With Business

Pittsburgh, Aug. 19.—Makers of nuts, bolts and rivets are well provided with business and 100 per cent operations are the rule at plants not suffering from the scarcity of labor. The new prices recently announced are firmly insisted upon on all new business as it is contended that while neither bars nor rods have advanced in prices producing costs have risen as a result of the efforts of manufacturers to maintain their working organizations.

Demand Gradually Enlarging

Pittsburgh, Aug. 19.—Demands upon the manufacturers of cold finished steel bars gradually are expanding, although considerable room for improvement still exists. While the demand is best from the automobile industry, other users of drawn, turned and rolled steel bars are coming into the market for larger tonnages than before in some time. A fair amount of advance orders are before makers and some of the bookings are for delivery over the remainder of the year. A new system of quoting has been adopted by the leading manufacturers and instead of the list and discount method, a pound basis hereafter will be quoted. Since the old base price was 5.00c Pittsburgh and carried a discount of 28 per cent, the net base price was 3.60c. The new card of prices and differentials which became effective yesterday and applies to all unfilled tonnages as of Aug. 18, quotes a base of 3.60c Pittsburgh but the base size now is 2¼ to 3 inches instead of 2 to 3 inches as in the old card adopted March 15, 1915.

Premium on Bands for Export

Pittsburgh, Aug. 19.—The feature of the situation in hoop and band steel is a rather active export demand for the latter and with sales at 3.35c to 3.50c, Pittsburgh, or from $6 to $9 a ton from the regular base price. Demand for the narrower widths, both domestic and foreign, is moderate. Continued good demand for band steel is noted from the makers of automobile accessories and parts. Little new business is coming along in cotton ties and buyers are not specifying at all freely on old contracts. It is reported that the cotton crop is late this year and free specifying for ties is not expected until next month. Some makers have ceased rolling ties for the present, having accumulated a sufficient stock to cover the probable requirements of the next month or so.

Plate Demands

Continue to Lag—Ship and Car Building Have Supplies

Pittsburgh, Aug. 19.—No appreciable improvement can be chronicled of the demand for plates, for while makers of tanks and oil refinery equipment are fairly free buyers, the requirements of the car, locomotive and shipbuilders are extremely moderate in the lack of new orders. The plant of the Standard Steel Car Co., Butler, Pa., is down because of a strike of a por-

tion of its workmen who have organized and have made demands upon the company for higher wages, shorter hours, and recognition of the union. Car manufacturers in Pittsburgh proper appear to be well fortified in the matter of plate supplies and some of the Pittsburgh steel manufacturers have considerable tonnages of suspended business with the shipbuilders. Plate production is being curtailed in keeping with the demand and no important shading of the March 21, base of 2.65c, Pittsburgh, for tank plates is noted.

Shading in Eastern Market

Philadelphia, Aug. 19.—The plate market was shaded considerably in bids of more than 20,000 tons of plates for a battleship to be built at the Brooklyn yard and a number of good sized tonnages are reported to have been placed by private consumers at concessions. Such shading is being done only on choice tonnages. At the same time, a large portion of the current business is going at 2.65c. While the demand has improved considerably, the eastern mills are not operating at more than 45 per cent of capacity. It is believed that there is a good prospect that some of the suspended orders of the Emergency Fleet corporation are going to be reinstated. Several private ship orders are being held up, it is learned, while prospective owners are ascertaining whether they can obtain suitable vessels from the shipping board at reasonable figures.

Boiler Makers Buying

Cleveland, Aug. 19.—Orders for plates continue to be received in fair volume, although the tonnages called for are not so large as during the recent buying movement on the part of automobile manufacturers. The latter are still placing some business, but the heaviest demand at present is coming from the makers of boiler plates.

Demand Holds Well

Chicago, Aug. 19.—New business in steel plates continues to be excellent and plate mills have comfortable backlogs, in sharp contrast to the slack condition of the early part of the year. An inquiry has been received for about 1600 tons of plates, and an equal tonnage of shapes for two colliers to be built at New Orleans.

Southern Mills More Active

Birmingham, Ala., Aug. 19.—The bessemer rolling mill plant of the Tennessee Coal, Iron & Railroad Co. has orders in hand warranting steady operation on plates and shapes for several months. Foundry and machine shop operations are increasing. Two of the larger plants are working day and night. Labor is being sought by one of the largest foundries and machine shops. While the union is not recognized, union hours are observed and union wages are paid at one of the larger shops, so anxious are the proprietors to increase production. Government sugar machinery and cotton compress work is voluminous. The plant of the Joubert-Goslin Machine & Foundry Co. has been greatly improved and enlarged.

Sheet Mills Refuse Orders

Have No Sheets to Sell Until 1920—Three Plants Close Doors Because of Labor Threats

Youngstown, O., Aug. 19.—Practically all valley sheet mills are obligated until the latter part of the fourth quarter. Several makers have withdrawn from the market and state they have no sheets to sell until Jan. 1. In spite of the heavy demand for all grades, there is no tendency on the part of makers to increase prices, no doubt because the general trend of conditions over the country is now toward lower prices. Two valley mills are turning away business daily. One large producer, however, states he has not taken on any fourth quarter business as yet and that he is about to open his books. The entire output of a mill in a nearby district producing blue-annealed sheets has been contracted for by a dealer here. This dealer is now offering to the trade 1200 to 2000 tons monthly of this grade in 7 to 14 gages for prompt rolling. An inquiry from a New York buyer for 18,000 blue annealed sheets is now pending. Heavy tonnages of this grade are now being consumed by makers of enameled ware and good-sized inquiries continue to come from this class of the trade. All galvanizing pots in the valley are filled except those at the DeForest plant of the Republic Iron & Steel Co. This plant is idle pending the installation of new driving equipment. Inquiries for galvanized range from 100 to 500 tons and mill commitments for this grade are heavy. The volume of inquiries from brokers indicates that they have been advised by their customers to get on mill books immediately. The mills here are obligated so far ahead now that it is a question whether any tonnages, no matter of how large a volume, can be had before the first quarter of 1920.

Still Flooded With Business

Pittsburgh, Aug. 18.—Sheet manufacturers still are flooded with orders and if not another ton of business is placed, practically all makers can keep going full on present bookings to the end of this year. Illustrative of the size of the demands, it might be stated that one company is almost two weeks behind in entering its orders. Not only are new demands on a tremendous scale, but several consumers who some time ago placed orders at less than the March 21 prices are in doubt about securing deliveries and are seeking to place protective orders with other manufacturers. In a few cases such demands have been prompted by notification by manufacturers who took the original orders that they will be unable to ship owing to labor troubles. The labor situation is the "fly in the ointment" in the steel industry today, for without strikes or disputes, the prospect would be extremely roseate.

Demand is Heavy

Chicago, Aug. 19.—Consumers of steel sheets in all grades are seeking much material, but mills are well filled and those located in this district have comparatively little remaining for this year's delivery. The leading independent is entirely out of the market on galvanized, but can offer December delivery on a small tonnage of black sheets and can take a few more blue annealed for November and December.

Tin Plate Mills

Are Nearly Sold Out—Manufacturers Predict Record Output in 1920

Youngstown, O., Aug. 19.—Steady operation of tin plate mills here throughout the fourth quarter is assured. Business for this month has been heavy and mills are practically sold out. The Trumbull Steel Co., Warren, O., has withdrawn from the market and, as far as known, will have no tin plate for sale until 1920. Many tin-plate makers in this and nearby districts hold that the production of tin plate for 1920 will be the largest since the beginning of the industry in this country. They base their opinion on the fact that this year's crops, while comparatively small, will consume the supply of cans now available. Canmakers did not contract for as many boxes of tin plate this year as they have in the past and, hence, after this season's crops are packed, the surplus of cans will be exceedingly small. With enormous crops expected for 1920 and with practically no cans available for the pack, it is thought that canmakers will be out soon for enormous tonnages of tin plate. Inquiries are pointing this way now. It is heard the leading canmaker is about to come into the market for several thousand boxes. The large inquiry for tin plate, which has been before certain makers during the last three weeks, has been satisfied. Quotations on this inquiry ranged anywhere from $6.75 to $7 base. The business, however, was closed with a maker in the Pittsburgh territory at $6.65, base.

No Let Up is Noted

Pittsburgh, Aug. 19.—Demands upon the makers of tin plate still are on an enormous scale for in addition to heavy specifications against unfilled tonnages, new orders, especially for export, are extremely numerous. There are few foreign countries where tin plate is used which are not now sending in orders. Meanwhile, the domestic demand is heavy, especially from the Pacific coast where estimates of the perishable crops fell seriously below actual yields and nowhere nearly enough tin plate had been ordered. Manufactured cans recently have gone to the Pacific coast from as far east as Baltimore in the effort to make good the deficiency. Restoration of practically normal transportation conditions in and around Chicago has permitted of the movement of some large shipments of tin plate which were held up by the railroad strike.

Shape Demand Increases

Seventy-Four Per Cent of Capacity of Bridge and Structural Shops Engaged

New York, Aug. 18.—Demand for structural steel which has been active recently continues to improve in this district. Lettings in the metropolitan territory reported during the past week aggregate at least 4000 tons, and the total probably was in excess of this figure. Further improvement is expected as a result of the closing of numerous jobs on which quick action is expected. One such job is the proposed Linnard hotel, Park avenue, involving 4000 tons, for which the general contract has been let. Bids on 1100 tons for the proposed dirigible hangar at Lakehurst, N. J., were rejected last week and the plans are to be redesigned. It now is rumored that a similar dirigible hangar may be erected in Florida in the future. Prices on fabricated business in this district continue low. In fact, the current quotations on fabricated steel delivered in New York range from $70 to $75 per ton. The great improvement in the structural business is shown in the report of the Bridge Builders and Structural society made public today. The records of this society show that during the month of July, 74 per cent of the entire capacity of the bridge and structural shops of the country were contracted for. This figure is equivalent to 133,200 tons, which compares with 65 per cent, or 117,000 tons for June. A comparative statement follows:

Month	Per cent	Approximate tonnage
July, 1919	74	133,200
June	65	177,000
May	49	88,200
April	24½	48,100
March	17½	32,300
February	12½	22,500
January	12	21,600
December, 1918	29	52,270
November	27	48,700
October	43	77,400
September	60	108,000
August	57	102,000
July	116½	209,700
June	56	100,800
May	60	108,000
April	64	115,200
March	47	84,600
February	55	99,900
January	53	95,400
December, 1917	121	205,200
November	77	138,600
October	61½	110,700
September	29	52,200
August	38	68,400
July	41½	74,700
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000
December, 1916	86	148,000
November	78	134,000
October	77	133,500
September	52½	99,400
August	64	112,600
July	47½	83,600
June	58	100,000
May	80	137,000

Small Tonnages Placed in East

Boston, Aug. 19.—The value of new construction work in New England at present is practically in accordance with the average established in the past few years, but the bulk of the work is in outlying industrial additions and improvements. In the larger cities practically no hotels are being built, and office building construction is almost negligible. A comparatively small tonnage of shapes is being used. The records of the leading New England construction companies indicate an average established by structural steel users' reports of two and two-thirds months of future work on hand. New England companies are now running their steel construction plants at an average of about 80 per cent of capacity, and the work in these same plants during the past year shows an average for that period of little over 50 per cent of the total capacity. The estimated steel tonnage booked by Boston construction companies during the past month is 4000 tons or about 60 per cent of total capacity.

Shape Mills Are Busy

Philadelphia, Aug. 19.—All eastern shape mills are rushed with business. One mill, which only recently was on part schedule, now is rolling more shapes than it was able to turn out during the war. Most of the current business consists of small orders, but these are in such volume that mills are beginning to pile up considerable tonnage ahead. Included in current business are several export orders for ship shapes, one for 1000 tons for France and a round tonnage for Argentina. The structural market is quieter.

Numerous Inquiries Being Figured

Pittsburgh, Aug. 19.—While new structural lettings in this district have been few and small lately, fabricating interests report numerous inquiries upon which they are figuring. Few of the shops are at all well provided with business and competition on such new projects as are coming out still is sharp enough to make the award unprofitable for the successful bidders.

Several Large Contracts Let

Cleveland, March 19.—Structural lettings in the Cleveland district have increased in number and tonnage, although several of the largest jobs figured on during the past few weeks are still in abeyance. Detroit is proving a particularly good market for fabricators, and two large contracts have been awarded in that city. The American Bridge Co. was awarded a contract for a power plant for the Detroit Edison Co., and a contract for a building for Henry Ford in connection with his new enterprises at River Rouge. The latter calls for 6000 tons, while the former will require 3500 tons. The contract for 600 tons for the Studebaker Corp.'s new building in Detroit was awarded to Whitehead & Kales Co., Detroit. It is understood that the contract for 4500 tons for a building for the Cleveland Tractor Co., Cleveland, has been closed, but confirmation as to who received it is lacking.

West Buying More

Chicago, Aug. 19.—Despite adverse circumstances surrounding the building trades, new construction in the West seems to be going forward at an increased rate. No settlement has been reached in the strike and lockout at Chicago and no construction is going on here. However, considerable business is coming in from outside sources, showing general activity throughout this territory. Some of this is railroad construction, and by far the greater part is industrial, with occasional hotels and mercantile buildings, although the latter are scarce. The American Steel Foundries is taking bids for a machine shop and an extension to its No. 2 foundry at Granite City, Ill. The Leonard Construction Co. is taking bids on 500 tons of steel for the Larrowe Milling Co., at Rossford, O. F. D. Chase, engineers, Chicago, is taking bids on about 400 tons for the Ohio Steel Foundry Co., Lima, O. Bids are under consideration for about 270 tons of steel for the substructure of the Madison street bridge at Chicago.

CONTRACTS AWARDED

Broadway theater, Buffalo, N. Y., 100 tons; to Kellogg Structural Steel Co.

Tanks and other equipment for the Beacon Oil Co., Boston, 3000 tons; to Memphis Steel Works.

State capitol building for the state of Idaho, Boise, 629 tons; to Omaha Structural Steel Co.

Three buildings for the Northern Paper Mills Co., Green Bay, Wis., 425 tons; to Worden-Allen Co.

Foundry building for the Danville Malleable Iron Co., Danville, Ill., 241 tons.

Power station for the Middle West Utilities Co., Tulsa, Okla., 235 tons; to Kansas City Structural Steel Co.

Structural steel for paper mill building for the Peshtigo Pulp & Paper Co., Peshtigo, Wis., 169 tons; to the Northwestern Iron Works, Milwaukee.

Fuel oil storage tank for the United States railroad administration, Missouri, Kansas & Texas railroad, 144 tons.

Power plant and foundry for the Samson Tractor plant, General Motors Co., Janesville, Wis., 1500 tons; to the Vierling Steel Co. and A. Bolter's Sons.

Bridge for the East Erie Commercial railroad, Water street, Erie, Pa., 100 tons; to the Jones & Laughlin Steel Co.

New central trade school, New Orleans, 300 tons; to the Price-Evans Foundry Co., Chattanooga, Tenn.

Building for Henry Ford, River Rouge, Mich., 6000 tons; to American Bridge Co.

Plant for Studebaker Corp., Detroit; to Whitehead, Kales & Co.

Power plant for Detroit Edison Co., Detroit, 3500 tons; to American Bridge Co.

Building for Anderson Motor Car Co., Rock Hills, South Carolina, 300 tons; to Fort Pitt Bridge Works.

Gymnasium for Lake Erie college, Painesville, O., 65 tons; to Fort Pitt Bridge Works.

Storage house for Star Worsted Mills, Fitchburg, Mass., 120 tons; to New England Structural Co.

Two buildings for Pennsylvania Sugar Co., Philadelphia, 1400 tons; to American Bridge Co.

Buildings for Texas Co., Port Arthur, Tex., 1900 tons; to Kenwood Bridge Co.

Five bridges for New York Central railroad, 300 tons; to American Bridge Co.

Building for Bryant Electric Co., Bridgeport, Conn., 300 tons; to American Bridge Co.

Building for National Biscuit Co., New York, 400 tons; to Hay Foundry & Iron Works.

Building for Kerr Steamship Co., Beaver street, New York, 800 tons; to Hay Foundry & Iron Works.

Buildings for Fraser, Brace & Co., Staten Island, 400 tons; to American Bridge Co.

Two transfer bridges for Lehigh Valley railroad, 750 tons; to American Bridge Co.

Power plant for Hershey Chocolate Co., 500 tons; to Shoemaker-Satterthwait Bridge Co.

Building on Madison avenue and Twenty-seventh

street, New York, 300 tons; to Passaic Structural Steel Co.

Building for United Dressed Beef Co., New York, 600 tons; to Hay Foundry & Iron Works.

CONTRACTS PENDING

Building for Cleveland Tractor Co., Cleveland, tonnage indefinite; bids to be taken soon.

Building for the Ohio Steel Foundry Co., Lima, O., 400 tons. F. D. Chase, engineers, Chicago, taking bids.

Manufacturing plant for the Larrowe Milling Co., Rossford, O., 500 tons. Leonard Construction Co., Chicago, taking bids.

Machine shop and 225-foot extension to No. 2 foundry of American Steel Foundries, Granite City, Ill. Company taking bids.

Substructure for Madison street bridge, Chicago, 270 tons. Bids being considered.

Building for the Manz Engraving Co., Chicago, 160 tons. Bids asked.

Stacy-Trent hotel, Trenton, N. J., 400 tons; bids being taken.

Germania Mill building at Holyoke, Mass., 400 tons; bids being taken.

Boat and storage building for Philadelphia navy yard, 1000 tons; bids being taken.

Building for Eclipse Gas Stove Co., Rockford, Ill., 650 tons; bids being taken.

Bridge for Baltimore & Ohio railroad across Allegheny river, 5500 tons; bids being taken.

Dirigible hangar at Lakehurst, N. J., 1100 tons; all bids rejected, plans to be redesigned.

Linnard hotel, Park avenue, New York, 4000 tons; general contract to Thompson-Starrett Co.

Railway express building, Grand Central terminal, New York, New York Central railroad taking bids on contract to convert this building from 4-story to 16-story structure.

Alloy Market

Shows Trend Toward Lower Prices—Caution in Buying

New York, Aug. 18.—While neither English nor domestic producers of ferromanganese have changed their asking prices, there have been sales by both groups during the past week at less than those prices. One round tonnage of English metal was sold at $100, c.i.f. Atlantic tidewater, and two domestic producers have sold round tonnages at less than $110, delivered. It now is apparent that although the current domestic quotation is $110 delivered, business can be placed at less on a competitive basis. The last quotations which have been made by English producers in response to inquiries are $105, c.i.f. Atlantic tidewater, but in view of the fact that the English makers recently accepted lower bids on definite tonnages, it is figured that by making a firm bid a consumer still could buy English metal at less than $105. Foreign inquiries for spiegeleisen which previously were noted still are under negotiation, but there is no indication that they will be closed at once. Domestic demand for spiegeleisen is at a low ebb, and the market is largely nominal.

It is estimated that current production of 50 per cent ferrosilicon is not over 10 per cent of the 1918 production. However, makers generally have ample stocks to take care of the requirements of their customers for the present. Only one or two makers are out of supplies of the alloy. Competition continues keen on inquiries for 50 per cent ferrosilicon. Little contracting has been done for a month or two, business being largely for carload lots for early shipment. Most makers are asking $90 to $95, delivered, both on carloads and contracts, but some resale alloy, it develops, still is on the market at around $80. Producers say the average cost of making 50 per cent ferrosilicon is around $90 a ton and assert that this quotation will be considered low before many more months.

The markets for the special steel making ferroalloys remain rather slow. Makers of special steels seem well supplied, one Pittsburgh consumer having more than 50 tons for which he paid about $2.50 a pound contained as against the current price of $1.15 to $1.25. The trade is interested in the bill now in congress to impose a tariff on tungsten ore and ferrotungsten. Representative Timberlake, who introduced the bill says that it would fix the price of American-mined tungsten concentrates at $18 to $20 a short ton unit, as against the current price of about $10. Several inquiries for ferrovanadium are reported and this market is somewhat stronger. Business has been done in the standard 35 to 40 per cent alloy for delivery over the remainder of the year at $7 a pound contained.

Hold to Market Prices

Philadelphia, Aug. 19.—It has been learned that while several sales of domestic ferromanganese have been made at less than $110, they involved off-quality material. Domestic producers refused several firm bids on carload lots of standard metal at $109. They say they now are selling below cost and state that if the market does not improve there will be no incentive to keep on producing, with the result that there will be a great shortage of ferromanganese next spring. A sale of 300 tons of spiegeleisen is reported.

Price Tendency Lower

Pittsburgh, Aug. 19.—Reports from the east of a weaker market in ferromanganese have been reflected promptly in this market. A Pittsburgh steel manufacturer recently took a round tonnage of 76 to 80 per cent domestic material at $105, delivered, and while no actual business has been reported in 78 to 82 per cent alloy, the impression is fairly general that even that grade can be bought at $105, delivered. The market also has gone to a lower base on 50 per cent ferrosilicon with one large producer now offering to accept business at $80, furnace, freight allowed, and while others are asking up to $90, it is extremely doubtful if any more than the lower figure could be obtained today as consumers appear to be well covered and such new demands as are coming out are for small tonnages. In view of the fact that the higher grades of ferrosilicon can be substituted for bessemer ferrosilicon, some surprise is occasioned by the fact that demands for the former are not more numerous. It is noted that consumers of ferromanganese are not buying more than 60 days ahead and so long as they maintain this policy it is considered probable that domestic material will have the preference over English ferromanganese and that it will command a moderate premium.

Exports of Wire

Average 10,000 Tons Monthly—Makers Book New Business Cautiously

New York, Aug. 18.—Wire makers, because of the uncertain railroad situation, continue to be careful about adding new business to their books. Where it is necessary to take care of regular customers orders are being entered, but such buyers are beginning to understand that in view of the present situation, they will not be entitled to receive more tonnage each month than they had been receiving on the average during 1917 and 1918. Wire mills in New England are unable to ship along the New York, New Haven & Hartford railroad, but are able, by using other roads, to ship to points outside of New England. It is learned that although the strike of the trainmen and switchmen of the Newburg & South Shore railroad at Cleveland has been terminated, the operations of the American Steel & Wire Co. at Cleveland continue handicapped by reason of the fact that the furnace men have not yet gone back to work. Export business in wire products, it is estimated, now averages around 10,000 tons of wire and wire products per month.

Export Demand Exceeds Supply

Buffalo, Aug. 19.—The export demand for wire is beyond what the trade can take care of in this district. With mills going day and night, one local maker had to reject a booking for 400 tons of 20-inch mesh.

Not Eager For New Business

Pittsburgh, Aug. 19.—With prospective production for the next 10 weeks already engaged, manufacturers of wire and wire products are not especially eager to enter new business. As a matter of fact, all of them are practically out of the market for third quarter business and those who still are quoting against new inquiries are taking only a portion of the business that is being offered. To satisfy some regular customers, one Pittsburgh independent has taken some business in nails on a basis of 3.50c, Pittsburgh, but with the stipulation that the order is to be filled at the convenience of the manufacturer. The American Steel & Wire Co. is one of the companies which is out of the market in this district and is confining its activities to deliveries against standing orders. With the adjustment of the labor troubles this company recently had at its Cleveland plants, it is expected that it will be better able to make shipments. The general average of wire mill operations today is about 80 per cent. No. 1 rod mill of the Pittsburgh Steel Co., which has been down for the past few weeks for repairs, again is in operation.

Low Price Still Holds

Chicago, Aug. 19.—Although demand for wire, nails and wire products is unusually heavy and supplies on contracts are equally strong, the leading interest continues to hold its former quotations and refuses to advance prices. Under these circumstances, new business is offered this seller in unusual tonnages, and it is necessary to choose carefully what can be accepted.

Exporters Foresee Obstacles

Idleness Added to Lack of Funds for Commercial Undertakings Will Cripple Foreign Sales—Italy Buys 8,000 Tons Pig Iron and Asks For 20,000 Tons of Hematite

NEW YORK, Aug. 18.—Although exports during the past week have held up fairly well, agents here are inclined to advise of a curtailment in the not distant future. The business that has been under way, it is said, has unduly raised the hopes of American producers, whereas the day of reckoning is fast approaching. This outlook is predicated upon two conditions, lack of money and idleness abroad. This is a situation which is peculiar to Europe in general. Those nations are overburdened with debt, and their taxes for the future years will be extremely heavy. This is a matter which will be overcome in time, but the general idleness of labor in those countries is a check upon their nationals meeting the situation sooner.

The organization of the Foreign Trade Corp., to deal in acceptances does not at the moment offer extensive relief as it is understood the new financial concern will be limited to doing a business of probably not more than $50,000,000.

The situation is now disclosed in the falling off in European business. The purchases of iron and steel those peoples have made of the United States were purchases dictated by dire necessity. The United States Steel Products Co., according to report, has been and still is shipping pig iron to England as ballast, but it is understood that the bulk of this has gone out of the Birmingham district in cotton ships through the southern ports. On the other hand, England has sent in an inquiry for 1000 tons of billets.

England, not being permitted to import English standard pipe under 2 inches, is now purchasing American standard pipe with English standard threads. A sale of 500 tons of this commodity was noted. England has also purchased 1000 tons of steel bars and a like tonnage of iron bars, and 250 tons of hoops.

France has made inquiry for a number of finished materials, but the tonnages generally have been extremely small. For instance it was learned that one inquiry was for a few tons of soft steel bars. The market was somewhat interested in a French inquiry for 14,000 tons of rails, but that was so unusual an inquiry as to cause considerable skepticism as to its sincerity of purpose.

France has purchased a small tonnage of hoops, sheets and bars, and has sent in an inquiry for 5000 tons of sheets, 2000 tons of plates and 600 tons of bars. Italy has purchased 8000 tons of pig iron and a new inquiry for 20,000 tons of hematite iron has been received from that country. Italy has also purchased 1000 tons of bars.

One house received an extremely promising inquiry from Holland for a long list of materials the aggregate tonnage of which would mean good business. It requested offerings of steel for axles, galvanized iron, bronze wire, spring steel, sheets, rods, copper, zinc, tin plate, lead, tubes and other materials. Holland, of course, purchases for the Dutch West Indies as well as for herself, and it is furthermore believed that many of the Dutch inquiries are advanced on behalf of German interests.

The bad plight in which the European producers find themselves on account of the money situation and because of the idleness of labor naturally broadens the opportunities of American exporters in the markets of other continents. There are many prospects in South America and new ones are developing every day. All of these might be availed of had the Americans the money with which to finance the projects.

Argentine has approached the market with a request for a credit of $11,000,000 for railway and general improvements in the country. Peru and Bolivia have many extensions in mind but have not undertaken as yet to find assistance in this country. These include nitrate plants, railway improvements, water works, sewerage undertakings, etc.

A small sale of corrugated sheets to Brazil has been noted, as well as 10 tons of copper sheets. A sale of 12,000 reels of wire to South America has been made. South America is also inquiring for rails in varying tonnages.

The ocean rates from Atlantic ports to South America are now weak and it is said that the scheduled quotations could be shaved if a shipper offered considerable tonnage. Inasmuch as the material is moving forward in such small quantities, however, this opportunity is one that few if any have been able to avail themselves of. The shipping board has already recognized this situation and has cut the rates on a selected list of articles.

The Shanghai and Tokyo trade has been booming. The increase in the Chinese business has been especially pleasing, although not all the export houses have been lucky enough to be in on this. One agent has sold several hundred tons of bars to China and a new inquiry for boiler plates has been received. China is buying tin plate, rods, bars, sheets, wire, galvanized shorts and nails. Among the recent sales made to China has been 200 tons of soft steel bars. The average Chinese order, however, calls for but 30, 40 or 50 tons of material.

Japan continues to buy in the volume that has become customary. Sales recently have been composed largely of bars, plates, shipbuilding material and tin plate. It is said that the individual orders vary from 300 to 2000 tons. A number of sales of 1000 cases each of tin plate have been made to Japan and China. Several orders of 1000 kegs each of nails have been placed by China, Japan and India. A number of sales of 100 tons each of bars and sheets have been made to India.

China has purchased 300 tons of plates, 3300 kegs of nails, 2500 cases of tin plate, 100 tons of angles, and 100 tons of bars from one house alone. A new inquiry for 100 tons of light sheets has been received from Japan. There is a Japanese inquiry in the market for pipe and a Chinese inquiry for light rails and rods. The tonnages do not run large. Many cables from the Orient are missing and about 50 per cent of those received are so badly mutilated as to render them worthless.

Foreign business generally has been greatly hampered by the lack of adequate cable facilities. The Pacific communications are extremely difficult and the commercial interests of this port are greatly concerned over the announced intention of the navy department to retain control of the wireless stations.

Industrial Boom

In Toronto Gives City 14 More Industrial Plants

Toronto Ont., Aug. 18.—From the time of its organization in February up to July 1, the industries department of the harbor board negotiated with 105 business concerns to induce them to establish plants in this city. As a result of its efforts, 14 new firms will be established here. Among them are: The Anthracite Briquette Co., a new coal company; Baldwins, Ltd., tin plate and steel plant, Swansea, Wales; Crane, Ltd., valve manufacturers, Chicago; Neptune Meter Co., New York; Taylor Instrument Co., Rochester, N. Y., and the Toronto Steel Construction Co., Toronto. Seventy-one companies in the United States were urged to establish plants in Toronto. An extensive publicity campaign is expected to place 1500 other companies in possession of information relating to this city.

A number of leading industrial concerns in the dominion have been looking forward to greatly increased business since the signing of the peace terms, but the change has been very gradual. Better business in iron and steel lines is reported, and steel interests especially are encouraged by the better feeling that prevails. Although there is very little heavy buying there is a feeling throughout the trade which has a tendency to give manufacturers an optimistic view in regard to business in the near future. Although the sale of used machinery and tools is holding the leading place in the market, the demand for new equipment is gradually increasing. Orders now being placed are not confined to any special line, but are well distributed. Railroad equipment, equipment for automobile shops and garages, woodworking plants and other lines are well represented in new orders which are being booked.

The Canadian National railways are again in the market for new equipment. This latest inquiry is for small tools, mostly carbon drills. The list calls for about 1500 of the latter and about 50 high-speed drills. The opening up of the various machine shops, which have been operating at limited capacity for three months, owing to a strike, is expected to increase sales of small tools.

Owing to failure of crops in some parts of the West, demand for agricultural implements will not be nearly so heavy as appeared probable some weeks ago. The outlook in Ontario is much more favorable and an active demand for implements is coming from that province. Manufacturers are preparing for a large export trade with Scandinavian countries and France and Belgium, provided the great obstacle of inadequate shipping accommodations can be overcome.

Hon. J. D. Reid, minister of railways, estimates there will be a loss of $28,000,000 this year in connection with the operation of Canadian government railroads. In addition to making good this amount, there must be provided for the railways during the coming year, $11,121,000 for construction; $20,000,000 for equipment and rolling stock and $21,421,000 for betterments, making a total of $80,542,000. The following contracts have been given out. Locomotives, $2,350,000; freight equipment, $8,650,000 and passenger equipment, $4,450,000.

Valley Stacks

Recently Relighted Give Youngstown District 40 Active Furnaces

Youngstown, O., Aug. 18.—The relighting of the Claire, Ella and Anna furnaces at Sharpsville and West Middlesex, Pa., and Struthers, O., respectively, means that only six furnaces in the Youngstown district, including the Mahoning and Shenango valleys and adjacent territory will be idle after Aug. 24. The total number of furnaces listed as belonging to the district is 46.

After Aug. 24, unless further changes take place there will be one furnace banked and five blown out in the district. Relighting the Struthers furnace will make the total number of active furnaces in blast in the Mahoning valley 22 out of a gross total of 25 stacks in the valley proper.

There are now no furnaces, owned by steel companies and directly attached to plants, out of blast in the Mahoning valley. The Hannah, a detached furnace of the Republic Iron and Steel Co., located on Crab creek in Youngstown is banked. The Niles stack of the Carnegie Steel Co. at Niles, O., was blown out some months ago. It is some miles from the main plant of the company in the valley, the Ohio works.

The Republic Iron and Steel Co. has two detached furnaces in Pennsylvania, the Hall at Sharon, Mercer county, and the Atlantic, New Castle, Lawrence county, not in blast. Both were blown out when the demand for iron dropped in the early part of the year. The McKeefrey stack at Leetonia, which also went out of blast early in the year, is on the list of furnaces concerning which no announcement has been made.

Steel Treaters

Announce Tentative Program for Chicago Meeting

The American Steel Treaters society has just announced a tentative program for its annual convention, to be held in Chicago, Sept. 23 to 27, inclusive. The convention and exhibits are to be held at the Seventh Regiment armory.

Registration of members will begin at the Seventh Regiment armory at 9 a. m. Tuesday morning, Sept. 23. A brief business session will be held at 10 a. m., followed by the first technical session on the subject, "Relation of Heat Treatment, Design and Selection of Steels for Metal Cutting Tools to Factory Production," by C. P. Berg. At 2 p. m. the president-elect will present his address, which will be followed by a technical session on the subject, "Heat Treatment of Steels for Cutting Purposes." Due to the large number of papers to be presented, and subjects to be discussed, technical sessions will be held on Tuesday and Wednesday evenings at 8 p. m. On Tuesday evening papers on "Case Hardening" will be presented.

A technical session at 10 a. m. Wednesday will be devoted to "Heat Treatment for Miscellaneous Purposes" and an afternoon session to "Heat Treatment of Steel for Intermittent Cutting Purposes." The evening session will be devoted to "Results of Investigations on Heat Treatment."

On Thursday morning heat treating equipment will be discussed and in the afternoon several papers will be presented on "Solution of Modern Demands on Heat Treating." An informal banquet followed by entertainments and dancing will begin at 6:30 p. m. at Hotel Morrison,

Friday and Saturday will be devoted to exhibitions at the armory and to plant visitation.

Serial advertising has been adopted by the Lakewood Engineering Co., Cleveland. Through the *Lakewood Aerial Bulletin,* it will endeavor to familiarize the buying public with its products, industrial tractors, cranes, etc. The first issue of the paper made its appearance on Aug. 15, when George M. Comey, recently discharged from the American air service, distributed copies from his Curtiss biplane in a flight from Dayton, O., to Cleveland. The bulletin is edited by W. G. Grayell and carries illustrations and descriptions of the equipment produced by the company. It likewise has an editorial column.

Discount Scheme

Of Quoting Prices of Cold Finished Steel Bars Abandoned

Pittsburgh, Aug. 19.—Effective yesterday and applying against all unfilled tonnages, leading manufacturers of cold finished steel bars have abandoned the discount scheme of quoting and in its stead have adopted a system similar to that employed in quoting merchant steel bars; in other words, on a pound basis. The new cards, while resulting in slightly lower prices on the average, does not disturb the present base price, which remains at 3.60c Pittsburgh. The old card adopted March 15, 1915, and which was revised on Jan. 1 of this year, quoted the base size at 5c per pound. The discount recently in effect has been 28 per cent, off list, which would result in a net price of 3.60c. In the new card the base size is from 2¼ to 3 inches instead of 2 to 3 inches as in the card previously in effect.

Manufacturers of cold finished steel for some time havce felt the necessity of quoting on a pound basis due to the evolution of shafting manufacture from a purely transmission product to one entering many manufacturing purposes, not to mention the desire to get away from a card that was extremely cumbersome and to a certain extent confusing. It is believed that greater stability in prices will be achieved as a result of the change which never could be obtained under the old system for the extras for sizes, quantity, etc., now become fixed and no longer subject to the fluctuations in the discount.

Quantity extras which in the old card were 5 and 15 now are 15 and 35. All specifications for less than 2000 pounds of a size will be subject to an extra of 15 cents per 100 pounds net on lots of 1000 to 1999 pounds and of an extra of 35 cents per 100 pounds net for less than 1000 pounds. Extras for cutting also have been increased but in practically all other directions where changes have occurred in the extra charge, reductions have been the rule.

Express View's on Basing Point Problem

Washington, Aug. 19.—Answers and views are beginning to reach the federal trade commission on the question of new steel price basing points as raised by the Western Association Rolled Steel Consumers in a complaint against the Illinois Steel Co., Carnegie Steel Co., Inland Steel Co., Interstate Iron & Steel Co., and the Steel Tube Co. of America. Most of the answers are from associations, such as that of the implement manufacturers, and other consumers. Practically all declare in favor of basing prices f.o.b., mill.

The statements have not yet been made public by the commission, but are expected to be after Sept. 1, the time limit for the filing of views. A member of the commission today said he hoped all producers and consumers will consider the question seriously and submit views so that the question, when called for final settlement, may have the widest possible latitude.

Henry Hay Sr., Dies

Chicago, Aug. 19.—Henry G. Hay Sr., assistant treasurer of the United States Steel Corp., died of heart disease yesterday at Gary, Ind., at the home of his son, Henry G. Hay Jr.

Buys Mines and Mills

Johnstown, Pa., Aug. 19. (By wire.)—Incidental to the decoration of J. Leonard Replogle, former director of steel supplies of the war industries board, by the French government at the chamber of commerce picnic here today, it became known that Mr. Replogle and Charles M. Schwab, chairman of the board of the Bethlehem Steel Corp., had bought the mines in Peru and the mills near Pittsburgh of the American Vanadium Co. It is said that the sale foreshadows a reorganization of the company with Mr. Replogle as president. The Vanadium company controls about 90 per cent of the world's output of vanadium.

Pittsburgh, Aug. 20—(By wire).—The report from Johnstown, Pa., to the effect that J. Leonard Replogle and Charles M. Schwab have purchased the mines in Peru and the mills near Pittsburgh of the American Vaandium Co. elicited neither confirmation nor denial at the company's offices here today.

The Nonferrous Metals

	‡Copper	Future Straits. N. Y.*	†Lead, New York bas s	Zinc St. Louis basis	Alum-num	Spot anti-mony
Aug. 13	23.50	54.00	6.00	7.50	33.00	9.00
Aug. 14	23.50	54.50	6.00	7.62½	33.00	9.00
Aug. 15	23.50	54.50	6.00	7.72½	33.00	9.00
Aug. 18	23.50	54.75	6.00	7.75	33.00	9.00
Aug. 19	23.50	54.75	6.00	7.72½	33.00	9.00

* July shipment from Singapore, c.i.f. New York.
† American Smelting & Refining Co.'s price.
‡ Producers' price. Outside market up from 21.87½c to 23.50c.

NEW YORK, Aug. 19.—The nonferrous metal markets experienced a definite recovery the past week, due to the absorption of copper, zinc and lead which had been held by dealers and speculators. The markets for several weeks had been the playthings for speculators, but about last Wednesday it became evident that the time was near when producers again would dominate in the markets. The margin in prices between the outside market and the producers' quotations narrowed very considerably by Monday of this week. Whereas second hands had been cutting copper prices by 2¼c a pound, zinc by ¼c and lead by ½c, these concessions had dwindled on Monday to ½c on copper, nothing on zinc and about 10 points or 1-10c on lead, and today some outside copper was as high as the producers'. The producers all along have been confident of the statistical position of their industries and so have refused to meet the outside market, but they have been booking little business.

Bargain hunters among consumers were attracted by the offerings by speculators and smaller producers of electrolytic copper at prices below 22c a week ago and accumulated a considerable amount of such metal in the aggregate. The copper market has been helped materialll by the settlement of several strikes at consuming plants, including the difficulty at Rome, N. Y., which had been in progress two months, involving over 4000 laborers at the works of the Rome Brass & Copper Co. and other plants. It is said 10 per cent of the country's manufacturing consumption of copper is centered at Rome.

The lead market showed an exteremly rapid recovery from the low prices quoted by second hands a week ago. The leading producer has stood firm at 6c, New York, for seevral weeks,. but outside sellers, growing anxious to take their profits, offered lead for August shipment from the west down to 5.50c, New York, some spot lead being sold at 5.45c. This was in the face of very strong statistical position for the metal. Supplies of lead in the hands of the producers and the government are not over 17,000 tons, or less than two weeks' production. The embargo on railroads elading out of southeast Missouri due to the shopmen's tsrike ha been lifted, enabling a freer movement of the metal.

The zinc market has been the particular football for the speculators the past few weeks. Dealers have driven the price over swings of ¾c a pound. The offering of 192,000,000 pounds of government brass was considered a bear factor for zinc, but this offering now appears to have been discounted. The amount of zinc in outside hands seems to have been largely absorbed and producers are not inclined to quote much below 7.75c for early shipment, in view of current costs of ore and smelting. High grade zinc prices are steady at 8.87½c, New York.

The last restriction on the importation of tin was lifted Aug. 15. The market is now entirely free. As a result of the renewed competition of foreign tin, the domestic tin market experienced a sudden decline the past two weeks, so that now the market is in fair alignment with London and Singapore. Suot high grade tin dropped from 70c to 56c in the course of a few days; spot 99 per cent tin dropped from 66c to 54c in a similar period, due to the lifting of the import bars.

Bethlehem's Ingot Mold Foundry

Direct Metal From Blast Furnaces as Well as Cupola Metal is Used — Arrangement for Storing and Charging Coke is Unique — Molds are Poured From a Long Platform

BY E. C. KREUTZBERG

PRIOR to the tremendous expansion in the steel production facilities of the Bethlehem Steel Co. during the past few years, all of the ingot-mold requirements of the company were taken care of by the iron foundry at the Lehigh plant. This foundry had sufficient capacity to produce 4000 to 4500 tons of ingot molds per month. After the Bethlehem Steel Co. took over the properties of the Maryland Steel Co., the Pennsylvania Steel Co. and the American Iron & Steel Mfg. Co., the capacity of the foundry at the Lehigh plant became wholly insufficient, and it became necessary to purchase a large portion of the ingot molds required for the operation of the various works.

In order to meet the needs resulting from this expansion, the erection of a new ingot-mold foundry was undertaken at Bethlehem. This plant, which only recently was completed, is an unusual establishment. Its capacity is 10,000 tons of ingot molds, stools and bottom plates per month. This output not only is large enough to supply the full requirements of the Bethlehem Steel Co. plants at Bethlehem, Sparrows Point, Lebanon and Steelton, but 30 to 35 per cent of the total capacity will be available to other eastern steelmakers. The new ingot mold foundry contains about 85,400 square feet of floor space, has a maximum length of 550 feet and a maximum width of 272 feet. Of this area, a 75 x 275-foot space is given over to the raw material yard which, unlike the stock department in most foundries, is completely covered by a roof. Of an unusually substantial character, the foundry building has a steel frame, brick walls, a poured gypsum roof and other details which make it thoroughly fireproof.

Mixer Metal Used

Due to the general plant layout at Bethlehem, the ingot mold foundry is arranged for handling both hot metal and pig iron. Hot metal is obtained from blast furnaces which supply all other departments of the plant; hence a supply of hot metal cannot at all times be obtained at the moment it is required. For this reason arrangements were made for melting pig iron when hot metal cannot be obtained. Two cupolas, each with a capacity of 40,000 pounds per hour, and one 450-ton mixer comprise the equipment for providing metal at this foundry. Of the raw material for the cupolas, 90 per cent is bessemer pig iron made by the Bethlehem Steel Co. in its own blast furnaces. The remaining 10 per cent comprises scrap originating in the various departments of the company. The mixer, shown in an accompanying illustration, is of standard construction. It is equipped for burning oil or by-product coke oven gas, and hot metal may be maintained in it at a satisfactory temperature for any desired length of time.

The arrangement for handling the charges for the cupolas and for facilitating their operation generally is of considerable interest. For serving the cupolas, there are two platforms, one at the level of the spout and the other at the charging level. Pig iron and scrap are loaded into flat tote boxes which are brought to the charging platform by means of two 25-ton cranes which



FIG. 1—MOLDING FLOOR AND PIT SHOWING EQUIPMENT FOR PRODUCING INGOT MOLDS AT THE NEW FOUNDRY OF THE BETHLEHEM STEEL CO.

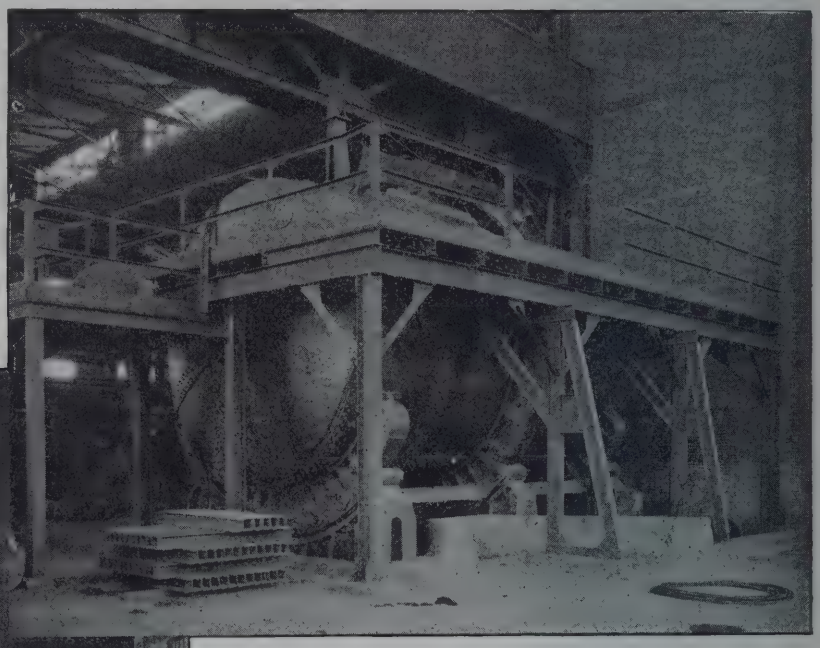


FIG. 2—COKE IS ELEVATED TO BINS ABOVE THE CHARGING FLOOR FROM WHICH MEASURING BUCKETS ARE FILLED FOR CHARGING THE CUPOLA



FIG. 4—THE FOUNDRY IS EQUIPPED WITH A 450-TON MIXER WHICH IS CHARGED WITH MOLTEN METAL FROM THE BLAST FURNACES

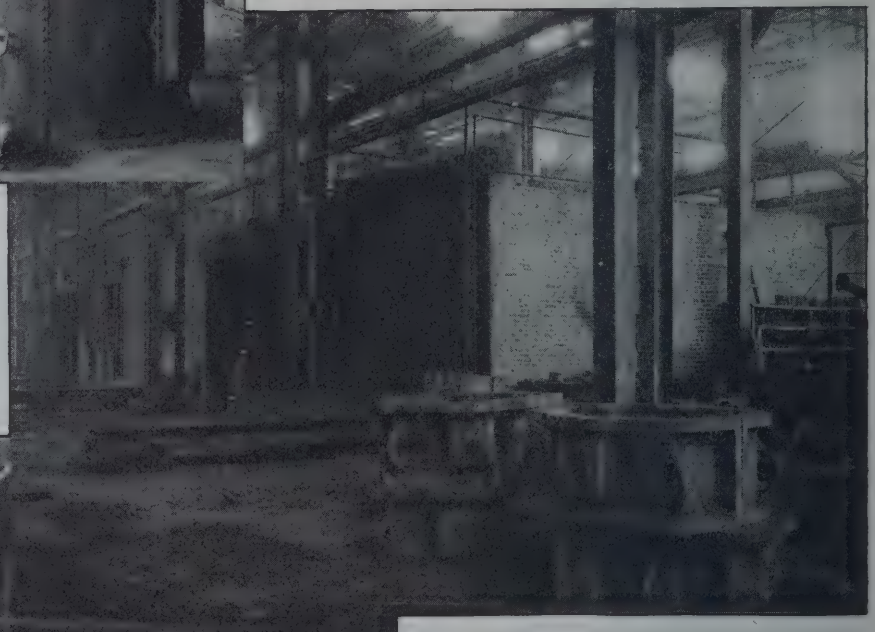


FIG. 3—THE CUPOLAS ARE ELEVATED SO THAT THE BOTTOMS MAY BE DROPPED DIRECTLY INTO CARS INSTEAD OF ON THE FLOOR, THUS SAVING EXPENSIVE HANDLING



FIG. 5—THE MOLDS ARE DRIED IN DOUBLE-ENDED OVENS FROM WHICH THEY EMERGE ONTO THE POURING FLOOR

span the raw material yard. On the charging floor they are placed on buggies which are pushed in front of the charging doors where the pig iron and scrap are charged by hand to insure proper distribution of fuel and metal. All iron is charged by weight; fuel, however, is charged by volume.

How Coke is Handled

The iron is charged through doors at the front of the cupolas and the fuel through doors at the rear. Fuel is delivered to the foundry in cars which are spotted over track hoppers and from the bottom of the hoppers the cope is conveyed by a skip hoist to bins above the charging floor. These bins are three in number and each has a capacity of 30 tons. From the bins the fuel passes into fixed-volume buckets, the flow being controlled by means of gates at the bottoms of the bins. In order to facilitate the removal of refuse from the cupolas, the latter were built at an elevation so as to afford ample clearance for cars which are spotted beneath them at the conclusion of each heat. Into these cars, which operate on rails, the bottom is dropped and the cars then are pushed to a dump where their contents are discharged. This system greatly decreases the amount of work necessary around the cupolas and accordingly cuts down the cost of operation. In order to have a clear space beneath the cupolas, the bottom doors are kept in place by pneumatic plungers, which are released at the time of dropping.

On the molding floor, specially designed 3-part flasks are used. The flasks are cast iron. Unlike the practice at many plants where the spindle is molded separately and set on the bottom plate, the Bethlehem Steel Co. molds the bottom and spindle as a unit. In this operation, the spindle is set in place and keyed to the cast-iron plate, after which the sand bottom is rammed.



FIG. 7—THE STOCKYARD IS ENTIRELY PROTECTED FROM THE WEATHER AND IS COMMANDED BY CRANES WHICH LIFT THE CHARGES TO THE CUPOLA PLATFORM

Next, the pattern is set in place over the spindle, being maintained rigidly in position by the use of an arbor which fits inside the top of the pattern and centers it about the spindle. The flask then is lowered onto the bottom, after which sand is filled in between the spindle and the pattern, and between the pattern and the flask, both being rammed together. The flask is then lifted and the pattern drawn. The ramming of the molds is done in pits, and the molding of the bottom and spindle in one piece results in a smooth casting since this method prevents the formation of fins which result when the spindle is not integral with the bottom.

Molds Are Bottom Poured

From the molding pit the molds are transferred by cranes to the drying ovens. There are eight of these ovens, each 12 x 25 feet. They are of the car type and are fired with by-product coke-oven gas. The entrance to these ovens is on the molding side and the exit, from which the dried molds are discharged, is on the pouring side of the shop. On being withdrawn from the ovens, the molds are assembled alongside a raised concrete pouring platform 7 feet wide and 175 feet long. Each mold, when rammed, is provided with a sprue reaching from the top down to the bottom in order that the casting may be poured from the bottom. In order to pour without causing injury to the mold, through spattering of the metal, the sprue is surmounted by a large sand box.

The use of the concrete pouring platform supercedes the old method of pouring in pits. It has been found that the platform makes it possible to assemble, finish and pour the molds with greater facility and a greater degree of safety than is possible with the pit pouring method.

In addition to the cranes in the raw material storage yard, the casting and cleaning section of the foundry is provided with one 40-ton and three 25-ton cranes. The mixer department is provided with a 100-ton ladle crane and the molding shop with three 25-ton cranes. The foundry is provided with a sand mixing screen and with a pneumatic system for conveying molding sand to the various floors. A 30-ton jar-ramming machine has just been installed for ramming the molds.

The foundry is provided with a full equipment of flasks large enough to produce molds for ingots ranging all the way from 6 x 6 inches up to 22 x 80 inches. Ingots of the latter size weigh 34,000 pounds each. The foundry equipment includes a wet pan for mixing material for luting the cupolas and also for mixing foundry facing.

All Flasks Are Machined

The foundry is provided with the necessary equipment for finishing cast-iron flasks, including a planer, a radial drill and other machinery. Scales are at hand for weighing the individual molds

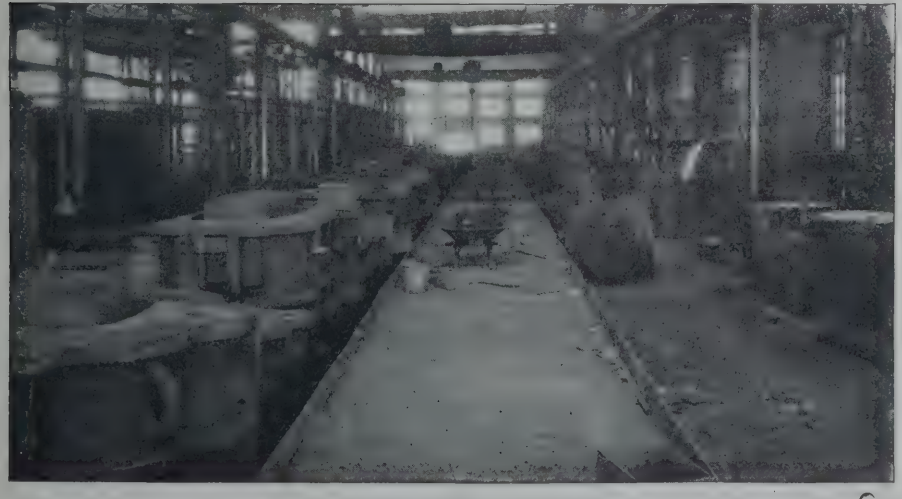


FIG. 6—AFTER COMING FROM THE DRYING OVENS THE MOLDS ARE SET UP ALONGSIDE A 175-FOOT CONCRETE PLATFORM ON WHICH THE OPERATOR STANDS WHEN POURING

as well as for weighing carload shipments of molds and of raw material as it is received. A building for storing patterns, which also houses the pattern shop, connects with the foundry.

Not only have the mechanical appliances and the molding facilities been studied out carefully, but the comfort of the workmen also has been considered. A large well lighted and ventilated wash room and toilet is furnished for the convenience of the employes. The wash basins and shower baths are supplied with both hot and cold water. A steel locker provided for each man affords a place for him to keep his personal tools and clothes.

Women in Industry

A report, more comprehensive in its scope than any which it has released heretofore, recently was published by the British committee on women in industry. The report covers a wide range of industries and records the results of experience gained from the employment of women over the entire war period. The general tenor of the report seems to indicate that Britain is ready and willing to see the women retire from industry, relinquishing their jobs to such men and boys as have not yet been replaced. The concensus of opinion among the British people seems to be that woman labor was regarded strictly as a war emergency; now that the war is over they desire to see prewar conditions resumed.

In this connection the report states that if women are paid the same wages as men, the men always receive the preference at the employment bureau; if they are paid more than boys, the boys receive the preference. The reason for this is that the employment of women entails greater difficulty and expense in management, that they are less permanent in employment, and that they have less personal ambition to acquire skill. On the other hand, women do not object to monotonous work and can equal the output of skilled men on all work which does not tax their strength unduly. During the period of the war the employment of women was always marked by a greater degree of success when they were confined to a separate shop, under managers who understood how to handle female labor.

G. H. B. Ward, attached to the labor section of the wages regulation department, said that "women are not equal to semiskilled men, especially on machines, due to the fact that they are less capable of taking care of them. In light repetitional machining, such as drilling or grinding and in gaging small parts they are superior to the boys whom they replaced. This," he added, "will be women's work in industry in the future."

The concensus of British opinion seems to be that if women find a place in industry in the future the nature of their work will be similar to that outlined by Mr. Ward. In commenting on women employed in British dockyards, E. R. Bates, deputy director, had the following to say: "The work of women, as far as quality is concerned, is quite comparable with that of men, but it has in nearly all cases to be supervised by men. The work at the dockyards during the war was devoted almost exclusively to repairs. There was practically no repetition work, which meant that when a women completed one task she was given another which entailed new and unfamiliar work, in which she had to receive a certain amount of instruction before being able to go ahead with it. Her resourcefulness is not equal to that of a man who is able to turn from one job to another."

Retards Iron Shipments

Embargoes on various railroads due to strikes of the shop men threaten to play havoc with operations at manufacturing establishments all through the east. Embargoes on New England roads prevent the bringing in of fuel and the taking away of product which makes it but a matter of a short time, if the embargoes continue, before all kinds of manufacturing establishments in New England close down. An embargo which is having very bad results is that on the Pennsylvania lines west which makes it impossible to ship to any points along these lines. Incidentally, mills in the Pittsburgh district by reason of this embargo as well as by reason of the embargo which prevents them shipping toward New England destinations, are limited greatly in the directions in which they can ship. Merchant pig iron furnaces in Virginia are greatly handicapped by the embargo on the Chesapeake & Ohio, which makes it impossible for them to move raw materials or product.

Engineering Body Moves

Headquarters for the Cleveland Engineering society have been established on the parlor floor of the Hotel Cleveland, Cleveland. Present quarters in the Chamber of Commerce building have proved inadequate owing to the increased membership and the expansion of the society's library.

The new quarters will contain a lounging room, conference room, dining rooms, general offices and a library sufficiently large to accommodate the 22,000 volumes now owned by the society.

Favor Reduced Customs in Canada

Adoption of a resolution which goes farther than any policy previously adopted, in the direction of free trade with Canada, was the highspot of the recent convention in Ottawa, Ont., of the National Liberal party. The tariff question is expected to be the main issue at the next Canadian election.

The principal plank of the platform which was adopted demanded substantial reductions in the burden of customs taxation; the abolition of all duties upon many necessaries of life and instruments of production, including farm implements and machinery, farm tractors, mining, flour and sawmill machinery, lumber and cement and a downward revision of the tariff effecting substantial reductions on articles of general consumption; and an increase of the British preference to 50 per cent of the general tariff.

Electric Smelting of Ores

Dr. Stansfield, of McGill university, has prepared a report on the commercial feasibility of the electric smelting of iron ores in British Columbia. He considers this smelting is metallurgically feasible, there being sufficient supplies of ore and of the requisite fluxes for carrying out the process. The present cost of electric power, however, makes the profitable production of pig iron impossible. The ores are chiefly magnetites and are consequently unsuitable for blast furnaces if unmixed with other ores. The magnetite ores are not of high grade, but contain 50 to 55 per cent iron. They are practically free from phosphorus, titanium and copper, and the proportion of sulphur could be kept as low as 0.1 per cent.

Although British Columbia has ample water supplies which could be utilized for the requirements of the electrical smelting industry, it would take so long to carry out this plan that it is not immediately helpful. Dr. Stanfield considers the possibility of utilizing the surplus power supplies of local electric railways, and he draws attention to the abundant supply of timber at hand from which charcoal for the electric smelting could be easily obtained.—*Engineering and Mining Journal.*

Paying Claims for Employes' Acts

Liability of Employers for Negligence of Their Workmen Cannot be Escaped by Contracts to Contrary, Courts Hold — Differ in Their Decisions Relating to Accidents Due to Error of Judgment

BY CHESLA C. SHERLOCK

THERE can be no doubt but that an employer is liable for the wrongs committed by his employes against third persons. This liability has been recognized from the remotest times. Blackstone, in his Commentaries, which were written some 40 years before the Revolutionary War, said: "If a servant by his negligence does damage to a stranger, the master shall be answerable for his neglect."

Employers generally admit that they are liable for the acts of their employes which contemplate acts of agency or contract, but as a matter of law their liability does not end here. It is immaterial so far as the employer's liability is concerned whether the service in which the employe is engaged contemplates these relations with the public or not. The rule of law is stated on the weight of judicial authority to be the same in either case.

In Maryland it was held that the employer may be liable for the torts or negligent acts of the employe while the latter is acting in a representative capacity of the employer. In Illinois it was said that the employer was liable whether the employe was liable to him at law or not.

Joint Employers Responsible

A long list of cases hold to the view that where there are joint employers of the offending employe they are jointly and severally liable to the injured third person, even though the workman was employed in a service for only one of the employers and received his pay from that one employer. The same cases announce the conclusion that the rule of liability cannot be changed by a contract which is to the effect that only one of the joint employers shall bear the entire responsibility for the wrongful acts of the employe. This means that legal liability for the wrongful acts of employes to the public is not the subject matter of a valid contract and that the law cannot be defeated by contracting away such liability, or even by partially diminishing it by contractural agreement.

California, Wisconsin, Missouri and some other states have said, however, that where the injured person discharges the employe from personal responsibility for his wrongful acts, such discharge will operate to discharge his employer also from liability.

In California, Georgia and Missouri it has been said that where the employer and the employe are sued jointly, but the verdict exonerates the employe and holds the employer liable, such verdict should be set aside, as the exoneration of the employe from liability accrues to the benefit of the employer also. However, this rule is by no means general, many other jurisdictions specifically holding that the exoneration of an employe will not relieve the employer from liability.

Formerly corporations were not deemed liable for the torts or negligence of employes because the corporation was an artificial person. The early decisions were much confused by this fact. They said that since a corporation was an artificial person that it had no mind with which to form an intent, no lips with which to utter a slander, or no hands with which to commit a tort or personal injury.

So the early judges dismissed corporations from liability for crimes and personal wrongs and passed the matter by. But it soon came to pass that corporations abused this blind protection from the law. Under the protection of a corporate body men did things that they were unable to do as individuals. They committed crimes, they committed personal wrongs and they so generally abused their protection that public opinion arose in arms and demanded that some means be found at law to curb their abnormal and unnatural powers.

It was then that the decisions came to say that corporations were liable for the wrongful acts of their employes in the same measure that individual employers were. The courts said that the intent of the officers of the corporation was the intent of the corporation and that the hands of the officers or their agents were the hands of the corporation and whatever they did wrongfully would be charged against the corporation. The former rule may now be said to be obsolete for it does not obtain in any jurisdiction of our knowledge at the present time. The rule now is that so far as liability for the wrongful acts of employes is concerned there is no distinction between corporations and individuals.

Decision on Errors in Judgment

It is often hard to determine just when liability for the wrongful acts of employes will attach to the employer. When does it arise? What degree of care is required of the employe?

In Montana it was held that as soon as the employe fails to exercise the degree of care in a given case that he would have exercised had he been acting in his own behalf liability will commence to attach to the employer. In other words no greater degree of care is required of employes by the law than they would be required to exercise as private individuals acting in their own behalf under similar circumstances. And as soon as there is a departure from that degree of care the employe is deemed guilty of negligence as he would be had there been no contract of employment binding him to the employer.

It is naturally true, however, that the degree of care required varies with the character of the employment and the danger which it holds to the general public. This statement is drawn from decisions in Iowa and Massachusetts.

In New York and Pennsylvania, it has been held that the employer is not liable for errors of judgment committed by an employe in an emergency. This brings us to a consideration of what is known as the emergency rule. It has been held that an employer cannot be held liable for the acts of his employes committed during emergencies, because of the unusual circumstances present and because of the fact that however wrongful an act may appear at the

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The author was formerly secretary of the Iowa Industrial Commission.

time, the existence of the emergency is ample justification for it, even though the employe in fact commits a grave error of judgment under the stress or excitement of the occasion.

In Pennsylvania a servant attempted to remove a burning lamp. Upon being severely burned he threw it from himself, whereupon it exploded and injured a third person. The court applied the emergency rule and relieved the employer from liability.

In Maine it was held that where an employe who is sent to install a certain machine in another's plant and who adjusts the machine in an emergency does not render his employer liable for damage caused the plant, provided he acted to his best judgment at the time, even though it later appear to have been wrong.

The measure of the employer's liability, once that liability has been definitely determined, is also a stumbling block for many courts and authorities. It is always hard to say offhand what the measure of liability in a given instance shall be, because it varies greatly, but an examination of the cases discloses a marked uniformity of holding in cases under this point.

In California, Connecticut, New York, Ohio and Wisconsin, five of the strongest courts in the country, it has been held that the employer's liability extends to a liability for full compensation for the injuries caused by the wrongful acts of his employes to others. This rule is general and seems to be accepted everywhere as soon as the employer's liability is established. However, where an attempt is made to collect exemplary damages there is a conflict in the authorities.

California, Connecticut, New York, Rhode Island, Texas, West Virginia and Wisconsin have held that the employer cannot be liable for exemplary damages unless it be proved that there was an express authorization in advance or a subsequent ratification of the wrongful act of the employe.

The United States Supreme Court has extracted this rule from a survey of the authorities: "Guilty intention on the part of the defendant (employer) is required in order to charge him with exemplary or punitive damages."

Another authority states: "Exemplary damages, being awarded, not by way of compensation to the sufferer, but by way of punishment of the offender and as a warning to others, can only be awarded against one who has participated in the offense. A principal (employer), therefore, though liable to make conpensation for injuries done by his agent within the scope of his employment, cannot be held liable for exemplary damages merely by reason of wanton, oppressive or malicious intent upon the part of his agent."

However, in Arkansas, Illinois, Kentucky, Massachusetts, Michigan, Mississippi and Wisconsin it has been held that where the employe's act was wilful, malicious and grossly negligent, but still in the scope of the employment, the employer will be liable for exemplary damages, the same as if he had committed the act himself.

Steam Boiler Efficiency

In order to economize floor space, horizontal type boilers have gradually been replaced by vertical boilers in Germany, as this type permits of a much greater concentration of tubes. Such boilers have been built with a heating surface of 10,700 square feet, but experience has shown that the best results are obtained from a heating surface not exceeding 6500 square feet.

Boilers of this type have given an overall efficiency equal to 87 per cent of the calorific value of the fuel. They are invariably provided with economizers having about two-thirds of the heating surface of the boiler and giving the maximum efficiency with a moderate evaporation of from 5 to 10 pounds of steam per square foot of heating surface. A higher rate of evaporation necessitates the escape of the gases at too great a temperature and makes excessive demands on the economizer.

The result of 18 experiments showed that the economizer tubes absorbed more than 600 B.t.u. per square foot of heating surface, and that the feed water often reached a temperature of 390 degrees Fahr., to the detriment of the working of the boilers. Exhaustive tests have proved that an economizer surface exceeding 60 per cent of the heating surface of the boiler does not increase the efficiency of the installation, and that 87 per cent may cause a decrease in the efficiency. — (*Zeitschrift fur Dampfkessel und Maschinenbetrieb.*)

Electric Feed Control for Boilers

A feed water control has been invented which works on the following principle: A float connected to an iron rod is free to work up and down as the water level varies, the rod protruding vertically through the boiler shell, encased in an arrangement of tubes. The outer tube, fixed to the boiler, has fitted to its upper end a totally enclosed electromagnet. The movement of the float rod through this magnet tends to make or break the magnetic field.

The feed valve of the boiler is automatically actuated by a piston magnet. When the movement of the float rod closes the magnetic field of the electromagnet, it causes the piston magnet to open the feed valve. By the same current a lamp is lit so that the fireman is immediately informed that feeding has commenced. The same magnetic action actuates another piston magnet on the steam valve of the feed pump, which starts to work simultaneously with the opening of the boiler feed valve and the lighting of the lamp. When the water has risen sufficiently high to break the magnetic resistance by forcing the float rod upward, the magnetic field is broken, the valves are closed, and the lamp goes out.

The water level can be adjusted while there is steam up in the boiler, and the float and magnet can be set so that they will act with a slight water-level variation. In this way, almost continuous and regular feeding takes place.

An alarm bell can be fitted to the control which will strike when the water continues to sink, in spite of the fact that feeding has begun, when too much water is being fed in, or if the electric current is interrupted.—*Zeitschrift fur Dampfkessel und Maschinenbetrieb.*

Exploit Swiss Iron Mines

Until the first half of the nineteenth century, Switzerland supplied her own needs in iron, according to an article, printed in a recent issue of *Commerce Reports,* but during late years she has depended on surrounding countries, principally Germany.

No data are available as to the production of iron in the country, prior to the nineteenth century, but during the first half of that period, it has been estimated the production totaled 3,000,000 pounds. Before the outbreak of the world war, the attention of some prominent metallurgists was turned to the ore beds on the Gonzen, and since then a students' synlicate has carried out experiments which have disclosed the presence of ore beds of considerable importance.

According to Swiss papers, the exploitation of the ore beds is to be taken up shortly by a large Swiss concern, and the problem of working the mines is being planned. In view of the inability to obtain cheap fuel, smelting furnaces, which will be built, can be operated by means of electricity generated from the waterfalls.



Miners' homes in the Briey region, adjoining Thionville. Nothing was damaged on the German side of the border; on the French side everything not used by the Germans was laid in ruins

French Operating German Plants

Mines, Furnaces and Mills of Thionville Basin, Undamaged by War, Now Delivering Their Products for Rebuilding Ruined Cities on French Side of Border — 30 Blast Furnaces Relighted

BY FRANCIS MILTOUN

BISMARK, it was said, never pardoned himself for having, in the treaty of Frankfort, accepted the tracing of the Lorraine frontier so that any part of the Briey basin became the heritage of France. The frontier of 1871 divided a great mineral deposit into nearly equal parts. That which went to France produced about 19,000,000 tons of ore annually, while district Germany annexed produced approximately 21,000,000. Possession of the deposits left to France permitted that country to build up its chief iron and steel industries, notably those of Meurthe et Moselle. This department, of which Nancy is the capital, produced in 1913 nearly 3,600,000 tons of pig iron and 2,500,000 tons of steel, while the Germans in the Thionville basin, on the other side of the border, produced 3,900,000 tons of pig iron, but did not make more than 1,600,000 tons of steel. Recently in the French parliament Joffre gave evidence to the effect that it was impossible to defend the region for the reason that it lay within the range of the big guns of the ring of fortresses surrounding Metz. Be this as it may, possession of the Thionville basin by the Germans opened the way for the continual harassing of the French armies, and the prolonging of the war by the provisioning of German ammunition and armament plants with basic raw materials. France made a mistake in failing to put forth efforts to protect her possessions. Collectively, then, it is shown that the inter-related basins of Briey and Thionville were the chief economic elements which made it possible for Germany to sustain the war so long.

The mines and plants of the French section were from the first all under direct fire of the firmly entrenched German batteries and many were destroyed. Out of 74 blast furnaces in the region a third scarcely can be put into operation again before the end of the present year, and even this depends upon the acquisition of much construction and factory material of a special nature. The remainder will remain cold only if skilled workmen cannot be had. Sixty per cent or more of the local blast furnaces are out of commission, and recuperation, at best, will be slow. French plants which were in possession of the Germans during the occupation of the region for four years were either destroyed or dismantled, and the equipment transported across the Rhine. In the Nancy district plants suffered



CHILDREN OF MINERS OF THE BRIEY ORE FIELDS ADOPTED BY AMERICAN WELFARE ORGANIZATION

bombardment by cannon and from the air. The ore deposits of Pienne-Murville were flooded, and the exterior works of Amormont-Dommary were in part destroyed. The mines which had been in possession of the Germans, and which had been worked by them, were to a certain extent left in fair condition, this for the reason that the Germans thought they were to be theirs for all time. In the interval they claim to have extracted 14,000,000 tons of ore, a volume about equal to the annual exports from this region before the war.

As with all mines throughout Germany, those of Thionville had a fluctuating production for the period of the war, the total probably being not more than 50,000,000 tons. The output of iron and steel plants likewise diminished as a result of the difficulties of the transportation of coke by reason of rail congestion during the active and prolonged movement of troops. When it is considered that Thionville and its district produced before the war in the neighborhood of 4,000,000 tons and about 2,000,000 annually during the war, it is seen that the German production was but 50 per cent of normal in this region.

Since the armistice German mines and furnaces in the occupied regions have been conducted under the sequestration regime. The *inspection des forges* of the ministry of industrial reconstruction in France is the ruling power in the present operation of the former German plants. Since November 30 blast furnaces have been relighted, but shortage of coke is preventing further activity.

The banner plant of the region unquestionably is that of the De Wendel firm. Its Grande-Moyeuvre plant in Lorraine was but a few kilometers from the war frontier. Closely coupled therewith was its plant at Joeuf, and the Homecourt and Marine plant, with its seven blast furnaces of 850 tons capacity, and its four 12-ton converters. At Hayange, just to the west of Thionville, are seven blast furnaces of 900 tons daily capacity, six converters of 12 tons capacity, and three martin open-hearth furnaces of 30 tons. These two plants were offered for sale under the guarantees of the German government during the war, and a German group, among which were Thyssen and Roechling, were to capitalize a company with 140,000,000 marks to operate a part of the mines and plant, the other portion being exploited by another group capitalized with 50,000,000 marks. Two immense plants are being put in operation and when in full operation are expected to produce 850,000 tons of pig iron and 800,000 tons of steel per annum.

The Rombacher Huttenwerke is a distinctively Lorraine organization, exploiting mining concessions in the neighborhood of Sante Marie aux Chenes, and possessing also coal deposits as yet unexploited, on the left bank of the Rhine.

The Rombach plant proper comprises seven blast furnaces of 1500 tons daily capacity, a steel plant with six converters of 26 tons capacity, four martin furnaces of 25 to 30 tons, nine rolling mills and seven blooming mills. At Maizieres there is another plant of four blast furnaces of 900 tons daily capacity and at Zweibrucke the association possesses 128 coke ovens producing 200,000 tons of coke per annum. The association of Rombachs has a total production of 800,000 tons of pig iron and approximately 600,000 tons of steel.

A Belgian society also is operating in this region. The Société Sambre et Meuse has at Maizières a plant which as far back as 1912 was being run more or less in connection with Thyssen interests for the reason that its operation under exclusively Belgian direction was not thought to be politically or economically efficient. Before the war there existed three blast furnaces and three batteries of 14 ovens each for the production of coke. A fourth blast furnace and a fourth battery of coke ovens was in construction at the opening of hos-



THE POMPEY PLANT IN FRENCH LORRAINE, WORKED INTERMITTENTLY DURING THE WAR AND WAS COMPARATIVELY UNDAMAGED



RUINS ON AN ORE-CARRYING RAILROAD IN BRIEY REGION

tilities. Since the armistice the former German directors and foremen have been discharged.

The Hagondange plant of Thyssen sits astride the railroad from Thionville to Metz. It is the pearl of the collection of this firm's interests. It covers an area of more than five kilometers in length and a kilometer in width. There are six blast furnaces of a capacity of 2000 tons per day, four converters of 30 tons and two martin furnaces of 80 tons, besides a rolling mill plant. The annual production is figured as 450,000 tons of pig iron, 400,000 tons of steel ingots, and 120,000 tons of cement.

Between Hagondange and Thionville is the Uckange plant with five blast furnaces of 800 tons daily capacity. The same firm has also a plant at Neuenkirchen, to the north of the Saar basin which also has five blast furnace units, a steel works and a rolling mill. The property is in the name of Stumm.

The Rochlingschelisen und Stahlwerk possesses the Carlshutte plant at Thionville, consisting of four blast furnaces of 800 tons daily capacity. A director of this plant is reported to have been sentenced to five years' detention for receiving stolen tools and machinery from French plants during the war.

The Belgian company of the Hauts-Fourneaux d'Aumetz la Paix has the Knuttange and Fontoy plants, just to the east of Thionville. The first plant has six blast furnaces of a daily capacity of 1000 tons and six converters of 30 tons, the second, three blast furnaces of 650 tons daily capacity. These plants can produce an average of 650,000 tons of pig iron and 500,000 tons of steel annually.

The Rumlinger und Saint Ingberter-Hochofen und Stahlwerk possesses at Ottange three blast furnaces, situated near the Luxembourg border; and bordering upon the frontier of old France, its Rumelange plant has three blast furnaces.

Germans "Selling" Lorraine Ore Deposits

The Audun le Tiche plant belongs to the Gelsenkirchen, and is situated in the angle formed by the Luxembourg frontier and the old French frontier, near Micheville and Villerupt, two of the most productive of the French plants of the former French Lorraine. It comprises four blast furnaces of 800 tons daily capacity, and another is to be fired within a few weeks.

The Dillinger Huttenwerke belongs to the Redange company of which 40 per cent of the capital is French. It has five blast furnaces of 850 tons daily capacity, three converters of 15 tons, one of 20 tons, 10 martin furnaces, of which one is of 60 tons, two of 50 tons, one of 25 tons, three of 20 tons and three of 15 tons.

A late German report announces that the Lorraine Hutten und Bergwerksverein of Nilvingen is in process of selling its ore deposits which it possesses in Lorraine and in the basin of Briey, also its plants of Kneuttingen and Feutsch. The same report states specificially that on the day of the armistice there were in the region 68 blast furnaces actually in operation, but that owing to the scarcity of coke these were subsequently reduced to 26, and later to 12.

With the peace treaty now ratified by Germany, and with the many rough corners of readjustment smoothed off, the French administration is daily bringing these German-owned plants into operation to meet the pressing need of France. The lining up and the protecting of the various interests, private and public, German and French, is a work of imposing magnitude but is being undertaken with a vigor hardly more noticeable elsewhere than in the basin of Thionville, which, with Briey, may be said to control the iron and steel trade of Europe.

Arrangements for manufacturing a steam-driven motor truck have been completed by the Winslow Boiler & Engineering Co., which has established a factory at 530 North Western avenue, Chicago. The general offices of this company are at 1423 McCormick building, Chicago.

Preventing Occlusion of Gases

Silicon Assists Materially in the Reduction of Unsoundness and Blowholes and Tends to Rid Steel of Absorbed Gases — How Severe Requirements Were Met in Making Hydraulic Cylinder Casting

BY SIR ROBERT HADFIELD

IN the early days of steel castings the difficulties which then had to be overcome to get rid of occluded gases were literally enormous. The useful element silicon, which prevents the occlusion, was hardly obtainable except in combinations which caused as much trouble as the unsoundness itself. There were no high-percentage ferrosilicons with low carbon available or silicospiegels. Aluminum was unknown for practical purposes. Manganese, while useful, was only a partial cure. Moreover, it was thought that the element silicon produced a material with inferior qualities; in fact, the presence of even as much as 0.2 per cent of silicon was looked upon with horror. We owe a great debt of gratitude to the French metallurgists who perfected and introduced the successful production of ferroalloys containing high percentages of silicon, such as silicospiegel also ferromanganese, and to others, including Hunt of Pittsburgh, who later brought about the production of cheap aluminum. The proper and most suitable manner of making the addition of these elements to obtain soundness in steel had also to be most carefully studied.

This great advance was largely due to three Frenchmen, Euverte, Pourcel and Gautier, of the Terre Noire Works, France, who were among the first to give us the necessary silicon and manganese alloys of the proper composition and character which have enabled us to produce sound steel. It is always satisfactory and pleasant to be able to trace and give the credit where it is due, and in this case it can be done. Several papers were read on the subject by Gautier before the Iron and Steel institute in 1877 and 1881 on "Processes of Producing Sound Steel Castings." These aroused great attention, in fact, sent a flutter through the metallurgical world at the time.

It is without doubt from the work of these metallurgists who pioneered the way that we are so largely benefiting today. German metallurgists never gave help of this nature, they have only copied, absorbed, and made use of the principles of French, British, American and Swedish metallurgists. I cannot remember any specific instance of the Germans teaching us any basic principles in ferrous metallurgy.

Among the magnificent exhibits of the Terre Noire Co. at the Paris exhibition of 1878, a series of specimens was shown illustrating this firm's research work. This then new material, known as "Cast Steel without Blowholes," made a great sensation in the metallurgical world. Its manufacture necessitated the employment of highly silicious pig iron, silicospiegel, also 60 to 80 per cent ferromanganese, which the Terre Noire produced and offered to the world. These alloys were produced in the blast furnace and contained combinations of iron, silicon and manganese, eventually known as silicospiegel.

The Terre Noire Co. was also one of the first if not the first firm to produce on a large scale the alloy known as ferromanganese, which is today of such enormous importance and interest to every steelmaker in the world.

The Production of Intricate Steel Castings

It is now possible to produce sound steel castings of all kinds and weights, provided the section is not too thin. As an instance, I will describe a particular application, namely hydraulic cylinders for cotton baling presses. These cylinders cast of steel and not forged or pressed in any way, are of particularly difficult nature, in some cases running up to lengths of over 30 feet. Such considerable length is for the purpose of obtaining a long stroke in pressing at the same time as many cotton bales as possible. The complete presses are made in this country and sent to India, Egypt and elsewhere. The ram is usually 7 to 9 inches diameter, the walls of the cylinders must be as thin as possible in order to save weight, and yet must stand the severe hydraulic test pressure of about 4 tons per square inch, and they must be guaranteed to work constantly day and night during the baling season at pressures up to 3 tons per square inch.

Picture to yourself, therefore, a cylinder of this nature, which is about 30 feet in overall length including the sinking head, the internal portion of which is subjected without intermission during the baling season to the severe hydraulic pressure mentioned—some 3 tons per square inch. There must not be the slightest weeping or oozing through the walls, for if the pressure was not fully maintained the baling would be a failure, that is, the bales would not be packed sufficiently tightly, and therefore occupy far too large a volume in shipment from the district where the cotton was produced to the cotton mills.

The problem of satisfactorily producing such a cylinder is greatly increased and intensified by the severe contraction met with in the cooling down of molten steel from about 1540 degrees Cent. This contraction is slightly over ¼ inch per foot, thus adding to the practical difficulties experienced, the mold for such cylinders being required to be not less than 7 inches longer than the cylinder itself is when cooled down, in other words, the cast-steel cylinder itself has to contract this considerable amount between its length as cast compared with its dimensions when cold.

It should be remembered that fluid steel at a high temperature, and as in the first part of the pouring into the mold of the cylinders referred to there is a drop of no less than about 30 feet in depth down the thin walls of the cylinder formed of sand or composition, that is, the space forming the walls of these cylinders for cotton presses is in some cases only about 1½ inches in width or thickness, and is seldom more than 2¼ inches. Bearing in mind, too, that the fluid steel when being poured is at the temperature of some 1540 degrees Cent., and that gases are given off from the sides of the mold which is formed of fire-resisting material such as silica sand, composition and other mixtures, it will be readily seen, specially with regard to the early poured steel dropping this full and long distance, how great must be the tendency of the molten steel to absorb gases and become unsound. It must be remembered that molten steel, which is quite fluid at from say, 1500 to 1540 degrees Cent., immediately below about these temperatures, can no longer be termed really fluid, it has more the consistency of thick cream, and not many degrees lower it is quite pasty. The great difficulties, therefore, of working within these narrow margins of fluidity and semisolidity will be readily understood. The only wonder is that under these severe conditions the steel remains sound

Abstract of a paper presented at a meeting of the Faraday society, England. The author, Sir Robert Hadfield, is a distinguished British metallurgist and chairman of Hadfield's, Ltd., Sheffield.

and the finished cylinder so successfully stands the high working hydraulic pressure before mentioned. It will, therefore, be admitted that the study of methods which get rid of occluded gases is of the highest service to the constructive engineer, and that our gratitude is due to those French metallurgists who, in the early days of the development of ferrous metallurgy, attacked this severe and complex problem of giving us alloys by the aid of which we could obtain the necessary sound steel free from blow holes, occluded gases and other defects.

Mineral Production for 1916

The report of the United States geological survey on mineral production for 1916 is now being distributed. Owing to the lateness of publication, resulting from the delay caused by war work, the summary is presented in the briefest form. "The elaboration of its many interesting features," the survey states, "will be left to reports for subsequent years."

The metals established a new record in 1916, exceeding for the first time $1,000,000,000 and approximating a total of $1,621,000,000. Pig iron and copper contributed more than 78 per cent to the total increase of $629,000,000, but large gains were made in zinc, lead, aluminum, ferroalloys and tungsten ores. As compared with the figures for 1915, the metallic products increased 63 per cent. The total value of the nonmetallic products increased more than $320,000,000 over the value for 1913, the year of next highest output.

As in the past, coal and iron are the most valuable of the mineral products. The value of coal in 1916 was $867,126,000 and that of pig iron $663,478,000. Copper registered an enormous increase, the production value of $474,288,000 being almost double that of the previous high record of 1915. Of chromic iron ore, 47,035 tons were mined in 1916 as against 3281 tons in 1915. The production of refined lead was 552,228 short tons compared with 507,026 tons in 1915 and 512,794 tons in 1914. The production of manganese ore was approximately tripled, 26,997 long tons being mined in 1916 as against 8708 tons in 1915.

Arthur Young, 15 Prudential building, Pinstone street, Sheffield, England, iron and steel merchant, is seeking connections with American producers of ingots, billets and bars, and also with American manufacturers of special ferroalloys such as ferrovanadium, ferrochrome, etc. In addition to his office in Sheffield, Mr. Young maintains a branch at 6 Lloyds avenue, London.

Plays Big Part In Britain's War Program

PROMINENT among the British steel plants, which arose to England's call for ordnance and ordnance products, is the firm of Thomas Firth & Sons, Ltd., Sheffield. At the beginning of the war 2900 workmen were employed at the plant which consisted of 44 acres. The plant extensions became so great that on Nov. 11, 1918 the employes numbered 10,500, of whom 2500 were women.

For a long time before the war the company had been producing armor-piercing shells for the British navy but in the early part of the war, when Britain realized that its army ordnance plants were hopelessly inadequate, the Firth company erected a huge plant at Tinsley. This plant produced over 4,000,000 shells up until Nov. 11, 1918. For the navy all types of guns were manufactured.

In addition to the above the company during the war produced shafting and turbine forgings for five cruisers and 10,000 additional tons of shafting and turbine forgings for the British merchant marine. In this connection it is interesting to note that the famous old ship VINDICTIVE, which played such an important part in the Zeebrugge fights, was equipped with crank and straight shaft forgings and other parts from the Firth works. The company furnished approximately 2,000,000 bullet-proof steel helmets for the British army and covered a large number of armored cars, airplanes, tanks and field guns with the same grade of steel.

The Firth foundry is among the largest in the kingdom and during the war it was devoted exclusively to ordnance castings. In addition to the armor plate, enough of which was manufactured to equip 12 battleships, it made exclusively all the valve castings for 153 torpedo boats, and many of the tank castings and gun mountings, etc., used in France.



INTERIOR OF THE SHELL PLANT AND FOUNDRY OF THOMAS FIRTH & SON, ENGLAND

Cleaning Gas By Effective Method

Corrugated Baffle Plates Built on the Interior of a Gas Washer Give a Large Cleaning Area and a Uniform Condition Throughout the Washer—Comparison of Various Types of Baffles

BY GEORGE B. CRAMP

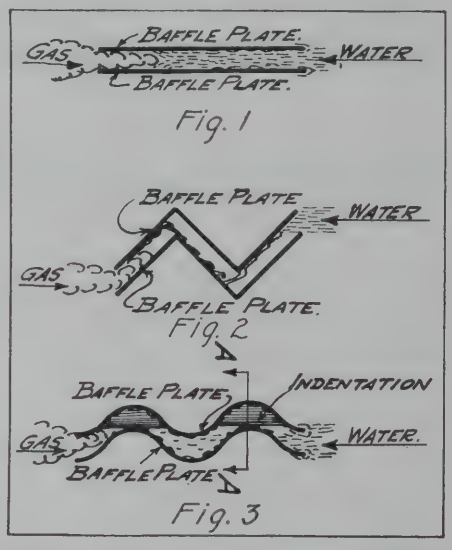
IN thoroughly and efficiently wet-washing blast-furnace gas, the principle as applied to the design, construction or operation of wet washers, is to subdivide the gas volume to be washed into as small bodies as possible and bring them into intimate and positive contact with as small amount of water as will clean the gas to the desired point of dust content without too great a reduction in the temperature of the gas. Positive contact of gas with water is secured best in those types of washers having sprays of water directed on baffles, the latter being located between the washed or sprayed surface of which the gas must pass in order to travel from the gas inlet to the gas outlet of the washer.

The efficiency of these types of washers depends upon the uniformity of water distribution, the uniformity of baffle arrangement, and the amount of area of baffle surface, provided the baffles are arranged sufficiently close to split up the gas volume into small bodies. With these conditions obtained it must follow that the greater the baffle area, the greater the positive contact of gas with water and the cleaner the gas, with a resultant use of less water, and less reduction in the temperature of the gas.

Obtaining Uniform Water Distribution

The spray nozzle has been developed to the degree of perfection where it can be depended upon to deliver a comparatively uniform spray of water over a given surface under specified conditions. It only remains to arrange several of them to secure a uniform distribution of water over any area greater than one nozzle spray will cover. With a uniform distribution of water provided, the vital point in wet-gas washer design, construction, and operation is the proper selection of the baffle shape to be used in the washer.

Fig. 1 shows two vertical plates spaced a given distance apart. The gas passes upward between these plates and the spray water either drops between or flows down the surfaces, picking up dust from the gas that comes in contact with it. As the gas travels upward, the central core of the gas does not come into intimate or positive contact with the wet surface of the baffle plates. Although it does not meet the spray of water, the action of the gas in traveling between the plates is so rapid that the spray is blown onto the surfaces of the baffles. The latter perform their function in confining the gas to narrow channels but on account of their straightness they do not entirely prevent the channeling of the gas between them.



FIGS. 1, 2 AND 3—VARIOUS SHAPES OF BLAST-FURNACE, GAS-WASHER BAFFLES

A baffle shape with the courses sloped at about the angle shown in Fig. 2 directs the films of water from the upper surface of one course to the upper surface of the next-lower opposite course while the under sides of each course remain unflushed by water. This results in the deposit of moist dust on these surfaces which increases until the washer becomes clogged or a heavy stream of water is necessary to remove the deposit. A further objection to this type of baffle is that it is not a commercial shape or one often met with even under special conditions. By reason of its contours it is doubtful whether it could be bent to fit within a cylindrical-type gas washer. To arrange straight plates of these contours in a cylindrical or square-type washer would result in dead ends. These are undesirable because they do not maintain uniformity throughout the main section of the washer.

The shape which lends itself for use as wet gas-washer baffles is the corrugated sheet represented in Fig. 3. The corrugated sheet is a commercial shape and can be bent readily without deformation of its corrugations to fit within a cylindrical shell. The corrugations are a mean between the two extreme shapes shown in Figs. 1 and 2, and permit the water to flow evenly down the surfaces. Not only do they tend to prevent the gas from traveling in a straight line but they cause it to deviate, eddy and wind its way between the plates, thus bringing it time after time into contact with the flushed surfaces of the baffles and, in so doing, removing a far greater amount of dust from the gas.

The corrugated plates may be held rigidly in the desired position by indenting the corrugation at section *A-A*, shown in Fig. 3. The indentations may be provided at odd points in sufficient number to space the plates equally apart when one plate is set against another. The indentations may be shaped further so that they are in the direct path of the wash water and are flushed thoroughly by it, thus offering no place for the dust to collect. Baffles arranged in a cylindrical washer in this manner give a uniform condition throughout the entire section of the washer, and a large baffle area.

Concerning Gas-Washer Shells

The outline of a gas-washer shell is probably of less importance than the arrangement of spray nozzles and the shape and arrangement of baffles. The shell should be built cylindrical, the gas entering at the side of the washer near the bottom and leaving the washer above the last course of baffles either centrally or at the side. This arrangement would leave the entire section of the washer free for building in baffles. The diameter of the shell could be less for an equal area of baffle surface than the arrangement shown in Fig. 4, but the difference in diameter is so small that this feature is outweighed in importance by the points of advantage gained in the construction shown.

The gas, upon entering the washer

is directed downward and tends to drop the heavier bodies of dust immediatey into the pool of water which always is maintained in the bottom of the washer. The gas then tends to distribute itself uniformly about the center of the washer and begins to rise through the baffles. Another advantage is gained by this construction in that it may be readily used as a water-seal valve. A further advantage of the larger diameter shell is gained in shaping or bending the baffle plates.

As the gas rises to pass through the lower or first set of baffles it strikes the thin edges of the plates and is immediately broken into annular-cylindrical bodies of about 3/8-inch thickness. These films of gas pass between the wavy surfaces of the baffle plates and meet a film of water. The latter during its downward flow continues to pick up dust by contact with the gas and keeps the surfaces of the plates washed free from deposits of dust.

The rough or heaviest dust along with considerable of the finest dust is washed out of the gas in passing between the first set of baffles. The final cleaning is done in the second set of baffles which are spaced 3/16-inch apart. In passing between the first set of baffles each cubic foot of gas is subjected to about 160 square feet of washing surface and in the second set about 320 square feet, and for a modern furnace installation with a gas inlet of 6 inches, diameter and a gas-washer shell 12 feet diameter, the total area of the first set of baffles would be 14,000 square feet and the second set about 28,000 square feet.

Gas Temperature is Reduced

As the gases pass through the washer it drops its dust burden and the temperature of the gas is reduced in relation to the amount and temperature of water used. The gas may pick up some moisture in the form of vapor, but if the gas is cleaned thoroughly and the temperature is not greatly reduced, the desired result is obtained particularly when the gas is to be burned under boilers or in hot-blast stoves. However, a lower temperature is probably more desirable for gas engines, though if a mean temperature of cleaned gas can be allowed for all three purposes, this washer will clean the gas sufficiently for all purposes.

Though the moisture in vapor form may not be reduced without reducing the temperature of the gas, at least, any entrained moisture in the form of drops of water, or even a fine mist that the gas always picks up and carries with it on leaving the gas washer, may be removed by subjecting the gas to impingement against an additional, unsprayed baffle surface. The principle applied here is the same as that in the removal of tar mist or fog from coke-oven gas by causing it to project itself in small jets at a comparatively high velocity against a plate surface so that every particle of gas comes in contact with the baffle.

In this type of blast-furnace gas-washer the same results are obtained by decreasing the diameter of the washer shell at the top and by inserting baffle plates 1/8-inch apart. The velocity of the gas is thus increased, the gas hurling itself rapidly in small bodies 1/8-inch thick against the corrugations of the baffles. This causes the entrained moisture to impinge on

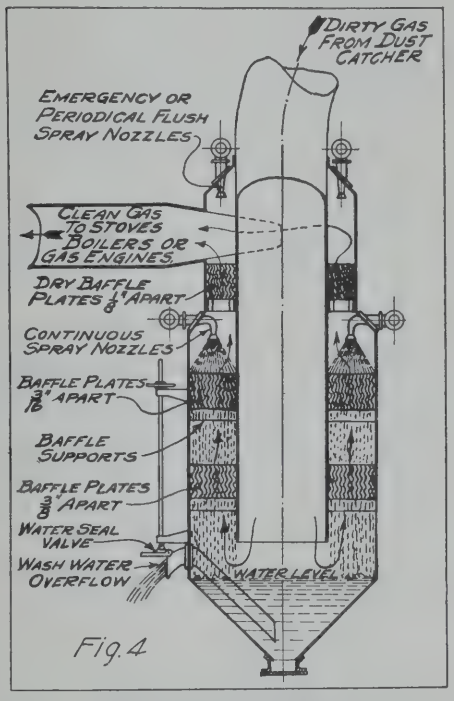


FIG. 4—CYLINDRICAL GAS WASHER EQUIPPED WITH CORRUGATED BAFFLES

the surfaces and as more moisture collects it will form into drops and gradually flow down the baffles. This keeps the surfaces wet and cleans the gas of any remaining impurities.

If the gas is not caused to come again into contact with a spray of water, after leaving the dry baffles, it passes out of the washer as free from entrained moisture as it is possible within a one-piece gas-cleaning apparatus to make it. Within an annular space of 6 feet inside diameter and 9 feet outside diameter there may be arranged more than 20,000 square feet of impinging surface with the plates spaced 1/8-inch apart. One cubic foot of gas receives the cleaning effect of 480 square feet, and in a height of 15 feet, 1 cubic foot of gas receives the cleaning and drying effect of nearly 1000 square feet of baffle surface. In traveling through the washer, the gas receives the total cleaning and drying effect of 62,000 square feet of baffle surface.

Spray nozzles may be inserted above the dry baffles to flush them should dirt tend to collect. These sprays may be connected with the furnace by means of a pressure-operated regulating valve which opens the spray-nozzle feed line when slips occur and insures the thorough cleaning of the gas during the slip. The principles of gas cleaning and drying just outlined are applicable to many other types of gas cooling, cleaning, drying and absorbing apparatus.

Book Review

Industrial Good Will, by John R. Commons; cloth; 213 pages; 5½ x 8¼ inches; published by the McGraw-Hill Book Co., Inc., 239 West Thirty-ninth street, New York, and furnished by THE IRON TRADE REVIEW for $2.

Good will is a competitive advantage. The employer who succeeds in obtaining the good will of his workers will be benefited in meeting competition by lower costs of production. For this reason alone is it advisable that employers study all angles of the labor problem if they wish to succeed in business.

In his book on "Industrial Good Will," Mr. Commons calls attention to the fact that good will is coming to be an intangible asset of business, more valuable than the tangible properties. If a man is not satisfied with conditions at the plant where he is employed, he is sure to seek work elsewhere. Frequent changes in organization are costly, as a new man on the job produces at a much slower rate, thereby adding to production costs.

Various methods of shop management are discussed. Mr. Commons tells of many labor problems of which he has personal knowledge and gives in detail the settlement in each case. The concluding chapter is devoted to a review of progress of labor organizations and trade unions in the leading countries of the world during the past 70 years.

A paper read by R. G. Mercer at the recent British Iron and Steel institute states that in the British Isles there are installed or being installed 141 electric furnaces with a total capacity of 112,000 kilovolt amperes. Of this number, 24 will be used for various alloys while the remaining 117 are for electric steel manufacture with a total charging capacity of 384 tons and a power capacity of 98,769 kilovolt amperes. Based on five days a week and four weeks to the month, the calculated output is 31,170 tons per month.

Arranging Industrial Cost Factors

Proper Division of Elements Essential to Keep Production Department Operating in Accordance With Preconceived Plans — Basis for Estimating Future Costs a Valuable Feature of the System

BY M. H. POTTER

IN previous articles of this series it has been pointed out that the first requirements in industrial cost accounting is the separation of the various items to show the regular annual payments for specific services, the payments being termed the production factor. Annual payments are apportioned among the various production centers, and to these are added certain factors, such as repairs, depreciation, etc., the desire being to show the cost of all the indirect charges at the production centers.

The relation of the machine rates to the production factors is shown in Fig. 1. It will be noted that certain elements are of a variable nature and that their value cannot always be determined with accuracy in advance, while other elements always are constant and can be readily and accurately predetermined. The purpose is to fix all factors with such accuracy that at any stated financial period all will correspond with one another. It is important, therefore, that actual expenditures in each element be constantly tabulated and compared with predetermined unit values. The value of comparison is self-evident and its application to the system outlined is of great importance.

Fig. 2 is a form used for tabulating the various elements of the different factors. Any items or elements which show a difference between the actual expenditure and the amount placed in the column "per factor" will require special consideration. It is important that the total estimated expenditures equal or slightly exceed the total of actual expenditures for the financial period. The difference, or balance, may be accounted for at the end of the period. However, it is obvious that if any degree of care is maintained errors will not be so great as to seriously affect the machine rate. Inasmuch as each factor is made up of a number of elements, it will be found in actual practice that errors when items are totaled, probably will cancel one another.

What Balancing Accomplishes

The balancing of one error against another, when this system is worked out properly, will show the value of determining the different elements and the reason for dividing these among the various factors. When estimated expenses fall considerably below the actual expenses, the difference may be carried forward and taken care of in the next financial period. When this system is applied to a definite line of work or operations, the person estimating the expenses under each element should study the nature and the extent of variation of such elements and make due allowances. Naturally, different lines of work will show different charges and it is only by the exercise of thought and judgment that true figures may be secured.

When the factors with their elements have once been determined it is not a difficult matter to check the figures under each, from one financial period to another. Here again comparison will afford a basis of check upon the figures.

Control accounts are figured for each production center and must be separated and tabulated if the desired results are to be obtained. The nature of the work in hand and the cost which is desired to be determined will, of course, be taken into consideration when determining production centers. The system outlined can be used to secure costs of service as required by the management.

In Fig. 3 are shown the factors which must be charged to the machine rates in order to balance the cost of production with the total expenditures, these being factors which are not distributed through machine rates.

Manufacturing costs and selling costs together, with related expenditures, are of interest to all manufacturers, although different lines of industry have leading or important selling-cost factors peculiar to themselves.

In Fig. 4 are shown the leading divisions of cost accounting as applied to the manufacturing and marketing of the output. By referring to Fig. 4 it will be noted that a definite period

This is the seventh article in this series on industrial cost accounting especially prepared for THE IRON TRADE REVIEW.

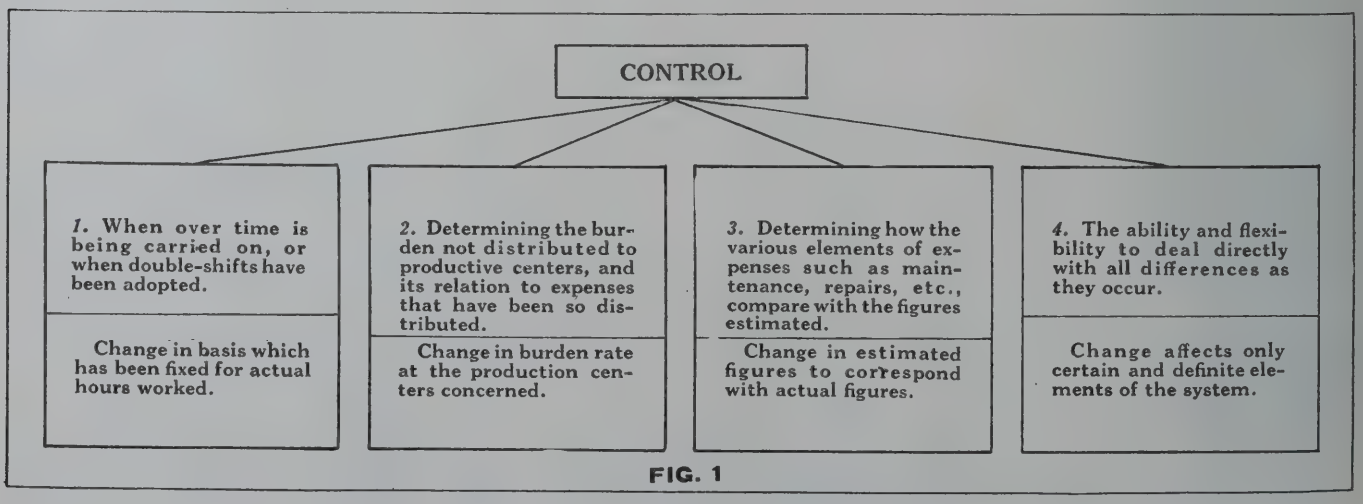


FIG. 1—RELATION OF MACHINE RATES TO PRODUCTION FACTORS

Building Factor

ELEMENTS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	Etc.	AC-TUAL	PER FACTOR	BALANCE
INTEREST INSURANCE DEPRECIAT-ION											
REPAIRS AND MAINTE-NANCE											
LAND FACTOR											
CLEAN-ING											
							TOTALS				

FIG. 2

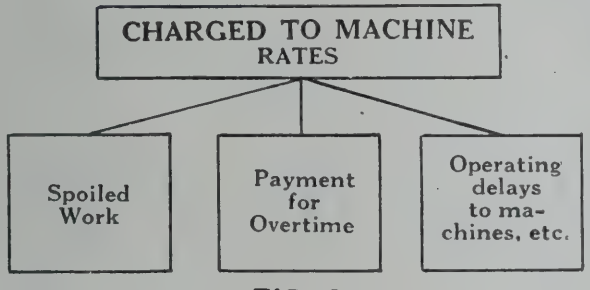


FIG. 3

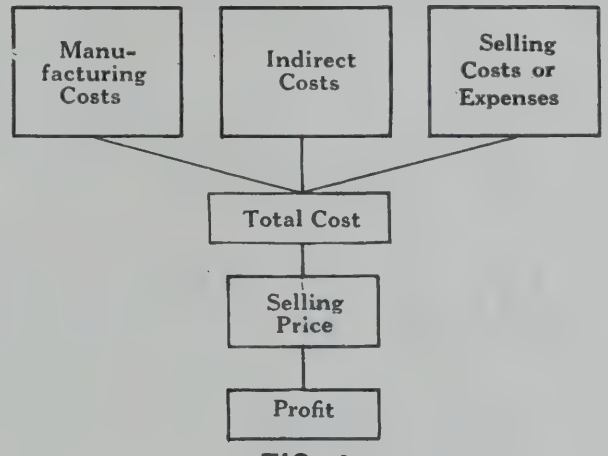


FIG. 4

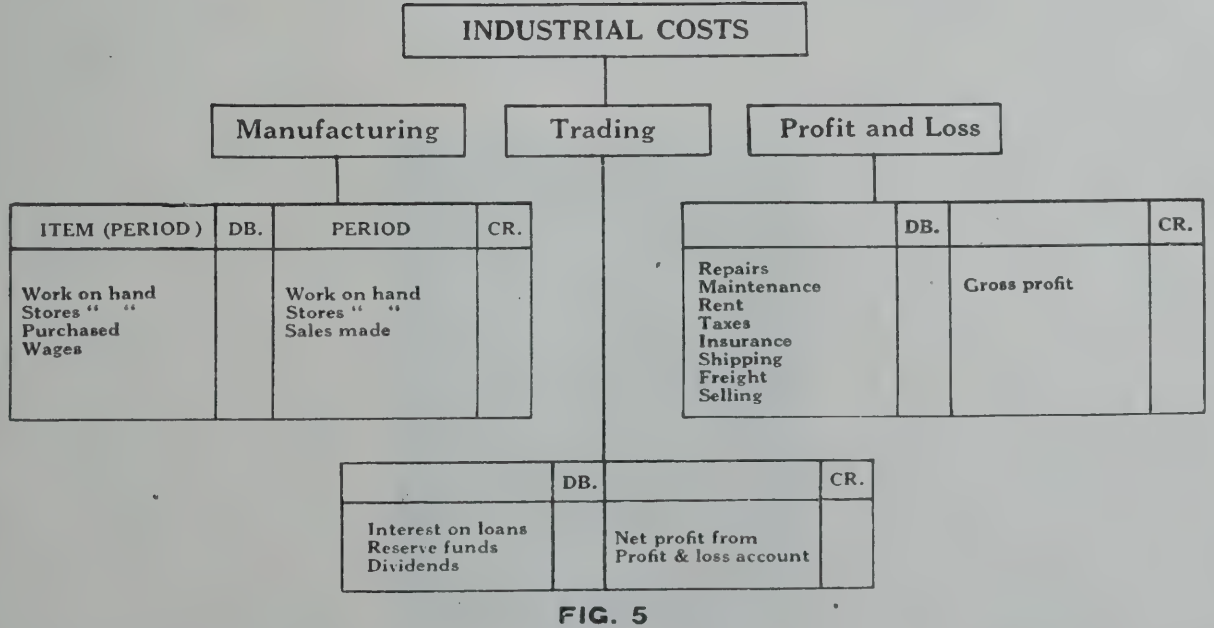


FIG. 5

FIG. 2—FORM FOR TABULATING VARIOUS ELEMENTS. FIG. 3—FACTORS WHICH MUST BE CHARGED TO MACHINE RATES. FIG. 4—DIVISIONS OF COST ACCOUNTING IN MANUFACTURING AND MARKETING. FIG. 5—RELATIONSHIP BETWEEN VARIOUS COSTS

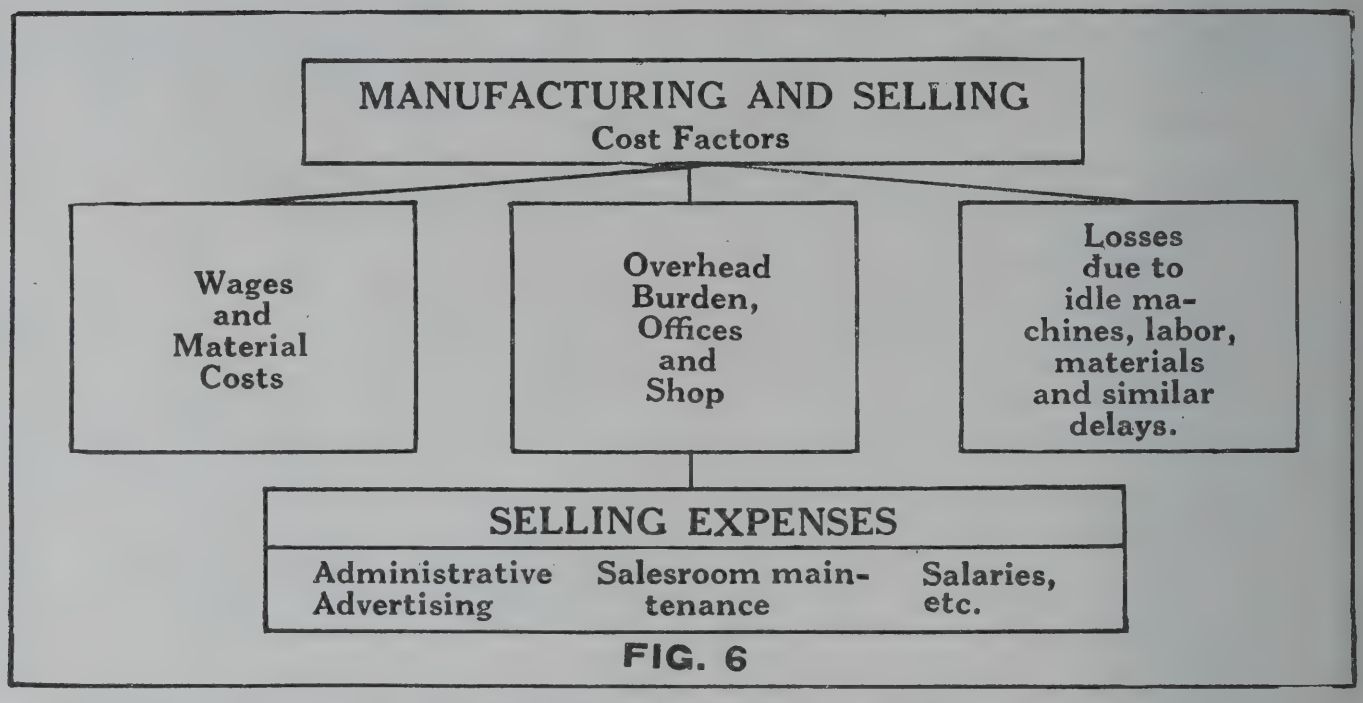


FIG. 6—PRINCIPAL FACTORS IN MANUFACTURING AND SELLING

is used as a time basis and that the balances are figured and recorded, either outgoing or incoming, for intervals of time. It is by summing up the factors as thus secured and tabulating them in accordance with the accompanying forms that the desired total or aggregate of costs is obtained.

Fig. 5 illustrates the relationship between various costs. The sum total of the costs when deducted from the selling price gives the profit. Principal factors of manufacturing and selling costs are shown in Fig. 6.

Relining A Worn Pump By Welding

CENTRIFUGAL pumps used for dredging silt, sand, mud and gravel from the bottoms of channels and for mining soft ore by the hydraulic mining system, are subject to wear due to the abrasion of the sand and gravel against the inner walls of the pump chamber. When the wear becomes so great as to interfere with the operation of the sand sucker, it becomes necessary to put the pump out of commission for repair. This is often a long and expensive process in cases where new parts have to be fitted.

Such a sand sucker chamber that had become badly scored through use was recently restored by the Oxweld Acetylene Co., Chicago, by means of the oxyacetylene process. When it is consand sucker shown in the accompanying illustration is 14 feet outside diameter, and consists of two massive steel castings having a total weight of 7 tons. The abrasion had been so severe it was necessary to rebuild both side walls of the pump chamber for a distance of 8 inches from the inner circumference. The thickness of the added metal varied from 1½ to 2½ inches. In addition, a new section approximately 14 x 18 inches in area had to be welded into the throat of the casting. The latter was approximately 3½ inches thick.

In order to insure holding the two halves of the chamber in alignment during preheating and welding they were bolted together. The heavy outer reinforced sections of the castings were not heated, because this would have produced internal strains. Preheating by means of charcoal was applied locally for a distance of about 14 inches inward from the edges of the flanges, each preheat extending for a distance of 3 feet around the inner circumference.



SPLIT CASTING OF A DREDGING PUMP WHICH WAS REPAIRED BY BUILDING UP THE WORN SURFACES

The total weight of steel added to the castings by welding amounted to 1264 pounds. The operators worked in pairs. As the heat in the small enclosure where the men worked was intense, it was necessary to hold several welders in reserve and to work in relays, each shift welding for a period of 20 minutes. Six days were required to complete the building-up work. As the built-up surface will be subjected to the same abrasive action of sand and gravel, high-carbon steel welding rods were used for the purpose of building up. This grade of steel gave a surface, which after cooling was impossible to cut with a file.

The oxyacetylene welding work was completed in six days, and effected a saving of approximately $2500.

The John C. Vance Iron & Steel Co., Chattanooga, Tenn., just purchased additional frontage at the plant for the purpose of establishing a structural yard.

Mills Pipe From Rough Flange Threads

Steam and other pipe lines subjected to heavy duty and continuous service require properly fitted pipe flanges. With the object of producing accurate flange threads for pipe installations, the Smalley General Co., Inc., Bay City, Mich., recently developed the machine shown in the accompanying illustration.

The machine is of rigid construction throughout and is designed for heavy duty. It consists of a substantial bed with which is incorporated the headstock for rotating the work while the carriage that supports the cutting mechanism travels on ways provided for this purpose. The machine, it is said, can be successfully and economically operated by semiskilled labor.

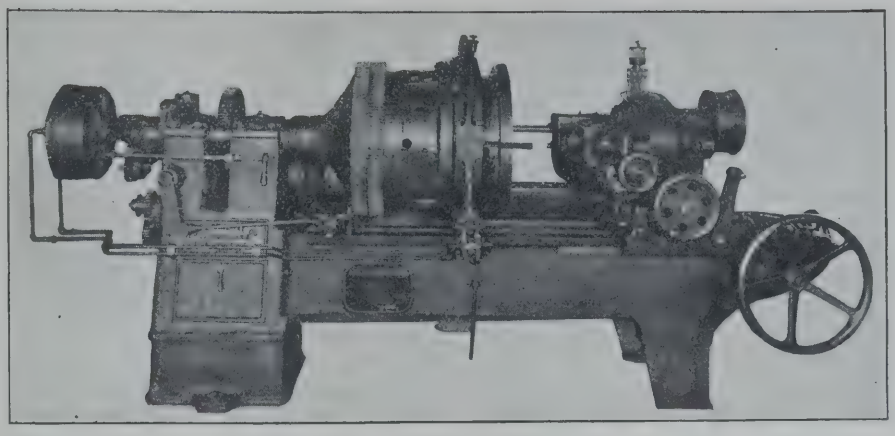
The work to be threaded revolves in a chuck while the cutting is accomplished through the medium of a revolving hob. With the object of giving the hob the proper travel to produce a tapered thread, a rigid taper attachment is provided. It is pointed out that this machine dispenses with a boring operation as the thread is milled from the rough, a practice which requires an accurate taper device.

The collet chuck for holding the work is of the air-operated type. This device holds the work securely and it is said that the time required for taking out the finished piece and substituting a new one is but a few seconds. The chucks are equipped with false jaws to adapt them to various sized flanges. They are arranged to take any size flange up to 23½ inches, outside diameter.

The chuck body is threaded to the main spindle and is driven through the medium of a staggered-face, broad-tooth spur gear. It is stated that this feature delivers the driving power as near as possible to the cutting point, thus reducing torsion to a minimum. The shaft that carries the pinion is driven through the medium of a worm gear from another shaft, the latter having a 3-step cone. This gives three speeds from the countershaft. Six speeds are possible if a 2-speed countershaft is used.

A power facing attachment is provided which is driven from the main spindle. Three feeds are provided: 3/16, ⅛ and 5/16-inch for each revolution of the work. This feature is so arranged that it is readily reversed and it is also provided with trips to throw out the feed when the tool has traversed the required distance. The machine is equipped with a lubricating pump which supplies cutting compound to the hob, through the medium of a flexible pipe.

In operation, the flange is chucked with the face out. Then the flange is faced at the correct turning speed after which the milling speed is thrown in and the thread milled. The approximate horsepower required to drive the machine varies from 5 to 7, depending on the class of work to be threaded.

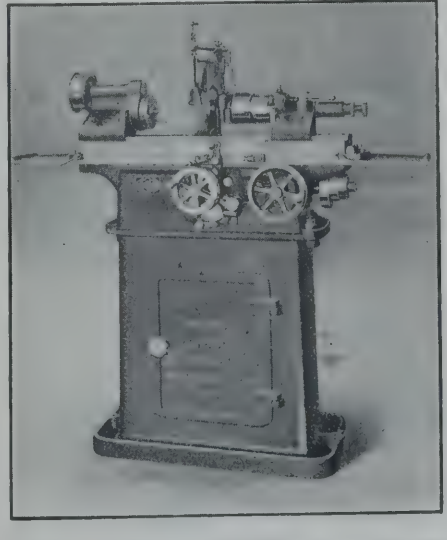


THIS TOOL IS EQUIPPED WITH A ROTARY HOB—IT FACES THE FLANGE AND CUTS THE THREAD FROM THE ROUGH CASTING AT ONE SETTING

Self-Contained Grinder for Precision Work

For finishing small, accurate, cylindrical parts in the toolroom and also for use on general production work in the manufacturing department, the Warren F. Fraser Co., Westboro, Mass., recently developed the tool shown in the accompanying illustration. This machine is a self-contained unit, the principal parts being a box-type bed on which the platen travels by means of an automatic feed, head and tailstocks for holding and rotating the work, and a rigidity constructed head which carries the grinding wheel.

The wheel is mounted on the end of the spindle in order to facilitate the ready change of wheels. To insure cool grinding and a satisfactory finish, the machine is equipped with a circulating pump which supplies cutting lubricant to the work at a point just over the line of contact with the wheel. The machine is semiautomatic in operation which enables a large number of like parts to be finished consecutively, once the machine is set up for a given operation.



SMALL CYLINDRICAL GRINDER FOR PRECISION WORK

The grinder takes work 8 inches long and 5 inches in diameter according to its rated capacity although in emergencies pieces 20 inches long and 6 inches in diameter can be accommodated. The swing over the guards is 5 inches. The head and tailstock spindles are hardened and finished by grinding and are equipped with No. 2 Morse taper.

The grinding wheel is 12 inches in diameter with 1½-inch face and 3-inch arbor hole. The wheel spindle is driven by a 2½-inch belt over a 4½-inch pulley. The wheel spindle is hardened and ground and runs in bronze journals. Three horsepower is required to drive the machine.

Wheel speeds range from 1800 to 2150 revolutions per minute. Six work speeds are provided as follows: 30, 50, 75, 107, 150 and 210 revolutions per minute. The ample range of wheel and work speeds enables the operator to adapt the machine to all classes of work.

The survey for the cut-off on the Philadelphia & Reading railroad between Sinking Spring and Blandon, Pa., has been completed and it will cost at least $1,500,000 to construct the projected bridges, which are to be of concrete. The entire line may cost in the neighborhood of $4,000,000. The distance is more than 10 miles and the road will provide a belt line around Reading, Pa., for traffic between Harrisburg and Allentown.

Refractories

In Greater Demand, with Prices Unchanged—Car Shortage Delays

Pittsburgh, Aug. 19.—While prices of refractories show no special change, both orders and specifications continue to increase and with most manufacturers now fairly busy competition for business is not as sharp as it was recently. Steel plant brick are in particularly good demand, as the big stocks of these kinds which existed as a result of free buying during the war and the sudden ending of the conflict, now are well out of the way. Steel manufacturers are replenishing stocks and are seeking prompt shipments because of the desire to be fortified against possible transportation delays later in the year.

Some shortage of magnesite brick exists at present, due to the fact that only small lots of Austrian magnesite are reaching the country, while the one domestic producer of brick-making magnesite only recently resumed after several months' shut down. Shortage of cars has interfered with the eastern movement of Washington magnesite and manufacturers of those brick cannot take much business until shipments are more certain and regular. Such tonnages of Austrian magnesite as are coming in fall far short of making good the deficiency in the domestic output of the past few months.

No trouble is experienced in making fairly prompt shipments of other kinds of blast furnace and steel plant brick, although Kentucky manufacturers have been hampered by a shortage of cars. Those dependent upon the Chesapeake & Ohio railroad have suffered most, as orders with some have warranted 80 per cent operation, while car supplies have permitted less than 50 per cent operation.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK (First Quality)	
Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 38.00
Illinois-Missouri	30.00 to 40.00
FIRE CLAY BRICK (Second Quality)	
Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00
SILICA BRICK	
Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50
MAGNESITE BRICK (Per Net Ton)	
9 x 4½ x 2½	$80.00 to 85.00
CHROME BRICK (Per Net Ton)	
9 x 4½ x 2½	$80.00 to 90.00
BAUXITE BRICK (Per Net Ton)	
55 per cent	$ 40.00 base
76 per cent	100.00 base

Pattern Manufacturers Hold Convention

The National Association of Pattern Manufacturers held its second annual convention at the Statler hotel, Buffalo, Aug. 16-17. President E. K. Ball, in his opening address, reviewed in a general way the activities of the association and mentioned some of the problems encountered during the past year. It was decided to hold the next convention on the second Friday in August, 1920, in Toledo, O.

The following officers were re-elected for the ensuing year: President, E. F. Ball, Newark Stamping & Foundry Co., Newark, O.; first vice president, Vaughn Reid, City Pattern Works, Detroit; second vice president, J. W. Brost; secretary-treasurer and business manager, E. O. Melville, Melville Bros, Columbus, O. For trustees: S. H. Thompson, S. H. Thompson Mfg. Co., Dayton, O., one year; J. H. Bridge, Maumee Pattern Co., Toledo, O., two years, and A. E. Schuchert, A. E. Schuchert Pattern Works, Cincinnati, for three years.

The Buffalo branch provided a program of entertainment, including a banquet at the Statler hotel. An address on "Industrial Relations" was delivered by D. D. Fennell, general manager, the Belmont Packing & Rubber Co., Buffalo. On Sunday the party boarded special trolley cars and viewed Niagara Falls.

Bethlehem Iron Ore Dock in Chile Completed

The iron ore dock of the Bethlehem-Chile Iron Mines, at Cruze Grande, Chile, construction of which was held up by the war, has just been completed. The dock has capacity for 30,000 tons of ore and is provided with 17 spouts, by which all 17 hatches of the standard, 20,000-ton ore boats of the company may be fed simultaneously. The loading time is expected to average three or four hours per vessel, the discharge of water ballast requiring more time than actual loading. The dock is similar to the ore docks in Lake Superior. It is nearly 500 feet long and is loaded by discharging the ore from hopper cars at the top of the dock. The height of the dock from low tide to top of rail is 120 feet.

Strong Demand

For Benzol, Toluol and Sulphate of Ammonia—Prices Pointing Upward

New York, Aug. 19.—Heavy buying of benzol and toluol continues, and as a result prices are tending upward. No change, however, has yet been made. The market may be quoted at 24 cents to 29 cents for pure benzol, spot or contract shipment, and 27 cents to 35 cents for toluol. Ninety per cent benzol is holding at 23½ cents to 28½ cents. With inquiry for motor benzol of somewhat smaller proportions and demand for pure benzol and toluol increasing, greater quantities of the latter are being distilled. Solvent naphtha is more plentiful, but the price is unchanged at 22 cents to 27 cents, producers' plants, spot and contract business.

Coke Oven By-Products

Spot	
Per Gallon at Producers' Plant	
Pure benzol	$0.24 to .29
Toluol	.27 to .35
Solvent naphtha	.22 to .27
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	3.40 to 3.65
Contract	
Pure benzol	$0.24 to .29
Toluol	.27 to 35
Solvent naphtha	.22 to .27
Per Pound at Producers' Plant	
Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	.08½ to .09½
Per 100 Pounds Producers' Plants	
Sulphate of ammouia	3.25 to 3.40

A better demand by the dye industry is noted in the naphthalin market, and considerable quantities of this product are now moving. The market on naphthalin in flakes is 6½ cents to 7½ cents on spot and contract orders, and on naphtha in balls it is 8½ cents to 9½ cents. Phenol continues at a standstill pending final arrangements for disposal of government supplies. Prices are nominal.

Better strength is noted in sulphate of ammonia. The fertilizer industry is buying in greater volume, and prices are tending upward. Export demand remains light.

Nine hundred or more strikers have returned to their jobs at the plant of the Waclark Wire Co., at Bayway, near Elizabeth, N. J. The men went out for an increase of 15 cents an hour but agreed to return to work for an increase of 5 cents.

Surplus Metals in Great Demand

War Department's Stocks of Iron and Steel Reduced 269,915 Tons in 30 Days, With 577,021 Tons Still on Hand—Total of $1,733,872,000 Paid Thus Far in Liquidation of Contracts

WASHINGTON, Aug. 19.—The general resumption of business as reflected in the iron and steel industry in the past few weeks has carried with it an increased demand for the iron and steel stocks held by the various bureaus in the war department. The office of the director of sales has announced that on Aug. 9 the total of these materials was 577,021 tons. This is 269,915 tons less than were on hand July 10. This reduction in 30 days compares with an increase of 50,222 in the preceding 40 days and has caused officials of the department to feel well pleased with the progress being made in disposing of surplus war materials.

The greatest decreases in the size of stocks occurred in billets, shell forgings, cast steel slugs and heavy melting scrap, while increases largely were in ingots, tool steel, shell steel, bars and rods, and terne plate. There were changes in other items carried in the surplus list, but the more pronounced fluctuations were in these. The net change in the month elapsing since the last inventory was reported showed daily sales averaging 9000 tons. This compares with an average daily net increase of 1125 tons in the period ending July 10.

The quantity of shell forgings in stock Aug. 9 was 224,219, as compared with 391,590 on July 10. Billets decreased from 136,948 tons to 110,382, while, on the other hand, ingots increased from 22,119 tons to 46,270. The tonnage of cast steel slugs, nearly 50,000 tons on July 10, was only 8386 tons on the last available comparative date. Heavy melting steel fell from 17,229 tons to 1539 and the stock of heavy melting nickel steel, 3457 tons a month ago, was cut in half. The 1027 tons of carbon tool steel on July 10 increased to 2724, and 234 tons of miscellaneous tool steel has been increased by more than 13,000 tons.

Pig Iron Tonnage Increases

While the pig iron and spiegeleisen tonnages increased, the quantity of ferromanganese and ferrosilicon decreased. The 728 tons of iron ore listed on July 10 has disappeared and in its place is zirconium ore, of which 740 tons are held. The pig iron tonnage increased from 3970 to 5137 and spiegeleisen from 114 to 769, while ferromanganese tonnage fell from 466 to 37 tons. The ferrosilicon drop was less precipitous, 144 tons being disposed of out of stock aggregating 390 tons.

Other stocks on hand Aug. 9 include rails, 919 tons; bars and rods, 56,752 tons; structurals, 697 tons; plates and sheets, 4696 tons; terne plate, 8058 tons; strip steel, 845 tons; pipes and tubes, 600 tons; angle iron, 155 tons; band iron, 11 tons; flat iron, 446 tons; adapter steel, 1523 tons; annealed steel, 938 tons; beveled steel, 11 tons; coil steel, 72 tons; copper clad steel, 5 tons; decarbonized steel, 36 tons; flange steel, 2098 tons; gun steel, 690 tons; machine steel, 226 tons; high speed tool steel, 206 tons; spring steel, 120 tons; steel shafting, 2 tons; bessemer bars, 86 tons; miscellaneous forgings, 56,857 tons; alloy steel, 7752 tons; galvanized sheets, 210 tons; shell steel, 41,674 tons; grey iron, 127 tons; armor plate, 871 tons; reinforcing steel, 192 tons; machine borings and turnings, 924 tons; nickel steel borings and turnings, 1590 tons; high speed tool steel scrap, one ton; miscellaneous mixed iron and steel scrap, 35 tons; low phosphorus steel scrap, 192 tons; high speed solids, 114 tons; cast iron scrap, 514 tons; malleable iron scrap, 1239 tons; shells in process, 442 tons; miscellaneous scrap, 9350 tons.

Value of Sales Announced

As most of the material now on hand in the department came through liquidation of contracts, it is interesting to note that the total liquidations to date now aggregate $1,733,872,000. Suspended contracts awaiting liquidation total $2,012,635,000. The department has also announced in detail the value of sales reported by bureaus from Jan. 1 to Aug. 1 as follows:

Construction division, $1,837,275; signal corps, $56,016; military railways, $71,274,706; chemical warfare, $719,888; ordnance, $70,999,494; military aeronautics, $3,502,811; surplus property division, purchase and storage, $210,639,412; aircraft production, $4,784,952.

The value by classes is as follows:

Wool, $163,604,111; railway rolling stock, $69,023,732; chemicals, etc., $31,982,542; textiles, $22,865,910; nonferrous, $20,345,679; animals, $19,080,999; subsistence, $13,351,384; clothing and equipage, $5,139,253; miscellaneous, including iron and steel, $18,420,944.

Plan National Business Meet in September

Washington, Aug. 18.—A committee to arrange for a national industrial congress to be held at Atlantic City late in September has been announced by directors of the United States Chamber of Commerce. A. C. Bedford, chairman of the Standard Oil Co., of New Jersey, was named chairman. The other members are D. A. Cooke, New York; James H. Defress, Chicago; John F. Fahey, Boston; James A. Farrell, New York, Homer L. Ferguson, Newport News; Edward A. Filene, Boston; Thomas W. Lamont, New York; I. L. Lee, New York; Alfred E. Marling, New York; Edward G. Miner, Rochester; William Fellows Morgan, New York; Lewis E. Pierson, New York; S. Goodwyn Rhett, Charleston; George Edward Smith, New York; Ernest T. Trigg, Philadelphia; Harry A. Wheeler, Chicago; Theodore Whitmarsh, New York, and Owen D. Young, New York.

Government Buys Brake Shoe Plant

Washington, Aug. 13.—On Aug. 15, the sale of the entire holdings of the American Brake Shoe & Foundry Co., in Erie, Pa., to the United States government was consummated. The reported consideration is $495,835. The plant is to be used as a government arsenal. Under the terms of the deed, the government obtains possession of three parcels of land near the city limits on West Twelfth street, together with all the buildings, plants, machinery and personal equipment of the company.

More Steel Bids Asked

Washington, Aug. 19.—Sealed proposals will be received at the St Louis district ordnance office until Aug. 28 on approximately 7543 tons or 73,641 forgings for 8-inch common steel shells. These weigh about 315 pounds each and are located at the plant of the Wagner Electric Mfg. Co., St. Louis. Bids will be

taken until Sept. 2 on 1698 tons or 11,885 forgings for 8-inch common steel shells, 320 pounds each; 4946 tons or 20,905 forgings for 240 millimeter shells, 530 pounds each; 500 tons or 2035 cast steel ingots for forging 240 millimeter common steel shells, 550 pounds each, all three lots located at Curtis & Co. Mfg. Co.'s Carrie avenue yards, St. Louis. Bids will be taken until Aug. 28 at St. Louis on approximately 70 tons of structural material such as bar spacers, roof slabs, construction bars, column bars, beams, straight bars, bent bars, spandrel beams, spirals, lintels, stirrups, etc., purchased for use on a government project, at the plant of the Western Cartridge Co., East Alton, Ill.

Bids will be taken until Aug. 25 at the Detroit ordnance office, on approximately 7098 tons or 30,000 240 millimeter shell forgings, located at the plant of the American Car & Foundry Co., Detroit.

At Philadelphia, bids will be opened on Aug. 27 on 460 net tons of 1 1/32-inch round hot rolled steel bars, average length 15 feet, at the United States Eddystone rifle storage arsenal, Eddystone, Pa., and on Aug. 29 bids will be opened on 805 tons of 1⅞-inch round cold rolled steel bars, located at the plant of the Eddystone Munitions Co., Eddystone, Pa.

Coal and Cement Producers Under Fire

WASHINGTON, Aug. 19.—Among the outstanding industrial features of the government's crusade against the cost of living was the decision last week of the senate to investigate the coal industry and the institution by the department of justice of antitrust proceedings against 19 of the largest cement manufacturing companies in the East. While the latter suit cannot be attributed to the concentrated efforts of the government in its fight against high prices, it is part of the general campaign, as one of the charges against the producers is that they conspired to increase and maintain high prices for their product.

The senate's investigation of the coal industry was authorized in the adoption of a resolution by Senator Frelinghuysen, of New Jersey. Power is given the committee on interstate commerce to "make inquiry into the cause or causes which have brought about the enormous increase in the market price of coal, and to that end obtain full data regarding freight rates, wages, profits and other matters bearing upon the question" in order to determine "who or what may be responsible * * * whether due to economic causes * * * or whether due to manipulation or profiteering on the part of miners, shippers and dealers in coal."

Charges of various kinds have been made in the house and senate against the coal operators and others connected with the industry. Congressman Huddleston, of Alabama, who introduced a bill to regulate the coal, iron and steel and other industries, accused the National Coal association of bad faith in its efforts to get the public to buy coal now. He said there is no car shortage as alleged, there is not a labor shortage as charged, nor any other grounds for the agitation to "buy coal now" at unwarranted prices.

While the house and senate will take the necessary time to investigate the various causes contributing to the cost of living, the department of justice is expected to act promptly. This was indicated in the filing of suit in the New Jersey district court of the United States against the cement producers. The Universal Portland Cement Co., a subsidiary of the United States Steel Corp., is not a defendant in the case. The defendants named are the Atlas Portland Cement Co., the Allentown Portland Cement Co., the Alpha Portland Cement Co., the Bath Portland Cement Co., the Coplay Cement Mfg. Co., the Dexter Portland Cement Co., the Edison Portland Cement Co., the Giant Portland Cement o., the Glens Falls Portland Cement Co., the Hercules Portland Cement Co., the Knickerbocker Portland Cement Co., the Lawrence Cement Co., the Lehigh Portland Cement Co., the Nazareth Portland Cement Co., the Penn-Allen Cement Co., the Pennsylvania Cement Co., the Phoenix Portland Cement Co.,, the Security Cement & Lime Co., and the Vulcanite Portland Cement Co.

Among the charges against the cement producers is one that they formed an "unincorporated association" for the control of the cement industry of the East.

Col. Marting Presented with Loving Cup

Col. Henry A. Marting, president of the Marting Iron & Steel Co., Ironton, O., was presented with a large silver loving cup by the people of Ironton, Aug. 15, in recognition of his services to the city. The presentation was made by a committee representing the citizens and two officials of the chamber of commerce in the presence of Col. Marting's family. It was purposed to have a public presentation at the opening of a hotel, which Colonel Marting's assistance made possible for the city to have, but following the advice of the colonel's physicians who feared the excitement might have an adverse effect on his health, the ceremony was limited. In accepting the loving cup, Colonel Marting announced a gift of $38,000 to the Ironton Y. M. C. A., for the erection of a building on property which he formerly gave for the project. Colonel Marting's benefactions, his interest in public affairs, and his affection for the people of Ironton have enshrined him as "Ironton's most public spirited and most generous citizen."

To Build Foundry

The T. W. Price Engineering Co. recently has completed the design and purchase of equipment for a large rolling mill to be installed in Japan, and also at the present time is engaged in making plans for a large foundry for making cast iron pipe, by the new process known as the "centrifugal cast iron pipe process," which has proved very satisfactory in an installation at the plant of the National Iron Works, Toronto, Ont. The Price Engineering company will continue the construction and installation of electric furnaces of improved design. For some years T. W. Price has been identified with the development and installation of electric furnaces, having installed and placed in satisfactory operation a number of electric furnaces in this country, and having also sold a number of furnaces in Japan. J. L. Dixon, an electric furnace engineer, recently has become affiliated with the company and he will aid in designing the new line. In addition to the electric furnace business, the T. W. Price Engineering Co. will continue the practice of consulting engineering, specializing as heretofore in the design of foundries, rolling mills, forge shops, and also special machinery and processes.

Recently started at the School of Arts of the Carnegie Institute of Technology is a course in ornamental modeling, both iron and brass. The student is taught to mold in clay, to transfer the model to plaster paris and then to metal. Night and day classes are held.

A French-Belgian Economic War

Manufacturing Interests in France Opposing Belgium's Plans For Increasing Exports of Finished Products—Strong Trade Barriers May be Erected—French Employers and Employes Smooth Out Differences

BY FRANCIS MILTOUN

Paris Correspondent of The Iron Trade Review

CONSIDERING the metal trades as characteristic of the bulk of the interests and industries of northeastern France and Belgium, Belgium's prewar situation for disposing of her finished products was by no means as favorable as that of France.

Outside four or five cities, from Louvain to Ypres, which were blotted out or stunted in their growth by the Germans, Belgium suffered little on-the-surface damage. France's wounds are everywhere visible. Belgium did undergo requisition and looting to the extent that nearly a million of its population today are without work from the fact that there are no raw materials, no tools or machines left in their stripped factories which they can put into operation. This is the situation *en plein.*

Northern France was essentially different as to its industrial organization from that of Belgium. France largely produced finished articles in most branches of the metal industries, while Belgium in the majority of cases supplied only raw materials or semifinished products.

These conditions were due to the prewar relations of Belgium and France with contiguous countries, relations based on import restrictions and customs dues, one or the other equally effective to encourage or strangle trade, depending upon whom they favor.

Belgium today is looking for a lowering of the barriers, as well as looking for means of fitting up its factories anew so that it may export finished locomotives and tractors and other machinery instead of merely rails, rough forgings and castings and boiler plates.

So far as France is concerned, the interests of the country oppose this elaboration of Belgian policy, even more than they would a similar policy of some overseas country where the same line of manufactured products were concerned. As an economic policy it is good for France and bad for Belgium. The fact that the countries are contiguous makes the status the more acute in that things point to legislation on both sides which will define the limits of mutual trade intercourse. It will not be a trade war, but rather an economic one.

France with her tutelage over the basin of the Saar and its coal fields, and of the whole of the Briey and the Lorraine iron fields, is more self-sufficient than ever. For this reason alone she can afford to be generous in her policies with relation to Belgium, at least not to antagonize her in foreign markets.

The fact is the case for Belgium is serious, and without question she looks to the United States to put her on her industrial feet again, either by supplying capital in association with American concerns, or by extending credit for machines and tools which she needs at once.

* * * *

Decentralization has ever been a policy of the French. Paris, however, still remains the greatest manufacturing center of the country. The great disaster which befell the French iron and steel industry in the war was due to the fact that so much of the industry bordered upon the frontiers of the north and east. The location was in line with an economic policy which was sound enough had one not to reckon with the possibility of war and invasion.

Outside Paris the greatest centralization of manufacturing industry in France is in the Lyons-Saint Etienne-Roanne district in central France. Lyons is the second city of France, with a population of a little less than half a million before the war and now well on to a million, approximately 300 miles from Paris by road or rail and somewhat less as the airplane flies.

The associated metallurgic industries of Lyons have produced some interesting statistics which prove the virtues of decentralization. Without specifying as to what part of it was due to war work, the whole industry of Lyons has taken a remarkable leap to the fore. From an index number of 100 for 1913 the metal trades have advanced to 155, 172, 200, 204, 300 in successive years to the beginning of 1919.

During the same period there were 291 individuals or firms dealing with 32,600 customers for fully finished products and 608 firms dealing with 15,000 customers in semifinished products. These figures show a wide distribution of home products.

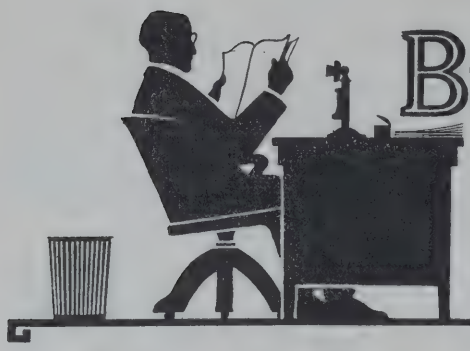
It is symptomatic that when the employers of the French metal industry and the employes recently got together to discuss the 8-hour day they fell into complete accord. The two elements opposed their respective signatures to an agreement which recognized the 8-hour day for application in the metallurgical industry, mining, naval construction and electrical enterprises—a perfect accord. The convention marked a big step forward, the more so since 53 groupments or syndicated special trades, all born of the metal industry, put their stamp of approval on it. The workmen's federation, on its side, is one of the most powerful bodies of the proletariat in France.

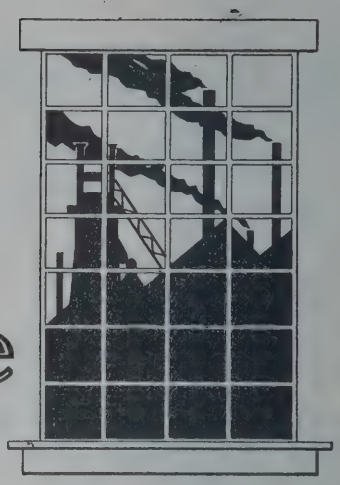
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The chamber of commerce of Paris recently began a series of conferences on "Commercial Camouflage." France fears the introduction of enemy products under the guise of their being French, lacking any label which shall indicate the country of origin. Primarily the movement is against German-made goods, files, locks, door hinges, bolts and nuts. Krupps used to accept order for a thousand bolts valued at but a few dollars. No order was too small and it received the care and consideration of an order for millions. There was no reason why France should have not kept this business at home. Today the "Made in Germany" will be less popular than it was before; one wonders if for business reasons it will not disappear.

France is seeking to protect her own industries and products by the adoption of a national trade mark, UNIS-FRANCE, or simply U-N-I-S. It should be sufficient, once the idea is thoroughly propagated. The only criticism from the American manufacturer who hopes to import his goods in France is that it looks as though it was an abbreviation, or a coined contraction, of Etats-Unis, United States.

Little Stories of Business Life





Senators Do It

THE commodious home of the national engineering societies in New York was made possible largely through the generosity of the late Andrew Carnegie. Its construction was supervised by a rather large committee, including representatives from each society, and one thing which impressed the old iron-master was the perfect harmony of its workings. In his address at the dedication exercises he commented especially on this fact, observing that such an absence of friction would hardly have been possible in Scotland. "Over there," he explained, "it would doubtless have been like the case of Sandy and MacDougall. Sandy was walking down the village street one evening and passed MacDougall's house.

"'Where ye gaen, Sandy?'

"'Oh, juist doon tae th' inn tae contradic' a bit.'"



Uxtry! Coke Mine Discovered

AN article which appeared recently in the *Shreveport (La.) Times,* ought to be of interest to the iron and steel industry in general and to blast furnace operators in particular. The item follows:

"According to the head of (a stated) steel company, recent discoveries of coke, suitable for use in the manufacture of iron and steel, and existing in large quantities near Howe, Okla., about 165 miles from Shreveport, changed the original plans of the company to locate its plant at Beaumont, Tex. The haul of the raw material and coke and limestone is much shorter to Shreveport than to the Texas city. One other city is under consideration as a possible location, namely, Texarkana. The location in Shreveport, however, it was conceded, has many superior advantages."



Looks Easy, But . . .

GETTING the other fellow's viewpoint is an interesting process. Recently at the plant of the Youngstown Sheet & Tube Co., according to the employes' new paper, *Bulletin,* a foreman took occasion to rebuke one of the laborers in regard to the number of days absent. The foreman showed his own attendance card, which indicated an excellent record, and remarked if he could be on the job regularly the man also should be able to do so.

The culprit shook his head and said with a shrug: "You give me easy job like you, sit around all day, do nothing, me come out every day, too."



A Real Literary Gem

HERBERT N. CASSON, in *The Romance of Steel,* tells of an English editor who once asked the late Andrew Carnegie to write an article on "Organization in Business." The busy steelmaker said he could do it, but feared his price might be too high.

"Then name your own price," retorted the delighted editor.

"Well, I couldn't let you have it at less than the knowledge has cost me, could I?" he replied. "Suppose we say $5,000,000—and that will be very much under cost."

Zero in Investigations

ACCORDING to a correspondent of *The Railway Age,* it cost the valuation department of one of the large railroads of the country $21,849 to ascertain the fact that it cost one-tenth of a cent to drive a track spike. The advisory board of the railroad consisted of a valuation engineer, two assistant valuation engineers and an engineer of unusual ability. This board held a conference lasting two and one-half months to learn all about track spikes; what they were, their use, etc. Detailed figures of the cost of the advisory board's, accountant's' clerks' and stenographer's time, stationery, printing, etc., aggregated $5827.50. Then 176 railroads were written to asking for details of the methods and cost of spike driving. These roads took the matter up with 1760 roadmasters, who in turn obtained the opinions of five section foremen. The detailed expense in this connection totaled $13,621.25. The advisory board then decided to have a practical demonstration of track spike driving and invited 50 valuation engineers to be present. Time and traveling expenses for the 50 engineers was figured at $2400, which brought the total cost of the investigation to $21,848.75. One Mike O'Reilly, a section hand, was selected to drive the spike. The official time was 10 seconds and on the basis of 40 cents per hour, the cost of driving the spike was one-tenth of a cent.



Buying Them on the Hoof

IN the old days it was customary to value the services of a man according to what he possessed above

the neck. Under the new industrial order to which some alleged sociological experts insist the world is coming, this will all be changed. A forerunner of the new scheme is seen in a serious notice recently published in a New York daily. It called attention to a chance for 100 former service men to obtain immediate employment through the re-employment bureau which has received a call from the Merchant's Shipbuilding Corp., Bristol, Pa.

According to the notice "men weighing between 135 and 150 pounds will be started at the rate of 46 cents an hour and will be advanced to 58 cents at the end of 12 days. Men who weigh 160 pounds or over will be started at 54 cents an hour and will be advanced to 70 cents just as soon as their work warrants the increase. The men later are to be put on piece work, which pays more than the wages quoted."

Manganese Production is Decreasing

Reports sent by operators of manganese mines to the United States geological survey covering the first three months of 1919, show that the shipments of manganese ore during that quarter were much smaller than during any other quarter since 1917. The shipments of high-grade ore were 23,937 tons, against 75,465 tons during the last quarter of 1918 and 305,869 tons during the entire year. The number of shippers was only 24, against 247 during the year 1918.

The extraordinary decrease in shipments is due to the unwillingness of the makers of ferromanganese to increase further their rather large stocks of ore, which were purchased at high prices, especially as there is now only a small market for the alloy. Early in November, 1918, the stocks of high-grade ore and ferromanganese were equivalent to nearly nine months' supply, the price of 50 per cent ore ranged from $60 to $67 a ton, and the price of 80 per cent ferromanganese was $290 a ton. In June, 1919, the prices offered for 50 per cent ore by the few furnaces that were making purchases ranged from $25 to $35 a ton and the price of 80 per cent ferromanganese ranged from $110 to $125 a ton.

Practically all the ore shipped during the first quarter was material delivered on contracts made before Nov. 11, 1918. The outlook of the domestic ore industry is gloomy, and there is no reason to change an earlier estimate that the shipments for the year will probably not exceed 60,000 tons.

Program is Announced

Many Technical Papers are Scheduled for Chicago Meeting of Mining and Metallurgical Engineers—To Visit Plants

FINAL arrangements for the annual meeting of the American Institute of Mining and Metallurgical Engineers to be held at the Congress hotel, Chicago, Sept. 22 to 25, inclusive, are nearing completion. The program covers a wide range of activities. All-day excursions have been arranged for Tuesday, Thursday and Friday. On Tuesday members will visit the plant of the Illinois Steel Co., Gary, Ind.; Thursday they will go to the La Salle district for an inspection of coal mines, cement works and other industries, and on Friday they will participate in all-day excursions to North Chicago, East Chicago, Milwaukee, Whiting, and other points. Technical sessions will be held on Monday and Wednesday. On Monday evening members of the institute will be entertained at a smoker, given by the Chicago University club and on Wednesday evening a banquet, followed by dancing, will be held at the Congress hotel.

Of the large number of papers to be presented at the technical sessions, the following are of particular interest to men of the iron and steel industry:

SESSION ON INDUSTRIAL ORGANIZATION
Monday, September 22, 2 p. m.

Method of Curtailing Forces at the Copper Queen. By Charles F. Willis.

Educational Methods at the Copper Queen. By Charles F. Willis.

Physical Examination Previous to Employment. By Charles F. Willis.

SESSION ON IRON AND STEEL
Tuesday, September 23, 2 p. m.

Blast-furnace Refractories. By Raymond M. Howe.

Effervescing Steel. By Henry D. Hibbard.

Aircraft Steels. By Albert Sauveur.

Determining Gases in Steel and the Deoxidation of Steel. By J. R. Cain.

Effect of Time and Low Temperature on Physical Properties of Medium-carbon Steel. By G. A. Reinhardt and H. L. Cutler.

Erosion Tests of Rifle Barrels. By A. E. Bellis.

Metallography of Rifle-barrel Steel. By G. F. Butterworth.

SESSION ON IRON AND STEEL
Tuesday, September 23, 8 p. m.

Industries of the Chicago District. By T. W. Robinson. Lantern slides, etc.

Manufacture of Steel Rails. By Robert W. Hunt.

The World's Largest Plate Mill. By C. L. Huston.

SESSION ON IRON AND STEEL
Wednesday, September 24, 10 a. m.

Cooling Properties of Technical Quenching Liquids. By N. B. Pilling and T. D. Lynch.

Differential Crystallization in Cast-steel Runner. By Francis B. Foley.

Manufacture and Properties of Light Wall Structural Tubing. By H. J. French.

Oxygen in Cast Iron and its Application. By Wilford L. Stork.

Graphitization of White Cast Iron upon Annealing. By Paul D. Merica and L. J. Gurevich.

Experimental Data Obtained on Charpy Impact Machine. By F. C. Langenberg.

Heat Treatment of Cast Steel. By John H. Hall, Arvid E. Nissen and Knox Taylor.

Deep Etching of Rails and Forgings. By F. M. Waring and K. E. Hofammann.

SESSION ON PYROMETRY WITH SPECIAL REFERENCE TO IRON AND STEEL METALLURGY
Wednesday, September 24, 2 p. m.

Report of the Pyrometer Committee of National Research Council. By George K. Burgess.

Pyrometry in Blast-furnace Work. By P. H. Royster and T. L. Joseph.

Pyrometry and Steel Manufacture. By A. H. Miller.

Electric Open-hearth and Bessemer Steel Temperatures. By F. E. Bash.

Some Thermal Relations in the Treatment of Steel. By Charles F. Brush. Illustrated by lantern slides.

Pyrometry in the Tool Manufacturing Industry. By J. V. Emmons.

Rate of Heating and Cooling of Large Ingots for Forging. By F. E. Bash.

Obituaries

John N. Benson, vice president of the Big Savage Fire Brick Co., Frostburg, Md., died Aug. 3. He had been connected with the fire brick industry for many years.

William Henry Trippett, secretary of Henry Bessemer & Co., Ltd., Sheffield, England, died recently. He had been connected with the company for about 35 years and prior to 1912 was its chief clerk. At that time he was appointed secretary.

John Frank Harden, chief clerk of the Philadelphia office of the Carnegie Steel Co., died Aug. 9, at Abington hospital, Jenkintown, Pa., of complications following pneumonia. He had been connected with the Philadelphia office of the Carnegie company for 15 years.

Colin Kennedy, manager of the Vancouver branch of the A. R. Williams Machinery Co., died recently at Vancouver. He was well known as a machinery traveler and previous to his going to the Pacific coast was connected with the Warnock Edge Tool Works, of Toronto.

Edward P. Bates, president of the E. P. Bates Co., Inc., Syracuse, N. Y., died recently in Butte, Mont. He was 75 years old, and was a member of the American Society of Mechanical Engineers and the American Society of Naval Architecture and Marine Engineers. He established the firm that bears his name, and which is one of a chain of engineering and water system offices maintained throughout the east, in Syracuse in 1876.

Resuming Work at Ore Docks

Operators Plan to Rush Shipments as Railroad Shopmen Return—Dockmen at Duluth and Two Harbors Back, While Those at Marquette, Escanaba and Ashland Hold Conferences—Mines Short of Men

(Special Correspondence)

DULUTH, Aug. 16.—Mining and other industrial enterprises at the head of the great lakes were demoralized as a result of the tieup at the ore docks, brought about through the railroad shopmen's strike, which fortunately has just been called off. It was the first time in the history of the upper lakes mining industry that the handling of iron ore at the docks was stopped entirely in the busiest part of the season through labor difficulties. First the railroad shopmen went out, and as locomotives and rolling stock would soon have become inoperable for want of attention, the railroad administration placed an embargo against shipments of ore from the mines to the docks. The men on the Duluth, Missabe & Northern railroad and the Soo and Northern Pacific railroad docks at Superior did not strike prior to the embargo. They have been ordered to resume work immediately on ore shipments.

The men on the Great Northern docks at Allouez struck for higher wages, and Duluth & Iron Range railroad dock operators at Two Harbors made demands after they were laid off. They, with the striking dockmen at Ashland, Wis., Escanaba and Marquette, Mich., have been notified that they must return to work before any attention will be paid to their demands.

Later advices were to the effect that dockmen at these three ports were still out Aug. 19. At a conference in Marquette Aug. 18 they failed to reach an agreement among themselves to return, and were to resume their conference the following day. Most of the dockmen at Duluth and Two Harbors have returned to work.

It is believed all the disputes will be satisfactorily adjusted and that shipping will be active from now on until the end of the season. Up until ten days ago, when the strike developed, independent operators were planning to increase operations. They are now taking up the work where they left off, and it is predicted that larger shipments of ore to the docks will be made during the next few weeks.

A majority of authorities in the trade generally hold optimistic views regarding the season's shipments. It is assumed that the independents will make special efforts to rush ore down the lakes during the closing weeks of navigation, but those in close touch with the situation are skeptical of their ability to obtain a sufficient number of miners. Large numbers of aliens are leaving for Europe. "We are losing our best miners," one operator said.

In the event of a substantial increase in demand for ore it is assumed that efforts will be made to speed up work at the low-cost open pits, and that labor will be conserved through closing down underground properties, as was done last season.

The outlook for manganiferous ores interests on the Cuyuna range is not cheerful, for the reason that there is no demand for their product, substantial tonnages having been carried over from last season at Lake Erie docks.

J. H. McLean, general manager of the Oliver Mining Co., said that the Oliver forces on the Lake Superior ranges, approximating 11,000 men were held intact during the strike by development work and stockpiling. The company is now in position to rush large tonnages to the docks. The company's washing plant, located near the Leonidas pit shaft in the Eleventh district, has been completed. It has a 35-foot log washer and an attempt will be made to wash ore without the use of tables or turbos, reducing cost and saving time.

Another mining village on the Mesabi range has moved. Houses near the Stevens mine, noted for years as being one of the best planned mining communities, have been taken to Aurora. The buildings were erected 15 years ago. The mine was taken over by the Oliver Mining Co., and operations suspended, it being decided to hold the ore in reserve.

The industrial situation at Duluth is improving. Prominent local interests have acquired a building for the establishment of a large stove foundry. The McDougall-Duluth Co., has announced it will erect a steel casting plant to be operated in connection with the Duluth Iron Works plant in West Duluth, a subsidiary enterprise. Two units will be constructed, the first of which will be ready to go into operation by Oct. 1. The furnaces will have a capacity of 15 tons each, sufficient, it is estimated, to supply the present needs of the trade in this territory. Incidentally, the McDougall-Duluth Co.'s shipyard is now employing a force of over 4700 men.

The Minnesota Steel Co. is still marking time at its plant here. The furnaces are being operated at about one-third of their capacity but various improvements have been made in the plant which is now equipped to make light steel rails.

Further assurance has come from Judge E. H. Gary, chairman of the United States Steel Corp., that the promise made by him last October to erect four finishing mills for steel products at Duluth at an estimated expenditure of $10,000,000 will be carried through "as soon as industrial conditions become adjusted to a more normal basis."

U. S. Coal Price is Low

According to an official statement made upon request by the board of trade in parliament, the comparative prices per ton of coal at the pit head in Europe and America average as follows: Scotland, $6.94; Great Britain excluding Scotland, $7.04; United States, June, 1919, $2.68; France, June, 1919, $8.64; Belgium, 1917, $4.32; Spain, 1917, $9.36. The average price of coal at the pit head in the United Kingdom in 1913, the last prewar year, was $2.43 per ton. The British production price is therefore practically two and a half times as great as the corresponding price in America and nearly three times as great as the corresponding price in the United Kingdom before the war.

The American chamber of commerce in London further points out that in 1917 the American production per worker was 770 tons while the British equivalent was about 240 tons, and that the British production is still declining while the American production is still advancing.

The Beverly Tool & Machinery Co., Beverly, Mass., has filed a voluntary petition in bankrupcy in Boston with liabilities of $4556 and assets of $4513.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

DR. MILTON L. HERSEY, who has been elected president of the Canadian company, located in the New Birks building, Montreal, Que., recently organized by the General Combustion Co., Chicago, manufacturer of industrial furnaces, is affiliated with a large number of industries in Canada. These include the Steel Co. of Canada; the Canadian Tube & Iron Co.; the Colonial Wire Mfg. Co.; etc. Vice presidents Wm. T. Dean and Max Sklovsky are principal owners of the parent company in Chicago and also hold executive positions in it. P. J. Woolf, secretary and treasurer, recently was released from military service and the Canadian company's managing director, Norman M. Campbell has been actively associated for a number of years with the Canadian Ingersoll-Rand Co., and occupies a place on its board of directors. H. H. Vaughan, who is a director of the Canadian General Combustion Co., is a past president of the Engineering Institute of Canada, is vice chairman of the Canadian Engineering Standards association, and is associated prominently with a number of Canada's industrial companies, including the Dominion Bridge Co., Dominion Copper Products Co., the Armstrong Whitworth Co. of Canada, etc.

Robert Moore, foreman of the operation department of the Noiseless Typewriter Co., Middletown, Conn., has been promoted to assistant superintendent.

E. H. Mangan has been appointed plant engineer of the crystolon plant in Chippawa, Can., of the Norton Co., Worcester, Mass., to succeed R. R. Pratt, resigned.

Harry Goldberg has been made manager of the branch office recently opened in Detroit by the Loewenthal Co., Chicago, maker of a number of kinds of ingot metals.

William D. Hannah, chief fuel inspector of the Grand Trunk railroad, with headquarters at Montreal, Que., has retired after 40 years of continuous service with this road.

A. G. Nutter has been placed in charge of the recently opened branch sales office at 145 St. James street, Montreal, Canada, by Wonham, Bates & Goode, Inc., 17 Battery place, New York.

Judge Will Cummings was elected president of the Southern Foundry & Machine Co., Chattanooga, Tenn., at its recent organization. E. D. Herron was elected vice president and general manager.

Thomas McCollum, a fuse inspector for the Ensign-Bickford Co., Simsbury, Conn., has completed 44 years of service with the company. He began work when 12 years old and is the oldest employe.

L. W. Cash, who for the past two years has been purchasing agent for the Wisconsin Parts Co., Oshkosh, Wis., successor to the E. B. Hayes Machinery Corp., has resigned, effective Sept. 1.

Maurice Mary, 16 rue du Rocher, Paris, is calling on Worcester, Mass., builders of machinery and machine tools for the purpose of purchasing to equip devastated industries in France.

Frederick H. Paine, first vice president of the Greenfield Tap & Die Corp., Greenfield, Mass., has been admitted as a general partner in the firm of Tucker, Anthony & Co., investment securities, and members of the New York and Boston stock exchanges.

A. Newman resigned recently as tool room foreman for the Heald Machine Co., Worcester, Mass. Horace Olliver, who has been foreman of the grinding department for two years, recently was transferred to the service department.

G. Yana, representative of the Toyeda Textile Machine Co., Noyaga, Japan, is visiting textile machinery builders in Worcester, Mass., for the purpose of studying methods of operation and production with the intention of reproducing them in Japan.

John H. Bride, Bristol, Conn., for the past three years office manager of the Rockwell-Drake Corp., Plainville, Conn., who has resigned to engage in business with his brother, has been presented an Elk's watch charm by his associates.

Robert F. Herrick, Milton, Mass., president of the Reed-Prentice Co., Worcester, Mass., and several other Massachusetts industries, has declined appointment to the Massachusetts Street Railway commission because he is going to South America.

N. S. Braden, formerly sales manager of the Canadian Westinghouse Co., Ltd., Hamilton, Ont., has been elected vice president of the company and H. N. Bostwick, who has been assistant sales manager, has been appointed sales manager, succeeding Mr. Braden.

Maj. T. F. Flynn, senior officer in charge of the government work at the plant in connection with the New Britain Machine Co., New Britain, Conn., has been transferred to the government works in Alliance, O., where he will be in charge of the heavy ordnance construction.

Carl F. Dietz was appointed vice president and general sales manager of the Norton Co., Worcester, Mass., when the Norton Co. and the Norton Grinding Co. were combined. W. LaCoste Neilson became vice president and foreign manager; Herbert Duckworth and Howard W. Dunbar became sales managers of the grinding wheel and grinding machine divisions, respectively; and John C. Spence and Charles H. Norton became superintendent and chief engineer, respectively, of the grinding machine division. These appointments are in addition to those noted in the July 3 issue of THE IRON TRADE REVIEW.

Thomas O. Morgan, formerly head of the service department of the New York office of the American Steam Conveyor Corp., Chicago, now is sales engineer in charge of Long Island and Connecticut territory. H. S. Valentine has been made sales engineer in charge of Philadelphia territory, with headquarters in the North American building, Philadelphia. Mr. Valentine is a mechanical engineer and formerly was affiliated with the Link Belt Co., Philadelphia, for over five years; with the Brown Hoisting Machinery Co., and the Yale & Town Mfg. Co., for about six years and with the Badenhausen Co., New York, manufacturer of water tube boilers, for about one year.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

GEORGE N. PEEK, formerly vice chairman of the war industries board and former vice president of Deere & Co., Moline, Ill., has been elected president and general manager of the Moline Plow Co. to fill the vacancy caused by the retirement of Frank Gates Allen, head of the plow company for many years and largely responsible for its development to present proportions. Mr. Allen will remain in an advisory capacity until Jan. 1 when he will devote his efforts to personal affairs. Mr. Peek will take up his new duties shortly. The Moline Plow Co. now is controlled by the Willys-Overland Co. At the time this transfer of control was made Mr. Allen wished to retire, but agreed to remain as head of the concern until a suitable successor could be secured. The retiring president and general manager has been in active business for the past 38 years.

Edward Shearson, of Shearson, Hammill & Co., New York, has resigned as a director of the American Steel Foundries.

A. Bigelow, formerly with the Metz Automobile Co., Waltham, Mass., has been made superintendent of the brass and aluminum foundry operated by the Rider-Bagg Co., Springfield, Mass.

James Savage, formerly of Brooklyn, N. Y., now is foundry superintendent for the Atkinson Co., Rochester, N. Y., successor to Clum & Atkinson.

Frederick M. Risler has been appointed manager of the office established at 6 Church street, New York, by the Gardner Machine Co., Beloit, Wis., maker of polishing and grinding machinery.

W. T. Howell, who formerly was affiliated with the Stewart-Warner Speedometer Corp., Beloit, Wis., has been appointed superintendent of foundries for the Emerson-Brantingham Implement Co., Rockford, Ill.

J. H. Hogue will on Sept. 1 become foundry superintendent for the French Oil Mill Machinery Co., Piqua, O., having resigned his connection with the Great Western Mfg. Co., Leavenworth, Kans.

W. J. Lynch, formerly with the Reliance Coal & Coke Co. and the United Coal Corp., has associated himself with the Pittsburgh office of Eaton, Rhodes & Co., and will handle sales in this office of by-product, steam and domestic coal.

Harold A. Wright, who for five years was sales manager of the Hendey Machine Co., Torrington, Conn., now is factory representative of a general line of machine tools and has established headquarters at 1101 Scollay building, 40 Court street, Boston.

Robert L. Kift, formerly vice president and general manager of the Bethlehem Construction Co., has resigned and purchased the entire stock of the Lehigh Structural Steel Co., Allentown, Pa. Thos. R. Mullen, formerly of the Austin Co., is general manager of sales.

B. F. Bart has been appointed district sales manager for the Standard Seamless Tube Co., Pittsburgh, in territory comprising New York, Philadelphia and New England. New headquarters have been established at room 1232 Tribune building, 154 Nassau street, New York City.

F. J. McGrail, who now has charge of the foundries operated by the Honolulu Iron Works Co., Honolulu, Hawaii, formerly was superintendent of the Struthers-Wells Co., Warren, Pa., for eight years. Prior to that time, he was affiliated with the Henry R. Worthington Pump Co., Harrison, N. J.

W. L. Tedford, who was discharged as a captain from the United States army last May, has been appointed European representative for the Commonwealth Steel Co., St. Louis. His headquarters will be at Paris, France. President Clarence H. Howard of that company, recently returned to St. Louis, after an extended tour of France, Belgium, England and Scotland.

R. E. Blood has opened offices at Room 523 in the Hudson Terminal building, 30 Church street, New York, as eastern representative of the Lockhart Iron & Steel Co., Pittsburgh, and also of the Pittsburgh Rivet Co., of that city. Mr. Blood for the past 20 years has been associated with the American Locomotive Co., serving in the last five years as assistant to the vice president.

Andrew K. Barr recently was made foundry superintendent of the Wakefield, Mass., branch of the Gibby Foundry Co., Boston. Formerly he was foreman patternmaker with Davis & Furber Machine Co., North Andover, Mass., for more than six years.

Lyman F. Copeland, a highway bridge engineer for the bureau of public roads, Washington, has been sent to Colorado, Arizona, New Mexico and other places in the west to work on the designs of steel bridges used over the large rivers there. He is a graduate of the class of '08, Worcester Polytechnic institute, Worcester, Mass.

J. L. Dixon, formerly connected with the John A. Crowley Co., is now associated with the T. W. Price Engineering Co., Woolworth building, New York, as metallurgist and electric furnace engineer. Mr. Dixon has had a wide experience in the design, installation and operation of electric furnaces, covering a period of over 11 years.

J. H. Jackson recently was discharged after serving 18 months as a lieutenant in the United States army, and was appointed sales manager of the Pittsburgh Gear & Machine Co., Pittsburgh. He succeeds W. H. Thompson.

William H. Woodin, president of the American Car & Foundry Co., has been elected a director of the American Locomotive Co., to succeed the late George R. Sheldon. W. Spencer Robertson of the American Locomotive Co., also has been elected a director to succeed Harry Bronner, who resigned because of the press of other matters.

Leonard B. Miller, member of the ore firm of Oglebay, Norton & Co., Cleveland, has returned to his desk after an illness of two and one-half years. Mr. Miller was spending his vacation in New Smyrna, Fla., when taken ill. The local physicians there and in Daytona had difficulty in diagnosing his disease, and finally it was necessary to bring him to Cleveland in a private car, where he entered a hospital. Transfusion of blood was resorted to, after which an operation was performed on his hip. He was in the hospital two years. Mr. Miller has been with Oglebay, Norton & Co., for about 40 years, and was in active charge of the company's mining operations.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

GEORGE W. SHORT has tendered his resignation as vice president and general superintendent of the Sharon Steel Hoop Co., Sharon, Pa., to take effect Aug. 30. Mr. Short has been connected with the company for the past 12 years commencing as superintendent of the open hearth and blooming mill departments, subsequently being made general superintendent of the plant. In 1910, he was elected vice president of the company. He is a director of the recently formed Slick-Knox Steel Co.

Charles D. Reeve now has charge of an office established at Grand Rapids, Mich., by the Wilcox Pressed Steel Co., Chicago.

Col. Charles Clifton at a recent meeting was elected chairman of the board of directors of the Pierce-Arrow Motor Car Co., Buffalo. John C. Jay Jr. was made president of the company.

John Barton Payne's appointment by President Wilson as chairman of the United States shipping board has been confirmed by the senate. He succeeds Edward N. Hurley, who has resigned. Mr. Payne, like Mr. Hurley, is from Chicago.

Charles Yon is president and Lawrence Snapp, secretary and treasurer of the United Fuel & Iron Co., which has opened offices in the House building, Pittsburgh, to deal in coal, coke and scrap iron. L. E. Huggins has been appointed assistant manager of sales of the coal department.

Will H. Brown has been appointed supervisor of purchases and material for the Nordyke & Marmon Co., Indianapolis, succeeding J. H. O'Brien, who resigned recently. Mr. Brown has recently returned from France, where he served as a lieutenant in charge of motor transport of Base Section 1, American expeditionary forces.

E. W. Wallbank, who formerly was tool designer with the Savage Arms Corp., Sharon, Pa., has been made superintendent for the Parkersburg Rig & Reel Co., Parkersburg, W. Va. At one time, Mr. Wallbank was foreman machinist with the New York Yacht & Engine Co., New York City; foreman patternmaker with the Producers' Supply Co., Franklin, Pa., and tool designer with the General Electric Co., Erie, Pa. He also has contributed various articles on pattern-making and molding methods to *The Foundry*.

W. P. Clark, who for the past two years has been connected with the Bullard Engineering Works, Inc., Bridgeport, Conn., as works manager of its gun plant in the manufacture of 155-milimeter guns has resigned to become affiliated with the Metal Ball Co., Danbury, Conn. Mr. Clark has become financially interested in the company and will be its treasurer and general manager.

Louis Resnick has been appointed director of publicity for the National Safety Council, Chicago. He formerly was general manager of the Associated Trade Press, of which he was the founder. Prior to that he was connected with the Associated Press for about four years, first as editor of the night bureau at St. Louis and later as editor of the west wires in the central division office at Chicago.

J. Leonard Replogle, who was awarded the decoration of chevalier of the Legion of Honor by the French government in recognition of services in connection with the direction of munition manufacture and distribution during the war, was formally invested by the French ambassador at the Johnstown chamber of commerce community picnic at Luna park, Johnstown, Pa., Aug. 19.

William H. Moreman, who has been connected with the Truscon Steel Co., Youngstown, O., for about 11 years, latterly as superintendent of the sash department, has resigned. He has been made general superintendent of the Milwaukee Corrugating Co., Milwaukee, effective Sept. 1. He entered the employ of the Truscon company as a machinist and after a series of promotions became department superintendent.

S. I. Sterret has resigned as purchasing agent for the Republic Iron & Steel Co., Youngstown, O. He will be employed in an executive capacity by the Kelly Island Lime & Transportation Co., Cleveland. S. H. Hedges, formerly assistant purchasing agent of the Republic company, has been named to succeed him. Edgard F. Kidd, recently promoted to the position of assistant traffic manager, is expected to be appointed general traffic manager to succeed the late Henry R. Moore.

Charles L. Allen, president and general manager of the Norton Co., George F. Fuller, president and treasurer of the Wyman-Gordon Co., and Lucius J. Knowles, president of the Crompton & Knowles Loom Works, all of Worcester, Mass., and Harding Allen, Barre, Mass., are trustees of the New England Farm and Food Foundation, which met in Boston, Aug. 9, when methods were discussed to encourage farm production with a view to cutting down the high cost of living.

Albert E. Newton, vice president and general manager of the Reed-Prentice Co., Worcester, Mass., and president of the National Machine Tool Builders' association, is said to be slated for the presidency of the National Metal Trades association, at its twenty-second annual meeting in New York, in April, 1920. He is a member of its administrative council at present and has been identified with the association for many years. He was the sixth president of the Worcester, Mass., branch, N. M. T. A., serving in 1910-11, since which time he has been a member of its executive board.

Meigs H. Whaples, secretary and treasurer of the Collins Co., Collinsville, Conn., and a director of the Pickering Governor Co., Portland, Conn., and the Stanley Rule & Level Co., New Britain, Conn., has been elected chairman of the board of trustees of the new Hartford-Connecticut Trust Co., Hartford, Conn. Other trustees are Charles E. Billings, chairman of the board of the Billings & Spencer Co., Hartford, and William A. Hitchcock, president of the Upson Nut Co., Unionville, Conn. Frank C. Sumner, who is president of the company, is a director of the Niles-Bement-Pond Co., the Peck, Stow & Wilcox Co., Southington, Conn., and the Plimpton Mfg. Co., Hartford.

War Labor Board Ends Its Work

Final Act is to Grant 12 Per Cent Increases in Wages in Ten Traction Cases—Labor Adjustment Service of Department of Labor Now Sole Federal Agency for Settlement of Disputes

WASHINGTON, Aug. 19.—The national war labor board terminated its activities last week with the adoption of resolutions declaring its work at an end. The granting of increases of approximately 12 per cent in wages in 10 traction cases was the last official act of the board. With its passing all labor disputes revert back to the labor adjustment service of the department of labor. Hugh L. Kerwin is director of this service, and was in charge of it before the war labor board came into being.

Of more than 1200 cases heard by the board, that of the Bethlehem Steel Co. in which the board's authority was questioned, stands out most prominently. In this case, however, the company agreed to permit collective bargaining, and the wage awards were taken up by the ordnance bureau of the army.

The end of the activities of the labor board was hastened by exhaustion of funds. There is a feeling that had the board been given more money it might have served for a longer time. Secretry Wilson of the labor department in July practically gave the board its opportunity to suspend when he sent the following letter:

"As the activities of the national war labor board which was created for the war emergency practically terminated with the close of the fiscal year, I want to take this opportunity of conveying to you and through you to the members of the employers and the employes groups and to the other officials of the national war labor board my sincere appreciation of the valuable and splendid work accomplished. I feel that the work of the war labor board contributed in large measure toward the solution of the economic and industrial problems with which the government was confronted during the world war."

While a full report of the board's work is not available now, the memorandum report of W. Jett Lauck, secretary, for the 12 months ended May 31, 1919, is of interest. According to that summary, 1270 cases were received by the board, 25 of which were consolidated with other cases, leaving 1245 separate controversies. In these, 462 awards and findings were made; 391 cases were dismissed, 315 were referred to other agencies, 23 were pending, 53 remained on the docket and one was suspended.

Cases were referred as follows: To the labor department's division of conciliation, 164; to the employment service, one; railroad administration, 13; navy, six; treasury, one; post-office department, eight; Emergency Fleet corporation, 10; war industries board, three; war labor policies board, one; fuel administration, six; federal oil inspection board, one; war department, 81; board members, 10; officers of international unions, 10.

Of the 391 cases dismissed, 93 were canceled for lack of jurisdiction; 11 for lack of agreement; 159 for lack of prosecution; 116 because of voluntary settlements, and 12 were withdrawn.

A monthly summary shows more cases reached the board last November than in any other month, the number being 275. September was second with 219. Decisions, however, were more numerous last March, 132 awards being made in that month, as compared with 99 in April.

Steel Plants May Close if Men Strike

PITTSBURGH, Aug. 19.—Although wide publicity has been given the announcement, emanating from William Z. Foster, secretary of the national committee of the American Federation of Labor for organizing the iron and steel workers of the country, that the result of a strike vote taken among the newly organized men would be made at a meeting of the committee in Youngstown, O., Aug. 20, the steel trade here refuses to become excited. While more or less interest is evident and the possibility exists that a general strike may be called for the purpose of gaining recognition for the union, few of the manufacturers are worried over the outlook.

Only in spots is there any real dissatisfaction among the workmen over wages or hours. The present "drive" of organized labor on the steel industry is not so much for the purpose of gaining for members of the union an increase in wages or a reduction in the number of working hours, but to compel official recognition of the unions. Of course, once this is gained other demands may follow.

What may be considered an answer to the demands of organized labor already has been made in a few cases. Officials of the Andrews Steel Co., and the Newport Rolling Mills, both at Newport, Ky., as long ago as June 28, discovered that the men were organizing, and since that date not a wheel has turned in either plant. The owners perceived that they would be called upon some time to negotiate with the unions and decided that it was preferable to suspend operations. Similar steps were taken by the Pittsburgh Steel Products Co., with plants at Allenport and Monessen, Pa., and by the Stark Rolling Mills at Canton, O.

Whether this will be the course of the entire steel industry is something for the future to disclose, but not a few officials of companies here believe that to shut the plants would be the most effective method of bringing the men to their senses. To be sure, all of the workmen in the steel plants have earned large wages in the past few years, but in the meantime, the companies also have earned considerable, but in contrast with the men, most of whom have been living right up to their incomes, the companies have put away sufficient funds to be able to stand a complete and indefinite shutdown much better than can the workmen.

Sheet and Tube Workers Publish Paper

Brimful of interesting items pertaining to its plant and its people, and well illustrated, the Youngstown Sheet & Tube Co.'s *Bulletin* has made its first appearance. Features of personal interest to the workers are interwoven with information relating to the operation of the plant. An editorial announcement says: "It is published by and for the Sheet & Tube people exclusively, and its purpose will be to pro-

mote better acquaintance among them, enlarge their understanding of the work upon which they are engaged, and stimulate their enthusiasm by giving them a wider view of the big institution with which they are connected."

Latest news is printed in regard to the employes' representation plan in operation at the plant, and another interesting article deals with the plan for co-operative buying to aid employes in reducing the cost of living.

"I am glad to see our employes begin the publication of a plant paper," wrote J. A. Campbell, president of the company, in sending his greetings. "At one time it was my privilege to know personally almost every man in our plant, but of course this is not now impossible for anyone. The new paper should at least help everyone to understand better the big organization of which they are a part."

Taylor-Wharton Adopts Works Council

The Taylor-Wharton Iron & Steel Co., High Bridge, N. J., has joined the ranks of those industries which are sharing with their employes the responsibilities of management. The officers long desired to apply the underlying principles of an industrial democracy, but the big problem in their minds was the development of a practicable plan.

After a study of various plans in operation the joint council plan generally was accepted as the best for adaptation to local conditions at High Bridge. It is desired by the company that the plan will be much more than a means of adjusting minor matters as they occur in the experience of the average workman.

A works council will be formed of representatives of the employes and of the management. The two sets of representatives will be equal in number and both will at all times have an equal voice and voting power in considering matters coming before the council.

Subject only to the right of the board of directors of the company to veto or annul, as stipulated in the constitution which was adopted by vote of the employes July 26, the works council may consider all matters of mutual interest, and decisions shall be final. The council on its own initiative may investigate and make recommendations to the management regarding the company's policies, problems of production, etc., and the management may refer matters to the works council for investigation and report.

The Taylor-Wharton Iron & Steel Co., in addition to the plant at High Bridge, owns the plant of Wm. Wharton Jr. & Co., Easton, Pa., having 850 employes, the plant of the Philadelphia Roll & Machine Co., Philadelphia, having 400 employes, and the plant of the Tioga Iron & Steel Co., Philadelphia, having 350 employes. At High Bridge the company has 750 employes and its plant is the only industry in the town. Its labor requirements are supplied by the surrounding rural country and villages as well as by the town of High Bridge. The relations between the company and its employes always have been pleasant and the company is the dominating factor in promoting the general welfare of the community.

During the period in which the new plan was under discussion, the department heads and foremen were freely consulted and their co-operation enlisted. Next followed a mass meeting of all employes at which the plant executive presented the general principles underlying the plan. One week later an election was held to determine whether or not the employes approved the plan and this resulted in approval. Then followed election of nine employe delegates who, in joint session with nine management delegates, drafted a constitution, and now are serving as the joint council. If the plan is found satisfactory at High Bridge, it will be submitted to employes at the company's other plants.

Tax Labor Agents $12.50

In furtherance of a plan to eliminate labor agents in Alabama who have been sending many negro laborers to West Virginia, Kentucky, Ohio, Illinois and other sections, the board of revenue of Jefferson county, Alabama, of which Birmingham is the county seat, has ordered that each agent pay an annual license of $1250. The Alabama legislature also has passed a bill restricting the activities of labor agents.

Seeks to End Strike

Chicago, Aug. 18.—Strikers at the plant of the Keystone Steel & Wire Co., Peoria, Ill., have been given a tentative offer of recognition by the local union but have been refused recognition by the American Federation of Labor. Barney Cohen, state director of the department of labor, is seeking to mediate between the strikers and the company. The Tenth Regiment of Illinois National Guard has been called to Peoria and is held in reserve if further disorder results. In a riot at the plant recently, Reuben Sommers, aged 19 years, son of P. W. Sommers, president of the company, was shot and is in a serious condition.

Return to Work

Several hundred of the workmen of the Standard Steel Car Co., Butler, Pa., who went out on a strike on Aug. 6, returned to work last Friday morning. This was the first break in the ranks of the strikers and officials of this company as well as of others affected expressed the belief that the backbone of the strike had been broken. Of the 7000 men who have been idle at the Butler plants, it is understood that almost with the strike, which was brought half of them were not in sympathy about by the refusal of the officials of the several companies to grant an increase in wages.

End Two-Month Strike

An agreement was reached at Clarksburg, W. Va., last Friday between officials of the Grasselli Chemical Co., and representatives of the 2000 workmen on strike at its plants at Ziesing and Grasselli, W. Va., and Terre Haute, Ind., whereby the men returned to work Aug. 11. The men went out two months ago because of a reduction of 25 cents a day in wages along with a reduction in working hours. The agreement provides for a restoration of the old wages, an 8-hour day and the right of the men to decide for themselves in the matter of organizing.

Strike Closes Plant

The management of the Columbia Graphaphone Co., Bridgeport, Conn., has announced that it will make good its recent threat to locate its plant elsewhere if its striking workmen did not return to their jobs. The plant was closed Aug. 14 at noon, apparently not to reopen. P. C. Roberts, assistant to the president, who made the announcement, said that no statement would be made at this time as to the location of the plant elsewhere.

Birmingham, Ala., Aug. 12.—There is not a word of verification to be heard in the Birmingham district on reports circulating in Baltimore and New York as to mergers in which southern iron concerns are involved. The Baltimore report tells of a merger of the Alabama company, the Sloss-Sheffield Steel & Iron Co. and the Woodward Iron Co. The New York report tells of a merger of United States Cast Iron Pipe and Central Foundry Co.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

EARLY in 1920, the Chicago Pneumatic Tool Co. plans to move its general headquarters from the Fisher building, Chicago, where it has been located for a number of years, to its own building in New York City. This office building now is under course of construction at 6 to 8 East Fourty-fourth street, New York. It is of combination steel, brick and limestone construction and is being erected by the Westinghouse-Church-Kerr Co. All of the initial 10 floors are to be occupied by the Chicago Pneumatic Tool Co., and the ground floor is designed for a permanent exhibition room, where the company's products will be displayed. A completely equipped service station will be maintained in conjunction and a sales and service organization will be retained at Chicago on a more extensive scale than heretofore. The company believes that the operation of its six plants and 26 sales and service branches can be directed more efficiently and economically from New York than from any other point.

* * *

THE Southern Pipe & Foundry Co., capital $75,000, has been incorporated at Knoxville, Tenn., by F. S. Mead, J. G. Simpson, T. S. Webb, R. W. Brown and Malcolm McDermott.

* * *

THE Standard Mfg. Co., Worcester, Mass., has purchased a factory in Malden, Mass., and will remove its business there when machinery has been installed.

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THEODORE L. DODD & CO., 80 East Jackson boulevard, Chicago, recently were appointed western sales representatives for the Worth Steel Co., Claymont, Del., manufacturer of steel plates.

* * *

J ARTHUR LAVIGNE and Jule Charbonneau, both of Worcester, Mass., have formed a partnership under the name of the Standard Machine Works, to make jigs, tools and gages in that city.

* * *

THE Kirk Supply Co., Farmers' Bank building, Pittsburgh, has been appointed selling agent for Ohio, western Pennsylvania and western New York for the Pittsburgh Furnace Co., Milwaukee, builders of electric furnaces.

* * *

THE plant of the Essex Machine Corp., Lynn, Mass., which in the last two years has been engaged in special machine shop work for the government now, is offered for sale. The reason given is that the equipment is of such a special nature that its adaptation to general machine shop practice is not advisable.



BUILDING BEING CONSTRUCTED IN NEW YORK FOR THE CHICAGO PNEUMATIC TOOL CO., CHICAGO

* * *

RECONSTRUCTION work at the Cambria Steel Co., Johnstown, Pa., is progressing steadily, though somewhat hampered by a scarcity of common labor. It is understood that the plans of the company call for an extensive addition to the steel car works, as a result of which the company will enter the manufacture of steel tank cars.

* * *

COMPETITION among communities near Follansbee, W. Va., for the new plant to be constructed by the Follansbee Brothers Co., Pittsburgh, is sharp. Committees are at work in Toronto, O., soliciting a fund of $65,000 to buy a site to insure the location there of the new plant and land of sufficient size has been optioned.

* * *

THE Baker Iron & Metal Co., Sixteenth and Arnold streets, Chicago Heights, Ill., capitalized at $30,000, is in the market for new or slightly-used derricks, a locomotive crane, and one large and one small shear. B. Baker is president, Samuel Baikovich vice president and Phillip J. Cohen secretary and treasurer.

* * *

OPTIONS taken on a site at Wellsburgh, W. Va., are reported to be the first step by the Follansbee Bros. Co., Pittsburgh, toward the erection of a $3,000,000 steel plant at Wellsburg. The site under option is priced at $157,650. Erection of 400 dwelling houses for employes is said to be part of the proposed development.

* * *

THE Bethlehem Mining Corp., has commenced work on the erection of the crusher plant and the development of a face at the limestone property at Bittinger near Hanover, Pa., which it recently acquired. The stone is combined dolomite and calcite and it will be used at the Sparrow's Point blast furnace plant of the Bethlehem Steel Co.

* * *

SCREW machine products, dies, shipbuilding tools and automobile parts will be manufactured in a new building now being erected for the Paragon Tool Co., 411 Occidental avenue, Seattle. The 2-story building will be of reinforced concrete construction, 100 x 100 feet. Officers of the company are: President, John Graham; assistant manager, C. A. Griffith; secretary and treasurer, M. E. Gulliford and sales manager, A. F. Slater. E. B. Chaurette is superintendent.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

INCREASED rolling and drawing capacity will be provided in the new building about to be started by the Dallas Brass & Copper Co., Chicago. The new site is 100 x 212 feet, at the corner of Orleans street and Institute place. The building will be four stories and cost about $300,000. In addition to the most modern brass mill equipment, comforts for employes will be provided on the roof. The new building will replace the present factory and warehouse on North Jefferson street. The concern was organized in 1907 and has enjoyed a substantial growth of its business, which consists of all descriptions of rolled and drawn brass and copper products. It specializes in thin metal and lock-seam tubing. Branch offices are in Detroit and Cleveland.

* * *

WILLIAM A. BREE has been appointed receiver of the Noyes Tool & Cutter Co., New Haven, Conn., a co-partnership conducted by Harry W. Noyes and William W. Ferguson. The company is said to be solvent. The application for a receiver was made by Mr. Ferguson to wind up the co-partnership, as the co-partners are unable to agree.

* * *

HOWELL DAVIS, Knoxville, Tenn., has purchased the property of the Pioneer Jellico Coal Co., at Jellico, Tenn., and will equip and make extensions which will bring the mine in a class with the largest in this field. The company had been in existence only eight months. The land consists of 1896 acres, with 500 acres containing 5 to 6-foot coal veins.

* * *

THE Miner-Morse Corp., Erie, Pa., recently has opened up a mill supplies department. Among the concerns represented are: The Brown & Sharpe Mfg. Co. (tools); Greenfield Tap & Die Corp. (taps and dies); J. E. Rhoades & Son (leather belting); Cleveland Twist Drill Co. (drills); and the Cortland Corundum Wheel Co. (grinding wheels).

* * *

ARTHUR YOUNG, 15 Prudential building, Pinstone street, Sheffield, Eng., iron and steel merchant, is seeking connections with American producers of ingots, billets and bars, and also with American manufacturers of special ferroalloys such as ferrovanadium, ferrochrome, etc. In addition to his office in Sheffield, Mr. Young maintains a branch at 6 Lloyds avenue, London.

* * *

CAPT. TEIXEIRA, a member of the Brazilian military commission, who recently spent several months in the United States, investigating steel plant practice and electric furnaces, recently placed an order for an electric furnace, manufactured by the Electric Furnace Construction Co., Philadelphia. The order was taken by Fenwick Freres & Co., New York City.

* * *

THE idle factory of the Peck, Stow & Wilcox Co., Southington, Conn., in East Berlin, Conn., has been sold to the Connecticut Metal & Chemical Co., New Britain, Conn., to care for its increasing business. The latter is a subsidiary of the Stanley Works, New Britain, and makes a specialty of reclaiming old metals from refuse scrap received from different factories.

* * *

AGRICULTURAL implements will be made at a $1,000,000 plant which the Farm Implement Mfg. Co. will build at Cedar Grove, an industrial suburb of Shreveport, La. The management has secured a 10-acre site and is having plans and specifications prepared for the buildings. Production will start Jan. 1. A. B. Picket is president and general manager.

* * *

THE Industrial Steel Casting Co., Toledo, O., representing a reorganization of the Taylor Coupler & Steel Castings Co., has commenced work on the reconstruction of a building for its increased needs. When completed the work will provide space 120 x 180 feet in addition to the office and will represent an expenditure of approximately $60,000. Four electric furnaces for producing steel for automobiles, etc., will be installed. The officers follow: President, L. S. Dukes; vice president and general manager, W. E. Wine; treasurer, Jos. L. Tillman, and secretary, R. F. Tillman, these being the same as the executives of the Win Railway Appliance Co., Toledo. This building activity recently was listed incorrectly as taking place at Ironton, O.

* * *

RECENTLY completed at Cross and West Sixth streets, Chattanooga, Tenn., the new plant of the Southern Foundry & Machine Co. is to be equipped at once with modern machinery. Operations will begin within a few weeks. The company, which was organized not long ago with a capital stock of $100,000, will engage in a general foundry and machine shop business on extensive scale. Judge Will Cummings is president and E. D. Herron vice president and general manager.

* * *

THE Carnegie Steel Co. has bought the former site of the Windsor Glass Co., West street and Third avenue, Homestead, Pa. The plot is 240 x 629 feet and contains a brick factory building erected 30 years ago and used for years in the manufacture of table glassware. It has been idle for several years. It is understood that the consideration was $100,000. No announcement has yet been made as to the purpose of the purchaser.

* * *

THE Harriman shipyards at Bristol and Chester, Pa., have been consolidated as one company. This was accomplished through the merging of the Merchant Shipbuilding Corp. and the Chester Shipbuilding Co. which action had been under contemplation for some time and was due to requirements of internal organization. Hereafter the two yards will be known as the Bristol and Chester yards, respectively, of the Merchant Shipbuilding Corp.

* * *

WORK has commenced on improving and enlarging the plant of the Lehigh Structural Steel Co., Allentown, Pa., recently purchased by Robert L. Kift, former vice president and general manager of the Bethlehem Construction Co. The property comprises 10 acres and will be engaged in the fabrication of structural steel for buildings and bridges. At present the plant has a monthly output of between 1200 and 1500 tons and is operating at capacity.

Increased Output Present Need

Lloyd George Sounds Plea for Work Which Applies in America as Well — Prices to Stay Up Until "Scarcity Demand" is Met in World—Foreign Exchange Problem—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

LLOYD GEORGE'S plea for increased production might well have been addressed to labor the world over, in America as well as in Great Britain. It is the uneconomic attitude of labor in this country toward the great fundamental problem of correcting the undersupply of goods, that is largely responsible for much of whatever discouragement there is in the outlook at the present time. Wall street frankly is disturbed, for the moment at least, and its sentiments are being reflected in declining quotations for many important stocks.

Next in seriousness to the problem presented by restless labor comes that of the continued demoralization of the foreign exchanges, of which no bottom now is seen. With the pound sterling at a discount of 11 per cent, francs of 32 per cent, lira of 42 per cent and marks at 75 per cent it is difficult to see how American exports to Europe can be maintained on anything comparable to the grand scale of recent months. Of course Europe must buy some things, including food and raw material regardless of price, but every dollar will be spent grudgingly and only for strictly indispensable purchases.

Attracts U. S. Imports

The present situation is one making American purchases in Europe attractive, while buying by Europeans here is discouraged. If America would import largely from Europe, correcting the adverse trade balance against the nations abroad, the problem would be solved. This is the way Europe's debts must be settled eventually, but most Americans would prefer to have the liquidation with goods spread over a long period of years, rather than to have industry confronted with excessive foreign competition in the home markets just now. There is no immediate danger from this source, however, because Europe is too thoroughly disorganized and lacks the raw materials and machinery to produce a substantial exportable surplus. In fact there is a crying need over there for many of the things America has to sell which will help them get on their feet industrially.

This brings the question around to the necessity of extending credits abroad. The world has waited long and in vain for the announcement of a comprehensive plan of financing which American bankers started to work out some time ago. Doubtless this plan has been held up to some extent by the delay in the ratification of the treaty, but more largely by the desire on the part of the bankers to be assured of the support of industrial and investing interests and that a broad scheme will have government approval and possibly aid. This latter will be forthcoming should congress pass the bill providing for the federal incorporation of an immense organization designed to co-ordinate the financing efforts of the country. This bill was introduced by Senator Edge, of New Jersey, and action upon it is expected soon.

In the meantime applications for credits from foreign sources are being met by individual sources in this country. In all, about $300,000,000 in credits have been advanced since the armistice, but this is only a small beginning of the vast volume of credits necessary to rehabilitate Europe. The immediate sum needed is estimated, in conservative quarters, at around $3,000,000,000. A number of banking corporations to extend foreign credits have been formed and individual industrial companies, including steel companies, are advancing credits to foreign customers when sales are made. Sufficient has not yet been done, however, to turn the tide of the exchanges, and this will be impossible until a broad, comprehensive plan is launched, it is believed.

The problem of exports has a peculiar relationship to the labor disquietude and the high cost of living agitation. If exports of foodstuffs and commodities were stopped through embargo or through default of proper financing, prices would fall in this country drastically. But what would be the result? Europe would be thrown into despair and what might happen there, with the people deprived of adequate food supplies and of raw materials with which to start to work may be left to the imagination. In this country industry, in the opinion of authorities, would be dealt a severe blow, occasioning widespread unemployment and much distress, from shrinking inventories and inability of the domestic market to absorb surplus goods.

Remedy Worse Than Ill

Labor would find this remedy for high prices worse than the disease. As Britain's premier so truthfully points out, the only permanent cure for the present economic ills lies in increasing production and greater practice of economy and thrift by the people. Ill-advised labor seeking to better itself by keeping up the "vicious cycle" of more wages to be followed by higher prices and then more wages, should weigh this consideration well.

Barring preventable profiteering in necessities, prices generally cannot become normal until conditions become normal. Production must be brought to a point where it is more equal to the demand. At present the world is pleading for goods of all kinds, and the period of high prices occasioned by the "scarcity demand" will be indefinitely prolonged if labor refuses to face the facts and perseveres in its policy of curtailing output through strikes, general inefficiency, and other means. If capital and labor get together and solve in a sane, rational way this fundamental problem of production the future of the country is bright. Prices will gradually recede and in that process labor will be the gainer as wages will not come down apace. If industrial strife continues, with output hampered, there may be breakers ahead.

American Locomotive on 6 Per Cent Basis

The issue of the common stock of the American Locomotive Co. has been placed upon a 6 per cent annual basis, instead of 5 per cent, by the action of the directors in increasing the quarterly dividend from $1.25 to $1.50. The regular quarterly dividend of 1¾ per cent in preferred was also declared. Both dividends are payable Sept. 30 to stock of record Sept. 13. The company's common shares carried a 5 per

cent dividend rate from February, 1906, to August, 1908, when the usual quarter disbursement was passed. Dividends were resumed upon the issue until August, 1916, when the 5 per cent rate was established. William H. Woodin, president of the American Car & Foundry Co., has been elected a director in place of Harry Bronner, who resigned and W. Spencer Robertson succeeds the late George R. Sheldon.

Plan to Tax Companies of Other States

(*Special Correspondence*)

Harrisburg, Pa., Aug. 18.—Plans to put into effect the new laws of 1919 relative to state taxation of foreign corporations are being worked out at the auditor general's office and it is estimated that there will be many thousands of dollars secured from companies chartered in other states and doing business in Pennsylvania. Some of the new laws increase the state tax on interest paid on bonds or scrip, while others are designed to reach the stock and bonds, for taxation purposes, of companies whose treasurers do not reside in Pennsylvania and have offices outside of the state. This has been one of the chief matters which has been concerning state taxation officials for years. Others will change systems of reports and returns on payments to residents of this state. Auditor General Charles A. Snyder, in charge of the collection of the revenues, says that in his opinion they will be ample to meet the appropriations of $103,000,000 made for two years by the legislature which adjourned in June.

Continue to Operate

Receivers of the Groton Iron Works, Groton, Conn., have been granted their motion by the court that they be permitted to continue the operation of he plant for an additional four months. It has been asked to dissolve the injunction which prevented the sale of the property Aug. 2 on judgments secured by 17 creditors, which question will be heard Aug. 29. These judgments amount to $70,000 in addition to which there are claims amounting to about $800,000 against the company.

No Foundries Statement

No earnings statement of the American Steel Foundries, Chicago, for the quarter ended June 30 will be published at this time it was announced following a meeting of directors of the company at Chicago recently. The company's six months income account filed with the New York stock exchange shows the following:

	1919	1918
Net earnings	$2,970,600	$4,187,455
Depreciation	133,516	184,728
Balance	$2,837,083	$4,002,727
Other income	162,096	95,758
Total income	$2,999,179	$4,098,485
Charges	28,403	86,561
Federal tax res.	965,000	1,043,000
Surplus	*$2,005,776	$2,968,924

* Equal to $3,89 a share on $17,184,000 stock (par value $33⅓), as compared with $17.27 earned in the corresponding six months of 1918 on $17,184,000 stock (par value $100).

It was explained that the transition period coincident with the taking over of the Griffin Wheel Co. made a statement at this time impracticable. Commenting on the railroad situation and its relation to equipment buying, an official of the company expressed the opinion that buying this fall would be forced upon the roads by dire necessity. It was pointed out that 85 per cent of the cars of the country are in constant use and that wear and tear would make it imperative to replace many cars.

Hits License Proposals

Opposition to the proposal to license industries as exemplified in the bill before congress to license the packers is expressed in a letter addressed to the members of the National Founders association by its president William H. Barr, of Buffalo. An active campaign on the part of all industries against the principle involved is urged. Any step in that direction will be but the beginning of a campaign for legislation applying similar principles to all other business, he declares. There is a general interest in this bill, according to Mr. Barr, on the mere question of licensing and entirely irrespective of the packing industry. Any protest directed to congress, in his opinion, should be specifically against the starting of any license for domestic commerce and it should be stated there is no interest in the bill except with regard to this phase of it.

Receiver is Appointed

New York, Aug. 18.—Stanton S. Freeman has been appointed receiver of the Seaboard Steel & Manganese Corp. on application of Philip E. Wright and other creditors. Mr. Wright alleged that the company has two blast furnaces at Temple, Berks county, Pennsylvania, but that they have not been operated for several months, with the result that the book value of the corporation which amounted to $1,720,694 on Jan. 1 had declined to $950,000. The application for a receiver also stated that Mr. Wright's claim amounts to $11,419.99 for merchandise, that the claims of other creditors total $150,000 and that the corporation owes to note creditors $558,000 which is guaranteed by the Guarantee Trust Co. The corporation, it is alleged, is without funds to meet its applications and it also is alleged that it is not known whether the assets are sufficient to liquidate the indebtedness. William R. Hopkins, president of the corporation, concurred in the application.

Financial Crop Ends

Berlin announces that Budapest banks will try to raise $375,000,000 to float a Hungarian loan.

* * *

Director General Hines says that a car shortage is beginning to be felt as railroad business picks up and expects the operating deficit will be small this month.

* * *

Notice has been sent creditors of the National Iron Works, Detroit, that the company has been adjudicated bankrupt and that the first meeting of creditors will be held at No. 117 Fort street west, Detroit, Aug. 28, at which time creditors may prove their claims and appoint a trustee.

* * *

William A. Bree has been appointed receiver of the Noyes Tool Co. & Cutter Co., New Haven, Conn., a co-partnership conducted by Harry W. Noyes and William W. Ferguson. The company is said to be solvent, the application for receivership having been made to wind up the co-partnership.

* * *

It is stated that from Dec. 31, 1914, to Dec. 31, 1918, 104 industrial companies mostly engaged in the metal-working field, after heavy expenditures for new construction and the payment of dividends, added the total of nearly $2,000,000,000 to their working capital. This increase practically all came from surplus earnings.

* * *

The new manufacturing plant of the Bridgeport Tube Works, Bridgeport, Conn., has been sold at auction to H. B. Houghton, Asbury Park, N. J., for $17,000. The mechanical equipment, machinery, machine tools, stock, office furnishings, etc., were sold in 368 lots to about 75 different manufacturers in the eastern part of the country.

* * *

The United States treasury has announced an issue of certificates of indebtedness, the second for the present fiscal year. The minimum amount is $500,000,000 and the certificates are dated Aug. 15, 1919, and mature Jan. 15,1920. The interest rate is 4½ per cent. The treasury announces a substantial over-subscription of the first issue of the certificates offered for the fiscal year of 1920.

Tool Users Postpone Purchases

Labor Situation Creates Cautious Buyers in Many Districts—Standard Oil Buys in New York—Aluminum Castings Wants 50 Lathes for Cleveland Plant—Cranes Move Faster in Pittsburgh

HESITANCY on the part of manufacturers to carry out their expansion programs is one of the outstanding features of the past week's tool market. This is true in increased measure as compared with the preceding week. A disinclination to close upon machinery requirements is noted in Milwaukee, Chicago, Cleveland, Cincinnati and further east and is superinduced by the general labor situation and industrial unrest which is sweeping the country. Manufacturers in Akron, O., face a tie-up unless they meet the organized machinists' demand for $1 per hour for a 44-hour week. Some tool sellers in the east are experiencing considerable hardship because certain manufacturers have withdrawn from the market until the crisis is past. Several tool manufacturers have avoided labor trouble by granting wage demands and have advanced tool prices accordingly. One increase of 15 per cent by a Cincinnati lathe manufacturer is noted and more increases are slated for Sept. 1.

Buying by the Standard Oil Co., New York City, continues to feature the eastern market. Its inquiries are frequent and its recent purchases include a number of tools for Mexico and over 28 small jib cranes. All but eight or nine fabricating machines have been bought on the list for Roumania. The recent lull in Pittsburgh has been superceded by a buying movement in both machine tools and cranes. Demands for small tools are on the increase and while few large lists are out, individual purchases bulk large. Crane sales include a number to the Youngstown Sheet & Tube Co., and four 10-ton cranes to the Youngstown Steel Car Co., Youngstown. Single cranes were sold the Blaw-Knox Co., Pittsburgh; the Birmingham Coal & Coke Co., Birmingham, Ala., and the A. Garrison Foundry Co., Pittsburgh. The Whitaker-Glessner Co., Wheeling, W. Va., and the Duquesne Light Co., Cheswick, Pa., are about to award small crane contracts. One Pittsburgh dealer sold a complete line of equipment for a mold manufacturing plant in Havana, Cuba.

Chicago dealers are interested in an auction sale of $100,000 worth of equipment at the Donaldson & Fisher Mfg. Co.'s Chicago plant, while the New York trade is interested in the announcement by C. A. Calleson, 50 Church street, that the information regarding the equipment of the plants of the Savage Arms Corp., has all been compiled and it now is ready for purchases.

Midwestern dealers have sizable inquiries from several concerns in Rockford, Ill., including the Barber-Colman Co., the Mechanics Machine Co., and the Sundtrand Adding Machine Co. Cleveland sellers still are at work on propositions which have been before them for several weeks. These include the Aluminum Castings Co., Detroit, for 50 lathes for its Cleveland plant; 50 tools for the Foot-Burte Co., Cleveland, action on which has been delayed; equipment for the tractor plant at Akron, O., for the Wellman-Seaver-Morgan Co., Cleveland, a formal list of which is expected soon; and the large list of requirements by the White Motor Co., Cleveland, noted two weeks ago, on which several fair-sized orders have been taken. Smaller inquiries are received in fair number from day to day.

Standard Oil Active in Tool and Crane Markets

CONTINUED buying by the Standard Oil Co., 26 Broadway, New York City, is again a feature of the eastern machine tool market. Orders, it is said, are being placed almost daily and new inquiries frequently are being brought before the market. While these inquiries are not large individually, the aggregate represents considerable business. Included in the latest inquiries are a number of machine tools for shipment to Mexico. Although virtually all machine tool equipment has been purchased for Roumania, there still remains outstanding a list of eight or nine fabricating machines for that country.

Considerable talk continues to be heard in the eastern market regarding the labor situation. While certain sellers state that they are being hard hit by the attitude of some manufacturers in withdrawing from the market until conditions improve, others assert that they are in receipt of a good amount of business, although made up almost entirely of small miscellaneous orders. Sellers generally agree that the present labor trouble will result in a more determined effort among manufacturers to substitute wherever possible, mechanical means for that of labor.

Since the early part of August when the majority of lathe manufacturers advanced their quotations anywhere from 10 to 15 per cent, there have been but few price advances noted. Nevertheless, there is continued evidence of an upward trend in prices, and increases by several manufacturers are expected by the end of this month or early in September.

Considerable second hand equipment is now upon the market, and possibly the largest list to be issued by a private corporation is one involving about 1400 machine tools at the Philadelphia and Utica plants of the Savage Arms Corp. This equipment is being sold through C. A. Calleson, acting sales agent, for the





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LUDLUM STEEL

Our completely equipped Metallurgical and Chemical Laboratories, combined with faultless vigilance through every step in manufacture, enables us to produce grades of steel that it is impossible to excell. You'll do well to depend upon "Ludlum Steel".

ESTABLISHED LUDLUM 1854

Prompt shipments from our warehouse stock at Watervliet, N. Y., Detroit, Mich., Chicago, Ill., or Cambridge, Mass., handled through our District Offices.

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Savage Arms Corp., and includes a large number of new machines, many of which are of standard type.

New projects to come up during the past week, for which equipment may later be required, include a fabricating shop for the Van Brunt Iron Works, Long Island City, for which a site, 300 x 309 feet, has been purchased. Another project is a ship repair plant for the Morse Dry Dock & Repair Co., to be erected on Staten Island near Fort Wadsworth. The company has not as yet given out the details of this project but it is expected to make some announcement shortly. A water-front of 300 feet has been purchased.

A large list of small jib cranes for the Standard Oil Co. of New Jersey is among the more important inquiries to come out of late in the eastern crane market. This inquiry calls for 20 or more jib cranes of 3500 pounds capacity, and eight or more of 7000 pounds capacity. All are to have an air hoist attachment. The equipment is for Bayway, N. J.

In the locomotive crane market, several orders have been placed. Of these, at least two were awarded to the Brown Hoisting Machinery Co., Cleveland. One called for a 15-ton, electrically operated locomotive crane for the Lehigh & Wilkesbarre Coal Co., Wilkesbarre, Pa., and the other specified a 15-ton steam-operated locomotive crane for the New England Mfg. Co., Boston.

Consistent Demand Maintained in Chicago

DEMAND for machine tools in the Chicago district seems to be keeping up in volume although some sellers believe inquiry is a little less than was the case during June and July. However, in the aggregate no definite falling off is noted, several sellers finding each month producing a larger total than the preceding. As has been the case for some time, this is largely in small purchases and larger lots are rarely called for.

An auction sale will be held Aug. 21 to dispose of machinery valued at $100,000 in the shop of the Donaldson & Fisher Mfg. Co., Chicago, which has been conducting a jobbing machine shop. In the list are included 16 lathes, eight drills, several electric motors and a miscellaneous lot of equipment. Dealers here have been given notice that bids will be received until Aug. 26 by the government for machinery and metals in the Bridgeport, Conn., district. The Barber-Colman Co., Rockford, Ill., is inquiring for three planers, and the Ingersoll Milling Machine Co., of the same city, desires a large horizontal boring, drilling and milling machine. The Mechanics Machine Co., of Rockford, Ill., is seeking five second hand grinders. The Sundstrand Adding Machine Co. of Rockford, is buying considerable equipment for an addition.

Labor difficulties are having considerable effect and are restricting purchases on the part of many institutions. Employes of the Power & Mining Machinery Co., Milwaukee, have struck and caused delay in placing of orders for lathes, boring mills, screw machines and radial drills to equip new plant capacity in the engine department. The Milwaukee Electric Crane & Mfg. Co., also is strikebound. Chicago dealers who have been in Cincinnati recently find that shops there are extremely busy, but are faced by the threat of strikes to enforce the closed shop. Deliveries vary in the several lines from prompt shipment to 90 days.

Demand Recovers from Lull

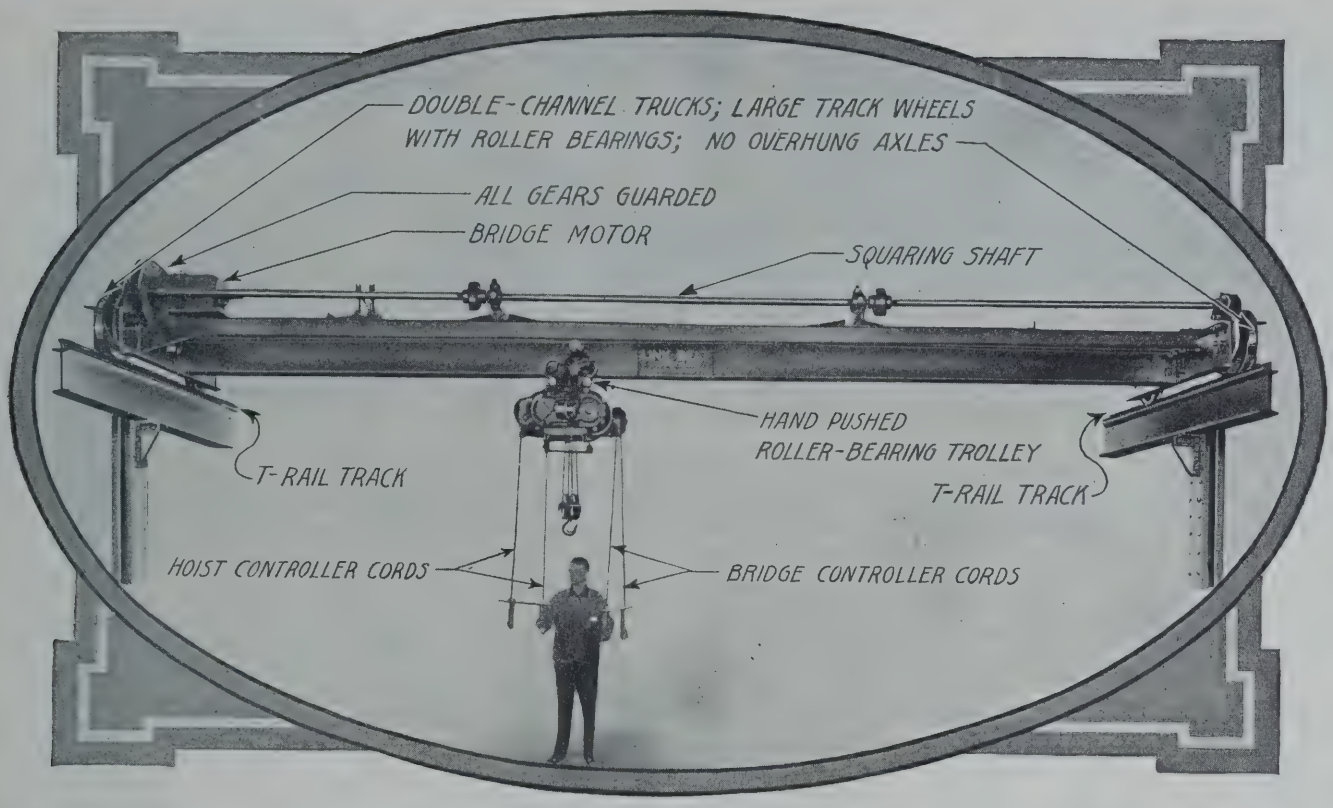
ACTIVITIES in the Pittsburgh machinery and tool market have recovered considerably from the lull recently noted. Several contracts for cranes have been placed and a number of new inquiries have come out. In

Machinery Exports Increased $2,995,104 in Two Months

PERHAPS in no more graphic way can the increasing exports from the United States of machine tools, machinery, etc., be shown than by the accompanying table, which compares shipments abroad for April and June, this year. While in April they totaled $5,611,461, in June the aggregate was $8,606,565, an increase of $2,995,104. As in April, France was first in June, having exported $2,021,182 worth of equipment; England was second with $1,893,871 worth, and Belgium, third with a total of $993,045. Fourth place, however, while occupied by Japan in April, went to China in June, that country importing $967,417 worth, while Japan imported $752,919 worth. Lathe exports increased from $992,784 in April to $1,712,899 in June; exports of other machine tools were decreased by $352,498; exports of sharpening and grinding machines likewise show a decrease, namely from $607,005 to $555,113, or $51,892; all other metal-working machinery, however, showed a gain of $2,679,379. Most of this increase was contributed by France, England and China. The comparative table follows:

	Lathes		Other Machine Tools		Sharpening and Grinding Machines		All other Metal-Working Machinery		Total	
	April	June	April	June	April	June	April	June	April	May
Belgium	$191,638	$ 377,971	$ 26,719	$ 72,840	$153,642	$ 70,712	$ 416,066	$ 471,522	$ 788,065	$ 993,045
Canada	12,605	21,765	93,313	60,970	7,658	10,713	237,798	117,433	351,374	210,881
Dutch E. and W. Indies	38,244	48,635	3,910	8,815	9,254	2,966	32,759	36,722	84,167	97,138
England	269,884	451,459	366,466	311,683	129,157	147,036	477,250	983,693	1,242,737	1,893,871
France	140,580	254,089	509,923	282,878	158,385	181,755	723,670	1,302,460	1,532,558	2,021,182
Italy	2,384	5,614	170,950	134,424	8,050	3,850	61,382	62,758	242,766	206,646
Japan	199,460	160,269	89,425	73,699	73,163	30,730	178,040	488,221	540,088	752,919
Netherlands	42,344	95,012	37,523	4,493	6,442	2,420	26,015	58,173	112,324	560,098
South America	26,837	113,923	36,921	36,006	6,320	7,040	49,965	199,053	120,043	199,053
China*	.....	30,926	.....	4,090	.....	145	.....	932,256	.....	967,417
Total	$923,976	$1,559,663	$1,335,130	$ 989,898	$552,071	$457,367	$2,202,945	$4,652,291	$5,014,122	$7,902,250
All other countries	68,808	153,266	226,435	219,169	54,934	97,746	247,162	477,195	597,339	704,315
Grand total	$992,784	$1,712,899	$1,561,565	$1,209,067	$607,005	$555,113	$2,450,107	$5,129,486	$5,611,461	$8,606,565

* Figures for April included in "other countries."



Here's The Ideal Crane for Side Bays

IT'S just the thing for machine shops, foundries, structural shops, mills, etc. The time it will save in a machine shop by quickly and economically serving machine tools with castings, etc., will soon pay for the crane. After that, the saving is "pure velvet".

Important Advantages

1. Crane always ready for service. Any shop hand can operate it. No need for keeping an operator up in a cage.
2. Pull a cord to operate hoist or crane; let go, and it stops. Simple as A, B, C.
3. All operating cords handy, both controllers mounted on hoist—right where the load is being handled.
4. Load is handled with greater precision and safety, than when operator is carried in a cage near ceiling and must depend on signals.
5. Like our mono-rail electric hoist and other Link-Belt products, this crane embodies Quality, Reliability, Accessibility, and High-Efficiency.

Built in 1, 2 and 3 Ton Capacities. Write for data blank. Let us figure on your requirements.

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Boston . . . . . 49 Federal St.
Pittsburgh . . . . . 1501 Park Bldg.
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Wilkes-Barre . . . . . 2d National Bank Bldg.
Cleveland . . . . . 429 Rockefeller Bldg.
Detroit . . . . . 932 Dime Bank Bldg.
New Orleans C. O. Hinz, Hibernia Bank Bldg.

CHICAGO

Kansas City, Mo. . . . . 306 Elmhurst Bldg.
Seattle . . . . . 576 First Ave., S.
Portland, Ore. . . . . First and Stark Sts.
San Francisco . . . . . 582 Market St.
Huntington, W. Va. Robson & Prichard Bldg.
Los Angeles . . . . . 163 N. Los Angeles St.
Toronto, Can. . . . . Canadian Link-Belt Co., Ltd.
Denver, Lindrooth, Shubart & Co., Boston Bldg.
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We Also Make

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small tools, demands again are on the increase and while few lists are being put out, the individual purchases bulk fairly heavy.

Current tool demands are being met without much trouble from stock, but pipe machines are short in stock and on the larger sizes of motor-driven lathes, some makers are not promising shipments short of six weeks.

The Blaw-Knox Co., Pittsburgh, has closed for a 10-ton Champion crane. The Pittsburgh Crucible Steel Co., which recently closed for a 15-ton cast house Milwaukee crane, has sent out specifications for a bucket crane. The Youngstown Sheet & Tube Co., Youngstown, O., has placed an order for several cranes with the Cleveland Crane & Engineering Co., Wickliffe, O., while four 10-ton cranes for the Youngstown Steel Car Co. have been awarded the Milwaukee Electric Crane Co. The latter company also has taken an order for a bucket crane for the Birmingham (Ala.) Coal & Coke Co. A. Garrison Foundry Co., Pittsburgh, has placed a 25-ton crane, with 5-ton auxiliary with Pawling & Harnischfeger Co., Milwaukee. The Whitaker-Glessner Co., Wheeling, W. Va., is in the market for a 10 and a 25-ton crane, while inquiry for a 75-ton crane is out for the new power plant of the Duquesne Light Co., at Cheswick, Pa.

Aluminum Castings Wants 50 Lathes

MOST propositions now before machinery dealers in Cleveland are those upon which they have been figuring for some time. Perhaps the largest of these is the list of 50 multiple tool lathes for the Cleveland plant of the Aluminum Castings Co., Detroit. Thirty of these are for piston and the remainder for heavy flange work. Experimental machines have been ordered and changes are being made on them by the company's engineers. When these are completed, the special machinery will be ordered. The Aluminum Castings Co., Cleveland, also wants a staybolt drilling machine. Another project which has been hanging fire for some time is that of a tractor building at Akron, O., by the Wellman-Seaver-Morgan Co., Cleveland. This will require a large number of tools, including many multiple spindle drills and dealers' representatives and the company's engineers are spending much time together working out the detailed requirements. A definite list is expected soon and it is believed that a plant will have to be built for production purposes.

Orders continue to be filed by the White Motor Co., Cleveland, and one was expected early this week from the Burke Electric Co., Erie, Pa. The former large list was issued two weeks ago and the latter for six tools was noted last week in this column, with one of 50 from the Foote-Burt Co., Cleveland, on which action has not been taken so far as can be learned.

Despite widespread industrial unrest, a fair sprinkling of inquiries is noted from all parts of the country. Strikes and threats of strikes in various localities are known to be holding up considerable machine tool business; manufacturers hesitate to proceed with expansions until the present crisis is past. In Akron, where machinists are 100 per cent organized, a strike is threatened unless $1 per hour is granted with a 44-hour week. The B. F. Goodrich Co. and the Firestone Steel Products Co., that city, have not as yet closed on all of their requirements noted recently. The International Harvester Co., that city, has been an active buyer of equipment but is also understood to be holding up further tool purchases. Manufacturers state their willingness to meet the wage demand as far as those who earn it are concerned but object to paying that scale to all in the machinist classification whether good or bad.

Elyria, O., is becoming more and more a manufacturing town, and considerable building activity has been noted there recently. The Western Screw Machine Products Co., that city, is among the companies that are looking for equipment. It wants a drill and a shear. The Concrete Engineering Co., Omaha, Neb., is in the market for a few machines. The Electric Auto Lite Corp., Toledo, O., wants two $\frac{3}{16}$-inch riveting machines. The Defiance Machine Works, Defiance, O., which is building a large lot of special machines for the General Motors Corp., Detroit, recently purchased two Milwaukee milling machines among other tools. The Electric Vacuum Cleaner Co., Inc., Cleveland, issued a small inquiry but is understood to have placed its order. The Hydraulic Pressed Steel Co., Cleveland, still is looking for several machines while the Geometric Tool Co., that city, has placed its order for a 70,000-pound Toledo punch press with the Cleveland Duplex Machinery Co. This inquiry was noted in this column Aug. 7. The Canadian Vickers, Ltd., Montreal, Que., wants a double end punch for 1-inch holes through 1-inch plate, with a 30-inch throat and a punch and shear as well, the punch for 1-inch holes through 1-inch plate and the shear with 20-inch gap, both arranged for electrical drive.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

CALAIS, ME.—The Green Butte Copper Co. has been incorporated to deal in fuel, coal, iron ore, etc., with $500,000 capital by H. M. Hall and Harold H. Murchie.

KITTERY, ME.—The Silver Quarter Service has been incorporated to make vending machines with $500,000 capital by Harry W. Foster, George E. Burnham and Elmer J. Burnham.

LEWISTON, ME.—The Chadwick Heel Co. has been incorporated to make tools, machinery, etc., with $50,000 capital by S. A. Chadwick and Michael Brownstein.

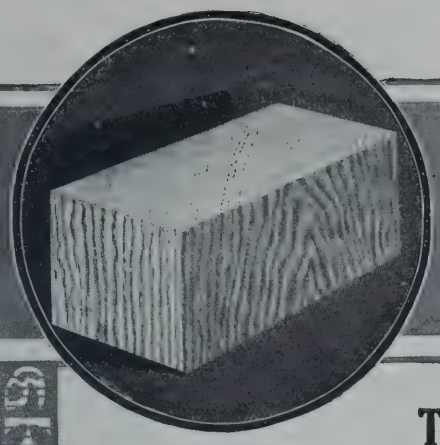
BOSTON.—E. D. Codman, 27 Kilby street, has awarded a contract for a machine shop addition.

BOSTON.—The E. N. Thayer Co. has been incorporated to deal in ornamental iron and steel with $10,000 capital by James W. Santry, Elisha N. Thayer, Brookline, Mass., and I. Krop.

FALL RIVER, MASS.—The Fall River Coppersmith Co. has been incorporated with $10,000 capital by Ludwig Golz, Otto A. Waihela and Charles S. Graham.

HAVERHILL, MASS.—The Haverhill Die Co. has been incorporated with $5000 capital by Fred Halloran, Nicholas J. Chapman and A. W. Kennedy.

HOLYOKE, MASS.—G. Haarman & Co., operating a structural steel and iron plant, have acquired



Kreodone EVERLASTING WOOD BLOCK FLOORS

Treated Only With Pure Creosote Oil

OVER twenty years of actual service definitely proves Kreodone wood block floors essential and necessary for economical plant operation.

Our customers are so completely satisfied that they never experiment after installing Kreodone. They specify Kreodone wood blocks for their floors from then on

Let us tell you why

Kreodone wood block floors never wear out; never decay; never bleed tar or smudge; stay where laid; are solid, permanent and sanitary.

Our engineers will tell you

how we can lay Kreodone wood block floors in replacement of old floors without stopping your work. Full information as to cost, method and time, free.

Selected long-leaf yellow pine blocks permanently treated with nothing but pure creosote oil—every bit of their manufacture in charge of experts of long experience—this is what makes Kreodone wood floor blocks superior. Give us a brief description of your plant and working conditions and we will refer you direct to a Kreodone floor in identical service.

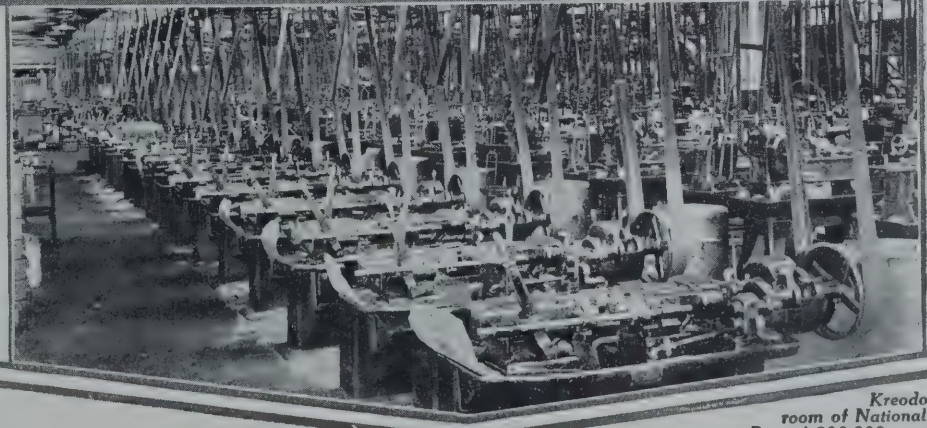
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206 Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland
31 Transportation Bldg., Philadelphia
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445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hammond Bldg., Detroit

We manufactured the first wood block floor laid in America



Get the genuine Kreodone blocks. Watch that spelling—it means service

Kreodone installation in the lathe room of National Acme Co., Cleveland, O. Part of 300,000 square feet of Kreodone floor.

property at Willimansett, Mass., on which it is reported planning a branch plant.

HOLYOKE, MASS.—The Cowan Truck Co., Canal street, has awarded a contract for a 2-story plant addition.

LEOMINISTER, MASS.—The Viscaloid Co., 511 Lancaster street, plans a 2-story machine shop, 40 x 60 feet, to cost $15,000.

LYNN, MASS.—The S. M. Hansen Co. has been incorporated to make machinery, parts, electrical equipment, etc., with $25,000 capital by Senius M. Hansen, Edward R. Fallon, Swampscott, Mass., and John Ingram.

SPRINGFIELD, MASS.—The American Bosch Magneto Corp. is building a 1-story, 30 x 100-foot storage building.

TEMPLETON, MASS.—The United States Toy & Novelty Mfg. Co. has been incorporated with $50,000 capital by James P. Clary, James J. Fairbanks, Gardner, Mass., and Charles A. Bryant.

WORCESTER, MASS.—The Osgood Bradley Car Co. will build a 2-story, 90 x 100-foot cabinet shop.

WORCESTER, MASS.—The American Steel & Wire Co. will build a 440 x 24-foot building.

WORCESTER, MASS.—The Leland-Gifford Co., crankshafts, has let the contract for a 2-story, 182 x 102-foot factory addition, to cost $50,000.

WORCESTER, MASS.—The Hobbs Mfg. Co. has let the contract for a 1-story, 35 x 60-foot addition for hardening and tempering lock washers.

PROVIDENCE, R. I.—The Apco Mfg. Co., 702 Eddy street, auto specialties, will build a 1-story addition, 80 x 200 feet.

PROVIDENCE, R. I.—The M. K. M. Chain Co., 862 Broad street, has been organized to manufacture chains, etc., by O. C. Maehnert, 123 Beacon street, Charles E. King, 156 Elm street, and others.

PROVIDENCE, R. I.—The Jewelers' Toolmaking Co., 220 Eddy street, has been organized to manufacture jewelers' tools, by G. J. Lederer, 40 Marion avenue, Carl Geisler, 194 Vinton street, and others.

TAUNTON, MASS.—The L. C. Blanke Twist Drill Co. will build a 1-story addition, 40 x 115 feet, to cost $14,000.

BRIDGEPORT, CONN.—Charles S. Huth, 207 Barnum avenue, has awarded a contract for a 1-story machine shop, 30 x 60 feet, to cost $13,000.

BRIDGEPORT, CONN.—The Bridgeport Hardware Mfg. Co. plans a 2-story addition, 20 x 150 feet, to cost $25,000.

BRIDGEPORT, CONN.—Plans are being made for a 1-story, 150 x 225-foot addition to the casting shop of the Bridgeport Brass Co. to cost $150,000.

BRIDGEPORT, CONN.—Harvey Hubbell, Inc., maker of electrical wiring devices, has let the contracts for a 1-story, 82 x 140-foot storehouse.

FORESTVILLE, CONN.—The Peck & Young Mfg. Co. has let the contract for a 1-story, 200 x 60-foot factory, a 40 x 80-foot garage and a 35 x 25-foot boiler house.

HUNTINGTON, CONN.—The Phillips Time Switch Co. has been incorporated with $50,000 capital by Leslie W. Holmes, C. F. Holmes and William E. Fisher, all of Shelton, Conn.

MERIDEN, CONN.—The M. B. Schenck Co. division of the Bassick Co., caster maker, has let the contract for a 2-story, 64 x 53-foot factory addition.

NEW BRITAIN, CONN.—The Stanley Rule & Level Co. has let the contract for 3 and 6-story factory additions to cost $35,000.

NEW HAVEN, CONN.—The Standard Iron Works, Laurence street, has been organized by S. D. Pardoll and others.

NEW HAVEN, CONN.—The Johnson Machine Works, 11 Orange street, has been organized by F. G. Johnson, T. P. Tonne and others.

NEW HAVEN, CONN.—The New England Iron Works will build a 1-story, 60 x 150-foot steel shop and a brick office building.

NEW HAVEN, CONN.—The Nevergap Co. has been incorporated to manufacture metal clasps, with $50,000 capital, by A. J. Larson, Jules Bango and Peter Torello.

NORWALK, CONN.—The New England General Auto Accessories Corp. has let the contract for a 2 sto.y, 80 x 150-foot factory to cost $65,000.

OAKVILLE, CONN.—The Autoyre Co., wire products, will build a 1-story addition, 60 x 100 feet.

WEST HARTFORD, CONN.—The Whitlock Coil Pipe Co. has let the contract for a 1-story garage and storage building.

WINDHAM, CONN.—The Davis Metal Stamping Co. has been incorporated to make patented metal shingles, etc., with $50,000 capital by S. J. Davis, W. P. Jordan, C. J. Alpaugh, L. A. Nichols, E. P. Chesbro, H. A. Bugbee and W. H. Armstrong, all of Willimantic, Conn.

North Atlantic States

BINGHAMPTON, N. Y.—The Universal Can Co. recently was incorporated with $1,000,000 capital, by J. F. Montgomery, H. C. Hooks and B. E. Austin, 194 Rugby road, Brooklyn, N. Y.

BROOKLYN, N. Y.—The J. Cutter Iron Works, Inc., 247 Norman avenue, plans a 2-story building, 60 x 90 feet, to cost $14,000.

BROOKLYN, N. Y.—The Hygrade Brazier Co. has been incorporated with $10,000 capital, by I. Zinker, B. Cooper and H. Dingberg, 160 Glenmore avenue.

BROOKLYN, N. Y.—The Coyne & Delany Co., 832 Kent avenue, plumbing specialties, plans a 3-story plant, 50 x 120 feet, to cost $70,000.

BROOKLYN, N. Y.—The Barzel Iron Works, Inc., recently was chartered with $5000 capital, by A. Rothman, N. Berson and A. Schultz, 409 Hewes street.

BROOKLYN, N. Y.—The American Can Co. has taken a long term lease on a 6-story, 80 x 460-foot building, on the waterfront. The Can company intends to occupy this building for the manufacture of cans and metal goods.

BROOKLYN, N. Y.—Smith Bros. & Sklar, Inc., has been incorporated to make wagons and auto bodies with $20,000 capital, by J. Sklar, M. and H. Smith, 136 Hall street.

BROOKLYN, N. Y.—The Hero Snap Fastener Co. recently was incorporated with $100,000 capital, by L. Brockner, S. Fink and A. A. Hoffman, White Plains, N. Y.

BUFFALO.—The Donner Union Coke Co. has let the contract for a machine shop.

BUFFALO.—The Pierce-Arrow Motor Car Corp. is reported planning to expand.

BUFFALO.—The Wolff Machine Co. recently was incorporated with $10,000 capital, by W. and E. and L. Wolff.

BUFFALO.—The Bilger Steel Products Corp. recently was incorporated with $50,000 capital, by R. L. O'Brian, 43 Cleveland avenue, E. E. Finck, 602 Ashland avenue and others.

BUFFALO.—The Iroquois Tool & Die Co., Inc., has been incorporated with $10,000 capital, by G. A. Gruber Jr., W. Preiss and W. J. Wagner.

BUFFALO.—The Mighty Mfg. Co., Inc., has been incorporated to make electrical devices with $50,000 capital, by E. Pappas, G. N. Chaltas and E. L. Crabb.

CARTHAGE, N. Y.—The Northwestern Telephone Corp. will erect a 2-story machine shop, 22 x 28 feet, to cost $20,000.

COLONIE, N. Y.—Work on the erection of a $500,000 plant for the Adirondack Steel Foundries Corp. has been started.

DUNKIRK, N. Y.—The American Locomotive Co. has started on a plant addition.

GLENS FALLS, N. Y.—The Arrow Grip Mfg. Co. recntly increased its capital from $100,000 to $500,000 and contemplates the erection of a plant.

HUNTINGTON, L. I., N. Y.—The Collins Motors, Inc., has been incorporated with $400,000 capital, by G. H. Stoll, D. C. Lawrence and R. Mensher, 646 Bushwick avenue, to manufacture automobile motors, etc.

LONG ISLAND CITY, N. Y.—The Van Brunt Iron Works has purchased a 300 x 309-foot site in this city for the erection of a steel fabricating shop.

MONTOUR FALLS, N. Y.—The Montour Aluminum Soldering Corp. recently was incorporated with $200,000 capital, by G. F. Barton, F. A. Hatch and E. W. Livings.

MT. MORRIS, N. Y.—The Mt. Morris Illuminating Co. is reported planning a new electric power plant.

NEW YORK.—The Metals Disintegrating Co., 62 Broadway, is building a new plant at Townley, N. J.

NEW YORK.—The Marvin Stoker Co., Inc., has been incorporated with $35,000 capital, by C. H. Lyons, E. P. Morris, and J. Marvin, Staten Island.

NEW YORK.—The Crane Co., Chicago, has awarded a contract for a 4-story building here, 90 x 200 feet, to cost $175,000.

NEW YORK.—The Morse Dry Dock & Repair Co. has purchased 300 feet along the waterfront in Staten Island for the erection of a ship repair plant.

NEW YORK.—The Eisemann Magneto Corp. has just been organized to take over the business of the Eisemann Magneto Co.

NEW YORK.—About $1,000,000 will be expended by the Standard Oil Co. of New Jersey, 26 Broadway, for two plants at Camden and Trenton, N. J.

NEW YORK.—A group of 5-story factory buildings at 510-553 West Twenty-third street has been sold by the Westinghouse Lamp Co.

NEW YORK.—The Jensen & O'Leskie Co., Inc., hardware and machinery, has been incorporated with $10,000 capital, by C. Jensen, E. A. O'Leskie and E. J. McTike, 321 Eastern Parkway.

NEW YORK.—The Federal Ship & Engine Repair Co., Inc., has been incorporated with $25,000 capital, by F. J. McHugh, J. M. Hannan and J. Harris, 1545 Broadway.

NEW YORK.—The Fastfeed Drill & Tool Corp. has been incorporated with $575,000 active capital by K. Kirk, J. A. Dubel and J. T. Herne, 61 Broadway.

NEW YORK.—G. Danzis Co., Inc., has been incorporated with $40,000 capital to make materials for die sinking, by F. O. Stoltz, P. and G. Danzis, 2015 Grand boulevard.

NEW YORK.—The Sterling Spinning & Stamping Works has been incorporated with $5000 capital, by B. Zinkin, H. Finkelstein and I. Schlepp, 161 Bryant avenue.

NEW YORK.—The Bronx River Iron Works has been chartered with $10,000 capital, by J. F. Ernst, M. Gullubier and F. Welden, 2323 Prospect avenue.

NEW YORK.—The Motorite Corp. has been chartered by C. E. Taoru, S. A. H. Dayton and M. F. Mills, 211 West Eighty-second street, to manufacture

HANNA



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Say you saw it in THE IRON TRADE REVIEW

motors and machinery. The company is capitalized at $100,000.

NEW YORK.—The Arrow Brand Tool Corp. has been incorporated with $800,000 capital, by Robert A. Van Voorhiss, W. E. Schells, and Arthur R. Oakley, Pearl River, N. Y.

NEW YORK.—E. Kaufman & Co., iron and steel, has been incorporated with $100,000 capital, by E. Kaufman, P. W. Hatfield, and A. W. D. Hogg, 256 Church street.

NEW YORK.—The Cotton Scutcher Lap Corp. has been incorporated with $50,000 capital, by C. Zabriskie, E. Mehringer and J. H. Griffen, 277 Broadway, to manufacture textile machinery.

PROVIDENCE, R. I.—The Brown & Sharpe Mfg. Co. has been granted a permit to build a 2-story workshop.

SYRACUSE, N. Y.—The M. L. Oberdorfer Brass Co., 804 East Water street, plans a foundry addition to cost about $40,000.

SYRACUSE, N. Y.—The Fisher Body Corp. will issue $5,000,000 worth of bonds, part of the proceeds of which will go into plant improvements.

SYRACUSE, N. Y.—In anticipation of an extended building program early next year the Onondaga Steel Co., Inc., has increased its capital from $150,000 to $1,000,000.

TROY, N. Y.—Reece-Hilton, Inc., tools and implements, has been incorporated with $50,000 capital, by R. Reece, A. L. Reece and R. C. Hilton.

UTICA, N. Y.—The Brunner Mfg. Co., air compressors, has plans for an addition, 1-story, 76 x 140 feet, to cost $15,000.

WATERTOWN, N. Y.—F. G. Hall, 823 Boyd street, plans to establish a machine shop.

WATERTOWN, N. Y.—A machine shop will be erected here by F. G. Hall, 823 Boyd street.

WAYLAND, N. Y.—The Wayland Specialty Co. has been organized to manufacture metal products, by Charles L. Clarke, I. J. Pillsbury and W. N. Thwing.

Central States Activity

CHAMPAIGN, ILL.—The Cushman Auto Tool Co. is building a 2-story, 40 x 70-foot plant addition.

CHICAGO.—The H. Channon Co., contractors' tools, is reported planning to erect a 7-story building.

CHICAGO.—The B. & W. Mfg. Co., automobile accessories, 5235 Ravenswood avenue, is having plans prepared for a 3-story plant, 50 x 125 feet.

CHICAGO.—The Motor Coach Metal Works, Inc. 2909 Indiana avenue, has been organized by Alfred T Kaiser, William E. Fuller and Oscar C. Graff.

CHICAGO.—The Ilg Electric Ventilating Co. will build a 4-story plant costing $750,000. A. S. Aischuler, 28 East Jackson boulevard, is taking bids.

CHICAGO.—The Economy Machine Products Co., 4750 London avenue, will build a plant, 160 x 200 feet, to cost $100,000.

CHICAGO.—E. Edelman & Co., automobile accessories, is reported planning to build a plant at an estimated cost of $250,000.

CHICAGO.—The Dallas Brass & Copper Co. is reported planning to erect a 5-story plant here at an estimated cost of $200,000.

CHICAGO.—The Pollak Steel Co., South Chicago, will build an addition to its drop forge plant, 75 x 141 feet, to cost $225,000.

CHICAGO.—Cribben & Sexton, founders, have let a contract for a plant addition, 88 x 122 feet, to cost $10,000.

CHICAGO.—The Locomotive Lubricator Co., 6 North Michigan avenue, capitalized at $50,000, has been chartered by W. J. Schleks and C. W. Rudolph.

CHICAGO.—The International Radiator Co., capitalized at $12,500, has been chartered by William H. O'Donnell, L. A. O'Donnell, and William H. Dorney.

CHICAGO.—The Locomotive Crane Co. of America, 3609 South Ashland avenue, capitalized at $300,000, has been chartered by Charles Vergan and Robert Vergan.

APPLETON, WIS.—The Appleton Machine Co., Appleton, Wis., is building a 1-story shop addition, 60 x 100 feet, and will equip it for general machine work.

AUGUSTA, WIS.—The Dells Milling Co. is taking bids for the construction of a power dam.

BARTON, WIS.—The Stevenson Mfg. Co., capitalized at $100,000, has been chartered to manufacture hardware specialties by Charles M. Stevenson, J. H. Batenauer and J. J. Fellenz. A plant 80 x 130 feet will be erected at once.

BEAVER DAM, WIS.—Frank Zweck has purchased the sheet metal department of the hardware business of his brother, John V. Zweck, and will re-establish it as a separate business in a 2-story building at 120 South Spring street, conducting it as the Zweck Sheet Metal Works.

FOND DU LAC, WIS.—The Vulcan Mfg. Co. contemplates a plant addition, 100 x 150 feet, which with machinery will cost about $30,000.

FOND DU LAC, WIS.—The Galloway-West Co. is taking bids for the construction of a dairy products plant, power and boiler house, private garage and service shop, L-shaped, 85 x 200 and 52 x 65 feet, costing about $100,000.

GREEN BAY, WIS.—The Conradson Machine Tool Co., Green Bay, Wis., expects to start manufacturing operations in its new plant about Sept. 1.

LADYSMITH, WIS.—A new hydroelectric power plant will be built near here by the Big Falls Power Co.

MADISON, WIS.—The Gisholt Machine Co. has awarded contracts for a machine shop addition to the Worden-Allen Co., Milwaukee.

MADISON, WIS.—The Madison Tool & Stamping Works, capitalized at $10,000, has been chartered to manufacture tools, stampings, metal patterns and dies by G. A. Benson, T. E. Rosten and W. L. Woodward.

MENOMONEE FALLS, WIS.—Architect Frank E. Gray, 86 Michigan street, Milwaukee, has been commissioned to prepare plans for a 1-story building, 137 x 149 feet, to be used as a high and grade school, vocational training institute and auditorium.

MILWAUKEE.—The Pawling & Harnischfeger Co., electric traveling cranes, is increasing its forge shop capacity by a 1-story extension, 80 x 100 feet.

MILWAUKEE.—The Standard Steel Corp., 491 Virginia street, has broken ground for its new plant, which will be 120 x 150 feet.

MILWAUKEE.—The Heil Co., manufacturer of electrically welded tanks, etc., will build a new office building.

MILWAUKEE.—The Titan Motor Truck Co. has started work on a machine shop, assembling floor and tool room, 100 x 158 feet, with a wing 50 x 100 feet.

MILWAUKEE.—The Jaeschke Bros. Foundry Co., Thirty-first and Locusts streets, will start work shortly on plant additions, including a foundry extension, 90 x 150 feet, and a coreroom, 50 x 100 feet.

MILWAUKEE.—The Lederer Machine Co. has been incorporated with a capital of $30,000 to manufacture patented machinery. The incorporators are S. Lederer, T. B. Hirsch and F. G. Katzenstein.

MILWAUKEE.—Robert J. Stahl, Edward A. Tessner and Charles B. Johnson, manufacturing automobile accessories and parts at 3419 Vliet street, have incorporated the business as the Interstate Mfg. Co., capital stock, $15,000.

MILWAUKEE.—Approximately $100,000 will be invested by the Chevrolet Motors Co., Flint, Mich., in the erection and equipment of a distributing headquarters here.

MILWAUKEE.—The Worden-Allen Co. has the contract to fabricate and erect 500 tons of structural shapes for an addition to the open-hearth building and a 600-foot extension to the crane runway, for the Interstate Iron & Steel Co., Chicago.

MILWAUKEE.—The Ogren Motor Car Co., organized in Wisconsin with $500,000 capital by Hugh W. Ogren of Chicago, will open a factory for the manufacture of passenger cars. New machinery is being purchased.

MILWAUKEE.—An increase of 100 per cent in the capacity of the A. E. Martin Foundry Co., 705 Park street, is provided by plans completed for new construction involving an expenditure of $200,000 in buildings and equipment. A new coreroom is being completed and work will begin shortly on a new cupola and molding floor, 80 x 144 feet.

OCONTO, WIS.—The Oconto River Public Service Co. has been incorporated with $250,000 capital to develop water power, by F. F. Becker, Charles H. Hartley and Ralph B. Hartley.

OSHKOSH, WIS.—The Oshkosh Motor Truck Co. is planning to enlarge its present factory or build a new plant.

OSHKOSH, WIS.—A plant for the manufacture of automobile accessories, devices and parts will be opened here by the Auto Specialties Co., which has been incorporated with a capital stock of $25,000 by E. J. Sullivan, Oscar Thelen and William Koeck.

OSHKOSH, WIS.—The Scott Player Action Co., a new $100,000 concern organized to manufacture metal actions and player mechanisms for pianos, is negotiating with the Oshkosh Association of Commerce for the lease of the former car shops controlled by E. A. Lull.

SCHLEISINGERVILLE, WIS.—Architects Backes & Pfaller, M. & M. Bank building, Milwaukee, are preparing plans for a 1-story machine shop addition, 77 x 198 feet, for the Vim Tractor Co.

SHEBOYGAN, WIS.—The machinery repair and welding shop opened some time ago at 816 Erie avenue, has been organized as the Sheboygan Welding & Cutting Co. Some new equipment will be installed.

STOUGHTON, WIS.—The Mandt Wagon Works, Ltd., division of the Moline Plow Co., is erecting a 3-story addition, 64 x 90 feet.

AKRON, O.—The Whitman & Barnes Co., reamers, drills, etc., has plans for a 1-story addition to its Chicago plant.

AKRON, O.—The Akron Cultivator & Mfg. Co., capitalized at $75,000, has been chartered by William C. Keough and others.

CANTON, O.—Contracts for the plant of the Timken Roller Bearing Co. have been awarded to the D. W. McGrath Co. and the Canton Bridge Co. The main building will be 300 x 600 feet.

CINCINNATI.—The Warman Brass & Aluminum Co. has been incorporated with $25,000 capital, by Roy Warman and others.

CLEVELAND.—The F. B. Stearns Co., automobile manufacturer, will enlarge its plant by a 4-story building, 200 x 400 feet.

CLEVELAND.—The L. & M. Axle Co., 247 Colonial arcade, recently was incorporated and will build a plant for the manufacture of axles. H. E. Shimmins is president.

CLEVELAND.—The Induction Furnace Co. has been incorporated with $5000 capital, by W. B. Stewart, Ashley M. Van Duzer, John W. Eckelberry, Walker H. Nye and L. C. Wykoff.

CLEVELAND.—The Auto Bushing Mfg. Co. has been incorporated with $5000 capital, by R. E. Hyde,

1127 Williamson building, A. F. Kotowski, E. C. Scharff, C. C. Hutchins and F. L. Stevens.

CLEVELAND.—The Foote-Burte Co. is reported planning an addition for the manufacture of machine tools.

CLEVELAND.—The Fisher Machine & Stamping Co. has been incorporated with $20,000 capital, by Frank C. Fisher and others.

CLEVELAND.—The Vesuvian Products Co., tools, has been incorporated with $3000 capital, by E. J. Cullen, William A. Becker, Charles E. Stoops, John J. Donovan and others.

CLEVELAND.—The Weeks Sheet Metal Products Co. has been incorporated with $10,000 capital, by W. J. Weeks, F. W. Werner, George Ott, J. E. Pease, P. P. Bethea, F. J. Humel and Victor J. Weeks.

CLEVELAND.—The Hayes Products Co., automotive accessories, metal products, has been incorporated with $50,000 capital, by Oscar Hayes, Fred Bentel, F. A. Lennie, William M. Hahn and Keith Lawrence, 329 Society for Savings building.

CLEVELAND.—A permit has been taken out by the Cleveland Twist Drill Co., Lakeside avenue and East Forty-ninth street, for the erection of an alteration factory, 1-story, 16 x 39 feet.

CLYDE, O.—The Clyde Cutlery Co. is reported planning a large plant addition.

COLUMBUS, O.—The Shilling Foundry Co. is reported contemplating an addition. Clarence Shilling is president.

DAYTON, O.—The Marshall-Smith Tool Co. recently was incorporated with $10,000 capital, by F. L. Smith and others.

DAYTON, O.—The Dayton Metal Body Co. recently was incorporated with $50,000 capital by Wayne F. Lee, Thomas F. Ford and others.

DAYTON, O.—The Globe Tool & Engineering Co. recently was incorporated by Henry Detzel, Alvin E. Shively and others, with $20,000 capital.

Throughout the West

ALGONA, IOWA.—The Harris Loader Co. recently was incorporated with $50,000 capital, by J. W. Harris, L. E. Krantz and A. Matson.

BRITT, IOWA.—The Hawkeye Wire Fence Co., recently incorporated, will commence operations about Sept. 1.

DAVENPORT, IOWA.—The Linograph Co. has had plans prepared for a 4-story addition, 69 x 150 feet, to cost $150,000, with equipment.

DES MOINES, IOWA.—The Schoener Garden Tool Mfg. Co. has been incorporated with $350,000 capital by H. Schoener, C. D. Bowles and others.

DES MOINES, IA.—A $250,000 factory will be erected by the Des Moines Foundry & Machine Co., on a 16-acre plot of ground just purchased. The construction probably will not start until spring. C. W. Schmidt is president of the company.

HERMANN, MO.—The Kilkenny Steel Works will erect a forge shop addition.

ST. JOSEPH, MO.—L. C. Gahbert and others have organized a company and will build a malleable foundry at a cost of $300,000.

ST. LOUIS.—The St. Louis Mfg. Co. will construct a power house.

ST. LOUIS.—The McQuay-Norris Mfg. Co. will equip a plant for the manufacture of piston rings.

ST. LOUIS.—The Inland Machine Co., 1627 Locust street, will equip a 2-story plant, 80 x 400 feet.

ST. LOUIS.—The National Metal Die Mold Co., O. G. Stark, 1637 Looks street, president, will build a metal working plant costing $50,000.

ST. LOUIS.—The Acme Lock Stitch Sewing Machine Co., capitalized at $100,000, has been chartered to manufacture sewing machine appliances by J. H. Keebaugh, W. M. Fritch and E. H. Benoist.

ST. LOUIS.—The Super-Power Piston Ring Corp., capitalized at $100,000, has been chartered to manufacture motor accessories by J. C. Hainer, St. Louis, and O. W. Hanson and F. W. Norburg, Salina, Kans.

BEAUMONT, TEX.—Capitalized at $50,000, the Gulf Coast Machine & Supply Co., plans to open a general machine and forge shop shortly. J. D. Butler is president of the company.

DALLAS, TEX.—The Kibbe Tractor & Implement Co. has been incorporated with $50,000 capital, by Louis G. Kibbe and others.

DALLAS, TEX.—The Dallas Power & Light Co. has increased its capital from $1,000,000 to $2,500,000, and is reported planning extensions.

HOUSTON, TEX.—The Finucane Boiler Works will build a 1-story addition.

ITALY, TEX.—The Elco Pump Co. has been incorporated with $25,000 capital, by L. S. Moseley and others.

PALESTINE, TEX.—An electric light and power plant will be erected by the Platt Gin & Machine Co.

HENRYETTA, OKLA.—The Martin Patent Rake Co., Roy J. Martin, president, will establish a plant for the manufacture of rakes. Some machinery will be purchased.

DAYTON, O.—The Dayton Metal Body Co. recently was incorporated with $50,000 capital, by Wayne F. Lee, Thomas H. Ford, E. M. Henshaw, H. J. Oakes and Edward T. Hall.

Business in Canada

LONGUE POINTE, QUE.—The Montreal Locomotive Works, Ltd., 145 St. James street, Montreal, has awarded the general contract to D. G. Loomis & Sons, 357 St. Catharine street west, Montreal, for two factories here.

MONTREAL, QUE.—The Sunshine Lamp & Supply Co., Ltd., has been incorporated to manufacture electric lamps, appliances, machinery, etc., with $20,000 capital by Charles S. G. Ogden, Charles S. LeMesurier, John L. Reay and others.

MONTREAL, QUE.—The Sisters of the Congregation of Notre Dame have let the general contract to Ernest Cormier, 10 Cathcart street, for a power house here.

MONTREAL, QUE.—Bids are being received by P. L. W. Dupre, 15 St. Lawrence boulevard, until August 30, for two factories for the Dupre Iron Works Co., Ltd.

MONTREAL, QUE.—The United Shoe Machinery Co., 1010 Bennett avenue, has let the general contract to D. G. Loomis & Sons, 357 St. Catharine street west, for a factory to cost $44,000.

NICOLET, QUE.—J. A. Sevigny plans to erect a foundry at an estimated cost of $10,000.

NICOLET, QUE.—The plant of the Beaulieu Foundry recently was badly damaged by fire.

RIGAUD, QUE.—Burnett & Crampton are having plans prepared for a foundry to have a capacity of 250 tons of castings per month.

BELLEVILLE, ONT.—The Tivani Steel Co. plans to build a steel plant here to include electric furnaces, rolling mills, merchant bar mills and open hearth furnaces. The company is also contemplating a similar plant at Vancouver, B. C.

BOSTON CREEK, ONT.—The Patricia Mining Co. will build a milling plant and is asking for prices on equipment.

BRANTFORD, ONT.—The Cockshutt Plow Co. is erecting two buildings in connection with its plant to cost $25,000.

BRANTFORD, ONT.—The Brantford Roofing Co., Sydenham street, is building an addition to its boiler house.

GUELPH, ONT.—W. A. Malone, architect, is preparing plans for a machine shop and warehouse for the International Malleable Iron Co. The building will be 120 x 189 feet, and cost $33,000.

LONDON, ONT.—C. S. Hyman & Co., Ltd., Richmond street, will build an addition to its tannery at a cost of $300,000.

ORILLIA, ONT.—The Orillia Tractors, Ltd., have been incorporated to manufacture tractors, etc., with $300,000 capital, by Fredrick W. Vollans, James B. Tudhope, William H. Tudhope and others.

OSHAWA, ONT.—The Gananoque Spring & Axle Co. has awarded the general contract for a manufacturing plant here.

OTTAWA, ONT.—J. H. Connor & Son, Ltd., have been incorporated to manufacture machinery, household utensils, tools, etc., with $300,000 capital, by Ainslie W. Greene, William H. Johnston, Bertha A. Cowan and others.

BOWMANVILLE, ONT.—The Ross Can Co., Ltd., has been incorporated to manufacture tin cans, containers, etc., with $500,000 capital, by Frank Regan, room 508, 12 Richmond street east; Alexander Nugent and others.

SARNIA, ONT.—The Roberts Automatic Connector Co., Ltd., has been incorporated with $1,000,000 capital, to manufacture railway appliances, etc., by John W. Roberts, John Garroch, Thomas H. Robinson and others.

TORONTO, ONT.—William and J. G. Gray are preparing to build a crane factory here to cost $50,000.

TORONTO, ONT.—The National Conduit Co., Ltd., has been incorporated with $100,000 capital, by G. M. Jarvis, John A. Kent and M. C. Purvis.

TORONTO, ONT.—The W. C. Hunt Mfg. Co., Ltd., brass and iron founder, recently was incorporated with $40,000 capital, by William C. Hunt, Nora L. Boles and Ambrose A. Crocker.

TORONTO, ONT.—The Excelsior Electric Dairy Machinery Co., Ltd., has been incorporated with $100,000 capital, to manufacture electric motors, electric machinery, dairy machinery, equipment, fine tools, gages, etc., by Lewis T. Rutledge, 320 Concord avenue; Alfred N. Morine, 156 Yonge street, and others.

UNITY, SASK.—Plans are being prepared by Murphy & Underwood, Saskatoon, Sask., for an electric light plant her for the town council to cost $25,000.

WALKERVILLE, ONT.—The Canadian Products, Ltd., has been incorporated to manufacture automobiles, etc., with $10,000 capital, by Alexander Reslie, Hugh L. McDowell, Bruce Harrison and others.

SOUTH VANCOUVER, B. C.—W. B. Russell plans a machine shop, 33 x 75 feet.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37 to 3.62c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37 to 3.62c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47 to 3.72c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67 to 3.92c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.50c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	6.75c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

	Black	Galv.
Butt Weld		
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	33
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

	Black.	Galv.
Butt Weld		
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

	Black	Galv.
Butt Weld		
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel	
1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½
Iron	
1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$21.00 to 21.50
Chicago	20.00 to 20.50
Eastern Pennsylvania	19.50 to 20.50
Cleveland	21.00 to 21.25
St. Louis	20.50 to 21.00
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.35 to 16.50
Cincinnati	17.50 to 18.00
Birmingham	19.00 to 21.00
Valleys	21.00 to 21.50
Boston (dealers)	14.50 to 15.00

BUNDLED SHEETS

Pittsburgh	$16.50 to 17.50
Eastern Pennsylvania	15.00 to 16.00
Cleveland	16.00 to 16.50
Buffalo	14.50 to 15.00
Cincinnati	13.00 to 13.50
St. Louis	11.00 to 11.50

STEEL RAILS, SHORT

Chicago	$23.50 to 24.00
Cleveland	23.50 to 24.50
Boston (dealers)	16.00 to 16.50
St. Louis	22.50 to 23.00
Birmingham	18.00 to 20.00
Cincinnati	18.00 to 18.50

STOVE PLATE

Pittsburgh	$18.00 to 19.00
Chicago	25.00 to 25.50
Eastern Pennsylvania	20.00 to 21.00
Cleveland	19.25 to 20.25
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New Jersey Points	21.00
New York	17.00 to 18.00
Cincinnati	16.00 to 16.50
Birmingham	19.00 to 21.00
Boston (consumers)	20.00 to 21.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$19.50 to 20.00
St. Louis	19.50 to 20.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.50 to 22.00
Chicago	23.00 to 23.50
St. Louis	22.50 to 23.00

BALED SHEETS

Pittsburgh	$19.00 to 20.00
Chicago	16.00 to 16.50

FROGS, SWITCHES, GUARDS

Chicago	$20.00 to 20.50
St. Louis	21.00 to 21.50
Eastern Pennsylvania	19.50 to 20.50

BOILER PLATE, CUT

Chicago, No. 1	$18.00 to 19.00
St. Louis, No. 1	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$22.00 to 22.50
St. Louis	21.50 to 22.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$23.00 to 24.00
Pittsburgh, No. 2	22.00 to 23.00
Chicago, No. 1	23.00 to 23.50
Chicago, No. 2	22.00 to 22.50
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	24.00 to 24.50
St. Louis, No. 1	21.50 to 22.00
St. Louis, No. 2	20.50 to 21.00
Buffalo	23.00 to 23.50
Cincinnati, No. 1	20.00 to 20.50
Birmingham, No. 1	15.00 to 17.00
New York No. 1 (dealers' price)	23.00 to 23.50
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$21.75 to 22.25
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	16.00 to 16.50
Boston (dealers)	15.00 to 15.50

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers' price)	$19.50 to 20.00

BUSHELING

Chicago, No. 1	$20.50 to 21.00
Chicago, No. 2	15.50 to 16.00
Cleveland, No. 1	20.50 to 21.00
Cleveland, No. 2	16.00 to 16.50
St. Louis, No. 1	20.50 to 21.00
Buffalo, No. 1	16.50 to 17.00
Cincinnati, No. 1	15.00 to 15.50
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.50 to 14.00
Chicago	10.50 to 11.00
Eastern Pennsylvania	14.00 to 15.00
Eastern Pennsylvania (blast furn.)	12.00 to 13.00
Cleveland	12.00 to 12.50
Buffalo	12.00 to 12.50
New York (dealers' price)	10.00 to 10.50
St. Louis	12.50 to 13.00
Cincinnati	8.00 to 8.50
Birmingham	10.00 to 11.00
Valleys	13.75 to 14.00
Boston (dealers)	10.50 to 11.00
Boston (blast furnace) (dealers)	9.75 to 10.25

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	13.50 to 14.00
Eastern Pennsylvania	14.50 to 15.00
Cleveland	15.25 to 15.65
St. Louis	12.50 to 13.00
Buffalo	13.50 to 14.00
New York (dealers' price)	11.00 to 11.50
Cincinnati	9.50 to 10.00
Birmingham	10.00 to 11.00
Valleys	15.75 to 16.00
Boston (dealers)	10.50 to 11.00
Boston (blast furnace) (dealers)	9.75 to 10.25

IRON AXLES

Pittsburgh	$30.00 to 31.00
Chicago	33.00 to 34.00
Eastern Pennsylvania	35.00
Cleveland	35.00 to 36.00
St. Louis	34.00 to 34.50
Buffalo	28.00 to 29.00
Cincinnati	26.50 to 27.00

IRON RAILS

Chicago	$24.50 to 25.50
Cleveland	27.00 to 28.00
St. Louis	23.50 to 24.00
Buffalo	24.00 to 25.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$18.50 to 19.00
Cleveland	19.00 to 19.50
St. Louis	18.50 to 19.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$22.50 to 23.00
Cleveland	19.50 to 20.50
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	18.50 to 19.50

FORGE FLASHINGS

Cleveland, large	$16.00 to 16.50
Cleveland, small	19.00 to 19.50
Chicago, small	18.00 to 18.50
Boston (dealers)	11.00 to 11.50

FORGE SCRAP

Chicago	$22.00 to 22.50
Eastern Pennsylvania, No. 1	14.50 to 15.50

ARCH BARS AND TRANSOMS

Chicago	$30.00 to 31.00
St. Louis	25.50 to 26.00

ANGLE BARS—IRON

Chicago	$28.00 to 28.50
St. Louis	25.50 to 26.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.50 to 17.50
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
Cleveland	16.50 to 17.50
Buffalo	15.00 to 16.00
Chicago	17.50 to 18.00

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania	32.00
Cleveland	34 00 to 35.00
St. Louis	31.50 to 32.00
Buffalo	28.00 to 29.00
Chicago	31.50 to 32.00
New York (dealers' price)	24.00 to 25.00
Birmingham	20.00 to 22.00
Boston (dealers)	25.00 to 26.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	21.00 to 22.00
Chicago	29.00 to 30.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$25.00 to 25.50
Pittsburgh, steel	22.50 to 23.00
Chicago, iron	24.50 to 25.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, Iron	22.75 to 23.00
St. Louis, iron	24.50 to 25.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 22.00
Birmingham, tram car	20.00 to 22.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$24.00 to 25.00
Chicago, cupola	27.50 to 28.00
Eastern Pennsylvania, cupola	25.00 to 26.00
Cleveland, cupola	23.00 to 23.50
New York, cupola (dealers' price)	21.00 to 22.00
Cincinnati, No. 1, cupola	21.00 to 21.50
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	25.50 to 26.00
Buffalo	24.50 to 25.00
Boston (dealers' price)	27.00 to 28.00
Valleys	23.00 to 23.50

HEAVY CAST

New York (dealers' price)	$20.50 to 21.50
Buffalo	21.00 to 22.00
Pittsburgh	21.00 to 21.50
Cleveland	18.50 to 19.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$21.00 to 22.00
Pittsburgh, agricultural	20.00 to 21.00
Chicago, railroad	23.50 to 24.00
Chicago, agricultural	21.50 to 22.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	22.00 to 23.00
Cleveland, agricultural	19.00 to 19.50
St. Louis, railroad	20.00 to 20.50
St. Louis, agricultural	19.50 to 20.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	29.50 to 30.00
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	28.50 to 29.00
Birmingham	15.00 to 16.00
Boston (dealers)	18.00 to 18.50

LOCOMOTIVE TIRES

Chicago	$23.50 to 24.00
St. Louis	21.50 to 22.00

BOILER PUNCHINGS

Chicago	$25.00 to 26.00
Eastern Pennsylvania	23.00 to 24.00

Announcement

to Buyers and Sellers of Scrap

Whatever your connection in handling Scrap, you expect these things:

Right Price
Quick Action
Courteous Treatment

Established over five years, with a complete and able staff of experienced Scrap men, our organization is ready to serve you.

— The James S. Miller Co
McCormick Building
Chicago

New Trade Publications

FOUNDRY EQUIPMENT.—Pouring devices, molding machines, squeezers, and jolting machines are described and illustrated in a 4-page circular being distributed by the Arcade Mfg. Co., Freeport, Ill.

POST DRILL.—The Lynd-Farquhar Co., Boston, is circulating to the South American trade two catalogs written in Spanish. One is devoted to a post drill and the other to shapers. Both are well illustrated and contain specifications and other data.

THREAD MILLERS.—A 4-page circular is being distributed by the Smalley General Co., Inc., Bay City, Mich., in which two thread millers are described and illustrated. Brief specifications are given of each machine and the last page contains two typical operation and time studies with both machines.

LATHE CENTER.—A 4-page leaflet is being distributed by Kell, Hock & Co., Newark, N. J., in which a ball-bearing lathe center is described. The center revolves in bearings, which run in a bath of oil. The center turns with the work and, according to the leaflet, by this method, friction between center and work is eliminated.

COAL BREAKER.—The Pennsylvania Crusher Co., Philadelphia, has issued bulletin 1006 in conjunction with bulletin 1004. The former bulletin is devoted to a description of a coal breaker designed for crushing and cleaning bituminous coal. It is of steel frame construction. In operation the breaker crushes coal to a desired size and automatically removes impurities, such as rock, sulphur balls, bony coal, mine timber and tramp iron. Illustrations are given.

COAL CRUSHER.—Bulletin 1004 being distributed by the Pennsylvania Crusher Co., Philadelphia, describes and illustrates a steel frame hammer crusher specialized for the fine crushing of bituminous coal. The frame of the crusher is of fabricated heavy steel plates. The rotor consists of a powerful forged shaft and rolled steel discs carrying from six to ten rows of steel hammers, which turn on ring oiled bearings. The cage is of heavy cast steel frame, carrying perforated rolled steel screen plates, manganese steel grates or bars, as the service demands. Specifications are given.

FOUNDRY FLASKS.—The Truscon Steel Co., Youngstown, O., is distributing a 4-page circular in which pressed steel foundry flasks are described and illustrated. The ribs and flanges of these flasks extend the full depth around the corners without buckling or cutting away the metal. The meeting parts are welded, the pinholders are of malleable iron and are securely riveted to the flask. The flange on the filling side is turned outward so as not to interfere with ramming the molding sand, or hold it when shaken out. The flange on the bottom is turned inward, holding the sand in place when the flask is lifted. One page of the folder describes and illustrates a steel platform for use with lift trucks.

INDUSTRIAL TRANSPORTATION.—An illustrated booklet is being distributed by the Bicycle Manufacturers' association, Hartford, Conn., containing letters from manufacturers in which bicycles as a means of transportation of employes to and from work is endorsed. Practically all of the letters, which are supplemented with views of bicycle sheds erected at the various plants to house these vehicles, point out the advantages of the bicycle as a means of transportation for employes in plants far removed from street car lines, etc. Among the companies mentioned in the booklet are the Underwood Typewriter Co., Hartford, Conn., the Pierce-Arrow Motor Car Co., Buffalo, the National Cash Register Co., Dayton, O., the Bullard Machine Tool Co., Bridgeport, Conn., the American Rolling Mills Co., Middletown, O., and Smith & Wesson, Springfield, Mass.

LOCOMOTIVE CRANE.—The United States Crane Co., Chicago, in bulletin 190, recently published, describes and illustrates its line of locomotive cranes, for grab-bucket, hook-block or magnet service. Some of the specifications of these cranes are: Working weight, 159,000 pounds; shipping weight 120,000 pounds; ballast required 30,000 pounds; lower frame, 18-inch I beams with cast steel brackets for spur gear drive mechanism; rotation gear and roller path; rotation rollers; rotating frame; side housings; engines are of the vertical type, double, 10-inch cylinder diameter with 10-inch stroke; boilers of the vertical type, 54-inch diameter, 9½ feet high, 125 tubes, 2½ inches in diameter; steam pressure 125 pounds to the square inch; water tank capacity, 500 gallons and coal bunker capacity, 2000 pounds. The cranes have a drawbar pull of 9000 pounds maximum, a hoisting speed of 280 feet per minute and has lifting capacities, without track clamps or outriggers, 50 foot boom, of 20 tons at 15-foot radius, and four tons at 50-foot radius.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

The purchase of tin, tin plate, antimony, aluminum, zinc, bronze, brass in bars, tubes, and wire bars; also antifriction metals, nickel, copper and iron and steel in all forms, is desired by a firm in Spain. Correspondence should be in Spanish. Opportunity No. 30109.

The purchase of rubber tire and tube manufacturing machinery, hardware and mill stores, machinery and machine tools of all kinds, is desired by a firm in India. Opportunity No. 30112.

Automatic tin-making machinery and tin plate and solder are needed by a firm in Spain. Opportunity No. 30116.

The purchase of steel tubes, 2 inches and 2¼ inches in diameter, ⅛ or ¼ thickness and 5½ meters in length, in quantities of 100 tubes of each quality, are desired by a firm in Portugal. Quotations should be given c.i.f. if possible. Correspondence should be in Portuguese. Opportunity No. 30067.

The purchase and agency is desired by a firm in Belgium for the sale of electrical appliances, such as switches and sockets; wrought iron and steel tubes and fittings; malleable iron fittings; gun metal and brass fittings for gas, water and steam; copper and brass wire, sheets, bar rods, etc.; merchant iron, steel bars, plates and sheets and tin plates of all sizes. Quotations should be given f.o.b. Liverpool. c.i.f. Antwerp. Correspondence may be in English but catalogs should be in French if possible. Opportunity No. 30069.

A company in England wishes to purchase small grooved rolled iron bars in sizes No. 2 full, 13/32, 15/32, 17/32 and 9/16 inches, to be used in the manufacture of brass-cased, round stair rods. The amount used by this company averages 5 tons per week in assorted size. Quotations should be given f.o.b. Liverpool. Opportunity No. 30070.

A party from New Zealand, now in this country, desires to purchase machinery for distilling alcohol from refuse juice, acetic wood retorts and recovery plant, sulphate or ammonia recovery plant and paper-making plant. Opportunity No. 30167.

The general manager of a commercial corporation in this country is about to leave for the establishing of new agencies in Cuba, Panama, Colombia, Ecuador, Peru, Chile, Argentina, Brazil, Bolivia, Uruguay, Paraguay and Venezuela. He desires to secure direct representation from manufacturrs and exporters for the sale of hardware, machinery, tractors, agricultural implements and plated ware. Opportunity No. 30083.

An agency is desired by a man in Spain for the sale of steel and iron, coal and coke, lubricating oils and waterproof canvas covers for railroad cars. Opportunity No. 30086.

The purchase by a company in Norway of electrical supplies, gas an electric fixtures, iron, steel boilers, various metals, shipbuilding materials, engines, electrical cable-making machinery, flour-mill machinery, etc., is desired. Opportunity No. 29876.

The purchase of asbestos packing, piston rings, drills, files, magnetos, copper connections, wheels, automobiles, tools, parts, tires and accessories, are desired by a firm in Spain. Opportunity No. 29879.

A firm in Italy wishes to purchase or secure an agency for soft steel for making bolts and nuts. Correspondence should be in Italian. Opportunity No. 29880.

A firm in Sweden desires to secure the sole representation in Sweden, Norway, Denmark, Finland, Poland, the Baltic provinces and Ukraine, from manufacturers of agricultural machinery, small household hardware, tools, rails and wagons. Opportunity No. 30103.

A party from Finland, now in this country, desires to purchase building machinery, including concrete mixers, electric motors, etc. Opportunity No. 30106.

A merchant in Mexico desires to be placed in communication with exporters of machinery for making starch and banana flour. Correspondenee should be in Spanish. Opportunity No. 30181.

A firm in Brazil desires to secure the representation of American steamship companies and agencies for the sale of sugar-mill machinery, and other equipment. Opportunity No. 30175.

One new or second-hand sailing vessel, 45 to 50 feet long, equipped with mast for loading and landing cargo, and with gasoline auxiliary power, is required by a merchant in Guadeloupe. Correspondence should be in French. Opportunity No. 30172.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, August 28, 1919 *No. 9*

Strike Threat Fails To Alarm

Iron and Steel Industry Awaits Calmly Approaching Climax in Movement to Force Union Control of Plants—Investigation Shows Only 10 to 15 Per Cent of Men Are Organized—Operations More Normal

STRIKE threats which have overhung the iron and steel industry for several weeks still exercise an inconsequential influence upon trade conditions. The industry in truth welcomes with some show of relief the fact that the decisive stage rapidly is approaching where a demonstration of the claims of strength of the union organizers will be called for. Producers stand firm in their conviction that the great body of their employes, because of the fair treatment of the past and the lack of valid grievances, are not likely to be swayed by any propaganda of discord inspired by professional agitators. A thorough investigation covering the entire industry shows that 10 to 15 per cent of the men, at most, are affiliated with the American Federation of Labor. The voluntary action of representatives of 30,000 employes of the Midvale Steel & Ordnance Co. in formally condemning the movement toward shorter hours and higher pay as tending to prolong the high cost of living is believed to be significant. Furthermore, the President's clear-cut declaration on the present obligation of labor toward national welfare, promises to have timely and disciplinary weight. If a strike actually is called, it is thought it likely will apply more to the various tradecrafts about the plants than to the mill workers themselves and its effect will be limited accordingly. Because of the predominance of foreign and common labor, blast furnace operations may be more exposed to effects from a strike call.

Operations More Normal

The week has witnessed the clearing up of some of the points of disturbance that already have existed. Ore again is moving freely by reason of the return to work of the dockmen at upper lake ports. The loss of shipments sustained through the interruption has not been important because the season's ore demand has been backward and many of the boats were not scheduled to run to the close of navigation. Mill and furnace production in the Chicago district which was affected by the lack of cars and locomotives growing out of the shopmen's walkout, has been restored to about a normal basis. All the plants of the American Steel & Wire Co. at Cleveland, with the exception of the Central group of furnaces, now are operating, though not at full capacity.

New Orders Declined

Increased difficulty of producers in various lines to accommodate new orders more plainly is manifest. Several leading makers of steel bars have withdrawn from the market and will promise deliveries only against regular contracts and these not before an extended date. One large independent company has put its price up $3 or to 2.50c, Pittsburgh, to the outside trade but still applies the old price to regular customers. In sheets much tonnage is going begging. Where certain producers have had their output interrupted by labor disturbances they are seeking to obtain tonnage from other mills. The continuing shortage of sheet bars is a factor. A similar oversold condition obtains in lap-weld pipe. Wiremakers are so filled up as to keep them well occupied to Jan. 1 and despite their care in accepting new business, the tonnage forced upon them is a cause of concern. Consumers of tin plate, it now is clear, have sharply underestimated their needs this year and it is a question how they can be accommodated. Large export inquiries, one for 100,000 boxes and another for a larger amount, probably will have to be surrendered to foreign mills.

Export Sales Holding Up

Despite the sharp slump in general exports in July, foreign business in iron and steel seems to have been affected at a minimum. August sales foot up a heavier total than the preceding month notwithstanding the aggravated exchange situation. A large transaction is about to be closed whereby Chile will place heavy orders for railroad equipment in this country.

Pig iron selling for next year is going on in a desultory way because producers still are inclined to hold it in check. The general volume of sales and inquiry continues lighter. At Chicago two lots of 10,000 tons each of basic have been closed by St. Louis consumers. Most producers are inclined to ask higher prices.

AUGUST 28, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Do Not Fear Labor's Threat

DESPITE threats labor leaders have made as to what they are going to do to the steel industry, steelmakers do not fear anything even remotely resembling a general tieup of their plants either now or in the near future. While strikes are numerous, and may be more so while the cost of living remains high, the percentage of the plants affected, it is confidently believed, will be trifling, because the record of the past shows that not much progress ever has been made by the labor unions in organizing the steel industry. It is regarded as assured by the leaders in the industry that the methods of direct dealing between men and employers, almost universally followed in the steel industry, will continue to be pursued successfully. An encouraging manifestation of the amicable relations between employers and the mass of the employed in the steel industry is the adoption of a sound and sane position by the workmen of the Midvale Steel & Ordnance Co. in deprecating the agitation for a shorter work day and an increased wage.

That the labor situation in the country as a whole is serious, however, cannot be denied. The prostration of the railroads by a general strike would be little short of a disaster. One of these factors of the situation is the great stress laid upon the importance of the worker during the war, and the flood of propaganda which exalted him to such an extent that he has been led to make demands wholly unjustified.

The principal factor, however, is the high cost of living. Present prices on iron and steel, when contrasted with other commodities, compare favorably with those before the war, and the lack of any indications that there are to be early advances of a general character in finished steel prices, reflects the willingness of the industry to refrain from adding to the burden of living. While this attitude toward prices is the correct one at the moment, it is not one that can have more than a slight effect upon the ultimate trend of the economic scale. As a matter of fact, the recent pernicious tendency in labor and the cost of living proceeds from one basic cause. This is the fact that labor is scarce. In few sections of the country are there enough workers to man the industries, and in most there is a decided scarcity. To render the situation more acute, it is estimated by competent authorities that fully 2,000,000 men are planning to leave the country as soon as they can get away. More than 1,000,000 already have made application to the steamship companies for passage and a large percentage of these have made deposits for their transportation.

What is needed to combat the high cost of living is a sufficiency of workers to meet our requirements, and the solution of this problem will prove a most difficult one, and one that only time will completely solve. The solution, however, will be greatly stimulated by such work as is being carried on by the Inter-Racial council in Americanizing the foreign-born element of our population so that it will regard this country as home. But of more importance is our attitude toward immigration. The present situation can be rendered only worse by the carrying out of any radical views which would discourage immigration. What is vitally needed is an intelligently discriminating but liberal immigration policy, which will bring needed workers into this country and by eliminating the shortage of labor, lead to a restoration of easier conditions.

Are More Sheet Mills Needed?

NEW sheet mills are springing up in various parts of the country right along and therefore, it becomes pertinent to inquire if sheets will become a drug on the market because of increased capacity? Present conditions do not point that way. The principal reason for the construction of sheet mills today is found in the demand which has come forth in late years for this product. The farmer not

long ago used wood for roofing and siding his barns, sheds and silos. Along came salesmen who convinced him that galvanized sheets were the most economical material in the long run for his purpose, inasmuch as they are easier to attach, easier and cheaper to keep in repair and are fireproof. The farmer, although skeptical at first, became educated, and is now demanding this commodity in good-sized tonnages. He is helping and will continue to help consume sheets.

The coming of the automobile was another factor which resulted in absorbing a large percentage of the sheet output. The production of automobiles has increased steadily since the beginning of the industry and such heavy demands for highly-finished sheets for making bodies, hoods, etc., have come about within the last three years that many sheet-makers began catering solely to this class of the trade, leaving their old-established customers to forage for their several thousand tons of the common grade sheets yearly. Surely there is room for new mills to take care of this cast-off business. If automobile production should increase as much in the next five years as it has in the past five, it is doubtful whether the mills which specialize on highly-finished sheets will be in a position to meet the demand from this particular class of the trade.

While the automobile industry is perhaps the largest consumer of sheets, makers of office furniture, roofing products, street cars, railroad coaches, tanks, boilers, stoves and enameled ware must not be overlooked. These makers patronize sheet mills regularly and their yearly business at least would pay the interest on the capital required to build several new mills.

Steel Scales Economic Barriers

AN important change in the export trade of the United States is already beginning to show itself. This change has already been officially announced in the statistics for July, during which month the volume of exports declined radically while the total of imports made the greatest gain in the history of the country. It is with satisfaction that the iron and steel industry has observed that the exports of these commodities have not followed the trend of foreign business in general. At the moment there are no indications that these materials will be affected in the same way that other American products are faring in foreign markets.

Exports of iron and steel during July did show a slight decline but they have increased during August. This increase has been in face of the very adverse conditions abroad. The industrial unrest throughout Europe and the radical decline in exchange rates were deterrent factors but the volume of iron and steel exports grew notwithstanding. It would seem that there is such an urgent necessity for such products abroad that the usual laws of international trading have been temporarily set aside in the case of steel.

It would be peculiar indeed were iron and steel sales to be made without regard to the natural law of economics. But this unique position of these particular exports is due to other factors. Europe will harvest a crop of sorts this year, but her industrial rehabilitation will not be complete until factories are restored. The latter require iron and steel products and for this reason the exports of these materials are likely to grow long after our exports of foodstuffs have declined.

Sound Principles are Demanded

THIS is not the only generation to suffer from the cost of living problem but the present problem is probably more nearly world-wide now than ever before. In France, in 1793, the guillotine was used freely to compel compliance with a series of maximum prices. Long before that, in fact, 1600 years ago, Emperor Diocletian of Rome was confronted with a crisis arising from popular unrest over the cost of living. So the emperor, in order to satisfy the desires of the people, fixed maximum prices on commodities, also on skilled and unskilled labor and even fixed the incomes of teachers, lawyers and other professional workers.

It might be mentioned, incidentally, that historians consider this act of Diocletian the beginning of the fall of ancient Rome. Today we hear the government being importuned from every side that it regulate everything. We see agitation for higher wages and shorter hours. Our government is trying to satisfy public clamor with promises of "sweeping investigations." We listen to "be it enacted theories" and put up with the idealistic visions of "ignorant dreamers." Yet all this will never in the wide world reduce the cost of living. In fact, such agitation is as much the cause as the effect of the predominate world issue. If the millenium seekers who are spreading far and wide their pernicious panaceas for all the ills of the masses do not stop somewhere within reason, human progress everywhere will be checked for generations. Increased production and still more production provide the only remedy for the high cost of living. President Wilson in his clear-cut, logical appeal to the public in connection with the demands of the railroad shopmen, to call a truce upon continuing wage contests, gives a cue to the whole country and calls the nation back to sound and elementary principles from which it has been straying dangerously. His message should have a wholesome and salutary effect.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 602 AND 604

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	27.00 to 27.25
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	29.75 to 32.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$30.50 to 31.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 28.50
No. 2 Northern, Boston	32.90
No. 2 foundry, Cleveland furnace	27.25
No. 2 foundry, Ironton furnace	27.75
No. 2 foundry, Chicago furnace	26.75
No. 2 fdry., Chgo. fce., 1920 del.	28.75
No. 2X, eastern del., Phila.	29.50 to 30.50
No. 2X, eastern, N. J. tidewater	29.35 to 30.85
No. 2X, eastern, Boston	32.90
No. 2X foundry, Buffalo furnace	28.00 to 29.50
No. 2 foundry, del., Philadelphia	28.50 to 29.50
No. 2 foundry, N. J. tidewater	28.35 to 29.85
No. 2 southern, Birmingham	26.75 to 27.50
No. 2 southern, Cincinnati	31.10
No. 2 southern, Chicago	31.75
No. 2 southern, Phila.	33.25
No. 2 southern, Cleveland	31.75
No. 2 southern, Boston	36.00
No. 2 southern, St. Louis	31.00
Virginia, No. 2X, furnace	29.00
Virginia, No. 2X, Philadelphia	33.10
Virginia, No. 2X, Jersey City	33.40
Virginia, No. 2X, Boston	33.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	28.00 to 29.00
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	39.80 to 41.80
Low phos. Lebanon, furnace	35.00
Low. phos. standard, Pittsburgh	40.00
Charcoal, Superior, Chicago	32.75

Coke

(At the ovens)

Connellsville furnace	$4.75 to 5.25
Connellsville foundry	5.50 to 6.00
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, Engish c.i.f. Atlantic ports	100.00 to 105.00
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.20
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	32 to 34 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.62c to 2.77c
Bar iron, refined, Pittsburgh	2.75c
Bar iron, common, Pittsburgh	2.35c to 2.50c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	38.00 to 40.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Pili g S r D Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET, MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No 10, open-hearth, Phila.	3.795c

Full sheet schedule page 602.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 602.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$58.80
Four-inch, New York	57.30
Six-inch and over, N. Y.	54.30
Six-inch and over, N. Y.	52.70 to 53.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.75 per bundle, mill.

Cotton ties, 3000 bundles and over, $1.73 per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	3.10c off
Hot pressed, square tapped	2.85c off
Hot pressed, hexagon blank	3.10c off
Hot pressed, hexagon tapped	2.85c off
Cold pressed, square tapped	3.00c off
Cold pressed, square blank	3.25c off
Cold pressed, hexagon blank	3.25c off
Cold pressed, hexagon tapped	3.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Aug. 27, 1919	Average prices July, 1919	May, 1919	August, 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	32.75	31.75	31.75	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
*Southern, No. 2, Birmingham	26.75	25.00	26.25	33.00
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa	27.00	26.50	28.80	51.00
**No. 2X, Virginia, furnace	29.00	26.50	27.50	51.90
*No. 2X, eastern del., Philadelphia	29.75	29.50	30.10	53.40
Ferromanganese, 80 per cent, delivered	110.00	111.00	130:00	250.00†
Bessemer billets, Pittsburgh	38.50	37.30	38.50	47.50
Bessemer sheet bars, Pittsburgh	42.00	40.80	42.00	51.00
Open-hearth sheet bars, Pittsburgh	42.00	40.80	42.00	51.00
Open-hearth billets, Pittsburgh	38.50	37.30	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	4.914
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.62	2.62	2.50	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	4.914
Tank plates, Pittsburgh	2.65	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	10.164
Sheets, blk., No. 28, Pittsburgh	4.35	4.31	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.51	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.71	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.75	4.00	3.72	6.00
Connellsville foundry coke	6.00	4.90	4.35	7.00
Heavy melting steel, Pittsburgh	21.50	19.90	15.45	29.00
Heavy melting steel, eastern Pa	19.00	18.85	15.30	32.80
Heavy melting steel, Chicago	20.00	19.40	15.40	29.00
No. 1 wrought, eastern Pennsylvania	27.00	24.70	21.90	46.24
No. 1 wrought, Chicago	22.00	21.20	17.05	33.50
Rerolling rails, Chicago	26.00	24.70	17.45	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Basic Orders Placed at Chicago

Two St. Louis Consumers Take 10,000 Tons Each and Other Lots are Placed — Furnaces Still Hold Back on 1920 Orders But Increasing Tonnage is Being Urged Upon Them—Prices Tend Upward

Chicago, Aug. 26.—Selling of basic iron after that grade had been unusually quiet for some time has marked the past 10 days in the Chicago district. Two sales of 10,000 tons each to melters in the St. Louis district have been added to by a number of smaller lots, aggregating about 10,000 tons. Included in the latter is one sale of 500 tons to a Milwaukee melter. General inquiry is good, although somewhat less than was the case during the past few weeks, slackness of demnad apparently being the result of labor uncertainty. Many foundrymen feel that their ability to keep their plants going at capacity is somewhat problematical on account of strikes. A recent sale of 1500 tons of foundry iron, silicon 2.25 to 2.75, was made for delivery in five days. A malleable user with large tonnages on contract who could not obtain his iron promptly has bought 1000 tons for immediate delivery from a seller who had it on cars. A Wisconsin foundry recently took 500 tons of foundry iron. The American Steel Foundries is inquiring for standard bessemer and probably will take 1500 to 2000 tons. Most inquiries are for small lots, carloads predominating. Increase in production is being brought about. The Northwestern Iron Co., Mayville, Wis., has blown in its idle stack and the stack under repair at Federal furnace, South Chicago, will become active within a week. One of the Iroquois stacks, South Chicago, being extensively repaired, will be blown in before the end of the year. The other idle stack at this plant has been producing ferromanganese for the Miami Metals Co., but recently has been cold. It will be started on foundry iron in a short time. Silveries are almost unobtainable and a recent inquiry by a Wisconsin melter for 4000 tons has not been placed. This buyer is willing to take the whole tonnage during the present year or have deliveries extended to July 1, 1920. Jackson county producers are entirely out of the market and Red River furnace is out of blast. An accommodation purchase of 35 tons of 10 per cent bessemer ferrosilicon was made recently to meet an emergency, the buyer taking this alloy at $49.75 per ton to use in place of silvery iron which would have cost $44.75 had it been available. Superior charcoal iron makers are practically out of the market for 1919 delivery and only one is known to have opened books for next year. This maker is quoting 1920 delivery at a $2 advance.

Sell 1920 Iron in Boston

Boston, Aug. 25.—Pig iron prices are stiffening. Southern furnaces particularly seem indifferent to new business, and each week sees a higher price tacked on to the schedule. This is due partially to export shipment, but it is mainly the result of complete confidence in higher future prices. One furnace is storing its production as fast as possible, making little attempt to dispose of any iron at present. Virginia furnaces as far as they affect the New England consumers are still out of the market. Some eastern Pennsylvania producers have opened their books for 1920 business and have made sizable sales in New England during the last week. One thousand tons was sold to a Massachusetts consumer and 1200 tons to an eastern Connecticut consumer. Both orders were for first half delivery at $30 at the furnace for No. 2X eastern (2.25 to 2.75 silicon) iron. Five hundred tons of eastern Pennsylvania iron of 3 and over, silicon content, went to a Rhode Island consumer for $32 at the furnace. Small tonnages of Buffalo iron have been placed for balance of the year delivery at prices ranging from $29 to $30 at the furnace for No. 2X eastern (2.25 to 2.75 silicon). Nothing in this latter district is now being sold here for 1920. The furnaces which have in the past few weeks been offering new year deliveries have obtained the desired backlogs and are now holding off for higher prices. It is estimated that 25,000 tons have already been sold for 1920 delivery and as the total New England consumption for the first half is approximately 200,000 tons, it is evident that active buying is not far off. Usually from 25 to 30 per cent of the first half's business is placed before Oct. 1, which means that if the present year is no exception, there are 35,000 or 40,000 tons to be sold during the next month. The estimated total of sales through Boston dealers during the week is 6500 tons.

Limited Selling for 1920

New York, Aug. 25.—Although the eastern pig iron market has been quiet during the past few weeks, the volume of business booked was fairly large. This business was comprised entirely of small lots and there was a lack of spectacular developments. Most of the current bookings were for this year. Sales for 1920 were slightly larger during the past week than in preceding weeks, but on the whole, the business for next year still is on a limited scale. Furnaces generally are unwilling to book 1920 business or are doing so only when urged by regular customers. Prices on foundry iron for first quarter done

during the past week range from $30.25 to $32, eastern Pennsylvania furnace, for 2.25 to 2.75 silicon. The same variation applies to this year. Foundry iron for the remainder of this year may be had at $28.25 to $29.25, eastern Pennsylvania furnace, for 2.25 to 2.75 silicon and $1 less for 1.75 to 2.25 silicon. Comparatively little Buffalo iron is being sold in this district. A Virginia maker, who has been selling high manganese and high silicon at $26.75, furnace, for 1.75 to 2.25 silicon, has withdrawn temporarily. Malleable may be had from an eastern Pennsylvania furnace at $27.75 to $28, furnace. Central Pennsylvania furnaces have participated in the business booked in this district during the past week for both this year and in 1920. Prices on charcoal iron for the remainder of this year and for first quarter are $36.35, Buffalo, for 2.62 per cent silicon and higher; $35.85, Buffalo, for 2.50 silicon, and $35.35, Buffalo, for 2.25 silicon. A western consumer has an inquiry out for a round tonnage of low-phosphorus iron. Export business during the past week includes one lot of 500 tons of hematite and several lots of foundry. Export business continues disappointing.

Bookings Fairly Good

Philadelphia, Aug. 26.—Fairly good bookings characterized the pig iron market here during the past week. The principal business consisted of a purchase of 4000 tons of foundry iron for this and next year by the J. L. Mott Co., Trenton. This order was divided among several furnaces. Numerous lots of 1000 tons and smaller for this year and some for next year have been placed. This business generally was done at prices equivalent to $28.50 to $29.50 delivered Philadelphia for 2 plain (1.75 to 2.25 silicon) for this year with No. 2X (2.25 to 2.75 silicon) $1 higher while first quarter is bringing $1 to $2 higher than this year. A willingness to sell for first quarter still is far from general. In fact only a few makers will sell beyond this year. A fair amount of new inquiry is out. This includes 500 tons of malleable for the rest of the year for Stanley G. Flagg & Son, Pottstown, Pa., 1000 tons of foundry iron 1 to 1.25 silicon for last quarter for the Pennsylvania railroad, 1000 tons of foundry 1.75 to 2.25 silicon for November-December-January for the Niles, Bement Pond Co. and others. The United States Cast Iron Pipe Foundry Co. continues a heavy buyer. Malleable can be had at $27.75, eastern Pennsylvania furnace as minimum although some malleable has been bought by eastern consumers at $29 Buffalo. Eastern buyers of basic are well supplied and there is no inquiry for this grade. An eastern steelmaker who has been a seller of basic lately has decided not to market any more of this grade. Incidentally eastern makers say there is not likely to be much more business at present level for basic because of the high cost. Low phosphorus is featured by some small inquiries including 500 to 1000 tons for a western plant of the American Steel Foundries. For copper-free low phosphorus $37 eastern furnace now is the minimum asking price. There is a fair amount of export pig iron inquiry including one lot 7000 tons of basic but actual sales are small, they include one lot of bessemer and several round tonnages of foundry iron.

A Virginia furnace which has been selling high manganese and high silicon foundry based on $26.75 furnace for 1.75 to 2.25 silicon has gone out of blast temporarily and has withdrawn from the market. No Virginia foundry obtainable here now at less than $28 furnace for No. 2 plain and $29 for No. 2X.

Another Maker Booked Full

Buffalo, Aug. 26.—Another Buffalo maker has retired from the pig iron market for this year's delivery. Quotations are being made on next year's iron only to old customers. This interest probably is oversold on 1919 iron. It closed its 1919 books with the sale of approximately 4000 tons of No. 2X foundry (2.25 to 2.75 silicon) at $28. A price of $29 also was quoted on some No. 2 X iron for this year's delivery. The tonnage of 1920 iron sold by the interest is small as the labor situation is causing furnaces to hesitate booking for the future. The inquiry probably aggregates 10,000 tons, mostly for foundry iron. Another interest which retired earlier is back in the market for a limited tonnage. Available capacity is being rapidy taken up and one transaction included the sale of 1000 tons of No. 2X at $29.50.

Interest Largely in Foundry

Pittsburgh, Aug. 26.—While the inquiries for foundry iron persist and represent a fairly sizable aggregate, the actual turnover in this class is moderate. In the steelmaking grades almost nothing is going on save for the inquiry from the American Steel Foundries for the requirements of its Alliance, O., plant for the last four months of this year. This inquiry calls for from 5000 to 10,000 tons of basic and about 500 tons of bessemer It is reported that a portion of the basic has been placed but no details as to quantity and price are made public. Sales of bessemer iron have been confined almost exclusively to carload lots but such business has been at the full market price of $27.95 furnace. In fact the market is showing firmness notwithstanding the dullness. Among recent sales of foundry was one of 500 tons of No. 2 (1.75 to 2.25 silicon) for last quarter shipment for this district at 27.25 furnace, or at 50c a ton over the market. Several of the recent sales of gray forge also have been at a premium of 50 cents a ton. Strength in the steelmaking grades in the face of the light demand may be explained by the fact that resale tonnages long since have been cleaned up while the danger of competition from steel companies whose producing costs average much lower than those of the merchant furnaces vanished when the demand for steel provided these producers with an outlet for all of their accumulated iron stocks. Demand for low phosphorus iron has tapered along with that for other grades. No changes lately have occurred in the list of active and idle stacks, but at least a couple of merchant stacks which it was expected now would be in blast still are idle due to the fact that the ore shipments have been held up by labor troubles at the upper lake docks. These are the Anna furnace of the Struthers Furnace Co. and the Ella furnace, West Middlesex, Pa., operated by E. W. Mudge & Co., Pittsburgh.

Foundries Need More Iron

Cleveland, Aug. 26. — A good many of the foundries in Cleveland territory apparently are receiving new business at a heavier rate than they had anticipated when they recently closed for their pig iron requirements. As a result, a number of these shops now are coming into the market for additional tonnage ranging from a few hundred to 1000 tons. Inquiries of this kind are quite numerous. In some cases it is apparent that the consumers are seeking to overbuy their needs and carry the surplus into next year. These consumers are finding it difficult to locate much iron on the $26.75 basis for 1.75 to 2.25 silicon. The Cleveland furnaces continue to hold this grade at $27.25 equivalent to $27.65 to $27.75 delivered to Cleveland consumers and have been selling some tonnage on this level. Generally new orders being taken by the furnaces and new inquiries are in much lighter volume. Many producers are comfortably sold against their output to Jan. 1, and are not soliciting or encouraging 1920 business, although they are taking some tonnage for the latter position when it is brought before them by regular customers. One week of foundry and malleable grades interest sold 8000 to 9000 tons in the about equally divided between this year and next and the price in all cases was on the $26.75 basis. A Canton, O., interest which recently was figuring on 5000 to 6000 tons of basic, has made purchases against this requirement. Shipments of iron are going forward freely and furnace stocks continue to fall.

Refuse to Quote for Next Year

Cincinnati, Aug. 25.—Inquiry for foundry iron for first and second quarter shipment is heavy, but so far no quotations have been named for any delivery beyond Dec. 31. Rumors that some sales have been made to favored customers probably originated through requests of some buyers to extend shipments of iron due in the last quarter into next year. Higher prices for next year's delivery appear to be inevitable, according to reports from various sellers. Several inquiries for malleable have come to light, both for shipment during the remainder of the present year and in the first half of next year. It is understood that nearly all the foundry iron offered last week at $26.75, Birmingham, has been sold. Most sales are now on a basis of $27.50 for iron with 1.75 to 2.25 per cent of silicon. Some firms are maintaining a difference of $1 between this grade and the next higher (2.25 to 2.75 silicon), but one house is quoting $1.10 per ton higher.

Still Quotes $26.75 Basis

St. Louis, Aug. 25.—This week has shown an increasing firmness in the market, so far as southern iron is concerned, although at least one furnace is still quoting $26.75, Birming-

ham basis, for 1.75 to 2.25 silicon, for delivery over the balance of this year. Some iron changed hands recently at $27 to $27.50, Birmingham basis, for 1.75 to 2.25 silicon, prompt shipment. Inquiries for both prompt and future shipment are fairly good, although the tonnage involved is limited. It is confidently expected a number of the larger buyers in this territory will be in the market soon, this time to cover for an additional tonnage over what they previously bought for last quarte shipment.

Southern Iron Market Firm

Birmingham, Ala., Aug. 26.—Sales of pig iron are still of the spot class although a little tonnage is taken on occasionally for delivery during the last quarter. No announcements have been made as to prices for 1920, although it is said an increase of $2 might be satisfactory. The market is firm. Sales reported during the past week aggregate more than a month's make. Production in Alabama for August will show a material increase over last month. The make in July was 14,000 tons greater than in June. A further increase will be made in the next two weeks by the blowing in of another of the Sloss-Sheffield Steel & Iron Co.'s furnaces, the Woodstock Iron Co.'s furnace at Anniston, and possibly the furnace of the Woodward Iron Co. at Woodward, now being repaired.

Coke Advance Maintained

Spot Firm at $4.75, Ovens, While Operators Ask $5 for September Shipments — Foundry Coke Selling at $6—Little Done in Contracting

Pittsburgh, Aug. 26.—Recent advances in prices of coke are well maintained, and on standard 48-hour fuel on spot or prompt shipment they have been slightly bettered. A week ago it was possible to pick up supplies at $4.50 and that price was exceeded only in a few instances. Today the market is not quotable below $4.75, ovens, and it is claimed that coke with a high percentage of sulphur is selling at that figure. This is not surprising in view of the fact that general production is barely sufficient to meet the demand. While more merchant ovens are in operation than recently, the increased output easily has been taken care of by the larger contract obligations and spot demands. As high as $5, ovens, is being asked, but as yet that price has not found basis on direct sales from producer to consumer. Little has been done lately in contracts over the remainder of the year and prices are merely nominal. On such business the general asking price is $5.25, ovens, but $5.50 is being quoted by a few operators. On shipments for September operators are asking $5, ovens but thus far they have not been able to book much business at that figure. The market for by-product coal continues to show a good deal of strength, with sales of Connellsville coal being reported as high as $3, and in a few cases higher. While some ovens are coming into operation in the region, the movement is far from general and it is declared that a number are being allowed to remain idle until a $5 market is established. That price would make coke shipments more profitable than $3 coal. Standard foundry coke is selling on spot at about $6, ovens, and a few contracts for the remainder of the year also are reported at that price. More is asked on both spot and contracts by some operators who are not anxious for business, but with some tonnage available as low as $5.50 the market is more fairly quoted at from $5.50 to $6, ovens. Connellsville production for the week ended Aug. 16, is estimated by *The Connellsville Courier* to have been 236,182 tons, as compared with 222,170 tons in the previous week.

Coal Supply Worries Coke Producers

Boston, Aug. 25.—The uncertainty in the supply of coal for by-product coke production, together with the stiffening prices in beehive coke, has resulted in a decided upward tendency in the local coke market. Every indication at present points to a September advance in the existing sliding scale contracts. These contracts have been based on the Connellsville market from month to month, and a $6.50 value in the Connellsville production will probably govern the September rating. The price of coke at present on all new contracts covering balance of the year is $10.40 and on contracts extending through the first quarter is $11.40, though in some cases contracts at $10.90 have been taken for that period. A few contracts have been made for the first half of 1920 at a flat rate of $11.90, and the local producer reports a reluctance to book any considerable tonnage at that figure.

Pay Premium at Cincinnati

Cincinnati, Aug. 25.—Connellsville coke for spot shipment is bringing a slight premium. Some furnace coke has changed hands recently at $4.50, ovens, while foundry coke is bringing from $6 to $6.50. Oven operators are slow in making further sales for next year's shipment until the question of a freight increase is settled.

Market Shows Strength

St. Louis, Aug. 25.—The coke market is strong and the ovens in the Connellsville district are behind with shipments. Spot coke is being quoted all the way from $5.50 to $6.25 at the ovens, for 72-hour foundry grade. Box cars are scarce. Customers in many instances are willing to pay premiums for coke in transit.

Ore Moving Freely Again

Dockmen's Strike Called Off, Boats Now Taking on Larger Tonnages—Market is Dull, But Renewed Buying is Expected

Cleveland, Aug. 25.—With operations resumed at all upper lake ore docks and a free movement of vessels, prospects for a large amount of business this fall are brightening. The present week is one of the dullest of the entire season so far as the selling of ore is concerned, but the dullness is not all due to the fact that furnaces have contracted for their requirements, and ore companies expect a renewal of buying. A peculiar feature of the situation is that while some interests have contracted heavily to protect themselves well into next season's operations, others have not covered their requirements for the balance of this year. The former have been moved largely by the possibility of an increase in the price of ore next spring, while those who are not buying much beyond current requirements say they do not wish to stock up with "high-priced" ore. Ore companies are notifying prospective patrons that they cannot guarantee deliveries on late orders. Although the strike of dockmen held up shipment of more than 5,000,000 tons of ore that loss is not so important in their calculations as the statement that the grain shipment this fall is to be extraordinarily heavy. Also, there is no assurance that railroad men and the railroad administration will be able to arrive at a satisfactory settlement.

Shipments by independent ore interests this year are expected to be considerably below those of 1918, although the total of all ore tonnages shipped from the Lake Superior district will not show a serious falling off from the total of last year. Independent interests declare that the United Steel Corp. has increased its shipments above those of 1918. It is the large volume of the corporation's shipments that is expected to adjust the scale. The corporation dipped heavily into its reserves last year and ever since the season opened has been busily stocking up. Within a few hours of the time the dockmen's strike was called off barges of the Pittsburgh Steamship Co., which had been ordered laid up for an indefinite period were on their way to the head of the lakes.

Practically all of the docks are now operating with full crews, except the Allouez dock, where only one-third of the usual number returned to work Monday. Work was resumed at Escanaba Monday, men at the other docks havings gone back last week. Dock office men at Escanaba are out.

A majority of the ore companies report that the strike did not affect them to any appreciable extent. As a natural consequence of the backward season many boats were coming down loaded to but two-thirds of their capacity. Now they are loading to capacity, and much of the loss is expected to be made up.

Scrap Market Softens

Consumers Show More Marked Indifference and Tighten Inspections—Dealers Still Optimistic—New England Situation More Active

FOR COMPLETE SCRAP PRICES SEE PAGE 604

Pittsburgh, Aug. 26.—Although scrap dealers here continue to take a cheerful view of the situation and to back up their views by purchases, the market is hardly as firm as it has been. Not only are steel manufacturers maintaining an attitude of indifference but a number of them have grown more particular in the matter of inspections. With rejections increasing the offerings seeking an outlet are too large for sales at prices which prevailed recently. The rejection taking place at the plant of a consumer, it is necessary usually for the shipper to reconsign promptly to save demurrage charges, and this is possible only by shading the price. The present turnover is probably the smallest in months and prices are being established on carlot sales. Such business does not provide a safe guide on values of round lots. The fact that dealers are paying $20.50 for heavy melting steel is rather indicative of confidence in an ultimately higher market, for material laid down on the yards at that figure could not be sold at a profit much under $24, since unloading and loading charges amount to in excess of $2 a ton. Sale of 500 tons of plate shearings at $24.50, delivery valley district, recently was made here. No. 1 cupola cast recently sold at $25.50 and dealers are paying as high as $24 for that grade.

Boston Market is Active

Boston, Aug. 25.—Heavy melting steel scrap has swung back after the sharp decline of last week and is now quotable at $16, dealers' paying price. This is in the face of no outside sales, for the large steelmakers have not been buying in New England since the heavy Pittsburgh purchases of two weeks ago. The demand from foundries for No. 1 machinery is strong and it is difficult to find any of this grade coming into the market. The foundries are in many cases buying direct from the source of supply, as fast as the scrap accumulates, and dealers are being forced to pay high prices for their requirements. A price of $28, delivered, is the average on such transactions. Stove plate has been among the grades to follow the general price advance. A Norwood, Mass., consumer bought approximately 500 tons of this grade at $22 delivered and other lots went to Worcester and Connecticut points. An eastern Pennsylvania consumer bought 100 tons of forge scrap at $15 delivered. The local dealers' price in this grade is $10.50 to $11. Toolmakers and special manufacturers have been coming into the scrap market. Eight carloads of wire scrap went to a Worcester consumer at $12.50 delivered. A small tonnage of rerolling rails for a special purpose sold at $20.50 delivered to a Massachusetts consumer. Heavy cast iron scrap has advanced in some cases, and a small tonnage during the week was sold to an Ansonia, Conn., consumer at $21.50 delivered. Several hundred tons of railroad scrap were bought by a Worcester concern at $18.50 delivered. The government ordnance department here awarded several lots of scrap during the week on bids recently received. Of these lots the most notable was that of 1000 tons of steel scrap sold to the Buffalo Bolt Co., Buffalo, at approximately $29 per gross ton f.o.b. Worcester, Mass. Quotations are being asked on 500 tons of cast iron pipe by a Norwich, Conn., concern. Other lots of pipe will soon be scrapped as a result of reconstruction of municipal water works systems.

Buying Volume Improves

New York, Aug. 25.—Demand for iron and steel scrap has shown considerable improvement here during the past week. This betterment was reflected particularly in heavy melting steel. Eastern Pennsylvania consumers who recently bought at $19.50 delivered and then reduced their price to $19, now are paying $18 to $18.50 delivered which makes the market on this grade in New York, $15.35 to $16 per gross ton. Despite this slight decline, the tone of the market is a good deal better, not only because of the business which has been transacted, but because the trade now is less anxious as to the effect of any labor troubles which may be in prospect. Dealers now believe that the danger of labor troubles has been greatly exaggerated and that the present situation is going to be ironed out without any serious consequences. As a result of the withdrawal of the embargo by the New York, New Haven & Hartford railroad, it again is possible to ship scrap in New England. In addition to steel scrap, other grades are active. The foundries are buying liberally of cast scrap and there also is active buying of wrought.

Consumers Lower Offers

Philadelphia, Aug. 26.—Taking advantage of the depressed scrap market in Pittsburgh, some eastern consumers now are offering $18 and $18.50, delivered, for heavy melting steel, but no sales are reported at these figures as the dealers continue to hold for higher levels. Only limited business was transacted in heavy steel during the week. This consisted of further buying by the Lukens Steel Co. The possibility of a railroad tie-up following the President's refusal of the shopmen's wage demand has upset scrap dealers and some of the latter refuse to buy or sell until the present uncertainty is removed. However, the entire trade has accepted the President's action with enthusiastic approval and the expectations expressed that it will have the ultimate effect of straightening out the labor situation. The heavy output of machine shop borings and turnings during the war and the fact that the blast furnaces have become accustomed to use these grades on a large scale now is proving a source of trouble to the regular users, the steel plants and rolling mills. These grades still are in good demand by the blast furnaces at prices which make it difficult for the mills to buy their specifications at less than $15, delivered. All foundry scrap is in good demand.

Mills Are Holding Off

Buffalo, Aug. 26.—All grades of scrap are firm, but there has been little selling. Dealers are well supplied with outside orders, and are not trying to force sales. Mills hesitate to buy scrap and scrap men are just as willing to hold off, because they believe they may get better prices.

New Business Drags

Cleveland, Aug. 26.—So little business is being done in any grade of iron and steel scrap that scarcely a ripple has been created in the market. Heavy melting steel consumers appear to be out of the market for tonnages until the labor situation clears, but it is the belief of dealers here that the mill and furnace strike talk has been given its quietus by the appeal of President Wilson to the railroad shopmen and the logical resolutions of the Midvale Steel & Ordnance Co. employes in convention at Atlantic City. Heavy steel is off a little to $20.25 to $20.50, cast borings to $15 to $15.50 and bundled sheets to $15.50 to $15.75. All wrought scrap quotations are unchanged as this grade is scarce.

Chicago Market Stagnant

Chicago, Aug. 26.—Both buyers and sellers of iron and steel scrap at Chicago are marking time and the market is almost bare of transactions. Consumers apparently believe they will not lose by waiting, and while output of steel and iron products is heavy, there seems to be sufficient scrap in the hands of users to meet their current demands. Dealers, on the other hand, are trying to sell only such scrap as is already on tracks and ready to be moved, holding their yard scrap for the rise they feel certain must come without great delay. The only railroad list at present current in this market is one from the Rock Island offering 300 tons.

Cincinnati Market Dull

Cincinnati, Aug. 25.—The scrap market is slowing down. Melters are not disposed to buy more for future shipment, and sellers seem content to wait until prices regain some of the lost ground. Complaints of a car shortage are general, and many shipments to outside consumers are delayed. Heavy melting steel is still in slack demand, and while prices have not been changed they are very weak. Cast borings and steel turnings are also weak, although the supply of the former is said to be limited. Railroad offerings are light.

Southern Market Slow

Birmingham, Ala., Aug. 26.—Scrap iron and steel dealers in the Birmingham district are waiting for an improvement in the market. The most active grade is No. 1 cast, foundries

still using this product in the place of pig iron. Heavy melting steel is moving slowly, the largest consumer in the territory being unwilling to pay what dealers ask. Country scrap is coming in more freely, and railroads are still offering material. Corporations are not willing to sell at present prices. Inquiries are being received from numerous directions. A car shortage is being felt by the dealers.

More Tonnage

Being Forced on Wire Mills Than Desired—Price Spread Shown

New York, Aug. 25.—As a result of the improved labor situation, reflected in the withdrawal of embargoes on freight in New England and elsewhere, wire makers again are able to ship on a basis that is nearly normal. Due to the extent to which they already have business on their books, however, they continue careful as to new bookings and are accepting orders only from regular customers, for tonnage in proportion to the deliveries to these users in 1917 and 1918. Despite this care in accepting business, however, the mills are concerned with the amount of new tonnage which they find it necessary to take. They now have enough business on their books to keep them occupied through the remainder of the year. Current demands are coming from all sources; both manufacturers and merchants are taking all the tonnage they can get. The leading interest has not yet changed its price and there is no expectation that it will follow the recent advances of independent producers some weeks ago.

Little Free Tonnage

Pittsburgh, Aug. 26.—Prospective production of wire and wire products in the next two months and in some cases even longer, is so thoroughly engaged that comparatively little is available against new inquiries, although most manufacturers are able to supply a little material to meet pressing demands from regular customers. One manufacturer here recently allotted among its several branch offices a small tonnage of nails at $3.50 a keg, Pittsburgh. This company did not follow the advance named by several other manufacturers, and aside from this willingness to take on a little business is still out of the market on third quarter business. Export demand for nails and plain and barbed wire is heavy and the report is current here that the United States Steel Products Co. recently raised its quotation on nails to $3.75, Pittsburgh. Mill operations are averaging about 80 per cent.

Meet Some Shading

Chicago, Aug. 26.—Conditions in the market for wire and wire products remain unchanged with the leading interest holding its schedule of prices at a level below that established by practically all independent makers. In the face of present conditions it has come to light here and there that these higher prices have been shaded but this practice is not general. Inquiry for wire and nails is heavy.

Sheet Orders Go Begging

Mills Booked so Heavily That They Remain Indifferent to New Business—Makers Seek Tonnage to Meet Deficits in Output

Youngstown, O., Aug. 25.—Buyers coming into the market here for sheets are finding it discouraging. Practically no sheets are available. The demand for all grades at present is as heavy as it was when the mills were on a wartime basis and with unsettled labor conditions, makers are showing no tendency to obligate themselves further than the fourth quarter. Many makers are booked with as much business as they can handle until Jan. 1. Plenty of new business is being turned away. Buyers who find producers in their own districts unable to handle their requirements are trying to make connections with mills here. They are not meeting with success, however, for the reason that the majority of sheet-makers here are out of the market. Inquiry for all grades is heavy. An inquiry for 600 tons of blue annealed is out this week. This material is wanted by a broker on the Pacific coast for shipment to Japan. A dealer, who recently contracted for the entire output of a certain mill of blue annealed rolling sheets from 7 to 14 gages, states a good business is being done in this direction. The new mill motor at the De Forest plant of the Republic Iron & Steel Co. is now on its trial run and it is expected the plant will be in operation by next Monday.

Demand is Active

Chicago, Aug. 26.—Consumers of steel sheets are inquiring for heavy tonnages of all grades, but without success in many cases, as most producers have their books well filled. Holders of contracts are specifying strongly, showing that the material is going into manufactured articles without delay. The leading independent in this district is forced by circumstances to refuse much business now being offered and in some cases has asked regular customers to inquire elsewhere to cover their requirements.

Demand Shows No Letup

Pittsburgh, Aug. 26.—Demands upon the makers of sheets show no material decrease; in fact, the contrary is the case with most of them. The American Sheet & Tin Plate Co., has practically all the business it can possibly handle for the remainder of the year without booking an additional ton, while the condition of the independents is equally as strong. Some of the manufacturers whose production is affected by labor troubles, are seeking assistance on their orders from the unaffected manufacturers and a good many buyers, who have been notified of the possible nondelivery against their orders as a result of the labor situation are seeking to place protective orders with other manufacturers. Large tonnages of such business are being turned down by the active producers who have some doubt about being able to meet the requirements of their regular trade. Sheet business is well distributed among the various kinds of stock and substantial export orders are being placed in addition to those from domestic sources. The American Sheet & Tin Plate Co., is running about 92 per cent of capacity with the independents averaging a little less due to the fact that the plants of a few of them are shut down as a result of labor troubles. No cutting of the March 21 prices now is noted, and some manufacturers who were active in this direction up to within a few weeks ago now are asking premiums over the regular market base of from $2 to $5 a ton.

Short Supply

Of Sheet Bars Still in Evidence—10,000 Tons Turned Down

Youngstown, O., Aug. 25.—Demand for semifinished material is running heavy in this district. The sheet bar market is particularly active. Inquiries for this material are not coming alone from local consumers but from users in scattered territories. One producer here turned down an aggregate of 10,000 tons last week, his mill not being in a position to roll any further tonnages until late in December. In some cases consumers are buying billets in fairly heavy lots from mills here and are having them converted into sheet bars at plants having slight gaps in their rolling schedules. A recent sale of 5000 tons of 4 x 4-inch billets was made at $41.50 by a maker in this territory. The leading maker of semifinished material remains out of the market.

Sheet Bar Supplies Inadequate

Pittsburgh, Aug. 26.—Although ingot production has gone forward quite sharply since the settlement of the railroad labor troubles, the situation in sheet bars still is difficult, comparatively few of the sheet mills getting an adequate supply. Few of the manufacturers actually have any sheet bars for sale and a valley maker recently quoted a premium of $8 a ton over the regular market base against an inquiry for 2000 tons for prompt shipment. The inclination of most manufacturers is to seek advances on sheet bars for immediate delivery, or reject the business. The market keeps well sold up on rolling billets and on skelp, but offerings of slabs are quite ample notwithstanding that an increasing tonnage of steel is being diverted from the slabbing mills into the more active channels.

Government Sells Steel

Chicago, Aug. 26.—The ordnance department is taking bids on 1265 tons of blooms and 320 tons of gun forgings, material left over in the hands of manufacturers when war preparations were stopped.

Bar Makers Avoid Sales

Large Producers Withdraw From Market—Independent Asks $3 More of Outside Buyers—Chicago Production Being Restored

Pittsburgh, Aug. 26.—Makers of steel bars are so heavily committed on squares and rounds of 1½ inches and smaller that they hesitate about taking additional orders and some actually have withdrawn from the market. New demand for the smaller sizes, especially for export, are urgent and large. Among recent export orders placed here was one for 2500 tons in which the specifications for each size were sufficient to engage a full turn of the mill. Demand for the larger sizes of rounds still is below normal but the small mill capacity is engaged to the limit and some manufacturers are pleased that current demand for small shapes which are rolled on bar mills are not heavier. The March 21 base is being closely adhered to by all makers while substantial premiums are being asked on those sizes that recent experience has shown cannot be turned out profitably at 2.35c. Just a fair demand exists for concrete reinforcing bars but as makers have some business before them current lack of activity is without effect on prices. Demand for iron bars is steady rather than active, with prices holding at the recent levels.

Chicago Demand Active

Chicago, Aug. 26.—Inquiry for soft steel bars continues strong and mills are booking a large aggregate of tonnage from all sorts of sources. Plants in the vicinity of Chicago which were severely affected by the railway shopmen's strike are getting back into their stride and have begun the present week in fairly good productive condition. During the days that cars were scarce, mills were kept operating as far as was possible and some material was piled in preparation for immediate shipment when cars were available. This material is now moving out readily. In some cases conditions of delivery are such that new business offered mills has been turned away.

Demand for bar iron is slack and consumers apparently are not interested in either prompt or remote deliveries. With the exception of one small mill, which is said to have conceded about $2 per ton, makers here are adhering closely to the prevailing price, 2.62c, Chicago. Demand for hard steel bars rerolled from rails is fairly good, coming from manufacturers only, reinforced concrete builders not seeking this class of material.

Want No Outside Tonnage

Cleveland, Aug. 26.—Several of the leading producers of steel bars now are out of the market, and it is understood one independent producer has advanced steel bars and small shapes $3 a ton to 2.50c, Pittsburgh, to other than his regular customers. The only deliveries that important mills now are promising are those against regular contracts and even these are so extended that they fall well beyond Oct. 1. Specifications are coming into the mills in heavy volume. Reinforcing bars continue in active demand and deliveries have lengthened so that some rerolling mills are not promising under eight weeks. A local construction interest inquired this week for 2000 tons for one job and 600 tons for another and is understood to have placed this business. A job for the American Body & Trimming Co., this city, for 250 tons is up. A bridge at Willoughby, O., taken by the King Bridge Co., will require 3000 tons of reinforcing steel. Reinforcing bars are firm at 2.35c mill, or Pittsburgh. The Franklin, Pa., rolling mill has shut down for repairs.

New Card Brings Complaints

Pittsburgh, Aug. 26.—Introduction by leading manufacturers of cold finished steel bars of a new card quoting a base price with extras, replacing the old list and discount method of quoting, has somewhat interrupted the flow of business from jobbers, many of whom in the East are complaining over the change. In the West, the new method of quoting has been accepted without complaint by the jobbers who are quoting a differential over the mill price, plus freight of $20 a ton on rounds and of $30 a ton on squares and hexagons. The complaint from the eastern jobbers is that the stock they have on hand must be written off to conform in price with the slight average reduction which the new card brought about, but the chief trouble seems to be that the jobbers were able to secure a wider margin under the old arrangement than is possible by the new card. New demands for cold finished steel bars steadily are increasing and come from a greater number of sources than was the case a few weeks ago. Some mills are running only about 60 per cent but the average is well above that mark.

Have Little to Sell

Philadelphia, Aug. 26.—Steel barmakers by reason of their mill schedules continue out of market excepting for tonnage which they are forced to take care of for old customers. Iron bars continue to be obtainable at 2.35c, Pittsburgh, although the usual price is 2.50c.

Bolt Market Strong

Chicago, Aug. 26.—Consumers of bolts and nuts are besieging makers with inquiries and with specifications on existing contracts. Most of this business is in moderate tonnages, as large users for the most part are well covered.

New Business is Lighter

Cleveland, Aug. 26.—Makers of nuts, bolts and rivets are busy on old business which has been under contract for some time. New business, however, is somewhat curtailed as are inquiries and an explanation is found in the general unrest in labor circles. Contributory to the attitude of uncertainty which prevails among manufacturers is the delay in effecting final peace. A few export inquiries continue to be received and orders from abroad reach makers from time to time. Much of the business now going through the shops of one maker consists of track bolts for the Cleveland Electric Railway Co., and other railroads, steam and electric. Several departments of one of the large plants are operating on a 24-hour day basis, with three 8-hour shifts. Some little difficulty still is being experienced in obtaining wire and bars.

Fleet Places Bolt Orders

Philadelphia, Aug. 26.—The new discount of 50 and 5 for machine bolts with hot pressed nuts larger and longer than ⅜ by 4 inches apparently is being maintained although low prices are being brought out by large lots for the Emergency Fleet corporation. More than 200,000 pounds of galvanized bolts and nuts have been awarded to the Pittsburgh Screw and Bolt Co. which was the low bidder with flat price of 4.85c Pittsburgh. From this figure the bids ranged up to 7.95c New York. On another lot of 43,000 pounds, for the Emergency Fleet corporation, the low bidders were Jos. P. Cattie & Bros., Philadelphia, at 5.15c Philadelphia and American Equipment Co., Morristown, Pa., at 5.25c Pittsburgh for machine and cariage bolts and 4.75c Pittsburgh for drive bolts.

Plenty of Business Booked

Pittsburgh, Aug. 26.—Makers of nuts, bolts and rivets are well provided with business for the present quarter and where labor conditions do not interfere, 100 per cent operations are the rule at the plants. Although prices have been revised upward considerably in the past month or so, expectations of further advances are held and makers have not yet opened their books to the jobbers for last quarter delivery.

Demand Fairly Good

Pittsburgh, Aug. 26.—Fairly good demands are coming to the makers of chain and while considerable room for improvement exists, production is somewhat curtailed by labor trouble at some of the plants and prices are holding steady at the decline announced late last month.

Higher Prices

On Cast Pipe Upheld in East—Larger Sizes Cut in West

New York, Aug. 25.—The advance in prices on cast iron pipe which became effective last Wednesday has become general and is being maintained. The market now is $54.30, New York, on 6-inch pipe, Class B or heavier and $57.30, New York, on 4-inch, Class B or heavier. A feature of the advance which was made last week was an increase in the differential between Class B and Class A pipe. Class A pipe and light gas pipe now are held at $2 per ton higher than Class B, and heavier sizes. Although there are no big tonnages to report, demand for

cast iron pipe continues of fair-sized proportions, being made up of numerous small orders. It is only in the export direction that the demand is disappointing.

No Special Change Noted

Pittsburgh, Aug. 26.—The situation here in tubular goods remains very much as it has been for several weeks past. Possibly new inquiries for lap-weld pipe are not quite so frequent nor so heavy as they were a short time ago, but this condition may be ascribed as much to a realization on the part of buyers of the futility of trying to interest manufacturers in taking quick-shipment business as to any tapering off in probable requirements. A number of small oil pipe line inquiries are on the market. Demands for buttweld pipe are growing steadily and depletion of warehouse stocks finds reflection in fuller operation of capacity producing smaller size pipe.

Large Sizes Weaker

Chicago, Aug. 26.—Cast iron pipe shops are overloaded with orders for small sizes, while larger sizes are not in much demand. Some quotations on the larger pipe have been shaded somewhat from the prevailing price. However, this has not resulted in much additional business and shops continue to be much out of balance, with comparatively little work for the pits in which larger pipe is produced. The United States Cast Iron Pipe & Foundry Co. has been awarded 1700 tons by the city of Chicago. It is probable that 3080 tons on which Detroit recently took bids will be divided between two makers. Bids will be opened Aug. 27 at Hamilton, O., on 1800 tons and on Aug. 29 at Spirit Lake, Iowa, on 370 tons for a contractor.

Plants Working Overtime

Birmingham, Ala., Aug. 26.—Cast iron pipe plants in the Birmingham district are starting up all pits that are in shape. Specifications continue coming in more freely, recent advances in prices apparently not having retarded business. Sanitary pipe plants are working overtime to supply the demand caused by building operations throughout the South and Southwest. Shipbuilding also affects the sanitary pipe market, not a little of the products of these plants going into ships. The melt of pig iron at cast iron and sanitary pipe plants is assuming proportions equal to what it was a few years ago.

Want Hog Island

New York, Aug. 26.—The Consolidated Steel Corp. is reported to be desirous of purchasing a part of Hog island for a shipping terminal. It is reported that the shipping board has requested the company to draft a definite proposal of purchase. The land is owned by the American International Shipbuilding Corp., but the government has an option to purchase until the shipbuilding contracts are completed. It is also said that the Drexel interests are anxious to obtain the whole island for a terminal, but no definite proposal has been made by them as yet.

Plate Orders Growing

Chicago Mills Now Well Booked to End of Year—Ship Awards to Lake Yards—Prices Show Softness

Chicago, Aug. 26.—Plate mills have booked sufficient business to take care of almost their entire output for the remainder of the year, the leading independent being especially well provided in this respect. General demand for plates remains good and some export inquiry is being received. One just under consideration calls for 5000 tons of ship plates for Japan. The McDougall-Duluth Co. has taken a contract for two ships of the Norwegian type, requiring 2500 tons of plates and about 1000 tons of shapes, the business being placed with an eastern maker. The Manitowoc Shipbuilding Co. has taken a contract for two fruit steamers for use on the Atlantic, involving 2000 tons of steel, mostly plates, which has been placed with a Chicago mill. The government is taking figures on 945 tons of steel plates, including some circles, the material having been left over in the hands of manufacturers at the time of the armistice.

Greater Activity in Boston

Boston, Aug. 25.—After a lull of several months in the plate market the trading during the past week has showed greater activity. Part of this increased business has been caused by a recent flurry in export sales, but by far the greatest effect has been caused by healthy conditions at ship building plants, at local car repair shops and among locomotive builders.

Prices Are Rather Soft

Pittsburgh, Aug. 26.—While 2.65c, base, Pittsburgh, still is the price asked by most makers of plates, on export business a price of 2.55c has been made by more than one company. The fact that the Carnegie Steel Co. bid 2.50c on the plates required for battleships Nos. 49 and 50, also pulls away some of the support of the March 21 base. It is doubtful if more than 2.60c, base, could be obtained on any sizable tonnages. That price is the maximum bid of exporters, and few domestic consumers are in such urgent need of supplies as to be willing to pay it. Much steel is being diverted from the plate mills into more active channels, but production is quite ample. The best demand still is from the tank and oil refinery equipment manufacturers. Fifty per cent of capacity is probably a liberal estimate of current mill operations.

Business Lacks Volume

Philadelphia, Aug. 26.—A somewhat improved demand for plates is noted and fair sized orders are being placed by oil companies boiler makers and other user. The business still lacks volume, however, and eastern plate mills not operating more than 50 to 55 per cent.

Completing New Stack

Rebuilding of the A-stack of the Toledo Furnace Co., Toledo, O., is proceeding rapidly and it is expected that the enlarged unit will be in operation around Oct. 1. A complete new stack and new foundations are being constructed and when these are completed the output of the furnace will be increased from about 400 tons to 500 to 550 tons daily. The location of the stack has been moved slightly. Relining of the stoves also is being done.

Tin Plate Demand

Growing to Great Proportions—Mills Running 95 Per Cent Full

Pittsburgh, Aug. 26.—A tremendous business is before the manufacturers of tin plate, whose problem now is to keep themselves from becoming oversold. Makers of perishable food containers in this country seriously underestimated the season's requirements and it is probable in consequence that they will go out of the present season quite barren of both tin plate and manufactured cans. Not only was the Pacific coast crop yield greatly in excess of early estimates, but the same error of judgment also was made with regard to the pack of salmon on the Pacific coast. Tin plate manufacturers under the circumstances are finding it extremely difficult to keep buyers from anticipating requirements, and in the meantime some huge export inquiries are coming out. One of these is for 100,000 base boxes, and while details are not made public it is understood that an even larger tonnage has been offered by one large interest. This latter inquiry cannot be handled by any of the smaller American companies and since the leading interest already is booked for the remainder of the year and does not care to be committed into next year, it is probable this demand will be filled abroad. Japan is the heaviest buyer in this country at present but a fair business is coming in from Canada and there are orders from South America, Scandinavia, South Africa, the West Indies and from every other consuming country, except Australia. Export prices in tin plate are considerably firmer than they have been. On small tonnages $7.10 to $7.25 per base box, Pittsburgh, has been done and while larger transactions continue at $6.75, this is a net cash price and actually is equal to $6.90. Stock tin plate has grown extremely scarce with practically all manufacturers, and a manufacturer who was short on an export order for 3000 boxes of 14 x 20 stock had considerable difficulty in obtaining it. On domestic business, $7 per base box, Pittsburgh, is extremely well founded on sales. Tin plate mill operations are averaging close to 95 per cent and enough business is in sight to insure this rate pretty well over this year.

Big Shape Job Appears

Cleveland Building Requiring 18,000 Tons in Preliminary Negotiation —More Awards Held Back—Chicago Market Active

Cleveland, Aug. 26.—One of the largest structural contracts to appear in recent months, involving 18,000 tons, is up for consideration this week by the Citizens Savings & Trust Co. and the Union Commerce National bank, which jointly are to build an extensive bank and office structure. While the work of clearing the site is proceeding, the companies are undecided as to whether to place the steel immediately or wait until the material is actually required.

Current lettings are of a very limited character, a half dozen large jobs figured during the past few weeks still being held up. The only contract let involving a good tonnage calls for 870 tons for the Firestone Steel Products Co., Akron, O. The commissioners of Lake county decided to build the high level viaduct over the Chagrin river at Willoughby of concrete instead of steel, and the contract calling for 3000 tons of reinforcing bars was let to the King Bridge Co. A building permit has been issued for the foundation of a 13-story apartment house to cost $3,000,000, but the steel contract involving 4000 tons has not been let. It is reported that the Foote-Burte Co., which recently took bids on a fair size tonnage for a new building has withdrawn its plans. Contracts for two new buildings for the Cleveland Tractor Co. on which bids have been taken also are being held up. A bond issue voted two years ago for the construction of a public library in Cleveland has been found to be too small to cover the present cost and as a supplementary issue will have to be voted on this project has been indefinitely delayed. Notwithstanding the temporary absence of demand for good tonnages, fabricators are booking a great number of small jobs.

New England Awards Less

Boston, Aug. 26.—Awards in structural steel work fell off noticeably during the last week. The various Boston structural companies report a reduction of over 25 per cent in the tonnage awarded as compared with the previous week. It is pointed out, however, that this does not indicate any serious turn in the market for the week is too short a period to take as a criterion. It is significant that more work is now being figured upon than has been at any time during August, and the jobs although individually small, will represent a sizeable total if a normal proportion of their materialize. New work has been repeatedly turned down after bids have been submitted, on account of the excessively high cost of materials and labor.

Pittsburgh Market is Quiet

Pittsburgh, Aug. 26.—A few fair size orders from domestic sources for angles and beams and some tonnages for export, one being for 800, have been booked, but in general the market for shapes is quiet. Fabricating interests are not being pressed with business, structural lettings running small in comparison with tonnages upon which bids have been asked. While some shops are busier, 50 per cent of capacity is probably a fair average of the present operations. Shapes and plain material prices are holding around the March 21 levels, but competition on new projects is too keen for the market to be other than in buyers' favor on fabricated steel.

New Hangar Bids Asked

Philadelphia, Aug. 26.—Bids are to be opened Aug. 28 on revised plans for a dirigible hangar at Lakehurst, N. J., involving about 6000 tons of steel. Otherwise the structural market is quiet here. Demand for plain shapes keeps up well but very few large tonnages are involved.

Active in West

Chicago, Aug. 26.—Demand for structural shapes and fabricated material continues brisk in the Chicago district in spite of the strike and lockout of building trades in this city. Most of the new business comes from industrial concerns, but during the past week three theater projects have been closed, while the fourth is pending. For the most part inquiries and purchases are for small tonnages. Several hotel projects and a bank building in Chicago promise some large tonnages and await completion of plans.

CONTRACTS AWARDED

Building for T. & E. Dickinson, 100 tons; to Buffalo Structural Steel Co.

Motion picture theater, Johnston City, N. Y., 265 tons; to Lackawanna Bridge Co.

New candy and biscuit factory for Robert A. Johnston Co., Milwaukee, 200 tons; to A. F. Wagner Iron Works, Milwaukee.

Concentrating plant for Phelps-Dodge Corp., near Bisbee, Ariz., 2200 tons; to Wisconsin Bridge & Iron Co.

Machine shop and assembling floor for Standard Steel Corp., Milwaukee, 100 tons; to Northwestern Bridge & Iron Co.

Addition to the plant of the Central Tube Co., Economy, Pa., 300 tons, to the Jones & Laughlin Steel Co.

New shop and erecting runway for the Pennsylvania railroad, Lines West, Columbus, O., 1200 tons, to the American Bridge Co.

Building for Firestone Steel Products Co., Akron, O., 870 tons; to McClintic-Marshall Co.

Viaduct at Willoughby, O., 3000 tons of reinforcing bars; to King Bridge Co.

Office building and alterations to theater for the United Theatres Co., Cincinnati, Ohio, 271 tons, to Wendnagel & Co.

Theater building for the Robinson Theater Co., Peoria, Ill., 213 tons, to A. Lucas & Son, Peoria, Ill.

Blackstone theater, South Bend, Ind., 192 tons, to Wendnagel & Co.

Copper Smelter at Bisbee, Ariz., 2500 tons, to Wisconsin Bridge & Iron Co.

Addition to military prison at Leavenworth, Kans., 260 tons, Ingalls Iron Works, Birmingham, Ala., low bidder.

CONTRACTS PENDING

Extension to plant of Tonawanda Board & Paper Co., 200 tons; bids being taken by Beaverboard Co., Buffalo.

Hull theater, Peoria, Ill., 250 tons. Bids being taken.

Warehouse at St. Louis for J. I. Case Plow Co., Racine, Wis., 250 tons.

Lyndale avenue bridge, 300 tons, and Franklin avenue bridge, 400 tons, for the city of Minneapolis.

West end power station, Cincinnati, 500 tons. Bids being taken by Sargent & Lundy, Chicago.

Ore bins and threstle for Belfont Iron Works Co., Ironton, O., 500 tons. Bids being taken by Freyn, Brassert & Co., Chicago.

Steel for bridge repairs in Chicago for the Chicago & Northwestern railroad, 200 tons. Bids being taken.

Machinery storage house for the Watertown, Mass., Arsenal—100 tons, bids being taken.

Manufacturing building for the What Cheer Beef Co., Providence, R. I.—100 tons, bids being taken.

Stoker Builders Will Meet in November

At its fall meeting to be held at French Lick, Ind., Nov. 3 to 5, the Stoker Manufacturers' association will hear some important committee reports. These committees have been in session during the past year and reports of the mechanical stoker situation throughout the country will be presented.

As a preliminary to the meeting of the general organization, on Sept. 4 at Chicago, a meeting will be held of the commercial committee, which consists of P. A. Poppenhusen, Green Engineering Co., chairman; S. A. Armstrong, Underfeed Stoker Co. of America; S. L. Nicholson, Westinghouse Electric & Mfg. Co.; F. B. Bigelow, Murphy Iron Works; W. R. Rea, Detroit Stoker Co., and R. C. Beadle, ex-officio, Combustion Engineering Corp. At that time likewise a meeting will take place of the engineering committee, which consists of F. H. Daniels, Sanford Riley Co., chairman; T. A. Marsh, Green Engineering Co.; Edwin Fitts, Detroit Stoker Co.; George L. Bouton, Murphy Iron Works; H. F. Lawrence, American Engineering Co.; F. F. Espenschied, Combustion Engineering Corp.; J. G. Worker, Westinghouse Electric & Mfg. Co., and R. C. Beadle, Corp. Mr. Beadle is chairman of ex-officio, Combustion Engineering the publicity committee.

A feature of the convention at French Lick will be an address by S. L. Nicholson, assistant to the vice president of the Westinghouse Electric & Mfg. Co., treating of the future of the stoker business in the United States, a subject which he handled at the meeting held in Detroit last June.

Jobbers Adopt Change

Chicago, Aug. 26.—Warehouse prices on steel products from Chicago store remain unchanged except that the new plan of quoting steel shafting by actual price rather than by discounts has been adopted. The new price is $4.90 on rounds and $5.40 on squares, hexagons and flats. This is exactly the same price as prevailed before the change, the former

price being 2 per cent off a $5 base for rounds.

Warehouse Sales Increase

Boston, Aug. 25.—The trading in sheets has been favorable throughout the summer, and so far August has been a record breaking month for New England warehousemen. The export trade during the month through New England points has taken an increased quantity of sheets in manufactured articles. The manufacture of automobile parts has furnished a steady demand for hundreds of tons of standard sheet steel. The price while remaining the same here has advanced in other sections and an early jump is looked for in New England.

Sell by the Pound

Cincinnati, Aug. 25.—Local jobbing houses have adopted the new method of selling cold rolled shafting by the pound, and have today set 5c per pound base, plus the usual extras. The Pittsburgh mill price is 3.60c per pound base.

Small Lots

Of Rails Being Placed Steadily Help Mills—Car Orders Few

Chicago, Aug. 26.—Although railroads are not in the market for standard steel rails, good general demand is being met by mills, lots of 500 to 1000 tons being fairly common, with smaller tonnages more numerous. These are being taken by industrial plants and for lumber roads and by manufacturers of frogs and switches. Light rails are active and the past 10 days has brought more business than any similar period during the present year. Most of this demand comes from coal mines.

Car buying continues to be practically absent except for tank cars, and a recent inquiry for 1000 of this type is being considered. A number of small purchases of this type of car have been made recently by oil and refining companies in Oklahoma, the American Car & Foundry Co. having taken about 300 of this type.

Not Much Activity Noted

Pittsburgh, Aug. 26.—Makers of standard rails here have yet to hear from the railroad administration in connection with a reported inquiry for 100,000 tons. Meanwhile rail mill capacity is only partly engaged as only moderate export orders are being placed and domestic requirements are confined entirely to small tonnages necessary for repair work. At the Edgar Thomson works of the Carnegie Steel Co. more capacity is engaged at the moment in rolling sheet bars than in rails. A good many inquiries are coming out for light rails but bookings as a general rule involve only moderate sized tonnages. Makers of spikes are sold up practically to the end of the year on sizes running ⅝-inch and smaller and are quoting anywhere from 3.85c to 4c base, Pittsburgh, against new inquiries. Standard spikes remain at 3.35c base and are extremely slow of sale with makers in a position to make prompt shipment against all inquiries.

Ferro Market Dragging

Carload Sales of English Metal at $105—Italy Wants More Spiegel—Ferrovanadium Advances Sharply—Tungsten Stronger

New York, Aug. 25.—Some carload business in English ferromanganese has been entered during the past week at $105, c.i.f. Atlantic tidewater. These sales did not represent a test of the market, however, which on the basis of what has been done, still may be quoted at $100 to $105, c.i.f. tidewater. It is reported that a western consumer offered to pay $95, c.i.f. tidewater, for English ferromanganese and was refused, but this cannot be verified. It is known, however, that importers would go to the trouble of cabling such an offer for the consideration of their English principals, if the tonnage involved were considerable. In general, there is a lack of interest on the part of consumers. Domestic ferromanganese continues to be quoted at $110, delivered, for 78 to 82 per cent. Some off quality metal recently has gone at lower than this figure.

Some export inquiry for spiegeleisen is reported. Italy is reported out for 2000 tons. Italy and Belgium bought several thousand tons recently, as reported at the time. The price is unchanged at $33 to $35 for 18 to 22 per cent.

Ferrovanadium has advanced sharply, due to insufficient supplies. Whereas 35 to 40 per cent went at less than $7 a pound contained recently, sales have just been reported at $8 and higher, while $9 is being asked in some quarters. The recent purchase of the Peru and Pittsburgh properties of the American Vanadium Co. by Charles M. Schwab and J. Leonard Replogle is believed by some to explain the advance in ferrovanadium based on the assumption that Bethlehem Steel Co. will contract for the major part of the output of the Vanadium company.

Tungsten has been stronger, due to expectation that congress will pass the Timberlake bill imposing a $10 a unit duty on tungsten ores, equal to $1 a unit on imported ferrotungsten.

The leading maker of ferrochrome is reported to have reduced its price on wholesale lots from 38c to 28c a pound contained, 4 to 6 per cent carbon. The ferrochrome market has been irregular, some offerings of French ferrochrome being reported at as low as 20c, c.i.f. New York, duty paid.

Ferro Offerings Disappear

Philadelphia, Aug. 26.—Eighty per cent ferromanganese has practically disappeared from the market temporarily and there will be no more to offer until the furnaces make more. In the meantime dometsic makers are countering on inquiries with offers on off-grade metal generally around 75 per cent. On 75 per cent the market may be quoted around $105 to $108 deliveerd. Current inquiry involves principally carloads. The Lavino Furnace Co., which blew in the Oriskany furnace, Lynchburg, Va., three weeks ago on ferromanganese, also has blown in the Marietta furnace on this metal. It now is installing a skip hoist at its Sheridan furnace. English ferromanganese guaranteed 76 per cent continues to be obtainable at $100 to $105 tidewater. Some carload business in spiegeleisen was done the past week at $35 furnace for 18 to 20 per cent.

Demands Still Limited

Pittsburgh, Aug. 26.—Demand for all kinds of ferroalloys still is of extremely limited proportions and prices largely are nominal in the lack of any important transactions. If prices have a definite tendency in either direction, it is in favor of consumers who are considerably less eager to buy than sellers are to secure orders. The house here which recently circularized the trade on 50 per cent ferrosilicon, naming a price of $80, furnace, freight allowed, has secured little or no business on this effort, while the fact that buyers had knowledge that supplies could be had at that figure has tended to discourage purchases at higher quotations named by other sellers. Although some makers are quoting $90 on 50 per cent ferrosilicon, such a quotation is more of an asking than a selling price, in view of the lower offerings which are before buyers. Almost nothing has been done recently in ferromanganese and while quotations show no material change, it is believed they would be lower on sales. It is intimated that a firm bid of $100 on 76 to 80 per cent alloy would not be refused, although the last sales reported of this grade were at $105, delivered.

Strip Demand

Continues to Grow and Valley Mills Run Double Turn

Pittsburgh, Aug. 26.—In contrast with the condition of a few weeks ago when orders were not sufficient to insure higher than 80 per cent operations, makers of strip steel today have enough business in sight to run practically full to the end of the present quarter. Not much eagerness is noted on the part of manufacturers to take business for the fourth quarter at current prices and it is intimated higher prices will be sought for the last quarter. The weight of orders no longer is much heavier in hot rolled strip steel than in cold rolled strip.

Cold Rolled Demand Grows

Youngstown, O., Aug. 25.—Demand for hot and cold rolled strip steel is still on the upgrade with but little tonnage to be had from mills in this territory. Mills are working double turn. A large per cent of the output is going to automobile makers. The demand from this source is extremely active. An inquiry for 600 tons of cold rolled welding stock is before one seller here for shipment over the last quarter.

Export Sales in August Larger

European Business, However, is Slumping Off Rapidly — Chilean Railways to Let Contracts Next Month—Profitable Trade With Orient and Scandinavian Countries — Labor Unrest Affects Deliveries

NEW YORK, Aug. 25.—European sales of iron and steel are increasingly difficult because of the exchange situation. Bankers, however, still are delaying action to see what the administration at Washington will do. During the past week sterling reached a new low level. The franc broke again and the lire sold to a new low level. The rate on Brussells broke in sympathy with the other allied countries. There was later a temporary recovery but the situation is reaching a critical stage. On the other hand the mark was merely weak while the rate on Austria was steady. Sales are being negotiated with Germany but there is not much this country can sell there just now. Germany did purchase some copper in the United States during the past week, but trading with the erstwhile enemy proceeds upon fragile bonds of sympathy and no little suspicion. Some German inquiries for tin plate have been received.

Reports were current last week that the French government has been sounding American bankers with a view to arranging a credit to stabilize franc exchange. Such a credit would be for at least $100,000,000 and perhaps twice that amount. It would run for five years, during which time the French hope to recoup themselves industrially. The distressing condition in France has been brought about because the country has not been producing. The Belgians have made a much better start, and it is anticipated that the new alignment of the iron and steel industry on the European continent will before very long be in working order.

Iron and steel exports during August will exceed the tonnage exported during July and will at least equal the record made during June, according to opinions held by some of the largest agencies. Some satisfaction is had in this fact and for that reason iron and steel men are not nearly so apprehensive over the general foreign trade outlook as persons in other lines. There is a special demand for such goods and even though Europe stops purchasing it is believed that other markets will grow.

Chilean Project to go Through

One of the most important deals pending is the Chilean railway project. It has been reported that the Chileans are ready to purchase some $50,000,000 worth of rails and rolling equipment in the United States. The deal has been held up on account of difficulties of being financed. It was learned, however, that the deal will be closed by Sept. 5, and by that time the specifications for rails and other needed equipment will be turned over to the proper American agents upon which quotations in detail can be made.

South American business at present is only fair and not so good as it was some time ago. The demand of Europe for credits naturally hampers the opportunities Americans may have in developing South American projects. In regular merchant lines Chile still is stocked up. South America has been buying galvanized sheets at a constant rate. One house reported sales averaging at the rate of 1500 tons a month.

The Orient is a good market. India has been inquiring freely. That country is asking for all lines of steel products, having found it difficult to obtain anything like her requirements in England. The inquiry for 20,000 tons of structural steel, made some time ago by the Tata Iron & Steel Co., has not yet gone through. It is understood that new negotiations are now under way. India has purchased 200 tons of wire.

The Orient is purchasing tin plate and sheets from the two large houses freely. Japan is a heavy purchaser, having returned to the American market with the volume of inquiries which were not filled earlier. Japan is buying heavily of tin plate and ship plates. One house reported the sale of 1000 tons of plates, 3000 tons of sheets and 2000 kegs of nails. This is not unprecedented by any means and other exporters are said to be doing equally as well. Japan has sent in a new inquiry for 7500 tons of ship plates. The inquiry for 80,000 tons of plates is still hanging fire owing to the difficulty of financing the transaction. China has been sending in many inquiries for wire shorts and scrap. The inquiries vary in size from 100 to 500 tons each.

England has purchased billets and sheet bars in the usual quantities. England has been buying steadily of finished products, but would purchase more were not the exchange rate so low. A sale of 200 tons of bars to England is noted. There are a number of English inquiries in the market for bars. A sale of 3000 tons of galvanized sheets to Holland, upon which American producers bid, was consummated by England on account of the disparity in exchange rates.

Italy has been buying pig iron but it is said to be doubtful whether the inquiry for 20,000 tons of hematite can be filled in this country. The Scandinavian countries have been purchasing heavily of ship plates, and have sent in inquiries for wire rods, plates, shapes, tin plate, and sheets. One of the recent inquiries was for approximately 8000 tons of commodities in all.

The greater percentage of the business has been taken up by the United States Steel Products Co. and the Consolidated Steel Corp. The Consolidated, it is said, has been allotted 10 per cent of the output of its constituent companies, and while it is not known how large a percentage of the output of the United States Steel Corp. is allotted to the Steel Products Co., independent sellers are anticipating that soon these companies will be sold up to capacity so that they can step in and get a larger volume of export business. At the present time the Consolidated is sold out of bars and sheets. It is purchasing tin plate for export from producers outside its organization.

These two companies have exercised a supervision over the business of the independent exporters. Where the independents have been compelled to go to either the Consolidatd or Steel Products companies for a commodity, they are compelled to disclose the name of the country buying and often the name of the purchaser. Tin plate quoted at $7 for domestic use has been sold abroad for $6.50 although it is now selling at about $6.75. This is a price which independent export agents find it difficult to duplicate.

Whether or not the American mills will be able to take care of the business offered is at present a problem. Exporters declare that the threatened labor troubles are already delaying deliveries. Should domestic trouble develop to any serious proportions, curtailment in production will be coincident with the reduction in export demand. Such a situation would, at least, tend to keep prices constant.

Several hundred employes of the Alan Wood Iron & Steel Co., Ivy Rock plant at Conshohocken, Pa., who went on strike for eight hours work with 10 hours' pay decided after being out a week to return to avert an indefinite shutdown.

Unrest Restricting British Trade

Markets Disorganized by Strikes, Lockouts and High Wage Awards—Many Large Companies Threaten to Shut Down Mills and Furnaces—American Material in Greater Demand—All Import Restrictions May be Lifted

Bureau of The Iron Trade Review.
Prince's Chambers, Corporation Street,
BIRMINGHAM, ENG., Aug. 8.

ALL pig iron markets are disorganized as a result either of the Sankey award which has served to increase wage demands of iron ore miners for inclusion in its concessions, or of the large increase in wages under an award by the Midland iron and steel wages board which gives the workmen, including blast furnacemen, a raise of 27½ per cent.

The confusion is intensified by the Yorkshire coal strike, which has reduced or stopped altogether production of blast furnace coke. In the western part of England it is probable that iron ore miners will strike soon. To do this they require the support of the miners federation, and they now are conferring with the miners' association of Cumberland with a view to getting its support. It is possible action may be taken even without the federation's sanction.

In the Cleveland district price questions are under consideration, but makers are inclined to maintain present quotations, with the provision that sales are subject to any increase which may be made during delivery. So many iron and steel works are shut down for the bank holidays that the blast furnaces will accumulate some stocks of pig iron, especially as consumers are not coming into the market with orders. A good deal of iron is wanted for shipment, but continental buyers object to the reservation as to prices, and as neither the French nor Americans insist on this condition, the latter have more opportunities for successful foreign competition. Owing to small consumption in the Midlands, fairly large quantities of hematite are available for export to the allies. Shipping facilities have greatly improved, and there is more disposition to issue the requisite permits. Neutrals are not buying extensively at present.

The decision at Cleveland not to put up prices has had an influence in other districts, Northampton and Derbyshire, both of which districts compete with Cleveland, delaying action as long as possible. Production at all furnaces is small, chiefly because of difficulty in obtaining coal, but the reduction in consumption, both by forges and engineering works, exceeds the decrease in output.

Midland districts which serve Birmingham are far from uniform in their policies. Staffordshire, which made substantial increases recently, is content now with a rise of 5s ($1.20). Northampton does not consider 20s ($4.80) excessive on contracts made before July 21; but 15s ($3.60) is added to prices quoted subsequently. The price of basic iron has been increased £1, the present selling price being £9 ($43.20).

Several makers prefer to postpone price revisions until the situation is clearer. Those smelters who are either stopped for lack of coke or who are looking forward to an early stoppage have not troubled themselves to alter prices, their sales being insignificant.

There is a remarkable lack of uniformity in regard to the conditional clause as some Northamptonshire makers do not demand that increases in cost during the progress of a contract be paid by customers. Practically no one is buying pig iron at present, although when finished iron works resume next week it is thought possible a few inquiries will be brought out. Two large blast furnaces were blown out this week by the Ebbw Vale Steel Works because of labor dispute, and this will reduce output considerably. Production of pig iron also will be reduced by the stoppage of iron works at Cyfarthfa, although that is a smaller concern.

In justice to himself, the ironmaster should add to the price the equivalent of the 27½ per cent addition to wages. What he wants to know is how he can do this with American iron coming into this country at anything from 30s ($7.20) to 60s ($14.40) below the home prices. Pig iron costs him more and he has to face the 6s ($1.44) rise in coal with corresponding additions at every stage of manufacture. This figure of £22 10s ($108) compares with £6 10s ($31.20) before the war, and while the puddler at that time earned 9s 6d ($2.28) per ton, the last advance has brought his rate to 34s 1d ($8.18).

The British ironmaster knows that any equivalent addition to the selling price not only makes his position hopeless in the world's markets, but will carry with it a big increase on the next bimonthly ascertainment by the wages board.

There is a strong feeling among ironmasters that the time has come when workmen should be asked to make some reciprocal concessions. The latter are likely to be told soon that they must chose between lower wages and a period of idleness. The first sign of this is the shutting down of the Cyfarthfa Iron Works, at Merthyr Tydvil, in South Wales, owned by Guest, Keen & Nettlefords, Ltd., by which 400 men have been thrown out of work. The employers find it impossible with the present cost of production to compete with America. The blowing out of two blast furnaces by the Ebbw Vale company will throw out of work for at least six months about 4000 steelworkers. The stoppage was due to a demand by mechanics and fitters for a large increase in wages. The steelworkers were not associated with the movement.

Coal supplies, apart from the Yorkshire strike, are deficient. That strike already has deprived the country of millions of tons of coal and coke. The coal controller issued an appeal to the miners throughout the kingdom to limit their holidays to one day this week, but three days were taken. At numerous collieries where preparations were made to start on the third day serious loss was incurred because only a small number of men reported for work.

A rumor is prevalent that the government proposes to remove all restrictions upon importations of American material in September. This would give great satisfaction to many consumers.

There is an idea here that with the progressive improvement in the American iron trade the formidable competition emanating from transatlantic steel works will taper off at no distant period.

As a result of the Sheffield coal strike great Sheffield works, such as those of Henry Bessemer & Co., and the Brown, Bayley's Steel Works, are closed down, and many similar concerns are operating only partially with an early prospect of complete stoppage.

Steel Awards

By Navy and Railroad Administration Are Expected Soon

Washington, Aug. 26.—The railroad administration and the navy department have not yet awarded contracts for their respective orders of 100,000 tons of rails and 28,000 tons of plates, shapes and bars, on which bids were received ten days ago. Director General Hines is expected to act soon now that railroad wage and rate decisions have been made. With the navy, the delay is said to be one of minor details as to sizes, etc. The Carnegie Steel Co. is expected to be given the contract for the plates and shapes because the prices it submitted were 15 and 5 cents, respectively, under bids of its competitors.

The navy will open bids next Tuesday for 384 tons of nickel steel forgings, 96 tons each for the battleships Montana, North Carolina and Nos. 49 and 50. This steel for the named ships is for roller turrets while for the numbered vessels, it is to be used in hull division work. Deliveries are for periods ending late in 1920. The navy also is in market for approximately 4300 tons of plates and 1500 of shapes for the construction of destroyer tender Dobbin being built at the Philadelphia navy yard. Bids will be opened here Sept. 9 with deliveries to commence within 30 days after award of contract. On Sept. 16 the navy will receive bids for 100 tons of soft steel bars for shop use at the Boston navy yard.

Gary Refuses to Receive Union's Committee

New York, Aug. 26.—A committee of labor men composed of John Fitzpatrick, chairman, William Z. Foster, D. J. Davis, assistant president of the Amalgamated Association of Iron, Steel and Tin Workers, and William Hannon, member of the executive board of the International Association of Machinists, called at the office of Chairman E. H. Gary of the Steel corporation this afternoon in an effort to see him. After they had been refused a personal interview, in reply to a question as to whether he had arranged for a meeting, Judge Gary said:

"When informed by my secretary that a committee of a labor organization had requested to see me I sent word to them through my secretary that I did not care to have a personal interview, but if they had any statement or request to make and would reduce the same to a written letter it would be read and consideerd by our officials, who would then determine what, if any, answer should be made. Nothing further has passed between us. I think it is better for those gentlemen and for me to leave no chance for misunderstanding in regard to what has been or shall be said. I have intended no personal discourtesy."

Following attempt to see Judge Gary, Fitzpatrick in answer to a question by a reporter expressed himself confidently that he would have a talk with Gary soon. Fitzpatrick also said that the visit to Gary's office had been preceded by talk with Gompers on the subject of the visit.

Made Sales Assistant

A. R. Williard has been made assistant manager of sales for the Carnegie Steel Co. in the Cleveland district, as the successor of Roland S. Le Barre, who recently resigned to become general sales manager of the alloy steel department of the Interstate Iron & Steel Co., Chicago. Mr. Williard has been identified with the Carnegie Steel Co.'s organization for a number of years and has been connected with the Cleveland sales office since March 1. He served as a captain in the ordnance department during the war and before that was connected with the armor plant and alloy steel department of the company at Pittsburgh.

Open Sheet Books

Pittsburgh, Aug. 27.—It is understood that some of the independent sheet manufacturers have opened their books for first half of 1920 business and while actual facts are not disclosed it is believed that an advance of about $5 per ton over the present basis is being quoted. The leading interest has not opened his books and probably will not do so until about the middle of October. In general manufacturers are not much inclined to talk business beyond the end of the present year and it is known that two or three of the larger independents have not yet opened their books for fourth quarter business.

Operations Resumed

All plants of the American Steel & Wire Co., at Cleveland, are now in operation, except the Central blast furnace group, which is still idle owing to labor trouble. Operations at the mills are not yet on a normal basis, but are gradually improving. The Newburgh steel works which was idle because of inability to obtain hot metal have started up, although not working at capacity.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony
Aug. 20	23.50	54.00	6.00	7.75	33.00	8.875
Aug. 21	23.50	53.50	6.00	7.65	33.00	8.875
Aug. 22	23.50	52.50	6.00	7.65	33.00	8.75
Aug. 25	23.50	52.25	6.00	7.60	33.00	8.75
Aug. 26	23.50	52.12½	6.00	7.55	33.00	8.75

* July shipment from Singapore, c.i.f. New York, but changed to August past 3 days.
† American Smelting & Refining Co.'s price.
‡ Producers' price. Outside market down from 23.50c to 21.75c.

NEW YORK, Aug. 26.—The nonferrous metal trade took a gloomy view of the labor situation last week, especially as consumers in many cases were inclined to go slow on purchases, pending a turn one way or another. The action of Midvale Steel & Ordnance Co. employes in deploring the persistent demands of labor was received with great satisfaction as an indication that some sanity still exists in the ranks of labor.

Despite the current low prices of the mark and franc, measured in our currency, both France and Germany bought copper through the Copper Export association last week.

The copper producers did a good business as compared with previous weeks, brass mills and general manufacturing consumers taking large tonnages in the aggregate. The lifting of the embargo on the New Haven railroad, with the return of striking workmen to their jobs enabled the resumption of shipments to several of the New England mills. But today the outside market was very weak, going to 21.75c for prompt, while producers held at $23.50c.

The market for pig lead is reflected more and more the strong position which has been evident in this metal for some time. Sellers of bonded lead have sold up for August and September and there is now some inquiry for domestic lead, which costs the foreign buyer considerably more money.

The zinc market has been rather weak, due to the light inquiry and the inability to do much export business, owing to the exchange rate decline. Second sellers have made the market, producers refusing to do business at less than 8c, while dealers have quoted to 7.55c and 7.60c, East St. Louis.

The decline in exchange rates has been watched with as much interest in the tin trade as the action of the London market. A decline of 1c in sterling is equal to a drop of ⅛c a pound in the cost of tin. A decline of £1 10s in the Singapore market is equal to the same drop in the price of tin. September-October-November shipment from Singapore sold as low as 51.50c, recently, while August was quoted down to 52.25c. Spot Straits tin is quoted 56.25c to 56.50c; spot 99 per cent 54.25c to 54.50c.

Modernize English Steel Plants

Many Obsolete Cogging Units Have Been Replaced by the Latest-Type Rolling-Mill and Auxiliary Machinery — Steel Production Shows Increase — Description of Typical British Steel-Plant Equipment

BRITISH steel production is now about 12,000,000 tons per year as compared with 7,500,000 tons before the war. This increase was achieved, not only by the erection of new rolling mills and by the extension of old rolling mills but by increasing the efficiency of the machinery installed. The urgent requirements of the war compelled the scrapping of considerable obsolete machinery, and the introduction of numerous mechanical improvements which were already overdue. In other words, patriotism did for the British steel trade what commercial enterprise and technical progress failed to achieve in peace time.

It is frankly admitted by British engineers that prior to the war, mill machinery had reached a higher development in America and certain Continental countries than in Great Britain. It is only fair to say, however, that the British steel trade, owing to what is believed to be unfair competition, due to the incidence of tariffs, bounties, etc., experienced a strong sense of discouragement which undoubtedly militated against the vigorous enterprise that otherwise might have been displayed. However, the movement of salvaging old machinery and installing up-to-date machinery in its place, is showing remarkable results in the improvement of the output of individual mills.

Generally speaking, the progress has been in four directions, namely, the installation of heavier rolling mills, of which the 40-inch cogging mill is probably the best example; the enormous extension of the use of electrical driving and manipulating equipment; the adoption of hydraulic intensifiers, hydraulic pumps, etc., which have given accelerated speed and a remarkable increase of power; and additional heating capacity. The general effect of these improvements has been to give better results in quality through the greater command over the operations, as well as to greatly increase the output. The designers have had the necessity of continuity of operation in mind, and this has been secured by improved construction and a keener appreciation of the importance of selecting the most suitable materials for the particular requirement.

With the exception of certain works where blast-furnace gas is available for efficient use in internal combustion engines, the steam turbine now is universally used, the tendency being to centralize power generators in increasingly large units. The numerous improvements in the generation and application of electrical energy, as well as in the construction of motors and control gearing, has enabled this power to be employed for duties for which only a short time ago it would have been considered unsuitable. The use of steam for power purposes is rapidly being discarded.

Closely related to increased output is the larger size of the cogging mills which have been built recently by Davy Brothers, Ltd., Sheffield, England. Several cogging mills equipped with 40 x 30-inch rolls which,

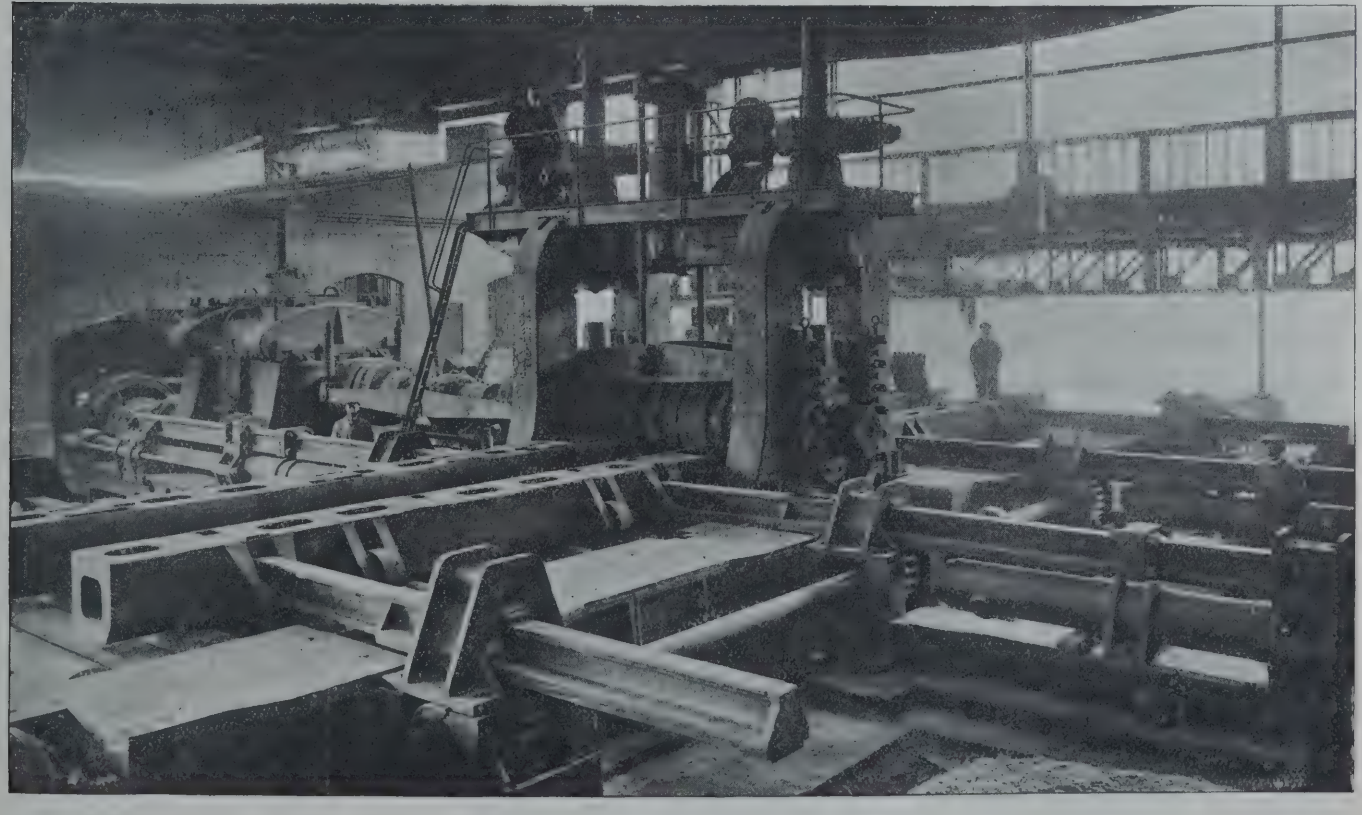


FIG. 1—TOP ROLL OF THIS 40-INCH COGGING MILL IS BALANCED HYDRAULICALLY AND IS RAISED OR LOWERED BY ELECTRICALLY-DRIVEN SCREWDOWNS. FRONT AND REAR MANIPULATORS ARE OPERATED SIMULTANEOUSLY THROUGH RACKS AND PINIONS BY MEANS OF HYDRAULIC PRESSURE

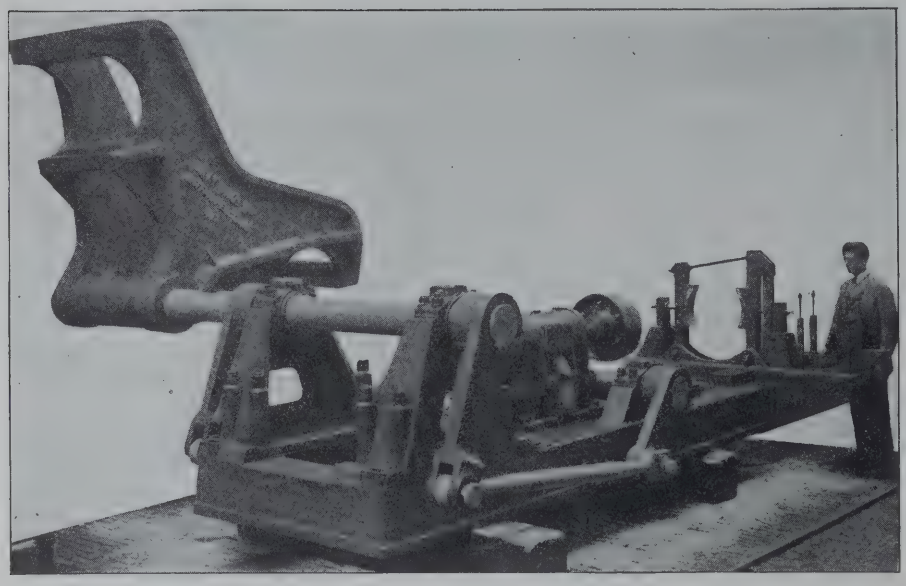


FIG. 2—ELECTICALLY-OPERATED TILTING CHAIR WHICH DELIVERS THE INGOTS ONTO THE MILL-APPROACH TABLES

it is claimed, represent the latest British practice in up-to-date rolling mill work, have been installed at various steel plants throughout England. The main coupling is of the fluted type with machine-cut teeth. The heavier revolving parts are carried in a heavy metal-lined cradle, and gears and hydraulic ram cylinders are provided for disengaging the couplings. The pinions are made of forged-steel shafts with nickel-chrome steel rims, having machine-cut teeth. The pinions are enclosed. They operate in an oil bath, the oil being supplied by means of motor-driven pumps. Forged steel is used for the mill spindles, these being machined throughout to eliminate backlash. The top spindle is fitted with universal-joint couplings. The roll housing are of cast steel, with wide openings arranged for the removal of chocks and rolls endwise. The gear for balancing both top roll and top spindle is of the compensating-lever type, having a single hydraulic cylinder arranged above the housing. The screw-down gear is totally enclosed and fitted with a safety slipping clutch to prevent any injury to the motor. The framing on the gearing side of the roller tables are made with double webbs. The mitre gears are housed in a trough which is equipped with dust-proof covers. All bearings are arranged for ring lubrication. The breast rollers in the housings are fitted with friction drives, so that in the event of the piece striking the rollers or inadvertently running in the wrong direction during the passage through the rolls, no damage will result to the driving gear. The ingot tilter is of U-trough construction and may be revolved in order to deliver the ingot to the roller table either with the small or the large end first.

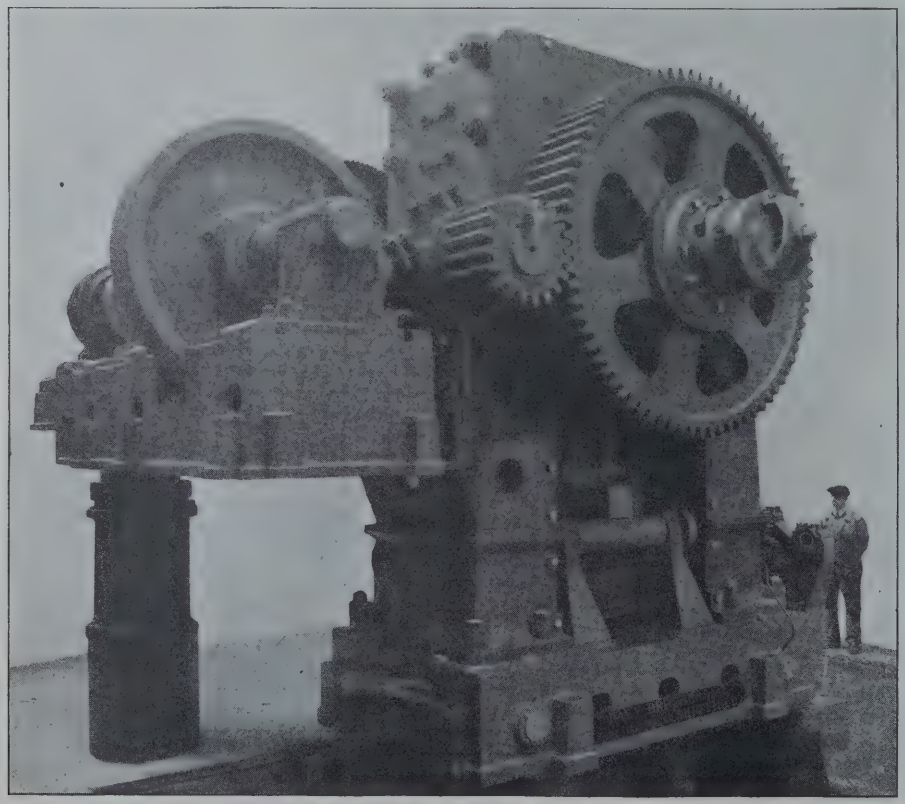


FIG. 3—ELECTRICALLY-DRIVEN VERTICAL UPCUT SHEAR WHICH WILL CUT BLOOMS 10 INCHES SQUARE

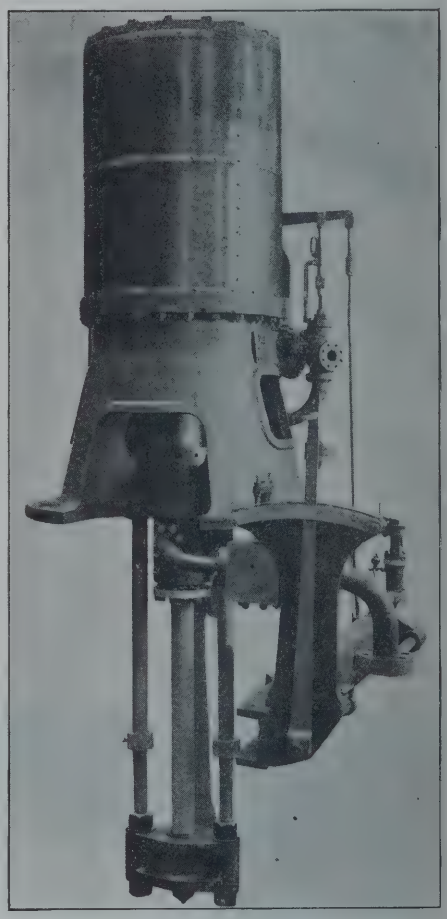


FIG. 4—STEAM-HYDRAULIC INTENSIFIER WITH THE UPWARD WORKING RAM CONNECTED TO THE STEAM PISTON BY TWO SIDE RODS AND A BOTTOM CROSSHEAD

The manipulator heads receive their motion by means of racks and pinions as shown in Fig. 1. Each head is 19 feet 8 inches long and is fitted with a renewable wearing face, 23½ feet long. The manipulators on one side of the rolls are connected to the corresponding heads on the other side by means of a long shaft which carries the operating pinions. By means of this construction the re-

ceiving pair of manipulators on the outgoing side are always in a corresponding position to those on the receiving side of the mills. This tends to prevent the piece from striking the head of a manipulator and buckling. The heads can be used also for straightening any piece which may have been bent through careless handling. All parts of the manipulator are above the floor level and the heads run on wheels, thus dispensing with lubricative surfaces around the rollers. One of the heads is fitted with a set of tilting fingers, which are operated by means of an electric motor through worm and crank drive.

A few years ago a hydraulic press was rather rare in British steel works, but for intensive production, time-saving, economy of fuel, etc., all of the greatest importance during the war, probably no machinery played a more important part. Such presses were used for the production of all classes of forgings including airplane parts, guns of the largest calibre, etc. The first applications of the intensifier carried a certain vibration, resulting from the placing of the hydraulic cylinder above the steam cylinder. It was found that the vibration from the forging press was transmitted to the intensifier. To meet these objections, a new type of inverted steam intensifier was designed. In this type the hydraulic cylinder is mounted on a stool below the steam cylinder and the upwardly working ram is connected to the steam piston by means of two side rods and a bottom cross head. The abolition of overhead pipes gives the enormous advantage of better access to the cranes around the press.

The latest type intensifier built by Davy Brothers is a tandem compound unit. The intensifier shown in Fig. 4 will handle up to three-fifths of full load on the compound system; beyond this high-pressure steam is automatically admitted to the low-pressure cylinder, which then operates in the ordinary manner as an ordinary intensifier. The power obtainable from the compound arrangement will, generally speaking, cover two-thirds of the total press demands, and it is anticipated that the steam required for operation of the intensifier will be reduced by at least 25 per cent. It has been found possible also to introduce special control gears which accelerate the descent of the steam piston.

One of the latest steel works to be built in the North of England will comprise eight 60-ton open-hearth furnaces, two 400-ton mixers, soaking pits, a 40-inch cogging mill, a light-section mill, and a large mill for heavy sections and rails. Waste-heat boilers are installed on all melting furnaces, mixers and soaking pits and the mills will be electrically operated throughout. It is anticipated that the weekly maximum output of this plant will be 5000 tons of ingots which will pass through the 40-inch cogging mill. In this plant, the ingots are cast on cars and conveyed on trucks to the soaking pits at the end of the mill buildings. It is expected that 45 tons of 4-inch billets will be rolled per hour. When rolling 6-inch blooms, an output of 10,000 tons per week is considered to be well within the capacity of the mill.

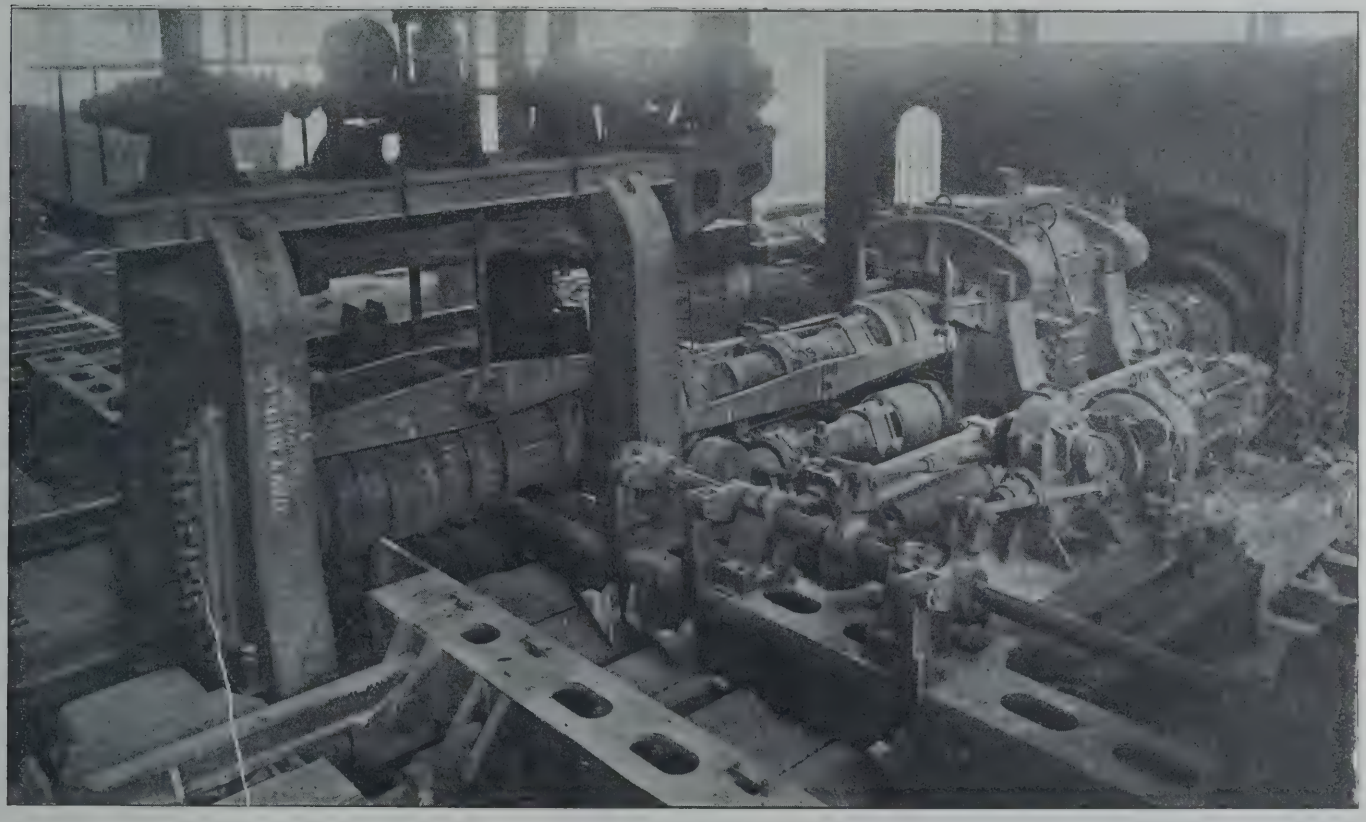


FIG. 5—40-INCH COGGING MILL BUILT BY DAVY BROTHERS, SHEFFIELD, ENGLAND. THE MILL IS DRIVEN BY MEANS OF A 13,700-HORSEPOWER REVERSING MOTOR. THE TILTING FINGERS ARE PART OF THE RIGHT-HAND MANIPULATOR AND THEIR METHOD OF OPERATION IS CLEARLY SHOWN

The electrically-operated tilting chair, shown in Fig. 2, is somewhat different to the type most commonly used. In this the operating motor is coupled directly to the worm shaft. The advantage of this method of construction is the automatic retardation derived from the crank motion. The chair frame is so designed that either the large or the small end of the ingot may be presented to the rolls by turning the chair to the left or right as required. The electrical equipment of the plant includes a Westinghouse reversing mill motor of 13,700-horsepower, three 1500-kilowatt generators, and an induction motor of 2700 horsepower.

The electrically-driven vertical up-cutting shears are of a somewhat novel design and were recently con-

structed for the Caen works in Norway, where a large cogging mill has been installed for rolling 10,000 tons of ingots per week. A similar shear is being installed in Great Britain. The 10 x 10-inch up-cutting shear shown in Fig. 3 is equipped with fixed roller tables and is so constructed that as the clutch is engaged, the preliminary motion of the camshaft lowers the top blade which then acts as a hold down. Further rotation of the camshaft lifts the bottom knife to effect the cut. The clutch is automatically disengaged on reaching the top position in readiness for the next cut. The shear is operated at the rate of 15 strokes per minute by a 200-horsepower continuously-running motor and will cut 10-inch square blooms. For certain sections the vertical-type shear is considered most suitable.

Specifications in Spanish

The bureau of foreign and domestic commerce, department of commerce, Washington, is issuing a series of pamphlets containing copies of the standard specifications of the American Society for Testing Materials, translated into Spanish. The English originals are given in each case on facing pages. These pamphlets are distributed by the bureau of foreign and domestic commerce at a nominal price. Recently specifications for the following materials have been translated: Malleable-iron castings, cast-iron car wheels, cast-iron locomotive cylinders, structural steel for cars, carbon-steel car and tender axles, iron and steel chain, and extra-high-carbon steel splice bars.

Quenching of Steel Causes Warping

BY J. H. WHITELY

DURING the course of a discussion of Dr. Carpenter's paper on "The Growth of Cast Iron After Repeated Heatings," presented at a meeting of the British Iron & Steel institute, Dr. Stead referred to the effect of repeated cooling in water on some large steel tongs which became red-hot each time they were used. He remarked that the result of the continued heating and cooling is to cause a material contraction in the length. The envelope contracts when being cooled, while the portions below are more plastic than the chilled outer layers. The effect is that the more plastic central portion is forced or "jumped" down, causing contraction in length and bulging of the sides. There probably is no decrease in the actual volume, but only a change in the position of the steel.

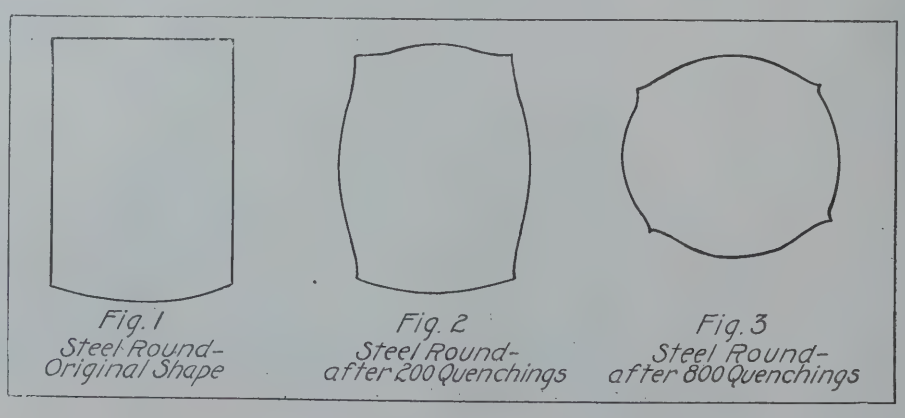
In order to warm a small tank of water used for molding purposes at the shop of Robert Roger & Co., Stockton, a piece of iron, weighing several pounds, is heated over a coke-breeze fire from 700 to 850 degrees Cent. It is then gripped with a pair of tongs and moved about under the water until it is nearly cold. Some years ago a cylindrical piece of soft steel, similar in shape to that shown in Fig. 1, was cut from a round bar about 3½ inches diameter and used solely for this purpose. The analysis of the steel was as follows: Carbon, 0.05 per cent; silicon, 0.01 per cent; phosphorus, 0.08 per cent; sulphur, 0.05 per cent; manganese, 0.45 per cent.

About 200 heatings and quenchings were given during a year, and in the course of four years of this treatment the cylindrical piece had gradually become nearly spherical in shape. An intermediate stage in the transformation of the bar after it had been subjected to about 200 quenchings is shown in Fig. 2. Dr. Stead's remarks are clearly illustrated by these examples, the pressure on the hotter internal metal due to the more rapid contraction of the chilled outer layers having ultimately caused the piece to assume a globular shape. The circular edges of the cylinder can still be seen, however, and it is probable that if the metal had been somewhat harder in quality these edges would have flaked off, as they were the parts most rapidly cooled in quenching.

Measurements taken indicated that, after 800 quenchings, the cylinder had contracted in length about 0.75-inch and had also increased in width by a corresponding amount. In order to obtain some idea of the way in which the metal had flowed, the ball was cut in two. The lateral expansion was clearly shown and it was also noticed that just below the top and bottom surfaces the metal appeared to have contracted, since the two heavy sulphide lines there bent inward. Sections of this sample were examined under the microscope, and several interesting features were observed. Two in particular, which are described below, seemed to have been brought about by the numerous quenchings to which the metal had been subjected.

1.—The shapes of many of the elongated particles of manganese sulphide present in the highly segregated bands strongly suggested that these particles had been twisted and contorted by the repeated quenching. Several instances were observed in which the particle had been bent almost through a right angle without breaking. In other parts of the steel the shapes of the particles appeared to differ in no respect from the straight or slightly sinuous forms usually found in rolled sections. Exactly how the quenching had brought about the marked distortion of the particles in the segregated areas is not easy to say, but it would seem as though the rates of movement of adjacent parts of the bands had sometimes varied considerably. The composite particle of slag and sulphide sheared in two and evidently one-half moved across the other.

2.—Cupric etching reagents showed the dark sulphide bands to be also rich in phosphorus. The ferrite grains in these areas were found to be much larger than those in other parts of the steel. Some segregated areas were undoubtedly richer in phosphorus than others, and it was noted that the largest grain-growth had occurred in the most highly phosphoric portions, the volumes of the grains throughout being from 10 to 100 times greater than those in others.



EVOLUTION OF A CYLINDRICAL PIECE OF STEEL INTO A BALL CAUSED BY REPEATED HEATING AND QUENCHING

Discussion of a paper presented at the annual meeting of the British Iron and Steel institute.

Develop Huge Explosive Industry

American Manufacturers' Co-Operation in War Described by War Department— Many Millions Invested in New By-Product Coke Ovens — Fifty-Three Munition Plants Undertaken With Government Support

IN the 19 months the United States participated in the war American manufacturers produced 632,504,000 pounds of propellants, the powder loaded into small-arms cartridges or packed into big guns behind the projectiles to send them against the army. In the same time France produced 343,950,000 pounds and Great Britain 294,290,000, the American production being equal to that of England and France combined.

This is one of the points brought out in the war department's forthcoming book reviewing the department's work during the conflict with Germany. The great expansion of the American explosive industry further is described as follows:

"In those 19 months we produced 379,762,000 pounds of high explosives for loading into shell. In the same 19 months England produced 771,122,000 pounds of high explosives and France 701,438,000 pounds. America was below both France and England in total output, but in monthly rate of output America had reached 39,121,000 pounds as against France's 23,154,000 pounds and England's 29,122,000 pounds. Our rate of manufacturing propellants at the end of the fighting was up to 43,046,000 pounds as against France's 17,084,000 and England's 10,824,000.

Increasing Supply of Toluol

"In the production of artillery ammunition a comparison with France and Great Britain shows that our monthly rate in turning out unfilled rounds of ammunition at the end of the war was 7,044,000 rounds, as against 7,748,000 rounds for Great Britain and 6,661,000 rounds for France. In producing complete rounds of artillery ammunition, our monthly rate at the signing of the armistice was 2,429,000 rounds while that of Great Britain was 7,347,000 rounds; and that of France 7,638,000 rounds.

"In the 19 months of our participation in the war our production of unfilled rounds in ammunition was 38,623,000 rounds, while that of France was 156,170,000 rounds and that of Great Britain 138,357,000 rounds. In that time we had produced 17,260,000 complete rounds, while France had produced 149,827,000 rounds, and Great Britain 121,739,000 complete rounds."

While all the existing plants devoted to the manufacture of explosive were working at full capacity when the United States entered the war, it is stated, the problem of the ordnance department when the United States entered the war was to expand the facilities and distribute the trained personnel in such a way as to insure maximum production. Fifty-three new plants for making explosive and propellants and loading these were undertaken at a cost of approximately $360,000,000. When the armistice was signed a large part of this construction work was completed and in an efficient state of operation.

"How to increase the supply of toluol, the basic raw material from which T.N.T. is made, was the greatest and most pressing of all problems in regard to the existing raw materials," the review proceeds. "Before the war the sole source of this ingredient was from by-product coke ovens. The monthly capacity of these ovens in 1914 was, approximately, 700,000 pounds. By April, 1917, when we stepped into the conflict, this capacity had been increased to 6,000,000 pounds a month.

"By the time the armistice was signed our efforts for greater production had been carried on so successfully that the supply had been increased to 12,000,000 pounds a month, and the average cost of this was only 21 cents a pound. This tremendous increase of production not only took care of all demands for commercial purposes and permitted the shipment of about 11,000,000 pounds to the allied governments, but was more than ample to take care of our own entire explosives program, leaving a large stock on hand Dec. 1, 1918.

"Three general sources existed from which toluol was obtained: First, from the by-product recovery coke ovens; second, by the stripping or absorbing of toluol from carbureted water and coal gas; and third, by the cracking or breaking down of oils.

"In augmenting the supply of toluol through the first process, construction of additional by-product coke ovens by the following big steel companies was arranged: Jones & Laughlin Steel Co., Pittsburgh, to have a capacity of 5,770,160 pounds a year; the Sloss-Sheffield Co., Birmingham, Ala., 2,019,556; United States Steel Corp., Clairton, Pa., 2,308,064; International Harvester Co., Chicago, 1,586,794; United States Steel Corp., Birmingham, Ala., 2,019,556; Rainey-Wood Co., Swedeland, Pa., 2,163,810; Seaboard By-Product Co., Jersey City, N. J., 1,081,905; Pittsburgh Crucible Steel Co., Midland, Pa., 2,019,556.

"The total cost of these additional ovens was about $30,000,000, which was met by private capital after contracts for the purchase of the product had been made, insuring a secure return on the investment. Production was to begin in 1919.

"In addition to this there was arranged construction for 320 additional ovens at the following places: Donner Steel Co., Buffalo, to cost $6,000,000; Birmingham Coke Co., Birmingham, Ala., $2,500,000; Domestic Coke Corp., Fairmont, W. Va., $2,700,000; Domestic Coke Corp., Cleveland, $1,500,000; International Coal Products Corp., Clinchfield, Va., $2,000,000. From these sources the monthly production of toluol in 1920 would have been increased by 600,000 pounds a month.

Supply Was Short at Outset

"When we entered the war the quantity of field artillery ammunition on hand was considerably less than a single month's supply, basing our rate of expenditure on the estimated rate for November, 1918. Besides there were no facilities of any degree of magnitude available to take care of our projected program for filling the high explosive shell necessary for use by our overseas forces.

"Consequently it became necessary at once to plan and to develop the resources of the country for the production of metallic parts such as the shell proper, the fuse, boosters and adapters, as well as to design and build entirely new plants and to train completely new forces for the loading of the shell with the high explosives.

"Our high explosive shell used in our principal field gun, the 3-inch caliber weapon, was of the so-called base-fused type of low capacity. The point-fused type with a higher explosive capacity was the kind most used at that time by all other na-

tions. It was considered more effective than the low capacity shell we were then using. We almost at once decided to adopt the point-fused type of shell that has a relatively large bursting charge.

"To prevent confusion and loss of time because of the scramble for steel forgings and other raw materials it was decided that the government would purchase all raw materials as well as furnish components for ammunition.

"How successful we were in getting into quantity production on ammunition after the numerous and large obstacles in the early months of the war can be indicated best by the fact that of the 11,616,156 high-explosive shell for 75-millimeter guns machined up to Nov. 1, no less than 2,893,367 passed inspection in October; while of the 7,345,366 adapters and boosters for 75-millimeter guns that had been machined up to Nov. 1, 2,758,397 passed inspection in October."

Germany Loses 80 Electric Steel Plants

WITH the occupation of the left bank of the Rhine by the allies the Germans have lost some of their most important electric steel plants, including the Thyssen works at Hagondange in Lorraine. Here are two heroult electric furnaces of 8 tons capacity and one heroult furnace of 2 tons capacity. At Rombas there is one heroult furnace with a capacity of 2 tons. In the Saar basin are the following: Roechling Works at Voelklingen with five Roechberg-Rodenhausen electric furnaces, and the Stumm works at Neuenkirchen with one Nathusius furnace. It is estimated that in all 80 modern electric furnace plants have passed from German state control forever.

* * *

Coke of ordinary quality sold at $11.54 per metric ton in Paris, July 1, while "second choice" quality sold at $10.77, and washed coke was quoted at $15.39, all prices f.o.b. No. 1 pig iron (2.25 to 3.25 per cent silicon) made in the Longwy district, was quoted at $39.23; No. 2, of the same analysis, $39.85 and No. 3, same analysis, $37.70, per metric ton. Pig iron with less than 2.25 per cent silicon sold from $36.16 to $37.70, and that with more than 3.25 per cent, at $40.77.

The following quotations prevail on scrap: Ordinary scrap iron, $1.84, per 220 pounds; axles, rails and wheels, $2.77; lathe turnings, $1.08; brake shoes, $3.23; gray iron castings, $2.77; scrap tin, 46c.

The base price of plates was $10.46 per 220 pounds. Cast iron stuffing boxes for railroads were $6.46, and cast iron brake shoes $7.69, per 220 pounds.

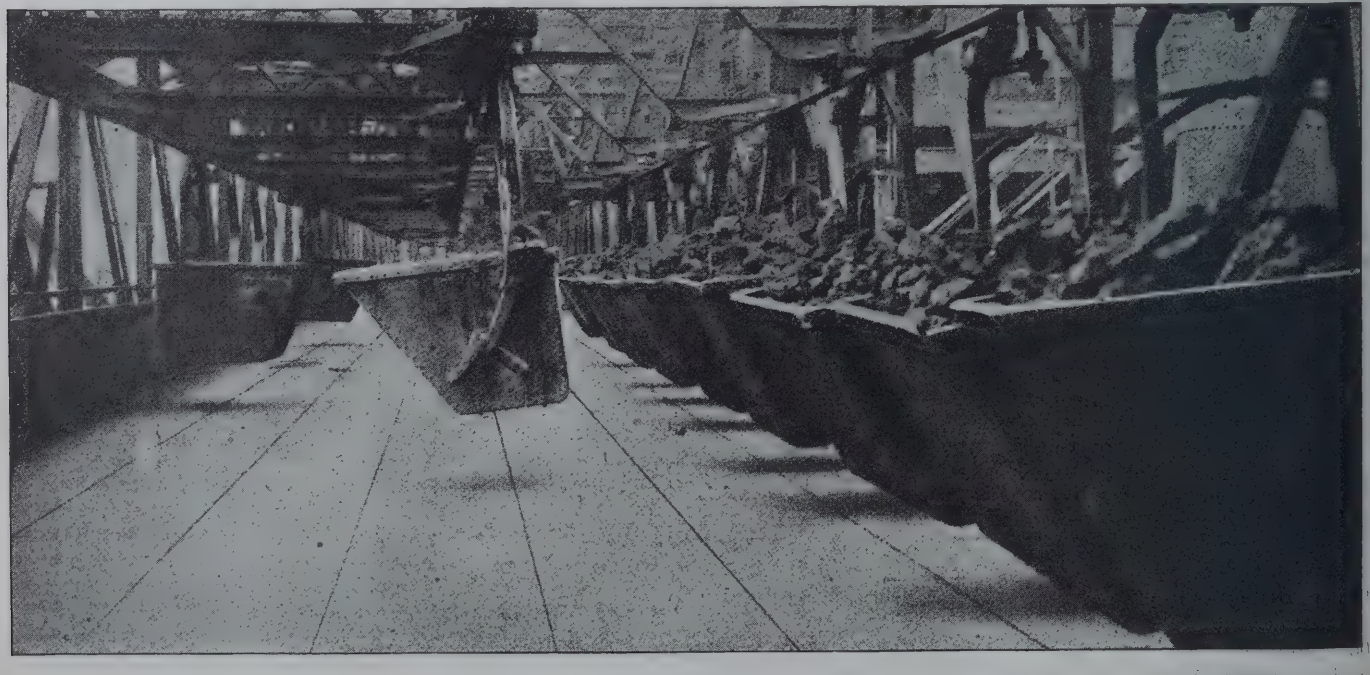
Some of the leading Belgian quotations were as follows: Rails, bars and beams, 500 Belgian francs; plates, 600 Belgian francs, the Belgian franc being worth but 95 per cent of par on the Paris market.

* * *

Aside from the free importation at standard tariffs, the following articles are free to be imported without restriction on the basis of a supplemenary import tax as noted:

	Standard tariff per 220 lbs.	Plus the following surtax, based on the ad valorem (Per cent)
Automobile axles of iron or steel, rough	$2.46	10
Automobile axles of iron or steel, finished	3.38	10
Steel balls for bearings	3.84 to 27.70	10
Machine tools	1.54 to 7.70	10
Steel springs for automobiles, wagons and locomotives	1.77 to 3.84	15
Pressed steel automobile frames	7.70	10
Auto rims, iron	1.84	10
Auto rims, steel	3.08	10
Agricultural machinery parts, without motors	1.92 to 2.31	10
Internal combustion motors	1.92 to 101.54	15

Other items subject to the surtax in addition to the regular tariff tax are: Tool steel 8 per cent; tin plate 15; copper sheets 5; lead in sheets 10; tubes 15; screws, bolts and nuts 15; wire netting, iron 5; other wire netting 15; blast furnace and steel mill material 10; rolls for rolling mills 15; cast and turned machine parts 15; forged or pressed machine parts 10; locomotives 15; hydraulic machinery 10; perforated sheets 15; boilers 10; tanks and cisterns 15.



CHARGING BUCKETS IN USE AT ROECHLING ELECTRIC STEEL WORKS

Golden Rule Best Labor Plan

Some New Systems and Methods for Fostering Industrial Morale Can't Compare With Age-Old Principle — Too Much "Democracy" as Bad as too Little — Loyalty Result of Honest Purpose and Common-Sense Action

BY W. A. GRIEVES

THERE is a conception in industry today that morale is something that can be bought, that it can be picked from the shelf somewhere and placed where it is desired and—presto, everything is lovely. But a little thought must soon tell us that morale is never in itself wholly a cause, it is most always an effect. a result of right thoughts, right actions, and wholesome environment.

It is a popular thing today to appear to be alarmed at what possibly may happen, but I for one refuse to be stampeded. It has taken this good old country of ours two or three centuries to get to the high position which she now holds; and the forces that have been at work all through these centuries are not ethereal. They are not going to be thrown aside and destroyed by a few hot-headed Bolshevists. While the jolt which jarred the slide-rule of industry in 1914 was a big one, it did not remove the lines of foundation and principle upon which our country has been built.

Let us be sane. Let us have just as much of this so-called industrial democracy as we can assimilate, and no more. All great and permanent things are not created in a day. It has taken this old world many centuries to come up to its present status, and even the most pessimistic will have to admit that the job thus far has been along the lines of progress. We can't go back and we don't want to go back; but it's going to be just as difficult, just as disastrous, to attempt too rapid development as it is to try to return wholly to past methods and practices.

Danger in Too Much Democracy

Today, as always, we have the extremists, those who are reactionary and those who would "bust" the whole machine in a mad endeavor to bring the millenium. Industrial democracy, whatever may be meant by that popular phrase, sounds good; but before we build too high hopes of its being a solution of all our industrial ills let's not forget the past.

The human race seems to be so constitued as to be only able to assimilate slowly. There's just as much danger in too much democracy as in too little. Look at Russia: A very pronounced example of too much of an apparently good thing. Let's not overlook the stern fact that the average man is quite willing to "let George do it." We, as Americans, like to make ourselves believe that we really represent ourselves, when the cold truth is that we much prefer to be represented.

The plea for a larger part in management is not so large or incessant as is the desire or knowledge of knowing that we can have it if we want it.

My many years of working with and dealing with men has convinced me of the intense honesty, the fairness, of the average man; and while I am for the broadest kind of industrial democracy consistent with safety, I cannot overlook the teachings of experience. We, as Americans, think we want much which, when secured, seems to be appreciated little, or, if appreciated, is not manifestly taken advantage of. Take for example the question of the primary. We howled against the old apparently autocratic political convention. And we continued to howl until we got the primary. And what has been the result? Some of our most advanced writers are advocating the return of the political convention and this is indicative of the trend of action and a clear demonstration of the fact that it is only the few after all who are willing to assume responsibility.

I know that this sounds like the rankest kind of reaction. But is it not true? So-called industrial democracy is not an entirely new play. It is true that some of the acts and scenes have been transposed and the stage settings perhaps made somewhat more elaborate; but the plot or theme is well known and has been on the boards for many years. Many fine industrial institutions in this country have been securing as good results for nearly 20 years as those plants are now securing which have just recently taken on these phases of co-operative activity and who think something really new has been discovered. Let us take for example, some of the co-operative activities of our own plant. We have our employes' building and loan, co-operative stores, bakery, shop paper, restaurant, dairy farm, slaughter house, etc., doing on an average of more than $1,000,000 business each year, all of which is managed by employes; but how many? About 2 per cent. Now, this does not indicate real indifference, but it does show that about 2 per cent of any crowd runs it. We have, for example, some 1600 stockholders in our employes' building and loan organization. There are 12 directors, four of whom are elected annually. And how many of these 1600 attend the annual election? About 200.

Two Fundamentals

This whole question of morale resolves itself into one or two very fundamental propositions, namely, confidence and the square deal. To create an atmosphere of real desirability in any organization it is not necessary to start a revolution. In order to secure the best bread, the baker does not indiscriminately use an unnecessary supply of yeast. The proper amount of leaven, intelligently used, finds its way through the whole setting and the results desired are secured. And just as it takes proper time, temperature and conditions for the bread to rise in all its richness, so does it take time, right conditions and hard work to bring about a desirable state of morale in any organization. Sounds a bit academic and platitudinous, but there's very little that's new. I'm ready to move a special vote of thanks to the man who brings us one really original idea.

Every now and then some of us fellows think we get hold of a new idea. We exploit it and chase it around over the country before chambers of commerce, employers' executive clubs, ad clubs and lots of other clubs, when all of a sudden we wake up to find that someone long ago exploited the same idea, even finding that its progenitor could be traced back to the golden age of

From a paper presented at the recent convention of National Association of Employment Managers, Cleveland. The author is assistant secretary of the Jeffrey Mfg. Co., Columbus, O.

Pericles, which age had the privilege of sitting at the feet of a Socrates and a Plato.

The average worker thinks. He may seem at times to waver in his thinking and acting; but in 95 cases out of 100 he can be counted on to think sanely and act constructively. It is only a few weeks ago that a crowd of 2000 or 3000 people gathered to witness the departure of Eugene Debbs to the federal prison. This incident was heralded over the country as an example of the attitude of our people; and certain yellow mediums which thrive in the business of being sensational, tried to leave the impression that this was representative America. But was it? We know it was not.

Problem Still Unsolved

There can never be any infallible recipe for building up morale. Confidence is the foundation stone upon which it must be built. And this confidence is not merely a question between management and employes, it must have as a fundamental also an expression of confidence between employes themselves. This is frequently overlooked. It has been said time and again that employes are often employes' worsts enemies. Note the attitude of the man newly promoted. Is it always as broad and sympathetic as that of the real boss? I'm afraid not. It hasn't yet been tempered with the spirit of justice. The arrogance of man in his earlier stages manifests itself. It's only after the broader viewpoint has been attained that the larger sympathies are evident.

Very few things in this life are greater than the influences creating them; and back of every great idea is the heart of a great person. It's as impossible to build morale in an organization without the spirit of the square deal as it is to organize a league of nations that will prevent war without first having nations infused with the spirit of justice and equity. Show me an organization of men and women where the spirit of justice and equity prevails, and I will show you an organization where there is little desire for the so-called industrial democracy with all the good that it holds.

Whatever chasm exists between management and employes in any organization can only be bridged through the practice of the golden rule. It all goes back to this fundamental. It matters but little about our methods. These change over night. But principles are eternal. What I might think the best method for my little trouble might not suit yours. There isn't any beaten path. No one scheme of industrial democracy is going to be a solution. Any one plan that succeeds well can largely be traced to the personality of some man with a big heart and a big brain controlled by big sympathies.

The heart and real desires of the rank and file of any industrial group can no more be wholly expressed in the constitutional form of representation than the real voice of the people of our country is reflected in the acts of our congress.

We must dig deeper than any one scheme, no matter how cleverly devised and applied. Any organization that hopes to build up morale by fighting agencies brought into being as a result of its own selfishness and unwillingness to deal fairly, has already greased the runways to its disaster. And morale cannot be built by taking advantage of another's misfortune. A fine example of this was brought to my attention the other day. A man about 60 years of age was sent to me for a job. He presented a letter from a friend of mine. He was one hand short due to an accident in early youth. He had come to our city over a year ago to be near his children. He applied for work at a neighboring factory and secured a job as night watchman. In addition to his duties as watchman he had to perform an almost continuous operation connected with an enameling oven. The temperature of the workroom was hot and the hours of work were 12 each night and seven nights a week.

His reason for coming to me for a job was not that he did not like the work he was doing. He wanted more pay. He was being paid the unjust sum of $2 for 12 hours of the hardest kind of work. His employers admitted that the pay was not enough, but gave him his choice of that amount or quitting, something they were pretty certain he would not do, as he had to have work. I cite this not because it is so very unusual, but to illustrate some of the causes of our industrial unrest. Maybe some plan of industrial democracy would take care of such abuse; but that does not get to the bottom of things.

Coercion for either management or employes can never be a permanent cure. We cannot build morale in an effort to substitute the counterfeit for the real thing. Every man is entitled to the best pay consistent with his ability to produce. And highest wages with corresponding good conditions are not necessarily a guarantee against discontent.

The whole question of building morale simply resolves itself into one of common sense. It has justice as its foundation. There are a thousand ways in which it may be brought about. Each one of us may think that our methods are the very best; and they may be for us. The man or woman has not yet been born who has worked out a perfect plan.

Absurd Claims Made

Personally I am afraid of any plan that claims to bring an industrial Utopia. The following advertisement which appeared recently is an example of much that is appearing these days:

"Mr. Blank tells how he has completely done away with strikes—how he has entirely eliminated antagonism and dissatisfaction and changed the whole relation between employer and employed. By the workings of his unique method, Mr. Blank does away entirely with the ill-will and antagonism of labor. He does away with the time killing tactics. He completely settles the hiring and firing problems—thus doing away for all time with labor turnover."

I would like to believe this, just as I would like to believe that Marxian socialism would be an international panacea for the diseases of our industrial and political order. But those of us who have been up against the game for 20 years or more, know that, with all respect for all plans that have as their aim the bettering of conditions, they are not going to bring in an industrial millenium. They will all do their bit, but to say that any one scheme will do away for all time with the festering spots of industrial misunderstanding, is making a claim far beyond the bounds of reason.

There's a stupendous scramble these days in an endeavor to inject morale into industry, but it can't be done by the hypodermic route. There's no use in fooling ourselves into believing that we can get in a few weeks or months what naturally requires years to obtain. We're having some splendid examples of the foolishness of this method right now.

The biggest wages, the best working conditions, and an honest effort to divide the profits 50-50 won't even satisfy. The whole question has a more fundamental element. It goes deeper than any one or a thousand methods. It has as its rock bed, confidence. It has as its superstructure a combination of all those factors that make for good will. And these cannot be cataloged. They are found in the hearts of men who have learned to play the game fairly. They are nurtured in the atmosphere of harmony, which, in turn, is nothing but the culture bed of efficiency.

Molding Machine Throws Sand

Description of a Device in Which the Projectile Principle is Employed for Ramming Sand — Sand Thrown by Rapidly Revolving Head— Stationary and Tractor Types Designed

BY PAT DWYER

WHEN an experienced molder wants to ram a deep pocket in a pattern, he throws the sand in place, a handful at a time. It needs no further ramming. This principle has been applied in an unusually interesting type of molding machine invented by E. O. Beardsley, 747 Irving Park boulevard, Chicago, and W. F. Piper, 538 South Oak Park avenue, Oak Park, Ill. A number of these machines have been in operation several months in various Chicago foundries, including the plants of the International Harvester Co. and the American Brake Shoe & Foundry Co. and rather unusual results have been achieved.

The Beardsley & Piper machine represents a radical departure in molding machine design, although it may be said to be a development of the gravity type. But instead of depending on the latter force for correct ramming, the sand is thrown into the mold at high speed by mechanical means. It follows naturally that a large quantity of sand can be handled per unit of time and that under suitable conditions finished molds should be turned out with extraordinary rapidity. It also is relatively easy to regulate the density of ramming.

In a measure at least the original features of this machine probably result from the fact that the inventors tackled their problem without preconceived ideas, and based their efforts on their practical foundry experience rather than on any precedents in the field of machine design. If machines of the jolt-ramming and squeezer types have endowed the molder with a giant's strength, the invention of Messrs. Beardsley & Piper, capable as it is of ramming seven cubic feet of sand per minute, may be said to have the effect of equipping him with seven league boots.

Since the first machine of this type was constructed in a small California foundry, a great deal of experimental work has been done with the result that the latest types embody a number of ideas based on actual operating experience. The development of the machine to its present state has been gradual. Two standard types have been developed; one, the tractor type, is an evolution from the other, the stationary type. The former style is illustrated in Fig. 1 and the latter in Fig. 4. The original features of both types of machines are clearly shown in these illustrations.

In either case the essential elements of the machine include a suitable sand handling mechanism which discharges the prepared sand into an inclined chute leading to the sand throwing head, which is so mounted on a double-jointed arm that it may be swung into any convenient position over the mold being rammed. The tractor type of machine, in addition, is mounted on wheels and, as shown in Fig. 3, is provided with a screw conveyor and bucket elevator for handling the sand together with suitable mechanism for moving the machine along the floor. When this kind of machine is employed the sand is arranged in a long windrow on the floor through which the machine moves as the work progresses laying down finished molds in its wake. For this purpose the sand should preferably be prepared by a portable machine of the auto type such as that built by the Sand Mixing Machine Co., New York.

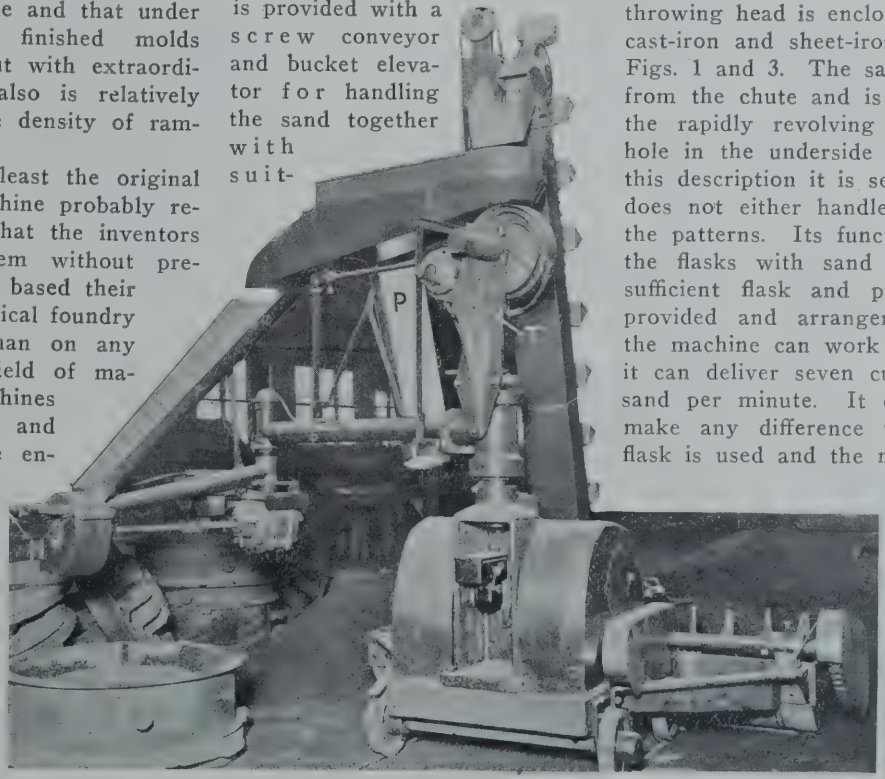


FIG. 1—THIS MACHINE RAMS SAND BY THROWING IT IN MUCH THE SAME MANNER AS A MOLDER THROWS IT INTO DEEP POCKETS AROUND PATTERNS BY HAND

The heart of the machine is the ramming head by means of which the sand is thrown into the molds. It is shown in detail in Fig. 2. The head is connected by a shaft to an electric motor which runs at high speed. The head itself consists of a small drum cast with three arms, on one side of which is a pair of brackets to which the impeller *A*, Fig. 2, is bolted. The impeller is so fastened that it may be adjusted to varying clearances. It is also made detachable so it can be renewed when it is worn out without scrapping the whole head. When in use, the entire sand-throwing head is enclosed in a combination cast-iron and sheet-iron hood as shown in Figs. 1 and 3. The sand enters at the top from the chute and is violently ejected by the rapidly revolving impeller through a hole in the underside of the hood. From this description it is seen that the machine does not either handle the flasks or draw the patterns. Its function is simply to fill the flasks with sand and ram them. If sufficient flask and pattern equipment is provided and arrangements are made so the machine can work steadily, it is stated it can deliver seven cubic feet of rammed sand per minute. It does not, of course, make any difference what shape or size flask is used and the nature of the pattern is of no consequence. The actual volume of output which may be obtained is dependent in a large measure on the organization of the shop and the facilities available for handling flasks and patterns to and from the machine. This same

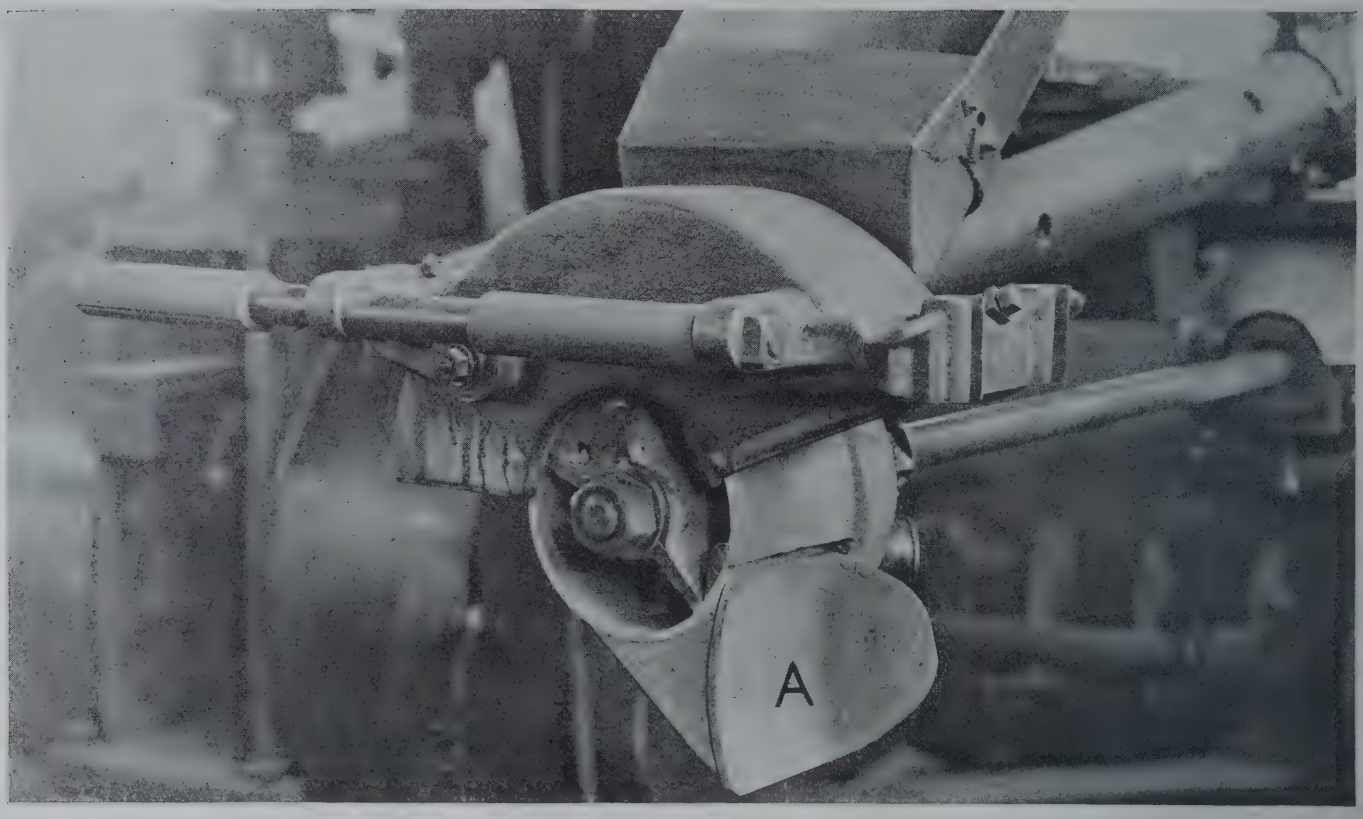


FIG. 2—RAMMING-HEAD OF SAND THROWING MACHINE WITH LOWER PART OF HOOD REMOVED TO ILLUSTRATE DETAILS OF CONSTRUCTION

limiting condition is encountered in the operation of most other types of molding machines.

For ordinary gray-iron work, the inventors have found that the ramming head should run at a speed from 1200 to 1400 revolutions per minute. This speed will ram the sand to the proper density. If necessary, the sand may be rammed at varying densities over the different parts of the pattern and this is one of the principal advantages of the machine. The variation in density is accomplished by passing the ramming head slowly or quickly over the pattern, the slower it is passed the softer the ram. By properly directing the stream, it is a comparatively simple matter to obtain any desired density of ramming up to the maximum pos-



FIG. 3—REAR VIEW OF TRACTOR-TYPE MACHINE SHOWING SCREW CONVEYOR AND ELEVATOR FOR HANDLING SAND. FIG. 4—STATIONARY TYPE MACHINE WHICH HAS A RANGE OF 360 DEGREES AND A RADIUS OF 7 FEET. FIG. 5—DRAG MOLD FOR A TRACTOR BRAKE WHEEL

sible with any given impeller speed. For making molds for steel castings an impeller speed of 1800 revolutions per minute has been found suitable.

Experiments also have demonstrated the fact that one impeller gives the best results. Heads were tried with two, four and six impellers, but it was found that the density of ramming decreased in proportion to the number of blades.

Ramming sand with this machine is as simple as filling a tub with water from a hose. The operator swings the throwing head into the proper positions by means of the handle *H*, Fig. 1. A constant stream of prepared sand comes down the chute and as it passes through the throwing head the revolving paddle strikes it and drives it into the mold at the proper speed to pack it firmly.

A fairly common job in this country is a sewer ring. Three molds a day, or one every two hours represents a good average output for one man by hand. It is claimed with this machine a man can turn out a complete mold in 10 minutes. This assumes, of course, that proper facilities are available for handling the flasks, etc., and that the shop is working under practically ideal conditions which do not always prevail under ordinary circumstances.

Figs. 4, 5 and 6 illustrate clearly what this machine can do. The molds shown are for 30-inch brake wheels for tractors. Five men, it is stated, regularly put up 300 of these molds every day. They have on several occasions made a complete mold in a minute. The machine on which these molds are made is of the stationary type and the sand is supplied from an overhead conveyor system. The floor is served by an air hoist which carries the molds away from the machine and puts the copes and drags together. The hoist is also used for shaking out the molds. Pouring goes on continuously. The molds are shaken-out over a grating in the floor near the molding machine. The sand drops through to the basement, where it is picked up, reconditioned and returned to the machine by means of a sand handling and preparing system of the ordinary continuously-operating type. The machine shown in Fig. 4 is so designed that the arm carrying the sand-throwing head can swing in a complete circle. The swing of the arm on the tractor type machine, on account of the sand elevator, is limited to 220 degrees which has proved ample for ordinary requirements.

Three motors are provided for operating the various parts of the mechanism of the tractor type machine. The entire control is concentrated in the handle *H*, Fig. 1, which is mounted on the sand-throwing head. This control is similar to that provided on a motorcycle. The functions of the motor connected to the sand-throwing head have already been explained. One of the other two motors is located in the large enclosed hood which surrounds the pedestal of the machine, as shown in Fig. 1. This motor furnishes the power for pulling the machine along the floor and for operating the screw conveyor and sand elevator. The riddle is oscillated by a third motor shown in Fig. 1.

The motor connected to the ramming-head is controlled independently of the other two. It is started by giving the control handle a quarter turn; if the handle is turned half way around all three motors are set to work. This simple interlocking arrangement makes it certain that the sand-throwing head is always in motion when the remainder of the machine is in operation.

The articulated arm which carries the sand-throwing head swings from two pivotal points which are provided with Timken roller bearings. This makes it possible to move the throwing head very easily in any direction in a horizontal plane. In fact, the operation of the machine is said to be quite within the capability of a one-armed man.

The tractor-type machine is pulled along the floor by means of a cable which is shown clearly in Fig. 3. This cable winds around a drum which is housed under the large hood at the base of the machine. The drum shaft also projects and carries the ratchet wheel *Q*, Fig. 3. Immediately over the ratchet wheel is a pawl with its fixed end attached to a pin mounted on an eccentric and its free end resting on the periphery of the wheel. As the eccentric revolves, the free end of the pawl



FIG. 6—A PORTION OF A FLOOR OF TRACTOR BRAKE-WHEEL MOLDS MADE WITH THE SAND-THROWING MACHINE—FIVE MEN MAKE 300 MOLDS A DAY

is alternately drawn back and pushed ahead. The result is that the drum carrying the cable is rotated a fraction of a revolution at each stroke of the eccentric. This arrangement of ratchet and pawl is similar to that in use on machine tools for regulating the feed and carriage travel.

The free end of the cable is attached to some suitable anchor at the far end of the floor before commencing operations. Therefore, when the machine is put in motion it gradually winds up the cable and pulls itself along the floor, consuming the sand heap as it moves. The rate of travel is regulated by adjusting the sizes of the gears in the pawl mechanism.

The screw conveyors used for bringing the sand to the bucket elevator are clearly shown in Fig. 3. Even if the sand is not thoroughly mixed in the heap it does not make a great deal of difference because it is turned over 32 times and then riddled before it reaches the mold. The riddle is of the oscillating type and is motor-driven as previously explained. There is a gap in one side of the riddle through which pieces of scrap, etc., are automatically ejected. They fall down the chute *T*, Fig. 1, and are collected in a box carried by the machine.

Designs Air-Operated Pickling Machine

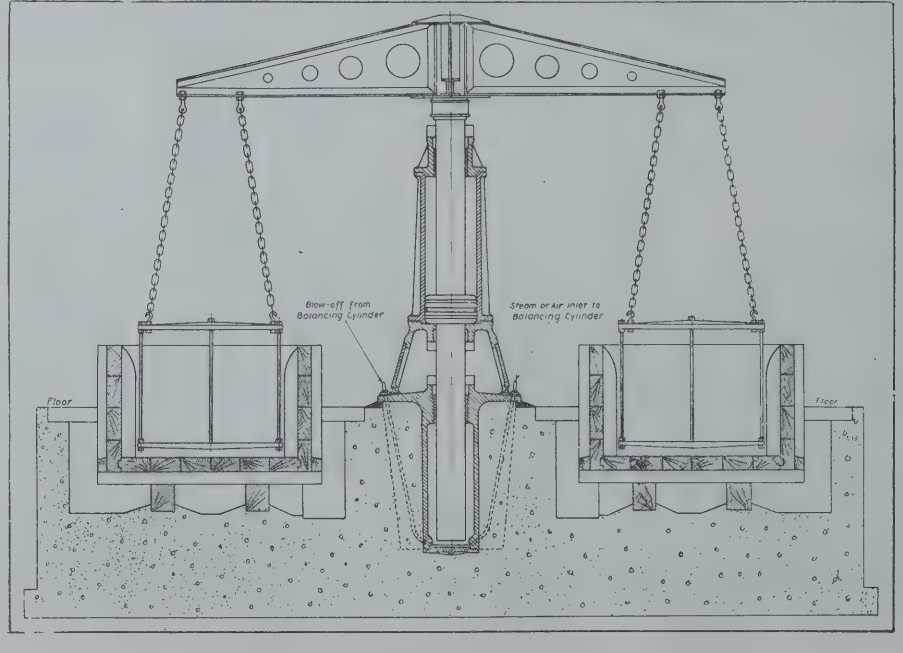
Pickling machines consist of a vertical reciprocating plunger with a spider of three or four arms carrying crates which move up and down in the pickling and rinsing baths. Steam exhausted from these machines is used for heating the pickling bath. The steam consumption of a pickling machine such as built by the Mesta Machine Co., Pittsburgh, is 1000 pounds per hour.

Among the companies which recently have installed the Mesta-type machine is the Consolidated Expanded Metal Co., Braddock, Pa. The officials of the company selected compressed air as a driving medium in preference to steam because of their power supply and layout of their plant. At the works in question, all power is purchased in the form of electrical energy and such steam as is generated is low pressure for heating purposes only.

In designing the air-operated machine, shown in the accompanying illustration, changes were made in the parts and valves to preserve the quick action. The cross-sectional area of the bottom piston rod has been used to float the deadweight of the plunger with its piston, together with a large part of the weight of the spider on compressed air. The steel casing which surrounds the bottom piston rod is buried in concrete and holds the whole machine rigidly even if no foundation bolts are used.

In order to test the economy of operation of a machine of this type, a test was made to determine the air consumption for various loads on the machine. When operated with two loaded crates, the machine used 20.7 cubic feet of compressed air per minute while running 32 strokes per minute. While loaded with one crate, the machine used 19.6 cubic feet of compressed air per minute while running 30 strokes per minute. In the former case, the air gage pressure at the machine was 87.1 pounds per square inch, whereas in the latter case it was 82 pounds per square inch.

The United States bureau of mines is distributing a booklet which compares the present status of the Belgian zinc industry to its prewar condition. For many years Belgium was the leading zinc producing country of the world but the war made a disastrous check on the industry, decreasing the production from 204,220 tons in 1913 to the small figure of 8000 tons in 1918. For the 10 years preceding 1914, 21.6 per cent of the world's output of zinc was produced in Belgium,



PICKLING MACHINE OPERATING ON COMPRESSED AIR

Need Box Cars in Valley

Statistics show the box car supply in the Mahoning valley to be at the lowest ebb since the termination of hostilities, last week closing with about 20 per cent of the normal box car equipment available. A steel company in the Youngstown district, which asked for 15 cars last week was told there were only a few available and that only a small percentage of the order could be furnished. Steel manufacturers are using gondolas covered with canvas to a limited extent to piece out the number of box cars arriving in Youngstown and nearby stations. Should the experiment work out satisfactorily it is expected a considerable number of such cars will be used.

Coal Tar Fuel for Diesel Engines

A writer in *Journal für Gasbeleuchtung,* discusses a method of filtering coal tar for use in diesel engines which is said to be both simple and effective.

The tar is pumped into a receptacle of about 3 cubic meters capacity. In this holder it is heated up to 60 degrees Cent., for 4 hours, and then left to stand for 10 hours to allow the pitch and other impurities to settle down. Then one-third of the contents of the holder is run from the top and forced through three filters, the latter being heated to 40 degrees Cent. The product is then conveyed to the holder for the purified material, from which it is led directly to the engines. The tar is warmed up to 40 degrees Cent, before being introduced into the engine. This is effected by means of a gas heating device below the tar pipe. To obtain the best results, it is pointed out that the piston of the engine should be cleaned once in four months.

Profit-Sharing Promotes Thrift

Employes Deposit 5 Per Cent of Wages, Company Donates 5 Per Cent of Net Earnings, Fund Being Saved and Drawing Interest at 5 Per Cent for Workers — Succeeds in $100,000,000 Enterprise

BY RALPH H. BUTZ

EVERY employer is aware that there are many profit-sharing plans which have failed to accomplish that which their originators claimed for them. One after another plans have been tried out in various establishments throughout the country and abandoned because they did not produce expected results. In some instances the employer attempted to give more than he could afford, in others the plan was merely a scheme to induce employes to invest part of their earning in the business to increase working capital.

There is, however, one plan which has withstood the test of time, and which is proving satisfactory to both the employer and employe. This plan may eventually be adopted by a large number of employers. The plan has been in operation for a number of years in some of the smaller establishments, and it is said to have produced satisfactory results in every instance. One corporation whose business is in excess of $100,000,000 a year adopted this plan July 1, 1916, and the results have exceeded expectation.

Participation Voluntary

The plan was unfolded to the employes in a circular letter, in which the following explanation was presented:

"In order that employes may share in the profits of this business, and to encourage the habit of saving, the company has decided to contribute annually a sum equal to 5 per cent of its net earnings (without deduction of dividends to stockholder), as shown by the annual audit of its books, to an employes' savings and profit-sharing fund.

"It is intended that this plan will furnish to those who remain in the employ of the company until they reach the age when they retire from active service, a sum sufficient to provide for them thereafter, and that even those who achieve a long service record but who may not remain with the company all of their business life will have accumulated a substantial sum. This savings and profit-sharing fund will enable an employe to secure an income for himself after the close of his active business career, or in case of death, for his family."

Each employe who has been in the company's service three years is entitled to participate. The fact that participation is voluntary is no doubt one of the reasons for its popularty and success.

Some employers have attempted to make participation in their profit-sharing plans compulsory on the part of the employes, and this policy is said to have resulted in dissatisfaction among employes.

The operation of the profit-sharing plan is simple. The employe who wants to participate is required to deposit in the fund 5 per cent of his salary, and no employe is allowed to deposit more. Further, no employe is allowed to deposit more than $150 per annum. This is to prevent higher-salaried employes from obtaining too large a participation.

The company will deposit to the fund each year a sum equal to 5 per cent of the net income for the year. The contribution is then credited pro rata to the participating members of the fund. Thus, if all the participating employes paid into the fund $100,000 during the year, and the contribution made by the company amounted to $300,000, each depositor would have credited to his account an additional $3 for each dollar paid in. This can be illustrated further by assuming that an employe deposited $150 during the year. After the company's contribution to the fund was credited he would have a total credit to his account of $600, plus 5 per cent interest, compounded semiannually.

The part of the plan providing for withdrawals from the fund has an influence in causing him to remain with the company. The average employe will not leave his position without giving due consideration to the loss it will mean to him.

After a depositor has completed 10 years of active service he is entitled to withdraw from the fund the entire amount to his credit. This includes, of course, the company's contributions and the interest on his account. If a depositor has not completed 10 years of service, he is entitled to withdraw only the amounts he has deposited, plus interest at 5 per cent, compounded semiannually. Thus if a depositor should withdraw before having served 10 years he would still receive more than if he had deposited his money in a savings bank.

There are several exceptions to the foregoing rule. A woman depositor who leaves to become married, after five years' service, is entitled to her full share of the fund. In case of death of a depositor while in the service of the company his estate is entitled to receive the full share credited to his account. Another condition is that when a depositor ceases to be an employe he is required to withdraw the amount due him.

Bonus Too Often Squandered

That this plan is popular with the employes is vouched for by the fact that more than 92 per cent of the eligible employes are participating. It not only teaches them to save, but it is a means of making ample provision for the future.

The plan has this feature of interest over the method of paying a bonus once a year. The employe who has not acquired the saving habit spends his bonus and has nothing left to show that he received a share of the company's profit. But when his share of the profit is placed on deposit, bearing interest, it will increase. Without making any special sacrifices he will acquire a modest fortune in the course of a number of years.

The money paid into this fund is largely invested in the stocks of the company, which are excellent securities and pay liberal dividends. In this manner the employes participate to the fullest extent in the profits of the company.

The latest report of the trustees for the fund shows that the company has paid into the fund every year an average of almost $4 for every dollar deposited by the employes.

The president of the company recently said: "We are very happy over the results of this profit sharing, not only by reason of its obvious success, but because of the independent position which it gives to the employe."

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Planning Industrial Laboratory

Experimentation in the Plant is Costly and Demoralizing—The Authors Show the Tremendous Importance and Necessity of an Adequate Research Laboratory, and Outline Their Conception of an Ideal Unit

BY A. D. LITTLE AND H. E. HOWE

PREVIOUS to the war there were about 375 industrial research laboratories in the United States, including those maintained by manufacturers for their own benefit, and commercial laboratories prepared to render similar service. At the present time there are no figures available regarding the number of new laboratories established as a result of the war, but there is no doubt but that the war created a deeper interest in industrial research, and the application of science to manufacturing processes.

Broadly stated, the aims of a research organization should be: To find, develop and train men; to create such a background in the public mind as shall insure support for research and the industrial utilization of research results; to secure co-operation between different branches of science, as, for example, between chemists and mathematicians; to avoid repetition and duplication of effort, first by rendering present knowledge readily available to research workers, second by applying clearing-house methods to research projects; to stimulate research by emphasizing the importance of specific problems, making special grants, rendering material and facilities as generally available as possible; to furnish a general staff for research which shall work out the plan of attack for major problems, assign the several lines to competent workers and co-ordinate and focus the whole; to bring home to manufacturers the advantages of research with the view of promoting the establishment of private, corporation, and group laboratories; to make and publish a census of available research facilities in men and equipment; to survey the natural resources of the nation and direct research toward their development, and to appraise our great industrial wastes and develop plans and methods for turning them to profitable use.

In any research laboratory, it is obvious that it is the personal factor which determines performance and this is preeminently true of the laboratory director. Sir Humphrey Davy truly said that his greatest discovery was Michael Farady, and coincidentally no greater problem is likely to confront a research laboratory than that involved in the discovery of a director. Successful laboratory directors may be of several types, but a militant optimism, contagious enthusiasm, controlled imagination and quick human sympathy are common to them all. Such a man will naturally in selecting his subordinates look for these personal qualities almost as carefully as he will weigh specialized scientific training, and having been thus guided in his selections will find it relatively easy to inspire throughout his organization those relations of good fellowship and that *esprit de corps* which multiply enormously the effectiveness of any working force.

The Divisions of the Laboratory

Within such a laboratory there are two distinct sets of duties which may be designated as scientific or technical, and commercial or financial. These two divisions have at least two points in contact, one being through a service manager, and the other the department charged with obtaining new business for the organization.

The fundamental duty of the scientific division is to interpret the results of pure science in the terms of industry. While the work of the commercial laboratory is of the same order as that done in any laboratory even where the dollar is never discussed, it must be conducted with full recognition of the fact that many industrial problems are as intimately concerned with economic questions as with scientific. The technical work should be in charge of the president, under whom various departments should be organized, so that each phase of a given problem may have the attention of a specialist, provided with adequate equipment to facilitate the work.

In this connection it may be emphasized that it pays to provide congenial, inspiring surroundings for the laboratory worker. The laboratory can be made attractive without being ornate, or involving unreasonable expense, and every effort should be made to have the workers reasonably happy. Under no other condition can the best work be expected, and it must be remembered that the heaviest investment is in the time of these workers, the salary cost being much greater than that for equipment or material maintenance. Rewards other than monetary for faithful service also play an important part.

The departments into which the technical division are divided will naturally differ in each laboratory, but a fairly definite line can be drawn between research, engineering and standardized or routine work.

The research department should be organized for both laboratory and small-factory-scale work. Engineering will embody plant inspection, design, construction and operation, and although much of its work will be in the field, many phases of its problems will be worked out concurrently in the laboratory. The analytical department will be subdivided under such headings as textiles, fuels, food, metallurgy, chemical microscopy, lubricants, etc.

Nothing is more expensive or demoralizing than experimentation in the plant. An industrial research laboratory should therefore be adequately provided with equipment of semicommercial size. Infant mortality among processes is high in any case and the most critical period in their young lives is that covering the transition from the laboratory to the plant. They require and the research laboratory should provide a nursery to protect and foster them during this period of their development. Even when no such provision appears feasible, it is, nevertheless, highly desirable to have the industrial research laboratory actually engaged in some small scale, highly specialized, commercial manufacture, preferably of some product which it has itself originated.

It is easy to visualize the organization chart for such a laboratory, and a brief description of how a new piece of work will be handled may therefore convey a better idea of the method of management. The authorization will go to the service manager, who sees all incoming mail, and to it will be attached any correspondence or data bearing on the case, all of which will be given a case number for identification. This number will be entered in a case register, which will indicate the name of the client, the subject of the problem, the date the authorization is received and the date when the work shall have been completed. The service manager, who must be familiar with the ability

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Excerpt of a paper presented at the spring meeting of the American Society of Mechanical Engineers, June, 1919, at Detroit. A. D. Little is president, Arthur D. Little, Inc., Boston, and H. E. Howe is affiliated with the National Research Council.

of each member of the staff, as well as with the work in hand, will assign the case to the division which can render the best service. Conferences will then be called, into which any member of the organization who can contribute anything to the solution of the problem in hand will be drawn, and outside associates or independent consultants may be included.

At the completion of the work the report, varying in extent from a single printed form to a bound volume of several hundred pages, will pass through the hands of all concerned, and will thus be distinctly the report of the organization and not of an individual in the organization.

Writing a report requires skill, for it must be comprehensive. It should begin with a clear statement of the problem, followed by the conclusion reached as a result of the work, which may then be described in detail. Patents, cost data, graphs, photographs and samples should be dealt with in an appendix, and in some instances descriptions of apparatus should be included. The whole must be carefully indexed, and a copy sent to the library to be bound and kept as confidential information in locked cases, but as part of the library it should be carded for the library card index.

This brings up the question of the library, which may easily be considered the backbone of the industrial laboratory. Its extent will depend upon other library material available in the community but there are few things which obstruct research more seriously than the absence of easily accessible proper library facilities. A few dollars spent in books and literature frequently saves as many hundreds otherwise spent in work of duplication. The useful periodicals must be provided, elaborate indexes will be found a good investment, also abstracts and patents; in short, every means for quickly locating literature references should be at hand. The current literature, with articles of interest indicated on an attached slip, should be circulated among the members of the staff whose names are checked on this slip, and someone, preferably a chemist, should have assigned to him the task of constantly reading the literature in order that no scrap of information shall escape.

British Labor Refuses Directorship

Some interesting details with regard to the progress of operations of the Ebbw Vale Steel, Iron & Coal Co., Ltd., accompanied by a protest against organized labor's obstructionism, were presented at the recent annual meeting of the company in London. John Windham Baynon, deputy chairman, presided.

In connection with the appointment of a new director, Sir Leonard Llewellyn, Mr. Baynon said the directors were disappointed in being unable to introduce another colleague. They invited one of the great trade unions to nominate one of their number to occupy a seat on the board, but it declined.

"Labor has long proclaimed its ability to take its share in the administration of industry; it has maintained that much of the industrial unrest was due to the ignorance of men managing great industrial companies," said the chairman. "We felt that the presence of a representative of labor on the board, with all the privileges and all the responsibilities of an ordinary director, would give him the opportunity of realizing the many difficulties which confront those men.

"We felt that in realizing and appreciating our difficulties he might possibly be able to take a broader view of many questions which have to be settled between capital and labor. We felt that the presence of a representative of labor on this board would give an opportunity to myself and my colleagues to learn the views of labor at first hand. We realized we were taking a bold step, and we were confident our action would be justified.

"I regret to say our invitation to labor has been refused; not that I am surprised, but I am considerably disappointed. If labor seeks to control industry, then labor should be prepared to serve its apprenticeship side by side with men who have made it their life-long study."

The speaker declared that during the past year the blast furnaces were damped down a number of times as a result of strikes. The company also had difficulty in operating its coke ovens owing to a strike of clerks at the Ebbw Vale collieries. At present it is having great difficulties with electricians and craftsmen which may compel it to close its iron and steel works.

"Today the company owns 3300 acres of land, and with its subsidiary companies it has, in addition, some 11,000 acres of leasehold property," he continued. "It has under construction two large modern blast furnaces which, when completed, will make nine furnaces in all, with a production of 450,000 tons of pig iron per annum. It has a large battery of modern by-product ovens and 150 ovens are now working. They will produce 575,000 tons of coke per annum, which not only will give us an ample supply of coke for our blast furnaces, but also will provide a large amount of fertilizer for agriculturalists.

"In addition to its iron and steel works, the company has a fine, modern galvanized sheet works, besides many subsidiary industries; a magnificent power station, producing electrical energy from the waste gases of the blast furnaces and by-product ovens at a minimum of cost.

"Ebbw Vale, with its subsidiary companies, last year produced 3,400,000 tons of coal; it employed over 20,000 men and it paid in wages £3,739,000 ($17,947,200)."

French Revise Ship Steel Specifications

Bureau Veritas, the French classification society, is now making an extensive revision to their existing specifications as covering the manufacture of various steel and iron products used in ship construction. This has become necessary, owing to the fact that American steel manufacturers, as a general rule, have been adverse to accepting orders when Bureau Veritas specifications are used.

Unusual conditions due to the war have been the cause of delaying such revisions until now. This work is well in hand and new copies of their rules should be ready for distribution by January, 1920. Pending the issuance of these revisions Bureau Veritas has issued formal notification that any orders for ship structural steel, boiler steel (including plates, tubes, stays and rivets), castings, forgings, etc., which might be received and which specified Bureau Veritas tests, inspection or specifications, are acceptable to them when fabricated in accordance with the various 1918 specifications of the American Society for Testing Materials and as hereinafter designated, provided, of course, that such tests are performed in the presence of a duly authorized representative of the Bureau Veritas.

The revisions are intended to cover any materials manufactured in United States or Canada for either export or local consumption. The specifications of the American Society for Testing Materials have been decided upon by the Bureau Veritas as being satisfactory and are believed to be most readily adaptable and agreeable to American practice and are so widely known that the mills can work to same without requesting special instructions.

In many cases, and especially with boiler material (plates, stays and rivets), it will be found that order designates the physical properties. In such an instance, order must be conformed to with balance of inspection in accordance with A. S. T. M. specification applying. Should the designated physical requirements so vary from the A. S. T. M. as to affect the chemical analysis set forth in such A. S. T. M. specification, the analysis may be altered, with their permission, as to come within the range of the physical properties.

Foundrymen Outwitted Germans

Though Faced by a Continuous and Increasing Shortage of Raw Materials, and Limited by Restrictions on Gas and Electricity, the Foundrymen of Occupied Belgium Found Opportunity to Produce Castings

BY IVAN LAMOUREUX

Sheer audacity characterized many of the activities of the Belgian people during the period of occupation. That perky little paper, which periodically jabbed the stolid German authorities and defied all efforts to trace, capture and punish its publishers, is well known. Similar in many ways to the spirit which actuated La Libre Belgique was that which prompted Belgian foundrymen to improvise and scheme to trick the Germans, by operating clandestine foundries under the very eyes of military authority. M. Ivan Lamoureux, in this article, which was written for the interesting new publication Revue de Fonderie, *tells how this was accomplished.*

MOST of the foundries in the Liege district in Belgium had to stop work in 1916 by order of the German authorities. Among those which remained inactive were some of which the invader was unaware, some whose production was needed for useful public work, and finally those that involuntarily or otherwise assisted in the foundry work required for the support of the German army.

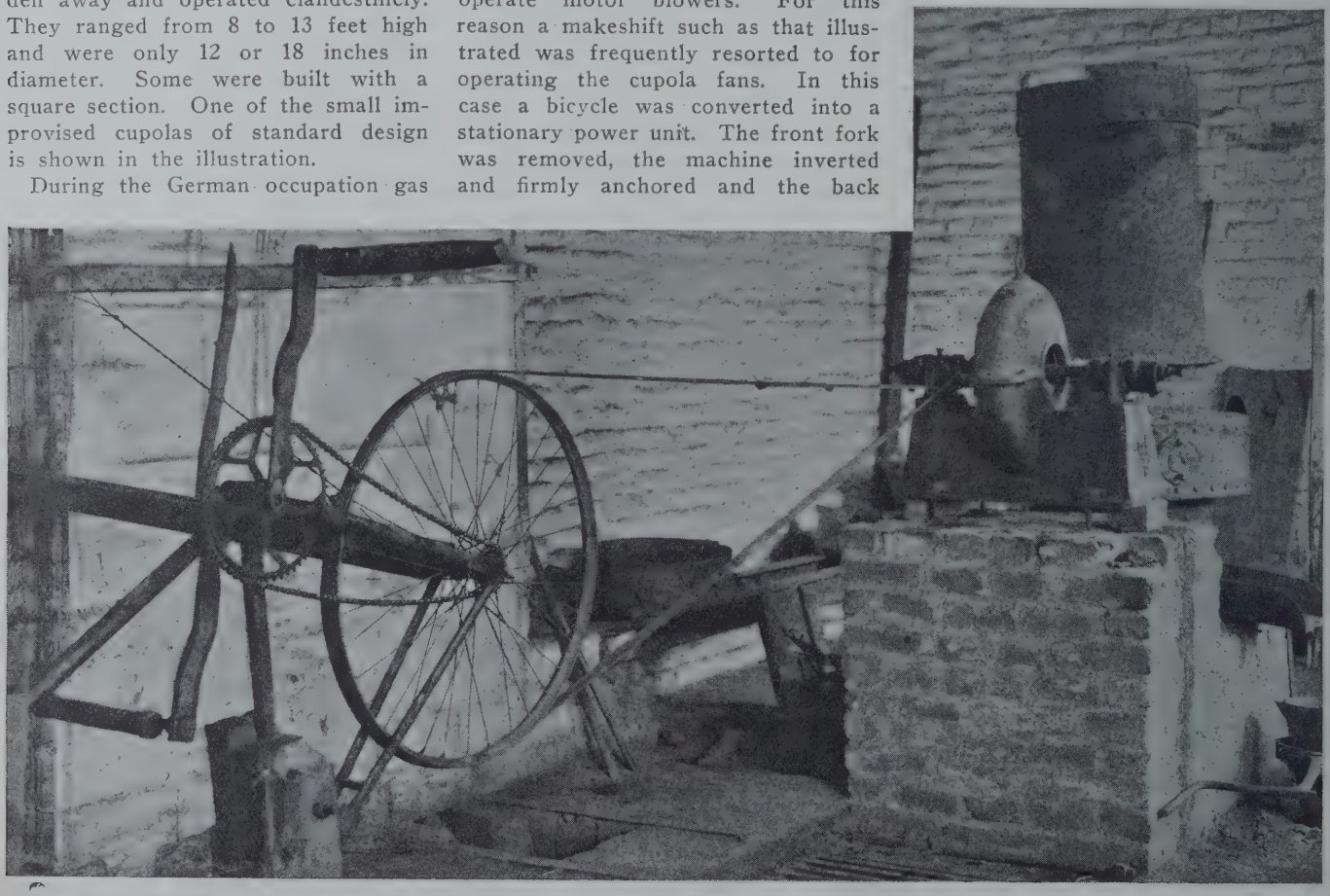
Despite the complete stoppage of large industries and the absence of raw materials, other than those which were to be found in Belgium, and which had escaped the enemy requisitions, small iron foundries continued secretly to cast small machine parts and all kinds of hardware.

Foundries which were prevented from operating their regular shops built small improvised cupolas from materials at hand. These were hidden away and operated clandestinely. They ranged from 8 to 13 feet high and were only 12 or 18 inches in diameter. Some were built with a square section. One of the small improvised cupolas of standard design is shown in the illustration.

During the German occupation gas and electricity were strictly limited. It was impossible to secure current to operate motor blowers. For this reason a makeshift such as that illustrated was frequently resorted to for operating the cupola fans. In this case a bicycle was converted into a stationary power unit. The front fork was removed, the machine inverted and firmly anchored and the back wheel was belted to the drive pulley of the blower. The cranks to which the pedals had been fastened were extended to double the former length and wooden handles replaced the pedals.

Two men turned this power unit, three shifts of two men each taking turns in turning the cranks to operate the blower. The melting period of the small cupola was two hours with a fan speed of as high as 2000 revolutions per minute. In ordinary practice a one horsepower motor served to drive a blower of the type in question.

These small hidden foundries operated practically during the entire war, making door hardware, furnace grates, small coffee and flour mills and other mechanical devices and hardware products which at that time were in great demand.



SMALL IMPROVISED CUPOLA BLOWN BY A HOME-MADE HUMAN MOTOR WHICH WAS USED IN A FOUNDRY CLANDESTINELY OPERATED IN OCCUPIED BELGIAN

Assembly Plants

For Buick and Chevrolet Companies Will Contain Novel Equipment

The buildings to be erected by the General Motors Corp. at Union avenue and Natural Bridge road, St. Louis, as recently announced in these columns, are designed to house assembling plants and offices of the Buick and Chevrolet Motor companies. The proposed buildings, docks and trackage will cover approximately 12 acres of ground. All buildings are to be three stories high and will have a combined floor space of approximately 20 acres.

According to the plans, the main buildings are of U shape design and will have a frontage of 680 feet on Union avenue and 760 feet on Natural Bridge road. An inner court, 140 x 660 feet, in each building, is intended to accommodate all incoming and outgoing freight and is well fitted with docks, trackage and a supply building. The office building connects the assembly plants and measures 40 x 120 feet.

The assembly buildings will be of fireproof construction of the reinforced concrete flat slab type. The office will be of reinforced concrete and tile. The exterior finishes are to be concrete and brick with stone trim, arranged so as to give the whole a pleasing yet not elaborate appearance, appropriate to buildings of this character.

A model heating and ventilating system is planned for all of the buildings, consisting of forced circulation of pure washed air through air ducts on the roof and down through the columns panels on each floor of the plant. Low pressure steam will be furnished from an outside source and will be introduced into the heating system for the proper tempering of the circulated air. No piping or radiation on work floors will be required with this system. Modern steel sash windows, extending from the ceiling to within 3 feet of the floor, will insure adequate lighting in day time.

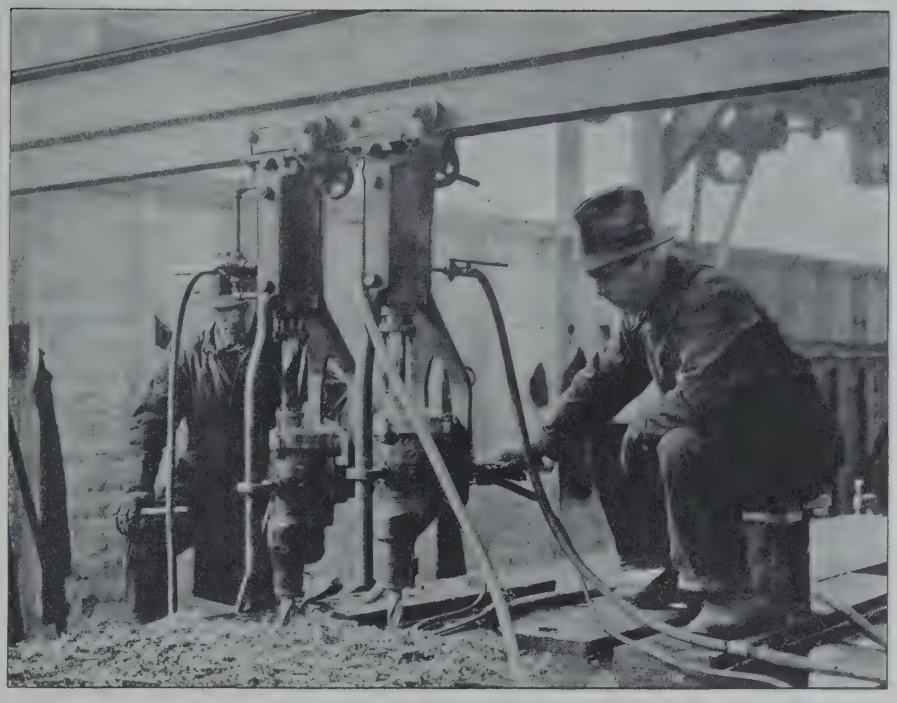
The plant was designed for the assembling of automobiles from parts manufactured in remote manufacturing plants. The assembly will begin with the erection of the door frames of the body, which will take place on the second floor of the right wing of the assembly shop. Side panels, body sills, under bodies, shrouds, windshield brackets, rear seats, top irons, and door hangers and other details of body assembly will receive attention in this department.

On the third floor, bodies will be prepared for painting by being sand blasted. The painting, involving more than a score of distinct operations, requires an elaborate system of paint spraying devices, overhead trolleys for conveying the bodies, and many drying ovens.

After the body has been painted, it will be equipped with electrical instruments. Sheet metal parts, including side aprons, fenders, etc., after being enameled, will be fastened to the body. In the meantime the tops and upholstered equipment will be in the course of completion in other departments.

In assembling the chassis, the frame will travel on a conveyor moving at a rate of about six feet per minute. The grease cups, motor, carburetor, vacuum tank and other parts will be attached as the frame passes various stations. After this preliminary assembly, the chassis will be placed on another conveyor, and after it has been painted, the storage battery, wheels, running boards will be assembled, followed by the body, which will be lowered through a hole from the body department.

With the exception of electric motors, elevators and sewing machines, all machinery and equipment for the new plants has been designed in the works engineer's office of the Buick Motor Co., Flint, Mich.



PORTABLE ELECTRIC DRILLS SUSPENDED FROM A MONORAIL ARE USED FOR DRILLING HOLES THROUGH THREE THICKNESSES OF 1 3/16-INCH BOILER PLATE

A Drill Press Substitute

A practical rigging, which is used in connection with portable electric drills for drilling boiler-shell plate, was devised recently at the Puget Sound Machinery Depot, Seattle. One to four electric drills are suspended from an H-beam which serves as a monorail for the side travel of the drills. Two monorails are provided. Each beam is supported by end girders which travel on standard-gage rails. By means of this arrangement holes may be drilled in any part of a plate by from one to four machines. When four drills are operating simultaneously it is advisable to strengthen the monorails near the top of the span by means of a truss.

The feed is provided by hydraulic pressure and is controlled by means of a 4-way valve. The spent water is discharged underneath the plates. The pressure maintained is about 85 pounds per square inch. The accompanying illustration shows two drills which were built by the Van Dorn Electric Tool Co., Cleveland, drilling through three thicknesses of 1 3/16-inch boiler-shell plate. It requires about eight minutes to drill a hole 1 3/16-inch in diameter.

New Company Organizes

The Vibrating Machinery Co., capitalized at $50,000, has been organized and chartered at Chicago, and has taken over the entire business of the Schroeter Engineering Co. A plant and office has been established at 546 West Jackson boulevard. Julius Schroeter is president of the new concern, F. Von Schlagell is treasurer and Mrs. J. C. Miller secretary. The company manufactures an oscillating foundry riddle and a gas unit for welding and cutting. The latter device is just being put on the market and is designed to use natural or city gas in connection with oxygen, doing away with the necessity of employing hydrogen and acetylene, which much reduces cost.

Tungsten Tariff Bill in Doubt

House Passes Timberlake Measure, but Senate and President are Reported to be Opposed to It—Views Seem Changed on Protecting War-born Industries—Kitchen Charges Tungsten Producers Were Supreme among Profiteers

WASHINGTON, Aug. 26.—While Republicans in the house last Thursday afternoon succeeded in passing the Timberlake tungsten tariff bill over the solid and vigorous protest of the Democrats, extreme doubt exists that it will ever become a law under prevailing conditions in its present form.

It probably will be some time before it reaches the senate floor, and its passage by that branch of congress without modification is questionable in view of the fact that the Republicans have a majority of only eight and a number of these are so-called Progressives, who in the past have favored a low tariff or no tariff, and on this issue have a record more like that of the Democratic party than that of the regular Republicans. Moreover, the measure passed by the house, even if it should succeed in passing the senate without change, may face an insurmountable obstacle in a veto by the President, in which event a two-thirds vote, impossible to obtain, would be required for its enactment.

Although the President in his recent message to congress said industries stimulated during the war, of which tungsten ore production is one, should be protected, it is not believed the rates in the Timberlake measure will be approved by him. Democrats insist that they are so high there is not the slightest chance they will be sanctioned by the President. Some Republicans, however, profess to think this will be done.

Attitude is Doubtful

What has been said of the possible attitude of the senate and the President on the tungsten bill is equally applicable to other pending special tariff bills, such as the one relating to manganese ore and ferromanganese. While Republicans in the house have submitted arguments in favor of the levies included in the Timberlake measure in order to stimulate and adequately protect the domestic tungsten ore industry, low-tariff Progressive-Republicans and the President, as well as the Democrats in both branches of congress, seem to be far from changing their minds in favor of high duties, although the President has conceded industries stimulated under war conditions should be encouraged by protection.

The vote on the Timberlake bill was in strict accordance with party lines, 171 to 132. The bill passed as devised by the Republicans of the committee on ways and means, with one amendment, introduced by Representative Green, Republican, of Iowa. This amendment provides that imported stocks of tungsten ores and concentrates now held in the United States shall be taxed the difference between their cost and $17 a unit, the latter figure being the estimated cost of mining in this country. The bill fixes a duty of $10 a unit on crude tungsten ores and concentrates and $1 a pound on its manufactured products, including ferrotungsten. A unit is defined as 1 per cent of a short ton of 2000 pounds, or 20 pounds of tungstic trioxide.

Representative Green said the purpose of his amendment was to meet an objection made against the bill by Representative Kitchin, Democrat. Mr. Kitchin, who led the fight against the bill, claimed that if passed it would at once give four firms of importers in New York "who now have, according to the evidence, 4500 tons of imported ore stored there, $2,700,000 as a clear bonus by enhancing the value of such ore that amount, and would give the producers here, who have stored 1500 tons, a clear bonus of $900,000 by advancing their price to that extent, or a total gift to those who are hoarding these 6000 tons of ore of $3,600,000."

His statement was denied by Chairman Fordney of the committee on ways and means, who led the fight for the bill, and other Republicans, but Representative Green said that in any event his amendment would take care of the situation.

It was further explained by Mr. Green that ore is coming to the United States, or at least offered for sale, at the rate of about $7 or $8, and that it is reported it has been offered in New York at as low as $6 per unit of tungsten trioxide laid down in New York. The effect of the bill, he said, as the committee intended it, will be to bring the price up to about $17 per unit, which was declared to be the lowest price, according to testimony before the committee, at which the American operators could produce it.

Under his amendment, said Mr. Green, those who have large stocks on hand if they bought it for less than $17 per unit will be compelled to pay a tax on the difference between what they paid for it and $17, and there will be no object in trying to ship in, "as doubtless otherwise there would be imported large quantities of the ore at somewhere from $6 to $8 a unit, with the hope of making the difference between that and the rate in this bill during the time the bill was pending."

Kitchin Charges Profiteering

Mr. Kitchin charged "that of all the profiteers during this war, of all the thousands of industries in this country that made immense profits out of the people and out of the government during this war, the tungsten industry stands in a class by itself. I say it has made 100 per cent more profit than any other industry in this country."

He said producers, after paying every cent of operating expenses, including overhead charges, taxes and insurance, and even allowance for depreciation, made enough profit to take every cent of capital they put into the business and put it back into their pockets, "and then, after getting back their capital have remaining as further profits over $10,000,000 or 150 per cent more than the total capital put in, with the capital already in their pockets." It was claimed by Mr. Kitchin that the production in 1916 was 5900 tons, which were sold for $24,780,000, with a capital investment at that time of only $5,000,000.

Representative Timberlake said that, according to statistics it is thought it will be necessary for the next three years at least to import into this country from 3000 to 4000 tons to supply requirements. The tariff proposed, he stated, would result in the discovery of new fields and the development of others, so that within two, three or four years the industry would be so extended in the United States as to provide for its needs. It was pointed out by Mr. Timberlake that there has not been a mine operating in this country since a few days after the armistice was

signed, because of the importation of the Chinese and Bermuda ores at a price against which domestic producers could not compete. He said the $1 a pound duty on ferrotungsten, etc., will be equal to about $1 per ton on the finished product, machined steel, of a value from $500 to $2500 per ton.

Revise Pacific-Far East Commodity Rate

WASHINGTON, Aug. 26.—Effective Aug. 15, the shipping board has issued a tariff carrying new Pacific-Far East commodity rates. The rates apply from United States Pacific coast ports to Hongkong and Shanghai, China; Kobe and Yokohama, Japan, and Manila, P. I. Among the rates are:

Band iron, bars, billets, blooms, bolts, hoops, ingots, pig iron, plates, including boiler plates bent; rails, not exceeding 33 feet in length; fastenings, rods, sheets, slabs, structural steel not fabricated, 60 cents per 100 pounds; set-up boilers on skids, ship's option, $1 per 100 pounds or 50 cents per cubic foot; castings, ship's option, $1 per 100 pounds or 50 cents per cubic foot; nails in kegs, 60 cents per 100 pounds; pipe not over 6 inches in diameter, 60 cents per 100 pounds; pipe over 6 inches in diameter, 46 cents per cubic foot; structural steel fabricated, ship's option, $1 per 100 pounds or 50 cents per cubic foot; wire in packages, ship's option, $1 per 100 pounds or 50 cents per cubic foot; pig lead and lead goods in packages, $1 per 100 pounds; machinery and machines not otherwise specified, 80 cents per 100 pounds or 40 cents per cubic foot; plows knocked down in boxes, 60 cents per 100 pounds; railroad equipment including cars and locomotives, special contract railroad supplies including axles, car wheels and equipment in packages; cattle guards in packages; signal apparatus in packages; car sills knocked down; underframes knocked down, car wheels, ship's option, 60 cents per 100 pounds or 30 cents per cubic foot; wire rope in reels, 60 cents per 100 pounds; safes and vaults, and parts thereof, ship's option, $1 per 100 pounds or 50 cents per cubic foot; spelter, 60 cents per 100 pounds; tin plates in boxes, 60 cents per 100 pounds; wire fencings in rolls, 45 cents per cubic foot; zinc plates and slabs and sheet zinc in packages, 60 cents per 100 pounds; agricultural implements not otherwise specified, in packages, 43¾ cents per 100 pounds; freight automobiles boxed, 30 cents per cubic foot; passenger automobiles boxed, 35 cents per cubic foot; clay products including fire brick in crates, fire clay in crates and common brick in crates, $1 per 100 pounds or 50 cents per cubic foot; copper bars and ingots and sheet copper, $1 per 100 pounds; hardware in packages, ship's option, 62½ cents per 100 pounds or 31¼ cents per cubic foot; hoes, complete, in boxes, bundles or crates, 42½ cents per cubic foot.

The shipping board also has announced new rates from Atlantic and gulf ports to South America, iron and steel articles being excepted in all instances aside from to Bahia Blanca and Port Madryn, Argentine, where the new rates on these articles are $30 and $35 per ton landed, respectively.

Offers Manganese Ore

Washington, Aug. 26.—Sealed proposals for the purchase of 239,656 pounds of ground manganese ore, located at New Cumberland, Pa., held by the surplus property division of the office of the quartermaster general of

Government's List of 1036 Tools Fixes Selling Prices

WASHINGTON, Aug. 26.—Approximately $1,500,000 worth of machine tools are listed in the inventory of 1036 machines available Aug. 8, just issued by the war department. The inventory is most complete, giving name of tool, maker, type, size, drive, quantity, where located, whether being disposed of by air service, ordnance, signal corps or the M. & E. M. surplus property, zone supply, P. S. & T. division; service value and selling price, ascertained by the use of the chart, described on page 349 of THE IRON TRADE REVIEW of Aug. 7. The price paid by the government for each tool also is given. Prospective purchasers are requested to communicate direct with their nearest bureau district office. The following indicates the number of different tools which are being sold:

AIR COMPRESSORS	1
BAND TURNING MACHINES	5
BASE COVER MACHINES	4
BORING MACHINES—	
Horizontal	6
BORING MILLS—	
Vertical	4
Spindle and Axle	2
Vertical Boring and Turning	3
BROACHING MACHINES	6
DEMAGNETIZER	3
DRILLING MACHINES	21
Gun Barrel	2
Heavy Duty	1
Multiple Spindle	15
Overhanging Drill Press	1
Pneumatic	1
Radial	10
Sensitive Bench Drill Press	1
Single Spindle	2
Upright Lever and Worm Feed	1
Upright	14
Vertical	1
Two Heads, Light	2
Stationary Head	1
GRINDERS—	
Automatics	2
Chucking	4
Cylinder	32
Cylindrical	4
Cutter	5
Disc	4
Double End	3
Drill	1
Electric and Portable	5
Plain	30
Surface	3
Tool	7
Tool-Wet	8
Tool and Cutter	6
Universal Cutter	5
Universal	18
Upright	1
Wet Internal	23
LATHES—	
Automatic Threading	1
Automatic	6
Axle	3
Bench	5
Boring	11
Heavy Pattern Gun Boring	6
Heavy Duty Boring	12
Heavy Duty Turning	13
Centering	3
Chucking	1
Engine	206
Speed	4
Triple-Geared	22
Turret	79
Vertical Turret	8
Hollow Hexagon Turret	3
Tilted Turret	2
MILLING MACHINES	18
Band	10
Heavy Duty	24
Horizontal	1
Plain	66
Thread	9
Universal	5
Vertical	93
PLANERS	2
Fuse	1
PRESSES	38
Arbor	5
Hydraulic Piercing	2
Geared	2
Straightening	1
PUMPS	12
RIVETER—	
Rotary Vibrating	1
RIVETING MACHINE	1
SAWS—	
Band	4
Cold	2
Hack	23
Power Hack	7
SCREW MACHINES—	
Automatic	7
Automatic Multiple Spindle	1
Plain	2
Turret	11
Universal	3
SHAPERS	20
SHELL STAMPING MACHINE	1
SHELL BENDING MACHINE	1
SINKERS (DIE)	2
SLOTTING MACHINES	6
THREADING MACHINES	2
TOTAL	1036

the army, will be opened by the surplus property office, zone supply office, Twenty-first street and Oregon avenue, Philadelphia, at 10 a. m., Sept. 12. This material is in two lots, the first consisting of 179,878 pounds, packed in bags of 195 pounds each. The second lot consists of 59,778 pounds, packed in barrels holding about 875 pounds. The analysis of the ore is approximately as follows: Manganese, 53.90 per cent; iron, 1 per cent; silica, 4.72 per cent; phosphorus, 0.104 per cent; sulphur, 0.01 per cent.

Liquidation Completed in 20,685 Contract Cases

Washington, Aug. 26.—Uncompleted portions of suspended contracts to the value of $1,763,845,000, or 47 per cent of the total value of suspensions as reported to Aug. 2, had been liquidated by the war department. Liquidation had been effected in the case of 20,685 contracts and claims, or 82.8 per cent of the total number suspended. The status of contract liquidation is summarized as follows:

	July 26 to Aug. 2	Total to Aug. 2
Number of contracts liquidated	334	20,685
Value of uncompleted portions	$32,133,000	$1,763,845,000
Paid to contractors in settlement	$ 5,986,000	$ 244,840,000
Saving effected	$26,147,000	$1,519,005,000
Per cent saved	81.4	86.1

Suspended contracts awaiting liquidation amount to $1,987,591,000. Assuming that future liquidation in each bureau can be effected at the same rate as in the past, the saving by liquidation of these contracts will amount to $1,648,017,000.

Government to Organize Armor Plant Force

That the organization of the government's new naval ordnance plant at South Charleston, W. Va., is about to be effected, is indicated by a recent announcement by the United States Civil Service commission, to the effect the plant is in need of men for positions which are to be filled in the supervisory and subordinate forces. Two salaried positions of $5000 a year are open and other positions range from $14.40 to $8 per day. The salaried positions are superintendent of forge shops and superintendent of melting shops. Other positions to be filled include, foremen of heat treatment of armor plate; foremen of heat treatment of large guns; foremen of 14,000-ton presses; foremen of small guns and foremen of heat treatment of projectiles. Applicants for these positions will not be given scholastic tests but will be rated on their training and experience, which will be rated at 90 per cent, while their physical condition will be rated at 10 per cent. Detailed information can be obtained from the commission's headquarters at Washington.

The manufacture of armor plate and forgings for guns of large caliber, entirely new lines of work for the government, is about to be inaugurated. It is estimated that eventually the plant will have an annual capacity of 50,000 tons of armor plate, projectiles, guns, miscellaneous ordnance forgings, etc.

Gold Exports Decline

Two months after the removal of restrictions on the exportation of gold from the United States shipments of the metal out of the country for exchange purposes has practically ceased. During the period that has elapsed since the embargo was lifted gold coin and bars aggregating $128,787,500 have left this country. The most extensive shipments have gone to South America, the total being $57,200,700. Asia has been a close second, taking $30,832,000 for Japan, $20,423,000 for China and $500,000 for India, making an aggregate of $51,755,000.

The prediction of bankers two months ago that shipments would approximate $100,000,000 for exchange purposes has proved true. After deduction of the amount sent to China, which will not be used directly for exchange purposes but will be worked up, it is found that approximately $108,000,000 is the extent of the gold movement. Small shipments will probably continue to South America and to the Far East for a time yet, but the major movement appears to be practically over for the time being.

Industrial Training Urged to Meet Living Cost

Col. Arthur Woods, assistant secretary of war, is uring 20,000 factory owners and industrial corporations throughout the country to undertake industrial training for their workers at the same time that they pay them a sufficient living wage during the period of their apprenticeship. Colonel Wood says:

"With the cost of living soaring, the question of efficiency in production and manufacture has come to the front as the issue of most fundamental importance in the solution of the living problem. It is becoming clear that some remedy must be found for a situation in which thousands of American workers, earnest, respectable men who are doing their best every working day of the week, are nevertheless attaining an output of not over 35 per cent of their best human capacity.

"In aggravation of the high cost of living, the entire question has been brought to a head just now by the large numbers of soldiers returning to civilian life from the military service. Many of these men went to war unskilled workers, but because of their experience have come back with greater ambitions and larger vision.

"They have the psychological start for better things. They have the desire to improve their condition and their earning power. But they have neither the skill, nor the means for developing the skill, without which their ambitions cannot possibly be realized. They must have industrial training immediately and on a sufficiently large scale to offer an opportunity for advancement to every man who wants one and deserves it.

"These men must earn a living wage while they are learning, and must be taught intensively enough so that in a short time they will be able to realize their ambitions and to increase their earning powers. That greater production means lower prices is axiomatic."

Salaried Employes Granted Representation

Employe representation has been extended to salaried employes of the Colorado Fuel & Iron Co. The company attained such a marked degree of success with the plan as applied to its wage earners four years ago that is has decided to permit all other employes to enjoy its advantages. Directors, executives and officers, as well as all general and special officials, doctors, superintendents and the like will be excluded, as representatives of the management. The company's announcement explains the operation of the plan in regard to salaried employes as follows:

"The representatives of the salaried employes from each county shall constitute a general committee. There shall be a joint general committee for each county composed of the general committee of representatives of the salaried employes and a like number of representatives of the management who shall be named by the management. Each general committee may consider the following or any other subjects: Employment and working conditions; direction of working forces and equipment improvements; works and office practice, methods and production; recreation and information; economy, thrift, insurance and investments; a square deal, one purpose, cooperation and success."

Uncertainty as to the future cost of materials and the steadily increasing cost of labor, are said to have caused the total abandonment of the project of the Ritz-Carlton Co. to build a huge new hotel in Atlantic City. The cost of the site and building was placed at $2,275,000.

New Company

To Develop Canadian Iron Ore Deposits on Extensive Scale

Toronto, Aug. 23.—The Consolidated Iron & Steel Corp. Ltd., a new company with authorized capital of $8,000,000, in which Toronto and Detroit capital is invested, has opened an office at 20 King Street East Toronto and will proceed to develop two large iron ore deposits on an extensive scale. It has opened a large hematite mine at Furnace Falls in Leeds county, 25 miles north of Brockville, where it owns 1500 acres. The other property of the company is located at Mileage 182 on the Algonia Central railway, where diamond drilling has been carried on since November, 1917, proving up large deposits of ore to a depth of 500 feet. Engineers reports estimate the available ore tonnage at a very large figure. Work on both properties is being actively carried on and at Furnace Falls there are thousands of tons piled up ready for shipment.

H. H. Macrae, managing director of the Steel & Radiation, Ltd., Toronto, who recently returned from England, has announced that negotiations have been started with a British firm for joint operations in Canada in a manufacturing line founded upon British patents and processes. Efforts are being made by the company to secure orders in Belgium and Siberia.

The well known firm of Baldwins, Ltd., of Swansea, Wales, one of the largest syndicates in the British iron and steel industry, has acquired the plant of the British Forgings Co., Toronto, for the manufacture of steel by the electric process. It was announced here that 2300 men will be employed. At the annual meeting of Baldwins, Ltd., in Swansea recently, the chairman said to the stockholders.

"We have in Canada trade which will require further enterprise on our part if it is to be maintained and increased. For this reason we desire to utilize our special knowledge and facilities in order that we may actually manufacture on a considerable scale in Canada. We have several other projects in view upon which it would be premature to speak."

The chairman announced that the company's profit for the past year, after providing for excess profit duty, was $2,214,500. Further capital was authorized by the creation of 3,000,000 "B" preference shares at $4.80 each.

As a result of the lack of orders the Dominion Iron & Steel Co., closed down its plant at Sydney, N. S., Aug. 23, for an indefinite period. This announcement was made by a leading official of the company who declared that the plant had been kept in operation for another week in view of an order for 15,000 tons of billets, which the company received a short time ago. The original plan was to close down Aug. 16, but this recent order kept several of the departments working for another week. He further stated that every man employed at the works would be given employment during the shut-down, or until the company received further orders. Most of these men will be taken on at the plate mill which is now being rushed to completion, while others will be used in repair work to be started in other departments. "At the present time we have no orders to keep the plant in operation," declared the official. "However, we are angling for business and perhaps within a short time will receive sufficient orders to reopen."

The recent decisions of the British government that motor cars entering Britain from Canada must be of Canadian manufacture to the value of 60 per cent will seriously affect the motor industry. A considerable portion of increasing export trade in automobiles has been with Britain. Canadian motor manufacturers regard the restriction as too stringent in view of the fact that under the imperial preference on imports other goods are included which are 25 per cent British in value.

Starts Supply Business

On Sept. 1, James T. Winterly & Co., mill, mine and contractors' supplies, will start business in the Conestoga building, Pittsburgh. The president of this company is James T. Winterly who is a graduate engineer and architect and has been in the contracting business in Pittsburgh for several years. He will take personal charge of the service department of the company in giving assistance to industrial concerns and contractors on technical matters. J. L. McConaghy, who has been with the firm of James H. Matthews & Co., Pittsburgh, for the past three years and who previously was engaged in engineering work for the city of Pittsburgh, is vice president of the company, and C. W. Elton, secretary and treasurer, for the past seven years has been with James H. Matthews & Co. in charge of sales of steel dies for a number of years and latterly as purchasing agent of that company. The new company will have the exclusive agency in this district for the Wilmington Fibre Specialty Co., the Aborn Steel Co., the Philadelphia Belting Co., the Holyoke Truck Co., the Cyclone Fence Co., the Acme Waste Co., and the Forest City Paint & Varnish Co.

Business Problems

To be Discussed at Conference Called By Illinois Manufacturers

The problems of business, brought on by post-war and industrial developments, will be discussed at a national conference to be held in Chicago, Sept. 8 and 9, under the auspices of the Illinois Manufacturers' association. The sessions will be held at the Congress hotel. Trade and industrial associations in every line of business have been invited to send representatives.

Leaders of organized labor are among those invited to speak and are expected to state where the demands of the workers will stop. Some of the subjects to be discussed are: Participation in private business on the part of the federal government; nationalization of industry; influence of exports on prices and production; possibilities for increasing production; the relation of the United States to the rehabilitation of industry in Europe; stabilization and guarantee of contracts; definition of profiteering; the attitude of employing farmers and manufacturers toward labor; adjustment between property rights and community interests; participation of labor in the management of industry; increasing the purchasing power of the dollar; distribution of the war debt; governmental price fixing; the Plumb plan and the solidarity of farming and business interests.

Stack Has High Record

A production of 864,234 gross tons of pig iron in four years, three months and four days was the record of No. 2 blast furnace of the Pittsburgh Steel Co., at Monessen, Pa., which was blown out Aug. 22 for relining after being in continuous operation since June 14, 1915. The rated capacity of this furnace is 15,000 tons a month, but for the 51 months that it was in operation it averaged 16,495 tons a month and the actual production for the period exceeded theoretical capacity by close to 100,000 tons, for on a monthly capacity of 15,000 tons, the output would have been exactly 767,000 tons.

Both stacks of the Pittsburgh Steel Co. were built in 1912-13 and were blown in in August, 1913. No. 2 stack went in Aug. 13, 1913, but was blown out on Oct. 1 of the same year and remained inactive until June 14, 1915. No. 1 stack had a longer continuous run on one lining than did No. 2, being in blast from Aug. 5, 1913, until May 1, 1919, a period of five years, eight mnths and 26 days, during which time it produced 1,176,627 gross tons of pig iron.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

BY PURCHASE, the Reading Iron Co. has acquired the plant of the George B. Lessig Co., Pottstown, Pa., maker of muck bar, shovel, tack, nail plate and cut nails. The purchase was made to give the Reading company a greater output of puddle bars; it formerly made extensive purchases of puddle bars from the Lessig company. By manufacturing them itself, the Reading company will control the quality of all material entering into the manufacture of its pipe.

The plant comprises two puddle mills, having a total of 22 double furnaces equipped with waste heat boilers and three 2-high puddle mill trains and 22-inch 3-high 3-stand rolling mill for nail plate and skelp, as well as the necessary heating furnaces, gas producers, etc. The nail factory contains 105 cut nail machines, together with heating furnaces, rumblers, packers, etc. The plant, which is on a 12-acre site, is complete with warehouses, machine, blacksmith, cooperage and carpenter shops and is located on the Philadelphia & Reading and Pennsylvania railroads. Its annual capacity is 30,000 tons of muck bar and 300,000 kegs of cut nails.

The Reading company plans to place the puddling mill in operation as soon as possible after necessary repairs are made and work at the nail factory will commence a little later. The plant now is being thoroughly overhauled.

* * *

THE Koehring Machine Co., Milwaukee, and the Waterloo Construction Co., Waterloo, Iowa, are to open southern headquarters at Atlanta, Ga., as soon as suitable buildings can be secured. Both concerns are extensive manufacturers of machinery for laying concrete. The Koehring company specializes in manufacturing machinery for concrete paving. The Waterloo company also makes machinery for the erection of concrete and is one of the largest companies in the United States.

* * *

THE Tennessee Coal, Iron & Railroad Co. is installing a manhoist at its mine at Sequatchie, Tenn., to convey the miners up the incline to work, the arrangement calling for an expenditure of $14,000. The apparatus will comprise four passenger cars, two of which will be attached to each end of a wire cable capable of withstanding a tension of 150 tons, the cars being hauled by a special engine installed at the top. Thirty miners will be hauled in each car. It now requires 45 minutes for a miner to climb the mountain to his work.

* * *

THE Watson Frye Co., Ltd., of Bath, Me., has just started work in its new foundry which was recently completed by the Austin Co. The foundry building proper is 58 x 195 feet and has adjacent to it a room 76 x 80 feet, which is used for cleaning castings. Above this cleaning room is a machine shop of approximately the same dimensions. A separate building, 26 x 60 feet, is used for a pattern shop. The entire plant is modern in every respect. The buildings are of brick and equipped in accordance with the latest foundry practice.

* * *

THE recently formed Slick-Knox Steel Co., has organized by the election of the following officers: Chairman, E. E. Slick; president, L. L. Knox; vice presidents, C. K. Strausbaugh and William McIntyre; secretary and treasurer, A. R. McGill; directors, Parke Bachman, Edwin Hodge Jr., Mont Murray, James Scott, W. H. Schoen and George W. Short. Work on the reconstruction of the old Blaw-Knox plant at Wheatland, Pa., which was taken over by the Slick-Knox company is progressing rapidly and the company expects to begin shipments of some of its products around the middle of September.

* * *

ARRANGEMENTS have just been completed by the General Combustion Co., Monadnock building, Chicago, for the organization of a Canadian company, with offices in the New Birks building, Montreal, Que. This company has been formed for the purpose of manufacturing and selling industrial furnaces and equipment. The officers are as follows: President, Dr. Milton L. Hersey; vice president, William T. Dean; vice president, Max Sklovsky, who holds patents on the furnaces produced by the company; secretary and treasurer, P. J. Woolf, and managing director, Norman M. Campbell.

* * *

CHUSE Engine & Mfg. Co., Mattoon, Ill., has shipped to Tsingtau, China, via New York and Shanghai, a 600-horsepower, cross compound, rope drive engine to be installed in a cotton mill wrecked by the Japanese, when the Shantung peninsula was taken from the Germans. The engine was ordered through Gaston, Williams & Wigmore, New York exporters. The Chuse company contracted to ship the engine from Mattoon to Tsingtau in five weeks, agreeing on a $50 a day forfeiture and bonus clause. The five weeks were not entirely consumed and the company received a bonus of $100.

* * *

TO solve industrial problems which require the services of mathematical specialists, the firm of Dantzig, Pfeiffer & Ritt, 500 West 116th street, New York City, consulting mathematicians, has been formed. It consists of T. Dantzig, G. A. Pfeiffer and J. F. Ritt and each member of the firm has been engaged in work of this nature for some time privately. Dr. Dantzig is a graduate of the University of Paris and of the Ecole Superieure d'Aeronautique et de Construction Mecanique. He has taught at Indiana university and at Columbia. During the war he was in charge of mathematical work of the instrument section of the United States ordnance. Dr. Pfeiffer received the degree of mechanical engineer from the Stevens institute of technology and the degree of doctor of philosophy from Columbia university. He has taught mathematics at Harvard, Princeton and Columbia. He is an associate editor of the *Annals of Mathematics*. Dr. Ritt took the degree of Ph.D. at Columbia. For three years he was at the naval observatory and since has taught mathematics at Columbia. During the war he was one of the chief ballisticians in the United States ordnance department.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Coppus Engineering & Equipment Co., Worcester, Mass., maker of blowers and power plant equipment, has called a special meeting of the common stockholders for Aug. 20, for the purpose of increasing the capital stock from $50,000 to $130,000, all preferred. The proceeds are to be used for enlarging the brass foundry properly to accommodate the increasing business, and to create a further reserve or preferred stock which can be issued from time to time to finance such further developments of the business as shall become necessary. The new building will be of brick and steel construction, with monitor roof, giving perfect light distribution and ventilation. There will not be a single post or column, the steel trusses being designed to carry a traveling crane so that the total floor space is available for molding.

* * *

PLANS and specifications have been completed in New York for the new West Virginia Metal Products Co. brass mill at Fairmont, W. Va.

* * *

THE Summers, Fitler & Todd Co., Pittsburgh, has been appointed exclusive agents for western Pennsylvania, eastern Ohio and northern West Virginia for the Rivett Lathe & Grinder Co., Boston.

* * *

IN order to provide for increased business the H. C. Cook Co., of Ansonia, Conn., manufacturers of brass novelties, will enlarge their plant to nearly double its present capacity. Work is expected to start at once.

* * *

THE Continental Steel & Supply Co., Pittsburgh, has installed 29 new nail machines at its plant at Ellwood City, Pa. Cement coated nails are the principal product of this plant.

* * *

THE Bethlehem Fabricators, Inc., Bethlehem, Pa., have completed a new fabricating shop, 60 x 280 feet which when completely equipped, will give employment to 150 additional men. At the present time, the company's force numbers 200.

* * *

RECENT orders taken by the Electric Furnace Construction Co., Finance building, Philadelphia, include one for a 3-ton furnace from the Hammond Steel Co., Syracuse, N. Y., for the manufacture of high grade tool steels and one from the Hong Kong Steel Foundry Co., China.

* * *

THE Dickey Steel Co., Inc., Woolworth building, New York City, recently was appointed sales representative for New York and Philadelphia district, for the Worcester Pressed Steel Co., Worcester, Mass., manufacturer of hot and cold rolled strip steel and light and heavy metal stampings.

* * *

THE Indiana Silo Co., Pendleton, Ind., and the Star Tractor Co., of Findlay, O., have consolidated as the Indiana Silo & Tractor Co. Capitalization is to be $1,000,000. A new plant will be built there to manufacture tractors, and the Findlay plant will be enlarged. W. H. Swain, of Pendleton, is president.

* * *

THE Chinese government has just closed contracts for purchase in the United States of 18,000 cars to be delivered within the next two years. Closing of the contract is confirmed by the officials of the American Car & Foundry Co., New York. The order will provide steady employment for a force of 2000 men for a period of at least two years.

* * *

WHILE the contract has not yet actually been signed, the negotiations for 150 locomotives to be built at a cost of about $7,000,000 for the Polish government by the Baldwin Locomotive Works, practically have been completed, according to Samuel Vauclain, president of the company. The terms of payment have not been made public.

* * *

THE Empire Steel & Iron Co. has decided to rebuild its blast furnace at Oxford, N. J., and has retained Freyn, Brassert & Co., Chicago, as consulting and supervising engineers. Plans are now being prepared which call for an entire new furnace shell, new blowing engines, additional boilers and enlargement of the present stove capacity, which will give the plant an output of 400 tons of basic iron daily. It will be equipped with a top of the double-bell design and hopper extension, skip incline, bins, etc. A pig-casting machine and other modern appliances will also be installed. The company ownes mines which supply practically all the ore used at the plant.

* * *

GROUND has been broken by Frank D. Chase, Inc., Chicago, industrial engineer, for a new foundry at Janesville, Wis. This foundry will produce tractor castings for the Samson Tractor Co. division of the General Motors Corp. The foundry group will include a gray iron foundry, core room, sand storage building and pattern shop and will cover an area of 530 x 330 feet. In addition there will be a material yard, 80 x 530 feet and a casting storage yard, 70 x 330 feet. These will be served by traveling cranes. The foundry will be equipped with complete conveying machinery and material handling systems. Buildings and equipment will cost in excess of $1,000,000.

* * *

IN ACCORDANCE with the expansion policy adopted by the Fruehauf Trailer Co., Detroit, and in order properly to care for increased demands for the company's products, announcement recently was made of the purchase of a new 5-acre factory site. On it a modern manufacturing plant will be erected, and this with the installation of new machinery and equipment, will provide manufacturing facilities which will enable the company to turn out its products on a greatly enlarged scale. Other plans call for an increase in the capitalization of the company from $150,000 to $250,000. Officers of the company are: President, A. C. Fruehauf; vice president and general manager, H. C. Fruehauf, and secretary and sales manager, E. L. Vosler.

Total Wages Drop 8.4 Per Cent

Labor Department's Bureau of Statistics Makes Comparison Between Amounts Paid in April and May by 115 Companies in Iron and Steel Industry—Number Employed Shows Reduction of but 4.6 Per Cent

WASHINGTON, Aug. 26.—The first reductions of any consequence in the volume of wages paid in the iron and steel industry are shown in the May report of the labor department's bureau of statistics. These figures disclose that in the plants of 115 producers in May the payrolls aggregated $10,744,379, or 8.4 per cent less than the $11,734,362 paid out in April. As compared with May, 1918, the aggregate of wages paid in the mills and furnaces of 114 companies, $10,614,879, is 17.4 per cent under the $12,851,528 payroll reported a year ago.

These totals in themselves have less significance than when consideration is given to the number of men employed in the same plants during the comparative periods. In this connection it is shown that last May 178,022 employes were carried on the payrolls of the 115 establishments, while in April the number was 186,525. This is a reduction of 4.6 per cent, as compared with a decrease of 8.4 per cent in the volume of wages paid. May this year, however, was 18.3 per cent lower than May a year ago in the number of workmen, the 175,970 employed by the 114 companies reporting for the two periods being 39,406 fewer than in 1918. This employment decrease compares with the fall of 17.4 per cent in the wage totals.

In commenting on the changes in wage rates, not only in the iron and steel industry but in others as well, the bureau remarks that "a number of decreases were reported in iron and steel, many of which were in accordance with the rules of the Amalgamated Association of Iron and Steel Workers." Continuing, the bureau says:

"The entire force in two plants was decreased 25 per cent. The rolling mill piece-work rates in one plant were reduced 18 per cent. About one-third of the employes in one plant and 15 per cent of the force in another plant were reduced 17½ per cent. The 65 per cent bonus, affecting all of the employes in one mill with the exception of the bar mill workers, was reduced to 40 per cent. A decrease of approximately 14 per cent, affecting about 50 per cent of the employes, was reported by one plant.

"About 45 per cent of the employes in one plant received a decrease of about 12 per cent; and a reduction in rates, averaging 11 per cent and affecting 40 per cent of the men, was made by another plant; while a third plant reported a decrease of about 11 per cent, affecting approximately 50 per cent of the employes. A 10 per cent decrease, which affected three-eighths of the employes, was made by one concern, and about 1 per cent of the force in one plant were decreased approximately 9 per cent. Three plants reported percentage decreases of six, five and three, affecting 33, 10 and 50 per cent of the employes, respectively."

The bureau of labor statistics also published the March report of the New York state industrial commission which gave the average weekly wage in March, 1915-1919, inclusive, in the blast furnace and rolling mill industry. The figures given were $33.52 in 1919; $27.95 in 1918; $23.53 in 1917; $18.93 in 1916; and $15.37 in 1915. The weekly average for all industries was $22.20 in 1919; $18.71 in 1918; $15.79 in 1917; $13.96 in 1916; and $12.65 in 1915.

The May employment report of the bureau, however, discloses that, as compared with April, iron and steel, carbuilding and repairing, cigar manufacturing and paper making industries are the only ones in which there has been a decrease in the number of employes, and, except cigar manufacturing, the only ones in which there has been a reduction in the amount of wages paid. The automobile, boots and shoes, men's clothing, cotton finishing, cotton manufacturing, hosiery and underwear, leather manufacturing, silk, and woolen industries all showed increases in employes and wages as compared with the month previous.

As compared with May a year ago, the majority of the selected industries show decreases which, it is pointed out, is natural, in view of the pressure brought to bear to increase wages in 1918 when the war was at its height. The automobile manufacturing, cotton manufacturing, leather manufacturing, and silk industries are the only ones credited with more employes now than in May, 1919, while the automobile, boots and shoes, cigar, cotton manufacturing, leather, and silk industries are the only ones which paid more wages in May this year than last year.

Steel Workers Call Halt to Demands

REPRESENTATIVES of employes of the Midvale Steel & Ordnance Co., at their joint meeting with representatives of the company in Atlantic City, N. J., Aug. 22 and 23 took a firm stand against "profiteering" by labor. They declared in resolutions they adopted that inordinate wage demands cannot solve the problem of the high cost of living. This expression from the elected delegates of a large body of employes was considered as evidence that workers in the iron and steel industry are doing some sane thinking, regardless of efforts now being made to force them into an antagonistic position against their employers.

The Midvale Steel & Ordnance Co., and its subsidiaries were among the first of the large companies in the iron and steel industry to adopt employe representation. In conformity with the constitution, representatives of the employes and those of the company, composing the collective bargaining committees and the general committees, held a joint session at Atlantic City, this central point being chosen because representatives came from a number of plants variously distributed. Many matters of importance were discussed, including efforts now being made to force down prices of food, housing, co-operation and benefit organizations.

The resolutions as adopted follow:

"Whereas, the high cost of living needs to be abated by diligent, efficient and conscientious labor, by thrift and by avoidance of waste and extravagance; and

"Whereas, the price of commodities is regulated by the day's labor of a man and the real unit of value or the unit of compensation is not a dollar but the purchasing price of a dollar and that the price of all things, meaning the average price of everything we use and consume which is

commonly referred to as the average price of commodities, is fixed, regulated, raised or lowered by the average compensation received for one hour's work by every man and every woman; and

"Whereas, we believe the only sure remedy for the high cost of living is increased production and the stabilization of prices in conformity with wages now being paid; and

"Whereas, we believe any workman who demands a greater proportionate return for his labor than his fellow workmen in other lines are getting is as guilty of profiteering as a grocer who charges exorbitant prices for the necessities of life, and that increases of wages paid to certain classes of workmen by the government or others will result in higher prices being set by the profiteers for the necessities of living to all purchasers alike. It is therefore

"Resolved, that persistent and unceasing demand of workmen employed in all classes and kinds of industries for a shorter day's work and an increased wage in order to meet the present high cost of living is uneconomic and unwise and should not be encouraged.

"Resolved further, that private monopolies should be controlled and profits restricted to a rate that shall be fair to the consumer.

"Resolved, further, that unnecessary exports of food and clothing be restricted and that all stores of hoarded supplies be uncovered and placed in the open market.

"Resolved, further, that copies of this resolution be forwarded to the President of United States, to the senators in congress from Pennsylvania and to the congressmen of the various districts in which are located the various plants of the Midvale Steel & Ordnance Co. and to the state and municipal authorities, to the end that they may, by all the powers and means to them available, endeavor to bring about normal conditions, with special privileges to none but justice to all and sure and swift retribution for those who may attempt to profiteer in the necessaries of life."

Shops Close as Protest Against Demands

TWO large manufacturing plants in Connecticut have been closed for an indefinite period following action of employes in making wage demands that employers declare are unreasonable. All foundries in Belleville, Ill., have been closed for a similar reason. As previously noted, a number of other plants have been shut down by their owners, who preferred to take this course rather than to experience trouble with trade union organizers. In England this step is being taken frequently by large companies, one company having first offered to give a trade union representation on its directorate, only to have its tender spurned. Talk of capital going on a "strike" is heard not infrequently in this country, although the number of plants which have been closed as a protest against excessive demands is not so large as to suggest a movement in this direction.

Following a strike, the entire factory of the Underwood Typewriter Co., at Hartford, Conn., except nonproducing departments, was ordered closed Aug. 11 by John Underwood, president of the company. Just prior to the announcement, Charles D. Rice, factory manager, notified the striking aligners that he would talk with them. It is reported that Mr. Rice explained why the company could not grant the men's demands and continue to operate, but the men refused to accept his explanation. Hundreds of the employes have left Hartford for other cities. Union leaders claimed that an automobile company of Flint, Mich., imported 65 of the machinists and toolmakers.

The plant of the Columbia Graphophone Co. closed Aug. 14, when striking workmen refused to return, has not been reopened. According to the management the plant has been closed indefinitely and new works will be established elsewhere in this country.

Foundry laborers in Belleville, Ill., are asking for an increase in wages from 45 to 60 cents an hour. The employers refused to grant the demands, stating that they had a contract under which the men agreed to work for 45 cents an hour until Jan. 1, 1920. The men claim there is a clause in the contract which gives them the right to ask for an increase at any time.

Machinists and electricians in Louisville, Ky., are on a strike, in company with street car motormen and conductors. Shopmen employed by the Louisville & Nashville railroad in Louisville remained at work. The company is now taking back all shopmen laid off in June by order of the railroad administration.

Union to Demand Hearing With Judge Gary

The committee representing the American Federation of Labor in canvassing the "strike vote" of iron and steel workers announced in Youngstown last week that 98 per cent of those who voted favored the proposition of making demands on the employers and backing those demands with a strike ultimatum. The committee, however, refused to disclose the number of workers who voted.

The leaders went through the formality of requesting that committees representing various branches of the trade formulate demands, although those demands had already been prepared for them by the leaders, and included one in particuar requiring that the employers deduct from their employes' wages the amounts to be paid as dues to the unions.

It was decided that the committee should first demand a hearing with E. H. Gary, chairman of the United States Steel Corp., and in the event this is refused to call a strike at the corporation's plants.

The committee went to New York Aug. 25, where it awaited the arrival from Europe of Samuel Gompers, who is expected to assume charge of the committee's efforts to obtain an audience with Judge Gary. Gompers was due to arrive Aug. 26. The committee claims it has until Aug. 30 to obtain the hearing or call a strike.

LABOR NOTES

The first fall meeting of the New England Foundrymen's association will be held at Boston, Sept. 10, at which time, A. O. Backert, president of the American Foundrymen's association will present a paper.

* * *

Nearly 200 members of the New England Foundrymen's association attended a summer festival at the Pomham club, Providence, R. I., on Aug. 13. In the evening the foundrymen were taken to the West Side club, where further entertainment and refreshments were provided. Clarence Corbin, Corbin Foundry Co., Providence, was in charge of the entertainment features of the day.

* * *

American consuls abroad have been instructed that it is no longer necessary to require evidence of the issuance of an import license, before certifying an invoice covering the shipment of any commodity, notwithstanding such commodity may be one whose importation is still subject to control by individual license, according to a recent announcement to importers by the war trade section of the state department.

Discount Method Dropped

New Extra Card for Cold Rolled Finished Steel and Shafting Puts Quotations on Flat Basis—Full List is Given

THE new extras on cold rolled finished steel and shafting which were adopted by the manufacturers, Aug. 18, as announced in the Aug. 21 issue of THE IRON TRADE REVIEW, differ substantially from the method of quoting previously in effect. Under the new schedule, extras are put on a flat per pound basis. The old plan of naming discounts off the base price according to size and form, has been dropped, in the interest of simplication and the avoidance of more or less confusion. In the new card, the base size is made from 2¼ to 3 inches, instead of 2 to 3 inches in the card previously in effect. The base price remains unchanged at 3.60c Pittsburgh. Quantity differentials have been materially increased by the new card. The effect of the new classification is to produce a slight lowering of prices on the average.

The complete new extra card upon which the manufacturers of cold rolled finished steel and shafting now are shown in the accompanying table.

Three hundred machinists and helpers at the Hampton roundhouse of the Delaware, Lackawanna & Western railroad, Scranton, Pa., have voted to strike until fellow workers are reinstated and the practice of laying off men is discontinued. The men say laying off workers to curtail expenses is not warranted.

Take New Bids on Hangar

Washington, Aug. 26.—Bids are to be opened by the navy department Sept. 8 for the construction of a dirigible hangar at Lakehurst, N. J. This is the same project for which bids were received and opened Aug. 6, but because of necessary changes in plans and specifications those bids were rejected. The project requires between 6000 and 7000 tons of steel, mostly structurals.

Adopted Aug. 18, 1919

NET EXTRAS FOR SIZE EXTRAS ARE PER 100 POUNDS NET

ROUNDS

Per 100 Pounds		Per 100 Pounds	
1/8" to 5/32"	$2.25	3 1/16" to 3 7/16"	$ .25
3/16" to 7/32"	1.50	3½" to 3 15/16"	.50
¼" to 3/8"	.90	4" to 4 7/16"	.80
7/16" to 9/16"	.60	4½" to 4 15/16"	.90
5/8" to ¾"	.40	5" to 5 7/16"	1.00
13/16" to 1 1/16"	.30	5½" to 5 15/16"	1.50
1⅛" to 1 7/16"	.25	6" to 6 7/16"	2.00
1½" to 2 3/16"	.15	6½" to 7"	2.50
2¼" to 3"	Base		

SQUARES AND HEXAGONS

Per 100 Po		Per 100 Pounds	
1/8" to 5/32"	$3.50	3/16" to 7/32"	3.00
¼" to 5/16"	2.00	3/8" to 7/16"	1.35
1/2" to 5/8"	1.00	11/16" to 13/16"	.80
7/8" to 1 1/16"	.70	1⅜" to 2"	.60
2 1/16" to 2 7/16"	1.00	2½" to 3"	1.50
3 1/16" to 4"	2.00		

FLATS

(Prices given are per 100 pounds)

Thickness in inches	¼"	5/16" to ½"	9/16" to 33/32"	¾" to 1"	1 1/16" to 1½"	1 9/16" to 3"	Wider than 3"
1/8" and 5/32"	$8.50	$6.50	$5.50	$4.50	$3.50	$2.50	$2.50
3/16" to 5/16"	7.50	5.50	5.00	3.50	2.50	1.50	2.50
3/8" to 7/16"	....	4.50	4.00	2.50	2.50	1.50	2.50
½" to 9/16"	....	....	3.00	1.50	1.50	1.25	2.50
5/8" to 11/16"	....	....	2.50	1.25	1.25	1.25	2.50
¾" to 1 1/16"	....	....	....	1.25	1.25	1.25	2.50
1" to 1 1/16"	....	....	....	....	1.25	1.25	2.50
1½" to 1 11/16"	....	....	....	....	....	1.25	2.50
1¾" to 1 15/16"	....	....	....	....	....	1.25	2.50
2" to 2 1/16"	....	....	....	....	....	1.25	2.50

EXTRA FOR ODD AND INTERMEDIATE SIZES:—

The following sizes in rounds, hexagons and squares shall be considered standard:

By 64th to 1", inclusive.
By 32nds, 1 1/32" to 1 31/32", inclusive.
By 16th, 2" to maker's limit.

All odd and intermediate sizes, (excepting those allowing a total tolerance of .008" and such specifications shall be for not less than 2000 pounds of a size), not less than 25c per 100 pounds net extra, in addition to the usual extras for accuracy, etc.

EXTRAS FOR CHAMFERING (For Automatic Screw Machine Use Only).

	Rounds Per 100 Pounds Net	Hexagons and Squares Per 100 Pounds Net
7/16" to 5/8"	$0.13	$0.15
11/16" to 15/16"	.10	.13
1" to 2"	.065	.115
2 1/16" and larger	.04	.10

These extras apply on lengths 10 ft. and longer and one end bar only. For sizes smaller than 7/16" and bars shorter than 10 ft., special prices will be quoted.

BOXING AND BURLAPPING:—

Boxing (minimum 50c), Domestic Shipment, $0.40 per 100 pounds net
Boxing (minimum 50c), Export Shipment.. .50 " 100 " "
Burlapping (minimum 25c), full length..... .25 " 100 " "
Burlapping (minimum 25c), ends only..... .10 " 100 " "

PISTON ROD STEEL:—

Uniformity to size and carefully selected surface finish—50c per 100 pounds net extra, in addition to usual extras for accuracy and short and long lengths.

ROLLER BEARING STEEL:—

Special analysis and finish (For special accuracy, regular extras will apply).....$1.00 per 100 pounds net extra.

EXTRAS FOR ACCURACY—ROUNDS:—

For accuracy from exact size to .0015" under, sizes 3" diameter and smaller.....25c per 100 pounds net.

For accuracy from exact size to .001" under, or from exact size to not more than .001" either way, sizes 2½" diameter and smaller, 50c per 100 pounds net.

For accuracy within .0005" either way and from exact to .001" over size, sizes 2" diameter and smaller, (standard sizes only) $1.00 per 100 pounds net.

For accuracy .001" either way or from exact size to .001" over, or from exact size to .001" under—sizes 2" diameter and smaller (odd and intermediate sizes) $1.00 per 100 pounds net.

—SQUARES, HEXAGONS AND FLATS—double above extras.

FOR ACCURACY, CARBON .31% AND OVER—double above extras.

EXTRAS FOR SPECIAL AND HIGH CARBON OPEN HEARTH STEELS:—

Specified Analysis—Carbon .30% and less.....25c per 100 pounds net.
Specified Analysis—Carbon, 30% and less, sulphur guaranteed .05% and under.....50c " 100 " "
Special Analysis—Carbon .31% to .50%.....50c " 100 " "

QUANTITY DIFFERENTIALS:—

All specifications for less than 2000 pounds of a size will be subject to the following extras, the total weight of a size ordered to determine the extra, regardless of length and regardless of the exact quantity actually shipped:

1000 to 1999 pounds.....$0.15 per 100 pounds net.
Less than 1000 pounds..... .35 " 100 " "

EXTRAS FOR LONG AND SHORT LENGTHS. Per 100 Pounds Net.

	Rounds	Squares	Hexagons	Flats
3" to 5 15/16"	$1.50	$1.50	$1.50	$3.00
6" to 11 15/16"	.75	.75	.75	1.50
12" to 23 15/16"	.30	.60	.30	.75
24" to 59 15/16"	.15	.30	.15	.40

Lengths longer than 24 ft. and less than 30 ft..$0.50 per 100 pounds net.
30 ft. and less than 35 ft..... 1.00 " 100 " "
35 ft. and less than 40 ft..... 1.50 " 100 " "
40 ft. and less than 45 ft..... 2.00 " 100 " "
45 ft. and longer..... 2.50 " 100 " "

Extras for long lengths apply on Rounds, Squares, Hexagons and Flats.

FREIGHT ALLOWANCES AND DELIVERY:—

The price quoted is base, Pittsburgh. If shipment is made from a point other than Pittsburgh (or Pittsburgh district), the freight from Pittsburgh to destination will be added, and the freight from shipping point to destination deducted. No freight to be allowed or paid by shipper on car blocking.

Obituaries

ALVAH S. CHISHOLM, widely known business man and philanthropist of Cleveland, assistant to the president of the American Steel & Wire Co., that city, died on Aug. 20 at St. Luke's hospital, following a sudden attack of heart trouble, superinduced by over-exertion during a game of tennis. Had he lived until Nov. 18. Mr. Chisholm would have been 48 years old; he was born at Chicago in 1871.

Mr. Chisholm had a widespread acquaintance in the steel industry, with which he had been prominently identified for many years. His father, William Chisholm, was a native of Montreal, Que., his ancestors having come from Scotland. In 1850, William Chisholm removed to Cleveland and established the firm of Chisholm, Jones & Co., which later became the Cleveland Rolling Mills Co. His son, Alvah S. Chisholm, received his early education in Cleveland's public schools and was graduated from Yale in 1893, with the degree of A B. After his collegiate course, he toured Europe extensively and soon after his return to America, entered the employ of the Cleveland Rolling Mills Co. He commenced his business career at the bottom, starting in the shops and workrooms of the rolling mill to learn all the details of the industry. He remained in the plant about two years and then was promoted to the city office as general clerk. Within a few years he became an important factor in steel circles and when the Cleveland Rolling Mills Co. was taken over as a part of the American Steel & Wire Co., Mr. Chisholm was retained as assistant to President William P. Palmer. In this capacity, which he filled until his death, he was an active operating executive of the company.

In addition to his steel interests, Mr. Chisholm was identified with many other industries, chiefly of a shipping and commercial nature. He was vice president and treasurer of the Newburg & South Shore railroad, a director of the Kelly Island Lime & Transport Co., the Lake Erie Dock Co., the Cleveland & Buffalo Transit Co., the Pennsylvania & Lake Erie Dock Co., the Jackson Transit Co., and the Standard Land Co.

With banking in Cleveland he was identified as a director of the National Bank of Commerce and the Citizens Saving & Trust Co.

He was interested, also, in many Cleveland civic organizations and philanthropies. His philanthropies were accomplished largely through the Red Cross and the Associated Charities, in which he was an active worker.

With him at the time of his death were his daughter and son-in-law, Mr. and Mrs. Howard P. Eells Jr. His widow, two sons, William and Corning, and a daughter, Helen, were at Bar Harbor, Me., at the time of his death.



ALVAH S. CHISHOLM

Edward P. Bates, president of Edward P. Bates Co., Inc., 228-230 West Water street, Syracuse, N. Y., died recently in that city.

John F. Merrill, for many years a director and general manager of the Laconia Electric Lighting Co., Laconia, N. H., died at his home in that city, Aug. 18, aged 86 years.

Arthur M. Rowles, Toronto, Ont., aged 68, died on Aug. 7, following a prolonged illness. For 15 years, he had been employed by the Canadian Shipbuilding Co., latterly being manager of its boiler department.

George Elmer Miles, secretary and treasurer of the Newport News Shipbuilding & Drydock Co., died Aug. 19 at his home at the Sherman Square hotel, New York City, following an illness of more than one year. Mr. Miles at one time was private secretary to the late Collis P. Huntingington, and was with the Huntington interests for more than 35 years.

J. J. Ulley, who for several years was proprietor of the Montreal Wire Works, Montreal, Que., died recently after a protracted illness at the age of 71. He retired from active business in 1917 and was succeeded by his son, A. S. Ulley.

Henry G. Hay Sr. of New York, assistant treasurer of the United States Steel Corp., who, as noted last week, died of heart failure at the home of his son, Henry G. Hay Jr., at Gary, Ind., on Aug. 18, was born in Indianapolis, Oct. 31, 1847, and went west to Wyoming in his youth, remaining there 33 years as rancher, banker, politician and surveyor general. He laid out the state lines of Wyoming. He was a commissioner to the world's fair in Chicago in 1892 and a member of the committee granting equal suffrage to women in Wyoming.

Stephen E. French, past president of the New England Foundrymen's association and one of the two honorary members of that organization, was killed Aug. 16, in an automobile accident in Boston. Mr. French was born in Orange, Mass., where he had made his home with few interruptions ever since. Nearly all of his business career was spent with the Athol Machine Co. He was treasurer and general manager of that company at the time he resigned a year ago, and since then had been associated with Geo. F. Blake Mfg. Co., East Cambridge, Mass.

Theodore Cooper, prominent consulting engineer and an authority on iron and steel construction, died of pneumonia Aug. 24 at his home, 353 West Fifty-seventh street, New York, aged 81. He was formerly superintendent of both the Delaware and Keystone Bridge companies, also assistant engineer in charge of the construction of the first elevated railroads in New York City, and one of the five expert engineers selected to determine the Hudson river bridge span. Mr. Cooper was a member of the board of experts on the Manhattan bridge plan in 1903. He was a lifelong member of the American Society of Civil Engineers.

Safety Work

In Metal Industries to be Described at October Conference

The program for the three sessions of the metals section of the National Safety council at Hotel Statler, Cleveland, Thursday, Friday and Saturday mornings, Oct. 2-4, has been announced. J. A. Oartel, director of safety, Carnegie Steel Co., Pittsburgh, is chairman; Homer J. Weeks, American Steel & Wire Co., Cleveland, is vice chairman, and W. E. Watters, National Malleable Castings Co., Melrose Park, Ill., is secretary. The program follows:

THURSDAY: "Accident Prevention in a Malleable Iron Foundry," H. L. Church, Rockford Malleable Iron Works, Rockford, Ill.; "The Personal Element in a Safety Program for the Foundry," M. F. Grantland, Marion Gray Iron Foundry, Marion, Ind.; general discussion, questions and answers.

FRIDAY: "Consider the Crane," C. C. Rausch, assistant director, Safety Institute of America, New York; discussion, O. J. Lewis, McKinney Steel Co., Cleveland; "New Ways to Put Safety Across in a Steel Plant," H. P. Heyne, United Alloy Steel Corp., Canton, O.; "Practical Demonstration of Investigating Accidents," court of inquiry staged by H. J. Weeks, with employes of the American Steel & Wire Co.; general discussion, questions and answers.

SATURDAY: "How the Foreman Cut Lost-Time Accidents," James F. Belford, acting secretary of labor, safety and welfare, American Smelting & Refining Co., New York city; E. E. Judd, American Smelting & Refining Co., Omaha, Neb.; "Humanizing a Steel Plant," Philip Stremmel, superintendent, National Enameling & Stamping Co., Granite City, Ill.; discussion, Raymond G. Adair, American Rolling Mills Co., Middletown, O.; "Practical Demonstration of Welding and Cutting," J. Schleicher, the Alexander Milburn Co., Baltimore; general discussion, questions and answers.

Start Work on Big Tube Plant at Detroit

Construction of a $3,000,000 plant on a 60-acre site has been started by the Detroit Seamless Steel Tubes Co., Detroit. The first unit of the plant will cost $1,000,000 and it is expected that it will be completed by Jan. 1, 1920. Plans call for a structure of steel and glass with brick and concrete facing and the plant proper will occupy a space, 350 x 700 feet. It will consist of three bays for manufacturing units, 90 x 700 and 550 x 45 feet high, to permit the use of traveling cranes; a separate heating plant and a 2-story administration building. The interior layout and special tube mill machinery were designed under the direction of C. A. Ross, consulting mechanical engineer, and C. L. Stafford, mill superintendent.

All the latest types of labor-saving devices and machines are to be installed and a powdered coal system will be used for heating and annealing processes. The total capacity of the first unit will be 2500 tons of seamless steel tubing monthly in sizes from ½ to 6 inches outside diameter of No. 13 gage stock and heavier. Cold drawn seamless steel boiler tubes and locomotive flues will be manufactured as well as mechanical tubing, used in the manufacture of automobiles, tractors and trucks. A complete forming department equipped to make practically any shape tube desired, will be installed.

Tracks of the Detroit Terminal railroad will run through the plant, bringing in raw material on one side and carrying away the finished product on the other. Motor trucks will serve the local customers in Detroit, and for these a loading platform will be provided. A spur of the new Pennsylvania railroad to Detroit, also will enter the plant.

Institute of Metals Will Meet in Sheffield

The British Institute of Metals held all its meetings in London during the war, the last outside meeting having been held in Ghent in 1913. The practice of meeting in various cities now has been resumed, and an elaborate program has been arranged for the autumn conference in Sheffield, Sept. 24 and 25. Hundreds of engineers and metallurgists are expected to attend. A special feature will be visits to industrial plants, and there also is to be a motor excursion through the Peak district, a distance of 50 miles, taking in Haddon Hall and Chatsworth House. Among the plants which will be open for inspection will be those of John Brown & Co., Ltd., Thos. Firth & Sons and Vickers, Ltd. The lord mayor will receive the guests and the master cutler will entertain them at lunch. Among the papers to be read are "Molding Sands for Nonferrous Foundry Work," "Observations on a Typical Bearing Metal," and "Seasonal Cracking of Brass."

Quotations on French Iron and Steel

Pig iron made in France, with a content of less than 2.25 per cent silicon, was quoted in Paris, Aug. 1, at from $32.20 to $33.56. That with content of from 2.25 to 3.25 per cent was quoted at from $33.56 to $34.93, and that with more than 3.25 per cent was quoted at $36.31. The exchange rate was 7.3 francs to the dollar. First quality hematite was quoted at $45.20; second, $43.83, and third, $45.20.

Controlled prices fixed by the ministry of industrial reconstruction for manufacturers in the northern and eastern departments follow: Refined pig iron, per ton, $38.36; blooms and billets, 220 pounds, $6.18; U and T shapes, 220 pounds, $10.96; merchant steel, 220 pounds, $8.22; plates, 2.1 to 2.9 millimeters thick, 220 pounds, $10.63; plates, 3 to 4 millimeters, 220 pounds, $9.59, plates, 5 or more millimeters, 220 pounds, $9.32.

By-Products

In Good Demand, Despite Fact Large Stocks Are in Storage

New York, Aug. 23.—While the makers of coal-tar products still are confronted with problems due to the fact that big stocks are on hand, the market situation continues to improve materially. Millions of pounds of naphthalin and large blocks of other coal-tar products, particularly phenol, are in storage. Government supplies of phenol are expected to be available before long, but at a government price, so the trade looks for a stable market in this product.

Demand for benzol, in mixture with other coal tar products, continues in active demand for use as motor fuel. Demand for all kinds of coal-tar products by the dyestuffs industry is keeping up well. Producers regard the American dyestuffs industry as a healthy one and say that with reasonable protection it will grow. Other industries which are buying on a satisfactory scale, particularly benzol, are the paint and rubber manufacturers. The advance in prices of benzol and toluol, which was made about 10 days ago, is being maintained. On the new basis, pure benzol is quoted at 25 to 29 cents per gallon at producers' plants. Toluol is quoted at 26 to 30 cents a gallon, while on high-grade material the prices are higher. Solvent naphtha is quoted at 22 to 27 cents per gallon. Demand for this product is relatively small, but production also is small. Although the drug season is at an end, producers are finding a partial outlet for naphthalin in the dyestuffs industry and in the export market. Considerable additional contracting for sulphate of ammonia for delivery over the year beginning July 1 has been done during the past week.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammouia	3.25 to 3.40

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

E. J. LUSTER, who as announced in the Aug. 14 issue of THE IRON TRADE REVIEW is head of the Luster Machinery Co., Widener building, Philadelphia, representing in that territory more than 78 manufacturers, is a graduate mechanical engineer. After serving his apprenticeship in a railroad shop he became a draftsman and designer for several large machine tool manufacturers. Subsequently he became affiliated with an exporting machine tool house and traveled extensively in foreign countries, selling American machine tools. At the outbreak of the war in 1914, Mr. Luster joined the sales force of the Sherrit & Stoer Co., and after a period of five months became receiver for the Jordan Machinery Co., organizing the Luster-Jordan Co., with Messrs. Sherrit and Stoer as partners and served as vice president and general manager. After the production was increased more than fivefold, Mr. Luster sold his interest to the Sherrit & Stoer Co. and organized the Luster Machinery Co. to sell machine tools, with offices in Philadelphia and Baltimore. A large modern showroom will be opened shortly in Philadelphia where the tools of the manufacturers represented by the Luster Machinery Co., exclusively, will be displayed.

E. R. Frederick resigned recently as president of the Allied Machinery Co. de France. He intends to remain in Paris for the present.

C. Ernest Canfield, Peterboro, Ont., an electrical engineer, has taken a position at the Pittsfield, Mass., works of the General Electric Co.

F. E. Knapp, recently returned from overseas, who prior to his enlistment had been engaged in the motor business for 10 years, has been appointed sales manager of the Lexington Motor Sales, Ltd., which has been organized to take over the distribution of the Lexington company's automobiles in Quebec province, with headquarters in Montreal.

Benjamin O. Anderson, Portland, Conn., for several years manager of the San Francisco branch of the Hendee Mfg. Co., Springfield, Mass., has gone to Rochester, N. Y., to take charge of the sales office of the S. K. F. Ball Bearing Co., Hartford, Conn., for the territory of northern New York state.

Tell Berna has been appointed sales engineer for the G. A. Gray Co., Cincinnati, O., manufacturer of planers. He formerly was Cincinnati district manager for the Cutler-Hammer Mfg. Co., Milwaukee.



E. J. LUSTER

E. B. Gould has been appointed to have charge of the Detroit office to be opened Sept. 1 in the Dime Bank building by the Goulds Mfg. Co., Seneca Falls, N. Y., manufacturer of pumps.

K. B. Segall, formerly works manager of the Michigan Stamping Co., Detroit, now is president of the American Equipment Co., that city, organized to deal in machinery and tools.

S. R. Willock, who has been assistant supply manager of the Emergency Fleet corporation, resigned recently to become associated with the Woodard Machine Co., Wooster, O., as sales manager.

Alfred J. Saxe has been placed in charge of the branch office, established at 231 Insurance Exchange building, Chicago, by the Automatic Furnace Co., Dayton, O., manufacturer of automatic smokeless furnaces, chain grates, engines, etc.

W. Bruce Pirnie, a salesman on the staff of the Worcester, Mass., branch of the Pierce, Butler & Pierce Mfg. Corp., Syracuse, N. Y., has been appointed manager of the Boston sales office of the corporation.

Frederick H. Payne, first vice president of the Greenfield Tap & Dye Corp., Greenfield, Mass., has been admitted as a general partner in the firm of Tucker, Anthony & Co., Boston.

W. W. Tangeman, who recently was discharged as a major in the ordnance department of the United States army in France, has resumed his connection with the Cincinnati Milling Machine Co., Cincinnati, O., as sales engineer.

James M. Monroe has resigned as southern representative of the Hunt-Spiller Mfg. Corp., Boston, and has been elected vice president of the Harry Vissering Co., Chicago, and the Charles R. Long Co., Louisville, Ky.

Byron F. Stowell, who for several years was master mechanic and mechanical engineer for the Hendee Mfg. Co., Springfield, Mass., has become affiliated with the Napier Saw Works, Inc., Springfield.

Daniel H. Hunter recently was appointed sales manager for the Sullivan Machinery Co., Chicago, in Louisiana, Texas, except the southwestern section and the oil fields of Oklahoma and Kansas. His headquarters are in Dallas, Tex.

Frederick G. Platt, president of the New Britain Machine Co., New Britain, Conn., has been elected president of the Hardware City Loan Corp., a new Connecticut corporation to encourage building operations in New Britain.

Philip C. Wentworth, for 12 years with the sales department of the Draper Corp., Hopedale, Mass., has been appointed treasurer and general manager of the National Ring Traveler Co., Providence, R. I. He succeeds the late A. Chase, one of the founders of the company, who was its treasurer and general manager for 26 years.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

HARVEY P. BARNARD has been made works manager of Midland, Pa., plant of the Pittsburgh Crucible Steel Co. For the past few months he has filled the position of production manager and prior to becoming associated with the Pittsburgh Crucible Steel Co. he was superintendent of plant B of the United Alloy Steel Corp., Canton, O. Robert W. McDonald, who has been acting works manager of the plant, has resumed his former position as superintendent of the Crescent works of the Crucible Steel Co. of America, the parent company of the Pittsburgh Crucible Steel Co.

A. C. Lorian recently became purchasing agent for the Clinton-Wright Wire Co., Worcester, Mass.

W. D. Truesdale was elected treasurer of the Inland Steel Co., Chicago, at an adjourned quarterly meeting of the board of directors, held recently.

George D. Dutton, Boston, has been elected president of the American Brick Co., which has a plant in Medfield, Mass.

George Foraker, formerly assistant general superintendent of the Pacific Coast Steel Co., San Francisco, has been made general superintendent to succeed C. E. Duncan, who resigned recently on account of poor health.

J. O. Griggs has resigned as foreman in the open hearth department of the Sharon Steel Hoop Co., Sharon, Pa., and has been made senior melting foreman with the Brier Hill Steel Co., Youngstown, O.

Alexander Chapman, assistant district sales manager for the Rail Joint Co., with headquarters in Chicago, has been made district sales manager, succeeding George C. Isbester, resigned.

Alonzo Tweedale, auditor for the District of Columbia, has resigned, effective Sept. 1, to become treasurer of the shipping board and the Emergency Fleet corporation. For 24 years Mr. Tweedale has been an employe of the district government.

Edward R. Bardgett, port agent at Toledo and traveling representative for the Great Lakes ore and coal exchange for the past two seasons, resigned yesterday to accept a position with the Cunard Steamship Co. He will be located in Cleveland.

William H. Bruce, for many years connected with Mark Mfg. Co., Chicago, as sales manager at Seattle and Minneapolis, has been appointed southern sales manager for the Steel & Tube Co. of America and Mark Mfg. Co., with offices at New Orleans.

Charles A. Lynch, of Philadelphia, formerly connected with the Pittsburgh district ordnance office as chief operator, carriage division, in charge of inspection and manufacture of gun carriage components, has become affiliated with the Fort Pitt Steel Casting Co., McKeesport, Pa., in its sales department.

Charles P. Derleth has been appointed St. Louis representative for the Celite Products Co., New York City. Prior to his enlistment, 14 months ago in the chemical warfare service division, Mr. Derleth was sales representative of the J. B. Ford Co., at Wyandotte, Mich. He is a graduate of the University of Illinois.

Thomas S. Disler, formerly traffic manager and purchasing agent of the Fort Pitt Steel Casting Co., McKeesport, Pa., recently resigned that position to become assistant secretary in charge of traffic and sales of the Kendall Lumber Co., Oliver building, Pittsburgh. Frank T. Taylor succeeds Mr. Disler at the Fort Pitt Steel Casting Co.

R. P. Rowe, vice president of the National Lead Co.; J. R. Wettstein, president of the United Lead Co. and a director of the National Lead Co., and Evands McCarthy, general manager of the United Lead Co., sailed for Europe on the steamer ADRIATIC recently. They will study business conditions in England and on the continent.

Edward R. Cardinal has been appointed district sales manager of the Tacony Steel Co., Tacony, Philadelphia. Mr. Cardinal is well known in the steel trade, having been district sales manager for the Carpenter Steel Co. in Philadelphia, later a member of the Carlin Steel Products Co., Philadelphia, and, more recently, president of the Cardinal Tool Co., Philadelphia.

Joseph J. Becker, who has been superintendent of the Oriskany plant at Reusens, Va., of the Lavino Furnace Co., Lynchburg, Va., since March 1, has been transferred to Sheridan, Pa., to take up similar duties at the furnace plant there operated by the same company. The Sheridan furnace is out of blast and Mr. Becker will supervise its overhauling, having accomplished a similar task at Reusens.

Walter Smith Oglesby sailed for Santiago de Chile on Aug. 22 to represent the Pennsylvania Steel Export Co. of Philadelphia. Stephen J. Carroll, secretary of the company, left on Aug. 24 for Buenos Aires, where he will spend a short time establishing closer relations with the Argentine office of that company. Stephen B. Carr, another officer of the company, left recently on a similar errand for Kobe, Japan.

W. C. Epstein has been made general superintendent of works operated by the Duff Mfg. Co., Pittsburgh. Mr. Epstein until recently was in charge of the production engineering division of the bureau of aircraft production, New York City. Prior to entering the government's service, he was with the American Brake Shoe & Foundry Co., Chicago, assisting the vice president in charge of operation. He was graduated from the University of Wisconsin in 1913.

George A. Bartle, who has been appointed plant superintendent for the Great Falls Iron Works, Great Falls, Mont., was graduated from the engineering department of the University of Minnesota. Since that time, he has held responsible positions with the Minneapolis Steel & Machinery Co., which he now is leaving; the Flour City Ornamental Iron Co.; the Emerson-Brantingham Co., and others, all of Minneapolis. Houghton A. Duncan has been made office manager for the Great Falls Iron Works, succeeding E. K. Keuzarder, who resigned to enter business.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

STANLEY H. McKEE has been appointed chief engineer of the Republic Iron & Steel Co., as the result of the resignation of J. C. Shackleford to become consulting engineer. Mr. McKee formerly was assistant chief engineer, and R. H. Crevoisie succeeds him. Mr. Crevoisie has been affiliated with the Republic company for 15 years, having removed to Youngstown when the company's offices were removed there from Pittsburgh.

W. J. Harvey of Cleveland, has been elected president and general manager of the Harvey Steel Products Corp., Jackson, Tenn., successor to the Southern Engine & Boiler Works, that city.

H. N. Taylor, president of N. & G. Taylor Co., Inc., Philadelphia, manufacturer of tin plate, who also is president of the Drop Forge Supply association, is absent on a two-week motor trip through New England.

Thomas J. Atkinson, who recently resigned as sales manager of the Reilly-Peabody Fuel Co., with which he was identified since its organization in 1916, on Aug. 25 assumed his new duties as manager of the coke department of the Superba Coal & Coke Co., 302 Frick building, Pittsburgh.

Alvin R. Whitehead, who recently resigned as purchasing agent for the American Condenser & Engineering Corp., Plattsburg, N. Y., has been appointed sales manager for the Sun Machinery Co., 150 Nassau street, New York City, with headquarters at 278 Washington street, Newark, N. J., recently established.

John F. Duffy, now associated with Walter-Wallingford & Co., in its Pittsburgh office, on Sept. 1 will join the John Eichleay Jr. Co. in its iron and steel scrap department. Before joining Walter-Wallingford & Co., Mr. Duffy was Pittsburgh district representative of the *Daily Metal Reporter* for several years and takes with him to his new position a wide experience as well as a large acquaintance among the steel, scrap and metals trade.

William H. Hundt, for 10 years associated with the New York office of Luria Bros. & Co., Inc., has been placed in charge of a new branch office of this company in Boston, to be opened on Sept. 1. The Boston office is to be located in the Board of Trade building, 131 State street. Mr. Hundt is well known in the New England district. Mr. Capstick, for a number of years in the Lebanon office of Luria Bros. & Co., Inc., will serve as assistant to Mr. Hundt.

Louis E. Strothman has been elected vice president and general manager of the Richardson-Phenix Co., Milwaukee, manufacturer of mechanical lubricating devices. Until Aug. 15, he was manager of the steam turbine and pumping engine department of the Allis-Chalmers Mfg. Co., Milwaukee, having joined that organization in 1902.

L. J. Webster has become affiliated with the sales force of the Cleveland-Duplex Machinery Co., Cleveland, to assist in developing a new sales plan which that company is inaugurating. Mr. Webster was recently discharged from service with the 135th field artillery and had resumed his position in the plant of the Columbia Axle Co., Cleveland, which he occupied before entering military service.

Eugene F. Ball, who was re-elected president of the National Association of Pattern Manufacturers at its second annual convention, held at the Hotel Statler, Buffalo, Aug. 16-17, is general manager of the Newark Stamping & Foundry Co., Newark, O. Mr. Ball has served the organization ever since it was formed and filled the same office in its forerunner the Inter-State Association of Pattern Manufacturers, which became the National association in 1918. It was at the suggestion of Mr. Ball and E. O. Melvin, of Columbus, O., that an organization of this character was started and in the past year its membership has grown from 28 to over 200.

Charles McKay has been placed in charge of the appraisal division of L. V. Estes, Inc., 202 South State street, Chicago, industrial engineer. Mr. McKay is well known in both industrial and public utility fields. He is the author of "Valuing Industrial Properties," published last year, and "Telephone Rates and Values," which will be published by the Cornhill Co., Boston, about Sept. 1. He also has written in excess of 100 articles for technical and trade journals on the general subject of valuation. He is a member of the advisory council of the Industrial Extension institute and during the past year has supervised the appraisement of nearly $40,000,000 worth of industrial and public utility properties.

J. F. Blank, who enlisted in the chemical warfare service division in September, 1917, and who was discharged as a lieutenant in January, 1918, to accept a position with the bureau of mines, doing experimental work in connection with the extraction of helium from natural gas for use in balloons, resigned from the latter position recently to become identified with the Wilson Foundry & Machine Co., Pontiac, Mich. His work now consists of assisting the foundry engineer in general foundry methods and in doing general foundry efficiency work. Prior to his enlistment, he was connected with the methods department of the Western Electric Co., Hawthorne station, Chicago, having charge of the methods and efficiency work in its foundries.

Charles E. Gradwell, of the firm of Gradwell & Phelis, Birmingham, Eng,. agents for the Hofmann-Sproul Co., Widener building, Philadelphia, dealer in iron, steel, scrap, etc., sailed for England recently, after a business visit to Philadelphia. After placing certain contracts in England, he will leave for China, where he has been appointed special buyer of scrap for the Hofmann-Sproul Co. E. R. Doud, E. R. Campbell and Walter Maccallum have become affiliated with the Hofmann-Sproul organization at Philadelphia, handling scrap, new materials, second hand specialties, chemical products, etc. Mr. Doud was formerly with the Tioga Steel & Iron Co., and before that with the Bethlehem Steel Co. Mr. Campbell formerly was with the American Steel Foundries and Mr. Maccallum is a chemical engineer and a graduate of Lehigh university.

Exports Show a Drastic Decline

Foreign Trade Report for July Indicates Radical Change in Commerce Tendencies as Exports Excess is Cut Down and Upset Exchange Gets Some Relief —General Financial and Industrial News

BY JOHN W. HILL, FINANCIAL EDITOR

SOME months ago when European exchanges, influenced by the tremendous adverse trade balance against the late belligerent nations, began to decline precipitately in the American market, close observers of the situation predicted the result would be a decrease in exports from the United States and an increase in imports unless some plan of financing was devised to equalize the exchanges. Although the credit plan is still pending it was not until the month of July that there was any indication that such a prophecy was to be borne out by the facts.

For that month the department of commerce reports a decided and even startling change in the trend of the country's foreign trade. Exports totaling $570,000,000 declined $348,000,000 from the preceding month, while imports standing at $345,000,000 topped the June record by $52,000,000. Imports for the month reached the highest figure for any month in the history of the country.

The July showing was all the more striking in view of the unprecedented exports of June which reached the grand figure of $918,000,000. June closed with a favorable balance of trade for the United States of approximately $400,000,000 for the month. The excess of exports over imports in July had shrunk to $225,000,000 the smallest figure since the embargoes of February, 1917, and smaller than any month prior to that since April, 1916, when prices were so much lower as to make comparisons almost out of the question.

As a consequence of this development European exchanges have grown firmer and the pound sterling has recovered somewhat from the low record of $4.14, touched last week. The situation is still far from being stabilized, however, as the seven months excess of exports stands at the unprecented total of $2,663,092,000.

What does this July exhibit mean? Are the unsettled trade balances and the upset exchanges in the process of being righted by the operation of the natural law of international trade which sways exports and imports according to the exchange barometer? Seemingly this is true. However, until the detailed report of the destination of the exports and the source of the imports is made available no certain conclusion can be drawn from the totals. It is only if the imports from Europe have increased and the exports to Europe have been curtailed that the movement will be significant in its effect upon the exchanges. The fact that in June Europe got $644,000,000 of goods and the rest of the world only $273,000,000 would indicate that the bulk of the $348,000,000 decline in exports represents a drop in the shipments to Europe. How much of the gain in imports is due to increased buying in Europe as a result of the exchange rates, is also uncertain. Probably Europe has not much surplus to export as yet.

August Buying Further Curtailed

During August buying by Europeans has been further curtailed, even foods being effected. How the exchange rates affect the situation may be illustrated by the example of an English deal. With exchange at par a British merchant would have to get $486,000 plus freight and profits for £100,000 worth of machinery sold in the New York market, but with exchange at $4.12 he could sell the goods on the basis of $412,000 and still realise in London this £100,000. Were he buying the machinery from the United States, however, he would have to pay £115,000, or in other words a sufficient quantity of pounds to make $558,000 on the basis of normal exchange, but representing only $486,000 in New York at the depreciated rates. The excess represents the evaporation of values through the exchanges.

Thus it is evident that the only thing preventing imports from England and other European nations by Americans is the lack of exportable goods by those countries. They are selling bonds and other securities held over during the war, however, and this is assisting in correcting the situation.

American financiers have pounded home the theory that unless huge credits were raised and extended to Europe, these countries might fly into bolshevism from lack of food and the materials with which to get back to work. Moreover it was pointed out that American industries needed the export business to maintain prosperity and prevent unemployment. This theory has been generally accepted. Little support has been forthcoming, however, for the financing plan, with the result that the exchanges are low and European buying apparently is decreasing. Now what is going to happen?

As for the United States no one disputes its export trade is vitally important, yet the great scarcity of goods of every description in this country and the labor shortage, indicates the domestic consumption power is sufficient to absorb a tremendous volume of goods at something near prevailing prices for months to come. Possibly, if food exports did not materialize in the degree anticipated, food values might break, a development that would help ease the labor tension.

Lloyd George's speech last week indicated that the exchange situation was agreeable rather than otherwise, in that it would bring home to England the necessity of curtailing in consumption and of increasing production. If Europe cannot buy and is not anxious for credits in order to buy, this country's only foreign trade salvation is the development of markets in other parts of the world, a slower process perhaps, but one that would lay the foundation for permanent trade. As for Europe it is hardly to be doubted but that a way will be found to provide it with the things imperative to save its nations from collapse.

Colorado Fuel & Iron Gain in Earnings

A substantial gain in earnings and surplus for the second quarter of 1919 as compared with the first quarter, is reported by the Colorado Fuel & Iron Co. Surplus after charges, taxes, sinking fund, etc., was $627,154, equivalent, after preferred dividend, to $1.71 a share on the $34,235,000 common stock as compared with a surplus of $401,384 or $1.05 a share for the quarter ended

March 31. In comparison with the same period last year the quarter's earnings show a drastic decline. Although gross receipts were more than $2,000,000 less than in 1918 the operating expenses were only slightly more than $1,000,000 smaller. The comparative income account follows:

	1919	1918
Gross receipts	$10,529,415	$12,812,003
Operating expenses	9,385,099	10,474,161
Net earnings	$1,144,316	$2,337,842
Other income	132,815	128,124
Gross income	$1,277,131	$2,465,966
Int., tax, etc.	649,977	765,796
Surplus	$627,154	$1,700,170

Agree on Equipment Trust Financing Plan

At a meeting held Aug. 23 in New York between bankers, railroad executives and representatives of the railroad administration, complete agreement was reached on the financial interests and road officials to float an equipment trust of $280,000,000 to finance the railroad administration's purchase of equipment. The total value of the equipment involved is $400,000,000, but it will be necessary to dispose of only $280,000,000 of the trusts under the plan. A committee of lawyers was appointed to work out the details and the new issue should be ready for consideration of investors before the close of September. The financing of the equipment purchases will place the finances of the roads in better shape for the return of private ownership, which is scheduled for the first of the year.

Denies Taking Option

The Bethlehem Steel Co. officially denies a published report that it has taken an option on the mills, blast furnaces and steel plants of the Kelly Nail & Iron Co. and the Belfont Iron Works, of Ironton, O., and the Ashland Steel Co., Ashland, Ky. The properties are represented by two blast furnaces at Ironton, wire and nail plants at Ironton, and a steel plant, billet and blooming and rod mills at Ashland, Ky.

Iron Company Organizes

The Canopus Iron Corp. recently incorporated under the laws of New York state with an authorized capital of $1,000,000, has organized with the following officers: President, Henry S. Predmore of the Anglo-American Talc Corp., Ltd., Madoc, Canada, and president of Gilchrist & Predmore, dealers in semiprecious ores and minerals, New York City; vice president, Roy I. Guthman; secretary, John G. Pearse, and treasurer J. Hamilton Mather, president, Freight & Cargo Warehouses, Inc., Jersey City, N. J. town, N. Y. The company has executive offices at Garrison, N. Y., which is about 49 miles north of Grand Central terminal, New York, and has a magnetic iron ore property of 140 acres at Phillipstown, Putnam county, New York, the mine being about three miles distant from tidewater in the Hudson river. The ore body has been developed by an incline shaft to a vertical depth of 165 feet and it is estimated that there is a width of ore of not less than 75 feet. The new mine is directly east of the Forest of Dean mine which is open to a depth of 1100 feet and which has been shipping ore since before the Revolution. Laidlaw, Kelley & Co., Inc., 14 Platt street, New York, have purchased 100,000 tons of ore from the Canopus Iron Corp., deliveries to begin within four months at the rate of 300 tons per day and the former company also will handle the output over and above this quantity as it is produced.

Business is Improved

At the postponed annual meeting of the Savage Mountain Fire Brick Co., Frostburg, Md., the following officers were elected for the balance of the year: Chairman of the board, Charles C. Gorsuch; president, John A. Caldwell; secretary, W. F. Caldwell; superintendent, G. A. Shuckhart; and assistant secretary, G. R. Harvey. The company reports that business was below normal during the first six months of 1919, due to the fact that all of its customers, being on the preferential list, laid in large stocks during the last half of 1918. Business during the last 30 days, however, has shown marked recovery and officials expect a good volume during the last half of the year.

Vote to Recapitalize

Although not assented to by all the stockholders, it is understood that a sufficient number of shares of the Wheeling Mold & Foundry Co., Wheeling, W. Va., have been recorded in favor of the proposed recapitalization of the company to carry the plan through. Herbert E. Field, president of the company, recently sent out to stockholders a circular requesting authority to organize a corporation for the sole purpose of purchasing the assets and continuing the business of the Wheeling Mold & Foundry Co., the new corporation to be capitalized as follows: $1,000,000 in 10-year serial or sinking fund 7 per cent notes, $1,200,000 of 7 per cent cumulative, non-voting preferred stock and 50,000 shares of common stock of no par value.

In the event of this plan becoming operative, it is proposed to pay $60, in cash, for each share of the present preferred stock of the Wheeling Mold & Foundry Co., and for each share of the present common stock, $50 in cash, $60 in 7 per cent preferred stock and one-half share of the new common stock, of the new corporation.

Glass Approves Edge Bill

Secretary of the Treasury Glass has sent a letter to Senator Edge of New Jersey, approving the senator's bill authorizing the creation of corporations for financing American export trade to Europe. It is expected that the bill will be presented to the senate for action within a few days. Secretary Glass wrote that he entertains "none of the misgivings of those who hesitate to support the measure, but on the contrary feels confident that its prompt enactment into law will afford an effective and altogether desirable means of greatly improving our foreign banking facilities and expanding our markets for export trade."

Financial Crop Ends

The Pettigrew Foundry Co., Harvey, Ill., has increased its capitalization from $75,000 to $125,000.

* * *

The George H. Bishop Co., Lawrenceburg, Ind., saw manufacturer, and the James Ohian & Sons Saw Mfg. Co., Columbus, O., have been merged.

* * *

A. R. Erskine, president of the Studebaker Corp., is authority for the statement that earnings in the first six months of the year ran 100 per cent ahead of one year ago.

* * *

The Harvey Steel Products Corp. has succeeded the Southern Engine & Boiler Works at Jackson, Tenn. W. J. Harvey, of Cleveland, is president and general manager. The Southern Engine & Boiler Co. was capitalized at $300,000.

* * *

Among recent capitalization increases filed in Michigan were the Stroh Castings Co., Detroit, $250,000 to $500,000; Briscoe Devices Co., Jackson, $25,000 to $40,000; Mott Wheel Works, Jackson, $250,000 to $350,000; Buhl Sons Co., hardware, Detroit, $1,00,000 to $2,000,000.

* * *

The Indiana Silo Co., Pendleton, Ind., and the Star Tractor Co., Findlay, O., have consolidated as the Indiana Silo & Tractor Co., with a capital stock of $1,000,000. A new plant will be built to manufacture tractors. W. H. Swain, of Pendleton, is president.

Tool Bookings are Fairly Good

Eastern Market More Affected by Labor Disturbances Than Other Districts—Chicago Dealers Enjoying Banner Month—Export Business on Wane Because of Present Unfavorable Exchange Situation—No Large Inquiries are Current

WHILE the continued labor difficulties are exercising a disturbing influence in some directions, many sellers of machine tools declare their sales sheets continue satisfactory. It is in the East where the present unsettled economic situation is having the most effect upon business. There, several lists of tools and cranes have been tabled and action upon these probably will not be taken until the difficulties have been ironed out. This is true of a list of four cranes for the Sligo Iron Co., Connellsville, Pa., and one of eight for the United States Cast Iron Pipe & Foundry Co., although the latter is understood to have bought three cranes. Recent purchasers of tools in the East include the Pathe Freres Phonograph Co., Bridgeport, Conn., and the Worthington Pump & Machinery Corp. Inquiries are out from the West Troy Foundry & Machine Co., Troy, N. Y., the E. W. Bliss Co., Brooklyn, N. Y., the Nyap Machine & Engineering Co., Pittsburgh, the Corn Products Refining Co., Chicago, and the Parish & Bingham Co., Cleveland.

Buying by the railroads is confined chiefly to replacement tools although the Cumberland Valley railroad recently purchased two electric traveling cranes and a half dozen machine tools. The Pennsylvania is asking for revised bids on inquiries for shop equipment which was issued early in the year, and on which action was delayed due to the lack of funds.

Chicago dealers claim that the rate of buying now being sustained will make August a banner month if it continues. This is true in a reduced measure in Cleveland, where bookings for tools from a varied line of industrial activities have been received. This business is without lists and is made up of small sales. In the latter territory the White Motor Co., Cleveland, continues to buy and in both Chicago and Cleveland, sizable sales have been made to concrete mixer manufacturers, whose business has increased due to widespread activity in road buiiding. Some fair-sized orders have come from automobile accessory manufacturers.

Proof that manufacturers are filling up with business is found in the offered deliveries which are growing more remote from week to week. In Chicago, they now average 90 days but labor difficulties are expected to send them further into the future. In Pittsburgh and sections further east, deliveries are not guaranteed short of six weeks and in some cases 10 to 12 weeks is required. New England manufacturers are unable to offer attractive delivery dates.

Reductions in export business are particularly marked in the East. It is claimed that this is resulting from the present foreign exchange situation. Requirements of Belgium, France and other countries are known to be large but with exchange rates at present levels, premiums as high as 60 per cent have to be paid by the French for Amerian-made mahine tools. Germany is taking advantage of the situation and is selling considerable machinery in Scandinavian countries.

Equipment Lists Tabled During Labor Trouble

EXPORT business in machine tools is almost at a standstill, as a result of the existing foreign exchange situation. Requirements of Belgium, France and other countries of continental Europe are extremely large, but with exchange rates at current levels France would be compelled to pay a premium of approximately 60 per cent for goods purchased here and much the same is true of other countries of Europe. Germany is becoming more active in the European markets, according to advices received by New York builders from their Swedish correspondents. Taking advantage of the exchange situation, Germany is placing considerable machinery in Scandinavian countries, the goods being paid for in marks at much lower figures than would have been the case in dollars. Japan has bought all classes of machine tools in the American market in past months but has not been purchasing of late. South America is buying very little machinery.

Transactions in the domestic market are scattered and of a miscellaneous character. Railroad buying is confined to absolutely necessary replacement tools. The shipyards are well equipped. The navy department is not buying, pending an appropriation for the current fiscal year. Demand for machines for general manufacturing purposes is being partly held in abeyance by the unsettled economic situation. Thus several lists of machines and cranes have been tabled temporarily, pending the outcome of the present steel and railroad labor-situation. Oil field requirements are of considerable importance, in the aggregate, principally for hammers and small lathes. Manufacturers of phonographs have been important buyers of automatic machinery. The only railroad business noted the past week was some shop equipment placed by the Cumberland Valley railroad, comprising two electric travelling cranes and about half a dozen machine tools. Other current inquiries for tools include a list of two shapers, two lathes and two radial drills for the E. W. Bliss Co., New York. The West Troy Foundry & Machine Co., West Troy, N. Y., formerly the West End Foundry & Machine Co., is inquiring for two lathes and

Chisel Steel

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Seminole Steel was developed by us for the production of impact tools that would be foolproof in heat-treatment, but would not fail in use. Chisels made of Seminole Steel will cut armor plate, nickel rivets and alloy steel billets—and yet, if hammered carefully they may be bent over the edge of an anvil! In fact, they will withstand any usage to which they may be subjected in actual service.

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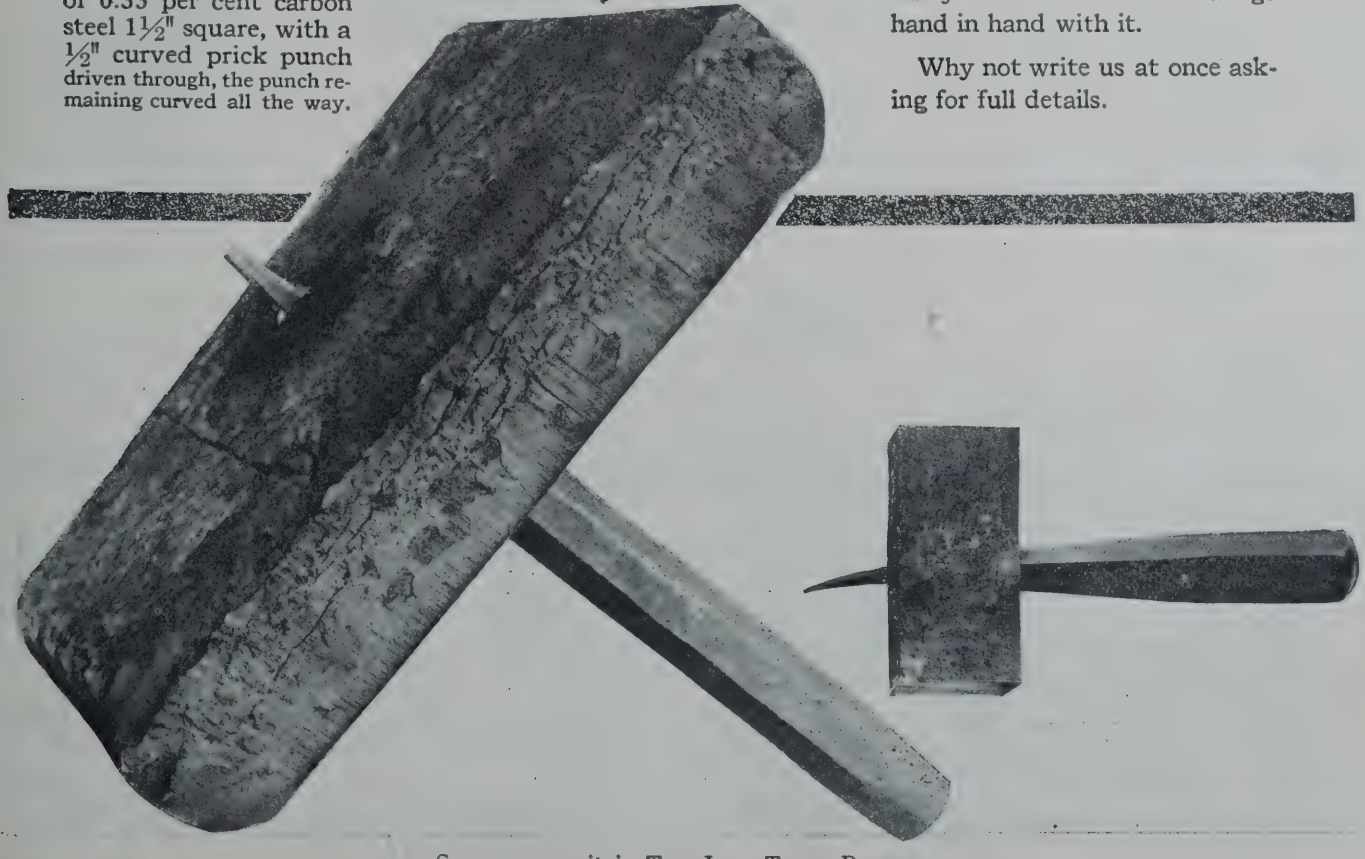
Branch Offices:
New York City Philadelphia Cambridge, Mass. Cleveland
Pittsburgh Cincinnati Detroit Chicago Buffalo

The larger illustration shows a ¾" octagon chisel driven through a block of 0.35 per cent carbon steel 2½" thick. Both punch and chisel are file hard.

The smaller illustration shows a block of 0.35 per cent carbon steel 1½" square, with a ½" curved prick punch driven through, the punch remaining curved all the way.

Tools made of Seminole Steel will effect an immense saving for you in reduction of forging costs alone—to say nothing of the many other economies that go hand in hand with it.

Why not write us at once asking for full details.



two drills. The Pathe-Freres Phonograph Co., Brooklyn, has bought a number of tools and remains in the market for automatic lathes and other machines. The Worthington Pump & Machinery Corp. bought two pipe bending machines.

The American Locomotive Co. has not yet closed on its list of 15 cranes, previously reported, including three for Montreal, three for Schenectady and nine for its Chester, Pa., plants. The Standard Oil Co. continues a buyer of one or two cranes almost every day, the current financing by this company paving the way for extensive improvements. Financing by the Atlantic Refining Co. also is expected. This company's inquiry for four cranes has been tabled. The Bethlehem Shipbuilding Corp. bought a 5-ton crane. The Sligo Iron Co., Connellsville, Pa., has postponed temporarily buying seven overhead and one locomotive crane. The United States Cast Iron Pipe & Foundry Co. is understood to have closed on its inquiry for cranes, including one 30-ton, 60-foot span, one 5-ton auxiliary hoist, and one 5-ton 25-foot span. A Cleveland contractor has received the general contract for a steel foundry for the Adirondack Steel Foundries Co., recently organized to operate a steel foundry near Watervliet, N. Y.

Labor Unrest Holds Up Pittsburgh Trading

PROSPECTIVE business in machinery and tools in the Pittsburgh district is good, but the labor unrest apparently is creating some hesitancy among buyers in closing. While there is a tendency in most directions to regard the feeling of unsettlement among workmen as something that will pass in time, few expect a restoration of normal relations between employer and employe without a struggle of some sort, during which a fairly general suspension of plant activities is possible. Under the circumstances, the tendency for buyers is to go slowly. Last month's activities have provided a number of the builders of cranes and other heavy equipment with a fair backlog of business and that the makers of light machinery and tools are well committed is evident from the fact that in a number of lines deliveries now are not being guaranteed short of six weeks and in some instances 10 and 12 weeks are the shortest dates. New England tool manufacturers seem less able to cope with quick shipment business than those in the Middle West.

W. N. Kratzer & Co., Pittsburgh, recently took an order from the Standard Sanitary Mfg. Co. for two cranes. It is expected that the Carnegie Steel Co. will close shortly on four cranes for its Edgar Thomson works; this business is expected to go to one of the Alliance, O., manufacturers. Revised bids are being asked on a number of inquiries put out early in the year by the Pennsylvania railroad, lines west, for shop equipment. Higher prices are likely in the new bids, especially on motor-driven tools, due to the higher prices now being asked by the builders of motors. The Nyap Machine & Engineering Co., Pittsburgh, which recently absorbed the Riflaw Wrench Co., is taking bids on equipment for making wrenches.

Brisk Tool Business Done in Cleveland

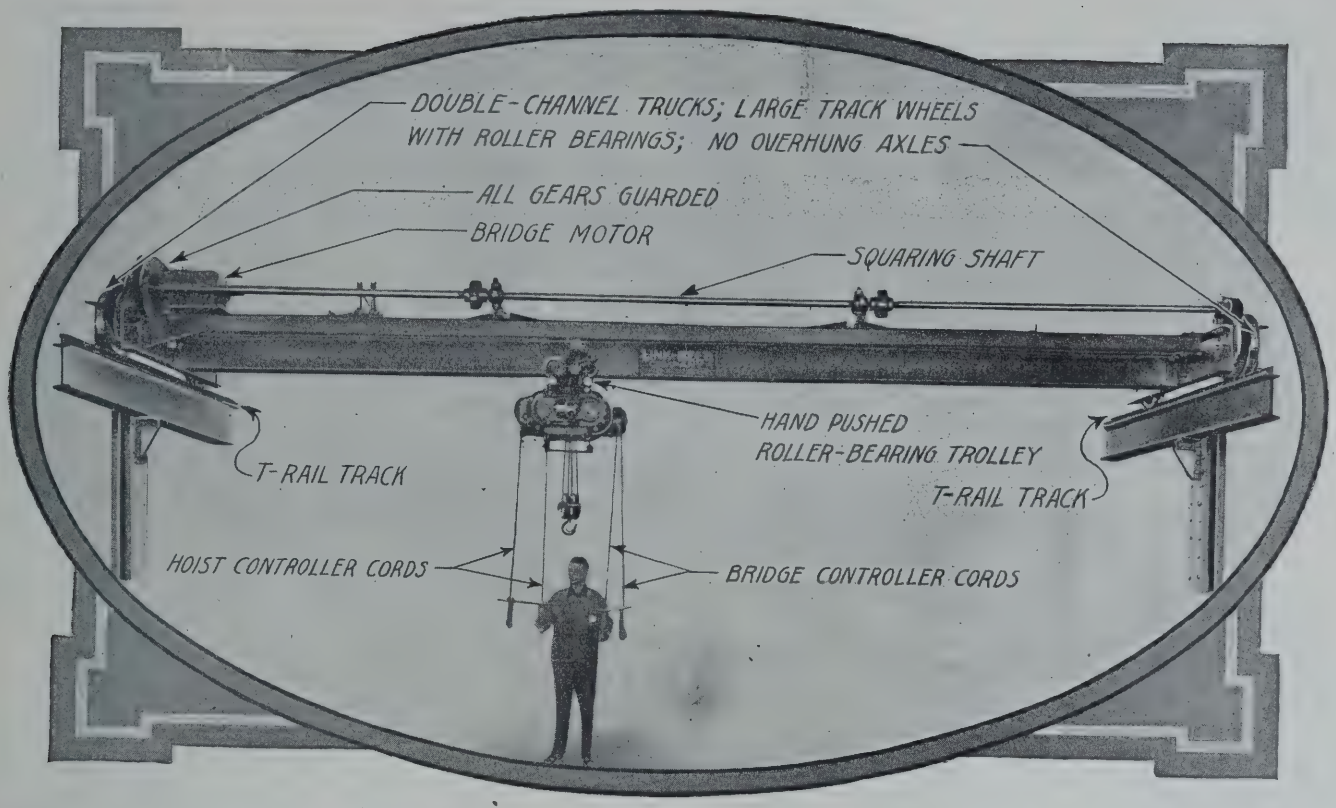
USERS of machine tools who are reached by Cleveland sellers in part are unaffected by the present labor troubles which are exerting a disturbing influence in many directions. A brisk market continues and orders as well as inquiries are frequent, coming from practically every line of industrial production with the automotive industry leading. No large list is current at the present time, but the small orders received represent a comfortable aggregate. A few conservative manufacturers are holding back their purchases and these probably will not buy until order is restored in the present economic situation. The Blomquist-Eck Machine Co., Cleveland, manufacturer of boring mills, reports that even without more orders, it has sufficient business on hand to keep it operating full until Jan. 1, 1920.

Additional buying has been done by the White Motor Co., Cleveland, one Cleveland dealer receiving orders the latter part of last week for $18,000 worth of tools. On inquiries aggregating approximately $20,000 worth of equipment, the Parish & Bingham Co., Cleveland, has bought two 24-inch Gould & Eberhardt shapers, some radial drills and other tools, but orders for some other equipment still remain unplaced. The G. A. Kelly Plow Co., Longview, Tex., was in the market for an engine lathe and is understood to have placed its order. The Standard Equipment Co., 3170 West 106th street, Cleveland, is reported to have closed upon its tool requirements for a new factory to cost $25,000. The North Baltimore Tractor & Machine Co., North Baltimore, O., is understood to be buying gear cutters. The Shaw Electric Crane Co., Muskegon, Mich., recently was looking for a 42 x 48-inch x 20-foot Ingersoll slab miller. The Gramm-

British Tool Seller Sees Small Market in Belgium

ACCORDING to the statement of a Belgian representative of a machine tool manufacturer of Birmingham, Eng., the outlook for the sale of both British and American tools in Belgium is decidedly gloomy. This sales agent recently made a survey of the situation in Belgium and the results are given in an article under the caption: "Machine Tools in Belgium," which appeared in a recent issue of *The Ironmonger,* published in London. This article follows:

The Belgium agent for a Birmingham firm of machine-tool makers sends a gloomy account of the trade prospects in that country, as a result of his first look around. He says that Belgian manufacturers may be divided into two classes—those who were working during the German occupation, their plants having been requisitioned by the enemy, and those whose plants have been wholly or partly taken away. The former are getting to work again, though with reduced staffs owing to the shortage of materials, and the rest will start as soon as they can reinstate their plants. This will present difficulties, because under the scheme of reconstruction adopted by the allies, instead of receiving immediate and full indemnification, they will receive in cash only 50 per cent of the 1914 value, and the remainder as it is collected from the enemy. That puts out of the market firms which are not able to finance new purchases. The agent is afraid that conditions created by the peace terms, coupled with the fact that there is still a large amount of German paper money in the country, will push Belgium commercially into the arms of Germany again, and that consequently the outlook for British and American machine tools in that country is less promising than it might have been.



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IT'S just the thing for machine shops, foundries, structural shops, mills, etc. The time it will save in a machine shop by quickly and economically serving machine tools with castings, etc., will soon pay for the crane. After that, the saving is "pure velvet".

Important Advantages

1. Crane always ready for service. Any shop hand can operate it. No need for keeping an operator up in a cage.
2. Pull a cord to operate hoist or crane; let go, and it stops. Simple as A, B, C.
3. All operating cords handy, both controllers mounted on hoist—right where the load is being handled.
4. Load is handled with greater precision and safety, than when operator is carried in a cage near ceiling and must depend on signals.
5. Like our mono-rail electric hoist and other Link-Belt products, this crane embodies Quality, Reliability, Accessibility, and High-Efficiency.

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Seattle 576 First Ave., S.
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- ☐ Coal and Ashes Systems
- ☐ Coal Pockets

Write for Catalogs
Place X in Square

Bernstein Motor Truck Co., Lima, O., is taking quotations on multiple spindle drills and prefers one with 36 spindles. The Miller Rubber Co., Akron, O., is in the market for a 300-750 kilowatt ampere, 2300 volt, 60-cycle 3-phase generator with exciter, 3600 revolutions per minute, with noncondensing steam turbine for operating on 125 to 140-pound steam pressure. The Strong, Carlisle, Hammond Co., Cleveland, has inquiries from London and Liverpool, Eng., for special machinery and it expects to receive the business.

Several lists of secondhand equipment are being offered by concerns which operated during the war on munitions, etc. One of the latest to appear is that of Foos Gas Engine Co., Springfield, O., which is endeavoring to dispose of a large number of machines. A fair sized list of machines available for sale, is issued by the United Engineering & Foundry Co., Pittsburgh. These tools are located in the various plants controlled by this company. An auction sale of 1150 metalworking tools is advertised by the American Can Co., 120 Broadway, New York City. The sale will be held Sept. 3, at River street, Edgewater, N. J. The list comprises 400 engine lathes, 75 power presses, 150 grinders, 350 turret hand screw machines, 75 drill presses, 25 milling machines and complete shellmaking equipment.

Building activities on the part of several companies, presage an early announcement of some interesting tool requirements. The Automotive Corp., Toledo, O., is building a 1-story plant, 90 x 300 feet. The American Radiator Co., Springfield, O., has plans for a 1-story machine shop, 100 x 126 feet, and the Thompson Grinder Co., that city is to erect two buildings, 34 x 60 and 50 x 200 feet, respectively. The Indiana Silo Co., Pendleton, Ind., and the Star Tractor Co., Findlay, O., now are combined as the Indiana Silo & Tractor Co., with $1,000,000 capital. It will build a tractor plant at Pendleton. Lathes and automatics, etc., will be required in all probability, by the Lorimer Mfg. Co., Troy, O., which is incorporated at $200,000 to manufacture talking machines and auto parts. A list of metalworking equipment is expected from the Noble Heater Co., Kendallville, Ind., which has been organized with a capital of $400,000 to manufacture automobile and other heaters. L. G. Williams, Box 50, Hopkinsville, Ky., is organizing a company to manufacture a special line of farm and mining machinery in a new town in Oklahoma. He will build a foundry, brass foundry, forge shop, etc., and will require some woodworking machinery for patternmaking.

Flood of Buying in Chicago

MOST machine tool dealers in the Chicago market find August bringing a flood of buying, which promises now to make it a banner month. The condition has not changed from one in which the total is made up almost entirely of small lots, heavy inquiries being practically absent. The exception to this rule is rare. The effect of continuous buying is being noted in deliveries, which have been growing more remote, and now average about 90 days. With labor troubles coming up here and there, this condition probably will grow worse as time passes. Prices are not being advanced generally, but one lathe dealer making a line of light machines has announced an advance of 20 per cent.

The Corn Products Refining Co. is inquiring for two lathes, a milling machine, shaper, saw, drill, chucks and other minor equipment. Manufacturers of concrete mixers find heavy demand for their products on account of large roadbuilding campaigns and are taking considerable machine tool equipment. Recent sales above the general level of the market include two, amounting to about $30,000 each, of equipment for shops operating for maintenance of manufacturing plant equipment. Several automobile accessory manufacturers in Chicago are enlarging their plants and adding machinery.

The Kane Shock Absorber Co., at Centralia, Wash., will build a machine shop and a foundry. The Walla Walla Tool & Wrench Co., Walla Walla, Wash., will build a manufacturing plant.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

MILFORD, N. H.—Fire recently damaged the boiler and engine house of the Page & Cote Mills here.

BOSTON.—Scott & Williams have let a contract for a boiler house, 1-story, to cost $20,000.

BOSTON.—The power house of the Edison Electric Illuminating Co. recently was damaged by fire.

BOSTON.—The General Steel & Rubber Stamp Co. has been incorporated with $12,000 capital by Ernest E. Purbeck, Robert A. Leon and Dudley B. Purbeck.

CAMBRIDGE, MASS.—The Newman Welding Co. has been incorporated with $10,000 capital by Anthony L. Piva, John F. Newman and Chester Piva.

GARDNER, MASS.—The pattern shop of the Gardner General Foundry Co. recently was damaged by fire. The loss was estimated at $10,000.

MEDFORD, MASS.—The Thomann Bronze & Brass Foundry, Inc., has been incorporated with $10,000 capital by Charles E. Thomann, William Klingenberger and Albert H. Thomann.

Salem, Mass.—The American Auto Radiator & Lamp Works, Inc., has been incorporated with $3000 capital by Justin W. Dowst, Morris Sherin and Abraham Glovsky.

SPRINGFIELD, MASS.—The Duckworth Chain & Mfg. Co. plans an addition.

SPRINGFIELD, MASS.—The Boston & Albany railroad has let the contract for a 1-story, 63 x 75-foot machine shop and garage.

SPRINGFIELD, MASS.—The Forging Service Corp. has been incorporated with $25,000 capital, by J. Howard Jones, Noyes C. French and Walter H. McCarthy.

STONEHAM, MASS.—The American Glue Co. has plans for a pump house according to a current report.

UPTON, MASS.—The Upton Mfg. Co. plans to build a 2-story plant addition at a cost of $30,000.

WATERTOWN, MASS.—Bids close August 29 for a 78 x 500-foot building for the storage of machinery at the United States Arsenal.

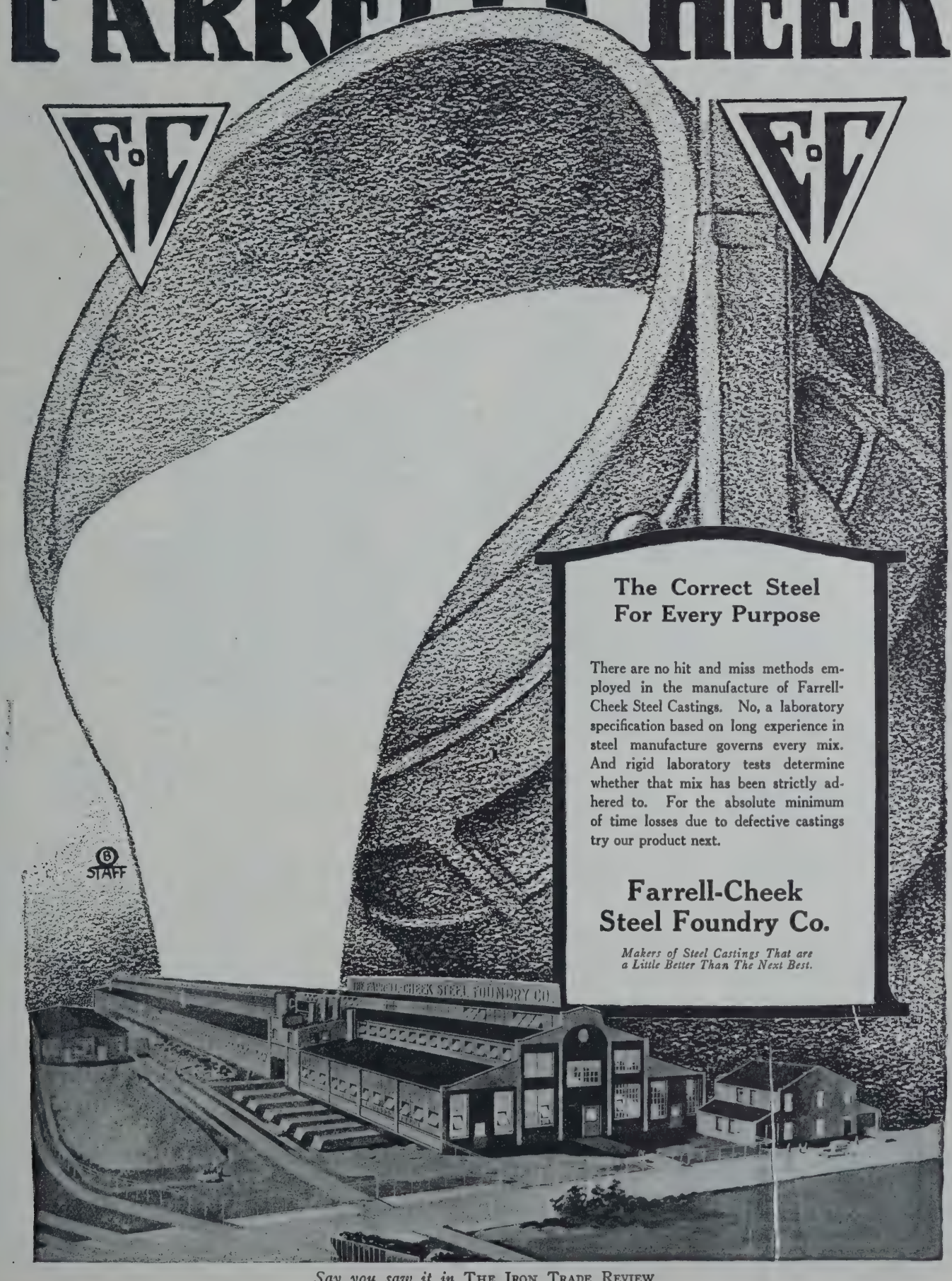
WORCESTER, MASS.—The Hobbs Mfg. Co. has awarded a contract for a hardening building, 1-story, 35 x 60 feet.

WORCESTER, MASS.—Plans are being revised for the proposed $300,000 plant for the Walden-Worcester, Inc., manufacturer of wrenches.

WORCESTER, MASS.—Plans are being drawn for a 1-story, 55 x 180-foot extension to the foundry of the Coppus Engineering & Equipment Co.

WORCESTER, MASS.—The Worcester Auto Body & Welding Co. has been incorporated with $50,000

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There are no hit and miss methods employed in the manufacture of Farrell-Cheek Steel Castings. No, a laboratory specification based on long experience in steel manufacture governs every mix. And rigid laboratory tests determine whether that mix has been strictly adhered to. For the absolute minimum of time losses due to defective castings try our product next.

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capital by Jacob Salo, Arvid Kaarto, Vaino Jarvinen and Karlo W. Aarnio.

WORCESTER, MASS.—The Bluebird Co. of New England has been incorporated to deal in machinery, electrical appliances, etc., with $150,000 capital, by John P. Coghlin, David B. Ker and G. Walter Jones, Brookline, Mass.

ANSONIA, CONN.—The H. C. Cook Co., brass goods, has let the contract for a 60 x 250-foot plant.

BRIDGEPORT, CONN.—The Bryant Electric Co. has let a contract for a 4-story, 60 x 218-foot addition.

BRIDGEPORT, CONN.—The Bridgeport Castings Co. has been incorporated with $100,000 capital by Harry B. Houghton, Edward P. Quinn, Torrington, Conn., Thomas R. Good and Wiliam H. Monagan, Waterbury, Conn.

HARTFORD, CONN.—The Arrow Electric Co., 99 Hawthorne street, has let contracts for a plant addition to cost $45,000.

HARTFORD, CONN.—The Safe-Seal Mfg. Co. has been incorporated to make elctric heating devices, etc., with $10,100 capital by C. E. Holland, New York, Richard Arnold, Brooklyn, N. Y., Richard Arnold Jr., New York, E. A. Backus, Thompson, Conn., and E. W. Putnam.

LITCHFIELD, CONN.—The Bantam Anti-Friction Co. will build a 2-story, 50 x 500-foot addition.

North Atlantic States

ALBANY, N. Y.—The Thacher Propeller & Machine Co. has plans for alterations to its blacksmith shop.

BROOKLYN, N. Y.—The R. H. Comey Co., 73 Nineteenth street, plans alterations to its boiler house.

BROOKLYN, N. Y.—Fred Blattner, 233 Maujer street, recently awarded a contract for a machine shop, 1-story, 50 x 174 feet.

BROOKLYN, N. Y.—The Sleepwell Metal Bed Co. has been incorporated with $5000 capital, by L. Weiner, I. and H. Weldt, 72 Graham avenue.

BROOKLYN, N. Y.—Al M. Ender, Inc., shipbuilding and stevedoring, has been incorporated with $10,000 capital, by C. D. Strang, M. E. and A. M. Ender, 15 Scoville's Walk, Brooklyn, N. Y.

BUFFALO.—The O. K. Lock Co. has been incorporated with $5000 capital, by F. J. Offerman, J. F. Koebel and L. C. Wilkie.

BUFFALO.—The New Departure Coaster Brake Corp. has been incorporated with $200,000 capital, by F. A. Gaynor, B. Lockwood and E. H. Kelly, 43 Cedar street.

BUFFALO.—The Elbridge Automotive Corp. has been incorporated with $500,000 capital, by F. C. Owen, 26 Courtland street, H. E. McComber, 1777 Broadway, New York and D. B. McCarriagher, 318 Erie County Bank building, Buffalo.

ELMIRA, N. Y.—The Willys-Morrow Co. contemplates a foundry.

GOUVERNEUR, N. Y.—The Hygrade Limestone Co. has been incorporated with $6000 capital, by F. D. and F. H. and F. J. Porter.

KATONAH, N. Y.—Kellogg & Lawrence, Inc., have been incorporated to manufacture hardware, etc., with $50,000 capital, by H. W. Kellogg, A. Elliot and C. Fayette Lawrence.

LOCKPORT, N. Y.—This city is considering building a municipal light plant.

NEWBURGH, N. Y.—The Alberger Pump & Condenser Co., 140 Cedar street, New York, has awarded contracts for a plant addition.

NEW YORK.—The Wire Wheel Repair Co., 146 West Fifty-fifth street, is reported planning to enlarge its plant.

NEW YORK.—The Rhythmk Shock Absorber Corp. recently was incorporated with $25,000 capital, by V. Lindsley and B. H. Trask, 25 Broad street.

NEW YORK.—The Steel Piston Ring Co. recently was incorporated with $50,000 capital, by A. Gluck, A. J. H. Kuhsiek and A. Mayer, 131 Riverside drive.

NEW YORK.—The Resta Motors, Inc., motors, has been incorporated with $25,000 capital, by E. L. Smallwood, D. Resta and T. J. Whalen, 340 West Eighty-sixth street.

NEW YORK.—The S. & S. Razor Corp. recently was incorporated with $21,000 capital, by A. E. Shepard, H. and D. Schaefer, 35 West 125th street.

NEW YORK.—Hardite Metals, Inc., has been incorporated with $350,000 capital, by I. B. and M. J. Rosencrantz and M. H. Hoffman, 54 Lenox avenue.

NEW YORK.—The Mercury Iron Works, Inc., has been incorporated with $6000 capital, by M. Chiger, I. Kemelblatt and S. M. Waldstein, 506 West 178th street.

NEW YORK.—The Marvin Stoker Co., Inc., has been incorporated to manufacture metal products with $35,000 capital, by J. Marvin, 125 Wilman street, and others.

NEW YORK.—The Copp Auto Body Co., Inc., has been incorporated with $25,000 capital, by Carl J. Austrian, Arthur Ofner and Helen Schechter, 45 Cedar street.

NEW YORK.—The Eris Stamping & Mfg. Co. recently was incorporated with $30,000 capital, by M. Brandt, M. Sparrow and S. Friedman, 855 Tremont avenue.

NEW YORK.—The Allen-Waring Auto Corp. recently was incorporated with $300,000 capital, by W. C. Allen, 105 Fifty-fifth street, A. D. Waring and others.

NEW YORK.—L. Sence & Sons has been incorporated to make electrical devices with $20,000 capital, by A. E. Bringle, A. L. Naze, and A. McMahon, 1400 Broadway.

NEW YORK.—The U. S. Automatic Steam Iron Corp. has been incorporated with $10,000 capital, by S. G. Buskard, L. Lichtman and N. Kemow, 414 West Broadway.

CONNELLSVILLE, PA.—The Wendel Aircraft Corp. has broken ground for a plant.

CONSHOHOCKEN, PA.—The American Metallurgical Corp. will make alterations to its plant.

DINSMORE, PA.—Breensburgh & Connellsville Coal & Coke Co. is having plans drawn for a coal tipple and power house to cost $100,000.

EDGELY, PA.—The William Woodhouse Chain Mfg. Co. has been incorporated with $20,000 capital, by W. C. Woodhouse, A. D. Woodhouse, William Woodhouse and Henry A. James, Doylestown, Pa.,

ERIE, PA.—The Auto Equipment Co. has been incorporated with $10,000 capital, by G. J. Miller, E. M. Miller, Albert E. Richards and others.

ERIE, PA.—The Ball Engine Co., Twelfth and Cranberry streets, is having plans prepared by the Osborne Engineering Co., Cleveland, for a $65,000 plant, 115 x 185 feet.

FRANKLIN, PA.—The Citizens Traction Co. proposes to build a power plant here.

GROVE CITY, PA.—It is proposed to build a municipal electric light plant here.

HAZLETON, PA.—The main building of the Freeland Foundry Co. recently was damaged by fire.

HAZLETON, PA.—The Duplan Silk Co. will erect a 2-story boiler plant, 90 x 100 feet.

JOHNSTOWN, PA.—The Van Dyke Silica Brick Co., capital $500,000, has been incorporated by F. D. Phillips and others.

JOHNSTOWN, PA.—The New Idea Miners' Tool & Machine Co. recently was incorporated with $10,000 capital, by J. P. Dunky and others.

LANCASTER, PA.—The Lancaster Steel Products Co. has awarded a contract for a bar mill to be 50 x 310 feet, with an extension, 50 x 70 feet.

LATROBE, PA.—John W. Ward, East Main street, and others, have organized the Ward Tool & Forging Co. which will build a plant here.

MARION, PA.—The American Safety Elevator & Mine Cage Co. has been incorporated with $200,000 capital, by John Hoffer, Blaine Wise and G. P. Gates.

MEADVILLE, PA.—The Phoenix Iron Works has awarded a contract for a 1-story machine shop, to cost $75,000.

MIDLAND, PA.—The Pittsburgh Crucible Steel Co. is reported planning to erect a new office building and 28 houses for its employes.

MILLERSBURG, PA.—F. K. Trenker & Co. is building a machine shop extension.

OIL CITY, PA.—Day & Zimmerman, Philadelphia, have the contract for power house here.

PHILADELPHIA.—Patrick Grant plans a public garage and machine shop.

PHILADELPHIA.—James D. Hadik will build a machine shop addition at 2434 North Fairhill street.

PHILADELPHIA.—The A. Schoenhutt Co. has awarded a contract for a saw mill and boiler house.

PHILADELPHIA.—Ballinger & Perrot, architects, are taking bids on a factory and boiler house for Scheonhut & Co.

PHILADELPHIA.—The Dodge Steel Co. recently was incorporated with $300,000 capital, by R. M. Carrington and others.

PHILADELPHIA.—The Philadelphia Drawing Machinery Co. will construct a 1-story plant addition to cost $22,000.

PHILADELPHIA.—The Philadelphia Engineering & Machine Co. has been incorporated with $15,000 capital, by Edward J. Squires and others.

PHILADELPHIA.—The Diamond Expansion Bolt Co. recently was incorporated with $5000 capital, by Lawrence M. Post and others.

PHILADELPHIA.—Connery & Co., Second and Luzerne streets, manufacturer of boilers, has plans for a 1-story addition, 75 x 90 feet.

PHILADELPHIA.—Plans are being prepared by the Bernstein Mfg. Co. for a 3-story factory building, 52 x 152 feet.

PHILADELPHIA.—Plans are being prepared for a 2-story factory building, 60 x 160 feet, for Collins & Aiken.

PHILADELPHIA.—William Steele & Sons, Sixteenth and Parkway streets, is having plans drawn for a plant, two stories, 60 x 160 feet, to cost $25,000.

PHILADELPHIA.—Plans are being drawn by the Keystone Wagon Works for a 3-story factory building, 75 x 109 feet, with a wing 60 x 64 feet. Frank V. Nichols is architect.

READING, PA.—Dick Bros., Inc., 20 Penn street, will equip a foundry.

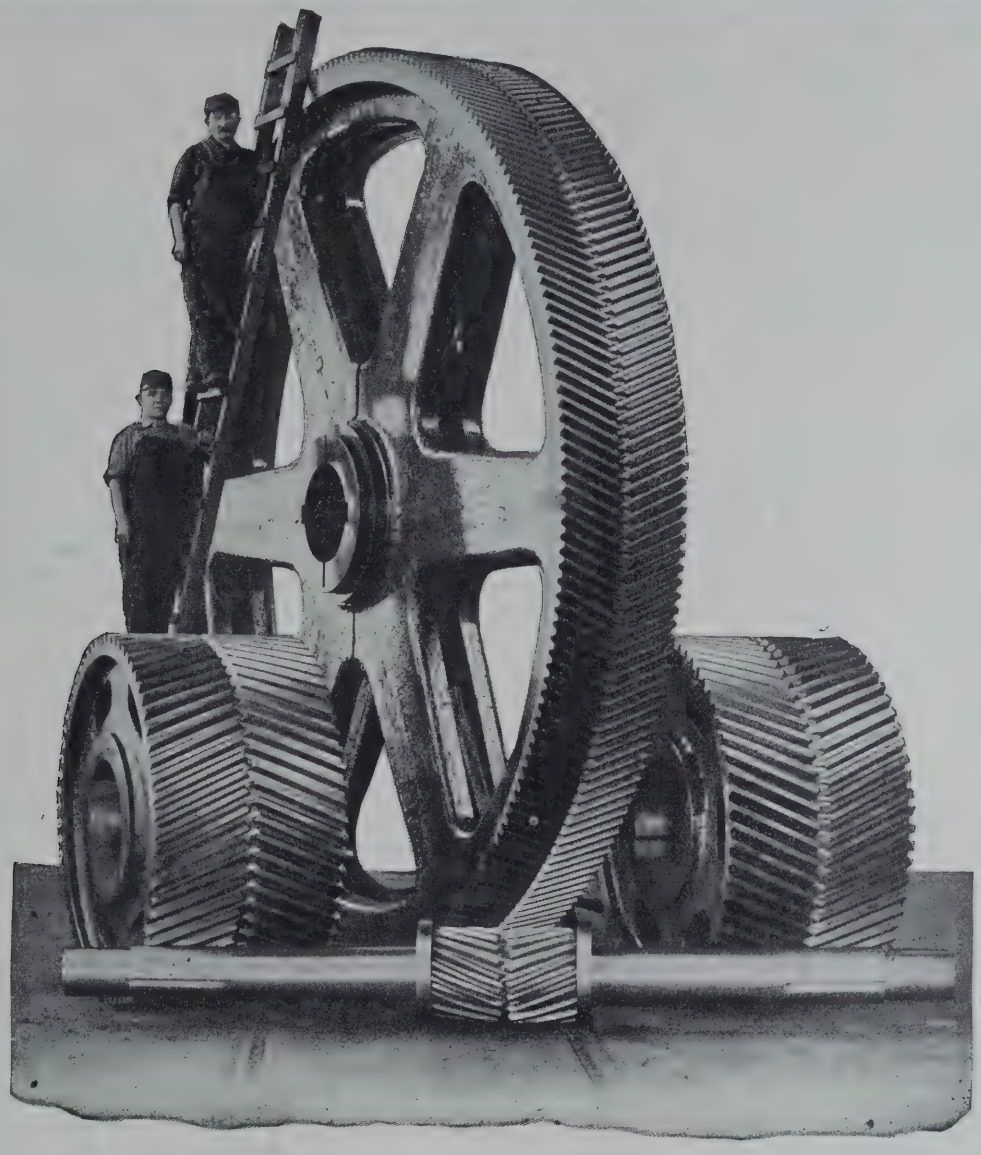
BLOOMFIELD, N. J.—A $30,000 plant will be erected by J. Brockie & Co., 8 Railroad place, Newark, N. J.

BLOOMFIELD, N. J.—The Sprague Electric Works of the General Electric Co. contemplates a plant addition to cost $15,000.

CAMDEN, N. J.—The Penn Shipyards Corp., 419 Market street, recently was incorporated with $4,000,000 capital.

CAMDEN, N. J.—The Penn State Automobile Co. has been chartered with $25,000 capital, by F. R. Hansall, L. C. Clow and J. A. MacPeak.

CAMDEN, N. J.—The general contract has been awarded to the George Kessler Construction Co. for



Falk Herringbone Gears

Illustration shows a complete set of hobbed herringbone gears, furnished to the United States Aluminum Company for a double duo hot mill drive in their new plant at Edgewater, N. J. The largest gear is 16' in diameter I. D. P. 36" face. All three are made from extra high carbon steel castings, annealed by our special process.

The motor pinion in the foreground is made from a high carbon steel forging, in one piece with the shaft, with a ratio of about 12 to 1 to the large gear. Forged steel shrouds are fitted at the ends of the pinion teeth. Two Fly Wheels are mounted on the pinion shaft and the drive is designed to carry peak loads about 3000 Hp., with speed reduction from 345 to 28 R. P. M. The two small gears transmit about one-third of this power to a second line of rolls at 28 R. P. M.

All castings for large steel gears of this description are made in our own open hearth steel foundry. We furnish steel castings for all purposes from 1 lb. to 100,000 lbs.

Write for interesting Falk literature.

The Falk Company, Milwaukee, Wis.

AGENTS: Pittsburgh—W. O. Beyer, 1024 Park Bldg. New York—M. P. Fillingham, 50 Church St. Wilkes-Barre—Vulcan Iron Works. Denver—Denver Engineering Works. San Francisco—F. W. Grimwood, Rialto Bldg.

a 3-story factory building, 80 x 132 feet, for Eavelson & Levering.

CAMDEN, N. J.—Bromund & Son, Inc., 509 Federal street, has been incorporated with $50,000 capital, to make lighting fixtures and appliances.

HARRISON, N. J.—The Driver-Harris Co., wire, cables, etc., is having plans prepared for a 3-story addition, 50 x 100 feet, to cost $50,000.

HARRISON, N. J.—The Gilby Wire & Die Co., 11 Passaic street, has been incorporated with $125,000 capital, by Walter and Stanley Gilby and T. W. Pell.

HOBOKEN, N. J.—The Hudson Electrical Supply & Equipment Co. has been incorporated with $50,000 capital, by A. T. Pupke, W. E. Stanton and W. J. Coleman.

HOBOKEN, N. J.—The American Aero Parts Corp. recently was incorporated with $500,000 capital, by James M. White, James Thompson, Lyons, N. J., and William Gordon, Union, N. J.

JERSEY CITY, N. J.—The Siegler-Hobson Engineering Co. has been incorporated with $10,000 capital to manufacture machines, etc., by George Siegler, C. R. Hobson and Joseph Seigler.

JERSEY CITY, N. J.—Edward V. Hartford, Inc., has given up its 8-story plant to the Brunswick-Balke-Collender Co. and has taken over the 1-story plant operated during the war by the Standard Ordnance Co.

KEARNEY, N. J.—The Ammann Tool & Machine Works, 208 Schuyler avenue, has been incorporated with $25,000 capital.

WILMINGTON, DEL.—John F. Henry, 320 Eighth avenue, has plans for an addition to his foundry.

WILMINGTON, DEL.—The Bond Mfg. Corp., seals, etc., will erect a machine shop addition, 1-story, 60 x 300 feet.

Central States Activity

BARTON, WIS.—The Stevens Mfg. Co., bank equipment manufacturer, is having plans drawn for a plant, 80 x 128 feet, to cost $80,000.

MILWAUKEE.—The Milwaukee Tank Works has let a contract for a warehouse, one story, 80 x 100 feet, to cost $12,000.

MILWAUKEE.—The Kiel Furniture Co., 1016 Thirty-second street, is having plans drawn for a power plant addition, 3-stories, 40 x 60 feet.

MILWAUKEE.—The Walder Mfg. Co. has been incorporated with $25,000 capital as mechanical engineers, etc., by William Neuman, J. A. Walder and Harold C. Turner.

RACINE, WIS.—The Hamilton Beach Mfg. Co. is taking bids for a foundry, 80 x 200 feet, to cost $60,000.

ADRIAN, MICH.—The Schwartz Electric Co. is 100 feet, to cost $20,000.

ALMA, MICH.—The Northern Wheel Co. will take bids soon for a plant, 1-story, 60 x 300 feet, to cost $50,000.

BAY CITY, MICH.—The Defoe Shipbuilding Co. will rebuild the part of its plant recently damaged by fire.

DETROIT.—The Buhl Malleable Iron Co. plans a plant addition.

DETROIT.—The Maxwell Motor Co. plans a new sheet metal plant.

DETROIT.—The Gear Grinding Machine Co. is taking bids for a plant.

DETROIT.—The Timken-Detroit Axle Co. is erecting a 4-story branch plant.

DETROIT.—The Detroit Steel Products Co. plans a metal window sash shop.

DETROIT.—A. Harvey & Sons Co. has let a contract for a foundry addition.

DETROIT.—The O. & S. Bearing Co. plans a machine shop addition, 1-story, 30 x 42 feet.

DETROIT.—The McCord Mfg. Co. has completed negotiations for the plant of the Russell Motor Axle Co.

DETROIT.—The Production Tool Co. of America plans a machine shop, 1-story, 30 x 80 feet, to cost $20,000.

CHAMPAIGN, ILL.—The Cushman Auto Tool Co. purchased the plant of the D. F. Boyer Handle Co. as well as that of the Danville Handle Co., Danville, Ill.

CHICAGO.—The Standex Mfg. Co. plans a manufacturing building, 90 x 120 feet, to cost $50,000.

CHICAGO.—The Federal Electric Co., electrical equipment, Lake and Desplaines streets, and the Wabash Vehicle Co., Wabash avenue and Thirty-ninth street, recently purchased a 38-acre site on which they will erect new plants.

EAST ST. LOUIS, ILL.—The Aluminum Ore Co. has purchased 227 acres at Baton Rouge, La., on which it will erect a plant, according to a report.

ELGIN, ILL.—This city is considering the erection of an electric light and power plant.

HEGEWISCH, ILL.—The Ryan Car Co. is having plans drawn for a plant addition.

LASALLE, ILL.—The Peru Construction Co. will erect an addition to the Westclox Co.

MOLINE, ILL.—The Moline Forging & Mfg. Co. will build a machine shop, 66 x 100 feet.

MINIER, ILL.—The Minier Mfg. Co. has been washing machines, by C. W. Birrd and others.

PERU, ILL.—The Peru Construction Co. has the contract to build an addition to the building occupied by the Western Clock Co.

PITTSFIELD, ILL.—The Brun-Mill Co., capitalized at $25,000, has been chartered to manufacture metal goods by Samuel H. Brunswick, Mellville Miller and F. B. Miller.

ROCKFORD, ILL.—The National Lock Co. is erecting a 6-story addition, 80 x 264 feet, estimated to cost $250,000.

ROCKFORD, ILL.—Greenlee Bros. & Co., machinists and founders, is reported planning to erect an addition to cost $30,000.

ROCKFORD, ILL.—The Forest City Bit & Tool Co. is adding to its plant at an estimated cost of $10,000.

ROCK ISLAND, ILL.—The Rock Island Brake Shoe & Foundry Co. has been incorporated with $200,000 capital, by M. I. Morris, Hyman Lewis and Simon Lewis.

ANDERSON, IND.—The Anderson Foundry & Machine Works has plans for two additions, 80 x 150 and 100 x 800 feet, to cost $125,000.

AUBURN, IND.—The Auburn Commercial Club plans to build 40 houses at an estimated cost of from $2000 to $3000 each.

EAST CHICAGO, IND.—George B. Limbert & Co., Railroad avenue, will erect two machine shops, one, 1-story, 90 x 176 feet, and the other, 2-stories, 52 x 88 feet.

EVANSVILLE, IND.—The Swanson Electric & Mfg. Co., capitalized at $85,000, has been chartered to manufacture electric apparatus by C. H. Battin, A. L. Swanson and B. C. Persons.

EVANSVILLE, IND.—The Gilmore M. Haynie Co. has been incorporated with $20,000 capital to manufacture and install motor driven power and light plants, by Gilmore M. Haynie and others.

FT. WAYNE, IND.—The Visible Automatic Pump Co. recently was incorporated with $100,000 capital, by A. E. C. Becker, A. Bowser, G. R. Bracken and others.

MINNEAPOLIS.—The Carter-Mayhew Mfg. Co., capitalized at $350,000, has been chartered to manufacture elevator and mill machinery by Clarence W.

Business Changes Recently Announced

AT the request of the Panhard Levasser Co., Paris, France, the Panhard Motors Co., Grand Haven, Mich., truck manufacturer, has released the name Panhard and will be known as the Hamilton Motors Co., effective Sept. 1.

* * *

W. A. Brown & Co., St. Marys, W. Va., have changed their name and address to the Standard Pipe & Supply Co., Marietta, O.

* * *

The Michigan Smelting & Refining Co., Detroit, has opened a branch office at 945 Oliver building, Pittsburgh.

* * *

Wonham, Bates & Goode, Inc., 17 Battery Place, New York City, have opened a branch sales office at 145 St. James street, Montreal, Que., in charge of A. G. Nutter.

* * *

The Spencer Otis Co., 747 Railway Exchange building, Chicago, has changed its name to the De Remer-Blatchford Co., but no change in personnel or policies will be made.

The Standard Steamless Tube Co., Pittsburgh, has opened a New York office in room 1232 Tribune building, 154 Nassau street, that city, in charge of B. F. Bart, as district sales manager.

* * *

Charles T. Stork & Co., Inc., exporters of iron and steel products, of New York, have moved from 154 Nassau street to 135 Front street.

* * *

The Loewenthal Co., Chicago, makers of a number of kinds of ingot metals, recently opened an office in Detroit, with Harry Goldberg as manager.

* * *

The name of the Electrolytic Oxy-Hydrogen Laboratories, Inc., 15 William street, New York, has been changed to the Electrolabs Co.

Carter, president, J. H. Mayhew, vice president, and H. M. Grennell, secretary-treasurer.

GREENSBURG, IND.—The United Engineering Co. has awarded contracts for the erection of an automobile plant.

INDIANAPOLIS.—The Irvin Robbins Co. will erect a 2-story building, 60 x 400 feet, at a cost of $100,000.

INDIANAPOLIS.—The Acme Aluminum & Brass Works recently was incorporated with $40,000 capital, by Frank L. Bridges, Peter Lamberlus and others.

INDIANAPOLIS.—The Indiana Smelting & Refining Co. has been incorporated with a capital of $100,000. Directors are Max Robbins, Lawrence Olson and William R. Jenkins.

INDIANAPOLIS.—The Dunn Motor Device Co., capitalized at $50,000, has been chartered to manufacture automobile parts by Benjamin D. Aufderheide, Harry F. Dunn and George H. Rosselo.

AKRON, O.—The East Akron Casting Co., Kelly avenue, is reported planning a plant addition.

AKRON, O.—The Summit Welding Garage & Machine Shop, South High and Crozier streets, is having plans drawn for a machine shop, one story, 50 x 170 feet, to cost $30,000.

ASHLAND, O.—Kaufman Bros. plan a foundry and office building, 45 x 70 feet, at an estimated cost of $20,000.

CANTON, O.—Work has started on a plant for the Union Metal Mfg. Co., 1410 Maple avenue. The building will be 75 x 275 feet and will cost $27,000.

CINCINNATI.—The Werk Co. has plans for a plant.

CINCINNATI.—The McMicken Auto & Wagon Co. has been incorporated with $20,000 capital, by H. Ostholoff and others.

CLEVELAND.—The Allyne-Ryan Foundry Co. plans an extension to its pattern shop.

CLEVELAND.—The Cleveland Pipe Co. has been incorporated with $25,000 capital, by David A. Gimp and others.

CLEVELAND.—The Auto Equipment Co., 506 Blackstone building, plans a plant, 2-stories, 65 x 100 feet, at a cost of $30,000.

CLEVELAND.—The Chisholm Steel Shovel Works, 1588 East Fortieth street, has a permit to erect a storage building, 1-story, 24 x 44 feet.

CLEVELAND.—The Republic Stove & Mfg. Co., 1902 East Fortieth street, plans a plant, 3-stories, 60 x 112 feet, at a cost of $50,000.

CLEVELAND.—The General Bronze & Foundry Co., 4900 Hamilton avenue, is reported having purchased a site on which it plans to erect a new plant.

CLEVELAND.—The plant of the White Co., St. Clair avenue and East Seventy-ninth street, will be enlarged by an addition, 200 x 600 feet.

CLEVELAND.—The Atlas Electric Co. has been incorporated with $100,000 capital, by E. F. Marcha, H. C. Miller, H. F. Tallon, O. Anderson and E. J. Baker.

CLEVELAND.—The F. P. Screw Co. has been incorporated with $125,000 capital, by J. W. Fribley, C. M. Prell, R. T. Sawyer, M. R. Dickey and H. D. King.

DAYTON, O.—The American Machine Production Co. will build a plant.

DAYTON, O.—The Dayton Auto Radiator & Metal Co. has been incorporated with $10,000 capital, by A. J. Wyen and others.

DAYTON, O.—The Reliable Spark Plug Co. recently was incorporated with $10,000 capital, by E. E. Kumler, W. L. Schleman, Hallie M. Kumler, Edward R. Mueller and others.

DAYTON, O.—The Avon Tool & Machine Co. recently was chartered with $20,000 capital, by Anthony H. Cooper, Edwin B. Bosler, Edward P. Thompson, Dudley H. Bishop and Charles C. Bosler.

DELAWARE, O.—The Sun Ray Stove Co. is taking bids for two plant additions, 85 x 100 feet and 43 x 65 feet, to cost $25,000.

FOSTORIA, O.—The Seneca Wire & Mfg. Co. is building an addition.

HAMILTON, O.—The Long & Alstatter Co. is revising plans for a machine shop addition, 1-story, 47 x 50 feet and 50 x 130 feet, to cost $50,000.

KENTON, O.—The Ohio Machine & Tool Co. has let a contract for a plant addition, 40 x 80 feet.

LIMA, O.—The Lima Locomotive Works, according to a report, plans to enlarge its plant.

LIMA, O.—The Lima Brass & Iron Foundry Co. has been incorporated with $50,000 capital, by Joseph White and others.

LORAIN, O.—The Hoffman Heater Co. will erect an office and factory building.

MASSILLON, O.—The Northern Ohio Traction & Light Co. plans to build a car barns.

MASSILLON, O.—A. F. Wendling has the contract to erect a foundry addition for Russel & Co.

MT. GILEAD, O.—Work has been started on a foundry for the Hydraulic Press Mfg. Co.

PIQUA, O.—The Lorimer Mfg. Co. recently was incorporated with $200,000 capital, to engage in the manufacture of talking machines, motors, auto parts, etc., by G. W. Lorimer, G. R. Harris, W. R. Hudson and F. O. Flowers.

PORTSMOUTH, O.—The Breece Mfg. Co. has increased its capital from $300,000 to $500,000 and among improvements contemplated is the erection of a power plant.

ST. MARYS, O.—The St. Marys Foundry Co. is erecting an addition.

SANDUSKY, O.—The Carballoy Products Co. has been incorporated with $50,000 capital by W. W. Headings and others.

SANDUSKY, O.—The Radiant Mfg. Co., electric lighting and power plants, has been incorporated with $20,000 capital, by I. R. Howarth, R. R. Langel, S. W. Waller, H. Ganong and F. Haucke.

SPRINGFIELD, O.—The Ohio Steel Foundry Co. is taking bids for a plant addition, 68 x 70 feet, to cost $25,000.

SPRINGFIELD, O.—The American Radiator Co. has plans for a machine shop, 1-story, 100 x 126 feet, to cost $25,000.

SPRINGFIELD, O.—The Wickham Plate Co. has let a contract for a plant addition, 1-story, 50 x 170 feet, to cost $35,000.

SPRINGFIELD, O.—Plans are being drawn for the erection of two buildings for the Thompson Grinder Co., 50 x 200 feet and 30 x 60 feet.

TOLEDO, O.—The Automotive Corp. has had plans drawn for a plant, 1-story, 90 x 300 feet.

TOLEDO, O.—The Watson Mfg. Co. has awarded contracts for a machine shop, two stories, 60 x 200 feet, to cost $25,000.

TOLEDO, O.—A site on which a plant will be erected will be purchased shortly by the Refigeration Engineering Co., 301 Nasby building.

TROY, O.—The Lorimer Mfg. Co. has been incorporated with $200,000 capital, by G. W. Lorimer, G. R. Harris, W. R. Hudson, F. O. Flowers and Louis Paul.

VAUGHNSVILLE, O.—The Vaughnsville Electric Light Co. has been chartered with $5000 capital, by B. G. Slusser, E. Mansel Jones, D. R. Hinkle, H. R. Williams, S. J. Collar and J. N. Edward.

WOOSTER, O.—The Ohio Voting Machine Co. has been incorporated with $100,000 capital, by L. A. Woodward, A. G. Smith, F. H. Blake, Wesley H. Zaugg and H. S. Baker.

YOUNGSTOWN, O.—The Lumen Bearing Co., recently incorporated in Ohio, is preparing plans for a brass casting plant here.

ZANESVILLE, O.—The M. S. Ayto Electric Co. has been incorporated with $10,000 capital, by W. A. Lorimer and others.

Throughout the West

MINNEAPOLIS.—The Eagle Foundry, University and Twenty-sixth avenues, recently was damaged by fire. The loss was estimated at $25,000.

DUBUQUE, IOWA.—The Trenk Wire Works has been purchased by the Adams Co.

GRINNELL, IOWA.—The Grinnell Washing Machine Co., capitalized at $250,000, has been chartered to manufacture washing machines and other devices by A. C. Lyon, president; Fred J. Whinery, vice president, and J. I. Fellows, treasurer.

OSKALOOSA, IOWA.—The Ideal Heating & Mfg. Co., 116 Avenue E, has awarded a contract for a plant, 1-story, 60 x 120 feet, to cost about $12,000.

ST. LOUIS.—The Enick Motor Co. plans a plant addition.

ST. LOUIS.—The Siehoff Packing Co., 4329 Ridge street, has plans for a garage and machine shop, to cost $15,000.

ST. LOUIS.—The Wagner Electric Co., 6400 Plymouth avenue, will take bids shortly for a plant, 5-stories, 160 x 400 feet.

ST. LOUIS.—The Gardner Motor Car Co. has been formed to manufacture a new light car to be known as the Gardner. Russell E. Gardner is president.

KANSAS CITY, MO.—The Kansas City Bolt & Nut Co. has acquired additional land adjoining its plant, on which it is reported planning to erect an extension.

DALLAS, TEX.—The Dallas Mfg. Co. is reported planning to build a $350,000 plant for the manufacture of cottonseed oil and cotton ginning machinery. The building will be 2-stories, 100 x 150 fee The company was chartered several months ago with $1,500,000 capital.

TULSA, OKLA.—The Rex Machinery & Supply Co. recently was incorporated with $100,000 capital, by C. W. Lord, David Wallace and G. N. McGarvey.

TULSA, OKLA.—The General Iron Works recently was incorporated with $50,000 capital, by Albert H. Bell, Ray N. Fellows and B. C. Johnson.

WICHITA, KANS.—The Electric Bond & Share Co. will erect an extension to its power plant, one story, 48 x 100 feet.

GREAT FALLS, MONT.—The Great Falls Iron Works plans a foundry, 100 x 150 feet, at an estimated cost of $50,000. Electrically operated cranes will be installed.

LIBBY, MONT.—It is reported that the Lukens-Hazel Mining Co. will expend $240,000 for a 200-ton concentrator and power plant.

PHOENIX, ARIZ.—The Water Users association, W. R. Elliott, manager, is having plans prepared for an electric power plant to cost $500,000.

SEATTLE.—The Acme Motor & Machine Co. has been incorporated for $15,000 by M. R. Farrell and others.

SEATTLE.—W. B. Erskine, 4521 Corliss avenue, is to erect a frame machine shop for Mollie Maggs Fisher, 1611 Eighth avenue, north, at 1513-19 Eighth avenue, at an estimated cost of $5,000.

SEATTLE.—The Rogers-Baker Machine Works has been organized with $5000 capital, by Henry Rogers, W. W. McKenzie and Hugh W. Baker. The company will erect a small machine shop.

PORTLAND, OREG.—The Pacific Brass & Steel Foundry is building a new foundry.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.38c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37 to 3.62c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37 to 3.62c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47 to 3.72c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67 to 3.92c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.50c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	6.75c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c

Sheet Schedule

Black

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 0c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric GG Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$21.00 to 21.50
Chicago	20.00 to 20.50
Eastern Pennsylvania	18.50 to 19.50
Cleveland	21.00 to 21.25
St. Louis	20.50 to 21.00
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.35 to 16.00
Cincinnati	17.50 to 18.00
Birmingham	19.00 to 21.00
Valleys	21.00 to 21.50
Boston (dealers)	15.50 to 16.50

BUNDLED SHEETS

Pittsburgh	$16.50 to 17.50
Eastern Pennsylvania	15.00 to 16.00
Cleveland	16.00 to 16.50
Buffalo	14.50 to 15.00
Cincinnati	13.00 to 13.50
St. Louis	11.00 to 11.50

STEEL RAILS, SHORT

Chicago	$23.50 to 24.00
Cleveland	23.50 to 24.50
Boston (dealers)	16.00 to 16.50
St. Louis	22.50 to 23.00
Birmingham	18.00 to 20.00
Cincinnati	18.00 to 18.50

STOVE PLATE

Pittsburgh	$18.00 to 19.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	20.00 to 21.00
Cleveland	19.25 to 20.25
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New York	18.50
Cincinnati	16.00 to 16.50
Birmingham	19.00 to 21.00
Boston (consumers)	21.00 to 22.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops..	$24.00 to 25.00
Chicago, billet and bloom crops...	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	19.00 to 19.50
St. Louis	19.50 to 20.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.50 to 22.00
Chicago	22.00 to 22.50
St. Louis	22.50 to 23.00

BALED SHEETS

Pittsburgh	$19.00 to 19.50
Chicago	16.00 to 16.50

FROGS, SWITCHES, GUARDS

Chicago	$20.00 to 20.50
St. Louis	21.00 to 21.50
Eastern Pennsylvania	18.50 to 19.50

BOILER PLATE, CUT

Chicago, No. 1	$17.00 to 18.00
St. Louis, No. 1	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$21.00 to 21.50
St. Louis	21.50 to 22.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$23.00 to 24.00
Pittsburgh, No. 2	22.00 to 23.00
Chicago, No. 1	22.00 to 22.50
Chicago, No. 2	21.00 to 21.50
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	24.00 to 24.50
St. Louis, No. 1	21.50 to 22.00
St. Louis, No. 2	20.50 to 21.00
Buffalo	23.00 to 23.50
Cincinnati, No. 1	20.00 to 20.50
Birmingham, No. 1	16.00 to 18.00
New York, No. 1 (dealers' price)	23.00
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$19.50 to 20.50
Eastern Pennsylvania, ungraded...	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	16.25 to 16.50
Boston (dealers)	15.50 to 16.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers' price)..	$20.00

BUSHELING

Chicago, No. 1	$19.50 to 20.00
Chicago, No. 2	15.50 to 16.00
Cleveland, No. 1	20.50 to 21.00
Cleveland, No. 2	16.00 to 16.50
St. Louis, No. 1	20.50 to 21.00
Buffalo, No. 1	16.50 to 17.00
Cincinnati, No. 1	15.00 to 15.50
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.50 to 14.00
Chicago	10.50 to 11.00
Eastern Pennsylvania	15.00 to 15.50
Eastern Pennsylvania (blast furn.)	12.00 to 13.00
Cleveland	12.00 to 12.50
Buffalo	12.00 to 12.50
New York (dealers' price)	11.00 to 11.50
St. Louis	12.50 to 13.00
Cincinnati	8.00 to 8.50
Birmingham	10.00 to 11.00
Valleys	13.75 to 14.00
Boston (dealers)	11.00 to 11.50
Boston (blast furnace) (dealers)..	11.00 to 11.50

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	13.50 to 14.00
Eastern Pennsylvania	15.00 to 16.00
Cleveland	15.25 to 15.65
St. Louis	12.50 to 13.00
Buffalo	13.50 to 14.00
New York (dealers' price)	11.00 to 11.50
Cincinnati	9.50 to 10.00
Birmingham	10.00 to 11.00
Valleys	15.75 to 16.00
Boston (dealers)	11.00 to 11.50
Boston (blast furnace) (dealers)..	11.00 to 11.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	33.00 to 34.00
Eastern Pennsylvania	35.00
Cleveland	35.00 to 36.00
St. Louis	34.00 to 34.50
Buffalo	28.00 to 29.00
Cincinnati	26.50 to 27.00

IRON RAILS

Chicago	$24.50 to 25.50
Cleveland	27.00 to 28.00
St. Louis	23.50 to 24.00
Buffalo	24.00 to 25.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	$18.00 to 18.50
Cleveland	19.00 to 19.50
St. Louis	18.50 to 19.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$22.50 to 23.00
Cleveland	19.50 to 20.50
Buffalo	20.00 to 20.50
New York	17.50
Eastern Pennsylvania	18.50 to 19.50

FORGE FLASHINGS

Cleveland, large	$16.00 to 16.50
Cleveland, small	19.00 to 19.50
Chicago, small	17.50 to 18.00
Boston (dealers)	11.00 to 11.50

FORGE SCRAP

Chicago	$21.00 to 21.50
Eastern Pennsylvania, No. 1	14.50 to 15.50
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	$26.50 to 27.00
St. Louis	25.50 to 26.00

ANGLE BARS—IRON

Chicago	$25.00 to 25.50
St. Louis	25.50 to 26.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
Cleveland	16.50 to 17.50
Buffalo	15.00 to 16.00
Chicago	16.00 to 17.00

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	31.50 to 32.00
Buffalo	28.00 to 29.00
Chicago	31.50 to 32.00
New York (dealers' price)	24.00 to 25.00
Birmingham	20.00 to 22.00
Boston (dealers)	25.00 to 26.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	21.00 to 22.00
Chicago	28.00 to 29.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$25.00 to 25.50
Pittsburgh, steel	22.50 to 23.00
Chicago, iron	24.50 to 25.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, Iron	22.75 to 23.00
St. Louis, iron	24.50 to 25.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 22.00
Birmingham, tram car	20.00 to 22.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$24.00 to 25.00
Chicago, cupola	27.50 to 28.00
Eastern Pennsylvania, cupola	24.50 to 25.50
Cleveland, cupola	23.00 to 23.50
New York, cupola (dealers' price)	21.00 to 22.00
Cincinnati, No. 1, cupola	21.00 to 21.50
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	25.50 to 26.00
Buffalo	24.50 to 25.00
Boston (dealers' price)	27.00 to 28.00
Valleys	23.00 to 23.50

HEAVY CAST

New York (dealers' price)	$20.50 to 21.50
Buffalo	21.00 to 22.00
Pittsburgh	21.00 to 21.50
Cleveland	18.50 to 19.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$21.00 to 22.00
Pittsburgh, agricultural	20.00 to 21.00
Chicago, railroad	21.50 to 22.00
Chicago, agricultural	21.00 to 21.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	22.00 to 23.00
Cleveland, agricultural	19.00 to 19.50
St. Louis, railroad	20.00 to 20.50
St. Louis, agricultural	19.50 to 20.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	26.00 to 27.00
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	28.50 to 29.00
Birmingham	16.00 to 18.00
Boston (dealers)	18.00 to 18.50

LOCOMOTIVE TIRES

Chicago	$23.50 to 24.00
St. Louis	21.50 to 22.00

BOILER PUNCHINGS

Chicago	$22.00 to 23.00
Eastern Pennsylvania	23.00 to 24.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

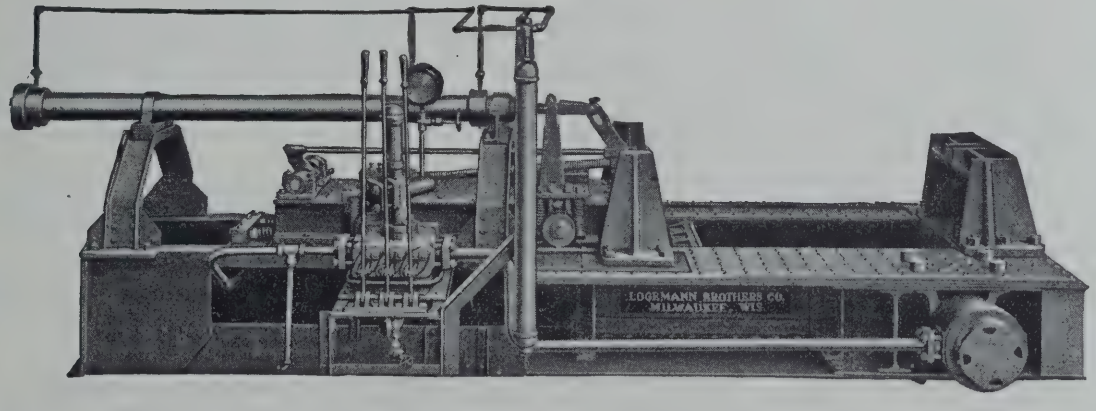
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

SHOP EQUIPMENT.—Bolts, nuts, clamps, washers, wedges, blocks, etc., are described and illustrated in a 6-page folder being distributed by the Standard Shop Equipment Co., Inc., Philadelphia. Each unit is fully described and specifications are given. A post card is attached to the folder.

PRODUCTION RECORD.—The Pelton Steel Co., Milwaukee, has published a 16-page booklet in which a number of colored charts showing the company's production records during 1916, 1917 and 1918 are given. During 1916 daily production averaged 2.34 tons, while its shipments totaled 2.30 tons. This jumped in 1918 to 11.72 tons average production and 11.71 tons average shipments.

RAILS.—Bulletin No. 266 issued by the Walter A. Zelnicker Supply Co., St. Louis, contains a list of rails, portable track angle and splice bars, switches, crossings, frogs, ties, spikes, new and used lockwashers, track bolts, street railway turnouts, etc., on stock at the company's East St. Louis, Ill., works and at various other points throughout the country.

STRIP STEEL.—The construction, equipment, design and operation of the strip steel mill at the plant of the National Pressed Steel Co., Massillon, O., are treated in a 14-page booklet being circulated by the company. The descriptions of the various installations are given in a general and brief form and should prove interesting, and are supplemented with a number of illustrations.

PIPE CUTTER.—A 4-page leaflet is being distributed by the Fox Machine Co., Jackson, Mich., in which the company's No. 10 pipe cutting machine is fully described and illustrated. The machine occupies a floor space of 29 x 38 inches; is 28 inches high; with belt drive weighs 1500 pounds and with motor drive 1650 pounds; the cutter shaft has a speed of 100 revolutions per minute and the cutter disc is 6 inches in diameter.

BOILER CLEANING.—An 8-page booklet is being distributed by the Vulcan Soot Cleaner Co., Du Bois, Pa., in which it describes and illustrates a diagonal method for removing soot from the tubes of horizontal water tube boilers. The description of the method is thorough and is supplemented with a number of illustrations including a line drawing showing the general layout of the soot cleaner in a horizontal water tube boiler.

STEEL CONSTRUCTION.—The National Pressed Steel Co., Massillon, O., recently published a cloth bound reference handbook for the use of engineers and architects in designing various types of buildings. The data given covers a system of construction in metal lumber with structural steel and kindred materials. Complete specifications on steel construction, properties of sections, tables of safe loads, construction details and other designing data are clearly illustrated and described.

STEAM APPLIANCE.—The Ayer Steam Appliance Co., Springfield, Mass., has issued a 10-page booklet in which it describes and illustrates an appliance for producing steam in gas producer power plants. The booklet does not go into details, but gives a general outline of the use of gas producers in industry as compared with other power systems, and points out the use of the steam appliance, upon which the company holds the basic patent. The booklet should prove interesting to gas producer users.

CALCULATING MACHINE.—An attractive 24-page booklet has been issued by the Monroe Calculating Machine Co., New York, in which a calculating machine which adds, multiplies, divides and subtracts is described and illustrated. Illustrations given show these machines being used in the offices of many large companies throughout the country, which include the Standard Parts Co., Cleveland, and the Thomas A. Edison Co., Orange, N. J. The booklet should prove of interest to office accountants and managers.

LOCOMOTIVE CRANES.—Bulletin No. 5 issued by the Edward F. Terry Mfg. Co., New York, is devoted to describing and illustrating cranes manufactured by the company. A number of actual installations are illustrated. The cranes can be driven by steam, electric motor or internal combustion engines. Among the various cranes described are those of the standard 8-wheel type; 8-wheel type for general work; 4-wheel type with bucket; tractor-wheel type with bucket; centipedal traction type and tower type. The latter can be mounted on steel towers where travel is required, or on timber, concrete or steel towers where a fixed unit is desired. Specifications and other data are given.

STEEL WINDOWS.—The Truscon Steel Co., Youngstown, O., is circulating a handbook in which steel window sash is fully described and illustrated. The book is divided into three sections, the first of which deals with pivoted windows, which are generally used in industrial and commercial buildings. The various stock units of these windows are illustrated, and complete tables, diagrams, etc., are given. The second section is devoted to continuous steel sash, generally used in monitors and sawtooth roofs. Full details are given. Counterbalanced types of steel windows are treated in the third section. In this section all types of sliding sash are shown and are accompanied with illustrations and descriptions of window hardware. The booklet should be of especial value to those interested in the designing and erection of modern structures.

CUTTING MACHINE.—A cutting machine designed for beveling the edges of boiler heads, combustion chamber heads, flue sheets and other steel parts that require trimming after the flanging operation and beveling to the calking angle, is described and illustrated in an 8-page booklet being circulated by the Davis-Bournonville Co., Jersey City, N. J. According to the booklet, this machine trims the sheets with a cutting torch to the required length and bevels them in the one operation. It is comprised of a motor-driven carriage supported on a radial arm, which is of light construction, consisting of two cold-rolled parallel round steel bars, firmly tied together and supported by a truss rod. The torch is mounted on the carriage beneath the radial arm and the tip may be directed at any angle required to cut to the desired calking angle. An adjusment provides for setting the tip to all angles from the vertical to the horizontal. Other details are given and are supplemented by a number of line drawings.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A manufacturers' agent in Italy wishes to secure an agency for the sale of metallurgical and chemical products, and industrial supplies. Opportunity No. 30165.

The purchase of a single-hand 35 to 50-foot yacht, with auxiliary engine, is desired by a man in Jamaica. Opportunity No. 30161.

An agency and the purchase of general hardware, tubing in general, iron and metals, lumber, etc., are desired by a man in Italy. Opportunity No. 30158.

Catalogs of cigar and cigarette-making machinery are desired by a firm in Paraguay, which is planning to enlarge its plant and install modern equipment. Opportuity No. 30225.

The purchase of staves and articles pertaining to cooperage, and metal or iron strips for barrel and box making, is desired by a firm in Spain. Correspondence should be in Spanish. Opportunity No. 30229.

Printing machines, linotype machines and types, and also rebuilt linotypes are required by a company in the British West Indies. Opportunity No. 30234.

A man in the British West Indies desires to secure an agency for the sale of paints and oils, enamelware, glassware, plain and galvanized corrugated iron, nails, etc. Opportunity No. 30352.

Quotations are desired by a firm in Greece on 100 tons of lead in pigs. Opportunity No. 30236.

The establishment of a water distillery for a city in Mexico is proposed and catalogs and quotations of machinery for distilling water are requested. Opportunity No. 30354.

A commercial agent in Argentina desires to purchase cigarette machinery, automobile accessories, mechanical specialties, etc. Correspondence should be in Spanish. Opportunity No. 30355.

A party from Australia now in this country, wishes to secure an agency for the sale of electric fittings, hardware in general, tools, etc. Opportunity No. 30329.

A merchant in France desires to represent firms for the sale of hardware, wood and iron working tools, agricultural implements, automobile accessories, construction materials, locks, etc. Correspondence should be in French. Opportunity No. 30343.

Iron plates for electrical machinery, tinned steel wire and other materials are required by a firm in Belgium. Opportunity No. 30361.

An agency is desired by a party in Switzerland for the sale of measurement apparatus for heating and ventilating, long distance thermometers, thermostats, anemometers and automatic temperature regulators. Opportunity No. 30362.

The purchase of nails, corrugated iron, expanded metals for reinforced concrete, crosscut saws, tractors, logging machinery, woodworking machinery, etc., is desired by a company in India. Opportunity No. 30382.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, September 4, 1919 No. 10

Labor Cloud Rises From Industry

Developments of Week Make Steel Strike Disturbances Improbable — Business Goes Forward on Growing Scale — Shipyard Work Comes Out More Freely—August Keeps Up Gain in Pig Iron Output

DIMINISHED importance is ascribed to the labor factor in iron and steel trade conditions as the result of the week's developments. While at no time has the rank and file of producers or consumers permitted themselves to entertain serious misgivings over the general strike threats, the acute stage for even partial dislocation of output is believed to have been passed. Manifestly the more radical elements in union circles have been forced to yield to wiser counsel, after having attempted to paint for public consumption some absurd and untruthful pictures of working conditions in the industry. Plant operations as respects labor disturbances are more nearly normal than they have been in weeks. Producers, nevertheless, are being bothered in some degree by a shortage in working forces which renders it impossible to obtain capacity yields demanded by current orders.

Ship Work Appearing

Plant operations continue to average around 70 to 80 per cent, being held down by the sluggish market in railroad materials and plates. There is considerable evidence of improvement, however, in these latter lines. New shipbuilding work especially is coming out more freely. In the East 10,000 tons are involved in four vessels about to be let, and 17,000 tons of ship steel are wanted for export. A southern yard is buying 6000 to 7000 tons for two colliers. Lake builders are figuring on more new work than for a number of weeks and 6000 to 7000 tons of steel for this purpose are pending at Cleveland. The navy has awarded the Carnegie Steel Co. 25,500 tons of plates, shapes and bars for two battleships at the reduced prices recently submitted and 2500 tons of shapes to the Phoenix Iron Works. A new navy inquiry calls for 4200 tons.

The Pennsylvania railroad has placed about 5000 tons of plates for repair work at a reported concession in the price. Other railroad repair work is coming out. Miscellaneous car awards are more numerous. Leading independent makers report the tonnages of plates and shapes booked the past week as the heaviest since the armistice. Eastern shape mills in August averaged 80 per cent operations.

Sales Are Shut off

Selling has been shut off more sharply in various mill lines because of the heavy obligations of producers and the receding deliveries. Tin plate mills in August received the heaviest tonnage of orders of any similar month in history and are assured of higher operations than are usual in the last quarter of the year. The export demand is heavy. Wire and nail consumers are pressing makers more urgently for material, but it is impossible to accommodate them in the degree desired because of the curtailed output due to a shortage of certain classes of mill labor. One or two sheet producers are willing to entertain 1920 orders since all makers of this character are well booked to the year end. Labor troubles are responsible for some enforced idleness, notably 28 mills at one Kentucky and 21 mills at an Ohio plant. The independent interest which advanced steel bars $3 a week ago to the outside trade as reported, is understood to have made some domestic sales at the higher figure. This price also has been done for export. The demand for shafting and cold finished steel has been the best in weeks. A similar situation obtains in light rails.

Iron Output Growing

August has continued the progressive improvement in pig iron operations and production shown in July and June. The month just past recorded a further gain of 23 furnaces in the active list and of 302,369 tons in the total output, representing about 12.5 per cent. The number of stacks in blast was raised to 263 and production to 2,726,581 tons. The tonnage increase would have been greater had it not been for the temporary suspension of various furnaces due to labor difficulties or to the lack of cars growing out of the railway shopmen's strike, notably in the Cleveland and Chicago districts. August's showing was the best since March.

SEPTEMBER 4, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Exchange Raises Trade Bar

REMOVAL by Great Britain of the war time import restrictions on Sept. 1 was an event without far-reaching significance for the export trade of the United States. Lifting of the ban, it is said, created hardly a ripple of enthusiasm among American importers in London. With pound sterling fluctuating between a 12 and 15 per cent discount in the American foreign exchange markets, there is in practice a more formidable barrier to imports than any tariff or governmental edict.

All of the embargoes in force during the war with the exception of 16 commodities have been removed. The exceptions include coal, tar, derivatives of dyes, synthetic drugs, perfumes, flavorings, photographic chemicals, opticals, optical glass, gas mantels, magnetoes, hosiery and certain chemicals. American automobiles, steel rails and other necessities may now enter Great Britain, providing British buyers choose to pay the price.

The only remedy for the exchange situation, of course is a comprehensive plan of export financing, enabling American sellers to advance European buyers ample long-time credits. International financial arrangements of this character are hardly possible on a grand scale, however, so long as uncertainty respecting the treaty of peace overhangs the horizon.

England however is not seeking an improvement in the exchange situation. The humiliation of a depreciated pound sterling in America is amply compensated for by the encouragement given thereby to exports to America and the repression of imports from the same country. The one hope of England now is to increase exports and decrease imports and the trade records of recent months indicate progress is being made in this direction.

It is interesting to note that in discussions of the probable effects of the new import policy English journals waste no space worrying about competition of American imports with home products. Their chief concern is connected with a probable influx of German goods, since the depreciation of the German mark will attract the spending of British money in that country. Furthermore it is only by the acceptance of German imports that the English may expect to collect any part of the huge indemnity assessed against the enemy.

Need Trained Consular Agents

ONCE industrial conditions of the world have returned to a normal basis, competition for trade among the various nations may be expected to be extremely keen. Despite the dominating position of the United States in a business sense, its industries not only will have to be conducted ably by their owners if they are to build up and maintain enlarged foreign markets, but more encouragement must be given to them in the future by the government than they have received in the past. One source of support that should be strengthened relates to the United States consular service.

The government should change its present system and see that selections for this important work consist of men trained specifically for that purpose, a policy that is followed by Great Britain and one which has more than justified itself. There is not the slightest desire to grant anything but the greatest respect to our consular agents, who have shown high zeal in their efforts to aid in the expansion of foreign markets for American industries, but it is an unfortunate fact that, for the most part, their training has been devoid of specialization in such an important undertaking. When this is considered, it really is surprising that American consulates have been as successful as their records indicate.

Now is an excellent time to change the system, so that especially trained agents may be sent abroad. In doing this the government should abolish its present policy of allowing these representatives only a shamefully small salary, and should substitute respectable remuneration. They deserve no less and the great nation they represent can well afford to pay it.

Helping the Homebuilder

DESPITE the fact that the United States is said to be in need of at least 1,000,000 homes, the workingman is given little encouragement by the government toward building. Keeping pace with the high cost of living, rentals have increased time and again until they are almost prohibitive in some sections. This condition is most pronounced in industrial communities to which great numbers of people moved from smaller localities during the war.

Some corporations have made it possible with loan systems for their employes to build homes, and other corporations have constructed homes and rented them to employes at reasonable rates, but it is only the largest of corporations which are able to do this. The employe of the smaller company is at a disadvantage due to no fault of his or the company. What appears to be needed is a system whereby every workingman in the country has an equal chance to build and own a home. Two bills at present are pending in congress, one creating a home loan banking system similar to the farm loan system and the other exempting from federal taxation the income of mortgages held by individuals. These bills might remedy the situation despite the fact that building material has advanced 110 per cent and labor something less since 1915, but financial encouragement is lacking. Congress could assist the workingman at this time by passing bills framed along this line and carrying sufficiently liberal appropriations to make the plan widely effective.

Underlying Conditions Sound

THAT the absorptive power of the United States for steel and its products is immense is proved by the present unexpected situation of the mills. In the past the railroads always have been considered as consumers of something less than one-half of the total production, perhaps about a third of the output of the mills. Pressure for increased tonnage during the war caused great additions to be built to plants and it was feared the return to peace would result in this additional capacity becoming idle as the need for steel was not expected to equal the rated output of all plants.

A surprise, however, awaited the steel world. Railroads, the largest users, have been consistently out of the market for months, yet despite their absence mills have been increasing their bookings until they are approaching or have reached the saturation point.

This unexpected situation has come about in the face of prices far higher than prevailed before the war and under the deterring influence of unexampled labor unrest.

The situation is so unexpected that it gives food for much thought relative to the increased use of steel. That it would be sufficient to overcome the handicap of railroad abstinence and yet be able practically to take up the additional tonnage provided by enlarged production was not considered possible.

Basing Question is National

AS the arguments for and against the present system of basing iron and steel products at Pittsburgh have been advanced more freely under the inquiry being conducted by the federal trade commission, the far-reaching character of the question has been brought more clearly into view. It is manifest that only the most exhaustive and painstaking inquiry will insure a judicious settlement of this controversy and one that will properly weigh the best interests not only of producers or consumers in one section, but in accordance with the advantage and due of the whole country. Because of the wide distribution of iron and steel consumption in this country and its fundamental importance to industrial activity and prosperity, the question has become essentially a national one. Practically every community in degrees of greater or lesser importance has a direct and very substantial concern in a thoroughly equitable settlement of the point at issue.

A notable addition to the arguments and claims which the federal trade commission will weigh in formulating a decision on this matter, is the formal answer by the Inland Steel Co. to the petition of the western steel consumers which is published in full in this issue. This statement may be considered as summing up the case for the producers particularly those in the west. It delineates many aspects of the situation which tend to proclaim the complicated character and the wide application of the problem. This document together with the application of the western organization of consumers and the various individual declarations which have been received, have brought before the commission a complete exhibit of thoughtful reasoning on this subject from diverse points of view. It is gratifying that this is true since it insures that the matter at issue will be thoroughly reviewed from all its various angles and that the outcome will be in terms of genuine, national interest. The federal trade commission has before it no more important proceeding affecting the internal industrial welfare of the country than the basing point controversy and it is to be expected that it will give to it the deep and judicious consideration which the scope of the question warrants.

Much has been claimed in support of or in opposition to the theory of a single basing point in recent years. The opportunity now is presented where the subject can be dispassionately analyzed in all its various aspects and an intelligent judgment passed which should lay this cause of difference at rest for all time.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 670 AND 672

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	27.00 to 27.25
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	29.75 to 32.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$30.50 to 31.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 28.50
No. 2 Northern, Boston	32.90
No. 2 foundry, Cleveland furnace	27.25
No. 2 foundry, Ironton furnace	27.50 to 27.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	29.50 to 30.50
No. 2X, eastern, N. J. tidewater	29.35 to 30.85
No. 2X, eastern, Boston	32.90
No. 2X foundry, Buffalo furnace	28.00 to 29.50
No. 2 foundry, del., Philadelphia	28.50 to 29.50
No. 2 foundry, N. J. tidewater	28.35 to 29.85
No. 2 southern, Birmingham	26.75 to 27.50
No. 2 southern, Cincinnati	31.10
No. 2 southern, Chicago	31.75
No. 2 southern, Phila.	33.25
No. 2 southern, Cleveland	31.75
No. 2 southern, Boston	36.00
No. 2 southern, St. Louis	31.00
Virginia, No. 2X, furnace	29.00
Virginia, No. 2X, Philadelphia	33.10
Virginia, No. 2X, Jersey City	33.40
Virginia, No. 2X, Boston	33.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	28.00 to 29.00
Silveries, 8%, furnace	40.25
Ohio Silveries, 8%, Chicago	44.05
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	39.80 to 41.80
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	32.75

Coke

(At the ovens)

Connellsville furnace	$4.50 to 5.25
Connellsville foundry	5.50 to 6.00
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	7.50 to 8.00
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	6.50 to 7.50

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$105.00 to 110.00
Ferromanganese, 80 per cent. English c.i.f. Atlantic ports	100.00 to 105.00
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.20
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	32 to 34 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	39.00 to 41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.62c to 2.77c
Bar iron, refined, Pittsburgh	2.75c
Bar iron, common, Pittsburgh	2.35c to 2.50c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	38.00 to 40.00
Relaying rails, Pittsburgh	38.00 to 40.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 670.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 670.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$58.80
Four-inch, New York	57.30
Six-inch and over, N. Y.	54.30
Six-inch and over, N. Y.	52.70 to 53.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.76½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.74½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–10–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	3.10c off
Hot pressed, square tapped	2.85c off
Hot pressed, hexagon blank	3.10c off
Hot pressed, hexagon tapped	2.85c off
Cold pressed, square tapped	3.00c off
Cold pressed, square blank	3.25c off
Cold pressed, hexagon blank	3.25c off
Cold pressed, hexagon tapped	3.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Sept. 3, 1919	Average prices Aug. 1919	June 1919	Sept. 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	32.75	32.75	31.75	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
*Southern, No. 2, Birmingham	26.75	26.75	24.25	33.00
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa.	27.00	27.00	25.50	32.00
**No. 2X, Virginia, furnace	29.00	28.25	26.50	33.50
*No. 2X, eastern del., Philadelphia	29.75	29.60	29.60	34.50
Ferromanganese, 80 per cent, delivered	107.50	110.00	114.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.50	38.00	47.50
Bessemer sheet bars, Pittsburgh	42.00	42.00	41.50	51.00
Open-hearth sheet bars, Pittsburgh	42.00	42.00	41.50	51.00
Open-hearth billets, Pittsburgh	38.50	38.50	38.00	47.50
Steel bars, Pittsburgh	2.35	2.55c	2.35c	2.90c
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73

	Prices Sept. 3, 1919	Average prices Aug. 1919	June 1919	Sept. 1918
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.62	2.62	2.53	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45c	2.45c	3.00c
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65	2.65c	2.65c	3.25c
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.35c	4.30c	5.00c
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55c	3.50c	4.25c
Sheets, galv., No. 28, Pittsburgh	5.70	5.70c	5.65c	6.25c
Wire nails, Pittsburgh	3.25	3.25c	3.25c	3.50c
Connellsville furnace coke	4.75	4.30	3.90	6.00
Connellsville foundry coke	6.00	5.20	4.70	7.00
Heavy melting steel, Pittsburgh	21.00	21.25	17.25	29.00
Heavy melting steel, eastern Pa.	19.00	19.60	16.15	28.50
Heavy melting steel, Chicago	19.50	20.75	16.75	29.00
No. 1 wrought, eastern Pennsylvania	27.00	27.25	22.50	34.00
No. 1 wrought, Chicago	22.90	23.25	18.70	33.50
Rerolling rails, Chicago	25.50	29.00	19.25	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

More Difficult to Buy 1920 Iron

Producers Continue to Hold Next Year's Business in Check—Eastern Makers, However, Sell 15,000 to 20,000 Tons at $1.50 and $2 Advance—New Business and Inquiry Generally Lighter

Philadelphia, Sept. 2.—The supply of pig iron is no longer so free here as it was. Of three furnaces which have been the largest takers of business lately, one last week advanced to $29 furnace for No. 2 plain (1.75 to 2.25 silicon), and $30 furnace for No. 2X (2.25 to 2.75 silicon) and since has withdrawn entirely with exception of tonnages on which quotations were outstanding. Another has advanced to a level which amounts practically to a retirement from the market while a third although not having changed its prices to any extent has refused to quote merchants thus indicating a lack of eagerness to sell although showing stiffer tendency. As already noted foundry iron delivered Philadelphia continues to be quoted $29.50 to $30.50 for No. 2 (2.25 to 2.75 silicon), $1 less for No. 2 plain (1.75 to 2.25 silicon). The volume of business is small; in fact there is a lull in buying. Most inquiries noted last week still are open. Virginia furnaces report that western consumers are unable to get ferrosilicon from usual sources because of labor troubles at Jackson county, O. Blast furnaces are turning to high silicon iron from Virginia as a substitute. A number of such sales were made the past week. No Virginia furnace as far as known now is selling any No. 2 plain (1.75 to 2.25 silicon). Only one stack is selling No. 2X (2.25 to 2.75 silicon), its price being $29, furnace. While other Virginia iron is being sold and in one case on basis of $26.75 furnace for No. 2 plain (1.75 to 2.25 silicon) only high silicon or high manganese iron is involved so that selling price generally is in excess of $30. Sales of the week include 500 tons of copper-bearing low phosphorus at $35, furnace. While the low phosphorus market is devoid of actual inquiry sellers say there are some feelers out which promise some buying before long. The Standish furnace the only remaining eastern maker of copper-free low phosphorus went out of blast last week. Sales of week included 500 tons of bessemer by eastern maker. No sales or inquiries for basic are reported.

Harder to Get 1920 Iron

Boston, Sept. 2.—The 1920 pig iron market in New England is becoming decidedly tighter. Furnaces which a week ago were selling for first half and first quarter have now withdrawn except for delivery during the remainder of this year. The few furnaces which are offering 1920 iron are finding ready buyers from all districts. The bulk of the tonnage sold here during the week went to these makers and it is estimated that nearly 6000 tons of new year business was placed. Several orders of 1000 tons or more were received from Massachusetts consumers, and many smaller orders were scattered throughout foundries in the eastern part of New England. All of the first half business has been placed at figures somewhat above the general market for the last quarter, although the premium in some instances has not been large. A price of $31.90 delivered for 2.25 to 2.75 silicon iron was reported on several of the larger contracts. One lot of 500 tons of No. 2X iron (2.25 to 2.75 silicon) was sold at $31 eastern Pennsylvania furnace or $33.90 delivered. The price on last quarter and spot delivery has held at about $29 Buffalo for No. 2X (2.25 to 2.75 silicon). Some central and eastern Pennsylvania iron of the same grade has sold for the same price at the furnace making the delivered price lower. Only special silicon iron has been sold from the Vigrinia district the past week. Southern iron continues unusually high in comparison with the northern iron prices. As high as $29 has been quoted for No. 2 foundry (1.75 to 2.25 silicon) and this with the $8 freight rate entirely prohibits the entrance of southern iron into New England in any sizable tonnages. Interest in first half delivery is keen throughout the foundry field. A large number of inquiries of a somewhat indefinate nature are circulating. Many dealers report orders already placed for first half, even though furnaces have not made any prices as yet. The total of sales to Boston dealers during the past week is estimated at 7500 tons.

Price Tendency High

New York, Aug. 30.—The principal feature of the pig iron market in this district during the past week has been the placing of considerable tonnage for the first quarter of 1920. Altogether, the sales of foundry iron for first quarter in this district during this period aggregated considerably more than 15,000 tons and probably as much as 20,000. The larger portion of this business was of single tonnages not in excess of 1000 tons, and the prices which were done were mostly $1.50 to $2 above those for this year. A considerable percentage of the 1920 business, however, was booked at an advance of only $1. Of the inquiry which has come out during the past two days, the major portion involves 1920 foundry iron. Out of 3000 tons of new domestic inquiries which one interest now has on hand, only about 500 tons are for delivery this year. In most cases

the furnaces are not anxious to sell for first quarter or first half, and in several cases they will not even book 1920 iron for old customers. Some of the furnaces which booked some of the 1920 business placed during the past week now are out of the market on this position having taken large tonnages in other districts as well as this. Prices which are being quoted have not changed during the past week, but it now is easy to get 25 to 50 cents higher than a few weeks ago. The foundry iron market delivered at New Jersey points for the remainder of 1919 still may be represented by a spread of $28.35 to $29.85 for 1.75 to 2.25 silicon, while the range on 2.25 to 2.75 silicon is $1 higher. Malleable iron can be had at $27.75 to $28, eastern Pennsylvania furnace. Some malleable has been sold for export. Little Buffalo iron is being sold in this district at this time, due to the extent to which the stacks there are booked ahead. A large amount of export inquiry continues to feature the market, but the orders placed are small.

Market Dull and Featureless

Pittsburgh, Sept. 2.—Dealings in pig iron have been on an extremely restricted scale during the past week with only a few sales of size worthy of note. One lot of 2000 tons of No. 2 foundry was sold for delivery in this district at $26.75 valley, furnace, while the transfer of 1000 tons of bessemer iron is noted at $27.95 valley, furnace, for the Alliance, O., plant of the American Steel Foundries. This latter sale represents a slight concession as iron running below the standard requirements in phosphorus is to be delivered at this price. A Pittsburgh district maker of ingot molds is inquiring for 1000 tons of bessemer. The market in basic pig iron is virtually dormant with nothing more than carload lots moving and inquiries few and far between. It is doubtful if the trade has experienced a quieter week this year than the past one and this condition has not been without some attraction upon prices. In the sale of 2000 tons of No. 2 foundry previously referred to, the price was at least 50 cents a ton below what most of the producers recently have been asking. Averages compiled by W. P. Snyder & Co., Pittsburgh, on valley sales in August show the same prices as during July, or $25.75 for basic and $27.95 for bessemer. It is doubtful if the average price on basic in this calculation is founded on other than shipments on old contracts. The Carnegie Steel Co. now has 49 of its 59 stacks in operation. The Anna furnace of the Struthers Furnace Co. probably will be lighted this week. This furnace will run on foundry iron for about six weeks.

Refuse to Quote on 1920 Iron

Buffalo, Aug. 30.—Buffalo furnaces uniformly are declining to quote on 1920 iron. Customers have been vainly trying to buy in this district for some time, but the ore situation is preventing furnaces from going actively into the market. The slowness with which ore is arriving is but a temporary condition, producers believe. Iron orders are not as large as they were, but they have been coming in good volume, and there has been a marked increase in the number of foundries calling for immediate shipment. Buffalo Union A furnace has been blown in again, after being banked since November.

New Business Falls Off

Cleveland, Sept. 2.—New business in pig iron has dropped away sharply and the turnover during the past week was the lightest in some time. One large selling interest reports about 2500 tons booked for this year and first half in foundry grades upon which the $26.75 furnace price of 1.75 to 2.25 silicon has applied. Other producers have entered business in a corresponding way. The reason for the contraction of buying is the fact that consumers are well covered on their requirements for the rest of the year, and the furnaces, with a few exceptions, still are unwilling to entertain orders for delivery after Jan. 1, at this time. This situation also is reflected in new inquiries where the buyers finding that the makers would not quote for next year, are withholding their requests until a later date. New inquiry of the past week has been exceedingly light. Shipments are going forward very favorably causing furnace stocks to be further reduced and there is continuing evidence that consumers in their recent purchases underestimated rather than overstated their requirements. The result is the placing of a number of small tonnages to fill in.

Several sales of basic pig iron in small tonnages have been made at slight concessions which went to the brokers as commissions, the consumers ultimately paying the market price. It is known that a 1000-ton lot went at the full rate of $25.75, valley furnace. However basic inquiry today appears to be nil and new buying has not appeared at any time in volume. It is understood the American Steel Foundries has purchased 10,000 tons for its Alliance, O., works. The Struthers Furnace Co. today relighted its stack and will operate on foundry iron for some weeks.

Demand Holds Well

Chicago, Sept. 2.—Although practically all large users of pig iron in the Chicago district have covered their requirements for the remainder of this year, some who bought conservatively at first having entered the market a second time, inquiry continues excellent. Naturally at present this is mostly for small tonnages to fill in unexpected demand or to cover purchases by small foundries which had not covered previously. Northern producers continue to book a fair aggregate of business, but are nearly sold out for their entire production to the first of next year. Every effort is being made to produce as heavy a tonnage as possible to meet the heavy demand. An important seller has increased the silicon differential $1, making the premium for 2.25 to 2.75 silicon $2.25 instead of $1.25, as provided in the schedule, with the same increase of $1 on each successive step. No increase has been made on the base grade, and it seems probable now that the year will close without a rise in prices except for this added premium on silicon. Silvery irons continue in demand and in addition to the inquiry for 4000 tons, mentioned last week, smaller inquiries aggregate more than 3000 tons. One large consumer of various grades of pig iron with plants located both east and west is seeking 1000 tons of low phosphorus iron and 1500 tons of standard bessemer. Southern iron continues quiet in this market with prices $1 higher than prevailed at the middle of the year. Information reaching Chicago is that costs in the Birmingham district have increased more rapidly than in the north and that southern makers have great difficulty in breaking even at present prices. Lake Superior charcoal iron producers have practically nothing more to sell for this year, and that grade is quiet.

Contract for 1920 Malleable

Cincinnati, Sept. 2.—No foundry iron for next year is being offered either in the south or in the Ironton district. There are numerous inquiries in hand, but furnaces are still waiting to see what their operating costs will be after Dec. 31. It is reported that some malleable iron for first quarter shipment, or at least with shipments extending into that period, has been contracted for, but at an advance in price, the exact amount not having been stated. It is understood, however, that the advance was about $2 per ton. Sales of foundry iron for the last quarter are scattered, depending mostly on the ability of the furnaces to deliver the metal. No one now questions $27.50 as being the minimum for either Birmingham or Ironton iron for the delivery named, and some furnaces are able to obtain $27.75 and $28. The situation in Jackson county is still unchanged and consumers of silvery iron have had to turn elsewhere for a supply. The south has practically disposed of all its iron of 4 per cent or more of silicon. Lake Superior charcoal iron is in moderate demand. The car shortage is still a vexing question in all iron producing districts.

Upward Tendency in South

St. Louis, Aug. 30.—Buying of pig iron in small lots continues in this territory, both for prompt delivery and shipment over the balance of the year. Prices on southern grades continue strong, with a tendency to reach the new schedule of $27.75, Birmingham, for silicon 1.75 to 2.25. Some of the furnaces are quoting $27.75 for this grade and maintaining the regular silicon differentials, but a few companies are quoting $27.50 and are shading the differentials on the higher silicons. Business pending amounts to probably 3000 or 4000 tons, one inquiry being for 1000 tons, for delivery before Jan. 1, and the balance being made up of smaller lots, prompt and future. There is one inquiry out for 250 tons of southern iron for delivery over the first half of 1920.

Slight Advance Made in South

Birmingham, Ala., Sept. 2.—The southern pig iron market has gained in strength and a slight advance in prices is noted, with most sales being made for fourth quarter, spot sales have been made on the basis of $28

for No. 2 foundry (1.75 to 2.25 silicon). While no announcements have been made as to transactions for 1920, there are indications of such sales being closed. Production is being increased steadily, 26 furnaces now being in operation, one on charcoal iron, one on ferromanganese, eight on basic and the others on foundry iron. The Sloss-Sheffield Steel & Iron Co. now has four furnaces in operation, and the Woodstock Co.'s furnace at Anniston is making iron. Purchasers are taking delivery on contracts freely. The car shortage is delaying the reduction of accumulated furnace stocks of iron although there is not a great quantity on yards in this district. Inquiries are being received steadily for 1920 iron, but most of the furnaces are not yet opening their books for that period.

Nails at $3.50

Are Being Sold Freely—Wire Consumers Urging Faster Deliveries

Pittsburgh, Sept. 2.—An independent wire manufacturer here who recently offered a moderate tonnage of nails to be made up and shipped at his convenience at $3.50 a keg found no trouble in disposing of the allotment. This is typical, for while the American Steel & Wire Co. continues to quote $3.25, it is practically out of the market on new business, and other makers who have been quoting $3.50 find their chief problem in giving all buyers some tonnage. Good demand is noted for coated nails and makers find that in all except the Chicago district, sales readily are made at $3.10 per count keg, Pittsburgh. Most companies are well booked over the remainder of the year on wire, both plain and barbed. Current mill operations range from 75 to 80 per cent full, with production still falling behind shipping directions.

Mills Filled Up

Philadelphia, Sept. 2.—Dealers are finding it difficult to get nails since all mills have so much business on hand they can take practically no more. All makers excepting leading interests now have minimum nail price of $3.50 Pittsburgh. The mills also are filled up on other wire products but not to so marked an extent as on nails. Independent mills who recently advanced wire prices say there is no difficulty about making sales on the higher level.

Buyers Urge Speed

Chicago, Sept. 2.—Wire producers are receiving many requests from consumers to hasten their shipments, which it is difficult to do because of the general shortage of cars. The latter is attributed to the grain movement. Inquiry continues active and mills have no difficulty in booking as much business as they can handle. The price situation is unchanged, the leading interest continuing to quote at the old price, which is considerably below that named by independents. The latter appear to be shading this figure somewhat on occasional tonnages, although as a rule the level is being maintained.

Coke Consumers Covered

Little Being Done in Contract Market—$5 Being Talked of as Basis of September Shipments—Few Sales of Spot Made at 4.90c

Pittsburgh, Sept. 2.—Although a few small sales of spot furnace coke recently have been made as high as 4.90c, ovens, the more general maximum is $4.75, and basis in sales still exists for a quotation as low as $4.50. In the Connellsville region at the close of last week only a few loaded cars were on the track, and with the suspension of mine and oven operations over the holiday, much talk has been heard of a possible shortage. While coal offerings admittingly are small, they are ample for present demand. Except for small tonnages moved at a higher price, $4.75, ovens, has not been exceeded. Nothing is being done in contracts as those merchant furnaces which now are inactive but which are likely to go in blast at an early date are provided with supplies. While $5 has been talked as the basis of September shipments, it is extremely doubtful if much business of this sort has been placed at higher than $4.75. Foundry coke is in steady demand with most sales at $6, ovens. Few producers of standard 72-hour fuel have any surplus over their contract obligations. Because of the scarcity of labor, makers are not anxious for new business, especially when buyers insist on box cars for shipment. The Connellsville production of coke for the week ended Aug. 23, is estimated by *The Connellsville Courier* to have been 240,440 tons as compared with 236,482 tons in the previous week.

More Foreign Orders

New York, Aug. 30.—Orders have been placed during the past few days for an additional 3000 tons of foundry coke for export. This business was placed with the northern New Jersey by-product producer. The coke market continues to reflect strength. A fair amount of beehive foundry coke has been sold in this district for both spot delivery and shipment over the rest of the year at $5.75 and $6, Connellsville. The price of the northern New Jersey by-product maker on foundry coke continues $6.

St. Louis Market Firm

St. Louis, Aug. 30.—A number of inquiries are out for Connellsville 72-hour foundry, covering delivery over the balance of this year. There is one inquiry pending for 1800 tons, for the first half of 1920, but the purchasing agent submitting this inquiry has not received prices interesting enough to justify placing the order. The market is firm at $5.50 to $6.25 on Connellsville 72-hour foundry, covering shipment up to Jan. 1.

Car Shortage Delays Shipments

Cincinnati, Sept. 2.—Operators in the Wise county, Pocahontas and New River fields are having difficulty in trying to supply fuel for the foundries, owing to the car shortage. Foundry coke in Wise county and Pocahontas fields ranges from $7 to $7.50 ovens, and New River is firm at $8. There has been an easing up in the Connellsville situation, as far as the supply of spot furnace and foundry coke is concerned, although considerable room for complaint as to the scarcity of cars still exists. Oven operators are said to be averse to taking on much more contract business and are naming only nominal figures, all of which are on a sliding scale basis. Information as to some furnace coke sales above $4.75, ovens, has been received, but quotations may now be said to range from $4.50 to $4.75.

Southern Ovens Sold Up

Birmingham, Ala., Sept. 2.—Coke producers in the Birmingham district are practically out of the market for the present, having sold considerable tonnage. The Sloss-Sheffield Steel & Iron Co. expects to be able to start up some of its by-product coke ovens at North Birmingham within the next 40 days. A shortage of railroad cars is being felt in this district. Further shipments are being made to Texas.

Ore Market

Still Quiet, Although All Furnaces Are Not Covered

Cleveland, Sept. 2.—Only one complaint was heard that the strike of workmen on the docks of the upper lakes delayed shipments to furnaces. This was from a Buffalo furnace and the delay in receiving ore was reported to have deterred this interest from accepting a contract for iron for delivery in the first quarter.

Ore companies said they were fortunate in keeping some of those interests which placed orders late supplied during the strike, but apparently the possibility of a recurrence of the trouble and more serious delay in shipments has not disturbed the furnace interests, as ore companies report no new orders were received during the past week.

The strike of dock office employes interfered to some extent with the compilation of records of shipments in August, but they are estimated by certain authorities as being 4,000,000 tons, compared with 9,725,331 in August, 1918.

While the labor trouble on some of the coal docks continues, more tonnage is being devoted to the handling of ore, with the expectation of making up the 5,000,000 tons in shipments lost by reason of the strike on the ore docks. Shipments of grain, however, are increasing and taking considerable vessel tonnage that otherwise would be devoted to the movement of ore. The market is dormant so far as new business is concerned, although a few furnace interests have not closed on their full requirements for the remainder of the year.

Scrap Market Dragging

Consumers Hold off From Making Purchases—Prices More or Less Nominal—Heavy Sales of Shell Steel Made Lower

FOR COMPLETE SCRAP PRICES SEE PAGE 672

Pittsburgh, Sept. 2.—A deadlock exists between consumers and sellers of scrap, and with business confined largely to rejected cars values are not clearly defined. Steel manufacturers seem to have ample supplies for the present. Dealers, believing that the present dullness will not be protracted, are not inclined to press sales. Under the circumstances, little room for price changes exists. Rejected shipments are selling below last week's quotations, shippers seeking to avoid paying demurrage. Recent government sales of shell steel have reflected the easier tendency which set in about a month ago following a withdrawal from the market by most of the big steel manufacturers. The Midvale Steel & Ordnance Co., recently bought 8000 to 10,000 tons of shell steel at $20 to 21, delivered at its eastern plants; the McKinney Steel Co., from 12,000 to 14,000 tons at $21 to $22, delivered, Cleveland, and the Donner Steel Co., a good tonnage at $21.50, Buffalo. The high mark on this kind of material was about $24.50, delivered, Pittsburgh. The Pennsylvania railroad scrap list for September offers 19,786 gross tons of various kinds of material. The largest single item is 4000 gross tons of No. 1 steel rails. This offering is below the average of the past few months.

Steelmakers Out of Market

Boston, Sept. 1.—Large steelmakers were absent from the scrap market during the past week, activity in some grades being due to competitive buying among dealers. No. 1 machinery continues scarce and in demand, but the market generally is quiet. A report from Pennsylvania consumers indicates a demand there for turnings and borings and this has been reflected in local activity in these grades. Borings sold up to $11.50 delivered, dealers yards, in several cases. Heavy melting steel has been gradually stiffening in price despite the lack of consumers in the market. It has been sold to dealers at $16.50 to $17.50. The government again offered considerable quantities of scrap. Eighteen net tons of special bessemer scrap located at Scituate, Mass., were awarded to C. M. Liphart, Philadelphia, at $33 a ton. Approximately 15 tons of steel located at South Boston was not awarded because bids were considered too low. Another lot of nearly 2,000,000 pounds of bessemer screw stock was not sold, although bids were received. It is understood some bids on this last lot were as high as $31 per gross ton. Eighty-one tons of steel blooms went to the Erie Iron & Metal Co., Erie, Pa., at $21 per gross ton. Twelve thousand, five hundred pounds of special chrome alloy steel were sold to the Roxbury Iron & Metal Co., at 75 cents per 100 pounds f.o.b. Framingham, Mass. Several sizable tonnages of No. 1 machinery scrap were sold to central Massachusetts foundries. One lot of 400 tons was sold at $27.50, delivered. Cotton ties for rebailing purposes have been in demand and have sold as high as $13.50 and $14 at the point of shipment.

Some Grades Are Lower

New York, Sept. 2.—Although there is a better undertone in the local scrap market, one or two grades have weakened. Stove plate is off about $1 and grate bars 50 cents. Heavy melting steel also is slightly lower and now is holding at $15 to $15.25. Although the rather inactive market makes it difficult to define prices, other materials appear unchanged. The feature of the week was the sale of one lot of 15,000 tons of shell forgings at Poughkeepsie.

Labor Situation Helps

Philadelphia, Sept. 2.—The improved labor situation has been followed by a decidedly improved scrap market. The fact that scrap is comparatively scarce coupled with the seeming assurance that there is to be an end to disturbances on the part of organized labor has caused a much stronger feeling. While the market is quiet there is no disposition on the part of dealers to shade prices. One large eastern steel works which had been trying to buy machine shop turnings at $14 was forced to raise its price to $15 and at this figure bought 4000 to 5000 tons. Another big steel company bought 1000 tons of stove plate at $21, delivered.

Mills Dipping Into Reserves

Buffalo, Aug. 30.—Prices are firm in scrap and the market is strong. Mills are not accumulating stock but are dipping into their supplies. The labor situation is the most potent factor in the present condition of the market, prompting caution. Few sales have been made during the week.

Weakness Still Prevails

Cleveland, Sept. 2.—Prices on all grades of scrap iron and steel here continue weak. While dealers believe that the backbone of the depression has been broken, and that the trend will be upward shortly, the market externally gives no indications of strength. Two of the largest consumers in this district are out of the market for several weeks, their purchasing agents being on vacation. Practically all users engaged supplies for several months, in the course of the recent buying movement, and hence are not expected in the market for some time. Dealers feel certain danger of a strike in the industry is past, and that fears on this score will be definitely removed soon. Several dealers who sold short when melting steel was $22 are reported reaping a harvest. Many of the larger brokers claim not to have a single order on their books.

Wants Good Tonnages

Youngstown, O., Sept. 2.—While the scrap market cannot be termed strong some good sized tonnages are moving. One dealer here is in the market for 2000 tons of low carbon, machine shop turnings; 1000 tons of flashings or No. 1 busheling; and, 500 tons of soft steel punchings. These tonnages are wanted monthly. A southern Ohio mill recently purchased 2000 tons of sheet bar crops at $22. This is $5 per ton lower than an order which was closed recently by a dealer in this district.

Chicago Market Waiting

Chicago, Sept. 2.—Under the double threat of a strike by steel workers and by railroad shopmen and further influenced by the holiday, consumers of iron and steel scrap in the Chicago market are buying practically nothing. Inasmuch as dealers have comparatively few contracts on which to make deliveries, the situation is unusually dull as there is not even the usual buying among dealers to apply on their contracts. Steel mills are especially apathetic in view of the possibility of lost time if workers decide to strike, bar iron mills are taking little material because demand for their output is slack, and rerolling mills are not in need of old rails because of former purchases which provide sufficient reserve for the present. Foundries are taking some cast scrap but this demand is not sufficient to make the market active. Railroads are furnishing an unusually small total of scrap, and the only important list now pending is that of the Chicago & Northwestern involving 2200 tons.

Postpone Buying

Cincinnati, Sept. 2.—The market for heavy melting steel scrap is weak. Stove foundries are buying in small quantities for prompt shipment, but most of the jobbing foundries are fairly well supplied for this year and are waiting to see what future conditions will be before placing any more orders for future delivery. Cast borings also show some weakness and are off about 50 cents a ton. There is a very limited demand for steel turnings and nothing except a nominal quotation on this class of scrap may be made.

Southern Market More Active

Birmingham, Ala., Sept. 2.—A little more activity is noted in the scrap iron and steel market in this district. No. 1 cast is moving well and some of the consumers in this district are asking for early delivery on contracts placed some time ago. Cast iron pipe plants are seeking immediate delivery. Consumers of heavy melting steel have advanced their offers. Dealers however, are maintaining their price, $3 above that offered. Stocks show a little reduction. Country scrap is coming in, and railroads and industrial plants are ready to sell in quantity. Quotations are on a firmer basis than for some time.

Sheets Scarce

With Makers Well Sold to Year End —Some 1920 Orders

Youngstown, O., Sept. 2.—A few sheetmakers here continue out of the market because they have all the orders they can handle for the next eight to 10 weeks. Some mills, however, are in a position to take on fourth- quarter business but are choosing attractive specifications. Spot business is good and a few buyers are successful in obtaining tonnages in this direction. Galvanized in light gages for early shipment are hard to buy in this district. One dealer here, however, is offering for immediate shipment, 45 tons of 16-gage galvanized, 27½ x 83 and 70 tons of 16-gage galvanized, 36 x 71, all prime stock at $3.75 f.o.b. Philadelphia. Other offerings for immediate shipment include 300 tons of 22 gage, 30 x 120 and 30 x 84, open-hearth, one pass, regular mill bundling at $3.85 f.o.b. Canton, O., 220 tons of prime, open-hearth, single-pickle sheets assorted as to gage and size at $4.15 f.o.b. Chicago, 180 tons of prime, one-pass, oiled and crated, 20-gage block, 52 x 38, at $4 f.o.b., Pittsburgh; 625 tons of open-hearth, full-pickled and annealed, extra deep drawing, oiled at $4.25 f.o.b. Philadelphia. Considerable business is being done in the second and waster market. Toy makers are beginning to come out after light tonnages, several sales having been made this week in this direction.

Blue annealed sheets continue strong and several good-sized inquiries are now pending. The entire output of a Pennsylvania mill rolling this product has been contracted for by a dealer in this district who reports that a large Ohio consumer has closed for 1000 tons monthly. The monthly output of this mill will average 800 tons.

More Specifications Placed

Philadelphia, Sept. 2.—While less contracting features the sheet market more definite specifications have been placed for fourth quarter delivery. Eastern capacity is pretty well occupied, but western mills which usually solicit business here now are out of market entirely.

Still Pressed With Business

Pittsburgh, Sept. 2.—No let up is noted in the demand for sheets but with makers already sold up for the remainder of the year, little capacity is available for prompt shipment orders but as yet only one or two mills have opened their books for the first quarter and half of 1920 delivery. Buyers do not seem particularly anxious to get under cover for the first part of next year, but makers as a general rule equally are indifferent about selling beyond the end of this year. The American Sheet & Tin Plate Co. is operating more than 90 per cent of its sheet mills, but the showing of the independents is not quite so favorable due to the fact that at the Newport Rolling Mills, Newport, Ky., 28 mills are idle and at the Stark Rolling Mills, Canton, O., 21 mills are idle owing to labor troubles. Prices are holding firm at the March 21 level with some makers who booked tonnages below this basis asking premiums of from $2 to $5 a ton to average up their prices.

Most Mills Full

Chicago, Sept. 2.—Activity in demand for steel sheets has suffered no diminution, and most mills are practically filled with tonnages as far as they desire to cover. This demand comes from all classes of users and indicates great activity in the manufacturing field. One factor to be reckoned with by sheet makers is inability to obtain sheet bars, but this has comparatively little effect in the case of local producers, who provide their own supply.

Light Rails

Are in Best Demand of Year at Home and Abroad

Chicago, Sept. 2.—Demand for light steel rails is active, and business is being booked at a better rate than at any previous time during the present year. Much of this is going to coal mines, which appear to be making considerable extensions and improvements. Standard rails are being sold only for miscellaneous uses in small lots. Car buying is practically absent, except for occasional sales of tank cars made necessary by enlarged activity of oil producers. The Mt. Vernon Car Mfg. Co. has closed an order for 25 cars for the Sacramento & Northern railroad.

Wilson & Co., Chicago, has an inquiry out for 200 refrigerator cars. The Pennsylvania Tank Car Co. has taken orders for 25 tank cars for the Bolene Refining Co., 100 tank cars for the Livingston Refining Co., six for the Wilhoit Refining Co., and 25 for the Commercial Car Line. The American Car & Foundry Co. has taken an order for 600 tank cars for the Mexican Petroleum Co., 200 for the Ohio City Gas Co., and 50 for the White Eagle Oil & Refining Co.

Good Demand for Tank Cars

Philadelphia, Sept. 2.—Tank car demand continues active. The Union Tank Car Co. is considering buying 1000 tank cars. The Ohio Gas Co. bought 300 tank cars, while the Mexican Oil Co. bought 500. The Swift Packing Co. let a contract for 700 refrigerators and the Havanna Central railroad let a car order to the American Car Co. The New York Central and other railroads are figuring on large car repair orders.

Light Rails Wanted for Export

Pittsburgh, Sept. 2.—Domestic demands for light rails have dwindled considerably, but export inquiries still are numerous and a fair amount of business is being placed, with makers quite generally holding for 2.45c, Pittsburgh. Nothing yet has developed in connection with a possible order for 100,000 tons of standard rails from the railroad administration. Railroad spikes are slow in keeping with the demand for rails and prompt deliveries are being made against all inquiries.

Report Premiums

In Sheet Bars But Supply Situation Seems to Be Easier

Pittsburgh, Sept. 2.—With the sheet mills running better than 90 per cent of capacity and the tin plate mills at a higher rate, consumption of sheet bars is extremely heavy. But as the Carnegie Steel Co. for several weeks past has been running around 95 per cent of ingot capacity and other producers have been doing as well, if not better, the spread between production and consumption of sheet bars has narrowed considerably and few finishing mills now lack sufficient supplies. Less talk now is heard of premiums over the regular base of $42, Pittsburgh or Youngstown, and those makers seeking them may be said to be taking this course to discourage orders. Brokers having tonnages they would like to sell at slight premiums over the market have had few opportunities to do so in the past week. Consumption of rolling billets also is heavy, but here, too, consumers are getting ample supplies on contracts. Current demands for slabs are being met easily. Less strength is noted in slabs than in other semifinished forms. Most steel manufacturers have some surplus of wire rods over their finishing needs. These surplus rods are being offered for prompt shipment. England is seeking 1000 tons and against this inquiry $57, Pittsburgh, has been quoted for soft rods and $67 on those of high carbon.

Advances Forging Billets

Philadelphia, Sept. 2.—Practically all mills are out of market on semi-finished material and particularly on rerolling billets due to high cost as compared with the present market. One mill which some time ago withdrew on rerolling billets, sheet bars and wire rods had advanced forging billets $3 to $54 Pittsburgh. Several inquiries for rerolling billets of 2000 to 3000 tons each are now out.

Demand is Heavy

Chicago, Sept. 2.—Demand for sheet bars and steel for wire mills is making heavy calls on the steel capacity of the leading interest, and is taking considerable tonnage which otherwise might go to finishing mills for plates, shapes and bars. While demand for the latter is strong and seems to be increasing, it is not as heavy as that experienced by producers of sheets.

Demands Still Heavy

Pittsburgh, Sept. 2.—Heavy demands still are being made upon the makers of strip steel and most of them now are running 100 per cent capacity. Shipments of cold rolled strip steel are somewhat restricted because of a scarcity of box cars, but since hot rolled strip can be shipped in hopper cars, shipments along this line are normal. Manufacturers have all the business they can handle for the remainder of the year. Books have not yet been opened for the first quarter of 1920. Prices are firm at 5.65c base Pittsburgh for cold rolled and 3.30c base Pittsburgh for hot rolled.

Steel Bar Mills Are Filled

Western Producers Booked to Year End—Export and Some Domestic Sales at 2.50c—Shafting Activity Broadens

Chicago, Sept. 2.—Demand for steel bars continues strong, and this product remains one of the most active departments of the finished steel market. Soft steel bars have been contracted to a point where most mills are practically full for the remainder of the year. Consumers are asking prompt delivery and specifications are being received in full volume, considerably in excess of present shipments. Delay resulting from the recent strike of railroad shopmen has been practically overcome during the past fortnight and mill conditions are close to normal.

Consumers betray little interest in bar iron and mills are losing considerable time, one interest in this district being closed down all this week. Inasmuch as this material depends largely for its activity on railroad buying, the present situation is not surprising.

Buying of hard steel bars rerolled from rails is heavy, large specifications being received from agricultural implement makers, while other manufacturers are specifying on their contracts and some are entering new orders.

Machine Tool Builders Buy

Boston, Sept. 1.—Increased numbers of machine tool manufacturers are coming into the steel bar market to complete their requirements for the present year. In some cases they are finding difficulty in locating a producer ready to accept their business.

Still Sell Iron at 2.35c

New York, Aug. 30.—Although in the majority of cases new business in common iron bars is being entered at the new base price of 2.50c, Pittsburgh, to which makers advanced recently, sales continue to be made right along at 2.35c, Pittsburgh. The latter price, however, may be considered exceptional, and is benefiting only regular customers whose third-quarter requirements had been placed before the advance. Demand for bolts and nuts is active and since prices were advanced the middle of August consumers have been specifying liberally on the contracts placed at the old prices for their third quarter requirements. The first advance in the price of steel bars in the east has been made by the Cambria Steel Co. which has quoted 2.50c, Pittsburgh on a number of inquiries as previously announced. It is understood some business already has been booked on the new basis. As far as known, none of the other makers have followed suit. All of the bar mills are well booked ahead and on many sizes, particularly the small sizes, 12 to 15 weeks' delivery is the earliest that some producers are able to quote. The Cambria Steel Co.'s advance applies to all bar products, making bands 3.20c base.

Want Premiums On Angles

Philadelphia, Sept. 2.—The steel bar situation is getting more interesting. In addition to the advance by the Midvale and Cambria Steel companies to 2.65c Pittsburgh to the outside trade a Pittsburgh mill is asking premiums on small angles, etc., which have to be rolled on high cost equipment. Bar makers say most consumers already have specified all their third quarter tonnage and have begun specifying their fourth quarter material.

Export Bar Orders at 2.50c

Pittsburgh, Sept. 2.—Advances ranging up to $3 a ton recently have been obtained by makers here on export orders for the smaller sizes of bars. Foreign consumers, most of whom prefer to make their own requirements of bolts and rivets instead of buying the finished products, are heavy buyers of the smaller sizes of squares and rounds and this demand on top of big domestic orders has put most makers out of the market for the next few months on sizes 1½-inch and smaller. Makers of cold finished steel bars are specifying freely against contracts. Altogether, the steel bar market is quite satisfactory, although makers could take on more business in large rounds. Urgent demands are coming out for concrete reinforcing bars, as with the approach of fall, construction work is being speeded up. Some makers of rerolled bars have withdrawn mill quotations, as they are doing little except a warehouse business owing to the character of the demand. Out of warehouse, rerolled bars are selling at 2.75c in carloads, or $8 a ton above the mill base. All makers have big orders. Ordinary and refined iron bars, made largely from scrap, are not moving with much snap and efforts to obtain more than 2.75c on the latter grade are not successful save in less than carloads.

New Orders Not Sought

Cleveland, Sept. 2.—Except for supplementary buying from regular customers to fill out needs previously contracted for but found insufficient, leading producers of steel bars are not inclined to accept much new business. This is because of their heavily booked position which will take up their capacity in large part to the end of the year, and to the extended deliveries that now are being made. Specifications are coming in in liberal tonnage. The demand for reinforcing steel continues lively. A local contractor has placed with a Buffalo mill 2600 tons covering several jobs recently taken. For the construction of 16 miles of concrete road between Bedford and Hudson, 300 tons of reinforcing steel will be required.

Bolt Market Booming

Chicago, Sept. 2.—Manufacturers of bolts and nuts find as much business being offered them as they can possibly handle and most plants are operating now at capacity. This means better than 90 per cent and in some cases up to the limit, although ability to obtain sufficient labor is holding back production in a few instances. Mill books are loaded with orders and sufficient material has been bought to keep operations at a high level for a long time.

Makers Well Sold Up

Pittsburgh, Sept. 2.—Orders for nuts, bolts and rivets are heavy and plants in this district are running practically full. Some fair sized orders are being placed by the Emergency Fleet corporation for bolts and nuts and the general demand is good save in track bolts. Books for the last quarter have not yet been opened; indications are that when they are an advance over present prices will be asked. In explanation, it was stated that labor arising over present quotations leave altogether too small a margin for the manufacturer.

Best Week Since Armistice

Pittsburgh, Sept. 2.—With most makers of cold finished steel bars and shafting, last week was the best in the matter of specifications since the signing of the armistice. Surplus war supplies, which have restricted new business throughout this year, appear to have become absorbed, and the outlook now is considered to be the best in some time. Confusion which resulted among jobbers with the inauguration of the base and extra card, replacing the list and discount scheme of quoting, has passed and business now is progressing without a hitch. Mill operations range from 60 to more than 70 per cent of capacity.

Reject Orders

In Lapweld Pipe—Big Orders Hang—Foundry Sales Uneven

Pittsburgh, Sept. 2.—Pipe manufacturers still are so heavily committed on the lapweld sizes as to be unable to give any attention to numerous inquiries which exist for big tonnages of line pipe. It is estimated that if they were so disposed manufacturers could take on business aggregating several thousand miles of line pipe in sizes running from 6 to 16 inches, An inquiry for 300 miles of 8-inch pipe, put out by a Pittsburgh contracting firm, for the Sinclair Oil Co., has not yet been closed and among other projects upon which makers have had a chance to quote is a line from Kansas into Chicago, about 1000 miles. About the only new business in lapweld pipe that is getting attention is that from regular customers, who are being given small tonnages to meet pressing needs. Active building operations in the west and Middle West find reflection in an increased demand for buttweld pipe from those sections. Generally, the buttweld pipe business is good and few furnaces now are idle. Activity in the automobile business helps mechanical tubing, but room for much improvement still exists in boiler tubes.

Export Lots Are Placed

New York, Sept. 2.—Slightly improved conditions are noted in the

eastern cast iron pipe market. In buying for export during the past week or so 1000 tons were closed for Cuba and South America. This business is said to have been done around the level of the domestic market which as recently noted was advanced $2 per ton. Buying still is confined to domestic requirements there being virtually nothing of importance in municipal tonnage.

Late Buying Active

Chicago, Sept. 2.—Lack of balance in buying of cast iron pipe continues with most tonnages running to small sizes. Large-pipe orders are scarce, and this is proving embarrassing to producers. Demand for over 12-inch sizes are unusually light and probably reflect the effort of most cities to keep down their purchases and to take only what is needed for urgent extensions in outlying sections. The National Foundry Co. is low bidder on 1800 tons at Hamilton, O., on which the formal award has not yet been made. Detroit has split equally its 3080 tons between the United States Cast Iron Pipe & Foundry Co., and the American Cast Iron Pipe Co. Bids were opened Sept. 1 at Elmhurst, Ill., on 1700 tons, a contractor's job. Figures will be taken Sept. 3 at Crowley, Wyo., on 150 tons, and Sept. 10 at Rock River, Wyo., on 160 tons.

Pipe Business More Active

Birmingham, Ala., Sept. 2.—Cast iron pipe plants in the south are receiving an increased number of specifications, with requests for early delivery. Many cities are in need of pipe to proceed with public work before cold weather sets in.

Sell on Pound Basis

New York, Aug. 30.—Warehouses in this district have decided to do away with the old method of selling cold rolled shafting and screw stock at list prices less discount. Hereafter they will sell this material in terms of cents per pound. The new base price on cold rolled rounds out of stock in New York as announced by one leading interest during the past week, is 5c, while the new base on cold rolled flats, squares and hexagons is 5.50c. A card of extras for size and quantity has been issued. The New York warehouses which recently advanced their warehouse differential from 75 cents to $1 per 100 pounds have gone back to the old method of quoting which was on the basis of 75 cents per 100 pounds. They found it impossible to establish the new prices because the majority of the warehouses continued on the old basis. Although the advance has been abandoned as far as New York territory is concerned, Philadelphia and Baltimore warehouses generally continue to obtain the $1 differential. There is some variation in prices on sheets out of store. The largest interests are quoting 4.57c on No. 10 blue annealed sheets, 5.50c on No. 28 black sheets and 7c on No. 28 galvanized. In some cases, however, dealers are selling galvanized sheets at 6.75c for No. 28, while some warehouses are disposing of No. 28 black sheets at 5.60 and 5.62c.

Big Plate Lots Sought

Shipbuilding Work Calling for Good Tonnages—17,000 Tons Wanted for Export—Round Sales Reported Both at and Below 2.65c

Philadelphia, Sept. 2.—The navy department is opening bids Sept. 9 on 4200 tons of plates for tender No. 3 to be built at the Philadelphia navy yard and about 10,000 tons are involved in four vessels expected to be let shortly for private account. An inquiry for 17,000 tons of ship steel and several smaller lots for export are current. During past week it is reported the Pennsylvania railroad placed approximately 5000 tons of plates at less than 2.65c Pittsburgh this being in addition to 6000 tons bought by this interest a few weeks ago. On the other hand it is learned that 10,000 tons of plates for domestic use were placed here about two weeks ago at full price. A large export company here says it sold 20,000 plates, shapes and bars during August for shipment to various foreign destinations. In addition there has been a considerable improvement in small orders so that eastern capacity now is finding no difficulty in keeping occupied to extent of about 50 per cent of capacity.

Best Demand from Tank Makers

Pittsburgh, Sept. 2.—Manufacturers of oil tanks still are crowded with business, as the oil companies, unable to secure sufficient supplies of line pipe, are being obliged to add considerably to their storage facilities. The prosperity of this industry is accountable for the bulk of current activities in plates, as other consumers still have ample supplies to meet all current demands. Some export inquiries are coming out, but the resultant business is moderate. Prices of plates are not overly strong and probably will not be until the mills are better supplied with orders. The recent quotation of the Carnegie Steel Co., of 2.50c, Pittsburgh, for the plates for battleships, Nos. 49 and 50, is said not to have been the first evidence of price cutting in plates. A valley manufacturer omitted the extra in his bid on 3000 tons for a navy department supply ship several weeks ago, and on recent export business only in a few instances has more than 2.55c, Pittsburgh, been obtained. Fairly large stocks of plates in the hands of shipbuilders who had government contracts which were cancelled remain something of a factor in the situation.

Figure on Vessel Contracts

Cleveland, Sept. 2.—New ship work is before lake yards and inquiries have been put out for 5000 to 6000 tons of hull plates covering this. Inquiries for a number of marine boilers involving 700 to 800 tons additional also are current. This is the first new construction of consequence upon which lake yards in this district have figured in some months. The matter still is in a preliminary stage and details of the character of the work being figured are not available. Local plate mills continue to receive tonnage in an increasing amount. Talk of the shading of prices continues and it is manifest that some mills are willing to make concessions from 2.65c Pittsburgh on an attractive tonnage.

Mills Keeping Busy

Chicago, Sept. 2.—Demand for steel plates is excellent and the leading independent in this district has sufficient business booked to care for practically its entire output for the remainder of the year. As is usual in such cases, small tonnages here and there can be slipped into the schedule occasionally. The leading interest has a heavy order book, but its capacity is that it will not be embarrassed by further inquiry. A recent inquiry for 1150 tons of ship material, mostly plates, for a tankship to be built by the Union Construction Co., San Francisco, has been followed by a definite order and the tonnage will be furnished by the leading interest here.

The National Shipbuilding Co. has placed in the South 3500 to 4000 tons of plates for two colliers.

Tin Plate Record

Established in August—Orders Largest Ever Received in Period

Pittsburgh, Sept. 2.—August was a record month in tin plate. While orders and specifications did not reach the proportions of some other months, they are estimated to have exceeded any other August since statistics have been compiled. This is due to the fact that the big can companies did not specify as freely during the early part of the year as usual because they carried over rather heavy stocks and early estimates of the size of the perishable food crops fell far short of actual production. The result was a rush of orders for immediate shipment which ran for practically the entire two months beginning with July 1. New domestic demands are expected to be lighter from now on, but orders on the books of the manufacturers are sufficient to keep them running practically full for some time and in addition some huge export demands are coming out. The American Sheet & Tin Plate Co. is operating more than 90 per cent of its mills and independent capacity is equally well employed. It is probable that this rate of operation will continue well into the last quarter in marked contrast with most years when this period is the quietest. Tin plate production for the current year probably will fall considerably below that of last year. Because consumers are likely to close the year with depleted stocks, expectations are running strong for a new high record production in 1920. In only two years of the last 20 has production failed to make an advance over the previous year and in both cases the succeeding year more than made good the decrease.

Awards Show Good Total

All Districts Report Liberal Contracts—Railroad Bridge Tonnage Appears—Eastern Shape Mills Average 80 Per Cent Operations

Philadelphia, Sept. 2.—As recent business in plain shapes has been good mills are active. Operations at eastern mills during August were 80 per cent of capacity, or better. One large eastern maker has some rollings closed as much as five weeks ahead. The current demand for ship shapes is considerable. Several small export shape orders were booked during the past week, and several foreign inquiries are out, including one for 4000 tons. Several fair size structural contracts are expected to be closed soon.

Small Jobs Are Let

Boston, Sept. 1.—Small contracts continue to be let but the aggregate of structural steel business on the books of local fabricators has fallen off some during the past week. A storage building for the French Worsted Co., of Woonsocket, R. I., has been let to the Eastern Construction Co. Another storage building, approximately 100 tons, has been awarded the Casper Ranger Construction Co. to be built at Greenfield, N. H. Bids are being taken on many new projects, including a factory at Everett, Mass., for the Boston Fibre Co.; a manufacturing building in Boston, for Alles & Fisher; a hotel at New Bedford, Mass., to cost $300,000, and a steel and wooden storage building at New Haven, Conn.

August Tonnage Satisfactory

New York, Aug. 30.—Reports from all sides indicate that bookings both of the plate mills and of the fabricating shops were better in August than in any previous month this year. One shapemaker says that for the first time since the signing of the armistice, it has had to close rollings in some cases for three or four weeks ahead, due to the heavy business on books. The current shape tonnage consists almost entirely of small orders. Large single lots are few and far between. Despite the recent concession the price of shapes to the navy department, the shape market continues to be maintained at the regular price of 2.45c, Pittsburgh. The sale to the navy had no effect whatever on the regular market.

Bookings Somewhat Better

Pittsburgh, Sept. 2.—Although considerable room for improvement still exists in the demand for shapes, most makers here note a distinct betterment and expect further improvement in view of optimistic reports from the Middle West and West concerning building activities. Mill operations, however, still are at a comparatively low rate and the fabricating shops as a rule could take on considerable business and still not be up to capacity. Fabricators of steel still note an active inquiry. New construction at the plant of the Pittsburgh Valve, Foundry & Construction Co. will require about 800 tons. The New York Central railroad proposes to add 13 stories to its terminal in New York City and has asked for bids on between 4000 and 5000 tons. The market is distinctly in favor of buyers on fabricated material under active competition from shops who need business to keep going, but plain material prices are holding well at 2.45c, Pittsburgh.

New Bids Are Opened

Cleveland, Sept. 2.—New bids on 2100 tons of steel for the Cuyahoga county jail were opened Sept. 2 by the county building commissioners. The Van Dorn Iron Works bid $109.40 a ton, the King Bridge Co. $109.50 and the McClintic-Marshall Co. $114.20. Bids were taken originally in July, the lowest being $111.90 and the only other one received, $123. Both bids were rejected because they exceeded the architect's estimate of $110, although the lowest bidder submitted his offer on a basis of an estimated requirement of 1700 tons, the total bid being $41,000 less than the architect's estimate. The Cleveland public library commission has decided to open bids Sept. 23 on a fair-size tonnage required for the new library building. A bond issue of $2,000,000 was voted previous to the war but recent estimates showed that the present building cost would exceed the figure by about $500,000. It was decided, however, to take bids to determine present costs. New structural business continues to make a good showing. Bids are to be taken in a few days on 4000 tons of structural shapes for a 13-story apartment house. New hotel projects are pending in Ashtabula, Sandusky and Cedar Point, O., while the new Belle Isle bridge project in Detroit is becoming active again. The Standard Oil Co. also is said to be inquiring for a good tonnage of structural shapes for new buildings in Detroit. The Pennsylvania railroad has awarded 500 tons of bridge work at Columbus. The McClintic-Marshall Co. has been awarded the contract for an additional tonnage of 4000 tons for a building for the Kelly Springfield Tire Co., in Cumberland, Md., making the total awarded for this job 8000 tons.

Building Demand Continues

Chicago, Sept. 2.—Numerous building projects continue to come into the market, and a number of them become contracts on the books of fabricators. However, it appears that many of them hang fire a considerable time and that more new projects appear from week to week than are closed. Among tonnages let in the west recently the two largest are for structures on the Pacific coast, the Balfour-Guthrie Co., San Francisco, placing 1061 tons for an office building, and W. R. Rust, Tacoma, Wash., 900 tons also for an office building. Among new inquiries are 400 tons for an addition to the plant of the St. Louis Smelting & Refining Co., Collinsville, Ill., and 268 tons for a warehouse building at St. Louis for the J. I. Case Threshing Machine Co. The National Shipbuilding Corp., New Orleans, which has been inquiring for material for two colliers to be built on the Gulf, has increased the tonnage of shapes from 1700 tons to 3000 tons. Plates for these vessels will be placed with mills in the Birmingham district, but the latter apparently are not in position to furnish shapes.

CONTRACTS AWARDED

Machine shop, round house and office buildings, for Cuban railways, 1400 tons, to Lackawanna Bridge Co.

School buildings, Williamsport, Pa., 300 tons, to Kellogg Structural Steel Co.

Shop and office buildings, Clearfield Bituminous Coal Co., Clearfield, Pa., 400 tons, to John W. Cowper Co., Buffalo.

Tanks for Humble Oil Refining Co., 700 tons; to American Bridge Co.

Mill buildings for J. & P. Coates Co., Providence, 600 tons; to J. H. Tower, Providence.

Bridge for C. N. O & T. P. railroad over Chattanooga river, 2300 tons; to American Bridge Co.

Pennsylvania railroad bridge at Newark, N. J., 500 tons; to American Bridge Co.

Additional tonnage for Kelly-Springfield Tire Co., Cumberland, Md., 4000, making total awarded 8000; to McClintic-Marshall Co.

Theater, Philadelphia, 250 tons; to Montgomery Iron & Steel Co.

Warehouse for John Mansley, Philadelphia, 300 tons; to Montgomery Iron & Steel Co.

Building for John and James Dobson, Philadelphia, 200 tons; to Montgomery Iron & Steel Co.

Building for Jeffrey Mfg. Co., Columbus, O., 2000 tons; to Case Crane & Engineering Co.

Building for Goodyear Rubber Co., Los Angeles, Cal., 5000 tons; to Burger Iron Works.

Building for Lang Body Co., Cleveland, 200 tons; to Fort Pitt Bridge Works.

Building for Worthington Pump Co., Cleveland, 125 tons; to Fort Pitt Bridge Works.

Building for Anderson Motor Co., Cleveland, 125 tons; to Fort Pitt Bridge Works.

Building for Paige Motor Co., Detroit, 1500 tons; to the American Bridge Co.

New hotel Linard, New York City, 4000 tons; to the McClintic-Marshall Co.

Extension to boat shop, Philadelphia navy yard, 800 tons, to the McClintic-Marshall Co.

Chevrolet factory, General Motors Corp., Detroit, 400 tons; to the McClintic-Marshall Co.

Bridge work for the Pennsylvania railroad at Columbus, O., 500 tons to the Mt. Vernon Bridge Co.

Office building for the Balfour-Guthrie Co., San Francisco, 1061 tons; to the Pacific Rolling Mill Co.

Steel frame building for W. R. Rust, Tacoma, Wash., 900 tons, to the Minneapolis Steel & Machinery Co.

Machine shop and extension to foundry No. 2, for the American Steel Foundries, Granite City, Ill., 378 tons; to the Kenwood Bridge Co.

One truss span across Puyallup river, Tacoma, Wash., for the Chicago, Milwaukee & St. Paul railroad, United States Railroad administration, 269 tons; to the American Bridge Co.

Structural steel for improvemnts to the Larrowe Milling Co., Rossford, O., 229 tons; to the Riverside Bridge Co., Martins Ferry, O.

Structural steel for building for the Flambeau Paper Co., Park Falls, Wis., 205 tons; to the Milwaukee Structural Steel Co.

CONTRACTS PENDING

Coal bunkers for American Coke & Chemical Co., Granite City, Ill., 700 tons; bids being taken.

Building for Corn Products Refining Co., Edgewater, N. J., 1800 tons; bids being taken.

Bridge across Allegheny river, for Baltimore & Ohio railroad, 5500 tons; award pending.

Addition to Railway-Mail-Express building at Grand

Central terminal, New York, 4000 tons; award pending.

Theater, Richmond, Va., 250 tons; bids being taken.

Building for Crown Cork & Seal Co., Baltimore, 200 tons; bids being taken.

Tanks for Standard Oil Co., 5500 tons; bids being taken.

Plant addition for the St. Louis Smelting & Refining Co., Collinsville, Ill., 400 tons. Bids asked.

Warehouse for the J. I. Case Threshing Machine Co., at St. Louis, 268 tons. Bids asked.

Extension of plant of Pittsburgh Valve Foundry & Construction Co., Pittsburgh, 800 tons; up for figures.

Jail for Cuyahoga county, O., 2100 tons; Van Dorn Iron Works lowest bidder.

Apartment house, Cleveland, 4000 tons; bids to be taken in few days.

Allan Motor Co., Cleveland, 400 tons; bids being taken.

Public library, Cleveland, tonnage indefinite; bids to be opened Sept. 23.

Bridges for Southern railroad, 500 tons; inquiries out.

Carbon Steel Better

Philadelphia, Sept. 2.—While high-speed tool steel is weak at $1.35 to $1.50 per pound and there is a lack of big buying, the carbon tool steel market is better. Buying has improved. The regular market on standard material is 15c per pound while ordinary carbon tool steel may be had as low as 12 cents.

Ferro Inquiry Broadens

Large Consumers Come Into the Market—English Competition Uncertain—$95 Seaboard Refused

New York, Aug. 30.—Inquiry for ferromanganese has taken a sudden spurt, and several large lots now are before the trade. The Youngstown Sheet & Tube Co. is inquiring for prices on 2000 tons for this year, and the American Steel Foundries wants 1000 to 1500 for the last quarter of this year and the first quarter of 1920. Several smaller inquiries are out, including one for 500 tons for this year. It is still too early to know how the market will be developed by these inquiries. Importers of English ferromanganese are taking an active interest and have cabled their principals for prices. Just how low the English makers will go to take this business is not known. An indication of their position, however, is reflected in the refusal of one English maker within the past week to accept an offer from a western consumer of 1000 tons at $100, delivered, which is equivalent to not more than $95, c.i.f. Atlantic tidewater.

Demand for spiegeleisen continues of small proportions and sales of carloads comprise most of the current business. Practically all of this business is being done at $35 furnace for 18 to 22 per cent. Owing to the lack of business, no test is afforded as to what might be done on an attractive tonnage.

Fair Sales Made in East

Philadelphia, Sept. 2.—Fair sales of 78 to 82 per cent domestic ferromanganese were made during the past week at prices that established the domestic metal at from $105 to $110, delivered. Some business is reported as having been done at $100, but this is not confirmed.

Several Inquiries Come Out

Pittsburgh, Sept. 2.—While sales of ferromanganese have not increased, consumers are more interested. Evidence of this is found in several good inquiries for supplies for shipment in the next 60 days. One of the inquiries is from a valley steel manufacturer and calls for 3000 tons. In view of the impression that consumers were fairly well covered on this material, the appearance of these inquiries is ascribed in some quarters to a canvass of the trade by the agents of English makers. These factors are believed to have some shipments on the seas and are currently reported to have offered 76 to 80 per cent alloy at $100, delivered, Pittsburgh or valley districts. These offers have led consumers to "feel" out domestic producers, who, it is understood, have named a price of less than $110, delivered, which they lately have been quoting on 78 to 82 per cent material.

Only occasional inquiries are coming out for spiegeleisen, while business in 50 per cent ferrosilicon is almost entirely in carload lots. The market on the latter material is not quotable at better than $80, delivered, Pittsburgh. Only one maker, as far as can be learned, is quoting this alloy as low as $80, but in a market as inactive as the present one, it is usually the lowest seller who makes the price.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Aug. 27	23.50	52.375	6.00	7.55	33.00	8.75	41.00
Aug. 28	23.50	52.25	6.00	7.475	33.00	8.75	41.00
uAg. 29	23.50	52.625	6.00	7.475	33.00	8.625	41.00
Sept. 2	23.50	53.75	6.00	7.425	33.00	8.625	41.00

* August shipment from Singapore, c.i.f. New York.
† American Smelting & Refining Co.'s price.
‡ Producers' price. Outside market up from 21.75c to 22.25c, casting 21.75c to 22c.

NEW YORK, SEPT. 2.—Trading in nonferrous metals continued slow with the opening of the new month, though there had been expectations of better inquiry after the holiday for which the trade seemed to wait during the latter part of August. However, sentiment was more cheerful, as the labor situation looked more hopeful, so it may be that buying soon will reassume good proportions. This expectation is backed with the belief that stocks of metal held by manufacturers generally are not large enough to run much longer than 30 days, or through October at the most.

Exchange is a dampening factor also. Ordinarily, about half of the country's copper is exported, but exports now are running only about half of normal, and in some recent months even much less than that. Zinc might also be exported except for exchange. Lead, however, is moving in quantity to South America and the Orient, and as a result the lead market is strong, though domestic buying is not heavy.

Tin is bought actively but mostly in small lots and for nearby use. Solder manufacturers lately have been in the market for good quantities, probably reflecting the good business in tin plate. Exchange makes this metal very uncertain. Today the market was strong, and August-September shipment of Straits tin from Singapore, c.i.f. New York, was quoted at a variety of prices, mostly 53.25c to 54.25c. Spot Straits at New York is 56c and 99 per cent tin 54.50c to 54.75c. The London tin market went up sharply in the past two days. The reason is not yet known, except that it was reported recently that buying for American account had cut into stocks in England.

Copper has been unchanged the past few days at 22.25c for spot and September, delivered, in the outside market, while producers continue to quote 23.50c. A buying movement by brass mills is expected soon. The latter are running at a prosperous rate but new orders on their books have not grown so rapidly in the past few weeks. Brass and copper products are unchanged. Brass sheets are 27.75c, rods 26.75c, seamless tubing 36c, copper sheet 33.50c, seamless copper tubing 37.50c. Deliveries by brass rolling mills now take from a few weeks on certain sizes of tubing and rod carried in stock, to several months.

Zinc continues weak. Japan is buying some prime western. Some high grade sold to domestic consumers at about 8.50c, New York. Price of western is today at 7.40c to 7.45c, St. Louis, for prompt, 7.50c to 7.60c. The market still is ruled by second hands.

Antimony is easier at 8.62½c, New York, for spot. Demand is light.

Other metals are unchanged.

Nickel is unchanged at 41c for ingot, 43c for shot, 45 for electrolytic.

Enlarging Contract Board

Washington, Sept. 2.—The board of contract adjustment is being enlarged to meet growing demands. The work is piling up faster than the present board can handle it, and additions are being made to the personnel, announcement of which is to be made later. Col. John Ross Delafield has been made chairman of the board and Col. Joseph Fairbanks vice chairman. Colonel Delafield succeeds Col. C. B. Garnet, who has left the service to resume the practice of law. Lieut. Col. Edward S. Malone has also retired from the board and left the service.

Export Business is Concentrated

England Now the Only European Purchaser of Importance—Sales to France Practically Impossible While Italy is Buying Little—Chilean Railroad Business Develops—Orient Still Sends Large Miscellaneous Orders

NEW YORK, Sept. 1.—Exporters have settled down to face the serious situation which has arisen as a result of the decided drop in foreign exchange on European countries. The sales which have been possible with these countries in the past have declined sharply and now inquiries are falling off. It is feared some months will elapse before there is a material improvement in the situation. In the meantime attention is being directed to South America and the Orient where the exchange on the United States is at a par or nearly so.

The volume of iron and steel exports however, does not appear to be falling off in the least. The business done during August, which is normally a dull month, was much better than some previous, and some of the exporters are of the opinion that September is going to be much better. This optimistic view is held despite the unfavorable situation in Europe, and is prompted by the volume of inquiries which have been received from other sections of the world.

One of the most gratifying developments is the fact that English export houses now are purchasing in the American market not only for India but also to enable them to fill inquiries which they have received from the Orient. These English merchants are doing their best to retain their old customers in this way. The American houses also have discovered that foreign purchasers are beginning to buy for stock, whereas heretofore their buying has been mainly a hand-to-mouth affair. There is still no future buying, but the sales being made to stock up merchant supplies indicate that a better tone is developing in the foreign markets. The effort of American producers to prevent any undue enhancement in quotations is an aid to this movement. Exporters declare that it is becoming increasingly difficult to obtain supplies.

According to a statement published this week, the Consolidated Steel Corp. has been exporting at the rate of 90,000 tons a month during the first seven months of 1919. Steel men estimate this to be approximately 10 per cent of the total iron and steel exports of the United States. If this is true the exports at this date are running at the rate of more than 8,000,000 tons a year. This figure is larger than a number of steel men had been led to believe, and while it is somewhat startling considering the circumstances, they have no reason to doubt its accuracy. During the month of June iron and steel exports totaled some 600,000 tons and that month was by no means out of the ordinary. Heretofore iron and steel exports have been crowded out by the heavy sales abroad of American food and coal. The tendency now is toward a decided decline in the exports of these commodities which should give a wider opportunity to steel.

England is the only customer of importance in iron and steel in Europe today, and yet the sales made there have been made in small lots. A sale of 200 tons of strip steel is noted. England has also purchased at least 5000 tons of sheets during the past month. The inquiries are coming chiefly from merchants who have discovered that they cannot get their wants filled by their own producers. The volume of such inquiries is good. One house reports that it has sold England approximately 500 tons of bars every week for the past several weeks, and has received inquiries for wire rods and wire aggregating several thousand tons. England is asking for sheets, bars and billets, some of the inquiries mentioned being for approximately 2000 tons of each commodity.

Italy and France are about the poorest of the European market for this country, although Italy has purchased a small tonnage of plates, and has made large inquiries for coal. She is also buying rails, plates and pipe, the recent sales of one house running to an aggregate of 6000 tons. French business has been practically dead, and the exchange situation operates seriously against American producers obtaining any business there. It is reported, nevertheless, that a sale of 500 tons of wire rods was recently consummated with France. An inquiry for 2000 tons of sheets has been received.

An inquiry for approximately 250,000 boxes of tin plate has been received from Germany, while Sweden has sent in inquiries for sheets, bars and shapes aggregating about 1000 tons.

India has been buying both directly and through English export houses. Recent sales included bars, tin plate, pipe and sheets. An inquiry for 50,000 pounds of aluminum sheets has been received from India.

The Oriental business appears to grow despite the unsettled conditions. Japan has been buying heavily of sheets. Orders for several thousand boxes each of tin plate have been received from both Japan and China. Japan has recently sent in a new inquiry for 2000 tons of ship plates. The purchases made by the Orient have consisted largely of bars, plates, sheets, and angles. They range between 200 and 500 tons each, whereas the aggregate, it is said, is very large. Japan has purchased 1000 tons of wire, and 1000 tons of wire rods. Inquiries for 3000 tons of heavy rails have been received from Japan, and China has been inquiring again for nails. There has been a very good bar business with both China and Japan. China has also sent in an inquiry for 580 tons of structurals.

Exporters generally agree that the bulk of the export business today is going to South America and the Orient. The minister of ralroads of Chile has asked for bids on approximately $4,000,000 worth of railroad material. These bids are to be opened Oct. 7. Among the requirements specified are 8500 tons of rails and 1000 tons of accessories. Quotations are also being made to Chile on many locomotives and cars. One house is quoting on 20 cars. Smaller sales of railway material including wheels, plates and rails,, are being made to Chile. Chile annually spends approximately $5,000,000 on her railroads, and would spend $50,000,000 this year on extensions provided credits could be arranged upon a reasonable basis.

One house reports inquiries for 60,000 tons of rails, 20,000 tons of tin plate and for lots of tank plates, sheets, structural shapes, etc., all from South America.

The most aggressive of the export houses, and especially those who were most aggressive in striving to develop French business immediately after the armistice, are today practically deserting the European field. They have turned to South America and the Orient where the most stable business is to be had and where credits and payments can be arranged without great difficulty. On the other hand some of the general foreign trading houses are inclined to desert the iron and steel field entirely. They are almost compelled to do this in view of the growth of the Consolidated Steel Corp. and the United States Steel Products Co.

British Still Turning to America

Settlement of Coal Strike to Have Beneficial Effect on Industry, but Pig Iron Production is Still Restricted, and Steel Consumers Place Larger Orders in This Country — Slow Deliveries Deter Some Buyers

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation street,
Birmingham, Eng., Aug. 15.

SETTLEMENT of the Yorkshire coal strike and a subsidence of the strike fever in Great Britain has come as a great relief to all industries, and particularly those in the iron and steel trade. The latter have been dominated by the coal strike during the past few weeks, and while production of pig iron is not likely to improve for at least a fortnight the settlement of the most troublesome features of the labor situation is expected to have a beneficial effect. Coincident with the coal strike the hot weather has prevented the working of full shifts, while the general steel shortage has reacted upon the demand for pig iron by restricting manufacturing work generally.

Pig iron prices, so far as published quotations show, have not advanced but those who are compelled to buy are required to contract to pay any increase in cost of production which may accrue prior to delivery.

There is still a great shortage of foundry iron in all markets, and business in pig iron is everywhere restricted. Consumers are not inclined to buy more than necessary for the present, while producers in view of fuel difficulties are not seeking business. East coast hematite is reported to be less scarce, although the supply is still short of consumers' needs. There is a plentiful supply of the lower qualities of Cleveland iron but for this there is little demand.

In the Midland district there has been a further damping down of blast furnaces owing to fuel shortage. Pig iron in the northern and midland markets is firm at last week's prices. Cleveland No. 3 is quoted at 160s ($34.56) for the home market and 165s ($35.64) for export, but the quantities available for export are negligible. Lorraine iron is reported to be available in quantities, f.o.b. Antwerp, but difficulties arising out of exchange have prevented English consumers from buying.

Price of Bars Advanced

In the midland market one or two important advances have been established. Puddled bars are now at £17 5s ($74.52) a ton, although there were still some being offered on Aug. 14 at £16 ($69.12). An advance of £2 ($8.64) for 3/8-inch rounds was obtained by a number of leading firms, making the price £27 2s 6d ($117.18), but this advance has not become general. There is an improvement in the demand for galvanized sheets, which are firm at £29 ($124.28), f.o.b Liverpool.

Much activity is reported from Glasgow and the west of Scotland. Iron and steel works have considerably increased output. The shipbuilding orders for the Clyde have greatly strengthened demand for all kinds of ship plates and angles. The west of Scotland quotations are: Boiler plates, £22 ($97.04) per ton; ship plates, £18 15s ($81); angles, £18 5s ($78.84), all net and delivered in the Clyde area. The home price of black sheets has been increased by 10s ($2.16) a ton, making the basis price for 3/16-inch sheets £22 10s ($99.20).

Prices in the South Wales tin plate trade remain firm. Good inquiries are reported from France, Italy and Portugal. It is stated that of a recent order of 150,000 boxes of all sizes a portion has been placed in Wales. Most local works are booked up to the end of September. The price of tin and sheet bars as regulated by the South Wales Siemens Steel association remains at £14 ($60.48) but the market is firm. Tin plates for the basis size I. C. 20 x 14, 112 plates, 108 pounds, are being quoted at 35s 9d ($7.58) to 36s ($7.64) per box and the tendency is considered to be upward. Galvanized sheets at Welsh works are quoted at £28 10s ($123.12) for 24-gage in bundles. Inquiries are coming in from the Far East and also from South America, chiefly for thinner gages. The returns of shipments of tin plates show 43,048 boxes were shipped last week as against 93,163 boxes the previous week, while the stocks amounted to 252,100 boxes, as compared to 214,252 for the week preceding and 103,539 for the corresponding week of 1918.

Conditions in the Midlands still tend to turn the thoughts of buyers to America. One of the latest examples is the purchase by a large firm of constructive engineers of American structural steel. The prices are said to be substantially below those of home steel works, and large tonnages are now on the way. The difficulty as to freight charges and delivery is considered to be the only obstacle to a large development in this direction. The import of finished bars from America is assisting a number of firms in meeting the difficulties encountered by steel users due to the shutting down of a large Welsh steel concern. A curious result of the tendency to look to America is reported in this district. At certain mills the steelmaking plants were shut down in reliance upon American supplies. The purchases were readily made at advantageous prices as compared with those of British steelmakers, but deliveries were so slow that the firms had to seek the assistance of rival British steel works to avert the stoppage of their finishing mills.

Purchasing from American concerns and foreign trade dealings in general are not only hampered by the shortage of shipping tonnage but are further complicated by the financial situation. A number of prospective buyers of American steel here are said to have been deterred by the demand for cash against bills of lading. As regards rates of exchange, these have moved substantially in favor of Britain as far as France, Belgium, Italy and Portugal are concerned, but under present conditions this does not help Britain. At the same time New York has again moved heavily against us, and the value of the British pound in New York is $4.32 on which basis the American price equivalents are quoted in this article.

Points to Need of More Production

Foreign competition in the iron and steel trade has been the subject of speeches by many leading members of the labor party this week. Mr. Roberts, food minister, as president of the Industrial League convention dwelt strongly on the importance of increased output and decreased cost of production if foreign trade is to be maintained, and pointed out that without foreign trade wages must go down.

Pig Iron Increases 12.5 Per Cent

August Output Continues on Rise for Third Consecutive Month — Nonmerchant Production is Responsible for Large Gain of 302,369 Tons — 23 Stacks are Blown in During Month

PRODUCTION of coke and anthracite pig iron in August increased at practically the same rate as during July, the percentages being 12.5 and 13.3 respectively. August concludes the third month to show increased production after a steady decline for eight months. The month's output represents 77.5 per cent of the high mark production of September, 1918, and is the highest figure reached since March of this year.

AVERAGE DAILY PRODUCTION

	1919	1918	1917	1916	1915
Jan.	106,654	77,523	101,930	102,319	51,323
Feb.	105,270	82,794	94,641	106,157	59,521
March	99,614	103,548	105,026	107,343	66,009
April	82,479	109,112	110,936	107,517	70,484
May	67,991	111,351	110,119	108,535	72,747
June	70,467	110,538	108,675	107,127	78,998
July	78,200	105,954	107,659	103,907	82,687
Aug.	87,954	108,983	104,483	103,156	89,510
Sept.	.....	113,774	104,691	106,935	94,478
Oct.	.....	112,335	106,332	113,167	100,656
Nov.	.....	111,595	106,620	110,593	101,174
Dec.	.....	110,602	93,077	102,715	103,278
Av.	87,328	105,293	104,562	106,610	81,022

The August total was 2,726,581 tons, a gain of 302,369 tons over the July total of 2,424,212 tons. Daily production was 87,954 tons, an increase of 9754 tons over the July average output of 78,200 tons. Production is still continuing to rise at a greater rate than that at which it fell.

Nonmerchant or steel works production in August was responsible for the greater part of the total gain, the increase in tonnage being 262,223 tons out of the total of 302,369 tons. The total steel works output was 2,171,760 tons compared to 1,909,537 tons in July. Nonmerchant daily production averaged 70,056 tons compared to 61,598 tons during the previous month, a gain of 8458 tons. Merchant iron production was 536,682 tons, a gain of 43,177 tons over the July figure of 493,505 tons. The daily output of merchant iron of 17,312 tons showed a gain of only 1392 tons over the July average of 15,920 tons.

Active stacks in blast on Aug. 31 totaled 263 or a gain of 23 stacks over the July number of 240. This net increase was made up of practically equal gains in merchant and steel works stacks. Of steel works stacks, 16 were lighted and 4 were put out of blast, a net increase of 12. Of merchant stacks, 17 were lighted and 6 were blown out, a net gain of 11. During July the greater number of stacks blown in were steel works furnaces.

The total pig iron made in the first eight months of the year is 21,188,781 tons compared to the totals for the same periods of 1918 and 1917 of 24,759,915 tons and 25,643,971 tons respectively.

Spiegeleisen production showed a slight gain in August of 349 tons, with a total of 8179 tons compared to the July total of 7830 tons. Ferromanganese production, however, fell from 13,340 tons in July to 9960 tons in August, a loss of 3380 tons.

The Milton Iron Co., Wellston, O., blew out its Milton stack on Aug. 18. A new stove, 18 x 85 feet, and a draft stack, 6 x 150 feet, will be built. The furnace and two old stoves will be relined.

AUGUST PIG IRON

States	No. of stacks	No. in blast last day of month: Aug.	July	Total tonnage made: Merchant	Nonmerchant	Totals: Aug.	July
Pennsylvania	159	99	90	156,306	940,462	1,096,768	913,212
Ohio	80	61	55	98,267	587,330	685,597	623,049
Alabama	45	24	20	95,171	74,705	169,876	142,772
Virginia	19	6	5	16,891	.....	16,891	15,266
New York	28	17	19	74,094	109,593	183,687	175,049
New Jersey	5	1	1	5,575	.....	5,575	8,853
Illinois	25	20	18	28,137	209,800	237,937	191,428
Colorado	6	3	3				
Indiana	16	15	15	24,041	208,281	232,322	261,347
Maryland	4	2	1				
Wisconsin	6	3	2				
Kentucky	7	2	2				
Tennessee	16	2	2	15,788	29,608	45,396	28,870
West Virginia	5	4	2				
Washington	1	0	..				
Georgia	2	0	..				
Texas	1	1	1				
Minnesota	3	3	2	22,412	11,981	34,393	43,196
Michigan	3	1	2				
Missouri	1	0	..				
Spiegel—All states	..	..	..	.....	.....	8,179	7,830
Ferro—All states	..	..	..	.....	.....	9,960	13,340
Totals	432	263	240	536,682	2,171,760	2,726,581	2,424,212

Navy Contracts Awarded

Washington, Sept. 2.—The navy department has awarded to the Carnegie Steel Co. contracts for approximately 25,500 tons of plates, shapes and bars and to the Phoenix Iron Co, through R. C. Hoffman & Co., contract for 2500 tons of channels, all of this material for battleships Nos. 49 and 50. It was on this tonnage that Carnegie quoted 2.50c, Pittsburgh, for plates, 2.40c for shapes and 2.35c for bars. The Phoenix bids were at the levels established by the late industrial board and which have been the current market prices.

MONTHLY PRODUCTION

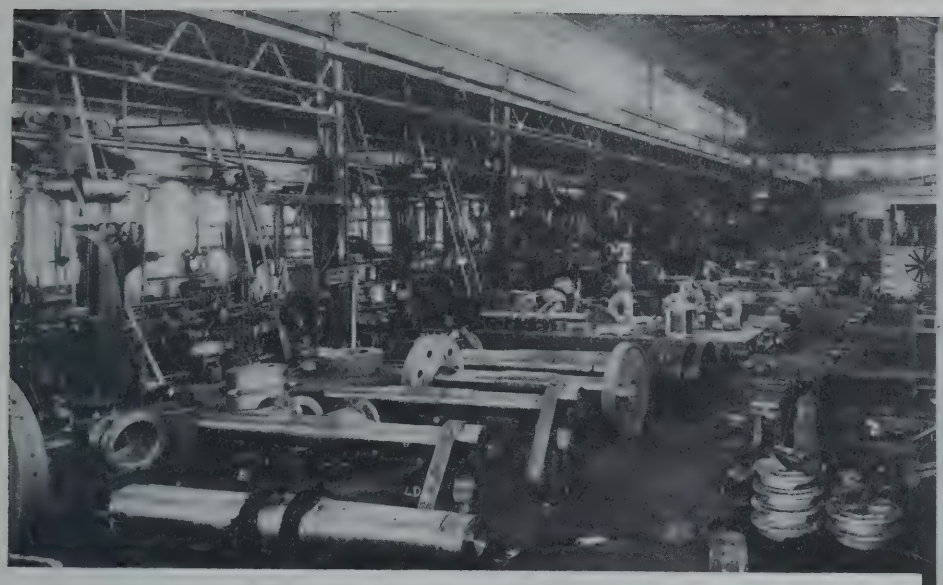
	1919	1918	1917
January	3,306,279	2,403,227	3,159,839
February	2,947,555	2,318,242	2,649,935
March	3,088,023	3,209,996	3,255,813
April	2,474,374	3,273,355	3,328,061
May	2,107,729	3,451,884	3,413,677
June	2,114,028	3,316,148	3,260,234
Total 1st half.	16,037,988	17,972,852	19,067,559
July	2,424,212	3,408,584	3,337,442
August	2,726,581	3,378,479	3,238,970
Total 8 months	21,188,781	24,759,915	25,643,971
September	.....	3,413,223	3,140,742
October	.....	3,482,392	3,296,286
November	.....	3,347,844	3,198,597
December	.....	3,434,114	2,885,380
Total 2d half..	.....	20,464,636	19,097,417
Grand total..	21,188,781	38,437,488	38,164,976

Made President's Aid

William Thompson has been named as assistant to President W. P. Palmer of the American Steel & Wire Co. with headquarters at Cleveland, effective Sept. 2, succeeding the late Alvah S. Chisholm. Mr. Thompson has been attached to the office of the president of the company for many years.

Buys 30-Mile Railroad

New York, Aug. 30.—The New York office of Wilkoff Bros. recently bought the Elk & Little Kanawha railroad, with a line of about 30 miles of track and with headquarters at Gassoway, W. Va. The purchase included about 2200 tons of steel rails and equipment, including bridges, buildings, locomotives, cars, etc. The Wilkoff Co. already has sold one-half of the rail tonnage for shipment to the Far East.



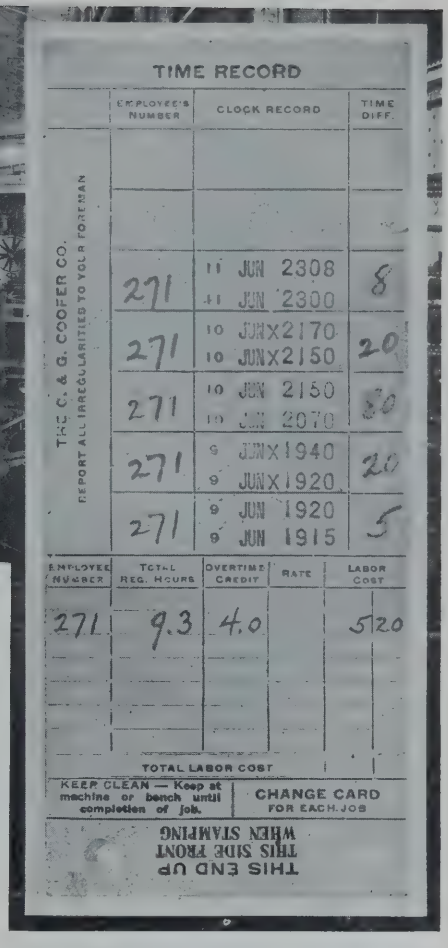


FIG. 1—PERIODOGRAPH CARD, INDICATING HOW TIME OF OPERATOR IS RECORDED

Controlling Production in a Jobbing Shop

BY E. L. SHANER

FUNDAMENTALLY, manufacturing consists of obtaining materials, fashioning them into suitable shapes and assembling them into the finished product. Primitive man, desiring to construct a knife or other tool, looked for metal or stone for the blade and wood or bone for the handle. Having secured the materials, he worked them into the desired shapes. Finally, he fastened the various parts together, thus completing the job.

Unconsciously, the man reduced to such methods follows the sequence of these simple operations instinctively, yet it is a singular fact that in the complex ramifications of modern industry, manufacturers often lose sight of these fundamenatls. In large plants, work on certain jobs frequently is held up because an item of material has been overlooked. Costly delays often occur because work is not properly planned in advance of its execution. Because of these deficiencies in many present methods of manufacture, plant executives are realizing more and more that control of production is essential to

PRODUCTION LIST

Page 13

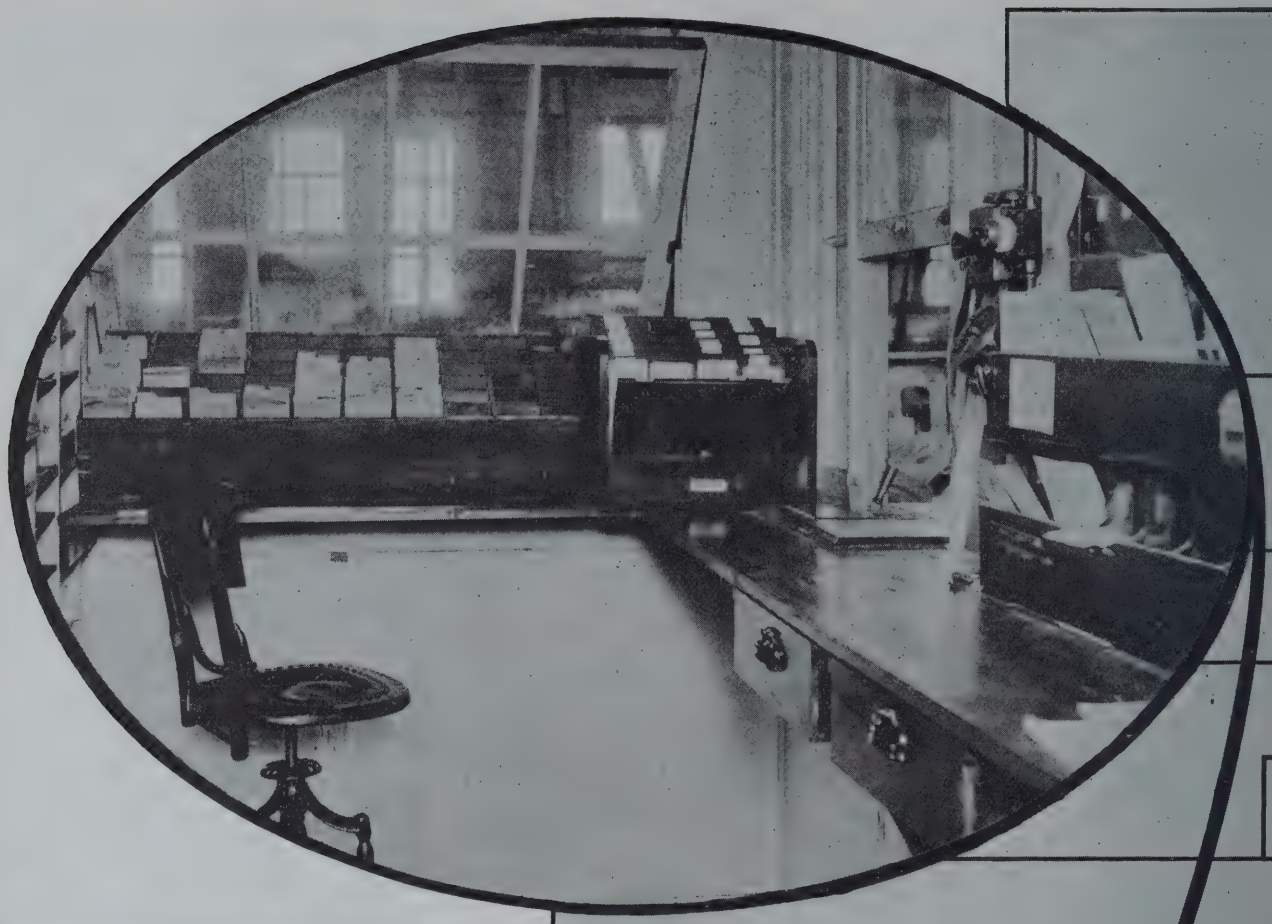
22 - 24" H. P. "Gravity" Valve Gear
"Short Cut-off"
Regular

ORDER NO. ____

A ✓ B-848 Assembly. B-1059 Details. A-3356-A Pick-up Blocks

Drg. No.	No.	Mat'l	Names of Parts		✓
B-848 Assembly			H.P. VALVE GEAR		
B-1059 Details					
			CAST IRON		
B-1059	2	C.I.	H.P. V.G. Bell Cranks, Marked _____ Job		
"	2	"	" " " Steam " " " _____ "		1
"	2	"	" " " Exhaust " Centers		5
"	1	"	" " "Front" Cam Rirg		10
"	1	"	" " "Back" " "	16112	13
				16113	14
			STEEL CASTINGS		
B-1059	2	S.C.	H.P. V.G. Roller Arms	16313	20

FIG. 2—THE PRODUCTION LIST ISSUED BY THE ENGINEERING DEPARTMENT NAMES EVERY ARTICLE NEEDED TO COMPLETE AN ORDER



MACHINE SHOP ORDER

Dept. No. E-3 Mch. No. TL

Order No. 4000

Name Bolt 7/8 x 11-1/4 with 1-2

Dwg. No. A-22469-X Item

Gauge or Jig No.

Material Steel

No. of Pcs. Req. 1

Operation No. 1 Name TL

Standard Time Hrs Tenths

Actual Time " "

Bonus Time " "

Next Op. Dept. Mch.

Del. to Fin. Stock

SPECIAL INSTRUCTIONS

Sq. Hd. Rough Bolt

FIG. 3—A VIEW IN ONE OF THE DISPATCH OFFICES. FIG. 5—FLOOR PLAN OF THE C. & G. COOPE
FIG. 4—(AT THE LEFT) ONE SIDE OF THE TIME CARD SERVES AS A MACHINE SHOP ORDER

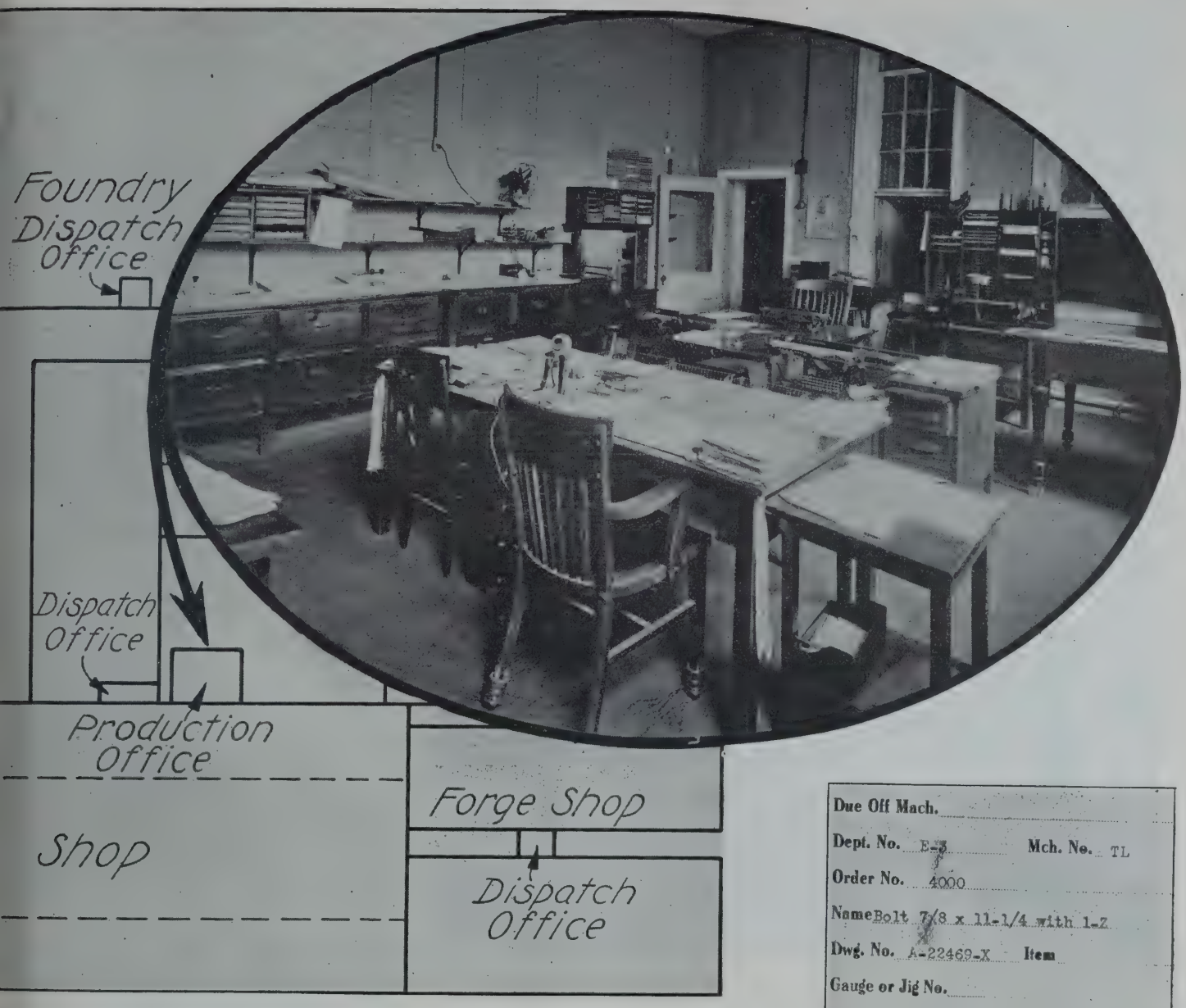
successful operation. An adequate system of control keeps the management constantly informed of conditions in the plant and permits intelligent supervision of operations. The progress made on any job may be ascertained at a glance, and accurate cost data are always available.

Many manufacturers engaged in multiple production of standard articles are employing control and cost systems in their plants. Factory control is an acknowledged success in this field, and perhaps that fact is partly responsible for the belief, generally held by many plant managers, that the system is not adapted to jobbing shops and plants where scarcely, if any, duplicate work is done. That production control can be exercised efficiently and to unusually good advantage in such an establishment, is proved by the experience of the C. & G. Cooper Co., Mt. Vernon, O. This company operates a large foundry and machine shop and builds large gas and steam engines, forging presses, rolling mill and general machinery. The majority of these machines are built to special specifications, there being very little duplicate work in the shop.

For more than four years, the company has employed a system of controlling production, which, in addition to greatly increasing the efficiency of operation, also has enabled the management to obtain costs with simplicity, efficiency and accuracy.

Company Has Interesting History

The history of the C. & G. Cooper Co. dates back to 1833 when Charles and Elias Cooper erected a foundry at Mt. Vernon. In order to finance the undertaking, Charles Cooper sold one of his three horses for $50, accepting a note payable in coal for that amount delivered at Zanesville, O. This note was exchanged for another, payable in



LANT SHOWING LOCATION OF PRODUCTION AND DISPATCH OFFICES. FIG. 6—PRODUCTION OFFICE
IG. 7—(AT THE RIGHT) MOVE ORDER, WHICH IN PART IS DUPLICATE OF MACHINE SHOP ORDER

paper at wholesale, which Mr. Cooper traded to P. A. Taylor & Co., Granville, O., for the bottom and staves for a cupola. The foundry material was moved from Zanesville to Mt. Vernon in November on two wagons. A drive propelled by a horse was built to operate the cupola fan. In 1836, a small 6 x 24-inch steam engine was built to operate the fan and since that time, the C. & G. Cooper Co. has been engaged in building engines and heavy machinery.

Production Control Becomes Necessary

For many years the business progressed favorably without any definite attempt being made to control production or to arrive at exact costs. The company successfully survived the panics of 1837 and 1857, although it suffered losses in the latter year on account of the failure of several railroads for which the company was building locomotives. In more recent years, when competition became a more prominent factor in the business, it was apparent that more accurate costs must be obtained and production must be better controlled if the company was to engage in the large amount of work offered. This desire to systematize the operations of the plant resulted in 1915 in inaugurating a system of cost finding and production control. Prior to that time the company was satisfied to know its approximate costs and its earnings or losses annually; now it receives the cost information at the completion of each job and is able to present a monthly profit and loss statement.

Under this system, when an order is received by the company, a copy is sent to the engineering department, which prepares a production list, showing the drawing numbers, pattern numbers, description of materials, and names of parts of all articles required for the

Due Off Mach. .....

Dept. No. E-3 Mch. No. TL

Order No. 4000

Name Bolt 7/8 x 11-1/4 with 1-Z

Dwg. No. A-22469-X Item

Gauge or Jig No. .....

Material Steel

No. of Pcs. Req. 1

Operation No. 1 Name TL

Next Op. ..... Dept. ..... Mch. .....

INSPECTED Del. to Fin. Stock

Sq. Hd. Rough Bolt

INSPECTOR .....

Variations from Instructions or Dimensions Must Be Noted Above.

AFTER LAST MACH. OPERATION GIVE FINISHED WGT.

JOB STARTED .....



FIG. 8—OFFICE OF COST DEPARTMENT, WHERE CARDS ARE EXTENDED, ASSEMBLED AND FILED

completion of the order. This information appears on a blue printed sheet 8½ x 11 inches, one of which is shown in Fig. 2. The sheets containing lists of all the parts for one job are bound together in booklet form and sent to the production department.

Upon receipt of the production list, requisitions are immediately issued for the castings, forgings and other materials necessary for the completion of the order. At the same time, the head of the production department calls the foremen of the various operating departments to confer on the routing of the job through the plant. The foremen carefully study the production list, and after discussing the problems involved, determine upon a plan of handling the job. The plan of routing which they adopt is set down on a detailed time and routing record, as shown in Fig. 9. This form provides for the print number, the item, the name and description of the article, the material of which it is made, the number required and the department and machine on which each operation is performed. A number of abbreviations, shown in the illustration, simplify the notations on this routing record.

The detailed time and routing record represents one of the greatest labor and money-saving features of the control plan adopted by the Cooper company. The preplanning of the job, performed as it is through collaboration of foremen of the various departments, tends to prevent discord as the work goes through the shop. It also insures that each detail will be more carefully considered than if the routing were left to a single department. Moreover, since each foreman has had a hand in planning the work, he feels under obligation to make his work good by living up to the schedule. This practice of planning work beforehand has contributed largely to the success of the system of plant control.

After the detailed time and routing record has been prepared, part of the information is entered on a form known as a controlling record of patterns, material and labor. This form will be mentioned in greater detail later. At the same time the controlling record is prepared, a 3¼ x 8-inch card, similar to that shown in Fig. 4, is made out for each operation for each article required to complete the job. A pink slip of paper of the same size as the card and containing the same information, accompanies each card. The cards serve as shop orders and the pink slips as move orders.

The cards, with their pink duplicates, of all operations of the same piece are fastened together and held in suitable files in the office of the production department until the material for the job arrives in the shop. Each group of cards and pink slips comprises the complete routing of a certain piece.

When advised that the material for a certain job has been received, the production department sends the shop or-

DETAILED TI

FOR ..... DESCRIPTION.....

PRINT	ITEM	ARTICLE	ORD. BY	MAT.	No. REQD.	OPERATION No. 1 Op.	Dept.	Mch.	Allowed	Actual	Op.	OPE Dept.
A-22469X		Bolt 7/8x11½ with 1-2		Steel	1		3	TL		Sq.Hd. Rough		Bol
A-22470-Q		Jack Screw		Steel	1		H	Fg.				4

TI

FOR .....

PR

DESCRIPTION .....

CONTROLLING RI

ORDER RECORD Date	From	Prom. Del.	MATERIAL RECEIVED RECORD Shipped or Cast	Received	Condemned or Transferred	REF. NO.	DRAWING NO.
							A-22469X
							A-22-4700

FIG. 9—THE DETAILED TIME AND ROUTING RECORD IS MADE OUT AFTER THE FOREMEN OF T
TION. FIG. 10—CONTROLLING RECORD OF PATTERNS, MATERIAL AND LABOR, ON WHICH T

der cards to the various dispatch offices. The location of the production office, dispatch offices and the various departments is shown in Fig. 5. It will be noted that in some cases one dispatch office serves for two departments. Each dispatch office is in charge of a dispatch clerk and is provided with a feeder box for holding cards representing jobs ready to be worked; a cabinet made by the McCasky Register Co., Alliance, O., for holding cards of jobs in operation; and a periodograph register made by the Gisholt Machine Co., Madison, Wis., for stamping on the cards the time each operation is started and stopped. As the cards and their duplicates are received by a dispatch clerk from the production department, they are placed in the feeder box where they are sorted according to jobs. As the time for doing the work on a certain job in the shop approaches, the card is removed from the feeder box and placed in the McCasky cabinet. Each metal divider of this cabinet carries a tab showing the number of a certain machine. The card of the work being done on that machine is inserted in the cabinet directly under the machine number. The cards for the next jobs for that machine are placed to the right of the number. The dispatch clerk depends upon the position of the cards to determine the sequence in which the jobs are to be handled on a particular machine.

When a workman completes a job and is ready for another, the foreman of the department notifies the dispatch clerk that the job is completed and the workman is starting another. The dispatch clerk then takes the card for the completed job from the McCasky cabinet and rings the man off the finished job on the periodograph register. He then immediately rings the man in on the card for the next job. The workman has previously been provided with the necessary blue print and instructions, and the periodograph cards have been carefully arranged in the proper sequence.

SUMMARY OF COST OF JOB

Description .....

For .....

Date of Contract ..... *Date of Shipment* .....

MATERIAL	RATE	ORIGINAL MATERIAL ROUGH WGT.	ORIGINAL MATERIAL FINISH WGT.	ORIGINAL MATERIAL AMOUNT	REPLACE MATERIAL ROUGH WGT.	REPLACE MATERIAL FINISH WGT.	REPLACE MATERIAL AMOUNT
Iron Castings							
Iron Castings Bought							
Steel Castings							
Brass Castings							
Home Forgings							
Forgings Bought							
Structural and Plate							
Stores							
Miscellaneous							
Boxing and Shipping Lumber							
TOTALS							
						TOTAL MATERIAL	

LABOR	PRODUCTIVE HOURS	FLAT LABOR	INCLUDING BURDENS	REPLACE OPERATIONS FLAT LABOR	REPLACE OPERATIONS INCLUD. BURDENS
Engineering Dept. A					
Pattern & Wood Depts. B&K					
Machine Depts. E, F, G, L&N					
Forge Dept. H					
Pipe and Tin Dept. J					
TOTALS					

JOURNAL CREDITS			
		TOTAL LABOR	
		FACTORY COST	
Stores		Administrative Expense ..... %	
Work in Progress		Selling Expense ..... %	
Factory Overhead			
Selling Expense		COMMERCIAL COST	
General or Admin. Expense		Freight	
		Profit or Loss	
TOTAL			
		SELLING PRICE	

FIG. 11—COSTS FROM RECORDS SHOWN IN FIGS. 12 AND 14 ARE SUMMARIZED ON THIS FORM

AND ROUTING RECORD

ORDER No. 4000

ROUTED .....

No. 2		OPERATION No. 3					OPERATION No. 4					OPERATION No. 5					OPERATION No. 6			
d	Actual	Op.	Dept.	Mch.	Allowed	Actual	Op.	Dept.	Mch.	Allowed	Actual	Op.	Dept.	Mch.	Allowed	Actual	Op.	Dept.	Mch.	Allowed	Actual
			4	10				4	D											

. & G. COOPER CO.

ICTION DEPARTMENT

IS OF PATTERNS, MATERIALS AND LABOR ORDER NO. .....

ARTICLE	MAT.	NO. REQD.	PATTERN NUMBER	MACHINE SHOP RECORD	DEL. TO
Bolt 7/8 x 11½ with 1-Z	Steel	1		3-TL	
Jack Screw	Steel	1		H-Fg. 4-L 4-10 4-D	

'ARTMENTS HAVE CONFERRED ON THE BEST WAY OF HANDLING A JOB. IT PROVIDES FOR EACH OPERA-OGRESS OF A JOB IS SHOWN BY CHECKMARKS WHICH INDICATE COMPLETED OPERATIONS

The periodograph register records on the card the day and month, and the time in tenth-hour periods, instead of hours and minutes. It is only necessary to insert the card in the periodograph and pull the lever once to print this information. Perforations prevent the card from being inserted upside down and make it impossible to stamp one record over another.

Inasmuch as the shop order, or periodograph card, is the keystone of the entire system of production control and cost keeping, the apparatus which enables the register to properly stamp the card should be mentioned. All of the registers, one of which is shown in Fig. 3, are controlled by a centrally located clock, similar to that shown in Fig. 13.

The apparatus is adjusted so that the time is stamped on the card in terms of 6-minute periods. The first period begins on the first day of each pay period, and other periods are numbered consecutively until the end of the

pay period. Referring to Fig. 1, it will be noted that workman No. 217 started a certain job at period 1915 on the 9th of June. He worked until period 1920 and continued until period 1940, the elapsed time from 1920 to 1940 being overtime, as designated by the cross. On June 10 the man worked 80 periods, an equivalent of 8 hours, and 20 periods, or 2 hours overtime. As the periods represent tenth hours it is easy to compute the net time consumed, and as they are counted consecutively every fraction of each workman's time can readily be accounted for.

In case a piece of work is spoiled, a blue card similar to the machine shop order is made out and used. All forge orders appear on green cards which are similar in all other respects to the shop order already described. At the end of the month, the original card of each operation which is unfinished is turned in to the general office in order to balance the payroll, and to check against in-and-out cards. A duplicate is prepared which follows the work throughout the next pay period or until the job is finished. The time of all men engaged on nonproductive labor is kept upon general purpose periodograph cards. Cranemen, sweepers, electricians, oilers and repair men use these cards.

When an operation is finished, the dispatch clerk takes the pink slip from the feeder box and gives it to a trucker as his order to move the material to the department or machine where the next operation is to be performed. Work that is completed and ready for assembling, is sent to the finished stock room, which is a repository for finished goods awaiting assembly.

When an operation is completed, the dispatch clerk sends the card to the production department. Here it is checked against the form known as the controlling record of patterns, material and labor.

This record, a copy of which is shown in Fig. 10, shows the drawing number and a description of each article, the kind of material from which it is made, the number of pieces required, and under the heading "Machine Shop Record," a list of the various operations. As the card for each operation is returned to the production department, the operation is checked off in the last column. By referring to this control record of patterns, materials and labor, it is possible at a glance to determine

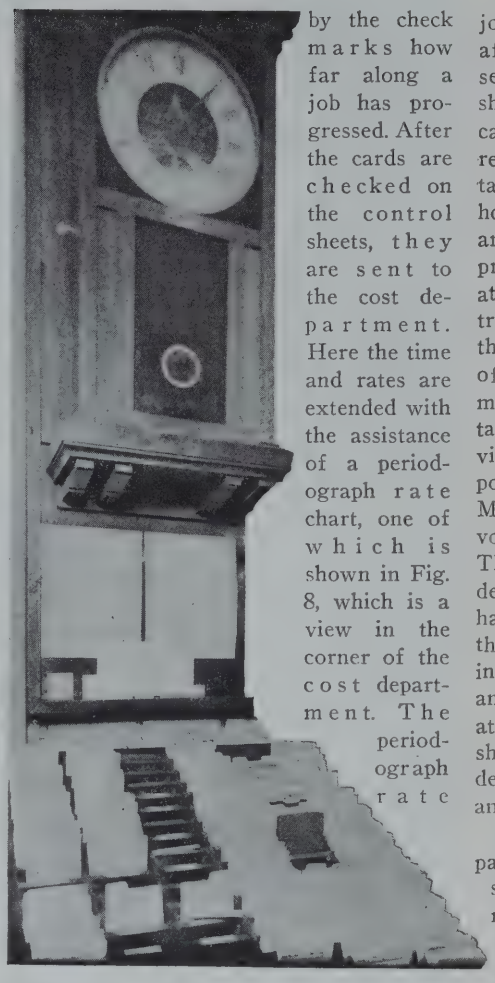


FIG. 13—CLOCK WHICH CONTROLS PERIODOGRAPH REGISTERS. (BELOW) FEEDER BOX IN A DISPATCH OFFICE

by the check marks how far along a job has progressed. After the cards are checked on the control sheets, they are sent to the cost department. Here the time and rates are extended with the assistance of a periodograph rate chart, one of which is shown in Fig. 8, which is a view in the corner of the cost department. The periodograph rate chart enables the operator to determine the labor cost for any number of periods at the various rates. The operator is also aided by a card system index which shows for each workman, the number, name, rate of pay for eight hours and rates for overtime. After the time on the card has been extended and the labor cost inserted as shown in Fig. 1, the values are transferred to the proper jobs or account number and the cards after having been classified and assembled, are placed on file in the rack shown in Fig. 8. The items from the cards chargeable to jobs are copied directly onto a record known as the detailed direct labor cost record. The hours and labor costs from the cards are entered on this sheet in the spaces provided. Information from this sheet at the completion of the job is again transferred to another record known as the summary of cost of job. The cost of material is entered onto this summary from a record known as the detailed material cost record which previously has been made up from reports sent to the cost department. Material records are made from invoices, store stocks or foundry costs. The direct labor is entered from the detailed direct labor cost record which has just been mentioned. After adding the factory overhead to the direct labor, indirect charges such as administrative and selling expenses are added as shown at the bottom of the summary cost sheet. Various forms used in the cost department are shown in Figs. 12, 14 and 15.

Another form used by the cost department is the repair stock order cost sheet, which contains the information regarding labor, material and indirect costs of repair jobs and stock orders.

Information relative to labor distribution, stores distribution and invoice payments is accumulated under account or job numbers and given to the general bookkeeper monthly for use in the controlling journal. The monthly profit and loss statement is made up from the entries in the controlling journal which is ruled to take the following accounts: Accounts receivable and payable; stores, including finished stock; work in progress, divided into material, labor and expense; administrative or general expense, and selling

For .....

Description .....

THE C. &

DETAILED :-:

THE COL. B. B. MFG. CO. 22440 A

ENGINEERING A			PATTERN AND WOOD SHOP B and K			MACHINE SHOP E - F Machine Tool Operators			
Hours	Flat Labor	Bonus	Hours	Flat Labor	Bonus	Hours	Flat Labor	Tool Hour Charge	Bonus

FIG. 14—RECORD ON WHICH DIRECT LABOR CHARGES ARE COLLECTED FROM PERIODOGRAPH CA

FOR.....

DESCRIPTION.....

THE C. & G. COOPER COMPANY

DETAILED - MATERIAL - COST RECORD

ORDER No.....

PRINT	ITEM	ARTICLE	MAT	No. Reqd.	Pattern No.	ORIGINAL MATERIAL Ordered From	Invoice Date	Rate	Rough Weight	Finished Weight	Amount	REPLACE MATERIAL Ordered From	Invoice Date	Rate	Rough Weight	Finished Weight	Amount

FIG. 12—DETAILED RECORD ON WHICH MATERIAL COSTS FOR EACH JOB ARE ASSEMBLED

expense. The system of production control is operated in the foundry department of the C. & G. Cooper Co. in a manner similar to that of the machine shop department. Although the work of the foundry consists of odd jobs, there being very few operations which are duplicated, the system has met with the utmost satisfaction. An individual cost is secured on every casting produced. Instead of the general purpose cards for nonproductive foundry labor, a special card is used for workmen who are engaged on cleaning castings, pouring metal, handling sand and doing other work which cannot be charged directly to any particular job. When the present system was inaugurated some of the workmen looked upon it with suspicion, believing that it was designed to thrust additional hardships upon them. However, as they became used to this new system, they discovered that in reality it saves time for them and now that they realize the accuracy with which this method keeps track of their earnings, they are strongly in favor of it.

The present officers of the C. & G. Cooper Co. are D. B. Kirk, president; B. B. Williams, vice president and general manager; F. H. Thomas, treasurer and manager of sales; Z. E. Taylor, secretary and assistant general manager; N. L. Daney, assistant treasurer and auditor, and B. L. Larsen, general superintendent. During the war the company successfully completed a contract for 3-inch shells and constructed a large number of special machines for munitions making. Among these were nearly 50 large forging presses. The company also has successfully executed a large order for the Emergency Fleet Corp. for marine engines. The above equipment was built in addition to the regular line of steam and gas engines. It is a significant fact that owing to the system of cost keeping in effect in its plant, the C. & G. Cooper Co. has been unusually successful in securing prompt and satisfactory settlement for its government work. Increased production and earnings have been secured and the company has been able to carefully analyze various branches of its business and to determine accurately what work is best fitted to its plant and organization.

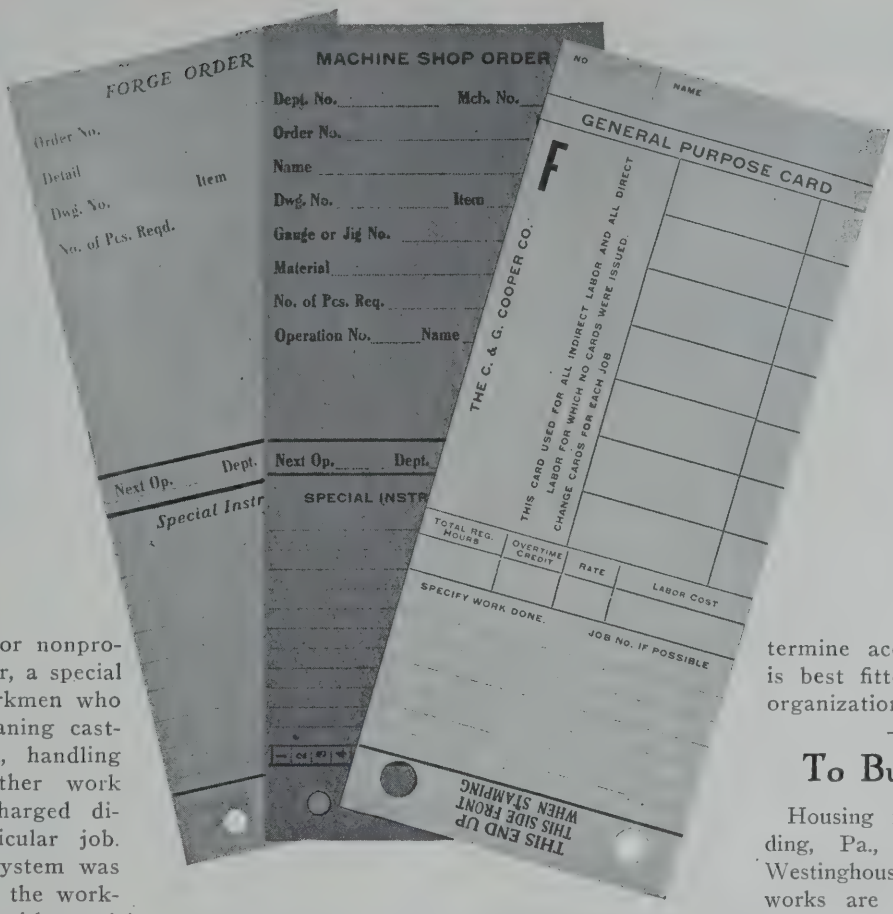


FIG. 16—THREE KINDS OF PERIODOGRAPH CARDS: FORGE ORDER (GREEN); MACHINE SHOP ORDER FOR SPOILED WORK (BLUE); AND GENERAL PURPOSE CARD FOR INDIRECT LABOR

To Build Homes

Housing facilities at Wilmerding, Pa., the home of the Westinghouse Air Brake Co.'s works are to be increased by the erection of a number of dwellings for employes. Official announcement is made of the organization of the Westinghouse Air Brake Home Building Co., with a capital of $1,000,000 to transact all business relative to real estate and dwellings which have been transferred to this company by the Westinghouse Air Brake Co. It includes the ownership of over 400 houses and considerable vacant property. Since the air brake company built its first houses for employes in 1890 there has never been an increase in rents and the new company will carry out the same policy.

The Van Dorn & Dutton Co., Cleveland, exhibited the operation of a Gleason spiral bevel-gear generating machine on a prominent street corner in Cleveland. The nine operations in making the gear were also displayed and the gears themselves as fast they were produced were applied on an actual order from a prominent builder of tractors.

COOPER COMPANY

ECT LABOR :-: COST RECORD

Order No.

N	FORGE SHOP H						PIPE AND TIN SHOP J		
on-Machine Operators	Machine Tool Operators				Non-Machine Operators				
Flat Labor Bonus	Hours	Flat Labor	Tool Hour Charge	Bonus	Hours	Flat Labor	Bonus	Hours	Flat Labor	Bonus

HIS FORM IS RULED SO THAT THESE CHARGES ARE LISTED UNDER DEPARTMENT HEADINGS

THE C. & G. COOPER CO.

REPAIR AND STOCK ORDER - COST SHEET

FOR DATE ORDER

REF. NO.	DRAWING NO.	ITEM	ARTICLE	MAT.	NO. REQD.	PATTERN NUMBER	MACHINE OPERATIONS	MATERIAL				LABOR (INCLUDING BURDEN)							TOTAL LABOR COST
								Rough Weight	Finished Weight	Unit Cost	Total Material Cost	1	2	3	4	5	6	7	

FIG. 15—COST SHEET FOR REPAIR AND STOCK ORDER WORK. ITEMS OF LABOR AND MATERIAL ARE ENTERED ON THIS FORM

Summarizing All Cost Factors

Easy Method for Determining Basis for Fixing of Selling Price Outlined—Plotting of Expenditures of Value in Making Comparisons—Figuring Depreciation Charges Explained

BY M. H. POTTER

VARIOUS accounts into which expenditures are divided are illustrated in Figs. 1, 2, 3 and 4. It will be noted that profits are recorded in each account and finally are listed as a total in Fig. 4.

Not only is the division of each account of interest, but also the method and reasons for using figures which represent the expenditures for certain articles or classes of articles. It is readily understood that expenditures should be recorded in accordance with certain articles, or, perhaps, classes of articles, because certain lines may be experimental and require a large amount of money to cover selling expenses. At this time when so many new lines of manufacture are being taken up and when large expenditures are necessary to introduce them, this important subdivision must be thoroughly accounted for.

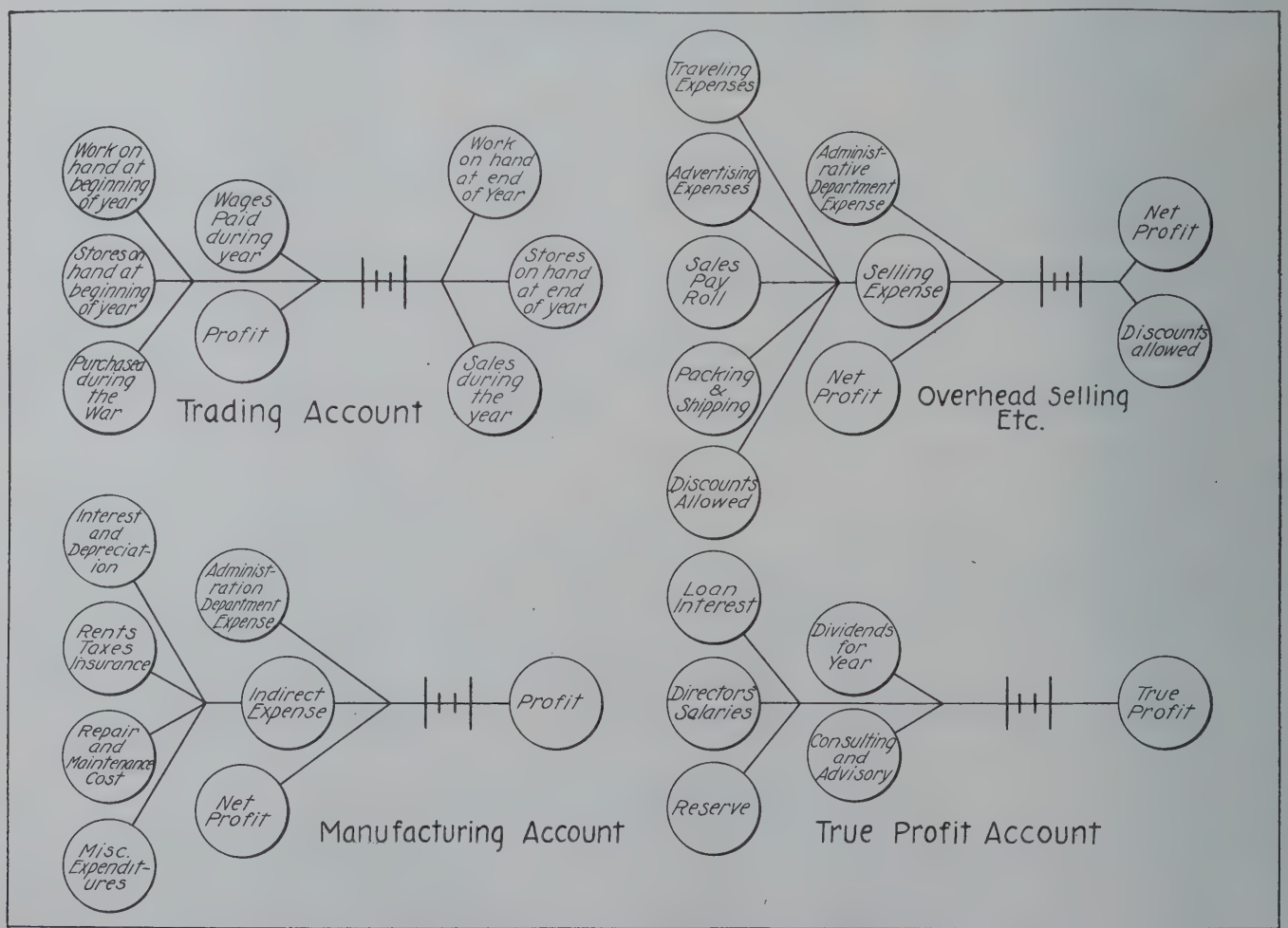
As previously pointed out, the method of subdivision outlined in this series of articles detects abnormal and excessive expenditures in any department. It is of great value for comparison. Principal expenses, no matter what they may be, which vary according to the character and line of manufacture are readily determined; for example, tooling costs necessary to produce a certain article. This expense may be distributed over a certain period and a percentage obtained to cover the tooling cost of each article produced in that period. The selling price may be determined immediately. This is true in regard to all of the various expenditures either direct or indirect.

Fig. 5 illustrates a method of plotting expenditures and is of value for comparison, week by week, month by month, or by financial periods. By subdividing into departments, certain expenditures may be readily seen and checked against estimated figures.

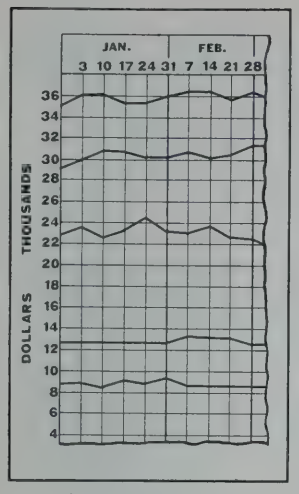
Fig. 6 illustrates depreciations which are most important, and records which should be carefully kept if economical and correct cost figures are to be obtained. The importance of determining the correct percentage of depreciation in each and every department of the organization can not be emphasized too much.

It must be understood that expenditures made for maintenance and repairs tend to offset depreciation due to wear and tear, but only in certain

This is the eighth and last article of this series on industrial accountancy written for THE IRON TRADE REVIEW by M. H. Potter.



FIGS. 1, 2, 3 AND 4—DIVISION OF EXPENDITURES INTO VARIOUS ACCOUNTS



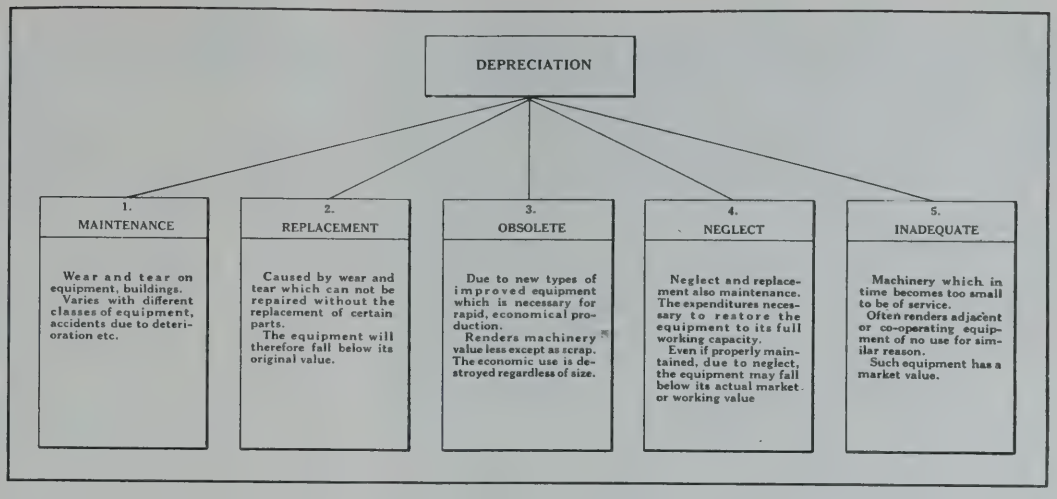


FIG. 5—CHART FOR PLOTTING EXPENDITURES. FIG. 6—OUTLINE OF SYSTEM FOR DETERMINING DEPRECIATION CHARGES

cases may they be considered as balancing depreciation losses. In some plants the equipment will wear out so rapidly that it will need frequent renewals. On the other hand, in many cases a large amount of renewals and additions are constantly under way and depreciation is fully compensated. However, there are many instances where repairs and replacements do not compensate depreciation. Equipment may be kept in the best of repair, but there comes a time when renewals of complete equipment must be made. It has been a "rule of thumb" among many manufacturers to consider the amount spent for additions, renewals and repairs sufficient to compensate for all depreciation. While this rule serves the purpose in some instances, it is advisable when accurate profit is to be determined to analyze depreciation as suggested in Fig. 6.

While a machine several years old may appear to be in first class condition and will perform its work correctly, its working life shortens yearly and provision should be made for that time when it must be replaced.

Depreciation should not only be computed as related to each department, but it also is important where several lines of goods are manufactured that distinct separate analysis be made, in order that depreciation charges related to one shall not be charged to another. As many manufacturing systems and processes change from year to year foresight must be used when depreciation percentages are calculated.

Better Grade of Steel is World's Need

MANY of the difficulties which beset American manufacturers of steel for ordnance materials during the war would have been eliminated if the quality of the steel used had been better, according to Maj. F. F. McIntosh, associate chief metallurgist of the ordnance department's technical staff, who read a paper on the subject at the March meeting of the Engineers' Society of Western Pennsylvania at Pittsburgh. Major McIntosh was sent to England and France by the inspection division of the ordnance department to study the methods of inspection and manufacture of ordnance materials in those countries as well as the metallurgical phases of the work. He declared that if American manufacturers are to compete successfully with the English in the world's market, they must give less attention to tonnage and more to the quality of their product.

Major McIntosh went abroad to find out if there were short cuts that might aid American manufacturers, but found that English and French tests of material were even more severe than those made in this country and that success was achieved by manufacturers in those countries by foregoing speed in favor of care in production. Not only in this but in practically all other directions, English practice is quite the opposite of American, the major found. Only acid furnaces are used in the making of steel, the few electric furnaces in use there being employed in remelting scrap. A close record of each heat and the temperature is kept.

By taking small amounts of metal before tapping, and submitting it to the forging test, it is known before pouring whether or not the steel is satisfactory. The hot ladle is unknown in England, although the ladle is warmed and dried by a small wood fire before the metal is run off. Ladle nozzles are from three-quarters to seven-eighths of an inch in diameter. Top casting is general, as it has been discovered that where bottom casting has been tried rejections of from 8 to 10 per cent have resulted, as compared with less than a tenth of 1 per cent by the former method. Hot top inverted molding of ingots has been found to make the metal sounder and to result in horizontal rather than longitudinal segregation.

The molds are carefully cleaned before teaming. Forging difficulties in England have been due largely to heating methods. Good steel has been obtained regardless of the shape of the dies whether heated in coal or gas furnaces. Oil furnaces have been found to give too intense a heat for safe practice. Since nickel and nickel chrome steels are generally used in gun forgings temperatures are carefully observed owing to the danger of forging them at low temperatures.

Heating for quenching is far less of a problem to the English than American steelmakers. Major McIntosh explained this was due to the tendency of the latter to cling too closely to theory. Forgings for the 75-millimeter gun in England are heated for about one hour and a half at from 850 to 900 degrees Cent., and allowed to remain at maximum heat for about 15 minutes. This contrasts with American practice of 14

(*Continued on page* 636)

Erects Fabricating Shop in South

Fairfield Works of Tennessee Coal, Iron and Railroad Co. is Equipped With Largest Plate Mill in South—Blooming, Bar and Structural Mills and Fabricating Shop Complete Plant

THE development of a modern plant in the South for rolling and fabricating plates, bars and shapes for shipbuilding and other construction purposes, which is described on this and following pages, is of unusual significance. In completing various extensions to its Fairfield works, the Tennessee Coal, Iron and Railroad Co. provides and links together the manufacturing units necessary to make the South independent of northern material. For the first time in history, the South is producing from its own ores the structural material for its needs. The shape mill at Fairfield is the first of its kind to be established in the South; the Fairfield plate mill while preceded by the mill at Bessemer, is the first wide plate mill to be built in the land of Dixie. Southern ore now may pass through the various steps of refinement in southern furnaces, mills and fabricating plants and emerge as finished structural material suitable for southern ships and buildings. The Fairfield and Chickasaw plants are expressive of the impetus given to shipbuilding in the South by the war. The modern facilities at Chickasaw, reinforced by the supply of the necessary plates and shapes afforded by the Fairfield works, place the South in a position to compete with other sections of the country in the building of steel cargo ships.

INDUSTRIAL development in the South, due to the war, has been rapid and has brought about the construction of plants for handling work new to southern manufacturers. The new plant of the Tennessee Coal, Iron & Railroad Co., at Birmingham, Ala., for fabricating shipbuilding material, is of such a character, as it opens up a new line of industrial activity in the South. This plant is known as the Fairfield works and is located about 1 mile west of the by-product coke plant of this company. The initial installation consists of a 45-inch blooming mill, a 36 x 110-inch plate mill and a combination bar and structural mill.

Hot ingots are carried from the Ensley plant of the Tennessee company to the Fairfield works over a broad-gage track. The ingots are taken direct from the Ensley open-hearth plant to the stripper building at the new works on specially designed ingot cars.

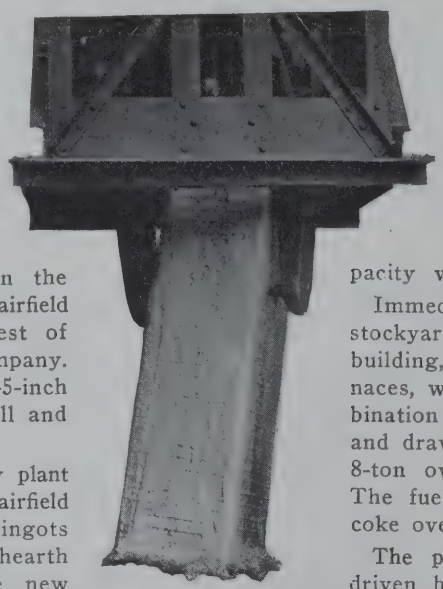


FIG. 1—INGOT CRANE IN SOAKING PIT BUILDING

The stripper crane runway is 180 feet long and has a span of 86 feet, center to center of crane rails, and is served by a 200-ton stripping crane. There are four 4-hole soaking pit furnaces, each hole being 7 x 10 feet in area. This building is 300 feet long, 86 feet crane span, with a 35-foot leanto over the valves for its entire length. The capacity of the charging crane for these pits is 15 tons. The top of the pits is approximately 6 feet above floor level, the ingots being delivered to the blooming mill by means of an electrically operated ingot buggy.

The 45-inch blooming mill is located in a building adjacent to the furnace building, having a length of 440 feet and 75-foot span, and is served by a 50-ton electric overhead traveling crane. This mill has a lift of 52 inches, the top roll being lifted electrically, and is driven by a motor set consisting of two 2800-horsepower, 55 revolutions per minute, 900-volt motors, constituting a 5600-horsepower unit of a maximum capacity of 20,000 horsepower. The flywheel motor generator set is made up of three 2000-kilowatt, 360 revolutions per minute generators driven by one 4000-horsepower, 360 revolutions per minute, 6600-volt induction motor, and provided with a 100,000-pound flywheel. This mill motor, together with its motor generator set, is located in a motor house adjacent to and parallel with the main mill building and is served by an overhead traveling crane of 50-ton capacity. This building is 240 feet long and 70 feet wide, and in this same motor house there is located a substation.

For shearing the slabs and blooms there has been installed a 1200-ton hydroelectric shear of a capacity to cut a slab 12 inches thick and 44 inches wide.

Between the blooming mill and the finishing mills, there is a stockyard having a span of 100 feet and a length of 500 feet, which is served by an overhead traveling crane of 25-ton capacity with a 10-ton auxiliary hoist.

Immediately adjacent and parallel to the stockyard is a well equipped reheating furnace building, provided with eight reheating furnaces, which serve the plate mill and the combination bar and structural mill. The charging and drawing for these furnaces is done by two 8-ton overhead, electric, slab charging cranes. The fuel used in these furnaces is by-product coke oven gas and tar, or fuel oil.

The plate mill, 36 x 110 inches in size, is driven by one 4000-horsepower, 82 revolutions per minute, 6600-volt, mill type motor with flywheel. The leveler for this mill has has a capacity of straightening plates 96 inches wide x 1⅛ inches thick. The end cutting shear has a blade 110 inches long and is motor-driven. The side cutting shear has a knife 190 inches long and this also is motor driven. There are two motor-driven, vertical scrap shears and one motor-driven circle cutting shear.

The building over the plate mill proper is 400 feet long by 62 feet wide, provided with one 50-ton overhead traveling crane. The shipping building for the plate mill is 440 feet long x 100 feet wide, and has one 96-foot span crane with two 10-ton trolleys on the bridge. The motor house is 100 feet long x 80 feet wide, and is served by one 50-ton overhead traveling crane which

has a span of approximately 76 feet.

The furnaces in the reheating furnace building, in which the slabs for the plate mill will be heated, have a hearth dimension of 10 feet wide by 42 feet long, while the furnaces for the combination bar and structural mill, for heating blooms and beam blanks, are 14 feet wide x 42 feet long.

The combination structural and bar mill is a mill after the type of the cross-country mill and consists of one stand of three-high, 28-inch rolls, three stands of 26-inch rolls and two stands of 24-inch rolls. The roughing mill on the 28-inch three-high mill is driven independently by one 2500-horsepower, 82 revolutions per minute, 6600-volt mill type motor, while the 26-inch and 24-inch trains—with the exception of the finishing train—is driven by a variable speed motor of 3000 horsepower, 6600-volt, by means of a long driving shaft with bevel gear connection to each train

The finishing train of rolls is driven independently by a 1000-horsepower, high-speed motor, direct-connected to a gear-reducing set. This mill is provided with variable speed motors arranged for rolling speeds from 500 feet up to 750 feet per minute. The slowest speeds are used on the heavier and the fastest speeds on the lighter sections.

The main building is 560 feet long x 75 feet wide, and the motor house located adjacent and parallel to the main mill building is 320 feet long x 60 feet wide. Roll changing in this mill is done by two electric overhead cranes. These cranes lift the housings, with the rolls in them, from the shoes and set them out to one side on stands prepared to receive them. The worn rolls are replaced by sets of extra housings and rolls previously built up and adjusted and in readiness for the mill at the time of changing rolls. By this method of roll changing, a great deal of time is saved in the mill over the old method of changing the rolls in the housings in place in the mill. A 75-ton and a 25-ton crane have been installed in the mill building, and in the motor house there is one 50-ton crane. The mill is provided with two hot beds, each located in a building 85 feet span x 180 feet long, and over the larger one of these hot beds, designed for heavy sections of I-beams and channels, is a 5-ton electric, overhead traveling crane with which to make repairs.



FIG. 3—INGOTS FROM THE ENSLEY PLANT GO THROUGH THIS 45-INCH BLOOMING MILL

Immediately adjacent to the hot bed building there is another narrow building known as the straightener building, in which the large roller straightening machines are located and where a 15-ton crane has been placed to serve in the making of rapid changes and repairs of these machines.

Two yard crane runways, each 85 feet span, one being 676 feet long and the other 576 feet long, are provided. These crane runways connect the shipping end of the plate mill with the shipping end of the combination bar and structural mill. This permits the loading of cars with miscellaneous products. Each crane runway is served by two cranes, 81 feet span, having two 10-ton trolleys on each bridge girder.

The No. 2 substation building, which is 52 feet 8 inches x 90 feet 3 inches, is located between the plate mill motor house and the combination structural and bar mill motor house and is connected with a 7 x 7-foot underground conduit. In this building are located the three 750-kilowatt motor generator sets, together with transformers and equipment for producing current. This building is served by a 10-ton traveling crane.

Between the plate mill and the combination bar and structural mill is the roll shop. This building is 280 feet long with a 60-foot span and has a roll storage crane runway 155 feet long with a 60-foot span. The usual equipment of

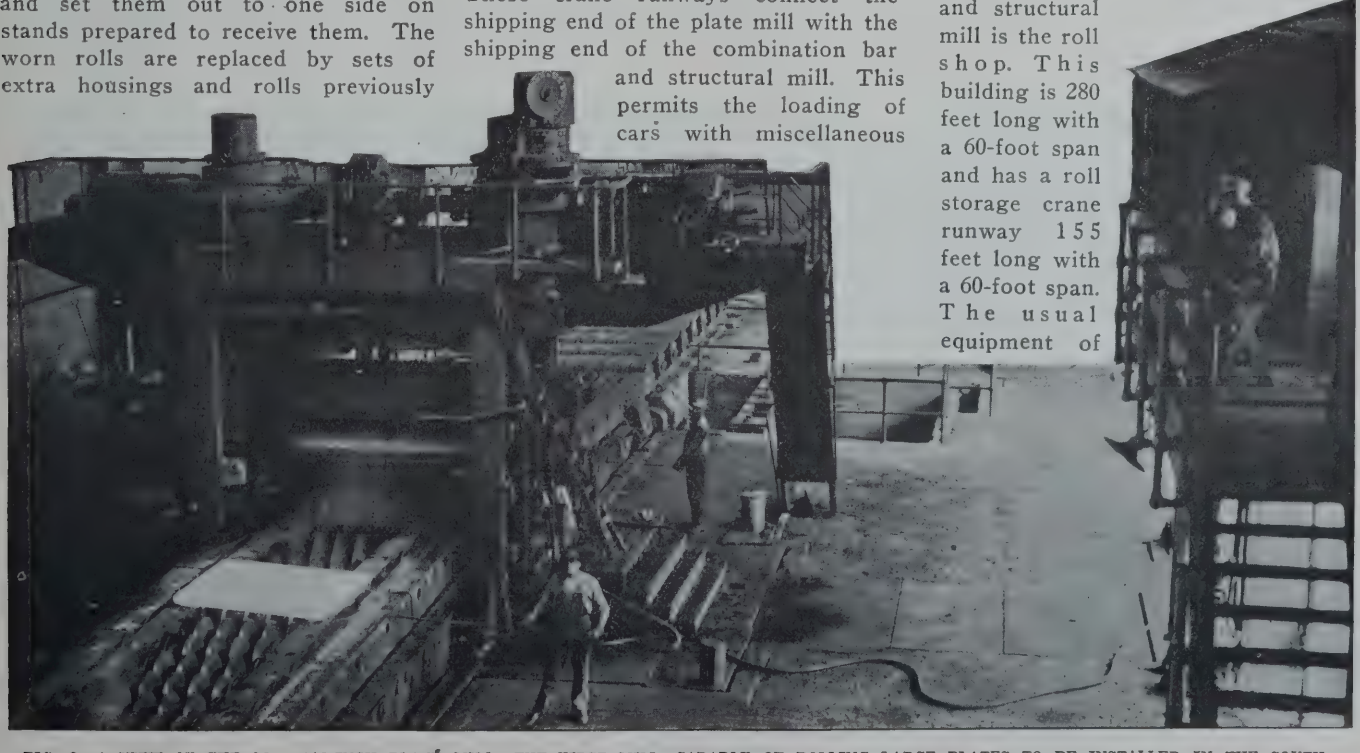


FIG. 2—A VIEW OF THE 36 x 110-INCH PLATE MILL—THE FIRST MILL CAPABLE OF ROLLING LARGE PLATES TO BE INSTALLED IN THE SOUTH

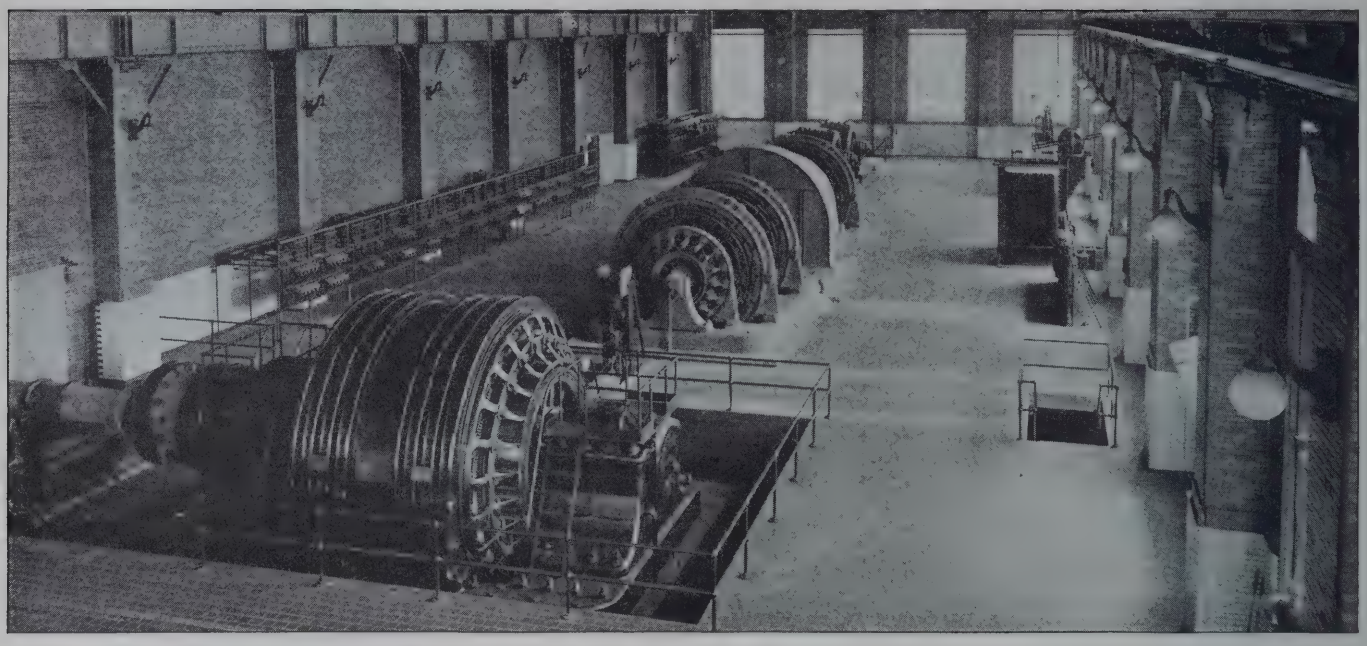


FIG. 4—MANY MODERN IDEAS IN POWER PLANT DESIGN ARE INCORPORATED IN THE MOTOR HOUSE FOR THE 45-INCH BLOOMING MILL

roll lathes and grinders will be installed. Just south of the roll shop building is the roll shop office, which is 30 x 80 feet.

In a separate group, located to the west of the mills, is the shipbuilding fabricating shops, consisting of a plate and shape fabricating shop, machine shop and forge shop. The plate and shape fabricating shop, building is a steel structure with a saw tooth roof, approximately 352 x 630 feet, in which are located numerous machines for punching, shearing and working up plates and shapes that make up the hull construction of ships. The material for this work comes directly from the mills and is fabricated, as far as possible, ready for shipment and final assembly at Mobile, Ala.

The machine shop building consists of a main span of 85 feet with leantos on either side of 70 and 40 feet, in which are located heavy traveling cranes which serve numerous machines. The building is 240 feet long. The forge shop building consists of a main span 85 feet wide, and leantos on one side 50 feet wide, and on the other 40 feet wide. The building is 240 feet long. In this will be located a 1000-ton forging machine with large steam hammers and furnaces for doing ship work. A substation known as No. 4 substation serves all of the above shops. The current and air lines, and hydraulic lines run from this station to the various shops.

Water for this plant is secured from the Village Creek water works system and the main lines are tapped at a point close to the by-product coke oven plant. The soaking pit furnaces use by-product coke oven gas entirely as fuel, this gas being supplied through a 30-inch main from the by-product coke plant. Drinking water for the employes of the mill is furnished by a main connected to the Birmingham water works system. Every sanitary measure possible is installed in these plants for the use and comfort of the company's employes.

The main trunk sewer for this plant is 7 x 7 feet. A novel combination has been arranged on the major portion of this sewer by making a double deck, the upper deck being 6 x 7 feet. It will be used for carrying the high tension electric cables to the various substations, thus doing away with all poles and extensive overhead power lines in the plant.

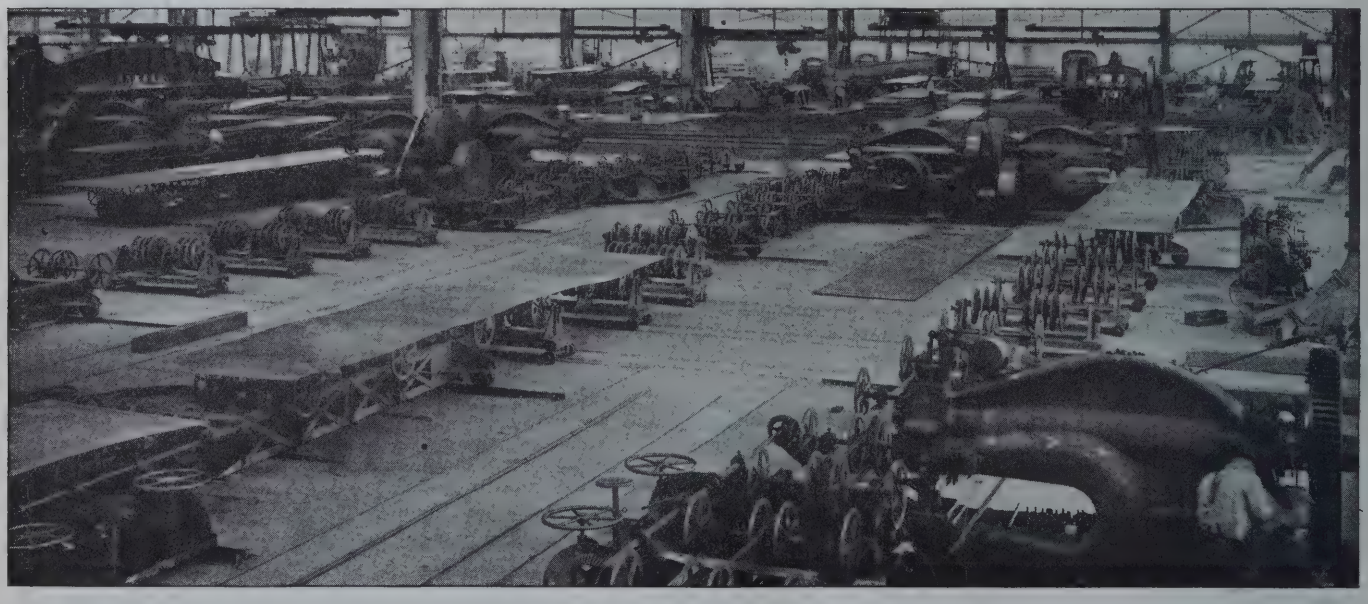


FIG. 5—APPROXIMATELY 75 PER CENT OF THE SHIP MATERIAL ERECTED AT THE CHICKASAW PLANT IS ASSEMBLED IN THIS 352 x 630-FOOT FABRICATING SHOP

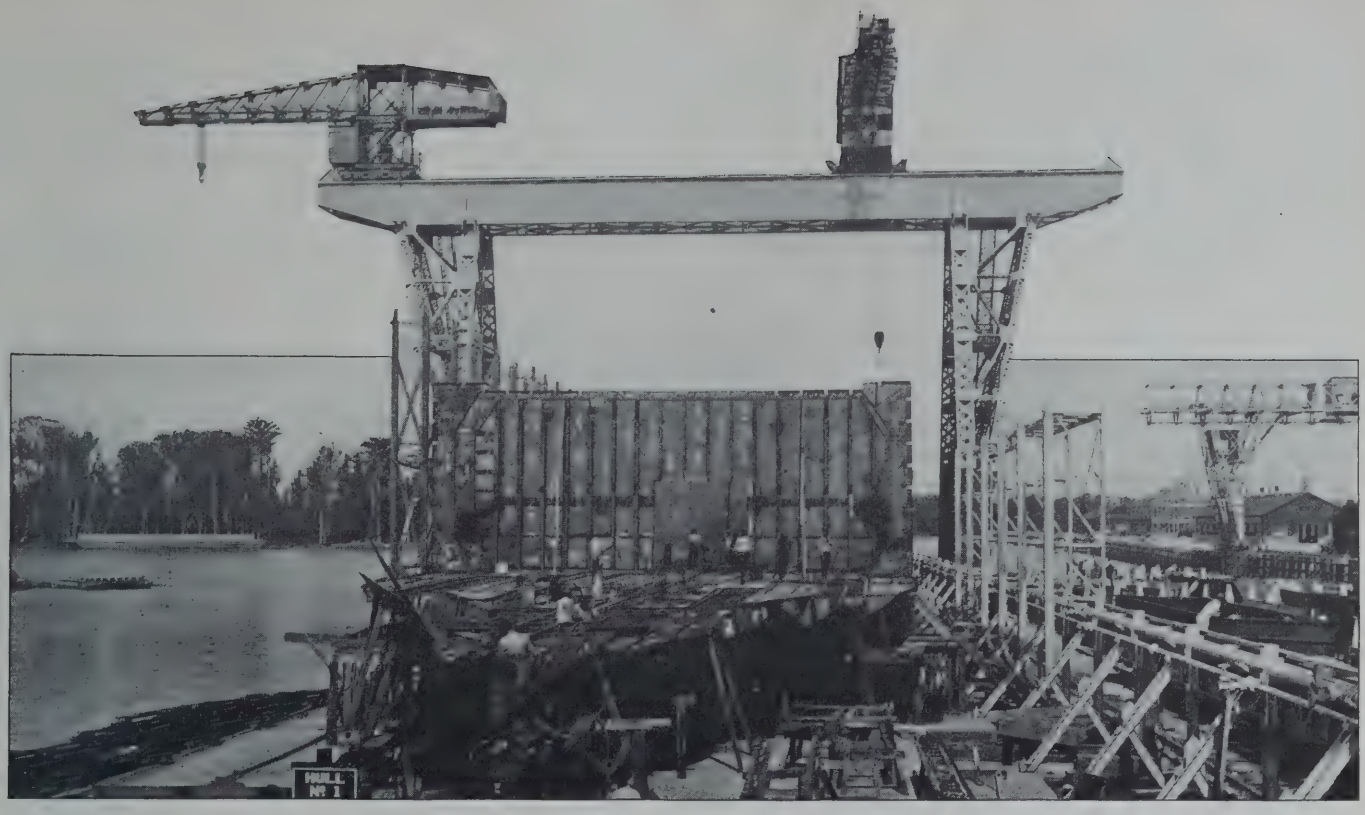


Fig. 6—A View of One of the Six Berths at the New Plant of the Chickasaw Shipbuilding Co. Fabricated Work May Be Lifted from Barges and Swung into Place by the Gantry Cranes in One Lift

Builds Yard for Steel Cargo Ships

MOST of the extensions to the Fairfield works, which were begun in November, 1917, were made for the purpose of providing fabricating facilities for a new shipbuilding plant then being built at Chickasaw, Mobile county, Ala., by the Chickasaw Shipbuilding Co. Practically 75 per cent of the material now used in the Chickasaw plant is fabricated in the Fairfield works, the remaining 25 per cent being assembled in the fabricating shop at Chickasaw.

The shipbuilding plant is about five miles north of Mobile and has an easterly frontage on Chickasaw bogue, a tributary of the Mobile river. As there was no village near the point chosen for this plant, it was necessary to build villages for the white and colored employes. A street railway line, connecting with the Mobile system at Pritchard, was built to afford a means of travel between Mobile and Chicasaw. The village for the white laborers was built on one side of the car line and the village for the colored people was built on the side of the tracks nearest to the ship yard.

The shipbuilding plant consists of six berths arranged two each on the north side of basins Nos. 1 and 2, and two on the south side of basin No. 1. Basin No. 1 is 150 feet wide by about 1000 feet long, and basin No. 2 is 200 feet wide by about 1000 feet long, both being designed for side launching.

The shipways are commanded by gantry cranes, one being provided for each berth. These cranes are of a special design, having two 10-ton locomotive cranes mounted on the bridges, enabling them to handle material from barges in the basins, from incoming cars, or from the stockyard alongside each berth directly to the ship. These cranes are illustrated in Figs. 7 and 8. As previously noted, all fabricated material ready to enter into the ship construction is delivered to the shipways underneath these cranes, where it is unloaded and either placed directly in the ship or in a space provided for storage until such time as it is needed. Materials which require additional fabrication are delivered to the plate shop, located at the west end of the shipways.

Many Cranes Serve Fabricating Shop

Each of the two main aisles of the plate fabricating shop is 80 x 400 feet, and is served by a 15-ton overhead traveling crane. On the west side of the building is a receiving crane runway 85 feet wide by 400 feet long, and on the east side is a shipping crane runway of the same dimensions. Each runway is served by a 10-ton crane. The shop equipment, including punches, plate planers, angle and plate heating furnaces, bending slabs, shears, etc., is in the main aisle of the building.

Adjacent to the plate shop at the north end there is a 61.5 x 300-foot template shop which is used for laying down certain portions of the ship on the floor and getting out the necessary templates to be used in the shop for the fabrication of material. On the south side of basin No. 1 there is a power station of brick and steel construction. The equipment consists of two 4000-kilowatt, 60-cycle, turbo-generators, complete with condensing apparatus, and three large air compressors and the necessary auxiliary machinery.

The boiler plant consists of four 750-horsepower water tube boilers, designed to furnish superheated steam for the operation of the turbo-generators and air compressors. These boilers are equipped with stokers and the necessary pumps and auxiliary machinery. Water for the condensing purposes is taken from basin No. 1 through an intake tunnel and the discharge from the condensers is returned to basin No. 2.

The coal for operating the station is delivered in river barges to a coal unloading dock, commanded by a coal unloading and storing bridge, which delivers the coal into a storage pile. The coal is carried from the storage pile by an incline belt conveyor to a 2200-ton bin in one end of the boiler house.

The coal is delivered to the stokers by means of an electrically driven coal larry.

The blacksmith shop, 60 x 120 feet, is equipped with the necessary steam hammers, forge furnaces, etc., the steam for operating the hammers being delivered from the power station through an overhead pipe line. The machine shop, situated east of the blacksmith shop, is 120 feet wide and 240 feet long and is equipped with modern machines. All machine tools are served by means of overhead electric cranes. Other units of the shipbuilding plant include a carpenter shop, rigger shop, sheet metal shop and paint shop.

West of basin No. 1 is a main stores building, 60 x 300 feet, and of brick and steel construction and on the outfitting dock there is a branch stores building designed to facilitate the outfitting of ships. The outfitting dock is served by a 100-ton derrick crane which is used for placing engines and boilers aboard ship. The crane is a duplicate of the 100-ton derrick crane used at the plant of the Federal Shipbuilding Co., Kearny, N. J.

Steel Staging is Employed

The shipways are designed for side launching and permanent staging of steel construction is employed. The temporary staging on the launching side is also of steel, but is designed so that it can be taken down or put up in sections in accordance with requirements. Facilities for welding and cutting are provided by an acetylene gas generator of the low pressure type. The gas is piped along the shipways where convenient outlets have been provided. Acetylene burners or welding apparatus may be quickly connected to these outlets, thus enabling workmen to use the equipment at practically any part of the shipyard. A refrigerating machine in the basement of the power house pumps cold drinking water through a continuous system of piping to all shops, buildings and shipways of the plant, insuring the workers a good supply of cold water at all times.

At the present time four 9600 steel cargo ships are on the ways and work on six additional ships will be started at an early date.

Book Review

Abrasives and Abrasive Wheels, by Fred B. Jacobs; cloth, 340 pages, 5 x 8 inches; published by the Norman W. Henley Publishing Co., New York, and furnished by THE IRON TRADE REVIEW for $3.

Abrasives and Abrasive Wheels contains valuable information for the shop or foundry superintendent and for the man who is engaged in the operation of grinding machinery of any kind.

The forepart of the book is devoted to natural and artificial abrasive materials such as emery, corundum, garnet, quartz, etc. Under the heading of artificial abrasives, the manufacture of carborundum and other well known manufactured abrasives is fully explained. The chapter on the manufacture of grinding wheels describes the lengthy process through which the material progresses until it is ready for shipment.

The testing of grinding wheels for efficiency is fully explained and illustrated by examples taken from actual working conditions. It is pointed out that by getting the right wheel in the right place, the manufacturer who is a large consumer can save thousands of dollars annually. In one chapter it is claimed that large wheels are more economical than small ones. The author has analyzed several popular sized wheels from a standard wheel list, determining the cubical contents and cost per cubic inch. It is shown that as the size increases the price decreases.

The subject of grinding wheel grits and grades, generally a confusing one to the average layman, is made plain.

Other subjects treated include safeguarding grinding wheels, information for ordering grinding wheels, the design of dust collecting systems, etc. The latter part of the book is devoted to cylindrical, internal and surface grinding, cutter sharpening, etc. Several special grinding operations are fully described.

Better Steel is Need

(*Continued from Page* 631)

to 15 hours' heating and long holding at heat. In support of his contention that rapid heating and short holding was the better method, Major McIntosh pointed out that the Sheffield district last September produced more than 5000 gun forgings and that 89 per cent of them passed inspection. This is a much better showing than made in this country where only 60 per cent of the forgings withstood the first tests.

Major McIntosh found that the French used basic open-hearth steel for cannon, but the method follows closely the acid practice with all additions in the furnace after the slag has been run off. Tests are made of the steel before pouring, but the ladle nozzles are larger than those in English plants ranging from 1 to 1½ inches and occasionally 1¾ inches. The ladle is dried by a small wood fire, but never heated. Only one plant in France bottom casts. The French forge at lower temperatures than do the English, but give more time in

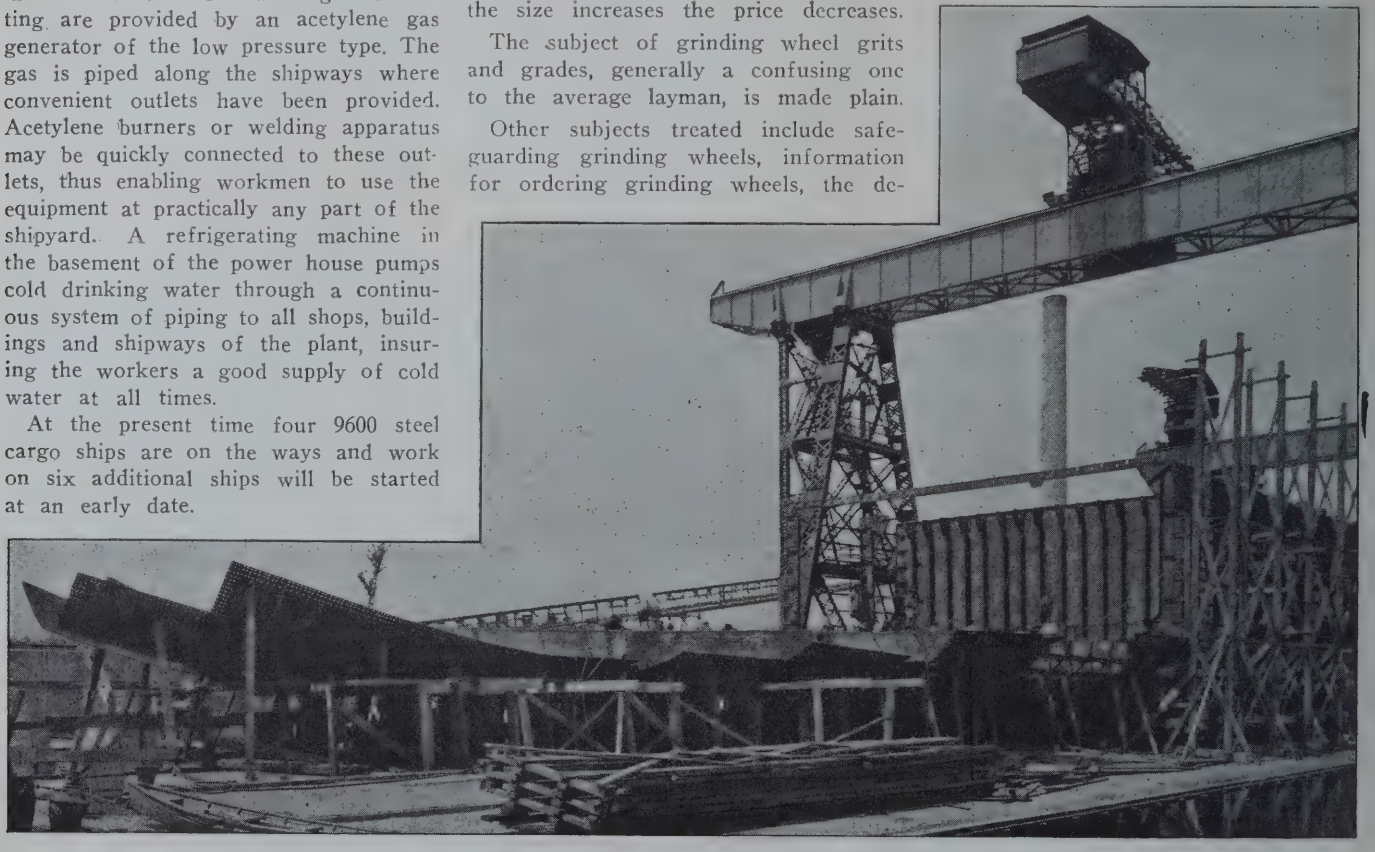


FIG. 7—FOUR 9600-TON STEEL CARGO SHIPS OF THIS TYPE ARE ON THE WAYS AT CHICKASAW AND SIX MORE ARE TO BE BUILT LATER

heat treating. Quenching is entirely in water in France, while in England the bath is water and oil, but the French run almost entirely in straight carbon steel, while the English employ nickel and nickel chrome.

Flakes, or Z fractures as they are called in England, because of the unknown quantities, are generally ascribed to the inclusion of foreign materials. On both the bend and tensile test, bad, banded fractures resulted from flakes. Inclusions were generally believed to be due to the fact that deoxidizing agents give off nonmetallic products. It was the speaker's opinion that in forging steel Americans were too prone to follow specifications of inheritance rather than scientific facts, mentioning as an example the four-to-one reduction that our steel men insist upon. He considered the etching test for forgings employed abroad preferable to the trepanning method, the former providing the better reference to the finished forging.

Invents Labor Saving Pouring Device

IN gray iron foundries making automobile cylinders and other relatively light castings, the task of pouring each day's heat is particularly arduous. This has led to the development of a large field for the application of mechanical pouring apparatus.

The accompanying illustrations show the details of one of the latest devices of this character, invented by Daniel Ryan of the Allyne-Ryan Foundry Co., Cleveland. Although designed primarily for automobile cylinder molds, the Ryan pouring device may be advantageously employed on any other work of similar character. The device consists essentially of a cylindrical ladle mounted on trunnions in such a way that the iron may be discharged through nozzles which become submerged when the ladle is rotated. The metal flows from the nozzles into two semicircular guide troughs which convey it to the runners leading to the mold. The entire apparatus is carried on a frame mounted on wheels which render it readily portable.

The ends of the pouring basin are constructed of cast iron with a segment removed as shown in Fig. 2. The sides are made of heavy boiler plate perforated and securely riveted to the end castings. The inside of the basin is lined with one course of 1-inch fire brick. The basin is supported by trunnions which rest in sliding shoulders. The shoulders move in vertical guideways and are raised or lowered by an adjusting screw operated by a hand wheel. By this arrangement, the level of the pouring basin may be maintained and any depression in the track will have no effect on the iron level if the trunnion shoulders are adjusted. The rotary motion of the basin is controlled by a lever securely bolted to the trunnion flange on the operator's side of the machine. An extension arm carrying a counterweight is provided; this offsets any danger of the basin turning over of its own accord while the iron is being poured into it from the crane ladle. Two cast-iron guide troughs rest upon the side frames and may be lifted off when it becomes necessary to reline them with clay. A 1-inch opening through which the iron flows to the sprues is provided in the bottom of each trough. The distance from the floor to the bottom of the basin is 3 feet 2 inches.

The entire device is supported by three flanged wheels—two on the operator's side and one on the helper's side—which run on rails spaced 4½ feet apart and permit the machine to be moved in a straight course over the molds. When several rows of molds are to be poured the machine may either be moved from one row to an-

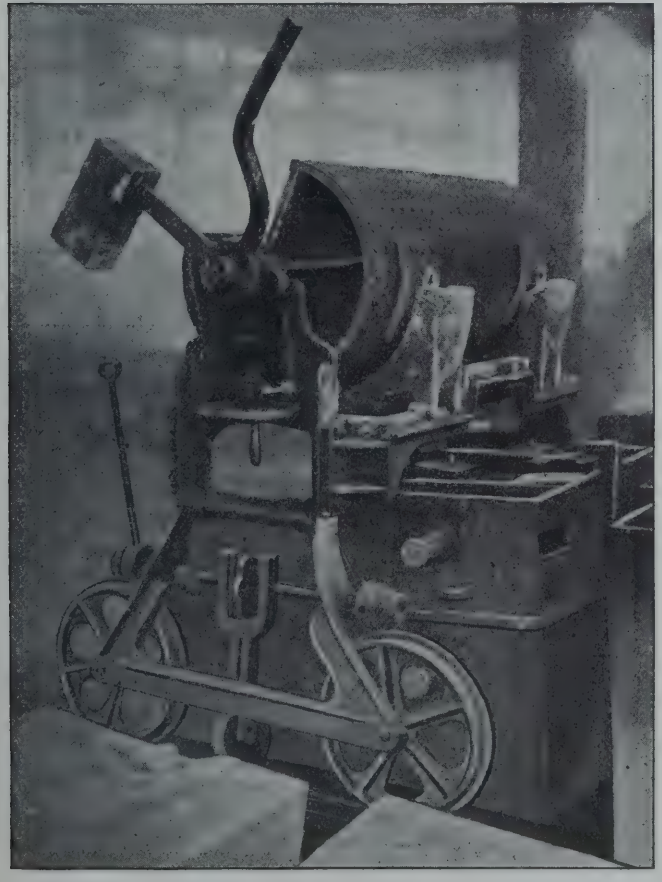
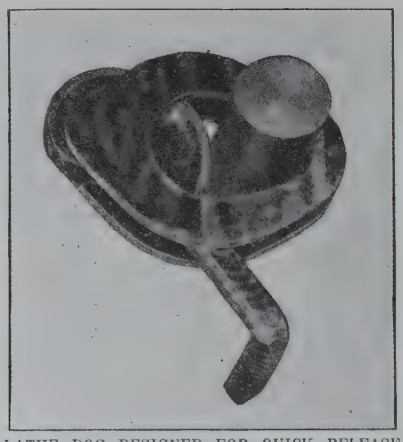


FIG. 1—SIDE VIEW SHOWING POSITION OF CANOE TROUGHS



FIG. 2—MACHINE IN POSITION TO RECEIVE CHARGE OF IRON



LATHE DOG DESIGNED FOR QUICK RELEASE

other by a traveling crane, or run to the end of the track and wheeled to the adjacent row of molds. For this latter purpose a lifting device is provided. It consists of two shafts equipped with an eccentric operated through cams which engage three pedestals. Each pedestal is equipped with a caster as shown in Fig. 2. One caster is placed between the two flanged track wheels on the operator's side of the machine and the remaining two casters are installed on the helper's side, there being one on each side of the flanged wheel at the ends of the carriage frame. Levers inserted in collars on the ends of the eccentric shafts actuate the cams controlling the motion of the pedestals. This raises the machine from the track and transfers its weight to the three casters.

The trunnion flange on the side of the basin is provided with a stop and when this stop is tight against the lug attached to the trunnion slide, the basin is in position to receive its charge of iron. This position is shown in Fig. 1.

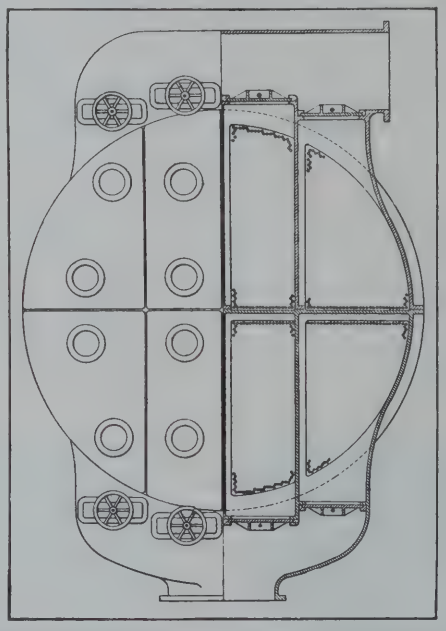
When the basin has been filled the operator moves the machine over the flask to be poured and by means of the pouring handle tilts the basin so that the iron is discharged through the openings into the guide troughs. In Fig. 1 these openings are shown just clear of the tops of the guide troughs.

The basin holds enough iron to pour four 6-barrel or seven 4-barrel automobile cylinder castings. It is said that two machines will take care of the output of a cupola which melts between 18 and 20 tons per hour and that only four men are required. Bull ladles required 14 men.

Hoisting Unit Maintains an Even Balance

A new type of hoist, which is particularly adapted for use where headroom is limited or where space is otherwise restricted, has been designed by Victor R. Browning & Co., Cleveland. The hoist, which is shown in the accompanying illustration, is equipped with a special-designed motor for use with either direct or alternating current, and may be suspended from an overhead trolley or I-beam. The main casting encases all moving parts and contains individual compartments for the various units.

Heat-treating gears and a disc-load brake are assembled in one end of the casting. These revolve in oil. At the reverse end, the controller and motor shaft are carried in another individual compartment. The entire controller may be removed quickly for inspection or repairs. The removal of a plate gives access to the gears and load brake. Between the gear and controller units are two long compartments, one of which contains the motor and the other the hoisting drum. The latter is carried on a threaded shaft and travels longitudinally while rotating. This feeds the cable through a bushing in the main housing and directly onto the drum grooves. It is claimed this type of construction adds considerably to the life of the cables and maintains an even balance of the hoisting unit.



STEAM SURFACE CONDENSER OF THE COMPARTMENT TYPE

Limit attachments are installed at both ends of the drum shaft to prevent overtravel of the drum. All bearings are bushed in phosphor bronze with the exception of the motor shaft which revolves on ball bearings. Two bearings are provided with grease cups while the other four are lubricated by the splash system.

The Four-Drive Tractor Co., Big Rapids, Mich., has increased its capital stock from $200,000 to $500,000.

Eliminates Set Screws on Lathe Dog

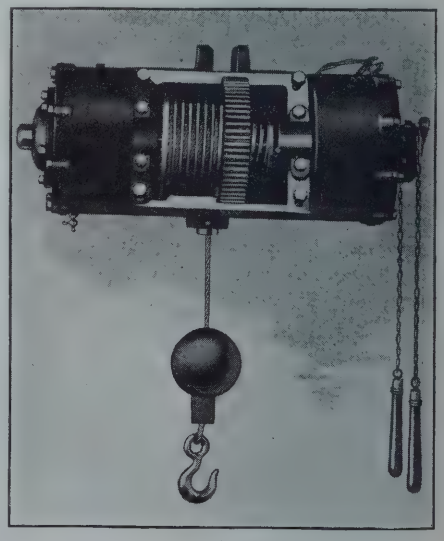
The lathe dog shown in the accompanying illustration is a recent development in small tool design made by the Efficiency Device Corp., Long Island City, N. Y. It grips the work through a cam which is made integral with the driver. For this reason, the power transmitted from the face plate in driving the work holds securely the piece to be turned.

As there are no screws to loosen the time required to put the dog in position and to remove it after the cut is taken is reduced to a minimum. Another factor that deserves attention is that there are no protruding parts that might catch the operator's clothing. The device is made of steel drop forgings and punchings and is case hardened to protect it from undue wear.

Develops New Condenser

A steam-surface condenser of the compartment type, which may be cleaned or repaired without interrupting the operation of the turbine or condenser, is now being built by the Wheeler Condenser & Engineering Co., Carteret, N. J. The condenser is equipped with four compartments which have individual sets of valves for controlling the circulating water. The arrangement of the compartments is shown in the accompanying illustration.

According to figures compiled by the bureau of mines, there were on Jan. 1, 259,717 tons of ore at the furnaces containing 35 per cent manganese and 346,316 tons containing less than 35 per cent, making a total of 606,303 tons in stock.



HOIST FOR USE WHERE HEADROOM IS RESTRICTED

Control Panel Designed to Insure Constant Heat

A new electric welding unit, designed to produce a constant heat in the weld, has been developed by the Wilson Welder & Metals Co., New York. The principal parts of the outfit are a motor-generator set and a constant-current control panel. A normal voltage of 35 volts is maintained at the terminals of the generator, which is flat compound wound, at both no load and full load. The panel, as shown in the accompanying illustration, is 20 x 27 inches and has mounted on it a small carbon pile, a compression spring, and a solenoid operating in opposition to the spring.

This solenoid is connected in series with the arc so that any variation in the current causes the solenoid to vary the pressure on the carbon pile and thereby maintain the current at the value for which the apparatus is adjusted. Three switches on the panel provide the means of current adjustment between a minimum and maximum of 25 and 175 amperes. By means of a shunt around the solenoid, no more than 25 amperes flows through the solenoid, although the current in the welding circuit may be any value between 25 and 175 amperes.

Equipment is Portable

To give this welding set wide application several types of driving power may be supplied. Electric motor drives of the standard motor characteristics 110-220-volt, direct-current or 220-440-volt, 60-cycle, 2 or 3-phase alternating current may be supplied. If desired, a gasoline unit can be furnished or the set can be equipped for a belt drive from external power. The normal generator speed is 1800 revolutions per minute. The weight of this welding outfit varies from 550 pounds without driving power to 1200 pounds with gasoline engine power and may be mounted on a truck for portable use.

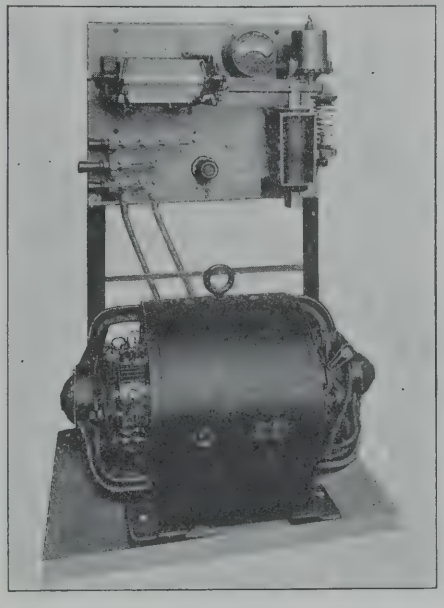
Designs Reversing Pump

The device shown in the accompanying illustration is a reversing, centrifugal pump recently developed by the Fulflo Pump Co., Blanchester, O. It is a self-contained unit, driven through the medium of internal spur reduction gearing by an overhead belt, and is said to be specially adapted to machine tools for pumping cutting mediums.

The reversing feature of the pump is accomplished by the design of the volute and the incorporation of a gate in the discharge. This gate deflects the fluid as the pump is reversed. The gate is bronze, mounted on a bronze pin, to eliminate corrosion.

The pad on which the pump is located is detachable and can be placed in any one of three positions. As the illustration shows, the packing is placed relatively near the water chamber, which feature protects the main bearing. The gland in which the shaft revolves is of ample length to insure a good bearing and is adjustable from the outside.

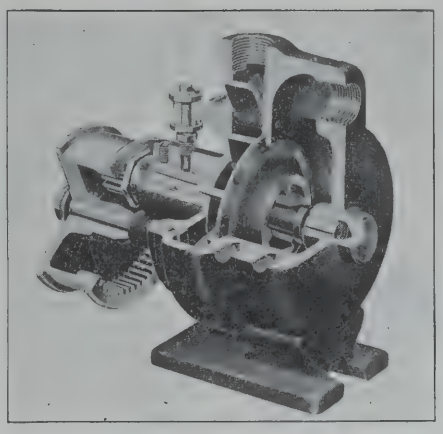
All steel parts are protected from undue wear by hardening, while all shafts are hardened and ground. The intake opening is placed high above the water chamber so that a full prime is retained in the body at all times. No relief or check valves are required and no strainer is used, due to the fact that the openings are proportionately large so that foreign matter which may enter the pump passes through freely.



GENERATOR SET AND CONTROL PANEL

Efficiency tests recently conducted showed that with a pulley speed of 600 revolutions a minute the pump delivered 16 gallons per minute with a 4-inch head. It is pointed out that higher heads can be reached as the volume of liquid and the height to which it can be raised depends entirely upon the peripheral speed of the impeller.

Much excitement was recently aroused over a reported oil strike in Derbyshire, England, but investigation revealed the alleged strike was nothing more than filtered oil found below the parent oil sand. It is believed that the real oil-bearing stratum of the district is confined to the millstone grit formation which has already been passed through.



CENTRIFUGAL PUMP DESIGNED TO RUN IN EITHER DIRECTION

Early History of American Steel Practice

Two papers, one entiled the "History of the Bessemer Manufacture in America", and the other entitled the "Evolution of the American Rolling Mill", were presented respectively before the American Institute of Mining Engineers, June 23, 1876, and the American Society of Mechanical Engineers, Nov. 16, 1891, by Robert W. Hunt, Chicago. The methods described in these papers have since become the basis upon which the great achievements of bessemer steel making and rolling-mill practice have been accomplished. For this reason Mr. Hunt has seen fit to reprint his two articles in a 54-page booklet for distribution.

The first 19 pages are given over to the early history of the bessemer process in America. The author tells of the many difficulties which were encountered in inducing capitalists and manufacturers to attempt the introduction of the bessemer process. Having enumerated the various bessemer works according to the order in which they started and in so doing having referred to the increase in product, the paper on bessemer practice concludes with a brief review of the causes leading to the remarkable strides made by this branch of the steel industry.

In the second part of his book Mr. Hunt deals with prominent facts connected with the evolution of American rolling mills. Throughout this paper is found the early history of many well-known steel companies in this country. A description is given of the Fritz-type mill which was adopted universally by railmakers in this country in 1866.

Says One Base Stabilizes Industry

Inland Steel Co. Answers Complaint of Western Consumers Against Pittsburgh Basing System in Iron and Steel—Local Monopoly Would Follow Quotations Founded Solely on Production Costs, is Claim

WASHINGTON, Sept. 2.—A carefully prepared argument in favor of the retention of the Pittsburgh basing system for iron and steel prices has been submitted to the federal trade commission by the Inland Steel Co. in answer to the petition of the Western Association of Rolled Steel Consumers for the establishment of Chicago as a separate basing point. The arguments advanced by the Inland company in a large measure are representative of the claims which the steel producers generally, and especially those in the West, are setting forth in their defense of the present system.

Experts of the federal trade commission now are engaged in classifying and digesting the answers and views expressed by iron and steel manufacturers and consumers on the merits and demerits of basing steel prices on Pittsburgh. As soon as this work is completed, the commission will make some of the records, if not all, public, and will announce the course it will pursue in taking up the case.

The complete statement of the Inland Steel Co. which is submitted over the signature of G. H. Jones, first vice president, is as follows:

The Inland Steel Co. fully approves of the fact that this application has been made to the federal trade commission and is quite willing to ignore any personal interest it may be supposed to have in the continuing of the present selling methods, if the government will carefully investigate the conditions and set its approval on such method as the federal trade commission may decide to be fair and reasonable to both buyers and sellers.

The Inland Steel Co. has no steel works east of the Chicago district and sells very little, if any, steel east of Indiana. Its natural market is west of Ohio, south to the Ohio river, and thence west to the Pacific coast. The Inland Steel Co. does not have and never has had access to the cost sheets of the subsidiary companies of the United States Steel Corp. and is, therefore, unable to state from knowledge what are the comparative costs of the production of steel in the plant of Carnegie Steel Co. or the Illinois Steel Co.

The application apparently seeks to convey the impression that the main factor in the cost of steel is the freight rate upon iron ore. This is obviously misleading. In the production of pig iron the tonnage of coal and limestone involved in the process of conversion is approximately equal to the tonnage of ore, and in the production of steel the tonnage of coal alone employed in the process largely exceeds the tonnage of ore. The coal used in the manufacture of coke for pig iron by the Inland Steel Co. must be hauled to its plant from the Pennsylvania and West Virginia fields and the steam coal obtained from Indiana and Illinois for heat-making purposes is more expensive in proportion to quality than is the coal of the Pittsburgh district.

Much of the equipment, machinery and supplies used in the manufacture of steel is produced in quantities only in the Pittsburgh district and have to be imported from that district by outside plants.

Pittsburgh Has Lower Cost

Without attempting to discuss the details of the costs in the respective territories and without accurate knowledge on the subject, the Inland Steel Co. desires to express its conviction that production of steel by equal plants in the Pittsburgh and Chicago districts would show lower cost in the Pittsburgh district. The industry was first established in the Pittsburgh district. Many of the large producers in the Pittsburgh district entrenched themselves by the acquirement at a comparatively early period of iron mines and other sources of raw material at a price lower than that at which similar sources could be acquired when Chicago competitors entered the field. This more than offsets any advantage which the Chicago district steel makers enjoy in connection with transportation costs.

The Inland Steel Co. emphatically denies all insinuations contained in the application to the effect that it is or has been a party to price fixing or that it is not engaged in active competition with other steel mills, including the subsidiaries of the United States Steel Corp. The Inland Steel Co. is absolutely independent of all other concerns engaged in the same line of business and offers its products to its customers, quoting prices based upon its desire to obtain a reasonable profit and primarily governed by market conditions in the industry.

When the Inland Steel Co. entered upon its business career, the Pittsburgh district was, as it still remains, by far the largest producer of steel products in the country. Pittsburgh competition was the controlling competition which plants located elsewhere were required to meet in order to sell their products. Customers invariably insisted upon comparing prices quoted in the Pittsburgh district and the simplest method of assuring such comparison was the use of the Pittsburgh quoted prices as a base.

The Chicago district never has and does not now produce iron and steel sufficient to meet the demands of consumers in the district. A very large part of such consumers must necessarily buy their steel and iron products from the Pittsburgh district.

The investment in modern steel plants is very large and for that reason steel plants are not mobile. They cannot readily move from point to point and to endeavor so to do would involve very great economic waste in the amortization of the cost of abandoned plants and would be altogether undesirable.

The controlling factor in determining prices has always been the question of whether demand is in excess of production or production in excess of demand. The use of the Pittsburgh price as a base in no way controls the price which the producer makes to the consumer. If there is a surplus of steel products on the market, the desire to dispose of the product involves a reduction of prices sometimes to the point of an actual loss. Where the supply is less than the demand, consumers often offer to pay advanced prices or premiums to insure deliveries and the result is the same whether a Pittsburgh base price is the ground work of competition or whether each steel plant arrives at the prices demanded by some other method of computation.

If prices were fixed by agreement among the producers, it would be a matter of small importance by what system of figures the agreed price was reached. When prices are made as a result of competition, as is the case with all sales made by the Inland Steel Co., it is likewise of little importance what method of computation is used. The Inland Steel Co. has a given output. That output it markets at the best prices, reasonably and fairly obtainable. When customers are not plentiful, it cuts that price down to a figure which will enable it to sell its products.

The individual members of the association making the application have seemed generally to have enjoyed a period of great prosperity during the last few years. The public statements of such of them as have been accessible have shown profits favorably comparable in proportion to capital invested with the profits of the steel producers so far as the same are matters of public knowledge.

Under the present system of quoting prices, with the Pittsburgh base as a standard, the members of the association are enabled to readily compare prices quoted by steel producers located in any part of the country. If the use of a different base price did not materially alter prices quoted it would obviously be useless to disturb the present custom.

If, in fact, the steel producer in any given locality undertook to base his prices solely on cost of production, giving the customer the benefit of all freight costs from competitive points it is plain that the result would be to create a local monopoly on behalf of

the steel producer in any given locality until the entire product of such local producer had been sold. Thereafter the customer would be obliged to pay higher prices to producers at other points through the addition of freight rates. It is believed that this would result in absence of competition where only a single producer was located, or in competition restricted to the local competitors in all other districts except Pittsburgh, which is the only district producing a considerable surplus.

The competitor buying his steel products from the Pittsburgh district, after the local limit had been reached, would be at a disadvantage with his competitors who had bought at lower price from the local producer, while in years of normal demand the Pittsburgh producer, knowing that the local supply was unequal to the local demand, would be able to await the necessary inquiries from those who had been unable to supply their wants from local sources.

Under such circumstances it is respectfully submitted that ordinary business judgment would lead the surplus local demand to bid up the local supply to approximately the cost of delivery from Pittsburgh and the element of vexation and uncertainty would have resulted without materially changing the situation. If such a result did not ensue then conditions of inequality among the different consumers in the same locality would create hardships far greater than the present system, because in most articles into which the rolled steel products enter, contracts must be made long prior to the ultimate completion of the article and reasonable certainty as to price is quite as important as any slight difference in cost.

As a uniform standard of money in a given market is a prime requisite of successful commerce, so a standard level of prices for steel, resulting from nation-wide competition, is of almost equal importance to industry.

If it were possible, as the application seems to contemplate, to procure producers of steel to sell their products wholly upon the basis of cost, plus some percentage, and with every producer figuring a different cost, or the same producers figuring different costs at different plants, with such uncertain elements of cost as the obsolescence and amortization of very large capital values involved in the installation of modern plants and equipment, and with competition localized as far as such action could localize it, it is respectfully submitted that a system of individual bargaining must spring up which would be contrary to the modern theory of commerce to which the commission is committed.

Moreover, as glut or deficit more commonly occur in localities than in the entire country, the disadvantageous features of oversupply or overdemand would, in the particular locality, be of more frequent occurrence and of accentuated disadvantage, and local conditions could be met only by return to what is practically the Pittsburgh base; that is, the stabilization of supplies throughout the country by drawing on the locality where production is in excess of demand to make good the deficiency in the localities where the reverse is the case.

The Inland Steel Co. having its plant entirely, and its business mainly, in the western field is not confronted with any problems which might affect a competitor having plants in different districts, but any regulation which would compel the competitor having plants in the same district as the Inland Steel Co., and other plants in other districts, to sell in the district in which it directly competed with the Inland Steel Co. at a price lower than that naturally based upon the laws of supply and demand and market conditions generally, would be obviously injurious to the Inland Steel Co. perhaps to a greater degree than to the competitor, which might make up in one district for its loss of profits in another.

The Inland Steel Co. respectfully suggests that trade customs like the practice under consideration which have grown up in times of keenest competition, are usually based upon some adequate reason and should not lightly be set aside. Moreover, this particular trade custom of basing steel prices upon Pittsburgh was officially approved by the war industries board (official bulletin June 24, 1918), and by the President as evidenced by official announcements made by them.

The Inland Steel Co. has maintained its competitive business under conditions of nation-wide competition. It believes that it can maintain its business if such competition is localized, but it believes that localization of competition would be a disadvantage as against universal competition, which, based on a clearly understood scale of prices, produces a better understanding and relationship between the steel producers and their customers.

Moreover, the results of the present use of Pittsburgh as a basing point are largely exaggerated in the application in so far as that practice affects the great bulk of the western and northwestern territory. The use of through rates based upon the practice of fabrication in transit, and the difference between through rates and the sum of local rates in many parts of the country minimize the freight differential, and in many cases all-water or combined rail-and-water rates as compared with all-rail rates from Chicago to points west leave little margin in the local rate from Pittsburgh to Chicago.

The Inland Steel Co., therefore, expresses its conviction that the applicants, as well as steel users generally, would be quite as likely to be harmed as to be helped by the granting of the application, and the Inland Steel Co. believes that the obvious result of forbidding the use of the Pittsburgh base rate would be to introduce a large element of confusion and uncertainty into steel and iron prices which would be especially injurious under the present conditions of economic unrest and uncertainty.

Dealer Says Change Would Upset Trade

AN interesting and thoughtful communication giving the viewpoint of the smaller dealer in steel, has been addressed to the federal trade commission on the advisability of retaining or abolishing the Pittsburgh base for steel prices, by W. A. Collings of the W. A. Collings Co., Kansas City. This communication is as follows:

Aug. 27, 1919.

Federal Trade Commission, Washington, D. C.

Gentlemen:

Referring to general circular No. 419 issued by Chamber of Commerce of United States of America, in relation to the basing point for steel and your invitation to make a statement to the commission, I beg to state that after 35 years of experience in steel buying as a small dealer, I do not think of any injustice brought about by using Pittsburgh as the single basing point for steel prices, in fact, when considering the small buyer as well as the large one, I feel that the single basis has always had a steadying influence on the market, considering all the varying conditions which exist.

I think every steel buyer will agree that after all, the most important feature of the matter is SERVICE, that is, whether one can get steel when needed and in my opinion we shall have a hard time getting steel for the next four or five years.

This subject is so intricate and far-reaching and has so many angles, some apparently diametrically opposed to each other that it is almost impossible to properly present it and I do think with the present unsettled conditions of labor, building construction and the steel market, it is a very bad time to take up ths matter.

We all know there are times when the Chicago mills are crowded with orders and the Pittsburgh mills may be slack. In this case, a dealer in the west who had figured on the Chicago basis, and who could not get steel from Chicago, but who had contracted to furnish his customer at the Chicago basis price, would either have to get steel from Pittsburgh, on a Pittsburgh basis price, or go without. This would cause constant confusion.

To present my views briefly, may I ask the following questions?

Can we, in peace times, force any company to sell any commodity at any price we wish?

If we have a double price basis, would it restrict competition by keeping the Chicago mills out of the Pittsburgh district and vice-versa, when competition is just what we want?

How far east of Chicago would the Chicago basis apply?

Would the dealer who bought steel on a Chicago basis sell at a cheaper price than the dealer who bought on a Pittsburgh basis?

How would we arrive at the proper price to charge at Chicago, above the Pittsburgh price? (I assume the other

basing point would be Chicago.)

At present, a small dealer can buy a mixed car of a number of steel products, all carrying the same freight rate, but not made in the same mills, the steelmakers carrying stocks in their warehouses for this purpose. A double price basis might stop this, as the mills could not carry stocks, forcing the small dealer to buy a full car of each commodity, some at Chicago, some at Pittsburgh, which of course, he could not do, as he cannot use a full carload of each.

There are at present independent mills at Pittsburgh, which make products that are not made in the Chicago district, but which compete with a product made by the United States Steel Corp. mills in Chicago district; if the Chicago *two-base* price should apply, it would put the independent Pittsburgh mill out of business.

How would it affect the large jobbers, say in Chicago, who carry large steel stocks, bought either at Pittsburgh or Chicago mills at the present satisfactory single base price—suppose the Chicago mills being congested, they had to buy in Pittsburgh at Pittsburgh price and mix with stock bought at the Chicago price—would this not be most fearfully confusing? How could they make staple quotations to their customers and would they not have to quote two prices on all steel bought at either Chicago or Pittsburgh? Would this not apply to the local jobber and small dealer also?

There are many steel products that are made in the Pittsburgh mills but which are not made in the Chicago district. What price basis would we use for Chicago district sales?

If we make two basing points, say Chicago and Pittsburgh, why not eight or ten—such as Sparrows Point, Cleveland, Birmingham, Ala., Dallas, Duluth, Los Angeles, San Francisco and Seattle?

We have a small mill here at Kansas City—what basis would this mill use?

Of course, we must consider the interests of the steel producer, the manufacturer who uses steel, the jobber, the small dealer and the ultimate consumer, but it appears to me that the parties who are pushing this investigation and who are in favor of a double basis, are considering only the ultimate consumer.

All mills cannot make steel equally economical; many of the older Chicago mills perhaps would have to shut down if forced to make a less price than the more highly efficient mills at Pittsburgh, with Chicago freight added.

Are we sure that the Chicago mills can make all the steel needed in the Chicago district and in the West? If not, it will be seen what confusion would arise when two dealers compete in the same town—one who buys on the Chicago basis and one who buys on a Pittsburgh basis.

Suppose it should be found that the Chicago mills could not turn out a sufficient amount of any particular kind of steel to fill the Chicago district's needs, then some small dealers (the large jobber would be sure to get his at the lower price) would have to buy at Pittsburgh at the higher price. How could the small dealer stay in business? This applies also to the Pittsburgh district.

Many works in the Chicago district only handle semifinished billets or rods, turning these into the finished products, such as wire, barb wire, nails, etc., buying the raw material on a Pittsburgh base and selling on a Chicago base. If the difference between Pittsburgh and Chicago was not enough, these mills would have to go out of business.

If we make a lower basing price at Chicago than the Pittsburgh price (say 10 cents above Pittsburgh), with freight added to Chicago, what would hinder the mills from raising the price at Pittsburgh, to make up for the difference, automatically raising the price at Chicago?

There are many disadvantages which I can see would work against the small dealer, and I am only considering him, if any change is made in the present single Pittsburgh base and I feel confident any change would put many small dealers out of business as well as some of the independent mills by the larger, favored firms being able to get their stock on a Chicago basis, while the small less favored dealer would have to get his stock at Pittsburgh on a Pittsburgh basis.

On this account and for the further reason that it would add to the present commercial confusion, when everything should be done to encourage and coax business, I believe it would be very unwise to make any change at the present time.

Yours very respectfully,

W. A. COLLINGS.

Kansas City, Mo.

Pittsburgh Chamber Asks System be Retained

Strong protest was made against any increase in the number of basing points on iron and steel by the Pittsburgh chamber of commerce at a largely attended meeting held last Friday afternoon, when a set of resolutions setting forth why the application of the Western Association of Rolled Steel Consumers to the federal trade commission for a Chicago base should be denied unanimously was adopted. These resolutions, drawn up by the chamber of commerce committees on trade and commerce and transportation and railroads, jointly, point out that the Pittsburgh district is the largest producer of iron and steel of any in the United States; draw attention to development, stimulation and stabilization which are more certain from a single basing point and to the possibility of injury to the industry which might result from a number of basing points.

The resolutions, which will be filed with the federal trade commission, follow:

Whereas, the Pittsburgh iron and steel district has always been the largest producer of iron and steel in the United States, and

Whereas, it has by common usage been the practice of all manufacturers of iron and steel, on account of the large production of iron and steel in the Pittsburgh district, to make Pittsburgh the basing point for prices of iron and steel, and

Whereas, the practice of making the Pittsburgh district the basing point for iron and steel, by reason of its very large production, existed, by common usage many years before the United States Steel Corp. and other large steel interests were organized or located in the Chicago district, and

Whereas, a basing point is a trade necessity looking to the development, stimulation and stabilization of business, and is necessary to enable the buyer to compare quotations, and

Whereas, in establishing a basing point we are removing, as far as possible, obstacles to the free movement of merchandise from manufacturer to consumer, as when all prices are quoted f.o.b. the basing point a comparison of prices is all that is necessary, the freight being equalized, and

Whereas, two or more basing points will work an injury to industry as a whole, will mean a division into districts and interfere with the buyer placing his orders to advantage with the manufacturers best fitted to meet his needs, thus restricting competition, and

Whereas, Pittsburgh, first the sole basing point, is the foundation of the steel industry, and by reason of location and tonnage output, is the logical sole basing point. Pittsburgh will always remain a basing point and as two or more basing points tend to restrict competition, it should remain the sole basing point,

Be It Therefore Resolved, that the chamber of commerce of Pittsburgh file with the Federal Trade commission its formal protest against any change being made in the sole use of Pittsburgh as a basing point in making prices on iron and steel.

Private Interests Pay Half of Job Bureau's Cost

Washington, Sept. 2.—According to a statement given out by the department of labor, one-half of the expense of maintaining the United States employment service now is being borne by the chambers of commerce, welfare organizations, municipalities and other outside agencies. During July these outside contributions, which have been promised until congress acts upon the Nolan-Kenyon bills for a permanent employment system, aggregated $61,424.85.

Because of this voluntary support, which prevented 300 employment offices throughout the country from closing on July 1, the federal employment service has been able to maintain its previous placement rate and soldiers and civilian workers were placed in jobs during July at the rate of 60,000 a week, the department says. The total placements for July, it is stated, were only slightly under those of June, being 234,683, with reports from several states not yet received. The cost for each placement to the government during the past month is given as 39 cents.

Gompers Puts Brake On Radicals

Federation's Executive Council Refuses to Sanction Steel Strike and Also Postpones Action on Shopmen's Strike for 90 Days—Judge Gary in Letter to Committee Declares it Does Not Represent the Will of the Workers

WASHINGTON, Sept. 2.—The American Federation of Labor evidently is not willing, at least at this time, to back the demands of the self-styled committee headed by John Fitzpatrick, in the efforts to organize workers in the iron and steel industry. This was plainly indicated at a meeting late last week of the committee and the executive council of the federation with President Gompers.

The council took the request of the committee "under advisement," it is reported, without any promise whatsoever that it would commit the federation to supporting a strike in the industry. It is believed that this action is tantamount to a refusal by Gompers and the executive council to give recognition to the abortive attempt of the steel workers' committee to stir up trouble. The position of the executive council is taken to mean that it recognizes there are two fundamental elements in the labor and industrial situation of the country. These elements are:

FIRST—That radical steps by organized labor at present would react unfavorably upon it through resentment of the public and that good politics prompts it to proceed with caution and to discourage steps that extremists are urging. This is implied by the influence brought to bear by Gompers in the case of the threatened railroad strike as a result of which the executive council postponed the strike, with the inference that it will not be called if the price of living is brought down within 90 days.

SECOND—Gompers and the executive council apparently realize fully that organized labor has only a small representation in the steel industry and that attempts to unionize it would fail, resulting in a further setback to the federation. In other words, this is interpreted as showing that the federation realizes the truth of the statement of E. H. Gary, chairman of the United States Steel Corp., to Fitzpatrick's committee that it does not represent the views of the steel workers.

While Fitzpatrick, his committee, or others at the conference would not talk as to how the conference regarded the attempt to organize the steel workers, it was evident that those seeking to bring this about are discouraged over the attitude of the executive council, because their extravagant claims and their threats to strike were not supported. Efforts are being made at further conferences to enforce the demands, but it is believed the council will not heed them for the present, if at all

Gompers is charged by the radical element in the labor federation with being too conservative in his attitude in urging caution about creating a labor turmoil in either the railroad or steel strike situation. This is said to have prompted the steel workers' committee to insist that Gompers arrange for a conference with President Wilson. The conference was held Aug. 29 and lasted 45 minutes. The labor delegation, headed by Gompers, in addition to him, was composed of John Fitzpatrick, D. J. Davis, Edward J. Evans, William Hannon and William Z. Foster.

The steel workers' committee prior to the conference here had spoken of the likelihood of an immediate and general strike. Therefore considerable significance was attached to a statement made by one of its members after the White House conference that the committee had the power "to extend the date of the strike, while negotiations are pending." A few hours previous the committee sent a telegram to James Mulholland, secretary of the Gary, Ind., Allied Iron and Steel Workers' council, asking the workers not to strike "under any circumstances" until the strike date had been set by the committee.

It is assumed that the delegation sought to have the President intervene in the steel strike situation, but the President has made no move. In a statement issued on Labor day the President called for a conference of representatives of employers and employes to be held in Washington to study the entire labor situation with a view to establishing a new basis of understanding between capital and labor. He urged employes in all lines of endeavor to remain at work, at least until the government has had a fair chance to reduce the cost of living, and to increase production. From the general nature of the President's appeal it is believed that he will not interfere at present in the steel controversy.

It is assumed that the conference will be held early in October. Curiously enough, neither labor nor employing interests have shown any enthusiasm for such a conference, which has been suggested for some time in administration and congressional circles. Reports in circulation that the President will ask Judge Gary to come to Washington for a conference before the former leaves Washington Sept. 3 are lacking verification.

Judge Gary on Aug. 27 refused for the second time to meet with or enter into any discussion with the committee. The committee, as stated in last week's issue of THE IRON TRADE REVIEW, appeared at Judge Gary's office, 71 Broadway, New York, on Aug. 26, but Judge Gary declined to see it, asking that it submit its proposals in writing. After their visit, the trades union men sent to the judge the following letter:

New York, Aug. 26, 1919.

Hon. Elbert H. Gary, Chairman, Finance Committee,
United States Steel Corporation,
71 Broadway,
New York City.

Dear Sir:

During a general campaign of organization and education conducted under the auspices of the American Federation of Labor, many thousands of men employed in the iron and steel industry made application and were enrolled as members of the various organizations to which they were assigned.

This work has been carried on to a point where we feel justified in stating to you that we represent the sentiment of the vast majority of the employes of this industry, and acting in behalf of them, we solicit of you that a hearing be given to the undersigned committee, who have been selected by the duly accredited representatives of the employes, to place before you matters that are of vital concern to them, and concerning hours of labor, wages, working conditions and the right of collective bargaining.

The committee called at your office at 3 p. m., Tuesday, Aug. 26, and requested a conference. We were advised by your messenger that you wished to be excused from a personal interview at this time and requested us to state our business in writing and whatever matters we wished to submit would be taken up by yourself and your colleagues and given consideration.

Therefore, we are submitting, in brief, the principal subjects that we desire to have a conference on. The committee has an important meeting in another city on Thursday next and will leave New York at five o'clock on Aug. 27,

1919. May we respectfully request that your answer be sent before that time to Mr. John Fitzpatrick, Continental Hotel, Broadway and Forty-first street, New York City?

Yours very truly,
(Sgd) John Fitzpatrick,
David J. Davis,
Wm. Hannon,
Wm. Z. Foster,
Edw. J. Evans,
(Committee).

Judge Gary, in a reply which was communicated to the labor representatives, Aug. 27, stated that he did not believe the labor committee represented the sentiment of the vast majority of the employes of the United States Steel Corp. He pointed out that the position of the corporation had not been changed, that it was opposed to the closed shop and favored the open shop, because the latter promotes the welfare of both the employes and the employer.

Judge Gary added that the Steel corporation does not combat labor unions as such, but refuses to discuss business with union representatives. Judge Gary's reply follows:

Aug. 27, 1919.

Messrs. John Fitzpatrick,
David J. Davis,
William Hannon,
Wm. Z. Foster,
Edw. J. Evans,
Committee.

Gentlemen:

Receipt of your communication of Aug. 26 instant is acknowledged.

We do not think you are authorized to represent the sentiment of a majority of the employes of the United States Steel Corp. and its subsidiaries. We express no opinion concerning any other members of the iron and steel industry.

As heretofore publicly stated and repeated, our corporation and subsidiaries, although they do not combat labor unions as such decline to discuss business with them. The corporation and subsidiaries are opposed to the "closed shop." They stand for the "open shop," which permits one to engage in any line of employment whether one does or does not belong to a labor union. This best promotes the welfare of both employes and employers. In view of the well known attitude as above expressed, the officers of the corporation respectfully decline to discuss with you, as representatives of a labor union, any matters relating to employes. In doing so no personal discourtesy is intended.

In all decisions and acts of the corporation and subsidiaries pertaining to employes and employment their interests are of highest importance. In wage rates, living and working conditions, conservation of life and health, care and comfort in times of sickness or old age, and providing facilities for the general welfare and happiness of employes and their families, the corporation and subsidiaries have endeavored to occupy a leading and advanced position amongst employers.

It will be the object of the corporation and subsidiaries to give such consideration to employes as to show them their loyal and efficient service in the past is appreciated and that they may expect in the future fair treatment.

Respectfully yours
E. H. Gary,
Chairman.

After receiving Judge Gary's letter, which was discussed at the meeting of the executive council in Washington, the committee sent a letter from which the following is quoted:

We have received your answer to our request for a conference on behalf of the employes of your corporation and we understand the first paragraph of your answer to be an absolute refusal on the part of your corporation to concede to your employes the right of collective bargaining.

You question the authority of our committee to represent the majority of your employes. The only way by which we can prove our authority is to put the strike vote into effect and we sincerely hope you will not force a strike to prove this point.

We asked for a conference for the purpose of arranging a meeting where the question of wages, hours, conditions of employment and collective bargaining might be discussed. Your answer is a flat refusal for such a conference.

We read with great care your statement as to the interest the corporation takes in the lives and welfare of the employes and their families, and if that were true, even in a minor degree we would not be pressing consideration through a conference of the terrible conditions that exist. The conditions of employment, the home life, the misery in the hovels of the steel workers is beyond description. Surely this is a matter which might well be discussed in conference.

You also made reference to the attitude of your corporation in not opposing or preventing your employes from joining labor organizations. It is a matter of common knowledge that the tactics employed by your corporation and subsidiaries have for years most effectually prevented any attempt at organization by your employes.

Some few days are still at the disposal of our committee before the time limit will have expired when there will be no discretion left to the committee but to enforce the decree of your employes whom we have the honor to represent.

British Strike Movement is Broken

Special Staff Correspondence

BIRMINGHAM, Eng., Aug. 15.—The general industrial situation here has brightened with the decision of the Yorkshire miners to resume work, although full operations in some parts of the coal fields will not be possible for weeks, and in some instances for months. Neither the necessary pumping nor ventilation was maintained during the strike. In West Yorkshire a dispute as to the retroactive date for the payment of the increase to enginemen may delay work, but the general belief is that the difficulty will be removed soon by some provisional understanding.

It is not only in the coal mines that the difficulty arising out of the strike will persist for some time. The closing of many of the Sheffield works has not only caused great loss to employers and much suffering to their workpeople, who are in no way responsible for the action of the miners, but it has also seriously affected every industry in the country. At least 20 manufacturers in the Birmingham and Staffordshire district have had to curtail production and, in certain cases, all departments had to be shut down because of the lack of supplies of steel from Sheffield. The effect upon the general fuel situation has been even more widespread. It will not be possible to make up the shortage of coal before winter, and beside the hindrance to industry there is danger of great hardship for domestic consumers.

It is probable that the Yorkshire miners will now be content to accept the national basis agreed on between the government and the miners' federation for the adjustment of tonnage rates to meet the loss of earnings which would otherwise be sustained by the piece workers through the reduction of the shift from eight hours to seven. The difference between this basis and that for which the Yorkshire men struck is only one decimal point, a ratio of 14.2 per cent as compared with one of 14.3 and represents a very trifling sum on a day's earnings.

Other evidences have come to light indicating a decline of the strike fever. A strike of 65,000 northern railroad employes over the application of a recent government wage award is threatened,, but an offer has been made which may avert the trouble.

The threat of direct action by the "triple alliance," the miners, railroad men and transport workers can now be considered negligible. It is not intended even to take a vote of the members of their unions on the subject. The explanation given by the leaders is that the occasion for an attempt to influence the political situation by a general strike has passed, but there is little doubt that the advocates of direct action concluded that public opinion was overwhelmingly against them.

Another welcome announcement is that of the decision of the government to avoid future intervention in labor disputes, except in cases of grave danger to national interests. There is no doubt that the readiness with which advances were granted when wage disputes were settled by government tribunals has had much to do with the frequency of new demands.

The increasing sentiment among employers and employes in favor of cooperation and negotiation was manifested this week in Birmingham by the success of the first convention of the Industrial League. The league was formed during the war largely at the instance of leading trade unionists who foresaw that peace would bring labor troubles, and having had long and bitter experience with the strike method of settlement were anxious to find a better way. The three-day convention was attended by many leading employers from all parts of the country and by representatives of many of the principal trade unions. The spirit displayed by both sides was gratifying.

British Firm Gives Fifth of Profits to Workers

William Gray & Co., a large shipbuilding corporation of West Hartlepool, Eng., have decided to set aside 20 per cent of their profits to be divided among their workers. The amount to which each employe is entitled to will be based on earnings exclusive of overtime, and will be dependent upon his having attained the age of 21 years, having been in the service of the company at least one year, and having lost through his own fault not more than 12 days' time in a year.

Furness Wilthy & Co., another large British shipbuilding firm, adopted a profit-sharing plan about nine years ago, making an employe a shareholder and guaranteeing him a dividend of 4 per cent. The company deducted from the employe's wages amounts sufficient to purchase shares in the company. This was objected to by trades unions on the ground that the employe needed all his wages to live, and also, that he could not seek work in another yard without losing his dividend. The plan failed owing to the objection of the trades unions.

The plan adopted by William Gray & Co. aims to overcome these objections by sharing profits without making the worker a stockholder. It is provided that time lost due to strikes will not be considered as time wilfully lost, while there is no reference in the plan to strikes in breach of an agreement.

Puddling Wage Rates Remain Unchanged

No change will be made in puddlers' wages during the next two months by mills in the Western Bar Iron association as a result of bimonthly settlement made in Youngstown last week.

Examination of the sales sheets of the mills disclosed there had been no change in the average price from the card rate of 2.50c on which the last previous settlement was made at Atlantic City, July 1. Settlements made March 1, May 1 and July 1 showed progressive reductions from the 3.45c card prevailing when the settlements of the six months preceding March 1 were made. The comparative bimonthly bar iron average price per ton since January, 1918, and the resulting puddling rate for the two months following are as follows:

	1918		1919	
January-February	3.10c	$15.05	3.10c	$15.05
March-April	3.30c	$16.05	2.75c	$13.30
May-June	3.35c	$16.30	2.50c	$12.38
July-August	3.40c	$16.55	2.50c	$12.38
September-October	3.45c	$16.80		
November-December	3.45c	$16.80		

Advance Housing Plan

Chicago, Aug. 25.—Expenditure of several million dollars to add to housing facilities at Indiana Harbor, Ind., to provide living quarters for employes of the Inland Steel Co. will result from the formation of the Indiana Homes Co. which has practically completed the purchase of 340 acres in the southern part of Indiana Harbor. This will accommodate about 2000 families.

Labor conditions have been poor in the vicinity of Indiana Harbor and the Inland Steel Co., the largest industry there, has had trouble finding homes for all its workmen. The new housing project is being financed by members of that company. As a result the company may be enabled to go ahead later with its plan of adding to its sheet mills and building a rail mill to round out its equipment.

Hammond Strike Broken

Chicago, Aug. 26.—Under protection of state militia the strike of workmen at the plant of the Standard Steel Car Co. at Hammond, Ind., seems to have been broken and strikers are returning to work. Each day sees more of the former employes returning to their tasks and there has been no disorder for several days. The company had considered evicting strikers from company houses to make room for new workers but this probably will not be necessary under the circumstances.

LABOR NOTES

The Midvale Steel & Ordnance Co., as a part of its interest in communities where its plants are located, is fostering erection of a new Methodist Episcopal church at Coatesville, Pa. It has donated land upon which the church will be built, its engineers have drawn plans for the new church free of charge, and the company is furnishing the building material to the congregation at cost.

* * *

F. E. Bath, representing the Graton & Knight Mfg. Co., Worcester, Mass., and John J. Lacava, representing its employes, have started on a country-wide tour to make a survey of conditions in about 50 leather factories, in compliance with the terms of agreement in the settlement of the recent strike. The result of their trip will determine the question of granting the 8-hour day and increased wages, this depending on the hours and wages which prevail in other cities taken as an average among the employes.

* * *

The average increase in the cost of operating the new state compensation law over the old law will be approximately 30 per cent, according to E. H. Downey, rate expert of the Pennsylvania state department of insurance. He has figured that in the mining districts the increase will amount to 20 per cent, 30 per cent in the manufacturing industries and 25 per cent in construction work. There will be an advance in death benefits of 10 per cent, in permanent disability 30 per cent, and temporary disability, 40 per cent. While the advance of medical costs will be nearly 50 per cent.

Reduced Stocks

Cause Good Demand for Refractories from Steel Industry—Cars Short

Pittsburgh, Sept. 2.—Steel manufacturers are specifying quite freely against their contracts for refractories and manufacturers of the latter are all fairly busy. Extensive repairs to both blast furnaces and open-hearth furnaces of the steel plants appear to have exhausted reserve supplies and current orders and specifications are believed to be largely for the purpose of replenishing stocks. Demands for silica brick are especially large. Prices show no special change than those of the past four or five weeks but the tendency is stronger as a number of the smaller producers have cost closely approximating current selling prices. While no particularly strong effort is being made to boost prices, most manufacturers have enough business in sight as to be disinclined to take on additional business at any lower figures.

Complaints of car shortages still are being heard and the fact that plants are running only about 60 to 70 per cent of capacity may be ascribed partly to this condition. The supply of box cars is much curtailed, due to the demands for equipment for moving the grain crops. Some manufacturers now are freely using gondolas to move their product.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 41.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent.	$ 40.00 base
76 per cent.	100.00 base

The H. E. Barton Tool Co., 106 South Jefferson street, Chicago, now is Chicago agent for the independent lathe chucks, manufactured by Terkelsen & Wennberg, 326 A street, Boston, and all sizes are carried in stock. The latter company now is New England representative for the roller bearing drill chuck, made by the Neilsen-Barton Chuck Co., Chicago.

Tender Dinner to Hoover

Under the auspices of the American Institute of Mining and Metallurgical Engineers, a banquet is to be tendered Herbert Hoover, after his arrival in this country before the middle of September. The actual date is to be decided upon after a cable is received from Mr. Hoover. This dinner will be in testimony of the admiration of the engineers of America for services rendered by Mr. Hoover in international affairs during the past five years and it is expected to tax the capacity of the largest of banquet halls among New York hotels. An executive committee has been appointed, with W. L. Saunders, 11 Broadway, New York, as chairman; Charles F. Rand, 71 Broadway, vice chairman; E. P. Mathewson, 120 Broadway, vice chairman, and Albert C. Ludlum, secretary. The first three hold the same positions on the general committee, made up of over 100 prominent mining and metallurgical engineers.

Raise Castings Standard

A new booklet on malleable iron and its production, which describes the methods that are being employed toward the improvement of malleable cast iron has been issued by the American Malleable Castings association, 1900 Euclid building, Cleveland. This association has for its purpose the establishment of a high standard of quality, and its various activities are being directed to that end. Aside from the various laboratories of its members, the association has maintained at Albany a research department for investigation and experiment and for testing and analysis of the daily output of each of its members. Results of these tests, together with directions for improvement where the need has been indicated, are forwarded to the respective members. The association will continue these daily tests and analyses in order to grade the products of each member. Where a member's product has daily met the requirements of the prescribed standard for a period of three months, a certificate of quality will be issued and the member then may call his product "Certified Malleable Castings."

Pig Iron Output

For First Half of 1919 Indicates Heavy Annual Loss

Pig iron production in the United States for the first six months of 1919, compared with both the first half of 1918 and the last half of 1918, shows a material loss. If production for the last six months of this year is continued at the same rate as during the first half, the 1919 total will fall 6,495,641 tons below that of 1918. The slump in blast furnace activity from January to June is responsible for the low production figure. Judging from the improved production of July and the number of idle stacks blown in during the month, the last six months' total will be considerably larger, with the result that the 1919 output may compare favorably with the 1918 output.

According to the statistics compiled by the American Iron and Steel institute, the production for the six months ending June, 1919, was 16,278,175 tons, 1,949,555 tons less than for the same period last year and 4,546,086 tons less than for the six months ending Dec. 31, 1918. Of the 16,278,175 tons produced, 16,036,218 tons were made with coke compared with 17,933,932 tons the first half of 1918 and with 20,488,243 tons the last half of 1918. Anthracite iron with 67,592 tons fell from 120,404 tons and 163,188 tons, respectively. Charcoal iron with 174,365 tons was about an average of the two six-month periods last year.

Production of pig iron by grade shows the following: Basic, 7,910,295 tons; bessemer and low-phosphorus, 5,181,621 tons; foundry including ferrosilicon, 2,436,023 tons; malleable, 465,823 tons; forge or mill, 104,874 tons, ferromanganese, 106,056 tons and spiegel, 38,136 tons. Merchant iron or iron made for the market totaled 4,499,133 tons while iron made for the maker's use totaled 11,779,042 tons.

Wants Catalogs

C. Carnoy-Vandensteen, Gand, Belgium, is interested in receiving catalogs and prices from American manufacturers of iron and steel tubes, valves, fittings and parts for steam and hot water heating systems, pumps of various kinds, radiators, etc.

Cole & Krentler, 220 Burlingame avenue, Detroit, are representing the McInnes Steel Co., Corry, Pa., in the sale of tool steels.

Pig Iron Output First Half of 1919

Compiled by American Iron and Steel Institute

HALF-YEARLY PRODUCTION OF ALL KINDS OF PIG IRON.

States.	Blast furnaces.				Production—Gross tons. (Includes spiegeleisen, ferro-mang., ferro-silicon, ferro-phosphorus, etc.)		
	In blast Dec. 31 1918.	June 30, 1919. In.	Out.	Total.	First half of 1918	Second half of 1918.	First half of 1919.
Maine	0	0	0	0			
Massachusetts	1	0	2	2	5,470	7,015	4,914
Connecticut	2	0	2	2			
New York	23	15	12	27	1,339,472	1,531,646	1,140,040
New Jersey	3	2	3	5			
Pennsylvania	127	75	90	165	7,121,903	8,076,368	6,010,549
Maryland	3	1	4	5	174,408	199,409	129,548
Virginia	13	3	16	19	263,676	250,061	193,111
Alabama	30	17	27	44	1,286,571	1,301,281	990,122
Georgia	0	0	4	4			
Texas	0	0	1	1			
West Virginia	4	1	3	4	264,151	330,524	211,058
Kentucky	5	1	6	7			
Mississippi	0	0	1	1			
Tennessee	9	2	14	16	180,978	179,844	109,919
Ohio	74	48	31	79	4,059,603	4,704,529	3,952,117
Illinois	23	12	13	25	1,505,113	1,935,194	1,435,249
Indiana	16	11	5	16			
Michigan	12	12	0	12	1,402,667	1,670,932	1,514,697
Wisconsin	5	2	6	8			
Minnesota	3	2	1	3	368,469	381,897	332,109
Missouri	3	2	1	3			
Iowa	0	0	0	0			
Colorado	3	3	3	6			
Montana	0	0	0	0	246,249	258,214	254,742
Oregon	0	0	1	1			
Washington	1	0	1	1			
California	0	0	0	0			
Total	360	209	247	456	18,227,730	20,826,914	16,278,175

HALF-YEARLY PRODUCTION OF COKE PIG IRON.*

Maine	0	0	0	0			
New York	23	15	11	26	1,334,792	1,527,538	1,141,240
New Jersey	3	2	3	5			
Pennsylvania	116	73	76	149	7,005,488	7,916,892	5,942,159
Maryland	3	1	3	4	174,208	199,264	129,276
Virginia	13	3	14	17			
Georgia	0	0	2	2	264,396	250,061	194,611
Texas	0	0	1	1			
Alabama	28	17	25	42	1,273,905	1,287,388	979,998
West Virginia	4	1	3	4			
Kentucky	5	1	6	7	263,431	330,524	209,558
Tennessee	9	2	12	14	189,852	177,848	109,919
Ohio	74	48	31	79	4,059,603	4,704,529	3,952,117
Illinois	23	12	13	25	1,505,113	1,935,194	1,435,249
Indiana	16	11	5	16			
Michigan	3	3	0	3	1,430,080	1,721,731	1,532,127
Wisconsin	4	2	4	6			
Minnesota	3	2	1	3			
Missouri	1	0	1	1			
Iowa	0	0	0	0			
Colorado	3	3	3	6			
Montana	0	0	0	0	433,064	437,274	409,964
Washington	1	0	1	1			
Oregon	0	0	1	1			
California	0	0	0	0			
Total	332	196	216	412	17,933,932	20,488,243	16,036,218

* Includes ferro-alloys made with electricity, electricity and coke, etc.

ANTHRACITE AND MIXED ANTHRACITE AND COKE PIG IRON.

New Jersey	0	0	0	0			
Pennsylvania	9	2	9	11	120,404	163,188	67,592
Total	9	2	9	11	120,404	163,188	67,592

HALF-YEARLY PRODUCTION OF CHARCOAL PIG IRON.

Massachusetts	1	0	2	2			
Connecticut	2	0	2	2	5,470	6,015	3,714
New York	0	0	1	1			
Pennsylvania	2	0	5	5	691	1,396	798
Maryland	0	0	1	1			
Virginia	0	0	2	2	12,866	14,038	10,396
Alabama	2	0	2	2			
Georgia	0	0	2	2			
Tennessee	0	0	2	2	126	1,996	.....
Mississippi	0	0	1	1			
Michigan	9	9	0	9	124,209	121,800	114,579
Wisconsin	1	0	2	2			
Missouri	2	2	0	2	30,032	30,238	44,878
Total	19	11	22	33	*173,394	*175,483	174,365

* Includes small tonnage made with charcoal and coke mixed.

TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

Coke*	332	196	216	412	17,933,932	20,488,243	16,036,218
Anthracite†	9	2	9	11	120,404	163,188	67,592
Charcoal‡	19	11	22	33	173,394	175,483	174,365
Total	360	209	247	456	18,227,730	20,826,914	16,278,175

* Includes ferro-alloys made with electricity.
† Includes mixed anthracite and coke pig iron.
‡ Includes small tonnage made with charcoal and coke.

HALF-YEARLY PRODUCTION OF BASIC PIG IRON.

States.	First half of 1918.	Second half of 1918.	First half of 1919.
New York, New Jersey	658,750	687,646	429,690
Pennsylvania—Allegheny County	1,694,024	1,821,725	1,679,013
Other counties	2,157,676	2,651,555	1,774,224
Virginia, Alabama, Kentucky	625,019	706,433	514,872
Ohio	1,544,630	1,816,051	1,505,219
Indiana, Illinois	1,617,829	2,015,488	1,691,566
Michigan, Minnesota, Missouri, Colorado, Washington, California	319,764	329,584	315,711
Total	8,617,692	10,028,482	7,910,295

HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

New York, New Jersey	193,063	211,553	210,510
Pennsylvania	2,603,066	2,706,958	1,959,459
Maryland	170,153	195,921	127,328
West Virginia, Kentucky, Tennessee, Ala.	201,726	306,196	181,839
Ohio	1,897,869	2,347,132	1,845,941
Indiana, Illinois, Wisconsin, Colorado	940,730	1,250,599	856,544
Total	6,006,607	7,018,359	5,181,621

HALF-YEARLY PRODUCTION OF FOUNDRY PIG IRON AND FERRO-SILICON.

Maine, Massachusetts, Connecticut	5,410	6,890	4,871
New York, New Jersey	380,391	448,433	419,378
Pennsylvania	340,499	445,345	385,807
Maryland, Virginia, West Virginia	256,389	233,542	192,678
Georgia, Kentucky	27,957	34,158	25,240
Tennessee, Texas	171,409	152,247	90,757
Alabama	592,581	576,542	461,306
Ohio	327,570	332,631	388,638
Indiana, Illinois	26,281	27,385	67,772
Michigan	178,781	177,288	183,697
Wisconsin	140,548	135,650	123,903
Minnesota, Missouri, Iowa, Colorado, California, Oregon, Washington	70,905	56,428	91,976
Total	2,518,721	2,626,539	2,436,023

HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON.

New York	80,745	117,886	70,421
Pennsylvania	62,797	56,098	45,744
Ohio	212,567	175,945	165,732
Ala., Illinois, Michigan, Wisconsin, Missouri	251,209	160,667	183,926
Total	607,318	510,596	465,823

HALF-YEARLY PRODUCTION OF FORGE PIG IRON.

New Jersey	7,629	29,103	2,514
Pennsylvania	74,457	105,961	53,173
Virginia	.....	841	105
Tennessee	1,213	3,481	.....
Alabama	42,021	31,272	7,273
Ohio	72,316	25,638	41,809
Total	197,636	196,296	104,874

HALF-YEARLY PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE.

New York, New Jersey, Pennsylvania	190,831	306,614	110,377
Virginia, Alabama	24,062	39,321	17,507
Ill., Colorado, Mont., Wash., Oregon, Cal.	22,335	33,717	16,308
Total	237,228	379,652	*144,192

* 106,056 tons ferro-manganese and 38,136 tons spiegeleisen.

HALF-YEARLY PRODUCTION OF OTHER GRADES.

Conn., New York, New Jersey	8,076	8,166	4,743
Pennsylvania	9,431	11,096	5,579
Md., Va., W. Va., Ky., Tenn., Ala.	17,009	30,410	14,853
Ohio	4,651	7,132	4,778
Indiana, Illinois, Michigan, Wisconsin, Minnesota, Missouri, Iowa, Colorado, Cal.	3,361	10,186	5,394
Total	42,528	66,990	35,347

PIG IRON MADE FOR SALE OR FOR USE OF MAKERS IN THE FIRST HALF OF 1919.

Grades.	For sale.	For maker's use.	Total. Gross tons.
Basic	949,486	6,960,809	7,910,295
Bessemer and low-phosphorus	604,570	4,577,051	5,181,621
Foundry, including ferro-silicon	2,369,900	66,123	2,436,023
Malleable	465,643	180	465,823
Forge or mill	34,685	70,189	104,874
Ferro-manganese	31,651	74,405	106,056
Spiegeleisen	22,326	15,810	38,136
All other grades	20,872	14,475	35,347
Total	4,499,133	11,779,042	16,278,175

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Oliver Rim Co., Atlantic, Ga., manufacturer of the Oliver split demountable rim, has purchased a 14-acre tract of land on the Altanta and West Point & Southern railroads, near Camp Jessup, as the site for a new plant. The contract for the building has been let and actual construction is to begin at once. The plant is to be modern, fireproof buildings, of brick and steel, with more than 15,000 feet of floor space. It will be of the latest saw-tooth type of construction. J. S. & C. R. Collins, in the Empire building, Atlanta, have the contract for construction of the plant, which will be equipped for the manufacture of 1000 rims per day. Part of the machinery has been purchased and some of it is already in operation in temporary quarters in order that dies may be made and other equipment prepared for the rolling of rims just as soon as the new plant is completed, which will be before Jan. 1.

The Oliver Rim Co. is incorporated under the laws of the state of Georgia with a capital stock of $1,000,000 and has offices in the Empire building here. Elmer Oliver is president, V. G. Collis, vice president, and R. H. Lukenbill secretary and treasurer.

* * *

THE new electric welding plant of the United States Chain & Forge Co., at York, Pa., is nearing completion and the company expects to start operations on Nov. 1. This 1-story structu e, 150 x 800 feet, will be used for the manufacture of bright chain.

* * *

THE Charter Oak Machine Co., Hartford, Conn., recently incorporated under the laws of that state, has organized by the election of the following officers: President, A. L. Bleauchine; vice president, Frank Johnson; secretary and treasurer, W. J. Gengres.

* * *

THE Strauss Bascule Bridge Co., Chicago, has submitted plans and specifications to the city council of Kenosha, Wis., for the proposed new double-leaf bridge across the harbor inlet at Main street. The span is 145 feet and the cost of the structure is estimated at $300,000, including grading and paving. Approval of the plans by the railroad commission of Wisconsin will be necessary before bids are asked for the work. B. T. Brennan is city engineer.

* * *

THE Bridgeport, Conn., branch plant of the American & British Mfg. Co., Providence, R. I., which was devoted to the making of munitions during the war, is to be equipped for the building of automobiles. A four-cylinder, 6-valve car that will sell for $8000 and upwards is to be one of the products.

* * *

THE Southern California Iron & Steel Co. is preparing to erect a plant at Huntington Park, Cal., where it has bought a site containing 25 acres. The first construction will include eight buildings to house open-hearth furnaces, machine shop, forge shop and other utilities. Plans now in hand call for the expenditure of about $1,500,000.

* * *

THE new manufacturing plant of the Bridgeport Tube Works, 250 North avenue, Bridgeport, Conn., was sold at public auction, Aug. 14, to H. B. Houghton, Asbury Park, N. J., for $17,100. The mechanical equipment, machinery, machine tools, stock, office furnishings, etc., were sold in 368 lots to about 75 different manufacturers in the eastern part of the country.

* * *

THE International Harvester Co. has bought a block of real estate at Ninety-ninth street and Muskegon avenue, Chicago, covering about three and three-quarter acres. This is the second block of this size recently purchased. It adjoins the plant of the Wisconsin Steel Co. and will be held for future growth of that plant, no immediate plans for enlargement being made.

* * *

THE Erickson-Young Pattern & Mfg. Co., Beaver Dam, Wis., has been organized to manufacture wood and metal patterns for the general foundry trade and to conduct a machine shop. The principal owners are James Erickson, who has resigned as superintendent of the pattern department of the Western Malleables Co., Beaver Dam, and Harry Young, who has been associated with the Standard Steel Car Co. as resident inspector at the western shops in Beaver Dam, but who resigned Sept. 1 to take charge of the new business.

* * *

ORDERS for 100 tank cars recently were placed by the Livingston Refiners Corp., Tulsa, Okla., with the Pennsylvania Tank Car Co., Sharon, Pa., for use in transporting the Livingston Refiners Corp.'s petroleum products. Offices in addition to the general offices at Sharon are maintained by the Pennsylvania company at 50 Church street, New York; Third National Bank building, St. Louis, and 503 Market street, San Francisco.

* * *

FROM Swansea, Wales, it is reported that the Gravesend Steel & Tin Plate Co. has bought the Bryngwyn Steel Tin Plate Co., Messrs. W. Lewis & Son's Works, and the Cambria Tin Plate Works at Gorseinon. All these are situated in the Swansea district. The purchase price is approximately $1,216,625. It is considered an important development, and further similar combinations are regarded as probable.

* * *

THE plant of the Buffalo Metal Goods Co., Buffalo, maker of coaster brakes, which has been taken over by the General Motors Co., is to be operated under the general supervision of the New Departure Mfg. Co., Bristol, Conn., one of its most important subsidiaries. The management of the New Departure Mfg. Co. states for the present there will be no change, so far as the Bristol company is concerned.

* * *

AT THE present time, L. G. Williams, East View Farm, R. 6, Box 50, Hopkinsville, Ky., is organizing a company to manufacture a special line of farm and mining machinery in a new town in Oklahoma. A small foundry, equipped with all modern appliances will be built as will an up-to-date brass foundry, machine, blacksmith, forge and pattern shops. Modern tools, automatic machinery and labor-saving devices will be purchased.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Higgins Spring & Axle Co., of Racine, Wis., has disposed of its business, equipment and materials to a new corporation formed at Edgerton, Wis., under the name of Continental Axle Co., by James W. Menhall, who is head of the Highway Trailer Co., of Edgerton. The Continental company has been incorporated with a capital stock of $200,000 and will specialize in axles for motor trucks, trailers and tractors, as well as continuing the manufacture of heavy vehicle springs. The machine tool and other equipment of the Higgins works at Racine will be moved to Edgerton, where a new plant, 200 x 300 feet, will be erected at once. Foundations are being laid. This adjoins the Highway Trailer plant, but will be conducted as a separate institution, building axles for the Highway company as well as other truck, trailer and tractor concerns. Members of the Higgins company have a considerable interest in the Continental company, the other stockholders in which are members of the Highway concern.

* * *

THE Hart & Cooley Co., New Britain, Conn., maker of warm air registers, has sold its factory buildings on Booth and Orange streets in that city to the Fafnir Bearing Co., New Britain, for $123,500 cash. The seller occupies adjoining buildings.

* * *

THE Hartford Batteries Co., Hartford, Conn., has purchased the former plant of the Clark Bros. Bolt Co. in Milldale, Conn., and will begin operations as soon as alterations have been made. The Clark Bros. Bolt Co. has moved into a new factory in Southington, Conn.

* * *

THE Framingham Foundries of Framingham, Mass., have been reorganized through the purchase of the controlling interest by the B. F. Sturtevant Co. of Hyde Park, Mass. The new organization is operating under the name, Framingham Foundries, Inc., and has as its new officers, Noble Foss, president; W. Emerson Barrett, vice president; G. L. Briddy, treasurer, and John J. McElroy, chief engineer. The plant is being enlarged to provide for making brass and aluminum castings. Three hundred men are at present employed and the foundry is working at full capacity.

* * *

THE Federal Electric Co., manufacturer of electrical equipment, Lake and Desplaines streets, Chicago, and the Wabash Vehicle Co., builder of vehicles, Wabash avenue and Thirty-ninth street, have bought a tract of 38 acres on which they will build a plant for each company for the production of their several lines.

* * *

LANCASTER IRON WORKS, INC., Lancaster, Pa., which recently increased its capital stock advised this action was taken for the purpose of enlarging its plant. It is doubling its boiler shop and installing new and heavier equipment so as to do larger and heavier work. It is not in the market for new tools and equipment, orders for which have been placed.

* * *

PRACTICALLY all equipment in the condensing line, such as boilers, engines, ice machines, air compressors, motors, etc., will be required by the Galloway-West Co., Fond du Lac, Wis., which will build a combination condensory and milk factory. The main building will be 85 x 207 feet with a garage 52 x 65 feet and both buildings will be of reinforced concrete construction.

* * *

TO FACILITATE the handling of inbound materials as well as outbound shipments of its products, the Pittsburgh Crane & Equipment Co., Sharpsburg, Pa., is extending the crane runway over the railroad and making other improvements. It is at work on several modifications of its plant and is increasing its facilities for the manufacture of electric traveling cranes, hand power and jib cranes, etc.

* * *

THE Driver-Harris Co., Harrison, N. J., now is selling its wire rope products direct to the trade instead of through its former selling agents. These products include sash cord and tiller rope in plain iron, galvanized iron, phosphor bronze, special bronze, monel metal, and all special grades. In addition to this, the company has increased its facilities to include all grades of rope in 6 x 7, 6 x 12 and 6 x 19 construction, such as drilling cable, elevator rope, haulage rope, sand lines, etc., in all sizes up to ¾-inch.

* * *

IN order to provide for the needs of its rapidly increasing volume of business, the stockholders of the A. R. Purdy Co., Inc., 127 Christopher street, New York, have authorized the board of directors to increase the company's capitalization from $10,000 to $100,000. No change in the managing personnel will take place. A new warehouse recently was leased at 506 Hudson street, and alterations have connected it with the main warehouse at 125 to 127 Christopher street.

* * *

THE Duff Mfg. Co., Pittsburgh, is constructing an addition, 160 x 80 feet, to its works. The new building is of brick and steel, following the standard Austin industrial construction. It is designed to accommodate the forge shop and heat treating department. Provision has been made for installing 16 steam hammers, with an equal number of trimming presses. The heat treating department will be equipped with furnaces of the latest type, burning either oil or gas. The completion of the new forge shop, about Oct. 1, will enable the production of the company's jacks to be greatly increased.

* * *

THE Eisemann Magneto Corp. has been incorporated at Albany, N. Y., and will take over the business and assets of the Eisemann Magneto Co. Directors of the new organization include Joseph A. Bower, vice president of the Liberty National bank; Abram I. Elkus; Jacob S. Farlee, a voting trustee of the Buffalo & Susquehanna railroad; Franklin S. Jerome, of the Seymour Mfg. Co., of Connecticut; Raymond E. Jones, president of the Merchants' National bank; George E. Matthies, president of the Seymour Trust Co., of Connecticut; Horace A. Moses, president of the Strathmore Paper Co.; Latham R. Reed, of McClure, Jones & Reed, and William N. Shaw, vice president of the New York Air Brake Co. The company did a gross business of approximately $4,000,000 last year, according to a recent announcement.

Foreign Markets

Sought by Canadian Steel Manufacturers—Works Are Being Expanded

Toronto, Ont., Sept. 1.—Canadian steel producers are now looking abroad for new markets, and Canadian steel may find its way to England, South America and even Australia. It may be too soon to say England will be permanently at a disadvantage in the steel trade, but conditions since the armistice have been such that Canadian manufacturers think now is their chance to get a foothold in foreign markets. Canada imports much steel and therefore its capacity for exporting might be doubted. The answer to this may come in a greatly expanded steel industry in Canada. The Lake Superior Corp. is now enlarging its plant at Sault Ste. Marie, Ont., the Lake Huron Steel Corp., recently formed with head office at Goderich, Ont., is looking for a site for a large electric steel plant; the Dominion Steel Corp. is building a $5,000,000 steel plate mill and making improvements to its present plant, while the Nova Scotia Steel & Coal Co., New Glasgow, N. S., is contemplating enlargements. A new company, the Consolidated Iron & Steel Corp., Ltd., of Toronto, backed by $8,000,000 of Toronto and Detroit capital, also is to engage in the iron, steel and mining business, as recently announced.

The Brockville Moulding Sand Co., Ltd., has been incorporated to develop extensive bodies of molding sand in the vicinity of Fernbank, two miles from Brockville.

Labor troubles at the plant of the Algoma Steel Corp. are reported to have resulted in almost a complete shutdown. According to M. T. Gleason, secretary of the Trades and Labor council, men in the blooming mill were given the preference of having the force reduced or the plant closed.

Word has been received from C. Hartlett, acting Canadian trade commissioner at Melbourne, Australia, stating that he has received a letter from H. R. Harper, chief engineer for the electricity commissioners recently appointed in the state of Victoria to erect and operate a large powerhouse on the coal fields about 90 miles from Melbourne, respecting the electrical machinery and material required. Bids will be called for early next spring, and manufacturers in this country will be given ample opportunity to bid. In the meantime, in order that the chief engineer may familiarize himself with the latest type of machinery in use in America, manufacturers interested are invited to submit catalogs of electrical machinery and equipment.

Canadian Site Obtained For Steel Plant

Toronto, Ont., Sept. 1.—After several weeks of negotiations a site has been obtained in Goderich, Ont., for a plant for the Lake Huron Steel Corp., recently organized. The company is planning a steel plant to include six electric furnaces and equipment for the manufacture of steel products. The site comprises 250 acres along the shore of Lake Huron. The company will spend $2,000,000 the first year, and an additional $6,000,000 the second year in establishing the plant. Among those interested in the company are J. J. Mahon, Newark, N. J., former chief inspector of the imperial munitions board, formerly of the Crucible Steel Co. of America; J. A. Durfee, Pittsburgh, former general manager of the British Forgings, Ltd., Toronto; J. C. Jones, Cleveland, president of the Cleveland Steel Co.; Charles R. Talbot, Detroit, vice president of the National Bank of Commerce; Harry S. Hall, Detroit, general manager of the Lewis Hall Iron Co., and president of the Hall Motor Truck Co.; Stuart A. Howard, Detroit, representing New York and Detroit financial houses; Alan Warren, Cleveland, representing New York financial interests; C. F. Megow, St. Paul, Minn., president of the Charles Megow Tractor Co., and formerly of the Ford Motor Co., and Bert H. McCreath, Toronto.

Awarded Forgings

The McKinney Steel Co., Cleveland, has been awarded by the committee on the sale of materials of the Detroit ordnance district salvage board, 7100 tons of 240-millimeter shell forgings, located at the plant of the American Car & Foundry Co., Detroit, at $19.60 per ton. The bids on this material ranged from $17.50 to $19.60 per gross ton.

Will Witness Process

Metallurgists and mining engineers who attend the meeting of the American Institute of Mining and Metallurgical Engineers at Chicago, Sept. 22 to 26, will be given opportunity to witness a demonstration of the production of metallic tungsten and molybdenum at the plant of the Fansteel Products Co., North Chicago. An excursion to Milwaukee has been arranged for that day for the purpose of visiting plants in and about Milwaukee which manufacture mining machinery. A stop will be made at North Chicago to visit the Fansteel plant, and the entire metallurgical process will be shown, from the preparation and purification of the commercial concentrates including sintering the pulvurent metal into homogeneous billets by high amperage currents.

20,000 See Schwab Given French Decoration

A notable tribute was paid to Charles M. Schwab at his home in Loretto, Cambria county, Pa., Wednesday, Aug. 20, for the part he played in the winning of the war. In the presence of 20,000 persons, Monsieur N. J. Casenave, minister plenipotentiary from France, presented to Mr. Schwab the insignia of the French legion of honor, while the people of Cambria county presented him with an American flag. Gen. George S. Goethals, J. Leonard Replogle and Charles E. Piez, as well as local and state officials attended the ceremony. Included in the assemblage also were many business associates and close personal friends of Mr. Schwab.

The tribute was paid to Mr. Schwab particularly for his work as the head of the Emergency Fleet corporation. President Wilson sent a letter in which he said: "I wish I might be present to say to your neighbors how heartily we have all admired and appreciated the service you rendered the government in pushing forward the shipbuilding schedule." Letters were also received from Governor Sproul of Pennsylvania and Senator Boise Penrose in which they expressed appreciation of Mr. Schwab's services for the government.

"When the days were dark, when France had to yield ground to the enemy Mr. Schwab helped us," said Minister Casenave. "We came to him and he gave us everything we needed. He was always ready in every emergency. At Bethlehem there was melted the steel of liberty. Mr. Schwab helped us not only with steel, but with money and with credit, and by the confidence he showed in my country. Now that with your help we are victorious, France must recognize what this great optimist has done."

The Liberty Knife Co., New Haven, Conn., has increased its capital stock from $20,000 to $50,000.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

FRANK D. EGAN, formerly works manager of the Pittsburgh Iron & Steel Foundries Co., has become steel mill application engineer for the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. He will devote his entire time to the development of electrical apparatus for steel mills. Mr. Egan's experience with electrical devices as applied to steel mills, covers a period of about 20 years, all of which has been spent in the mills of the Pittsburgh district. In 1899, he entered the electrical department of the Homestead, Pa., plant of the Carnegie Steel Co., under the direction of Alva C. Dinkey, who then was superintendent of the electrical department. In 1903, he resigned to enter Grove City college where he completed a college course. After he was graduated, he entered the inspection department of the Westinghouse Electric & Mfg. Co., remaining a little over a year. He resigned to become assistant chief electrician at the Carrie furnaces of the Carnegie Steel Co. He then joined the electrical engineering force of the National Tube Co. While devoting the major portion of his time to his work, he attended the University of Pittsburgh for two years and then gave up his course to enter the electrical superintendent's office. Later he became assistant superintendent of the electrical department. In 1911, he resigned to become electrical engineer with the Pittsburgh Crucible Steel Co. Late in 1917, he left the Crucible company to enter the employ of the Pittsburgh Iron & Steel Foundries, Pittsburgh, as works manager in charge of war work. He remained until his recent return to the Westinghouse organization. Mr. Egan is a member of the iron and steel committee of the American Institute of Electrical Engineers, a past president of the Association of Iron and Steel Electrical Engineers, and a member of the American Iron and Steel institute.

August H. Tuechter, president of the Cincinnati Bickford Tool Co., Cincinnati, celebrated his fiftieth birthday on Aug. 23.

Hugh K. Lindsey has returned to Columbus, O., as manager of the Columbus office of the Galion Iron Works & Mfg. Co., Galion, O., manufacturer of road machinery, succeeding Curtis C. Latimer.

D. R. Salisbury has been made London, England, representative for the Allied Machinery Co., of America, New York City. He sailed on Aug. 30 on the BALTIC for London, where he will remain indefinitely.

John Bergan, purchasing agent for the Russell & Erwin division of the American Hardware Corp., New Britain, Conn., has resigned to accept a position with the Trumbull Electric Mfg. Co., Plainville, Conn.

W. H. Holt, who recently resigned his position at the Woonsocket Machine & Press Co., Woonsocket, R. I., has accepted a position as superintendent of the Sipp Machine Co., Paterson, N. J.

Louis Stephanson, who has resigned as advertising manager for Landers, Frary & Clark, New Britain, Conn., to join the McCann Advertising agency, New York, has been succeeded by H. G. Nichols.

Edward L. Dunn, formerly manage of the Standard Plunger Elevator Co, Worcester, Mass., and for the past year or more in the government service in Washington, has accepted a position as associate editor of the *American Machinist*, New York.

Jerome R. George, vice president of the Morgan Construction Co., Worcester, Mass., returned home Aug. 26 after an absence since Dec. 30, during which time he made extensive trips through England, France and Belgium.

H. F. Harris, an industrial engineer, recently was made general sales manager of the Bethlehem Motors Corp., Allentown, Pa. He has held important positions with various automobile companies, including Everett, Studebaker, Maxwell and Overland. He recently was general sales manager of the Republic Truck Co.

D. V. Holcomb, formerly connected with the John Lauson Mfg. Co., New Holstein, Wis., has been made general sales manager of the General Tractors, Inc., with executive offices in New York and Chicago, which is a reorganization of the Monarch Tractor Co., a South Dakota corporation with main works and offices at Watertown, Wis.

Frank P. Turner, controller of the Buick Motor Co., Flint, Mich., has been promoted to controller of the General Motors Corp., with headquarters at Detroit. Mr. Turner was formerly connected with the duPonts at Wilmington, Del. E. W. Proctor, assistant treasurer of the Buick company, will succeed Mr. Turner as controller and W. W. Bacon of the accounting department will be made assistant treasurer.

William J. Wooldridge has resigned as engineer with the Pittsfield, Mass., branch of the General Electric Co., after 27 years of service, and will leave that city, Sept. 1 for Portsmouth, O., to take a position with the Whitaker-Glessner Co. He was for 11 years at the Lynn, Mass., works, five years at the Schenectady, N. Y. works and 11 years at the Pittsfield works of the General Electric Co.

H. I. Kahn has been made manager and placed in charge of the new branch office established in the Jefferson county bank building, Birmingham, Ala., by the Keller Pneumatic Tool Co., Chicago and Grand Haven, Mich. W. H. Woody, division manager for the Keller company at Washington, recently was awarded a victory loan medal made from German cannon by the victory liberty loan committee of Portsmouth, Va. The medal is one of seven awarded for distinguished service in the five loan campaigns.

H. H. Hills, formerly assistant general manager of the Packard Motor Co., has been promoted to be vice president in charge of distribution. Mr. Hills was general sales manager for a number of years, after becoming affiliated with the company in 1908. George R. Bury has been made general distribution manager for the Packard company. For the past year he has been head of the Packard Motor Co., of Chicago, and prior to that time he was carriage sales manager.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

CHARLES E. HILDRETH, president and general manager of the Whitcomb-Blaisdell Machine Tool Co., Worcester, Mass., and general manager of the National Machine Tool Builders' association, who recently resigned as chief of the machine tool section of the office of the director of sales in the war department, was given a welcome home banquet by the Foreman's club of the company, Aug. 22, at the Sterling Inn, Sterling, Mass., and presented a silver loving cup. Supt. Maurice Downey, president of the club, was toastmaster and made the presentation speech, after which Mr. Hildreth related some of his experiences while in Washington as representative of the machinery industry.

C. F. Megrow, formerly of the Ford Motor Co., Detroit, and Henry Ford & Son, Dearborn, Mich., has designed a tractor to be manufactured at Holly, Mich.

H. H. Hills has been made vice president in charge of distribution and George R. Bury general distribution manager for the Packard Motor Car Co., Detroit.

C. F. Hepburn has been made vice president and general manager of the Republic Motor Truck Co., of Alma, Mich., relieving President F. W. Ruggles of some of his duties.

Lawrence W. Kinnear has been named manager of the newly opened Detroit branch office in the Penobscot building, of W. S. Kinnear & Co., 111 Broadway, New York, engineers.

Ex-Gov. Eugene Noble Foss, president of the B. F. Sturtevant Co., Hyde Park, Mass., and Richard H. Long, head of the R. H. Long Machinery Co., Framingham, Mass., are candidates for the democratic nomination for governor of Massachusetts.

Hiram N. Cudworth, Chicago representative of the grinding machine department of the Norton Co., Worcester, Mass., and Mrs. Cudworth, are spending their vacation in Falmouth, Mass. They renewed acquaintances in Worcester, their former home, this week, on the way to the shore.

N. S. Franklin, for eight years associated with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in its testing, engineering and sales departments, has been appointed assistant superintendent of the New Britain, Conn., district of the Connecticut Light & Power Co.

Jerome R. George, vice president of the Morgan Construction Co., Worcester, Mass., who has been in Europe since the first of the year, has booked return passage on the steamship BALTIC, whose sailing date is indefinite because the ADRIATIC took her place on the July 21 trip to this country.

Maj. Harry C. Martin, U. S. A., who has been on duty at the Sandy Hook proving grounds for some time, has been transferred as the ordnance officer of the northeastern department and will relieve Col. T. C. Dickson, commander of the Watertown, Mass., arsenal of the department ordnance routine.

Frederick C. Billings, president of the Billings & Spencer Co., Hartford, Conn., has succeeded his father, Charles E. Billings, as a trustee of the Hartford-Connecticut Trust Co., the latter resigning because of physical disability. Charles E. Billings was the first president of the Billings & Spencer Co., serving from 1869 until September, 1917, when he was succeeded by his son.

A. D. King, Flint, Mich., for three years in charge of motor production, Chevrolet division, General Motors Corp., has been transferred to Janesville, Wis., to be general works manager of the Samson Tractor Co., a division of the corporation. Mr. King entered the industry with the old Leland-Falkner organization, now the Cadillac Motor Car Co., and later was with the Ford Motor Co. as mechanical engineer for six years.

James M. Buick, vice president and general manager of the American Car & Foundry Co., has been made director of sales, the office of general manager having been abolished. His present title is vice president in charge of sales. William C. Dickerman will direct the production division and will be known as vice president in charge of operations. Frederick A. Stevenson will be assistant vice president in charge of operations and he also will be head of the manufacturing section, in charge of production in car plants, rolling mills and foundries.

Homer C. Johnstone on Sept. 1, after three years' service resigned as manager of the steel department of Gaston, Williams & Wigmore, Inc., New York City, to accept a position with the exporting house of W. H. Knox & Co., 18 Old Slip, New York City, where he will have charge of all steel and metal sales. Prior to becoming affiliated with Gaston, Williams & Wigmore, Inc., Mr. Johnstone was connected with the Midvale Steel & Ordnance Co., for about 14 years.

Frederick C. Gilbert has resigned as vice president and director of the Timken-Detroit Axle Co., Detroit, in charge of sales and publicity, after an affiliation dating back to the company's formation 10 years ago. For 14 years prior to that time, Mr. Gilbert was connected with the Pope Mfg. Co., as general production manager of a number of its plants, including the Pope Motor Car Co., Toledo, which later was sold to the Willys-Overland interests, and the Columbia Steel Co., Elyria, O.

E. M. Webb who recently was discharged from military service as first lieutenant, ordnance corps, has been appointed shop superintendent of the Duff Mfg. Co., Pittsburgh. Mr. Webb was stationed at the Rock Island arsenal in charge of experimental work, including the development and testing of the French 75-millimeter recoil mechanism. Before being commissioned, he was assistant to the production superintendent of the American Tool Works, Cincinnati. Mr. Webb is a 1915 graduate of the University of Cincinnati.

E. W. Morgan, for 31 years foreman of the brass foundry department of the Turner & Seymour Mfg. Co., Torrington, Conn., has resigned to become superintendent of the brass foundry to be established in Bridgeport, Conn., by H. B. Houghton, who recently purchased the plant of the Bridgeport Tube Co. at auction. Mr. Houghton was formerly of the sales force of the Turner & Seymour Mfg. Co. Mr. Morgan took up his new duties Sept. 2 and the foundry is expected to be in operation about the middle of this month.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WALTER A. JANSSEN, who has been operating manager of plants for the Canadian Steel Foundries, Ltd., with headquarters at Montreal, has resigned and has been appointed assistant general manager in charge of operations of the American Steel Foundries, New York, Chicago and Pittsburgh, with headquarters at Chicago. In August, 1917, Mr. Janssen resigned as foundry superintendent, after a 10-year connection with the Bettendorf Co., Davenport, Ia. Upon leaving, his former employes tendered him a banquet and presented him with a gold watch and diamond ring in token of their esteem. Shortly after, he was appointed operating manager of the plants of the Canadian Steel Foundries, Ltd., located at Longue Pointe and Pointe St. Charles, Que., and the steel foundry and rolling mill at Welland, Ont. In 1917 Mr. Janssen was a director of the American Foundrymen's association and chairman of its committee on steel foundry standards. Last year at the Milwaukee meeting of that organization he was elected vice president.

Hamilton Stewart, Pittsburgh, recently was elected director of the Crucible Steel Co., of America, in place of the late T. H. Given.

Gen. T. Coleman du Pont and Henry Payne Whitney have been elected to positions on the board of directors of the Vanadium Steel Co. of America.

E. F. Kidd has been appointed traffic manager of the Republic Iron & Steel Co., Youngstown, O., to fill the vacancy caused by the death of H. R. Moore.

Arthur Smith, who succeeded his father some time ago as superintendent of the foundry of the Ingersoll-Rand Co., at Phillipsburg, N. J., has resigned. William Turner, who comes here from Canada, will be his successor.

Baylor Hickman, president of the Ewald Iron Co., Louisville, Ky., recently was appointed exclusive agent in the Louisville and St. Paul districts for the Woodward Iron Co., Woodward, Ala.

J. R. Edwards has resigned his position with the A. M. Byers Co., Pittsburgh, to become affiliated with the Reading Iron Co., Reading, Pa., with headquarters at Dallas, Tex. He will have charge of the Texas, Louisiana, Oklahoma and Kansas territory.

J. B. Arnold, assistant general manager of sales of the Illinois Steel Co. at Chicago has been appointed acting manager of sales for the same company at St. Paul, Minn., to succeed D. R. Cotton, resigned, in addition to his regular duties. A. H. Warren is appointed assistant manager of sales at the St. Paul office.



WALTER A. JANSSEN

John Q. Reid, who has been superintendent of the Longue Pointe works of the Canadian Steel Foundries, Ltd., Montreal, has been promoted to the position of general superintendent of the company. Before going with the Canadian Steel Foundries, he was works manager of the Chester, Pa., plant of the American Steel Foundries.

W. H. Forbes, who has been a member of the sales staff of the Carnegie Steel Co. in the Cleveland district for the past 12 years, has resigned, effective Sept. 1. Mr. Forbes will devote his attention to private business undertakings in which he is interested and will be identified with the Leader Construction Co., Cleveland.

R. L. Mason, as general agent, has been placed in charge of the new sales office established in the Oliver building, Pittsburgh, by the Pennsylvania Iron & Steel Products Co., Ellwood City, Pa., which is specializing in the manufacture of steel barrels, drums and other sheet metal products. Mr. Mason has had charge of sales of the Clarke Car Co., the Steubing Truck Co., and the Edwards Mfg. Co.

Presley Hamilton, who was formerly traveling representative for the Midvale Steel & Ordnance Co., and later for the Brier Hill Steel Co., has recently opened offices in the Singer building, to act as eastern sales agent for the Keystone Bronze Co., Pittsburgh; McAleenan Brothers Co., Pittsburgh; Pittsburgh Knife & Forge Co., Pittsburgh, and the Youngstown Foundry & Machine Co., Youngstown, Ohio.

O. H. Taylor, with headquarters at 308 Stuart building, 280 Broadway, New York City, has been appointed New York representative of the Merrill-Stevens Shipbuilding Corp., Jacksonville, Fla. C. W. Hendley has been made purchasing agent of the Jacksonville plant of the corporation to succeed H. W. Hebb, resigned. W. W. Helvenston has been appointed acting purchasing agent at its South Jacksonville plant. Mr. Hendley and Mr. Helvenston formerly were assistant purchasing agents.

Joseph A. Halls resigned on Sept. 1 as superintendent of the Tod-Booth plant of the United Engineering & Foundry Co., Youngstown, O., to become superintendent of the fireproofing department of the General Fireproofing Co., whose headquarters and principal plant is located in that city. Mr. Halls has been affiliated with the United Engineering & Foundry Co. since it absorbed the William Tod plant, of which he then was superintendent. He was taught the machinists' trade at the Tod plant and subsequently became foreman. Samuel J. Reilly, superintendent of erection in the field for the United company, succeeds Mr. Halls as superintendent of the plant.

Brighter Business Outlook Seen

Saner Sentiment Permeating Ranks of Labor—Public is Aroused to the Need for More Production—Steel Employes Wage Gains Beat Living Costs—No Definition Given for Average Living Standard

BY JOHN W. HILL, FINANCIAL EDITOR

MARKED improvement in the business outlook has followed in the wake of President Wilson's admirable stand upon the wages question and his appeals to labor for a truce in industrial disputes pending the outcome of the government's efforts to check the flight of living costs. Brought face to face with the problems confronting it, the country is in no mood softly to indulge outcroppings of radicalism spelling curtailment of production.

A widespread awakening has occurred to the critical world shortage of goods and to the fact that the only real permanent solution of the high prices lies in bringing the supply of goods more nearly up to the level of the demand. As a result the public will not be slow in displaying its impatience toward any group of workmen who, either through strikes of demands for unreasonable wages, would retard rather than speed up the productive machinery which eventually will correct the prevailing unsettled conditions. This new spirit is permeating the ranks of the rational laboring classes, and most observers believe that the noisy disturbing element of radicalism is on the wane, to be replaced by a dominant note of sober, clear-thinking on the part of the great mass of true American workmen who have no taste for the unspeakabe terrors of bolshevism.

With the growing shortage of labor causing its services to be at a premium in practically every industry in the country, wages are higher in proportion to the cost of living then ever before. Strikes or threats of strikes upon the plea of failure of wages to meet the cost of living in most cases are based upon a bogus claim. Millions are suffering from the high cost of living but they are in the class of brain workers, such as office help, bookkeepers, professional men and those living upon fixed incomes —not wage earning manual laborers or mechanics.

That is why the steel men's union leaders here placed themselves in a ridiculous light when they attempted to angle for popular sympathy by drawing a picture of alleged wretched conditions under which steel employes are compelled to live. These tactics, aimed at roping in a gullible public unacquainted with the facts will prove a boomerang. A truthful history of the steel employes wage advances, always several leaps ahead of the cost of living increases, is calculated to bring tears of envy rather than of pity from the average citizen.

Although the highest authorities fix the increase in the cost of living, weighting each item of the family budget in proportion to its importance, at 71 per cent since 1914, the wage increases in the steel industry have advanced from 114 to 170 per cent. Common laborers now earn an average of $5 a day against an average of $2 for the same hours of work before the war. However, only a small portion of the vast number of steel employes are classed as common laborers, the higher classes earning from $6 to $18 daily, with $10 as an ordinary wage. It is significant to note in this connection that the labor cost per ton of steel output has increased 225 per cent, while the efficiency of labor has decreased 20 per cent.

Union Claims are Absurd

These undisputable facts reduce to an absurdity any claim of union officials that steel employes are underpaid. With such a wide margin of wage gain over living costs rises, any steel workman who has failed to better his living conditions since 1914 has only himself to blame. The great mass of sober-minded steel employes are not blind to all this.

The phrases "high cost of living" and "maintaining a standard of living" have been much overworked of late. They are used as though those who employ them have had a tangible and definite idea of what constitutes the "standard." But do they? To maintain a "standard of living" would necessitate an average man with an average number of children with average aspirations respecting living conditions.

Some men are saving, others are spendthrifts, some have large families and others none at all. Some have no desire for automobiles and not all, by any means are content with low-priced cars. How then is it possible to adjust an average wage to maintain a "standard of living"? The fallacy of dwelling upon the "high cost of living" in connection with most wage demands at present is evident in view of the "orgy of extravagance" sweeping the land, on the authority of the government thrift bureau and of every retail dealer in any industrial center. This condition has done much to encourage high prices and profiteering.

It is no one's business how the wage earner spends his income under ordinary conditions. But when labor begins to clamor for more wages because "of the high cost of living" inquiries upon the subject are pertinent. If it is shown that wages are consumed by the "cost of high living, an extravagant demand for luxuries and by unwholly economical mode of life, then the public may well ask if it is bound to maintain such a standard.

Efficient workmen are entitled to a wage sufficient to properly cloth and feed their families educate their children, save something for advanced age and enjoy some of the comforts and pleasures of life. That is unquestionable. From all present appearances, however, it is the craving by labor for the last items in the category that is keeping up the demand for higher and higher wages.

A great middle western merchant says the war wages have created a "new standard of extravagance—not of living." Stores that once catered to the laboring classes complain they are losing their identity because cheaper grades of goods are no longer in demand. They must compete with the high-priced stores and stock up with $10 to $18 colorful silk shirts for mill hands and mechanics and expensive hats, furs and silk stockings for their wives. With foods the same story is told. The demand for all commodities has been concentrated at the top for the higher priced products of supposedly better quality, with the result that prices have been pushed up and up. One authority contends that there never was so little suffering from lack of necessities in the history of the country. No excuse for unemployment

exists in any line and wages everywhere are high.

The plain truth of the matter is that labor has been profiteering, which has given many manufacturers and sellers of necessities an excuse to profiteer in their turn. The steel industry is conspicuous among the industries of the nation for lowering its prices and sticking to it. In most lines there has been an evident scramble on the part of all factors to take advantage of the situation and "get all they could while the getting was good." The government has undertaken to check profiteering by dealers in necessities. Proper education should bring labor back to earth also stimulating increased production and greater economy in buying.

Urge Action on Exports

Washington, Sept. 2.—Gaston, Williams & Wigmore and George Mogensen, New York, exporters, have telegraphed Senator Owen, former chairman of the senate committee on banking and currency, to urge the President to call a meeting of a special committee to solve the problem confronting industries and exporters in moving heavy tonnages now waiting shipment abroad. The export business of the United States, the telegram reads, is paralyzed today. Continuing the message says:

"If it is the desire of the government to preserve to America its foreign commerce and prevent the horrors of overproduction in the near future, something must be done at once to get the government and all interested members of the community together to provide a present remedy. If a committee is convened by call of the President in Washington, consisting, say, of two appointees of the President, two members of the banking and currency committee of the senate, two members of the appropriate house committee, two members of the bankers' committee, two members of the American Manufacturers' Export association, two exporters and two appointees of the national chamber of commerce to sit in Washington, to hold hearings, and bring forth a plan, a solution will be forthcoming, having the support of all, in 30 days. There is a great crisis which will admit neither of delays nor of differences between those charged with the responsibility of averting a great misfortune. Anything we can do to help, regardless of time and expense, will be done."

No Advance Tax Rulings

Internal Revenue Commissioner Roper has issued a statement explaining that no attempts will be made to answer the multiude of inquiries swamping his bureau for information concerning abstract propositions involving questions of income tax and profit liability. No advance information will be given concernig taxation features of companies about to be reorganized. Requests for information must be accompanied by concrete facts and the transaction involved must be completed. Names of all real parties interested, and not dummies must be stated regardless of who presents the problem. Mr. Roper says that experience has proven that advance details of plans of business reorganizations do not always coincide with the facts as they appear when finally worked out.

Todd Ship Surplus Falls

A decrease in the surplus of the Todd Shipyards Corp. for the year ended March 31 is shown in the company's annual report. After depreciation, taxes and sinking fund reserve the surplus for the year was $1,134,582 against $3,943,237 in 1918. Net earnings were shown to have increased $294,217 to $12,292,767 in the year and there was an increase in reserves for depreciation, taxes, amortization of $2,919,145 to $8,784,605 over the year before. The net working capital of the corporation as of March 31 was reported as $5,690,580 as compared with $4,848,200 the preceding year. President William H. Todd says that since March 31, 1919, all of the outstanding $786,000 6 per cent convertible notes have either been converted into stock or called for payment. The number of shares now outstanding is 95,000. The net working capital March 31, 1919 was $5,960,580 compared with $4,484,200 a year previous.

Buy Machine Works

New York interests have purchased the plant of the Exeter Machine Works, West Pittston, Pa., and according to reports, plans are being formulated for the erection of extensive additions. No announcement has been made by the retiring controlling interests as to the identity of the new owners and a statement of this character is not expected for at least a month. No changes in the personnel of the offices and working forces will be made. The new owners plan to have the general offices of the company in New York, where a large engineering staff will be employed, and sales offices will be opened in Cleveland, Chicago and other cities. Six additional properties adjoining the plant have been purchased by the new owners, which will be used as sites for plant extensions. The company manufactures locomotive cranes, steam and electric hoists and special

May Absorb Tank Works

Absorption of the Petroleum Iron Works with a plant at Petroleum, O., by the Galena Signal Oil Co., a member of the Standard Oil group, is reported to be under negotiation. Although it is understood that a proposition for the purchase was laid before the annual meeting of the stockholders of the Petroleum company recently President George P. Baird, of Youngstown, refused to comment upon the matter. The stockholders at their meeting re-elected its old board of directors and the directors rechose the former officers. The company produces steel tank cars, tanks, oil refinery equipment, steel channel buoys, steel barrels and casks and a varied assortment of steel containers.

Donner to Discuss Bonds

The Donner Steel Co. stockholders will meet in special session Sept. 8 to vote on a proposition of creating a new $12,000,000 mortgage secured by a like amount of first and refunding 6 per cent bonds. Of the bonds it is proposed to issue for immediate sale $2,500,000 for the purpose of financing improvements near completion for the purchase of additional property and to reduce current indebtedness of something over $4,000,000.

Marlin-Rockwell Net Less

The six months manufacturing profit of the Marlin-Rockwell Corp. for the six months ended June 6 last, decreased $2,581,350 and total net income before taxes was $1,196,849 a decline of $1.827,447 and equal to $17.50 a share as compared with about $37 a share earned for the corresponding period of 1918. The statement shows: Sales, $7,051,235, decrease, $6,002,986; manufacturing profit, $1,151,535; decrease, $2,581,350; deductions from income, $422,997, decrease, $320,800; balance, $728,538, decrease, $2,260,549: additions to income, $468,311, increase, $364,453; total income before taxes, $1,196,849, decrease, $1,827,447.

The War Finance Corp. announces that advances of $220,885,523 have been repaid leaving an outstanding balance of $105,797,989. The loans were made to railroads, public utilities, cattle growers and industries. Although the corporation has authority to issue $1,000,000,000 in bonds for the financing of export trade, it is not expected that advances for this purpose will be made until after the conclusion of the peace treaty.

To Sell Phenol

Government Closes Contract With St. Louis Company—

New York, Sept. 2.—A contract was signed during the past week by the Monsanto Chemical Works of St. Louis, by which the latter becomes the agent of the government for the sale of large supplies of phenol which were bought during the war. The contract calls for the disposition of this phenol over a series of years and the profit allowed the Monsanto Chemical Works on the sale of this material is said to be practically negligible. It is stated contracts for the sale of government phenol simultaneously were offered to the Monsanto Chemical Works and to the Barrett Co., New York, but the latter refused to sign the contract.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .35
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

Demand for the various coal tar products is unchanged from a week ago. Benzol continues to be bought actively, in mixture with other coal tar products, for use as motor fuel. The demand for all kinds of coal tar products by the dyestuffs industry is keeping up well. The paint and rubber manufacturers continue to buy benzol actively. Prices are unchanged. A fair amount of benzol has been sold for export, particularly to South America. Fair amounts of naphthalin have been sold for export particularly to the Argentine and the Far East.

As a result of the contract business in sulphate of ammonia recently placed for the coming season, producers are in much better position as to unfilled orders. Spot business during the week was booked to some extent from domestic consumers and there also were some orders for prompt and nearby shipment for export. Prices continue unchanged.

Obituaries

George Elmer Miles, 76, treasurer of the Newport Shipbuilding & Drydock Co., died recently.

John Cordner West, mechanical engineer for the Sullivan Machinery Co., Chicago, was drowned at his summer home at St. Joseph, Mich., Aug. 23.

Layne Clinkofstine, who for 34 years was a prominent business man of Saginaw, Mich., and head of the firm of L. Clinkofstine & Co. that city, dealer in machinery and metals, died recently.

William J. Davis, general manager of Charles Davis & Co., iron and steel scrap dealers, died Aug. 25 at his home in Pittsburgh. Mr. Davis served 18 months with the ordnance department at Camp Hancock, Ga.

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W. M. Blount, president and general manager of the Birmingham & Southeastern railway and vice president of the American Railroad Short Line association, with headquarters at Union Springs, Ala., died at his home in that city recently.

Col. Andrew Cowan, president of the Andrew Cowan & Co., Louisville, Ky., jobbers of mill and auto supplies, died on Aug. 23, of a lingering illness dating back almost a year. Col. Cowan also was director of several banks, and for several years a prominent leather manufacturer.

Staunton Kearfott, of Montclair, N. J., president of the Kearfott Engineering Co., 95 Liberty street, New York City, was instantly killed recently when the automobile which he was driving was struck by a trolley car at Port Reading, N. J. Mr. Kearfott served two years in France with the American army.

George W. Armpriester, for years superintendent of puddle mills in eastern Pennsylvania, died at his home in Harrisburg, Pa., aged 80 years. Mr. Armpriester was apprenticed to a puddler at Pottstown and became superintendent of the mill when a young man. He was then employed by the Charles L. Bailey Co., of Harrisburg, Pa., for years as superintendent of the Herr street puddle mill and later made a superintendent of mills in the Central Iron & Steel Co.

Unusual Program

Planned for Meet of Purchasing Agents Association at Philadelphia

Arrangements have been made for an unusual program at the third annual convention of the National Association of Purchasing Agents to be held Sept. 22, 23 and 24, at the Bellevue-Stratford hotel, Philadelphia. Total membership in the association is about 2500. Among the papers to be read by members of the association are the following:

"Relations Between the Purchasing Agent and His Company Organization," by F. A. Marsh, of the Link Belt Co., Chicago; "Relation Between the Purchasing Agent and Salesman," G. W. Sanborn, United Engineering & Foundry Co., Pittsburgh; "Analysis of the Purchasing Agent," K. H. Taylor, Illinois Glass Co., Alton, Ill.; "Relation of Traffic and Stores Departments to Purchasing," T. J. Hefferman, American Tube & Stamping Co., Bridgeport, Conn.

J. D. A. Morrow, secretary of the National Coal association, of Washington, will talk on "The Coal Situation," and J. H. Tregoe, secretary of the National Association of Credit Men, will give "The Relation of Credits to Purchasing."

The address of welcome will be by J. S. MacLaughlin, city director of supplies, Philadelphia, and the response by Dr. F. W. Russe, of the Mallinckrodt Chemical Works, St. Louis. A smoker and vaudeville will be given Monday evening and Tuesday evening there will be a boat trip on the Delaware river.

Officers of the National Association of Purchasing Agents are D. D. Ranken, of Wilmington, Del., president; F. J. Solon, of the Owens-Bottle Machine Co., Toledo, O., first vice president; J. A. Whaling, of the Solvay Process Co., Syracuse, N. Y., second vice president; V. W. Bergenthal, of the Wagner Electric Mfg. Co., St. Louis, third vice president; J. C. Dinsmore, of the University of Chicago, treasurer, and L. F. Boffey, of New York, secretary.

About 250 additional employes at the Gloucester City, N. J. shipyard of the Pusey & Jones Co. have been laid off, due to lack of work. At present new keels are not being laid as fast as completed vessels are launched so more employes are expected to be laid off in the near future. The working force has been reduced from 6000 to 2500 since the war ended.

Labor Affects August Tool Sales

While Expectations for Month Were Not Fulfilled Several Sizable Lots Were Closed — Many Industries Represented by Buyers — Automotive Trade Takes Many Tools — Fabricating Equipment Moves Freely — Prices Tend Upward

FULFILLMENT of prognostications concerning August as a banner tool-selling month was somewhat curtailed by labor's unrest and the generally disturbed economic conditions. Strikes among machinists in Bridgeport, Conn., Paterson, N. J., Rockford, Ill., Cincinnati and Akron, O., created more or less apprehension. Numerous cases are known where manufacturers in various lines, whose expansion plans had been perfected to a greater or less extent, tabled their equipment lists, postponing action until labor conditions become more stabilized. Notwithstanding these facts, however, many sellers of machinery claim to have enjoyed splendid sales totals. As has been the case for many weeks, these were made up almost entirely of small miscellaneous sales. With few exceptions large lists remained absent from the month's dealings. Price revisions upward continued through August and those buyers, who two or three months ago were looking for reductions, finally gave up hope and entered the markets for their equipment requirements. Additional increases are believed to be impending.

Automotive Industries Continue to Lead

ONE of the largest lists to be issued since the signing of the armistice came out early in the month from the White Motor Co., Cleveland. It called for between 250 and 300 tools, amounting to about $400,000. In fact the automotive industries continue to maintain the lead in tool buying. Approximately $50,000 worth of new equipment, mostly multiple spindle drills, was purchased by the North American Motors Co., Pottstown, Pa. The Aluminum Castings Co., Detroit, indicated its intention to purchase 50 multiple tool lathes for piston and heavy flange work at its Cleveland plant. The Parish & Bingham Co., Cleveland, bought planers, shapers, radial drills, etc., to manufacture automobile frames

Cranes Move Freely Early in Month

CRANE sales started out well in August, but fell off towards the latter part of the month. Steel manufacturers took small lots but one of the largest sales was made to the Baldwin Locomotive Works, Philadelphia; it comprised 16 overhead electric cranes. An inquiry for 15 was issued by the American Locomotive Works. The Cleveland Crane & Engineering Co., Wickliffe, O., was awarded a large contract for the Mare Island navy yard. The original specifications for which called for 27 cranes. The Standard Oil Co., New York, issued a list of 28 small jib cranes for Bayway, N. J. The Carnegie Steel Co., the Youngstown Steel Car Co., and the Youngstown Sheet & Tube Co., Youngstown, O., each purchased four cranes; the Midvale Steel & Ordnance Co., Philadelphia, inquired for five; the Bethlehem Steel Co., Sparrows Point, Md.; the Singer Mfg. Co., Elizabeth, N. J.; the Standard Sanitary Mfg. Co., Pittsburgh; Abendroth Bros., Port Chester, N. Y.

Railroads Start; Shipbuilders Again Active

SOME little buying took place by the railroads and shipbuilders. The Cumberland Valley railroad was reported to have purchased 25 tools and a small list was purchased by the New York Central. The Pennsylvania lines west is understood to be revising its tool lists and placed several fair sized orders. The Philadelphia & Reading bought about $25,000 worth of equipment and the Baltimore & Ohio as well as the Cambria & Indiana figured among the purchasers. Fabricating equipment was bought by the Winnismet Shipyard Co., Chelsea, Mass., and the Gould Construction Co., Long Island City, N. Y., the former taking eight and the latter five machines. Fraser, Brace & Co., 1328 Broadway, New York, took a quantity of tools and a traveling crane for a ship repair plant at Clifton, Staten Island, N. Y. The Perth Amboy Dry Dock Co., Perth Amboy, N. J., bought machinery to extend its ship repairing facilities as did the Morse Dry Dock & Repair Co., Staten Island, N. Y.

Exchange Rates Make Export Market Unsatisfactory

EXPORTERS of machine tools had greatly lowered exchange rates to contend with in August. Requirements of European countries are known to be large but buyers virtually have to pay a premium to obtain American-made machinery. Germany is taking advantage of this situation and is placing many machines especially in Scandinavian countries; she also is negotiating with Cincinnati manufacturers to resume antebellum relations. Perhaps the largest transaction reported during the month was the purchase of 80 tools by the Standard Oil Co., New York, for shipment to Roumania. An inquiry is current in New York for about 400 tools to equip an automobile plant in Sweden but purchases are postponed until exchange rates become more stabilized. This same thing is true concerning an inquiry from Poland for about 200 tools for a locomotive repair shop.

Different Manufacturers Buying Equipment

PHONOGRAPH and plow manufacturers, wrench makers, oil companies and adding machine builders as well as numerous other manufacturers were represented in the miscellaneous buying of the month. The Standard Oil Co., New York, bought over $400,000 worth of tools for various plants. The Sundstrand Adding Machine Co., Rockford, Ill., bought a number of tools and the American Smelting & Refining Co., New York, light equipment for a boiler shop in Alaska, while the Corn Products Refining Co., Chicago, took half a dozen tools and some other equipment. The Pathe Freres Phonograph Co., Brooklyn, N. Y., bought lathes and other tools and remains in the market. The Moline Plow Co., Poughkeepsie, N. Y., placed $20,000 worth, while the Bucyrus Co., Milwaukee, closed on 15 tools. Builders of machinery figured largely in the month's buying. The Foote-Burt Co., Cleveland, issued an inquiry for 50 tools. The E. W. Bliss Co., Brooklyn, N. Y., bought six; the Rickert-Shafter Co., Erie, Pa., a fair sized lot; the Aultman & Taylor Machinery Co., Mansfield, O., figured on eight tools; the Ingersoll Milling Machine Co., and the Mechanics Machine Co., Rockford, Ill., each bought equipment. The Pollak Steel Co., Cincinnati, issued an inquiry for 20 tools for a drop forge plant at Chicago. The B. F. Goodrich Co., and the Firestone Tire & Rubber Co., Akron, O., both issued sizable lists. The Allegheny Forging Co., Pittsburgh, bought at least a dozen tools.

Tool Sellers Encounter Obstacles

Labor Situation at Home and Exchange Rates Abroad Continue to Hinder Movement of Machine Tools—Several Fair Sized Lists Current in Cleveland and New York—Crane Awards Not Numerous

OBSTACLES continue to block the path of machinery sellers all over the country. Deterrents are furnished to domestic business by the labor situation and to foreign trading by the low exchange rate. Inquiries from abroad are numerous in the vicinity of New York, perhaps the largest being the one from Sweden for 400 tools for an automobile plant. Other lists come from France, Belgium, Spain, Japan and China, but many of them are simply feelers. China, however, purchased 12 drills. Canada too is receiving many inquiries from abroad, one in particular from a reconstruction division in France, for a varied line of equipment. Canada's export inquiries come from Russia, Australia, South Africa, Belgium and elsewhere, while its heavy domestic trade arises in the automobile industry.

Despite the trade hindrances sales are mounting These comprise clearances of one or two tools at a time in most cases, although several sizable lists are out in the middle west. Included in the list of prospective purchasers are the Columbia Axle Co., the Parish & Bingham Co. and the American Borvisk Co., Cleveland; Burke Electric Co., Erie, Pa.; Firestone Steel Products Co., B. F. Goodrich Co., Goodyear Tire & Rubber Co., and the Crescent Garage & Machine Co., Akron. Business in the middle west is well distributed among varied lines of industrial activity, several fair sized lists being current.

In Chicago, the General Motors Corp., has purchased about $75,000 worth of equipment for the Samson Tractor Works, Janesville, Wis., and another list is expected later. A large list is expected there from the Moline Plow Co., Moline, Ill., whose main machine shop was damaged by fire. An active market is reported in Pittsburgh, where the Pennsylvania railroad has started to buy.

Inquiries are current in New York from the International Motor Co., New Brunswick, N. J.; the Electric Auto-Lite Corp. and R. Hoe & Co., Poughkeepsie, N. Y., all three desiring to obtain miscellaneous equipment. Small brass casting makers in New York state have been large buyers of tools and manufacturers of printing presses in New England have been active.

Crane awards of size are not numerous. The Philadelphia navy yard however, bought five electric travelers from Niles-Bement-Pond Co., which company also closed a contract for 16 overhead cranes for the Baldwin Locomotive Works. The Midvale Steel & Ordnance Co. still is in the market for seven cranes for Johnstown and Coatesville, Pa. plants and the largest inquiry for cranes still current is that of the American Locomotive Works for 13. The Bethlehem Steel Co. also wants several. In Pittsburgh, many small crane inquiries are before sellers.

Exchange Rate is Obstacle to Foreign Sales

PENDING settlement of the steel labor question and improvement in foreign exchange rates, business in machine tools in New York and vicinity has been rather quiet. Dealers report a fair total turnover comprised of purchases of one or two tools, but large domestic lists of machine tools are few and far between. Little attention is being paid to the various export lists, some of them quite lengthy, which have been issued by export buyers, inasmuch as these usually have developed to be only feelers. France, Belgium, Poland, Sweden, Finland, Japan and China have been inquiring for machines, but exchange rates in Europe have prevented closing on most of these inquiries. China bought 12 drills through a New York exporter. A list of over 400 machines for a Swedish automobile plant still is being figured on in this market. There are several other Swedish inquiries, but it is expected America may have to compete with Germany on this business.

The International Motor Co. which recently took over the plant of the Wright-Martin Airplane Co. at New Brunswick, N. J., is figuring on machine tools. The Electric Auto-Lite Corp., Poughkeepsie, N. Y., is inquiring for several small machines. The R. Hoe & Co., which bought the Mitchell Co. plant at Poughkeepsie, is in the market for radial drills, shapers, planers, drill presses and other tools. The Adirondack Steel Foundries Co., Colonie, near Watervliet, N. Y., is inquiring for electric hoists and chain blocks. New York state makers of small brass castings have been good buyers of machine shop equipment.

An order for five electric traveling cranes, including one 20-ton, two 10-ton and two 5-ton cranes, for the Philadelphia navy yard, went to the Niles-Bement-Pond Co. This company also recently was awarded an order for 16 overhead cranes for the Baldwin Locomotive Works, Philadelphia. The Midvale Steel & Ordnance Co. has not yet closed for a 75-ton ladle crane and four 10-ton traveling cranes for its Johnstown, Pa., plant, or the one 40-ton crane for the same plant, or the one 40-ton crane for its Coatesville plant. The American Shell Co., Patterson, N. J., closed for one crane and the United States Cast Iron Pipe & Foundry Co. for one 30-ton crane. The largest list still pending is that of the American Locomotive Co. for 13 cranes. Bethlehem Steel Co. still is awaiting action on several cranes.

Many Small Cranes Wanted Near Pittsburgh

NUMEROUS inquiries still are coming out in the Pittsburgh district for cranes. The Weirton Steel Co., Weirton, W. Va., recently ordered a 5-ton standard


The Mighty Oak
that grew from
the Little Acorn
Our growth has not been due to unusual outside conditions. Not in a day—not in a week—but in the course of 65 years have we become the "mighty oak" of the Tool Steel World. A good, healthy growth, backed by over four thousand well satisfied re-order customers.
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Consistently Uniform
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Huron Alloy Die Steel
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Prompt shipments from warehouse stock at Watervliet, N.Y., Detroit, Mich., Cambridge, Mass., Chicago, Ill.— handled through our District Offices.
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Cincinnati Detroit Chicago Buffalo

Champion crane and has put out an inquiry for a monorail hoist. The Union Switch & Signal Co., Swissdale, Pa., is seeking a 5-ton, 54-foot span crane and the Erie Foundry Co., Erie, Pa., seeks a 50-ton crane. The Donner Steel Co., Buffalo, which recently closed with the Alliance Machine Co., Alliance, O., for three cranes, two 20-ton and one 10-ton, now is in the market for a 5-ton crane. The Blaw-Knox Co. is in the market for another crane and inquiry also is out from the Diamond Alkali Co. for a crane. The Chicago Pneumatic Tool Co. recently placed orders for three Champion cranes for its Franklin, Pa., works, two 20-ton and one 15-ton. The Carnegie Steel Co. has closed with the Morgan Engineering Co., Alliance, O., on three cranes for its Edgar Thomson works, a 20-ton, a 50-ton and an 80-ton. Developments in connection with the rehabilitation of the Cambria Steel Co. plant at Johnstown, Pa., are expected before long. Several of the large crane manufacturers now have a good volume of business booked and are operating their plants on a much heavier scale than was the case recently.

Demands for machine tools steadily are expanding and some houses report August bookings to have been the best of any month since the signing of the armistice. A significant feature of the recent dealings has been the placing of orders for a couple of planers by the Pennsylvania railroad lines west. A number of inquiries have been put out by this railroad since the first of the year but actual orders have not been forthcoming. The Ward Tool & Forging Co., recently organized at Latrobe, Pa., and which soon will break ground for a new plant, will probably be in the market for a line of automatic machinery for making rivet sets, punches, dies, reamers, small tools, small forgings and automobile valves. Most of the manufacturers of tools are well booked and in a number of lines eight to 10 weeks are the best deliveries being promised.

Tool Business in Canada Improves Daily

CANADIAN machinery dealers announce considerable activity in the equipment and machine tool trade, especially in Toronto and district, where the market is improving daily. Demands for motors are numerous, while there is a brisk movement in woodworking and mining machinery, tractors, etc. Automobile concerns continually are in the market for new equipment and dealers look for even more business from this source, when plants, which now are under construction in Ontario near completion. Dealers handling agricultural machinery and tractors report present buying far in excess of their expectations, and in some cases machines which were expected to keep the sales department busy until the first of the year have already been disposed of. A large number of inquiries are coming in for tool room equipment and in most cases new tools are wanted. Prospects in the dominion for increased business in machinery and tools also are on the increase. Word has been received at Ottawa, Ont., from Philippe Roy, commissioner general for Canada in Paris, France, that Captain Bisson, of the "Office de Reconstitution Industrielle des Departments Victimes de l'Invasion," 14 Rue de la Tremoille, Paris, would like to get into communication with Canadian manufacturers who are in a position to make prompt delivery of the following articles and prices at which they can be laid down there: Vertical lathes, milling machines, shaping machines, automatic lathes, machines for rolling mills, mortising (slotting), planing and boring machines, grinders, etc. In addition to this, inquiries have been received from Belgium, Russia, Australia, South Africa and a number of other countries for machinery, farm implements and other equipment.

Cleveland Dealers Busy Despite Labor Agitation

SUMMING up the condition of the machine tool business in Cleveland during the past week, several dealers report it as extremely satisfactory. Orders are received from widely distributed sources and from miscellaneous industries. General lines of equipment are being purchased, but most of the sales are light and small numerically. Inquiries are plentiful and a tendency to close quickly is noted. The aggregate of business transacted would be greater but for the labor situation. However, the present unsettled condition is treated more or less lightly by manufacturers who believe it to be but a passing phase, which will soon blow over.

Much business is current in Akron, O., and strikes and threats of strikes are militating against the efforts of dealers to obtain the orders. The Firestone Steel Products Co., that city, has not closed on its requirements which include six large boring mills. Action likewise is postponed on the large list issued by the B. F. Goodrich Co., Akron, and the Goodyear Tire & Rubber Co. is understood to be getting ready to close on about $75,000 worth of equipment. The Crescent Garage & Machine Co., Akron, which has contracted for about $50,000 worth of machines, including a 50 or 52-inch Le Blond engine lathe, has indicated its intention of buying $40,000 worth additional. Several other concerns in Akron are in the market for one or two machines to piece out their equipment. The J. V. B. Engine Co.,

Belgians Buy Machinery From Government-Owned Stocks

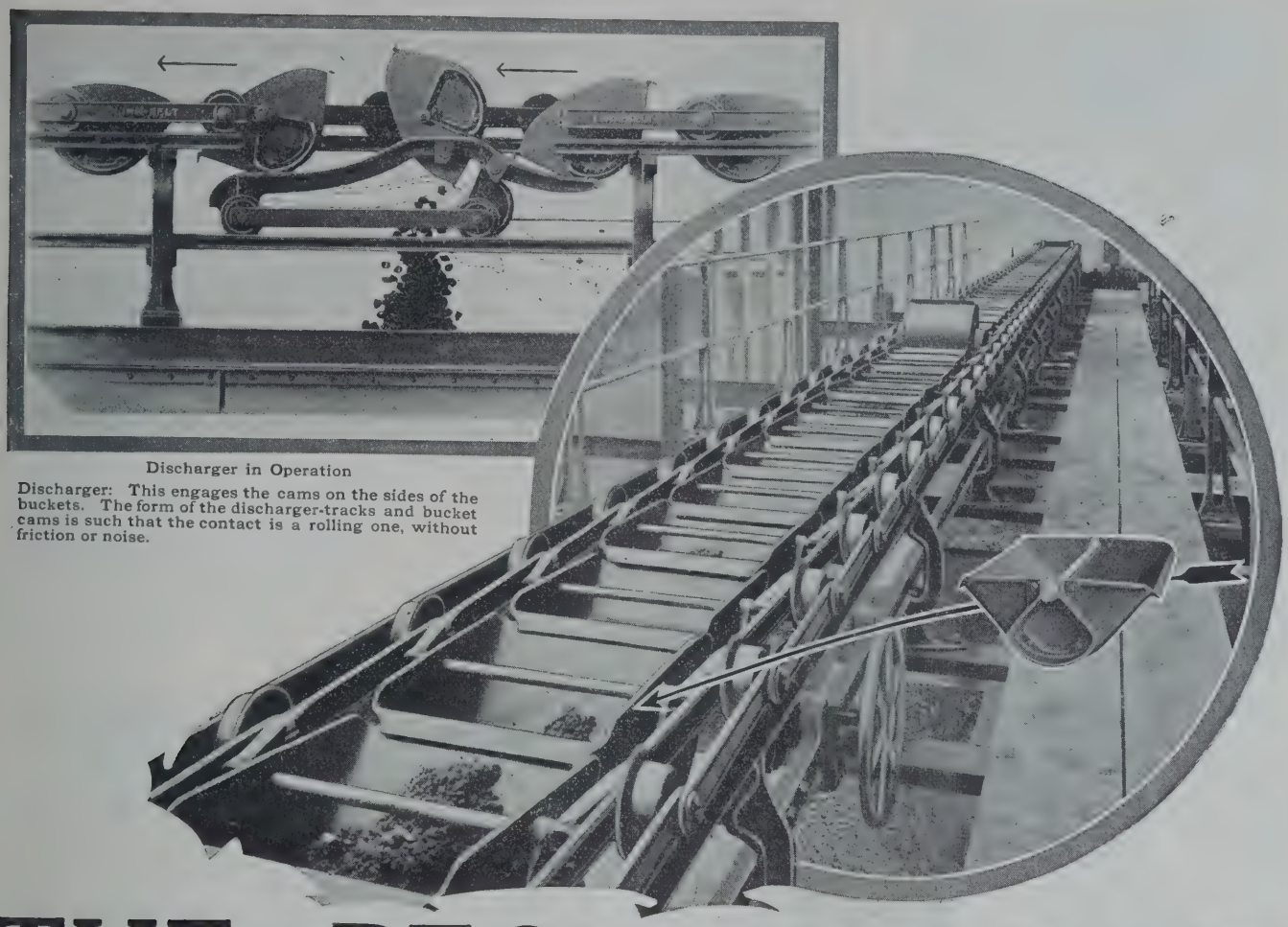
AID to devastated Belgium is being extended by the United States government in other ways than by large loans of money. Sales are being made from the government's huge stocks of war work machinery and three years credit is being extended. A recent article in *The Daily Iron Trade and Metal Market Report* follows:

A party of Belgians, members of Construction Metallique, is touring the United States taking steps toward the rehabilitation of districts devastated during the war. They are buying machinery from the United States government which had been used in war plants, and which they will utilize in reviving industries of Belgium. The visitors are being assisted by Lieut. E. P. Sykes, of the office of the director of sales, who is disposing of the equipment of the former war plants.

"These men represent all the industries in Belgium," Lieutenant Sykes said. "Their purpose in this visit is to buy machinery which will replace what the Germans destroyed. The Construction Metallique resembles the big holding companies of the United States. It will do all the buying for Belgian manufacturers.

"In order to evade the heavy discount the Belgians would have to stand if they paid immediately, the United States government is to take three-year notes. They will thus be able to start their factories, ship us goods, and restore exchange conditions to normal within a reasonable period.

"The purchases will amount to at least 3000 machines. They may buy more, as they need about 60,000. In addition they have made some private purchases."



Discharger in Operation

Discharger: This engages the cams on the sides of the buckets. The form of the discharger-tracks and bucket cams is such that the contact is a rolling one, without friction or noise.

THE PECK CARRIER

Is the recognized standard machine for handling coal and ashes in the modern boiler plant, for cement clinker, stone, etc.

FOLLOWING its record of service in Power House work, the Peck Carrier is even supplanting the older combinations of belt or screw conveyors and elevators for the more important duties in cement mills. Constructed as it is, with relatively few wearing parts and these of the best design to resist wear, the cost of maintenance and power is far less than with the types of conveyors replaced; but of even greater importance is its reliability and freedom from delays, which are always serious in a continuous process like the manufacture of cement. In this feature of reliability, the Peck Carrier is unrivaled. It is extensively used and is in increasing demand for handling rock, and hot and cold clinker, besides coal and ashes in power house.

We believe it will be but a short time before the use of this Carrier for all but very short conveyors—and in all cases where material has to be both conveyed and elevated—will be universal.

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- ☐ Coal and Ashes Systems
- ☐ Coal Pockets

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Place X in Square

LINK-BELT

Elevators and Conveyors

Akron, was incorporated with $100,000 capital recently.

Several new inquiries of fair size are current in Cleveland. These include one from the American Borvist Co., Cleveland, which wants about 15 tools for general machine shop equipment; these will aggregate $25,000. The Columbia Axle Co., Cleveland, has issued an additional list comprising a number of lathes, shapers, etc., which will call for an expenditure of about $40,000. A new list of machinery requirements has been issued by the Burke Electric Co., Erie, Pa., covering approximately $7500 worth. The Parish & Bingham Co., Cleveland, which was an active buyer in Cleveland during August, wants two 16-inch Gould & Eberhardt shapers among other equipment. The General Supply & Machine Co., Meridian, Miss., is asking for an 18 or 20-inch screw cutting lathe with 6 or 8 feet between centers. The Newark Machine & Stamping Co., Newark, N. J., is in the market for a 42 x 36-inch x 12-foot planer. The National Acme Co., Cleveland, is understood to have closed on some equipment including a 26-inch Aurora lathe with sliding head. Considerable activity is noted among Detroit manufacturers and a large number of tools are being sold in that territory. The Cadillac Motor Car Co., Detroit, is one of the purchasers and among other machines, it has ordered two 12 x 18-inch drill presses.

The price situation remains fairly steady. Changes are being made but these represent adjustments more than real increases or reductions. Where a price was $6 high or $7 low, the odd dollars and cents would be dropped to equalize the price.

Prospective changes in automobile design give rise to expectations of additional tool requirements on the part of manufacturers. For instance, the Grant Motor Car Corp., Cleveland, has announced that its new 1920 design carries an entirely new hood and it will utilize the H. J. Walker Co.'s engine.

Expansion activity in various directions likewise presage heavy tool needs soon. Among the new companies soon to start operations is a $12,000,000 body corporation which will build in Cleveland. The Dalton Adding Machine Co., Cincinnati, will probably purchase additional equipment for a 4-story building, 60 x 160 feet, contract for which has been awarded. It is understood that the National Cash Register Co., Dayton, O., is to spend $1,000,000 on expansions. Heavy equipment will be purchased by the Lima Locomotive Works, Lima, O., which is enlarging its plant by several additions. The Standard Woodwork Co., 815 East Ninety-third street, Cleveland, will probably close on some woodworking equipment soon for the new plant it is erecting. The Worthington Pump & Machinery Co., Cincinnati, is enlarging its plant and the Acme Machine Tool Co., that city, is spending $18,000 for a 1-story addition.

Tractor Plant Tools Bought in Chicago

WHILE most buying in the Chicago field continues to be of small lots an occasional instance comes up where a larger purchase is made. One such has just been closed by the General Motors Corp. for the tractor plant of the Samson Tractor Works, Janesville, Wis., including about $75,000 worth of equipment. Other machinery will also be needed for this plant. Fire damaged the main machine shop of the Moline Plow Co., Moline, Ill., which will necessitate entire new equipment, totaling a large assortment. The list of these requirements is being prepared.

A scarcity of presses has developed recently, unusual demand having arisen on the part of many users. Sellers have a large number on back order and delivery is becoming slow. One reason for this is a series of strikes by molders which delays their manufacture. General buying keeps up at a high rate, mostly in small lots and single tools.

Much interest is manifested by dealers even as far west as Chicago in the sale by the American Can Co. of equipment in 12 buildings of its plant at Edgewater, N. J. This includes 1150 metalworking machine tools of various kinds, 300 motors and a large quantity of general equipment as noted in this column last week. Western machine tool builders are almost as busy as in war days and demand seems to be on the increase.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

BOSTON.—Plans have been figured for a 1-story, 60 x 320-foot machine shop for the Compressed Steel Shafting Co.

BOSTON.—The J. T. B. Motor Co. has been incorporated to build gasoline engines with $100,000 capital, by B. L. Colpitts, Harry Bergson and James T. Bustin, Medford, Mass.

CAMBRIDGE, MASS.—The United Drug Co., Boston, has purchased land on which it is reported contemplating a building for the manufacture of hardware.

FITCHBURG, MASS.—The Hibbard Electric Co. has been incorporated to make electric appliances with $60,000 capital, by Walter L. Hibbard, N. M. Hibbard and Harry W. Conant, Somerville, Mass.

FRAMINGHAM, MASS.—Plans are being made by Monks & Johnson, Boston, engineers, for a 5-story, 70 x 200-foot plant for the Dennison Mfg. Co.

GARDNER, MASS.—The American Toy Mfg. Co. has been incorporated with $50,000 capital, by Charles A. Bryant and Emil Hendricson, both of Templeton, Mass., G. E. Sand and J. Franklin Wilkinson, Winchendon, Mass.

NEW BEDFORD, MASS.—Plans are being drawn by the J. G. White Engineering Corp., New York, for a power house for the National Spun Silk Co.

ORANGE, MASS.—The Judkins Textile Machine Co. has been incorporated to operate plants in Orange and Providence, R. I., with $50,000 capital, by W. K. Clark, Greenfield, Mass., Edward S. Judkins, East Providence, R. I., and George A. Dexter.

SPRINGFIELD, MASS.—Bids closed Aug. 25 for a 1-story, 50 x 120-foot plant for the Duckworth Chain & Mfg. Co.

SPRINGFIELD, MASS.—The Springfield Tool Co. has let the contract for a 2-story, 90 x 200-foot addition to cost $50,000.

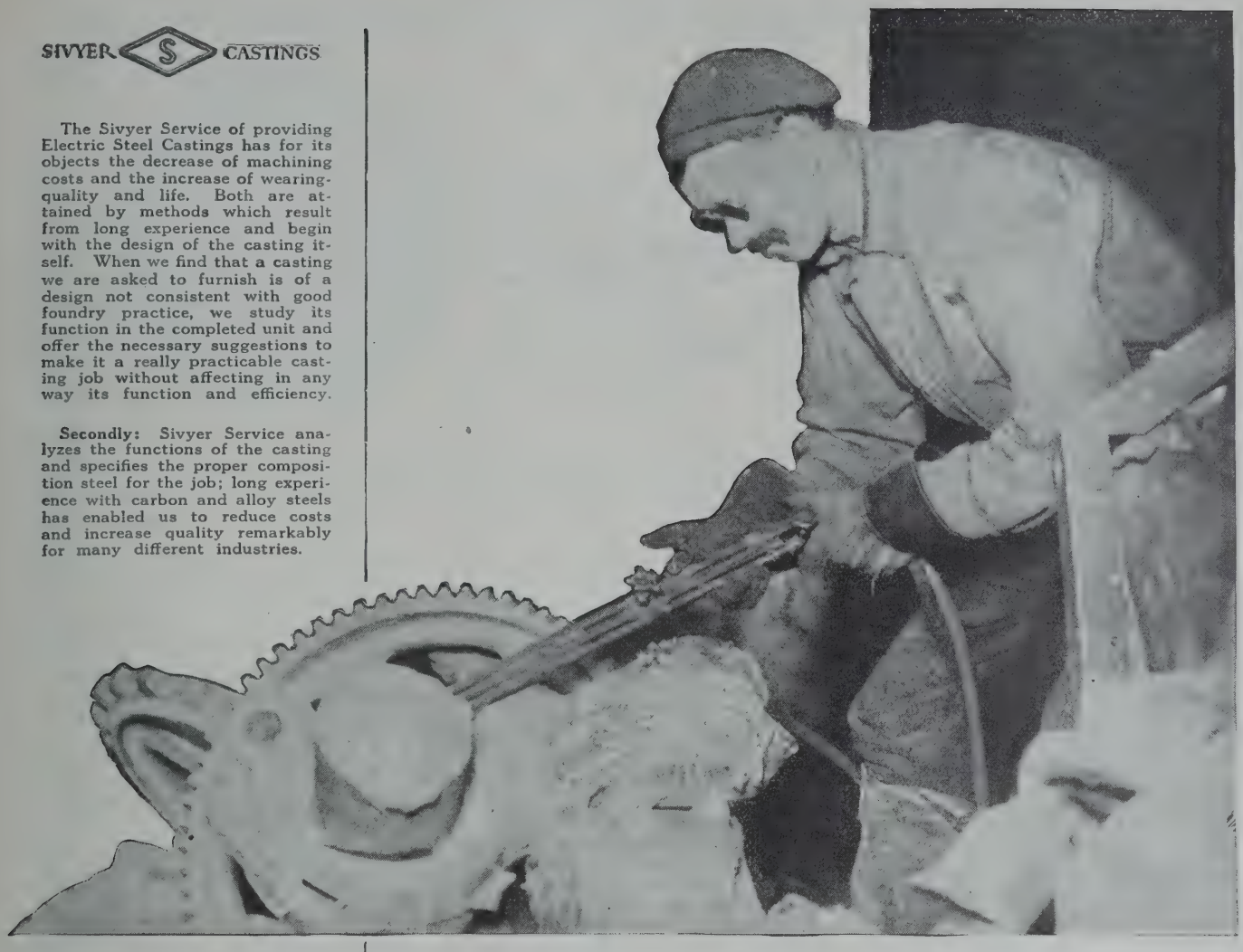
SPRINGFIELD, MASS.—The Springfield Foundry Co. has let the contracts for two additions, 100 x 100 feet and 40 x 50 feet.

SPRINGFIELD, MASS.—The Package Machinery Co. has been incorporated with $3,000,000 capital to operate a machine shop, by William L. Putnam,

SIVYER S CASTINGS

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly: Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.



Thirdly: Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly: Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

PROPER gating and ample risers do much toward insuring for Sivyer Steel Castings the sterling soundness necessary to keep machining costs low. But the right methods in getting rid of risers and gatings also have much to do with providing smooth clean castings. The use of oxy-acetylene torches for this purpose is, of course, common; we have found, however, the men who use the torches are quite as important as the equipment itself and have spared no pains to retain good workmen who have been familiar with Sivyer standards for years. The Sivyer men, even more than the Sivyer metal, have given to Sivyer Castings the high quality that has won them their national market.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Manchester, Mass., George W. Kyburg and Harvey H. Bundy.

PROVIDENCE, R. I.—The General Fire Extinguisher Co. has let a contract for a 4-story, 63 x 113-foot office building.

WOONSOCKET, R. I.—Bids have closed for a one and 2-story, 80 x 130-foot mill addition and a 40 x 40 foot boiler house, for the Gold Mark Knitting Co.

DANBURY, CONN.—Bids have closed for a 1-story, 90 x 150-foot machine shop to cost about $30,000, for Doran Bros.

HARTFORD, CONN.—The American Metal Sales Corp. has been incorporated with $25,000 capital, by Samuel P. Blakeman, John E. Lundquist and J. A. Wilmath.

NEW BRITAIN, CONN.—Bids close Sept. 1, for a 6-story, 80 x 160-foot, and a 1-story, 50 x 160-foot factory additions to cost about $225,000 for Landers, Frary & Clark.

North Atlantic States

BROOKLYN, N. Y.—Strober Bros., iron, steel, etc., has been incorporated with $20,000 capital, by M. S. and M. Strober, 120 Rutledge street.

BUFFALO.—The Art Metal Co., Erie, Pa., has let the contract for a 1-story addition, 120 x 166.

BUFFALO.—The Niagara Machine & Tool Co. plans a plant addition, one story, 75 x 180 feet and 90 x 100 feet.

BUFFALO.—The A. F. Oliver Gear Machine Co., 60 Cherry street, is having plans drawn for a plant, one story, 50 x 60 feet.

BUFFALO.—The Buffalo Foundry & Machine Co., 1543 Fillmore avenue, contemplates a foundry addition, at an estimated cost of $20,000.

BUFFALO.—The S-T Engineering Corp., machinery and mechanical devices, recently was incorporated with $100,000 capital, by W. B. Powell, H. H. Leonard and H. J. Turner.

BUFFALO.—The Milner Flower Electric Co., electrical machinery, has been incorporated with $30,000 active capital, by M. W. Bense, C. B. McBride and A. E. Moore, 37 Wall street, New York.

FALCONER, N. Y.—The Falconer Iron Works has let the contract for a 2-story addition 40 x 120 feet.

NEW YORK.—The Peerless Heater Co. recently was incorporated with $10,000 capital, by E. Steuer, Harrison N. Lipkermann, 92 Morningside avenue.

NEW YORK.—The Himoff Tobacco Machine Co., Inc., has been incorporated with $50,000 capital, by H. and R. and M. Himoff, 104 West 190th street.

NEW YORK.—The Improved Propeller Corp. has been incorporated with $150,000 capital, by J. Kunse, S. Ratajczm and W. Kedzierski, 42 Broadway

NEW YORK.—The Electric Keyless Lock Co. has been incorporated with $10,000 capital, by S. Greene, H. Gottesman and A. M. Block, Woolworth building.

NEW YORK.—S. Blickman, Inc., has been incorporated to make metal specialties with $500,000 capital, by S. M. and S. Blickman, 286 Ft. Washington avenue.

NEW YORK.—The Monarch Carburetor Lock Co. has been incorporated with $100,000 capital, by N. A. Unger, W. H. Rosenfeld and H. H. Walker, 140 Nassau street.

NEW YORK.—The Atlantic Adriatic Steamship Corp. has been incorporated with $100,000 capital, by V. S. Bendix, R. L. Lake and L. Acerstrom, 561 West 179th street.

NEW YORK.—The Highlands Navigation Corp. has been incorporated with $250,000 capital, by J. J. and D. F. McAllister and A. M. Clair, 103 Kent street, Brooklyn, N. Y.

NEW YORK.—The M. R. Shafter Co. has been incorporated with $20,000 capital to make automobile accessories, by M. R. and V. F. and B. J. Shafter, 3750 Broadway.

NEW YORK.—Kimelblatt, Ross & Sisti Co. has been organized to operate an ornamental iron works by Joseph Kimelblatt, Marco A. Sisti and M. J. Ross, Lynbrook, N. Y.

NEW YORK.—The General Metal Crafts Co. recently was incorporated with $100,000 capital, by J. Agazim, G. G. Greenburg and G. T. Cullen, 44 East Thirty-fourth street.

NEW YORK.—The Humil Corp., electrical apparatus, recently was incorporated with $300,000 capital, by J. Van Harder, H. H. Thurlow and F. D. Hagan, 55 Liberty street.

NEW YORK.—The Mutual Art Metal Works, Inc., has been incorporated to make metal novelties, with $10,000 capital, by H. and I. Mershon, and M. Rosenfield, 50 Cathedral Parkway.

NEW YORK.—The Brooklyn Ship Repair Corp. recently was incorporated with $750,000 capital, by T. Barth, Charles Karlson and Robert E. Shortell, View Court, Brighton Heights, N. Y.

NEW YORK.—Barbour, Love & Woodward, Inc., machinery, recently were incorporated with $100,000 capital, by R. L. Woodward, L. S. Love and J. W. Barbour, 1601 University avenue.

NEW YORK.—The Simplex Metal Spinning & Stamping Co. has been incorporated with $10,000 capital, by S. Silverstein, L. M. Murray and D. D. Shapiro, 1541 President street.

NEW YORK.—The Boyce Veeder Corp., fire extinguishers, has been incorporated with $75,000 active capital, by P. L. Veeder, H. H. Boyce and J. W. Truesdale, 259 East Eighty-second street.

NEW YORK.—The Metropolitan Chain Corp. has been incorporated to make chandelier and fixture chains with $5000 capital, by L. Kaplan, J. Mesnick and I. Freedman, 1791 Gleason avenue.

NEW YORK.—The Apex Specialties Corp. recently was incorporated with $20,000 capital to manufacture machinery tools, etc., by F. E. and C. Wocel and H. W. Benkman, 610 West 191st street.

NEW YORK.—J. S. Lawson & Co., Inc., has been incorporated with $10,000 capital to make machinery and hardware, by J. S. Lawson, J. A. Potter and A. D. Stanton, 416 West Thirty-third street.

NEW YORK.—The Portable Electric Current Co. has been incorporated with $2,000,000 capital, by W. A. Blank, 882 St. John's place, L. B. Kanter, 180 Thirteenth street, and C. B. Plante, 761 Lincoln place.

ROCHESTER, N. Y.—The General Railways Signal Co. plans a foundry addition, 110 x 220 feet.

ROCHESTER, N. Y.—The board of contract and supply has taken bids on the sewage disposal plant.

ROCHESTER, N. Y.—The Lisk Mfg. Co., 160 Fifth avenue, has plans for a power plant, 1-story, 63 x 87 feet.

ROCHESTER, N. Y.—The Harrison Radiator Corp. plans an addition, 1-story, 160 x 289 feet, to its plant at Lockport, N. Y.

ROCHESTER, N. Y.—The North East Electric Co., 348 Whitney street, plans a plant addition, 2-stories, 86 x 198 feet, to cost $60,000.

ROCHESTER, N. Y.—The Corporation Pattern Works, Inc., recently was incorporated with $5000 capital by G. J. Fink, W. H. and E. C. Kramer.

ROCHESTER, N. Y.—The Rochester Blower Pipe Co. recently was incorporated with $15,000 capital, by A. I. Bull, C. G. Diehl and F. J. Weinmann.

ROCHESTER, N. Y.—The Cellu Metal Corp. recently was incorporated with $150,000 capital, by A. B. Progin, W. Cheindia and F. C. Monkhouse.

SOUTH NEW BERLIN, N. Y.—The Bertholme Power Co. has been incorporated with $25,000 capital, by T. B. Parker, F. Van Valkenburg and E. W. Hovey.

SYRACUSE, N. Y.—The Syracuse Chilled Plow Co. has been incorporated with $300,000 capital, by C. A. Chase, W. W. Wiard and others.

SYRACUSE, N. Y.—The Brown, Lipe, Chapin Co., 110 Seneca street, manufacturer of gears, is reported having plans prepared for a 5-story plant, 70 x 78 feet.

UTICA, N. Y.—The Utica Heater Co. has plans for an addition, 1-story, to its plant at Whitesboro, N. Y.

UTICA, N. Y.—The Utica Knitting Co. has plans for a machine shop addition, 1-story, 60 x 69 feet, to cost $15,000.

WATERLOO, N. Y.—The Waterloo Wagon Co. is reported planning to build a plant for the manufacture of automobile and truck bodies.

WATERLOO, N. Y.—The Waterloo Body Corp. recently was incorporated with $200,000 capital, by T. E. Milliken, A. W. Frantz and J. Kropf.

ALLENTOWN, PA.—The Lehigh Chemical Co. recently was incorporated with $10,000 capital, by Stanley Staneslaus, Reading, Pa., A. Sofrancey and Lawrence H. Rupp.

FERNDALE, PA.—The Cambria Car & Foundry Co. has been incorporated with $5000 capital, by H. J. Widmann, Johnstown, Pa., and others.

MCKEESPORT, PA.—The National Tube Co. will start work soon on a plant at Christy park. Address Taylor Allderdice, second vice president, Frick building, Pittsburgh.

NEW CASTLE, PA.—J. C. Barr of the Pittsburgh Steel Co., Union Arcade, Pittsburgh, is interested in a steel plant to be erected at New Castle junction.

PHILADELPHIA.—The Philadelphia Metal Lathing & Furring Co. has been incorporated with $5000 capital, by M. H. Jester, John J. Baurer and E. W. Billerbeck.

PITTSBURGH.—The Pittsburgh Gauge & Supply Co. plans to erect a plant addition, to cost $350,000.

PITTSBURGH.—The Continental Steel & Supply Co. recently installed 29 nail machines at its plant at Ellwood City, Pa.

PITTSBURGH.—The Weinman Pump & Supply Co., capital $20,000, has been incorporated by C. E. Chalfant and others.

PITTSBURGH.—A charter has been granted to the Pittsburgh Forging Co., capital $5000. A. R. Bassett is among the incorporators.

PITTSBURGH.—Charter has been granted to the J. A. Malone Co., capital $35,000, iron and steel manufacturer. J. A. Malone is president.

PITTSBURGH.—The Standard Steel Products Co., recently incorporated, has acquired 15 acres at Coraopolis, Pa., as a site for a plant.

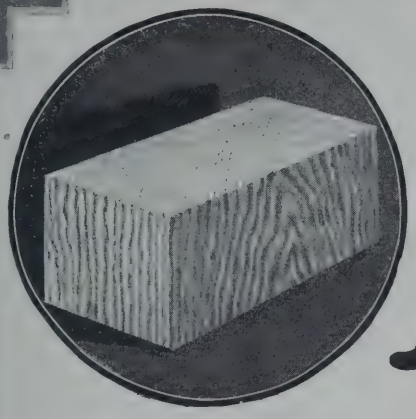
PITTSBURGH.—A charter has been granted to the Triangle Automobile Spring Co., capital $5000. A. R. Bernhardt, Pittsburgh, is an incorporator.

PITTSBURGH.—The Duquesne Light Co. proposes to spend $200,000 for a supply station. A. W. Thompson, 435 Sixth avenue, Pittsburgh, is president.

PITTSBURGH.—The Radner & Dinger Co., one of the city's pioneer concerns in the fabricating of sheet metals, has a factory location and will erect a plant.

PITTSBURGH.—A charter has been granted to the Factory Products Co., capital $50,000, manufacturer of engines. William W. Adams, Pittsburgh, is interested.

PITTSBURGH.—The Duff Mfg. Co. is constructing



Kreodone EVERLASTING WOOD BLOCK FLOORS

are treated with Pure Creosote Oil

IT is significant that during the 22 years we have been making KREODONE Floor Blocks, *not one of the floors we have laid has worn out, decayed, bled smudge or tar, or broken down.*

Incidentally "once a user always a user" was never truer than as exemplified by the big KREODONE following—a host after 22 years. Users, old and new, keep coming back for more, again and again. They stay sold.

Truly a great record, which we point to with pardonable pride.

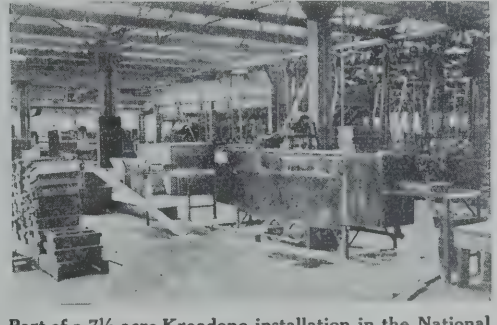
Our oldest floors are still in use and good for 22 years more.

Here's the conclusive proof that you need KREODONE floors in your plant if you want to cut upkeep expense and get more wear by many times than your present floors ever gave you.

We use nothing but seasoned, long-leaf yellow pine blocks, treated with the most efficient preservative known to science —*PURE Creosote Oil.*

Please note that we emphasize the word PURE. Pure creosote oil does not bleed tar or smudge out of treated floor blocks.

Our engineers will gladly survey your floors. No charge. Write.



Part of a 7½-acre Kreodone installation in the National Acme Co., Cleveland, Ohio, showing the conditions under which Kreodone Wood Block Floors serve best. Note the water on floor.

Get the *Genuine KREODONE* Blocks
Watch that Spelling—it means Service

REPUBLIC CREOSOTING COMPANY, Indianapolis, Indiana

Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

BRANCH OFFICES:

315 Peoples Gas Bldg., Chicago
206 Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland
31 Transportation Bldg., Philadelphia
828 Plymouth Bldg., Minneapolis
445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hammond Bldg., Detroit

an addition, 80 x 160 feet, which when completed will accommodate the forge shop and heat treating departments.

PITTSBURGH.—The building occupied by the Miller-Owen Electric Co., Lexington avenue and Thomas boulevard, recently was damaged by fire. Valuable electrical machinery, including dynamos and motors were damaged.

PORT BLANCHARD, PA.—The Ronna Coal Co. is reported planning to rebuild its coal washing plant.

POTTSTOWN, PA.—The Plastic Firebrick Co. has been incorporated with $25,000 capital, by John P. Oister, Frank T. Boyer, Elmer H. Gray and F. S. Yeager.

SHARON, PA.—This city is considering a sewage disposal plant.

SHARON, PA.—The Wilkes Rolling Mills Co. will build a sheet mill here.

SHARON, PA.—Nathan Rosenblum has awarded a contract to Wallis & Carley for a 4-story warehouse which will be equipped with elevators and gravity-controlled conveyors.

SHARON, PA.—The Slick-Knox Steel Co. will build a 2-story assembling plant, 150 x 300 feet, at Wheatland, Pa., and also will fit up a plant to make truck frames. C. K. Strasbaugh is president.

TACONY, PA.—The Dodge Steel Co. has awarded a contract to the Austin Co., Cleveland, for a steel foundry building.

TARENTUM, PA.—The Raydex Co. is making improvements to the old plant of the Northern Tool Forge Co.

VERONA, PA.—The Verona Steel Castings Co., a branch of the Standard Steel Car Co., has acquired nine acres near here, on which it is reported the company plans to build a new plant.

WASHINGTON, PA.—The Duncan Miller Glass Co. has let the contract for a gas producer plant.

WAYNESBORO, PA.—The Landis Tool Co. is reported planning plant extensions.

WEST NANTICOKE, PA.—Staple & Bell, Inc., plans to erect a coal breaker.

WILKES-BARRE, PA.—The Wilkes-Barre Iron & Wire Works Co. has been incorporated with $10,000 capital, by W. T. Ulrichson, Hugh P. Walters, Thomas H. Mead, Scranton, Pa., John R. Wilson and others.

WILLIAMSPORT, PA.—The Pennsylvania Collapsible Tube Co. has been granted a charter. It was capitalized at $25,000 and was incorporated by Harold A. Gilbert and others.

WRIGHTSVILLE, PA.—The Riverside Foundry Co. will build an addition 54 x 100 feet.

YARDLEY, PA.—The Keystone Screw Co., Philadelphia, has purchased the plant of the Klauder-Welden Co., which includes a modern foundry and machine shop.

YORK, PA.—The Read Machinery Co. contemplates a plant, one story, 160 x 240 feet, to cost $60,000.

CAMDEN, N. J.—The Penn State Auto Co. has been incorporated with $25,000 capital, by F. R. Hansel, I. C. Clow and J. A. McPeak.

JERSEY CITY, N. J.—The Auto Products Co. has been incorporated with $100,000 capital, by J. Hower, Peter Brance and J. P. Conlon.

LAMBERTVILLE, N. J.—Quirk Bros., New York, have decided to build a foundry at Phillipsburg, Pa.

MONTCLAIR, N. J.—The American Concrete Steel Co. will erect a 6-story warehouse for the E. E. Leach estate, to cost $150,000.

NEWARK, N. J.—The Heineman Phonograph Co. will shortly erect a 4-story factory building.

NEWARK, N. J.—The National Lock Washer Co., Herman street, is having plans drawn for a plant addition to cost about $20,000.

NEWARK, N. J.—The Dix Magneto Co. recently was incorporated with $25,000 capital, by J. P. Donohue, J. M. Maier and J. M. O'Neil.

NEWARK, N. J.—H. R. Friedman, Inc., 77 Arlington street, has been incorporated to manufacture notions, toys, etc., with $125,000 capital.

NEWARK, N. J.—The Metal Parts Co., 207 Market street, has been organized by John J. Turtletaub and others.

NEWARK, N. J.—Stengle & Rothchild, Main street, have awarded a contract for a boiler house, 1-story, to cost $16,000.

NEWARK, N. J.—The Aeolian Co. recently purchased 50 acres for the erection of a plant to cost about $2,000,000.

NEWARK, N. J.—The New Jersey Parts Co., manufacturer of shock absorbers, has leased a 2-story building.

NEWARK, N. J.—The Otis Elevator Co. has leased a building to be erected at 12 East Park street, to be 23 x 75 feet.

NEWARK, N. J.—The Metal Stamping & Mfg. Co. has been incorporated with $100,000 capital, by Harry Green, Sali Kneip and N. M. Frutchman.

NEWARK, N. J.—The Bachman Machine & Tool Mfg. Co., 130 Orchard street, has been organized by Carl Bachman, 38 Pennington street, and others.

NEWARK, N. J.—William E. Quimby, Inc., 209 Parkhurst street, pumping equipment, has plans for a 2-story addition, 48 x 92 feet, to cost $18,000.

NEWARK, N. J.—The Hillside Tool & Die Co. has been incorporated with $50,000 capital, by F. N. and S. L. Raymond and William S. Parsons.

NEWARK, N. J.—The Cocoanut Oil Co., New York, will erect a $300,000 plant, 110 x 200 feet, and the boiler plant will have 500 horsepower capacity.

NEWARK, N. J.—Amann & Finn, Inc., 557 Springfield avenue, have been incorporated with $50,000 capital to manufacture electric motors, dynamos, etc.

NEWARK, N. J.—The American Platinum Works, Oliver street, has awarded a general contract for an addition, 3-stories, 50 x 130 feet. The boiler house will be 25 x 40 feet.

NEWARK, N. J.—The contract for an additional unit to the Nutley plant of L. Sonneborn Sons, Inc., has been awarded and will be 1-story, 38 x 112 feet, with a boiler room extension 40 x 53 feet.

NEWARK, N. J.—Contracts for a $150,000 plant for the New Toy Co. were awarded recently. The building will be 2-stories with a floor capacity of 50,000 feet. A separate building of 2500 square feet will be used for mixing chemicals.

PHILLIPSBURG, N. J.—The Schedler-Murphy Iron & Steel Co. has been incorporated with $50,000 capital, by T. E. Murphy, Peter Schedler and others.

PISCATAWAYTOWN, N. J.—The Raritan Refining Co. will erect a plant.

TRENTON, N. J.—The Travelers Tire & Rubber Co. plans a plant and power house.

TRENTON, N. J.—The Standard Oil Co. will erect a repair shop, storeroom and general offices at an estimated cost of $200,000.

TRENTON, N. J.—The National Radiator Co. has plans for a core room and sand storage building, 1-story, 76 x 317 feet, to cost $30,000.

TRENTON, N. J.—William F. Lemon & Bros., Inc., has been incorporated to manufacture hardware, electrical supplies, etc., with $50,000 capital.

TRENTON, N. J.—The Ingersoll-Trenton Watch Co., 702 Monmouth street, has awarded a contract for a plant addition, 21 x 99 feet, to cost about $13,000.

TRENTON, N. J.—William F. Lemmon & Bro., Inc., capitalized at $50,000, recently was incorporated to manufacture hardware, by W. D. Lemmon, Edgar H. Freeman and others.

TRENTON, N. J.—The Hasselman-Powers Co., 26 West State street, has been incorporated with $125,000 capital to manufacture airplanes, automobiles, etc., by David L. Powers, F. G. Hasselman and J. Albert Homan.

WILMINGTON, DEL.—The Speakman Supply & Pipe Co., East Thirtieth and Spruce streets, will erect a plant addition, 60 x 180 feet.

BALTIMORE.—Sherwood Bros., manufacturers of oils and greases, whose plant was damaged by fire recently, announced that plans are under way to construct a modern plant.

Central States Activity

APPLETON, WIS.—Edward F. Witthuln, 984 Lake street, is forming a company to build an electric washing machine.

APPLETON, WIS.—The Northern Boiler & Structural Iron Works is completing work on a large plant addition and office building.

APPLETON, WIS.—The Langstadt & Meyer Co., electrical apparatus, is taking bids for a 2-story machine shop addition, 40 x 120 feet.

AUGUSTA, WIS.—The Dells Milling Co. is taking bids for a power dam.

BARTON, WIS.—The Stevenson Mfg. Co., general farm appliances, has let contracts for the first unit of its proposed plant to be 2-stories, 80 x 120 feet.

GREEN BAY, WIS.—The Wisconsin Public Service Co. is making preliminary surveys for a dam and hydroelectric plant at Johnson's Falls. The plant will cost about $500,000.

HORTONVILLE, WIS.—The Debareiner Hardware Co. is having plans prepared for a 1-story shop building, 60 x 120 feet, to be used as a machine shop and sheet metal works.

MENOMINEE, WIS.—The American Rule & Block Co. has been organized by Axel Thomsen, of Thomsen Bros. & Co., machinists.

MILWAUKEE.—The Kearney & Trecker Co. is erecting a machine shop addition, 40 x 480 feet.

MILWAUKEE.—The E. & W. Mfg. Co., Oregon and Reed streets, will build a 2-story addition, 55 x 93 feet.

MILWAUKEE.—The A. E. Martin Foundry Co. recently awarded the A. F. Wagner Iron Works the contract to erect a gray iron foundry addition.

MILWAUKEE.—The Standard Steel Corp. has awarded the Northern Bridge & Iron Co. a contract to erect a machine shop and assembling floor.

MILWAUKEE.—The Monarch Tractor Co., Watertown, Wis., has been reorganized as the General Tractors, Inc., with headquarters at New York and Chicago.

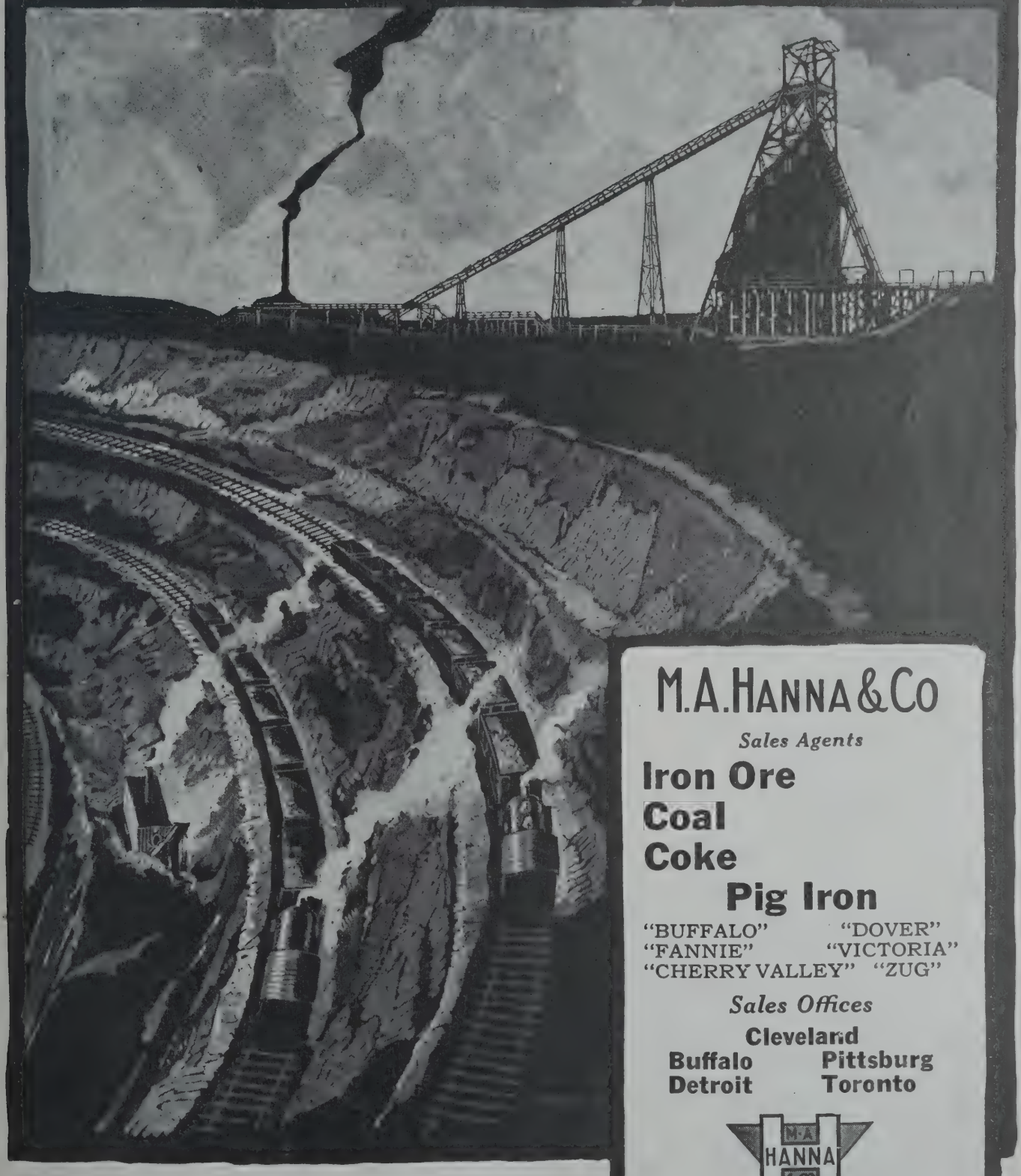
MILWAUKEE.—The Ogren Motor Car Co., a new $500,000 corporation, has started work on rebuilding the former Elite rink, 120 x 150 feet, into an automobile manufacturing plant.

OSHKOSH, WIS.—The Bull Dog Tractor Co. has been organized with $750,000 capital, by J. H. Tritz, Eber Simpson and Arthur H. Gruenwald.

SHEBOYGAN, WIS.—Architects Childs & Smith, Chicago, have plans for the proposed Sheboygan high school, to be 3-stories, 162 x 195 feet, containing vocational training departments, etc.

TWO RIVERS, WIS.—Sam Schwartz & Son, scrap metal dealers, will award contracts shortly for a

HANNA



M. A. HANNA & Co

Sales Agents

Iron Ore
Coal
Coke
Pig Iron

"BUFFALO" "DOVER"
"FANNIE" "VICTORIA"
"CHERRY VALLEY" "ZUG"

Sales Offices

Cleveland
Buffalo **Pittsburg**
Detroit **Toronto**

M.A. HANNA & CO.

Say you saw it in THE IRON TRADE REVIEW

2-story building, 60 x 150 feet, to be equipped for refining metals and handling scrap.

WEST BEND, WIS.—The West Bend Barn Equipment Co. has purchased the business of the Spring Bearing Truck Co., Waupaca, Wis., and is moving the plant here, where a large shop will be built.

DETROIT.—The Hudson Motor Car Co., 2901 Jefferson avenue, is having plans drawn for a plant addition, one story, 300 x 300 feet.

DETROIT.—Architect Fred A. Evans, 70 Book building, is taking bids for a machine shop to cost $30,000. The name of the owner is withheld.

DETROIT.—The Mutual Electric & Machine Co. has had plans prepared for an office and machine shop addition, 60 x 130 feet, to cost $35,000.

DETROIT.—Architect O. H. Kavieff, 712 Empire building, has plans for a foundry, 70 x 95 feet, to cost $30,000. The name of the owner is withheld.

DETROIT.—The A. J. Detlaff Co., manufacturer of automobile clutches, has purchased six acres at Sandwich, Ont., as the site for a Canadian branch plant.

DETROIT.—The Swedish Crucible Steel Co. has in course of construction a building which when completed will add 40,000 square feet to the company's manufacturing facilities.

FLINT, MICH.—The Buick Motor Car Co. has had plans drawn for a plant, two stories, 80 x 300 feet, to cost $90,000.

GRAND RAPIDS, MICH.—The Glove Wire & Truck Co. has plans for a plant.

GRAND RAPIDS, MICH.—The Michigan Stamping Co. is having plans drawn for a factory and power plant additions.

GRAND RAPIDS, MICH.—The National Spring & Wire Co., 1454 South Sangamon street, plans a plant, 4-stories, 86 x 500 feet.

GRAND RAPIDS, MICH.—Plans are reported under way for a new plant for the New Era Spring & Specialty Co., of which W. Smalley Daniels is president.

HASTINGS, MICH.—The General Motors Corp. has purchased the plant of the Hastings Consolidated Press & Tool Co., and is reported planning to enlarge it.

JACKSON, MICH.—The Jackson Motors Corp. has been chartered with $5,000,000 capital, to operate the Jackson Automobile Co. and the United Four-Wheel Drive Truck Corp., Chicago, which were recently consolidated. H. A. Matthews is president.

HOLLAND, MICH.—The pattern shop of the Western Machine Tool Works, recently damaged by fire, will be rebuilt.

LEXINGTON, MICH.—This city contemplates building a lighting plant.

OWOSSO, MICH.—The Owosso Boiler Works has plans for a plant addition, to consist of machine and fabricating shops.

BELLEVILLE, ILL.—The J. C. Born Machine & Foundry Co. has increased its capital from $10,000 to $30,000 and has changed its name to the Columbia Mfg. Co.

CHICAGO.—The Dallas Brass & Copper Co. contemplates a plant here, 4-stories, 100 x 212 feet.

CHICAGO.—The Whitman & Barnes Mfg. Co. has had plans drawn for a plant, one story, 100 x 500 feet.

CHICAGO.—The Colonial Chemical Corp., 1600 Broadway, Minneapolis, has plans for a plant, four stories, 82 x 107 feet.

CHICAGO.—The McGill Mfg. Co. has plans for a

Business Changes Recently Announced By the Trade

EDGAR T. WARD'S SONS CO., steel merchants, announce the opening of a new warehouse in Detroit to be located at 660 West Fort street. A complete line of high speed steel and high quality steel of all grades will be carried. F. W. Reulman has been appointed local manager in charge of the new office and warehouse.

* * *

A New York district sales office has been established by the Camden Forge Co., Camden, N. J., at 2 Rector street. Samuel W. Hilt has been named manager of the new office.

* * *

The Page Steel & Wire Co., New York City, recently opened branch offices at 29 South La Salle street, Chicago, and in the Book building, Detroit.

* * *

The Camden Forge Co., Camden, N. J., has established a district sales office at 2 Rector street, New York, with Samuel W. Hilt as manager. The new office at 984 Union Arcade building, Pittsburgh, is in charge of John H. Schuler.

* * *

The Structural Tool Co. is the new corporate style for the United States Tool Co., manufacturer of small tools for steel fabricators.

* * *

The Midland Steel Products Co., 3136 South Canal street, Chicago, has changed its name to the Midland Steel Sales Co.

The Interstate Mechanical Laboratories, Inc., 154 Grand street, New York, is the new name for the State Machine & Tool Works, Inc.

* * *

The Philadelphia office of the National Tool Co., Cleveland, recently was moved from 11 North Sixth street, to 40 North Seventh street. A New York sales office was recently established at room 553, 50 Church street, with E. S. Chamberlain in charge.

* * *

The Heald Machine Co., Worcester, Mass., has removed its Detroit sales office from 911 Majestic building to 401 Marquette building. Samples of machines as well as various machine parts are displayed at the new headquarters, in charge of J. G. Wonn.

* * *

Stockholders of the H. W. Cooper Saddlery Hardware Mfg. Co., Moline, Ill., at their annual meeting recently decided to change the name of the company to the Moline Iron Works and double the capacity of the plant. The first unit is to be a two-furnace malleable iron foundry. Officers were elected as follows: President, L. E. Nutt; vice president, J. J. Creedon; treasurer, J. T. Miles; secretary, L. H. Dorman.

* * *

The Foundation Co., New York, shipbuilder, has established offices in France at 16 Rue de la Pepiniere, Paris, under the name, Foundations, Constructions, Travaux Publics.

Fairbank & Co., Wade building, Cleveland, have established a branch office at Uniontown, Pa., for the purpose of dealing in coal and coke. Harvey C. Bartel, is in charge.

* * *

The John W. Cowper Co., Inc., Buffalo, engineer and contractor, has opened an office in the Oliver building, Pittsburgh, in charge of L. H. Meyer.

* * *

The L. B. Foster Co., Pittsburgh, and allied interests, including the Light Railway Equipment Co., will establish an office in the Tribune building, 5 Nassau street, New York, on Aug. 15, in charge of Sydney A. Foster.

* * *

The New York sales office of the Mattison Machine Works, Rockford, Ill., manufacturer of wood-working machinery, has been removed to 703 World's Tower building, 110 West Fortieth street. J. V. Parks will continue in charge.

* * *

The P. B. Yates Machine Co., Beloit, Wis., manufacturer of wood-working machinery, has established a branch sales office at 724 Chamber of Commerce building, Detroit, in charge of H. W. Krehnbrink.

* * *

The Equipment Mfg. & Supply Co., Philadelphia, formerly in the Commercial Trust building, has opened a new office, store and warehouse at 26 North Fifth street.

plant for the manufacture of electric specialties, four stories, 65 x 260 feet, to cost $150,000.

CHICAGO.—The Lasker Iron Works, 3210 South Lincoln street, has awarded a contract for a boiler works, one story, 100 x 158 feet, to cost $10,000.

CHICAGO.—The Chicago Steel Exchange, Inc., has been incorporated with $10,000 capital, by Augustus C. Blancke, Mabel C. Blancke and Lulyan Mink.

CHICAGO.—The Hy-Speed Wrench Co., 139 North Clark street, capitalized at $40,000, has been chartered by Israel Lipman, Bay Rhyman, and William Frankel.

CHICAGO.—The Bowden Motor Corp., 619 South La Salle street, capitalized at $200,000, has been chartered by J. C. Shaw, A. E. Catron and R. B. Shaw.

CHICAGO.—The Hillside Fluorspar Mines, 38 South Dearborn street, capitalized at $2000, has been chartered by C. P. Hellesoe, J. L. Richards and I. Howley.

CHICAGO.—E. Edelman & Co., manufacturer of automobile accessories, 351 East Ohio street, have bought a site on which a plant costing $250,000 will be erected.

CHICAGO.—The Cook County Paper Stock Co. will build a plant costing $1,000,000, including a warehouse 600 x 1100 feet, a factory 300 x 950 feet, a 3-story building 100 x 120 feet, a 1-story building 100 x 300 feet and a 1-story machine shop 60 x 200 feet.

CHICAGO.—Three manufacturers of automobile accessories are enlarging their plants. The Standex Mfg. Corp., 341 East Ohio street, will build additions 48 x 120 feet and 48 x 97 feet at a cost of $45,000. H. Edelman & Co. will build a plant costing $250,000. The B. & W. Mfg. Co., 5235 Ravenswood avenue, will build a 3-story plant, 50 x 125 feet.

MOLINE, ILL.—The Moline Iron Works will erect a foundry building at an estimated cost of $250,000. L. E. Nutt is president.

KENDALLVILLE, IND.—The Noble Motor Co., capitalized at $400,000, has been chartered to manufacture metal heaters for automobiles by Clarence E. Baker, Gilbert A. Bartholomew and Louis Goering.

KOKOMO, IND.—The plant of the Walton & Macke Wire Nail Co. recntly was damaged by fire.

KOKOMO, IND.—The Haynes Automobile Co. is taking bids for a dynomometer building, one story, 85 x 120 feet, to cost $40,000.

MISHAWAKA, IND.—The Dodge Mfg. Co. plans to erect a number of houses for its employes.

MUNCIE, IND.—The Big Four railroad plans the building of a belt railroad around this city.

SOUTH BEND, IND.—The South Bend Tin Mfg. Co. has been incorporated with $50,000 capital, by Martin Kaniewski, Ignac Cierpiat and Adolph Cruszczynski.

SOUTH BEND, IND.—The Dilts Machine Works, Inc., a New York corporation has qualified to do business in this state. It is capitalized at $12,500 and will operate a foundry and machine shop. Stuart MacKibben, South Bend, is agent.

WINONA LAKE, IND.—The Indiana public service commission has issued an order for the Winona Electric Light & Water Co. to construct a new pumping station.

AKRON, O.—The J. V. B. Engine Co. recently was incorporated with $100,000 capital, by Joseph Van Blerck and others.

ASHLAND, O.—The Ashland Brass Foundry recently let a contract for an office and foundry building, 45 x 70 feet.

CINCINNATI.—The plant of the Worthington Pump & Machinery Corp., here, will be enlarged according to a report.

CINCINNATI.—The Acme Machine Tool Co. has a permit to erect a 1-story addition at an estimated cost of $18,000.

CLEVELAND.—The Cream Cone Machine Co. will build a plant.

CLEVELAND.—The Geometric Stamping Co. plans the erection of a plant, 1-story, 31 x 79 feet.

CLEVELAND.—The Standard Woodwork Co., 815 East Ninety-third street, contemplates a plant.

CLEVELAND.—The Peerless Motor Car Co. has a permit to erect a plant addition, one story, 33 x 333 feet.

CLEVELAND.—The Federal Bed Spring Co. has been incorporated with $50,000 capital by I. Grohs and others.

CLEVELAND.—The Commercial Forgings Co. has been incorporated with $15,000 capital, by W. Illingworth and others.

CLEVELAND.—The P. A. Geier Co., machinist, 5112 St. Clair avenue, has plans for a plant addition, two stories, 39 x 301 feet.

CLEVELAND.—The Surgical Cutlery & Mfg. Co. recently was incorporated with $10,000 capital, by Charles F. Honey, Charles L. Henderson, Ralph S. Austin, Philip Herder and Augustin Perschol.

CLEVELAND.—The Cleveland Co-Operative Stove Co. which recently increased its capital from $250,000 to $500,000 is improving its plant with a foundry addition and a new enameling plant.

COLUMBUS, O.—The Columbus Metal Products Co. recently was incorporated with $10,000 capital, by E. G. Lloyd, D. H. Wyatt, Bert Wolmann and others.

ELYRIA, O.—The Elyria Steel Products Co. recently was incorporated with $150,000 capital, by C. E. Lozier and others.

LORAIN, O.—The Lorain Steel Stamping Co. has been incorporated with $100,000 capital, and will erect a plant at an estimated cost of $35,000.

MASSILLON, O.—The Beans Spring Co. has been incorporated with $500,000 capital, by J. F. Beans and others.

SANDUSKY, O.—Workmen are rushing to completion the erection of the plant here or the Maibohm Motors Co.

SANDUSKY, O.—Contractors have completed the foundations for the new office building and pattern shop for the Gartland & Carroll Foundry Co.

SPRINGFIELD, O.—The plant of the Hennessy Foundry Co. recently was purchased by W. C. Armstrong and others.

SPRINGFIELD, O.—The Danis Hunt Construction Co. has been awarded the contract to erect a plant for the Robbins & Meyer Co.

TOLEDO, O.—The Buckeye Electric Motor Co., recently was incorporated with $10,000 capital, by H. H. Donnell and others.

WOODSFIELD, O.—The Woodsfield Tool Co. recently was incorporated with $15,000 capital, by E. Schwall, George Ritzert, Clarence Lafferre, Harry Cooper and others.

COVINGTON, KY.—The Williard Machine Tool Co. has plans for a plant addition, 1-story, 65 x 100 feet.

HOPKINSVILLE, KY.—A company is being formed to manufacture a line of farm and mining machinery and its plant will be located in a small town in Oklahoma. The company plans to install a modern foundry and machine shop and desires to get in contact with manufacturers of foundry, machine shop and allied equipment. L. G. Williams, East View farm, R. 6, Box 50, Hopkinsville, Ky., is in charge of the project.

LOUISVILLE, KY.—Benjamin F. Vogt and several others recently organized the Weighing Machine Co., and will engage in the manufacture of weighing machinery.

LOUISVILLE, KY.—The Byron Engineering Works, capitalized at $175,000, is being organized to manufacture automobile trailers by J. Stoodard Johnson Jr. and O. E. Byron.

LOUISVILLE, KY.—The Illinois Malleable Iron Co., Chicago, is reported to have closed a deal here for the purchase of 42 acres, on which it plans to erect a foundry.

BUCKHANON, W. VA.—The Equitable Glass Co. will build a producer plant.

CLARKSBURG, W. VA.—The Monongahela Valley Traction Co. will double the size of its power plant at Riversville.

CLARKSBURG, W. VA.—The National Mold & Machine Co., capital stock $10,000, has been incorporated by P. H. Koblegard, J. E. Greenwood, B. W. Greenwood, H. H. Koblegard and M. H. Koblegard, all of Clarksburg.

FAIRMONT, W. VA.—The West Virginia Metal Products Corp. will build a plant to cost $1,500,000 including a building 1-story, 300 x 600 feet. J. E. Watson is president.

GRAFTON, W. VA.—The Potomac-Edison Co., capital $4,000,000, will build a hydroelectric power plant near here.

HUNTINGTON, W. VA.—The Lamie Chemical Co. will build two additions, 50 x 50 feet and 60 x 200 feet.

HUNTINGTON, W. VA.—The Standard Oil Co. is arranging to build a garage, warehouse, boiler and pump house here.

Business in Canada

REGINA, SASK.—The Canadian Oliver Chilled Plow Works, Ltd., has been incorporated to manufacture farm implements, castings, tools, machinery, etc., with $20,000 capital, by Joseph D. Oliver, James Oliver, Hewlett G. Davies, Charles F. Cunningham, all of South Bend, Ind., and others.

BRIDGEWATER, N. S.—The Acadia Stationary Engines, Ltd., has been organized with $100,000 capital by W. T. Ritcey, Bridgewater; William Duff, M. P., Lunenburg, N. S.; R. W. Elliott of Halifax, N. S., and others.

MONTREAL, QUE.—The Laval Industrial Co. is making preparations to start work on a stamping works here.

MONTREAL, QUE.—The British Minerals Corp., Ltd., has been incorporated with $1,500,000 capital, by Louis P. Crepeau, Benjamin Robinson and George Whittaker.

MONTREAL, QUE.—The Auto-Indicator Sales Co. of Canada, Ltd., has been incorporated to manufacture motors, engines, etc., with $25,000 capital, by Thomas Kirby, Ernest Poulin and others.

MONTREAL, QUE.—The British Foundation Ovens, Ltd., has been incorporated with $15,000,000 capital to carry on business as ironmasters, etc., by Thomas Robinson, Edward L. VanZandt, Charles J. Goulet, Elmer Polhemus and Edwin Rosenberger.

SHERBROOKE, QUE.—The Dominion Cartridge Co. has let the general contract for a factory here to cost $50,000.

VERDUN, QUE.—The city council will erect a steam generator plant here to cost $75,000.

BRACEBRIDGE, ONT.—The Muskoka Foundry, Ltd., has been incorporated with $70,000 capital by Charles E. Lount, Alexander C. Salmon, Albert Coombs and others.

BRANTFORD, ONT.—The Brantford Scale Co. has awarded a contract for an addition.

(*Concluded on Page* 674)

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 60 to 65 cents per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.447c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.50c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	6.75 to 7.00c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 ecnts
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.

Lengths—72-84-96-120 and 144 inches.

Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

	Black	Galv.
Butt Weld		
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

	Black.	Galv.
Butt Weld		
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

	Black	Galv.
Butt Weld		
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$21.00 to 21.50
Chicago	19.50 to 20.00
Eastern Pennsylvania	18.50 to 19.50
Cleveland	21.00 to 21.25
St. Louis	20.50 to 21.00
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.35 to 16.00
Cincinnati	17.00 to 17.50
Birmingham	19.00 to 21.00
Valleys	21.00 to 21.50
Boston (dealers)	16.50 to 17.50

BUNDLED SHEETS

Pittsburgh	$16.50 to 17.50
Eastern Pennsylvania	15.00 to 16.00
Cleveland	16.00 to 16.50
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	11.00 to 11.50

STEEL RAILS, SHORT

Chicago	$22.50 to 23.00
Cleveland	23.50 to 24.50
Boston (dealers)	16.00 to 16.50
St. Louis	22.50 to 23.00
Birmingham	18.00 to 20.00
Cincinnati	18.00 to 18.50

STOVE PLATE

Pittsburgh	$18.00 to 19.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	20.00 to 21.00
Cleveland	19.25 to 20.25
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New York	18.50
Cincinnati	16.00 to 16.50
Birmingham	19.00 to 21.00
Boston (consumers)	21.00 to 22.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$18.50 to 19.00
St. Louis	19.50 to 20.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.50 to 22.00
Chicago	21.00 to 21.50
St. Louis	22.50 to 23.00

BALED SHEETS

Pittsburgh	$19.00 to 19.50
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	$20.00 to 20.50
St. Louis	21.00 to 21.50
Eastern Pennsylvania	18.50 to 19.50

BOILER PLATE, CUT

Chicago, No. 1	$16.00 to 16.50
St. Louis, No. 1	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$20.00 to 21.00
St. Louis	21.50 to 22.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$23.00 to 24.00
Pittsburgh, No. 2	22.00 to 23.00
Chicago, No. 1	22.00 to 22.50
Chicago, No. 2	21.00 to 21.50
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	24.00 to 24.50
St. Louis, No. 1	21.50 to 22.00
St. Louis, No. 2	20.50 to 21.00
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	16.00 to 18.00
New York, No. 1 (dealers' price)	23.00
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$19.50 to 20.50
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	16.25 to 16.50
Boston (dealers)	15.50 to 16.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers' price)	$20.00

BUSHELING

Chicago, No. 1	$19.50 to 20.00
Chicago, No. 2	15.50 to 16.00
Cleveland, No. 1	20.50 to 21.00
Cleveland, No. 2	16.00 to 16.50
St. Louis, No. 1	20.50 to 21.00
Buffalo, No. 1	16.50 to 17.00
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.50 to 14.00
Chicago	10.50 to 11.00
Eastern Pennsylvania	15.00 to 15.50
Eastern Pennsylvania (blast furn.)	12.00 to 13.00
Cleveland	12.00 to 12.50
Buffalo	12.00 to 12.50
New York (dealers' price)	11.00 to 11.50
St. Louis	12.50 to 13.00
Cincinnati	7.50 to 8.00
Birmingham	10.00 to 11.00
Valleys	13.75 to 14.00
Boston (dealers)	11.00 to 11.50
Boston (blast furnace) (dealers)	11.00 to 11.50

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	13.50 to 14.00
Eastern Pennsylvania	15.00 to 16.00
Cleveland	15.25 to 15.65
St. Louis	12.50 to 13.00
Buffalo	13.50 to 14.00
New York (dealers' price)	11.00 to 11.50
Cincinnati	9.00 to 9.50
Birmingham	10.00 to 11.00
Valleys	15.75 to 16.00
Boston (dealers)	11.00 to 11.50
Boston (blast furnace) (dealers)	11.00 to 11.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	31.00 to 32.00
Eastern Pennsylvania	35.00
Cleveland	35.00 to 36.00
St. Louis	34.00 to 34.50
Buffalo	28.00 to 29.00
Cincinnati	26.50 to 27.00

IRON RAILS

Chicago	23.50 to 24.00
Cleveland	27.00 to 28.00
St. Louis	23.50 to 24.00
Buffalo	24.00 to 25.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	17.50 to 18.00
Cleveland	19.00 to 19.50
St. Louis	18.50 to 19.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$22.50 to 23.00
Cleveland	19.50 to 20.50
Buffalo	20.00 to 20.50
New York	17.50
Eastern Pennsylvania	18.50 to 19.50

FORGE CUTTINGS

Cleveland, large	$16.00 to 16.50
Cleveland, small	19.00 to 19.50
Chicago, small	16.00 to 16.50
Boston (dealers)	12.00 to 12.50

LARGE SCRAP

Chicago	$21.00 to 21.50
Eastern Pennsylvania No. 1	14.50 to 15.50
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	25.50 to 26.00
St. Louis	25.50 to 26.00

ANGLE BARS—IRON

Chicago	$23.50 to 24.00
St. Louis	25.50 to 26.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
Cleveland	16.50 to 17.50
Buffalo	15.00 to 16.00
Chicago	15.50 to 16.00

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	31.50 to 32.00
Buffalo	28.00 to 29.00
Chicago	30.50 to 31.00
New York (dealers' price)	24.00 to 25.00
Birmingham	20.00 to 22.00
Boston (dealers)	25.00 to 26.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	21.00 to 22.00
Chicago	26.00 to 27.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$25.00 to 25.50
Pittsburgh, steel	22.50 to 23.00
Chicago, iron	23.50 to 24.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, Iron	22.75 to 23.00
St. Louis, iron	24.50 to 25.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 22.00
Birmingham, tram car	20.00 to 22.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$24.00 to 25.00
Chicago, cupola	26.50 to 27.00
Eastern Pennsylvania, cupola	24.50 to 25.50
Cleveland, cupola	23.00 to 23.50
New York, cupola (dealers' price)	21.00 to 22.00
Cincinnati, No. 1, cupola	21.00 to 21.50
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	25.50 to 26.00
Buffalo	24.50 to 25.00
Boston	27.00 to 28.00
Valleys	23.00 to 23.50

HEAVY CAST

New York (dealers' price)	$20.50 to 21.50
Buffalo	21.00 to 22.00
Pittsburgh	21.00 to 21.50
Cleveland	18.50 to 19.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$21.00 to 22.00
Pittsburgh, agricultural	20.00 to 21.00
Chicago, railroad	21.00 to 21.50
Chicago, agricultural	21.00 to 21.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	22.00 to 23.00
Cleveland, agricultural	19.00 to 19.50
St. Louis, railroad	20.00 to 20.50
St. Louis, agricultural	19.50 to 20.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	$25.50 to 26.00
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	28.50 to 29.00
Birmingham	18.00 to 20.00
Boston (dealers)	18.00 to 18.50

LOCOMOTIVE TIRES

Chicago	$23.50 to 24.00
St. Louis	21.50 to 22.00

BOILER PUNCHINGS

Chicago	$22.00 to 23.00
Eastern Pennsylvania	23.00 to 24.00

In stock for immediate shipment

—— ask for prices —— × × ×

2000 tons forging billets 7 29/32 square.
4000 " shell forgings 6" diameter
1000 " " " 9.2" "
1000 " tire bars oval edge 5/8 + 3
100 " Cr. Bessemer Rds 1 9/32 diameter
650 " " " " 2 13/32 "

All this steel has been given the OK by Govt. inspectors

The James A. Miller Co
McCormick Bldg, Chicago.

(Concluded from Page 669)

BRANTFORD, ONT.—The Cockshutt Plow Co. will build additions to its plant at an estimated cost of $100,000.

BRANTFORD, ONT.—The Electric Tin Products Co. has purchased property here on which it plans a tin smelter.

BRANTFORD, ONT.—The Robbins & Myers Co., electric fan manufacturer, Springfield, O., is reported to have purchased a site here on which it plans a plant.

BROCKVILLE, ONT.—The Canadian Sander Mfg. Co. has been incorporated to manufacture machinery, etc., with $20,000 capital, by Arthur C. Jones, Ray L. Carter and J. Arthur Jones.

FOREST, ONT.—The city council is planning a waterworks plant.

GODERICH, ONT.—The Convertible Tractor Co., St. Paul, is making preparations for a plant here.

HAMILTON, ONT.—The Dominion Canners, Ltd., contemplate a $1,000,000 factory here.

KITCHENER, ONT.—The F. W. D. Auto Co. will start work soon on a plant here.

MORRISBURG, ONT.—Handley Page, Ltd., has been incorporated with $2,500,000 capital, to manufacture airplanes, etc., by William H. Workman, Mark Kerrm F. R. Chalmers and William H. McGannon.

OTTAWA, ONT.—Security Devices, Ltd., has been incorporated to manufacture safes, locks, tools, etc., with $25,000 capital, by O. G. Regan, F. W. Fee and G. A. Holland.

TORONTO, ONT.—The Northern Aluminum Co. is erecting a plant here.

TORONTO, ONT.—William and J. J. Greey are building a machine shop here, 98 x 180 feet, at an estimated cost of $50,000.

New Trade Publications

OIL HOLE COVERS.—Catalog No. 6 being circulated by W. W. & C. F. Tucker, Hartford, Conn., describes and illustrates oil hole covers and cups. Specifications and other data are given.

EXPORT SERVICE.—A small cardboard-bound booklet of 12 pages, entitled "Service," is being circulated by C. K. Thomas & Co., New York. The booklet points out the service on exports rendered by the company to its various clients.

ORE UNLOADERS.—The Wellman-Seaver-Morgan Co., Cleveland, has published a 12-page illustrated booklet in which it describes automatic ore unloaders which it has built and installed at various ports on the Great Lakes. The equipment is thoroughly described and numerous illustrations, showing various types of unloaders at work, are presented.

BOILER GRATES.—A 20-page booklet is being circulated by the Combustion Engineering Corp., New York, in which grates designed for hand firing boilers where automatic stokers cannot be installed are described and illustrated. A number of line drawings showing the elliptical air openings of dumping bars for various fuels are presented.

NONFERROUS METALS.—White & Bros., Inc., Philadelphia, are circulating a 24-page booklet pertaining to the manufacture of nonferrous metals. The latter part of the booklet is devoted to illustrations of various departments of the company's plant, and include the laboratory, the electrolytic table, a corner of the balance room, the copper warehouse and test departments.

BLOWERS.—The Buckeye Blower Co., Columbus, O., is circulating bulletin No. 10, which describes and illustrates multiblade fans for mechanical ventilation, forced or induced draft, mine ventilation, dry kiln where hot blast is used, waste heat installations of all kinds, mechanical systems where space is limited, and exhausters. Various data are given. A chart for determining frictional resistance or static pressure in inches, water gage, is given.

HAMMER DRILL.—A 4-page leaflet is being distributed to the trade by the Star Expansion Bolt Co., New York, in which a spring hammer drill is described and illustrated. This drill is adapted to the use of electricians, plumbers, etc., and is said to have a capacity for drilling 1 inch per minute in brick or concrete. The barrel of the drill contains a hammer or plunger which is thrown rapidly back and forth by the action of a cam and spiral spring, so that it strikes a series of blows on the drill point holder. The drill is operated by a hand crank.

SWING CUT-OFF SAWS.—A 4-page illustrated circular is being distributed by the Oliver Machinery Co., Grand Rapids, Mich., in which swing cut-off saws are described and illustrated. The frames of these saws are supported by trunnions which are independent of the countershafts. The frames are hung low from large screws, made adjutsable in the hangers by means of hand wheels. The saw arbors are mounted in separate yokes which are removable from the frames and which are held in finished slots securely bolted. The saw arbor bearings are automatically lubricated.

ENGINEERING.—Westinghouse Church Kerr & Co., Inc., engineers and constructors, New York, are circulating a 4-page leaflet containing a list of clients by whom the company was employed during 1918. According to the leaflet, the company served more than 40 clients during the year as engineers and constructors, and designed and built plans for the production of guns, shells, aircraft, turbines, high explosives, sulphur, brass and steel castings, forgings, carbide, leather, saws, lamp, superheaters, barrels, glass, railway shops and terminals, power plants, transmission lines, cantonments, loading plants, filtration plants, electric railways and workmen's houses.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

The purchase of automatic scales for weighing beet sugar and other machinery for a modern beet sugar plant is desired by a firm in Spain. Correspondence should be in Spanish. Opportunity No. 30364.

An agency is desired by a man in Italy for the sale of raw materials for the paper industry, including machinery. Correspondence should be in French or Italian. Opportunity No. 30365.

An agency is desired by a party in Italy for the sale of chemicals, leather, agricultural implements, etc. Correspondence should be in Italian. Opportunity No. 30379.

A commercial engineer in Belgium wishes to represent firms for the sale of metal products, sheets, bars, beams, forgings, tubes, copper and brass in sheets, bars and tubes, etc. Opportunity No .30380.

A firm in Trieste desires to purchase and secure an agency on a commission basis, for gas, water, and electrical appliances, sanitary goods and hardware in general. Opportunity. No. 30381.

A party in Italy desires to secure an agency for the sale of insulating material, slag-wool, asbestos, metals, iron, steel, etc. Correspondence should be in French or Italian. Opportunity No. 30383.

The purchase of steel shipbuilding machinery, second hand preferred, is desired by a party in Canada. Opportunity No. 30385.

An agency is desired by a party in Argentina for the sale of galvanized oval steel fence wire, and galvanized steel barbed wire. Opportunity No. 30387.

The purchase of metals, tubes, bars, sheets, marine hardware, piston rings, etc., is desired by a firm in Spain. Opportunity No. 30218.

Agencies are desired by a society in Belgium for the sale of machine tools for metals and wood, drill presses, lathes, etc. Opportunity No. 30220.

The purchase is desired by a firm in Spain of borers, drills, punches, lathes, files, machinery and other equipment, including mining and transmission machinery. Opportunity No. 3022.

The president of a commercial firm in China, now in this country, desires to purchase and secure an agency for the sale of penknives, machinery for making envelopes, typewriters, etc. Opportunity No. 30420.

A firm located in the Red Sea district desires to receive catalogs of simple models of pumps for raising water from streams or wells, 30 to 50 feet deep, iron pipes of small and medium size, as well as telephones, wire and other equipment. Opportunity No. 30424.

A company in Belgium seeks the representation of a firm manufacturing electrical installations, electric motors and accessories. Correspondence should be in French. Opportunity No. 30425.

Hardware and general merchandise in similar lines are required by a party in France. Opportunity No. 30426.

An American who is established in France desires to secure agencies for the sale of steel and steel products, such as wheels, tires, axles, forgings, castings and bar and sheet steel. Opportunity No. 30429.

A party in Algeria wishes to secure an agency for the sale of electrical equipment, motors, accessories, dynamos, etc. Correspondence should be in French. Opportunity No. 30430.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, September 11, 1919 *No. 11*

Strike Talk Still Fails to Excite

Iron and Steel Industry More Concerned With Getting Out Tonnage to Meet Growing Obligations Than With Unionism Threats—Much New Business Being Passed—Foreign Orders Are Heavier—Steel Output Gains

NOTHING in the week's events has modified the refusal of the iron and steel industry to become excited over the prospect of anything resembling serious strike troubles. The Gompers' message to the President is looked upon largely as an incident in a widely-staged propaganda to impress the employers, the 85 to 90 per cent of the workmen in the plants who have refused to affiliate with the newly-formed unions and the public. There is a well-defined suspicion also that it may have afforded a way for the more conservative labor leaders to redress an awkward position produced by the impossible claims and threats of radical agitators on which a showdown is overdue and to merge the matter with the approaching conference on general labor questions already called by the President. Just now the troubles of the industry have more to do with getting out tonnage to meet current demands than with controversies over unionism.

There are various indications that consumption of steel in a number of finished lines is running considerably ahead of production with the latter held back from capacity tonnage by labor shortages and other operating difficulties. Car shortages also are a factor. The notable instances of this are wire products, tubular goods, sheets, tin plate and bars. Specifications in all these products are ahead of output with the result that buyers are exerting increasing pressure and are encountering greater difficulties in getting desired deliveries. New orders, some of them very attractive, for delivery this year are being declined. Pipe line inquiries aggregate several thousand miles. An unsatisfied tin plate inquiry calls for 200,000 boxes.

Steel Output Increases

Despite any drag on finishing operations, crude steel output is working up steadily. August yield of the works was at the annual rate of over 38,500,000 tons of ingots or more than 3,300,000 tons in excess of July, and represented 85 per cent of the record period of October, 1918. Ingot production in 1919 to date amounts to 86.4 per cent of the 1918 figures for the same period.

The recent invoking of the federal anti-dumping statute by domestic producers against English makers of ferromanganese has caused the latter to withdraw their low prices of $95 and $100 seaboard. In some cases sales at the complained-of prices have been suspended.

Export Sales Pick Up

Export sales of iron and steel again are on the upgrade after the sharp slump in July revealed by the government figures just published. China and Japan again are in the market liberally and South America continues an active customer. European demand is light excepting Spain which has been taking the advantage of exchange in its favor to buy American steel and resell it to nearby countries. The heaviest week's sales reported include 10,000 tons of ship plates and two lots of 24,000 boxes and 5000 boxes of tin plate to Japan; 10,000 boxes of tin plate to China; 7000 boxes of tin plate and 1000 tons of galvanized sheets to Spain; 9000 tons of steel bars to Argentine; 6000 tons of wire to Cuba and South America, and 15,000 boxes of tin plate to Chile. A 20,000-ton billet sale is held up at Chicago by the exchange situation. It is estimated that recent export sales have easily been from 10 to 15 per cent of mill output. A leading Pittsburgh independent as the result of heavy foreign bookings advanced its export figures on all products this week $3 to $5 per ton.

A good index to the general and diversified character of present distribution is the surprisingly large percentage of material that is passing into use through the jobbers.

Report Big Iron Sale

There is a report in Chicago that a large buyer in that territory has closed for 100,000 tons of malleable and 100,000 tons of foundry iron for 1920 delivery at this year's prices, but definite information of any such transaction is lacking. While many buyers are seeking to cover for next year, the general opinion of producers continues to be that it is not wise to sell so far ahead at this time and the run of sales is light.

SEPTEMBER 11, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - 426 Old South Bldg.
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BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Gompers Plays A Bold Hand

SAMUEL GOMPERS' telegram to President Wilson, suave in tone yet intimidating in effect, urging the latter to use his good offices to induce the Steel corporation to grant a conference to the representatives of the so-called organized workers of the steel industry purely is for public consumption. It is a mixture of the same exaggeration, untruthfulness and downright bluff which has characterized the present movement engineered by labor agitators to force a recognition of the union by the iron and steel industry. It is an effort to bring about through the intervention of the government or rather through the federal administration that which the newly-fledged unions are not able to accomplish through their own strength or efforts. In that respect it is an admission of weakness. Nobody knows more surely than Gompers and his associates that they have been talking in big figures but that the numbers of their claims largely are made up of ciphers. They know that if they attempt to call a strike that the effects would be insignificant in direct proportion to the strength of their membership. This is because their extended expenditure of time and effort and no little money over a period of months has brought comparatively few recruits to the ranks of organized labor in the industry and these largely from the foreign and more ignorant classes. As stated in a recent issue of THE IRON TRADE REVIEW on high authority, a complete canvass of the iron and steel industry shows that but 10 to 15 per cent of its employes at most have accepted union membership and these chiefly in the auxiliary trades such as machinists, carpenters, bricklayers, etc. These figures are eloquent of the right of the American Federation of Labor to speak for the hundreds of thousands of employes of the iron and steel industry or to invoke the aid of the President, directly or indirectly, to the furtherance of its cause. The American iron and steel industry is open shop because the rank and file of its employes want it to be open shop.

The inference is plain that the unions having failed to intimidate the manufacturers by their claims of strength or to force the latter into a conference which could be tantamount to a recognition, now are playing their last card. There is only one real end for which the American Federation of Labor is striving in this controversy and that is the recognition of the union. All the other items enumerated in the original set of demands are of so trivial or general a character that they assume the ridiculous when it is considered that in behalf of these the agitators would essay a strike which on their own words "would paralyze industry" and create an "industrial crisis." These demands have been put forth to give numbers to the alleged grievances and to lend a semblance of reason to the unions' cause in the public mind which is little informed regarding the actual conditions of employment in the steel industry. They mean literally nothing in themselves. All are subordinated to the one aim that unionism shall gain a footing and a recognition in the iron and steel industry, something which it has never been able to do. If they can maneuver it by fair means or foul to gain a seat at the table with Judge Gary and other leaders of the steel industry, the presidents of the various unions claiming a voice, undoubtedly would consider that they had won a real victory, not to speak of their having saved their faces. And undoubtedly they would be able to put the fact to good effect in the future in their mischievous endeavors to embarrass the country's premier branch of enterprise.

The union leaders have carefully refrained at any time from any statements which would disclose their exact membership in the iron and steel industry. It is clear that if they had the right to speak for the majority of the industry, or even for a large proportion of it, that the leaders of the steel industry being men of common sense and of business judgment, scarcely would decline to give them a hearing on the basis of any actual or imagined grievance. However, they speak only for a small

faction of the industry which they have been able to entice into membership by various methods in recent months.

There is no clearer case of the autocracy of organized labor than the threats of the decided minority against the steel industry, no more offensive assumption of arrogant privilege than Gompers' message to the President. It is inconceivable that the President of the United States, chief advocate as he is, of the self-determination of peoples and classes should allow himself to become the tool, consciously or unconsciously, for the propagation of unionism where it is wanted neither by employer or employed. If the President should yield to Gompers' blandishments or threats, however, it is to be hoped that the steel industry's reply will be direct and to the point. The industry has the strongest kind of a case and it owes it to the country in these days of unsettlement and the pursuit of false standards, to talk straight and vigorously. The President manifestly would need the real facts and the public would welcome them.

Europe's Food Supply and Steel

ACCORDING to the more recent reports from France some progress is being made in coping with the high cost of living. The French have been suffering extremely but their condition has been not much different from that of all Europe. These "hard times" abroad have been of the greatest detriment to the restoration of normality in foreign trade and of no little influence upon the sales abroad of American iron and steel. The news that an abatement is in sight, that Europe is at last beginning to see the return of better times, the forerunner of normal conditions, spells confidence and security to American industry.

For the United States there is a most intimate relation between the European food crop and the American iron and steel industry. It does not appear as yet that Europe will harvest a crop in 1919 sufficiently large to meet all needs. That is due to the long drawn out negotiations over the peace treaty and the necessity of retaining many thousands of men under arms. Good progress has been made, notwithstanding but it has been a strain. Next year the Europeans will be able to feed themselves much better and they will have time to think of something other than the bare necessity of obtaining essential raw products and instruments of production. Once a good crop is harvested, the Europeans will have the inclination to turn to improvements, betterments and extensions.

The American iron and steel industry has no reason to feel uneasy over the trade conditions in the ex-belligerent countries. European food crops will remove the most serious of the difficulties in trade now encountered in making sales to that continent.

Building Plants in the Open

AMERICAN manufacturers have gained an enviable reputation for boldly striking out from the beaten path of precedent when they believe that advantages will be derived from such action. This is proved in an impressive manner by the growing tendency to build new industrial plants in the thinly-populated areas on the outskirts of cities rather than in the congested districts.

With few exceptions most of the industrial plants erected during the past few years have been built several miles out from the congested districts of the cities in which they are located. This tendency has resulted in the rapid growth of new manufacturing centers of a distinctly different type from those which in earlier years grew up in the centers of many American cities. As a rule, the new structures have been built in cities where a large amount of excess land was available for future extensions. On account of the thinly-settled districts surrounding these industrial centers, a number of the more progressive companies were able to build up communities for their workmen. In cases where this was true, engineers were given full opportunity to develop model communities conforming with the latest ideas for the happiness and comfort of employes. Moreover, the shift in location of the nation's industrial works, automatically relieves the congestion of railway tracks and structures in the already-crowded portions of large cities. Everyone realizes that any development which tends to eliminate the necessity of directing bulk shipments of freight through the downtown section is to be encouraged.

Another result of the new policy regarding the location of industrial plants is the wider opportunity given engineers for designing plants better fitted to provide adequate lighting, heating and ventilation for workers. Instead of the multi-story structures frequently found in the congested districts, the new plants in the outlying sections of the city usually are of the single story type covering large areas. This design is preferable to the other from the standpoint of the worker. Moreover on account of the large amount of space available, employers are able to provide recreation features not possible in plants situated in close quarters. The increasing number of important manufacturers who are building large plants outside the city limits indicates that the days of the old industrial works, huddled together on a small area are numbered.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 736 AND 738

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	27.00 to 27.25
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	29.75 to 32.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$30.50 to 31.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 28.50
No. 2 Northern, Boston	32.90
No. 2 foundry, Cleveland furnace	27.25
No. 2 foundry, Ironton furnace	27.50 to 27.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	29.50 to 30.50
No. 2X, eastern, N. J. tidewater	29.35 to 30.85
No. 2X, eastern, Boston	32.90
No. 2X foundry, Buffalo furnace	28.00 to 29.50
No. 2 foundry, del., Philadelphia	28.50 to 29.50
No. 2 foundry, N. J. tidewater	28.35 to 29.85
No. 2 southern, Birmingham	26.75 to 27.50
No. 2 southern, Cincinnati	31.35
No. 2 southern, Chicago	31.75
No. 2 southern, Phila.	33.25
No. 2 southern, Cleveland	31.75
No. 2 southern, Boston	36.00
No. 2 southern, St. Louis	31.00
Virginia, No. 2X, furnace	29.00
Virginia, No. 2X, Philadelphia	33.10
Virginia, No. 2X, Jersey City	33.40
Virginia, No. 2X, Boston	33.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	28.00 to 29.00
Silveries, 8%, furnace	40.25 to 43.00
Ohio Silveries, 8%, Chicago	46.80
Tennessee Silveries, 8%, Chicago	44.05
Low phos. standard, Phila.	39.80 to 41.80
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	32.75

Coke

(At the ovens)

Connellsville furnace	$4.75 to 5.25
Connellsville foundry	6.00 to 6.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	8.50 to 9.50
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	7.50 to 8.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$105.00 to 110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	nominal
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	85.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.15 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	28 to 30 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.00 to $7.50
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsburgh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.62c to 2.77c
Bar iron, common, Pittsburgh	2.75c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	38.00 to 40.00
Relaying rails, Pittsburgh	39.00 to 41.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 736.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 736.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$58.80
Four-inch, New York	57.30
Six-inch and over, N. Y.	54.30
Six-inch and over, N. Y.	52.70 to 53.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.76½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.74½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	2.70c to 3.10c off
Hot pressed, square tapped	2.45c to 2.85c off
Hot pressed, hexagon blank	2.70c to 3.10c off
Hot pressed, hexagon tapped	2.45c to 2.85c off
Cold pressed, square tapped	2.85c off
Cold pressed, square blank	3.10c off
Cold pressed, hexagon blank	3.10c off
Cold pressed, hexagon tapped	2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Sept. 10, 1919	Average prices Aug. 1919	June 1919	Sept. 1918		Prices Sept. 10, 1919	Average prices Aug. 1919	June 1919	Sept. 1918
Bessemer, valley, del., Pittsburgh...	$29.35	$29.35	$29.35	$36.60	Iron bars, Cleveland.....	$2.52	$2.52	$2.52	$3.64
Basic, valley, delivered, Pittsburgh...	27.15	27.15	27.15	33.40	Iron bars, Chicago mill.....	2.62	2.62	2.53	3.50
*No. 2 Foundry, Pittsburgh.....	28.15	28.15	28.15	34.40	Beams, Chicago	2.72	2.72	2.72	3.27
*No. 2 Foundry, Chicago, furnace....	26.75	26.75	26.75	33.00	Beams, Pittsburgh	2.45	2.45c	2.45c	3.00c
Lake Superior charcoal, Chicago.....	32.75	32.75	31.75	37.70	Beams, Philadelphia	2.695	2.695	2.695	3.23
Malleable, valley	27.25	28.65	28.65	34.90	Tank plates, Pittsburgh.....	2.65	2.65c	2.65c	3.25c
Malleable, Chicago	27.25	27.25	27.25	33.50	Tank plates, Chicago.....	2.92	2.92	2.92	3.52
*Southern, No. 2, Birmingham.....	26.75	26.75	24.25	33.00	Tank plates, Philadelphia.....	2.895	2.895	2.895	3.48
*Southern Ohio, No. 2, Ironton.....	26.75	26.75	26.75	33.00	Sheets, blk., No. 28, Pittsburgh.....	4.35	4.35c	4.30c	5.00c
Basic, eastern del., eastern Pa.....	27.00	27.00	25.50	32.00	Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55c	3.50c	4.25c
**No. 2X, Virginia, furnace.....	29.00	28.25	26.50	33.50	Sheets, galv., No. 28, Pittsburgh....	5.70	5.70c	5.65c	6.25c
*No. 2X, eastern del., Philadelphia.	29.75	29.60	29.60	34.50	Wire nails, Pittsburgh.....	3.25	3.25c	3.25c	3.50c
Ferromanganese, 80 per cent, delivered	107.50	110.00	114.00	250.00†	Connellsville furnace coke.....	4.75	4.30	3.90	6.00
Bessemer billets, Pittsburgh.....	38.50	38.50	38.00	47.50	Connellsville foundry coke.....	6.00	5.20	4.70	7.00
Bessemer sheet bars, Pittsburgh.....	42.00	42.00	41.50	51.00	Heavy melting steel, Pittsburgh.....	21.00	21.25	17.25	29.00
Open-hearth sheet bars, Pittsburgh....	42.00	42.00	41.50	51.00	Heavy melting steel, eastern Pa.....	19.00	19.60	16.15	28.50
Open-hearth billets, Pittsburgh.....	38.50	38.50	38.00	47.50	Heavy melting steel, Chicago.....	19.00	20.75	16.75	29.00
Steel bars, Pittsburgh.....	2.35	2.55c	2.35c	2.90c	No. 1 wrought, eastern Pennsylvania.	27.00	27.25	22.50	34.00
Steel bars, Chicago.....	2.62	2.62	2.62	3.17	No. 1 wrought, Chicago.....	21.00	23.25	18.70	33.50
Iron bars, Philadelphia.....	2.595	2.595	2.595	3.73	Rerolling rails, Chicago.....	25.50	29.00	19.25	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Big Iron Sale for 1920 is Reported

Chicago Hears 100,000 Tons of Malleable and 100,000 Tons of Foundry Have Been Taken at This Year's Prices—Definite Information Lacking—Furnaces Still Discourage Much Buying After Jan. 1—Silveries Advanced

Chicago, Sept. 9.—A sale of 100,000 tons each of foundry and malleable pig iron for first half delivery is said to have been closed recently in this district, at the price prevailing for delivery this year. Selling of a tonnage anywhere approaching this total at the present price would indicate a desire on the part of the seller to create a backlog early and willingness to resume considerable obligation during next year at the present level of prices. Inquiry at present is somewhat slack and consists mostly of 100-ton lots to fill in special grades by melters who have sufficient iron for their ordinary needs. Inquiry for 1920 delivery is somewhat better. One melter asks prices on 500 tons of foundry for first half and a sale of 500 tons of foundry for first quarter was made recently. An automobile maker in Indiana has requested that all its remaining last half tonnage be shipped at once, indicating a desire to get its iron under cover as soon as possible. Requests for anticipation of shipments are not uncommon. Many buyers are taking lots from their regular sources of 200 to 500 tons without making inquiry. A sale of 1500 tons of low phosphorus iron was made recently to a steel foundry. The situation in the silvery market is peculiar and interesting. The only furnace in the Jackson county sector now able to ship silveries is quoting a schedule of $2.75 over the former price, naming $39.50 at the furnace for 6 per cent and $47, furnace, for 10 per cent. The freight rate to Chicago is $3.80. A Tennessee stack is quoting $41.75, furnace, for 6 per cent, and $49.75 for 10 per cent, with $3.40 freight to Chicago, and has made sales at that figure. Production of silvery iron in the Chicago district may be undertaken within a short time to fill the demand which melters at present find they cannot do from ordinary sources. In addition to this, it is understood the strike in Jackson county is practically settled and that the three interests producing silvery iron there may resume within a short time. Full production in the Chicago district will be a fact within a short time. The idle stack of the Federal Furnace Co., South Chicago, will be blown in next week, and the stack of the Iroquois Iron Co., South Chicago, now being rebuilt, will be ready for operation the first week in December. This will place everything in this district in full activity. Southern iron continues to be practically excluded from this market. Because of the continued operation of northern stacks during the slack season early in 1919 however an excess of iron was produced which is serving to fill the deficit that would have arisen from lack of southern iron. Some additional sales of Canadian iron from the Soo are being made. Some foundries are taking that iron containing an excess of sulphur at regular prices to use instead of cast scrap.

Take More 1920 Business

Boston, Sept. 8.—One furnace after another has opened its books for a small sale of 1920 pig iron, and then after selling several thousand tons, has closed them again. Twice a Buffalo interest has offered limited tonnages for first half, and twice has withdrawn from the market. The Bethlehem Steel Co. has been selling 1920 iron here during the past week and other furnaces also have taken some business. On the whole, however, any iron for 1920 delivery is hard to obtain, and the majority of the furnaces are refusing to quote. A lot of 600 tons of 2X eastern (2.25 to 2.75 silicon) was sold to an eastern Massachusetts textile manufacturer for first-quarter delivery at $29, Buffalo. Two hundred and fifty tons of the same grade for the same delivery sold at a delivered price of above $33, which indicates a spread of over $1 in the first-quarter trading. The week's sales handled by Boston sellers were about in line with the general average established throughout the summer, but this was made up almost entirely of small tonnages. The 1920 sales did not exceed 2000 tons. Deliveries on all existing contracts for the present quarter are reported as excellent. Reports from foundries are universally favorable, many having to turn down business, and not a few working night shifts. Some foundries for the first time in their history, are sending work to outside concerns. The general impression is that in spite of this activity, the present requirements for pig iron are reasonably well cared for, and that the only large business which can be looked for, is that for first half or first quarter delivery. One Massachusetts machine tool manufacturer is asking for 500 tons for last quarter and several smaller inquiries are circulating. A rumor persists that a large consumer is on the point of placing an exceptionally heavy order extending well up in the thousands of tons. A Rhode Island consumer is asking for 400 tons for immediate delivery. The estimated total of sales for the past week through Boston sellers is 6500 tons.

Fill-in Orders Prevail

New York, Sept. 9.—Some pig iron

consumers are coming into the market almost daily for such fill-in tonnages as they are able to plan for definitely, and the general run of these tonnages are foundry grades, with some malleable and charcoal interspersed. Shipments are going forward with regularity and furnaces find the car supply adequate as a general thing. No unusual volume of inquiry is appearing, but there is a fair sprinkling for delivery this year, as compared with the far more prevalent requests for next year's delivery. Sales have not been active the past week, and one large furnace interest estimates its sales for the week aggregated about 3000 tons, mostly foundry grades. However, an eastern Pennsylvania foundry interest has been able to close for 2000 tons of No. 2X (2.25 to 2.75 silicon) at a shade less than $29 delivered.

Basic Iron Prices Unsteady

Pittsburgh, Sept. 9.—Efforts to sustain the market here on basic pig iron at $25.75 furnace, are not particularly successful. One large merchant interest here, which in the past few months claims to have booked about 100,000 tons of this grade and in the past fortnight or so to have taken several thousand tons, does not deny that some price concessions have been made in obtaining this business. The sales by this company have been widely scattered among steel manufacturers in the Ohio valley and the Youngstown and Pittsburgh districts and while nothing official is disclosed as to prices, the common assumption is that freights were absorbed by the seller. In some cases it is understood trade deals were made. These sales have practically filled up all the important buyers of basic pig iron and current demands are few and small. Demand for bessemer iron also is sporadic and comes chiefly from the steel foundries. Even foundry and malleable grades now are not being inquired for as freely as they were a short time ago. Most consumers are well filled up for the present. A sale of 500 tons of malleable for last quarter shipment is noted at $27.25 furnace, while a smaller tonnage and for immediate shipment was sold at $27.75. The general asking price on No. 2 foundry (1.75 to 2.25 silicon) is $27.25 furnace and small sales for prompt shipment are noted at that price. Small sales of No. 2X foundry (2.25 to 2.75 silicon) for prompt shipment also are noted at a premium of 50 cents a ton above the regular market base of $28.50 furnace. The market appears to be in considerably better shape on foundry and malleable grades than it does on steelmaking iron. It is understood that a valley furnace which has been making bessemer and steelmaking grades for the next few months will make malleable and foundry because of the better market in those grades. The Claire furnace, Sharpsville, Pa., will be lighted this week, leaving only one merchant furnace in that district on the inactive list. This is the Ella furnace, West Middlesex, Pa. Sales of low phosphorus pig iron are few and the only transaction of any account recently made was one of 300 tons to a Pittsburgh district consumer at about $40 delivered Pittsburgh. About 1800 tons of low phosphorus recently sold at Burnham, Pa., by the government has been resold in this district.

Production is Main Thought

Philadelphia, Sept. 9.—Pig iron trade activities in the East seem to have settled down to continued determined effort to get out production necessary to fill comfortable total of orders on books of furnace companies. New sales in past week have aggregated comparatively smaller totals than in week previous and these involved mostly foundry, malleable and charcoal grades. The largest single tonnage sold was 2000 tons of No. 2X (2.25 to 2.75 silicon of which 500 tons was for prompt delivery to an eastern Pennsylvania foundry and machine shop and the remainder to be delivered through the year. Seller was important Philadelphia district producer, the delivered price being slightly under $29. Most Philadelphia sellers admit market is unusually quiet and ascribe it to pending labor activities which they hope will reach definite climax in next 10 days. Several sales of carloads up to several hundred tons of foundry iron have been made at the market which sellers seem willing to hold down to around $30, furnace. The Baltimore & Ohio railroad inquires for several hundred tons of foundry and about 100 tons of charcoal iron but general inquiry also is quiet especially for this year and producers are loathe to quote for next year until better apprised of new costs. While practically all Virginia furnaces are out of this year's market with possibly one exception, this seller is confirming itself to delivery only within next 60 days. and is getting from western users for mixtures, price equivalent to $32, furnace, for higher silicons. So far this month this maker has booked several thousand tons of this business ascribing reason to scarcity of higher silicons in Middle West. Delaware river soil pipe makers are growing busier through building revivals. No new business has developed in low phosphorus and both basic and bessemer grades are slow. The Alan Wood Iron & Steel Co. will blow in one Ivy Rock stack this week on foundry making two active, and the Muirkirk furnace, which now is in new Baltimore hands, was relighted yesterday for new campaign on charcoal.

Selling Small Lots for 1920

Buffalo, Sept. 9.—Moderate tonnages of iron were sold in this market last week. Certain old contracts were wound up, and some iron taken for next year. Producers are gradually getting around to quoting for next year's delivery, despite the fact that they are not very strongly in the market. Demand is good, particularly for 1920 iron, and if cost bases were more certain, there is no doubt a good buying movement would take place. In view of existing conditions, producers are not pushing 1920 iron.

New Business is Light

Cleveland, Sept. 9.—New business in the Cleveland district is comparatively light due to the fact that most of the uncovered requirement applies to deliveries after the first of the year, and producers are not encouraging buying for that period at this time. Nevertheless, some producers continue willing to accommodate regular customers for next year's iron when there is a good reason for doing so and are accepting this business at no advances over the present scale of $26.75 furnace for 1.75 to 2.25 silicon. One seller reports bookings in the week of 7000 to 8000 tons including 2000 tons of off iron, a considerable portion of which was for next year under these conditions. Local furnaces continue to make scattered sales, usually for filling-in purposes and of light tonnage to consumers who have underestimated their needs for this year and they are having no trouble in obtaining their advanced price of $26.75 furnace for the base grade on this business. One sale of 1000 tons of foundry iron to a local buyer who it is understood took this lot with the idea of carrying a portion of it over into next year was closed recently. Some of the furnaces to restrain speculative buying at this time have inserted a clause in their contracts, reserving the privilege to revise prices on the unshipped tonnage as of Jan. 1, to the then prevailing market.

Stovemakers Buy for 1920

Cincinnati, Sept. 8.—Stove foundries have bought considerable southern foundry iron for this year's shipment, and it is rumored that most of this iron brought $27.75 for 1.75 to 2.25 silicon, Birmingham. As most of these melters already had considerable iron on hand or ordered, it is presumed that they intend to carry the metal over into next year. Southern furnaces are still backward in opening their books either for the first quarter or the first half. A small tonnage of northern foundry iron has been booked on a basis of $28.75, Ironton, for first quarter delivery. Other small sales were made at $29. While there are well-substantiated reports that some of the lakes furnaces have been taking on a little first half business at $26.75, furnace, it is understood that this iron only went to favored customers, and that practically none now may be had at that price.

Good Demand at St. Louis

St. Louis, Sept. 6.—The demand for all grades of pig iron is decidedly brisk, with prices strong and tending upward. There is relatively little iron available in the South, and northern furnaces are entirely sold out, so far as their quotas for this district are concerned. The largest demands are coming from the foundries, which are working at capacity and using up more material than they had contracted for. New business is pouring in upon both merchant foundries and manufacturers of specialties, and a number of them are finding it difficult to secure additional tonnages of raw material. Actual sales are larger than inquiries. Sales during the week totaled between 6000 and 10,000 tons, mainly foundry iron. There is considerable complaint relative to deliveries, but railroad officials see little hope of relief until after the crops have been moved. Low-grade iron and grades with a

high percentage of silicon are scarce. Silveries are virtually unobtainable, even when premiums are offered. One firm reported the sale of 1000 tons of iron, 4 to 9 per cent silicon, at $3.25 higher than the last preceding transaction. Stove plants have been trying unsuccessfully to secure sizable tonnages of low-grade foundry. So far as can be learned the furnaces serving this district are entirely out of that material.

Southern Market Steady

Birmingham, Ala., Sept. 9.—The pig iron market in the South has settled down to a steady pace. The principal obstacle in the situation is the car shortage, which is interfering with deliveries. Production is improving, and it is estimated conservatively that the output for the last half of the year will exceed 1,000,000 tons. With 990,122 tons of iron officially credited to this state for the first half, the year's output may go above 2,000,000 tons. Sellers still have not admitted sales for delivery during 1920, though furnace interests say they could take on a large tonnage for next year's delivery if they desired. No price has been fixed on 1920 business. Representatives of furnace companies are in Washington seeking better transportation service.

Ore Movement

Retarded to Some Extent by Coal Strike—Market Inactive

Cleveland, Sept. 9.—While labor difficulties on the ore docks of the upper lakes were settled two weeks ago, the movement of ore was retarded to some extent during the past week by the strike on the coal docks. At one time 65 vessels loaded with coal were held at the docks and many of them would have been employed in the ore trade if the cargoes could have been discharged. Larger shipments of ore could be made, ore companies report, if vessels at the coal docks could be freed for such service. The effect of the ore dock strike in August is reflected in statistics relating to tonnage on dock at Lake Erie ports Sept. 1. As a result of the strike the tonnage on dock was drawn upon to a considerable extent. The amount of ore on dock Sept. 1 was 6,705,062 tons, 364,831 tons less than on dock Aug. 1, and 1,447,152 tons less than the amount on dock Sept. 1, 1918.

Shipments of ore in August amounted to 4,423,133 tons which was 5,302,198 tons less than in August, 1918. The total shipments this year up to Sept. 1 amounted to 29,604,981, or 9,729,283 tons less than in the same period in 1918. Further details relating to the shipments follow:

Port	Aug., 1919	To Sept. 1, 1919
Escanaba	336,334	2,757,897
Marquette	277,843	1,169,569
Ashland	375,245	3,320,090
Superior	939,979	6,426,447
Duluth	1,645,788	11,466,924
Two Harbors	847,944	4,464,054
Total	4,423,133	29,604,981

The market continues inactive. One firm reports the sale during the past week of a comparatively small tonnage of a special grade of ore.

Spot Coke Market is Soft

Offerings Exceed Demand and Maximum Now Appears to be $4.75—Contract Market is Quiet—Shipments Are Slow

Pittsburgh, Sept. 9.—Spot demands for blast furnace coke have fallen to extremely limtied proportions in the past few days, and while the number of loaded cars on tracks in the Connellsville region is comparatively small, offerings of free coke exceed the demand, due to the fact that operators have had much trouble in obtaining 100 per cent specifications against contracts and have this tonnage available for prompt shipment. Sales recently were fairly frequent at $5, ovens, for standard 48-hour fuel, and in a few instances as much as 5.25c was paid by coke producers, who preferred to ship their coal at $3 per ton or better rather than light up their own ovens to meet some of the preholiday demand for coke. While some business has been done in the past seven days as high as $4.90 and $5, ovens, the market now appears to have sold to $4.75 as a maximum. The opinion is expressed by consumers that since they have had several offerings of coke in the past few days, a firm bid of $4.50, ovens, would buy some of the fuel now available. The market is going through the usual reaction which follows almost all holidays. Consumers prepared for a possible shortage following Labor day and in the past week were not active buyers. Almost nothing is going on in contracts for furnace coke, possibly because few idle blast furnaces remain to be lighted, while producers also are impressed by the possibility of better prices on spot than they could expect to obtain on contract shipment. Foundry coke has not shared the weakness of 48-hour fuel as production is being kept closely within bounds of contract obligations and the unusually wide margin between prices of furnace and foundry coke is not proving much of a stimulus to the production of the latter. Labor is scarce and production of 72-hour fuel involves much labor, not only around the ovens but in loading cars. Shipments against contracts have been slow, due to the fact that the normal number of box cars have not been available, and buyers are disinclined to accept shipments in open-top cars. Such tonnages as are becoming available for stock or prompt shipment are bringing anywhere from $6 to $6.50, ovens, but in the general way $6.25 appears to be the top, except on a few small tonnages of high-grade brands. The production of coke in the Connellsville region for the week ended Aug. 30, is estimated by *The Connellsville Courier* to have been 242-395 tons, compared with 240,440 tons in the previous week.

Arranges Contract for 1920

Boston, Sept. 8.—A shortage of cars suitable for shipping coke from Connellsville to New England district is given as the reason that no beehive coke is coming into this market. The sales of by-product coke continue strong, and although there is nothing spectacular in the market a constantly increasing demand for spot deliveries indicates a healthy condition. The Rhode Island producer has announced a sliding scale contract to govern the 1920 business. Unlike the present sliding scale contracts, the new ones will have prices adjusted twice a month, based on the Connellsville price as quoted in either one of the two leading trade publications. Flat rate contracts for first half delivery are being offered by both producers at $11.90 and some business is being closed on this basis, although most consumers hesitate to pay the $1 advance above the present price of $10.90. At present there is no lack of cars for delivering coke, although shortages reported in other sections of the country are causing some anxiety over future New England conditions.

$4.75 Minimum Established

Cincinnati, Sept. 8.—Connellsville operators have about succeeded in establishing a minimum price of $4.75 for furnace coke to be shipped this year. Some coke has been sold at $4.85, and as high as $5, ovens, has been paid for some choice 48-hour brands. Foundry coke in that field is firmer, and $6 to $6.50 is being quoted. Some prompt coke has been picked up as low as $5.75, but the tonnage was limited. Future contracting is not at all active. Oven operators are holding off until they can determine what next year's production costs will be. New River foundry coke is very scarce and is quoted all the way from $9 to $10 per ton, ovens. Pocahontas foundry ranges from $8 to $8.50, and leading Wise county brands are bringing the same price. Very little fuel for shipment after Dec. 31 is being booked.

Coke Scarce, Prices Strong

St. Louis, Sept. 6.—Coke continues strong in price, and is scarce. Deliveries are unsatisfactory, especially from parts of the East, due to the car shortage and labor difficulties. A number of ovens which a short time ago were selling for first half delivery have withdrawn. Uncertainty relative to production cost after Dec. 31 has made all producers hesitate in accepting orders. Consumption in the St. Louis district is on a huge scale. All the foundries are very busy, and have orders which will keep them operating at capacity for several months.. Some sales of carloads in the West and Southwest are reported, but these transactions are chiefly in the nature of filling in. Most of the western melters have covered their requirements for the remainder of this year. In some instances, however, new business booked has necessitated the purchase of additional supplies of coke. Production by the by-product ovens here is well maintained. The coal situation is unsatisfactory, due to the strike in the Illinois coal fields adjacent to St. Louis.

Scrap Improves in West

Chicago and St. Louis Buyers Take on Tonnages—New England Situation Less Active—Other Districts Show Dullness and Easy Prices

FOR COMPLETE SCRAP PRICES SEE PAGE 733

Chicago, Sept. 9.—Definite signs of improving sentiment and a distinct feeling of better things imminent mark the iron and steel scrap situation in the Chicago market. While there is not much change from the quietness which has prevailed during the past few weeks, there has been some buying of heavy melting steel by an independent consumer. Foundries also continue to take cast scrap liberally, the demand for this grade being strong in comparison with the reduced supply now coming out. This product has yielded less in the decline of prices than any other item on the list, and relatively is scarce. Prices continue to decline gradually, and a number of grades have dropped from 50 cents to $1 during the last few days. With Labor day past, and the threat of a steel strike apparently growing less, conditions seem to be shaping themselves for a much more active period during the autumn. Somewhat better railroad offerings are being made at present, the Southern offering 2077 tons, the Santa Fe 1300 tons, the Chicago, Milwaukee & St. Paul 900 tons, the Wabash 675 tons, and the Burlington 300 tons.

Boston Demand Fallen Off

Boston, Sept. 8.—Demand in the scrap market has fallen off during the past week. However, some Pennsylvania blast furnaces are continuing to buy borings and turnings, and are taking all supplies as fast as they are offered. Some difficulty in supplying the demand is reported, yet prices, although they have stiffened, have not advanced except in a few small tonnage lots. Dealers are paying $10 for these grades, delivered. Even the foundry demand for No. 1 machinery has slackened, and a slight softening of prices in this grade is evident. Three hundred tons of cast scrap which has been held by a Boston manufacturing plant was sold during the week, one dealer taking 100 tons at $1.16 per 100 pounds. It is understood the balance was sold to a consumer at $28 per gross ton, delivered. More sales of government scrap were made through the Boston ordnance office the early part of the week. One lot of steel shell forgings went to the General Electric Co., at $22 per gross ton. Perry, Buxton & Doane Co., Boston, was awarded about 3300 tons of this same scrap at $19.06 per gross ton. Cotton ties for rebaling purposes continue to bring high prices, and $15 is a common price for this grade. Some malleable cast scrap has been changing hands, and the prices are reported to have been well up in line with the market established some weeks ago. The Lynn branch of the General Electric Co. sold a small tonnage of this grade to the Woolworth Mfg. Co. for $18.25. Other sales have been made at $17.50 delivered. The Boston navy yard is asking for bids on a large assortment of scrap. A considerable tonnage of cast and wrought pipe is among that offered.

Metropolitan Market Dull

New York, Sept. 8.—Dullness characterizes the local scrap market. Dealers state that demand for practically all descriptions is exceedingly quiet, and the market as a whole is weaker than it was a few days ago. Heavy melting steel, which usually is moving in fair quantities, now is about at a standstill. Eastern consumers are out of the market and with the railroad embargo in effect at Monessen, Pa., the movement of heavy melting steel to the Pittsburgh district is negligible. There is some buying of stove plate by a northern New Jersey consumer. This material is being taken at a figure under that offered by this buyer recently. Stove plate is quoted at $17.50 to $18 f.o.b. New York. Other quotations largely are uncharged. The government has been finding bids on shell forgings unsatisfactory. One dealer, who recently made the high bid on two lots, which aggregated about 5000 tons, has had his checks returned.

Awaiting Labor Developments

Philadelphia, Sept. 9.—Scrap conditions in the eastern market seem to be waiting on the labor situation. As was the rule in the past two weeks, buyers and sellers of steel mill grades are unwilling to act until something definite results from today's labor conference at Washington. The recent demand for low phosphorus from several important steel foundries has been satisfied and yet the market is firm and in the opinion of some producers is between $26.50 and $27, delivered eastern Pennsylvania. Such grades as borings, turnings and stove plate are scarce and in demand generally. Actual transactions in all grades, however, are few and all quotations are unchanged.

Rejections are a Factor

Pittsburgh, Sept. 9.—Current business in scrap iron and steel is confined almost entirely to the small tonnages being refused or rejected by consumers. Steel manufacturers are keeping close watch both on the quality and size of shipments against contracts. They are refusing overshipments, unless the shipper is willing to accept less than the contract price, and are rejecting those cars that contain even small pieces of material other than that stipulated in the contracts. One steel company will not knowingly take a car rejected by another and this rather limits the market on such shipments. Demurrage charges pile up rapidly in such cases and the average dealer would prefer to accept a low price than lose the difference between the contract price and what is offered in railroad charges. Small lots of heavy melting steel are moving at from $20 to $21, but they are hardly representative of the market. Dealers generally are refusing to take contracts at these prices. They fear being unable to cover them profitably and what material of this grade they have on their yards would show them a loss if sold at those figures. The labor situation is the dominating factor in the market at present and until there is a definite clearing up of the uncertainty, demand is expected to lag. Dealers believe the situation will clarify shortly and are not pressing material for sale now.

Buffalo Market Firm

Buffalo, Sept. 9.—The scrap market continues firm, but there is not a great deal of buying either by local or outside consumers. Local users have probably been dipping deeper into stocks of the dealers during the week than have outsiders. Outside mills are now having scrap delivered against old orders. Heavy melting steel was sold during the week at $19 and $20. Demand for special grades used by steel casting plants doing railroad work has fallen off. Dealers say the market is healthy.

Valley Buying is Light

Youngstown, O., Sept. 9.—Not much demand exists for heavy melting scrap in this district. Dealers' have a good supply on hand which they bought around $12 to $14 and unless attractive prices are offered they refuse to stock any further tonnages. In this district this material is bringing $21 to $21.50 per ton. Light bundled scrap is moving in better lots and a good inquiry for this grade is out.

Weakness Less Pronounced

Cleveland, Sept. 9.—Scrap iron and steel in this district seems a little firmer. The weakness that has governed the last few weeks is less pronounced. Dealers, insisting the bottom has been reached for the present, are declaring that they will not sell under the present market quotations. The mills, on the other hand, appear somewhat at a loss to determine whether to buy now or take a chance on still lower prices. The net result is a minimum of trading, barring a few deals among brokers. A large amount of scrap is moving on contract. Heavy melting steel is quoted at $19.75 to $20 machine shop turnings at $11 to $11.25, No. 1 cast at $23 to $23.50 and No. 1 railroad wrought at $24 to $24.50.

Foundries Buying Freely

Cincinnati, Sept. 8.—Melters of foundry iron scrap are buying quite freely, although they have limited stocks to draw on. Foundry cupola-size scrap is firmer, and No. 1 cast has been advanced 50 cents a ton. There is no call for malleable scrap and very little buying of steel scrap. All kinds of wrought scrap also show some weakness, although no definite change in quotations has been made. The car supply has improved some and outside shipments on contracts are moving with a fair degree of promptness. The short supply of high

silicon iron has curtailed the use of foundry scrap to some extent, but this has had no appreciable effect on stove foundries which are melting large quantities.

St. Louis Market Looking Up

St. Louis, Sept. 6.—A much better undertone developed in the scrap market. The improved labor outlook has served to remove some of the recent pessimism, and consumers are becoming more interested. General consumption is on a large scale, especially with the foundries, while rolling mills are buying small tonnages for immediate use. The leading foundry interest purchased a fair tonnage of cast scrap, and the American Steel Foundries bought about 2000 tons. Offerings are not large, and come mainly from dealers, who are bullish in their views. Yard stocks are heavy, and holders seem confident that much higher prices will be obtainable later in the season. Virtually nothing is coming in from the country. Railroads are easing out tonnages from time to time in private sale, but are not pressing their material for sale. The following lists were before the market during the week: St. Louis Terminal Railway association, 250 tons, Missouri, Kansas & Texas, 1100 tons, and the Frisco railroad, 800. Several good lists are expected this week from western lines. Cash grades are in particularly good demand at the moment. A moderate inquiry is noted for malleable scrap, and material suitable for stovemakers is in demand. Steel mill grades are slow.

Alabama Prices Marked Up

Birmingham, Ala., Sept. 9.—There is some activity in the scrap market, and quotations are gaining strength. Advances have been made on most grades, and heavy melting steel is held at a higher figure than the larger consumers here are willing to pay. Cast scrap is still sought by Chattanooga foundrymen, and there is demand for low grade material, sash weights, turnings and borings.

Stock Sheets In Demand

New York, Sept. 8.—Outstanding in the local warehouse market is a heavy demand for sheets. The mills, it appears, are booked well ahead on domestic orders and in addition are confronted with a good demand for export. With this the situation, the warehouses are in receipt of a heavier inquiry for sheets than at any time this year, and prices have been advanced. The market on black sheets may now be quoted at 5.75c, an advance of $5 per ton, and galvanized sheets at 7c, the former inside figure of 6.75c having disappeared. In addition to sheets, there also continues to be considerable activity in steel bars for reinforcing purposes. Prices, however, remain unchanged at 3.37c, New York. As a matter of fact, a better demand is in evidence for virtually all lines, with the possible exception of plates and shapes, which continue to lag. August, for most warehouses, was the most active so far this year, and September, it is believed, will eclipse this record.

Plate Orders Growing

Chicago Mills Well Booked to End of Year—Eastern Mill Makes Sales at 265c Pittsburgh—Japan Buys Tonnage

Philadelphia, Sept. 9.—Several Philadelphia district steel plate makers have booked additional tonnages for both domestic and export use and each one declares he secured 2.65c Pittsburgh without trouble. Several thousand tons of ship plates for delivery over seas are included. Eastern boiler makers, especially those catering to oil country equipment trade are placing fair tonnages for both tanks and boilers. No immediate prospects for new shipbuilding work appear in Philadelphia district but some are said to be held in abeyance further north along the coast.

Japan Buys at 2.65c

New York, Sept. 9.—Some comfortable tonnages of steel plates have been figured on in this district and some of this business has been for export. Something like 1200 to 1500 tons of plates for shipment to Japan have been placed with an eastern mill at the 2.65c price, this within a few days. Still another inquiry for 3000 tons is open, but it may be some time before this is placed.

Refinery Work is Placed

Cleveland, Sept. 9.—Several thousand tons of plate work for tanks and stills for the new refinery of the Standard Oil Co. to be erected at Toledo are reported to have been placed with a northern Ohio fabricator. Nothing has developed in the matter of the 6000 to 7000 tons of ship steel inquiry from lake yards which was noted a week ago.

Demand Continues Strong

Chicago, Sept. 9.—Although demand for steel plates has not become as active as that for soft steel bars, it is stronger than had been expected and plate mills are well filled for the remainder of this year. Plates are being bought by carbuilders for repair work, a recent sale involving about 400 tons, while builders of tank cars are unusually active and taking considerable of this material.

Bookings Are Small

Pittsburgh, Sept. 9.—While a fair amount of plate business daily is developing, it is proving no tax upon mill capacity and bookings are small in comparison with those for other lines of finished steel. Outside of the navy requirements and a moderate amount of business in connection with some ships under construction for the United States Steel Corp., demand from shipbuilders has been extremely light. A little business is reaching manufacturers in connection with car repair work, but the principal demand still is from the makers of tanks. Locomotive builders are a little busier than they have been, due to some fair export orders. The Baldwin Locomotive Works received 150 locomotives for shipment to Poland and the American Locomotive Co., 65 locomotives for Egypt. Prices still incline toward softness, chiefly as a result of the Carnegie Steel Co. bid of 2.50c, Pittsburgh, on the plate requirements for battleships Nos. 49 and 50. At the moment the market is nearer that base than 2.65c.

Mills Flooded

By Flow of Sheet Inquiries—Operations at 90 Per Cent

Pittsburgh, Sept. 9.—Sheet manufacturers still are being flooded with inquiries with which they can do little owing to the fact that present bookings are sufficient to keep mill capacity engaged at its present rate of operation to the end of the year. Some manufacturers are not as fully booked on blue annealed sheets as they are on other kinds and probably could slip in a little additional tonnage on this line. But on black, galvanized and specialties manufacturers have reached a condition in live business, where they cannot accept new orders even from regular customers which call for delivery this year. The American Sheet & Tin Plate Co. is scheduling about 93 per cent of its mills this week, but indepedent capacity is less fully engaged, due to the fact that the Stark Rolling Mills, Canton, O., and the Newport Rolling Mills, Newport, Ky., still are down. Making allowance for the loss of the 49 mills of these companies, present sheet mill operations may be placed at about 90 per cent of capacity.

Demand Exceeds Supply

Chicago, Sept. 9.—Sheet manufacturers find demand for their product is greater than their ability to book business for delivery over the remainder of this year and much inquiry is being turned down.

Early Tonnage Not Wanted

Youngstown, O., Sept. 9.—Contract business is commanding the attention of sheetmakers here. A few makers continue to remain out of the market and it is not thought any additional business can be placed with these makers until Jan. 1. Some producers have notified their district sales offices to discontinue the solicitation of further sheet business while others have notified their salesmen not to take on any more business for the time being. Practically no overage is being rolled. A good inquiry exists for all grades of sheets but makers are not quoting. Buyers who formerly patronized makers in nearby districts are making every effort to place their business with mills in this territory, but so far they have not been successful. Their tonnages formerly were placed with certain mills which are now idle on account of labor conditions. An export inquiry for 1000 tons of galvanized was quoted on this week by a dealer here.

Bar Mills Are About Full

Agricultural Implement Makers Specifiy Heavily—Shipments Falling Back—Prices Incline Upward

Chicago, Sept. 9.—Mills rolling soft steel bars find their books well filled for the remainder of the present year and more business continues to be offered each week. All consumers with tonnage on mill books are specifying freely, indicating great activity in their manufacturing processes. Agricultural implement manufacturers are taking out their full tonnage and other manufacturers are not behind. Inquiry is being received for 1920 contracts, and a few sales have been made running in to next year to cover business demanded by consumers for delivery during that year. Prices for 1920 have not been changed from those prevailing at present. While this buying is not in large quantity, mills generally would not avoid entering further business for next year. The leading interest is operating now practically at capacity, and with all its blast furnaces and open hearths active, shipments on contracts for soft steel bars are falling somewhat behind.

Demand for bar iron is unusually slack, and two mills in this district are down for this week, one not expecting to operate until October. Another bar iron mill is operating on steel bars, rerolling billets for another interest. In spite of the slack situation, one producer has advanced the price to 2.75c, Chicago mill, while others are holding at 2.62c, Chicago mill.

A good tonnage of hard steel bars is being offered and manufacturers with contracts on mill books are specifying strongly.

Not Urging Specifications

New York, Sept. 9.—Steel bar sales in general are said to have placed the mills in eastern territory in such satisfactory position that sellers are not pushing consumers for specifications except in respect to certain sizes which might balance mill schedules. A fair volume of the usual business is coming forward every day and deliveries are slipping behind gradually but not markedly in some instances. Export bar tonnage inquiry has been quiet the past week.

Prices Tending Higher

Pittsburgh, Sept. 9.—Prices of both steel and iron bars show an upward tendency in this market. The Cambria Steel Co. is holding firmly to its recent advance of 2.50c Pittsburgh base to the outside trade and several independent companies are getting as high as 2.50c Pittsburgh on export business and on bars rolled on hand mills where costs rule high they also are demanding a premium over the March 21 base from domestic consumers. All makers of bars are so well sold up with business as to be unable to give much attention to new demands and it has been necessary in some cases recently for consumers to seek supplies urgently needed for warehouses. The Carnegie Steel Co., who made no change in its quotation, still is holding the base of 2.35c Pittsburgh. Concrete reinforcing bars are in strong demand for immediate shipment with most makers so heavily committed as to be unable to consider much new business. Hard bars rolled from new steel are quoted at 2.35c base Pittsburgh with the usual extras for twisting and deforming, while the most recent business in rerolled bars was at 2.50c mill. The Aluminum Co. of America is planning a plant at Edgewater, N. J., of concrete construction and has asked for 1500 tons of reinforcing bars. While one maker of common iron bars has some tonnage available at 2.55c Pittsburgh, most producers are naming 2.75c Pittsburgh as a minimum on carloads and are asking 3.00c in less than carloads. Demand for iron bars is good but far from active.

All Bolt Users Active

Chicago, Sept. 9.—Conditions could not be better in the market for bolts and nuts with all western mills operating practically at capacity and all classes of consumers taking out material on their contracts and seeking further tonnage. Automobile and agricultural implement manufacturers are especially in need of this material, and jobbers are seeking further supplies.

Room for More Orders

Pittsburgh, Sept. 9.—While makers of nuts, bolts and rivets generally are comfortably well off in the matter of bookings for shipment over the remainder of the year, several of them are in a position to take on additional orders. Books, however, have not been opened for first quarter and half of 1920 as yet as manufacturers do not want to be committed far ahead in the event of higher bar or rod prices. Prices are unchanged save on nuts, some makers of which now are quoting 2.70c off list for blank and 2.45c off list for tapped. Deliveries against orders are fairly prompt though hampered in some instances by poorer car supplies.

Makers Are Running Full

Cleveland, Sept. 9.—Makers of nuts, bolts and rivets have all the business they can handle at present and are running full. This is contributed by various consuming industries and from time to time, foreign orders are taken. Inquiries are frequent and prices remain firm at the recent advance. Books are not yet open for first quarter and half of 1920. One large maker is running his steel plant, rolling mill and some departments of the nut and bolt shops 24 hours daily.

Demand Still Expanding

Pittsburgh, Sept. 9.—Makers of cold finished steel bars and shafting still report a steady expansion in the demand and most of them now have a fair backlog of advance bookings. Buyers are specifying fairly freely and slightly heavier mill operations are necessary to enable the manufacturers to keep up with their orders. Prices are firm in keeping with the market for ordinary steel bars.

Mills Fairly Busy

Pittsburgh, Sept. 9.—Hoop and band mills are fairly engaged, for while cooperage interests are moderate buyers and cotton tie requirements for this season largely are made up, some heavy demands are coming out from both domestic and foreign sources for bands. The cotton crop now promises to be only a little more than 11,000,000 bales and early rollings of ties were based on a probable crop of more than 12,000,000 bales. Specifications against contracts are fairly good, with this month's shipments taking a price of $1.74½ per bundle of 45 pounds in lots of 3000 bundles or more. Band steel is reported to have sold at 3.50c, base, Pittsburgh, but on domestic business 3.05c still is the general price on both bands and hoops.

Big Orders

For Mill Pipe Receive Scant Attention—South America Buys Cast

Pittsburgh, Sept. 9.—The problem of the manufacturers of lapweld pipe at present is in what business to accept and what to turn down. Makers of both steel and wrought iron pipe are sold much further ahead on lapweld pipe than is considered desirable and they are not giving much attention to the numerous new inquiries that are coming out, except occasionally sliding in small tonnages urgently required by regular customers. No large line pipe inquiries recently have come out, but those involving small tonnages have been frequent and it is probably no exaggeration to say that in the aggregate these amount to several thousand miles. With the expansion in building activity and the attendant demand for water, gas and conduit pipe, much more buttweld pipe capacity is in operation today than in a long time. Building operations in August, according to reliable sources, exceeded those of August, 1918, by 33 per cent and also showed a substantial gain over July of this year. Demands for both mechanical and boiler tubes are gaining steadily and while some price cutting is going on, it is considerably less frequent or important than it was a short time ago. Automobile manufacturers are ordering much mechanical tubing and a number of good sized inquiries for boiler tubes recently have been made by the locomotive builders who have been getting some good export orders.

South America Buys Lot

New York, Sept. 8.—Featuring trading in the eastern cast iron pipe market during the past few days, is a lot of 1000 tons for South America. This business, placed with one seller, went at a figure approximating the domestic market, and follows the award of several smaller tonnages noted recently for export to South America. Aside from these orders, however, little business is being

placed for foreign shipment, despite the various miscellaneous export inquiries afloat. Although municipal inquiry is practically at a standstill, domestic demand is noted in fairly good volume, various small tonnages for private consumption being placed. Sellers are at more or less of a loss in accounting for the almost total lack of public buying with the cities reported to be in such urgent need of improved facilities. Prices appear stronger. Shop capacity in virtually every instance in the east is being limited by the scarcity of labor. Some shops have succeeded in getting their operations up to 70 and 75 per cent, but these are the exception. The majority are running at 60 per cent.

Shops Lack Large Sizes

Chicago, Sept. 9.—With the season for pipe laying drawing to a close, mills find numerous inquiries for cast iron pipe, mostly in small tonnages and almost entirely for small sizes. The latter condition is something of an embarrassment, as shops need large sizes to keep their operation balanced. Bids have been taken at Salt Lake City on 1600 tons of 30-inch pipe on which no award has yet been made. The United States Cast Iron Pipe & Foundry Co. has received an order for 1700 tons at Elmhurst, Ill., a contractor's job. Bids will be opened Sept. 12 at McCook, Nebr., on 76 tons, and on Sept. 19 at Wooster, O., on 543 tons.

Tin Plate Demand

Far in Excess of Supply—Prices Growing Firmer

Pittsburgh, Sept. 9.—Makers of tin plate are finding it a good deal of a problem to consider, let alone supply, all the demands that are coming to them. With present bookings sufficient to carry them through to about Nov. 15, by which time orders for early 1920 delivery will be flowing in, manufacturers are practically out of the market for the remainder of the year. Much business for early shipment, which is seeking makers is being turned down. Among recent inquiries of this sort was one for 200,000 boxes from a domestic consumer, who like so many others made a poor guess as to this season's requirements. Export inquiries still are numerous and large, but go begging in a good many instances because of the filled-up condition of makers' order books. The leading interest is paying more attention at the moment to domestic than to foreign business. Manufacturers generally are so well supplied with live business that they can afford to take a firmer stand on prices, and they are doing so. While some export business is being taken as low as $6.75 per base box, Pittsburgh, that is a net cash price and, allowing for the usual discounts granted for cash, is equivalent to almost $6.90. Furthermore, small export tonnages are being placed as high as $7.25. On domestic business the price of $7 is not being shaded and stock items are averaging a little higher, due to the fact that the mills have pretty well reduced stocks, while the demand is active and big.

British Withdraw Prices

Anti-Dumping Action by American Producers of Ferromanganese Has Effect—$95 and $100 Quotations Disappear

Philadelphia, Sept. 9.—British sellers of ferromanganese who recently have been offering this metal at $95 and $100 seaboard and had made some sales at these figures, have withdrawn these prices indefinitely. This course has been taken as the result of the complaint of domestic producers to the federal trade commission that these interests were violating the antidumping law by making prices on this lower than those at which they were selling at home. In some cases, where offers of $95 had been accepted by the agents of the British makers, the transactions have been called off by the seller. This applied in one lot of 1500 tons.

Ferro Market is Quiet

New York, Sept. 9.—Since the larger interests identified with importations of ferromanganese in this territory are declared either to have taken all the business they desire at this time, or have not committed themselves heavily for the future, the market generally is quiet. It is understood that an inquiry from the Chicago district steelmaker for 1500 tons has been satisfied at least as to 1000 tons said to have been imported material.

Low Prices on English Ferromanganese

Pittsburgh, Sept. 9.—English makers of ferromanganese are making a strong effort to regain their former place in American trade and have materially underquoted domestic producers in their drive to secure business. An offer of 200 tons of English 78 to 82 per cent material was made to an Ohio valley steel manufacturer at about $103, delivered, but was not purchased. This is equivalent to about $98 at Atlantic seaboard and even less if the material was shipped from Baltimore or some of the northern ports as the freight rate to this plant from all except Norfolk is above $5 a ton. Other sales of English material are understood to have been made at around $95 seaboard and large producers meanwhile are holding rather firmly at within a few dollars a ton of their recent asking prices. A sale of 700 tons of domestic 78 to 82 per cent ferromanganese is noted to a valley steel manufacturer at $107, delivered, and against another inquiry for 400 tons, $108, delivered, has been quoted.

Aside from the fact that some makers of 50 per cent ferrosilicon who recently have been quoting that material at $80, delivered Pittsburgh, now are naming $85, no particular change has taken place in the market for this alloy.

Ferrotungsten demands are not being much stimulated by the possibility of higher prices that will result in the event of an enactment of the bill now before the United States senate imposing rather heavy duties on both tungsten ore and metal. While ferrotungsten is quoted as high as $1.30 a pound, at least one good sized tonnage is available here for 10c a pound less and a firm bid of $1.15 probably would get consideration.

Inquiries Are Held Up

Cleveland, Sept. 9.—About 4500 tons of inquiries for ferromanganese which have been current in Cleveland and valley territory, have been rendered inactive because of the withdrawal by English makers of the $95 to $100 seaboard prices which they have recently quoted. The action of the latter is due to the situation which has been produced by the complaint filed by domestic makers at Washington against the agents of English producers under the antidumping law. Of the inquiries which have been pending in this territory, 2000 tons for a Youngstown consumer has been withdrawn; 1500 tons for another is suspended and the same applies to scattered lots totalling to about 1000 tons. Before the action was taken by domestic producers, 250 tons of British metal were sold to a local buyer on the basis of about $95 seaboard.

Ferrosilicon Quoted Higher

New York, Sept. 8.—The market for 50 per cent ferrosilicon is somewhat higher. Sales recently have been made on the basis of $82 to $83, delivered, as compared with $80 previously. No more resale alloy is offering, so far as known. Most of the large makers of 50 per cent ferrosilicon are quoting upwards of $100 a ton delivered and it is believed round tonnages of the alloy could not be obtained much under this figure. The market may be quoted $85 to $90, freight allowed. Some 75 per cent ferrosilicon was sold at $155, delivered Pittsburgh district.

Some makers of special steels have bought rather heavily of ferrotungsten in anticipation of the enactment of a bill to protect the domestic tungsten trade. A bill to levy $10 a short ton unit on imports of tungsten concentrates recently passed the house. This bill carries an amendment by which holders of foreign ore already in this country would be assessed for the difference between their cost price and $17 a unit. The protest among such holders is very strong; they claim such a levy would be unconstitutional and virtually confiscatory and furthermore they wonder how such stocks are going to be located. Some ferrotungsten which had been imported from England sold through dealers at $1.15 a pound of metallic tungsten contained.

The ferrovanadium market is stronger, business in high grade alloy having been done at $7.50 a pound contained for comparatively large quantities. Small quantities have sold up to $10 a pound.

The ferrochrome market is irregular. The leading maker is quoting 28c on 4 to 6 per cent carbon, but this price is being shaded, particularly on imported alloy.

Ferromolybdenum is offered at $2 a pound contained, delivered.

Shape Outlook Better

600,000 Tons Estimated to be in Deferred Bid Class—20,000 Ton Cleveland Job Reported Closed—Inquiry Good

Pittsburgh, Sept. 9.—August structural lettings are said to have reached the same tonnage as those of the previous month notwithstanding the fact that the last week of the month was marked by considerable hesitancy on the part of buyers in the fear of labor troubles on Labor day. The possibility of a tie-up of the steel plants now seems slight and the trade is inclined to take a cheerful view of the situation, especially in view of the fact that in the past six months no less than 600,000 tons of structural steel has been inquired for, figured upon, and then shelved. Buyers, apparently, are beginning to realize that they will not be able to do better in the matter of prices later on and lately a number of inquiries which have lain dormant for several weeks have made their re-appearance. The American Bridge Co. has taken 2750 tons for the new plant of the Aluminum Co. of America at Marysville, Tenn. The Baltimore & Ohio railroad has placed 750 tons for a plate girder bridge at Highland, Pa. The Bethlehem Steel Co. is almost certain to be awarded 7000 tons for a hangar for dirigibles at Lakehurst, N. J.

Many Jobs Are Planned

Boston, Sept. 9.—Although the tonnage of structural steel let during the last week in this district shows a slight increase over the previous week, all contracts have been small. Considerable talk of large construction has been circulating, the most prominent item being the New Bankers building which it is understood will go ahead in the near future. This building as now planned will require about 4500 tons. Industrial plants throughout eastern New England report exceptionally favorable conditions and much new construction is planned. The New England Oil Refining Co. has plans for two large plants, one at Providence to cost $1,000,000 and a smaller to be located at Fall River, Mass. The contract for an $800,000 addition to the Pawtucket, R. I., plant of J. & P. Coats, Inc., has been let.

Low Prices Disappearing

New York, Sept. 8.—Although few large tonnages have been noted of late, structural bookings, according to local fabricators, continue to increase, and the low prices quoted recently are disappearing. On the general run of fabricated material, the market now appears to be around $75 to $85 a ton. Despite the increased amount of buying, a fairly good volume of business is pending. Some of this tonnage, it is said, has been held up for some time, and some interests attribute this to a hesitancy among builders to proceed until further assurances are forthcoming that the labor crisis has been passed. Others, however, attach but little importance to the labor situation as it now stands. Included in the larger awards at present is a lot of 1800 tons for a Boston & Maine railroad bridge at Haverhill, Mass., and 2000 tons for an exposition building in the south. Another sizable award involved 1800 tons for the Corn Products Refining Co., at Edgewater, N. J. A $534,180 contract for the superstructure of a 2100-foot bridge across the St. Johns river at Jacksonville, Fla., has been awarded the Bethlehem Steel Bridge Corp. A $374,447 contract for the foundations and approaches went to the Missouri Bridge & Iron Co., Leavenworth, Kans.

Small Contracts Are Placed

Philadelphia, Sept. 9.—New structural business in this district is slow and contracts placed this week are small, as for example, about 150 tons on which the city took bids yesterday for small extension to the Frankford elevated railways. Shape mills are mildly interested in a hearing held today by the eastern traffic committee in Broad street station on a two-year-old complaint by fabricators on fabrication-in-transit charges. The general opinion now seems to be that since the government controls railroads and is little interested in building up traffic, it likely will not change the present rules.

Western Demand Continues

Chicago, Sept. 9.—Although building operations in Chicago and vicinity are still held up by a strike and lockout, demand for structural material from other points in the west is sufficient to keep up the total which has been fairly high through several weeks. During the past few days no unusually large tonnages have been placed, the largest being 412 tons for a tank shop for the Wayne Oil Tank & Pump Co. Other projects are for smaller tonnages. The waiting list, containing a number of tonnages, seems slow to close and considerable delay is met in changing inquiries into contracts. Hubbard & Co., Chicago, is inquiring for 378 tons for an office building and plant on which bids have been taken.

Large Jobs Awarded at Cleveland

Cleveland, Sept. 9.—The contract for 20,000 tons of structural shapes for the new office building to be erected jointly by the Citizens Savings & Trust Co., and the Union National bank is reported to have been awarded to the American Bridge Co. The county building commission has awarded the contract for 1700 tons for the county jail building to the Van Dorn Iron Works, this company's bid of $109.40 erected having been the lowest received. Some private work in this city is understood to have gone recently under $75 delivered. The difference in prices quoted on the public and private jobs is understood to be due largely to the fact that equipment is tied up in the average public job much longer than in the private job, and other circumstances of a similar character. The McClintic-Marshall Co. took 700 tons for the machine shop for the Firestone Tire & Rubber Co., Akron, O., the latest of the several new buildings being erected by this company. The American Bridge Co. received 1200 tons for the Toledo Machine & Tool Co., Toledo, O. The National Iron & Wire Co. was awarded 160 tons for a building for the Glidden Varnish Co., Cleveland. Contrary to expectations, the Cleveland library commission has decided to build the new library of concrete, although a fair tonnage of structural shapes will be required for the lower part of the building as designed. New jobs are developing at a fair rate, and include a 14-story building to cost $1,000,000 and to be erected next spring on the site of the present Opera House.

CONTRACTS AWARDED

Addition to Germania Mills, Holyoke, Mass., 500 tons, to the American Bridge Co.

wridge for Boston & Maine railroad, Haverhill, Mass., 1800 tons, awarded to independent shop.

Exposition building in south, 2000 tons, to the Richmond Structural Steel Co.

Noyes-Buick service station, Boston, 300 tons, to the New England Structural Co.

Building at plant of Corn Products Refining Co., Edgewater, N. J., 1800 tons, to McClintic-Marshall.

Office building for Citilens Savings & Trust Co., and Union National bank, 20,000 tons, reported to American Bridge Co.

Cuyahoga county, O., jail building, 1700 tons, to Van Dorn Iron Works.

Building for Toledo Machine & Tool Co., 1200 tons, to American Bridge Co.

Machine shop for Firestone Tire & Rubber Co., Akron, O., 700 tons, to McClintic-Marshall Co.

Chemical plant for Virginia-Carolina Chemical Co., Charleston, S. C., 200 tons, to Fort Pitt Bridge Co.

Building for Glidden Varnish Co., Cleveland, 160 tons, to National Iron & Wire Co.

Tank shop for the Wayne Oil Tank & Pump Co., Ft. Wayne, Ind., 412 tons, to the Alliance Structural Steel Co.

Baseule bridge over Manitowoc river, Manitowoc, Wis., 322 tons, to the Milwaukee Bridge Co.

Addition to plant for the St. Louis Basket & Box Co., St. Louis, 239 tons, to the Structural Steel Co., St. Louis, formerly the Kaysing Iron & Foundry Co.

Theater, store and office building, for Auerbach & Co., Chicago, 203 tons, to the Kryl Bridge & Crane Co.

Foundry building for the Great Falls Iron Works, Great Ralls, Mont., 124 tons, to the Minneapolis Steel & Machinery Co.

Supports for lubricating oil stills for the Marland Refining Co., Poca City, Okla., 107 tons.

New plant for the Aluminum Co. of America, Marysville, Tenn., 2750 tons to the American Bridge Co.

New pattern shop and warehouse for the Pittsburgh Valve, Foundry & Construction Co., 500 tons to the Jones & Laughlin Steel Co.

Bridge No. 66 for the Baltimore & Ohio railroad at Highland, Pa., 750 tons to the McClintic-Marshall Co.

CONTRACTS PENDING

Addition to School No. 144, Brooklyn, 340 tons, contract pending.

Building for Columbia Chemical Co., Barkerton, O., Van Blarcom Cleveland, general contracts; 260 tons, bids being taken.

Hubbard & Co., Chicago, office building and plant; 378 tons. Bids in.

Addition to Saco Lowells shops, Upper Newton Falls, Mass., 120 tons; bids being taken.

Building for Bryant Electric Co., Bridgeport, Conn., 300 tons; bids to be taken soon.

Addition to Germanian Mills, Holyoke, Mass., 400 tons; bids to be taken soon.

Billet Order

For 20,000 Tons For Export Held Up—Sheet Bars Easier

Chicago, Sept. 9.—Activity of sheet and wire mills is giving an unusual demand for steel for these purposes, and producers of billets and bars are being called on to supply a heavy tonnage. This is having a strong effect in keeping open-hearth furnaces at top production. A recent inquiry for 20,000 tons of billets for export, which came almost to the point of being closed, has fallen through on account of the foreign exchange situation. This material will not be sold unless different arrangements are made for financing.

New Demands are Light

Pittsburgh, Sept. 9.—New inquiries for sheet bars and billets in this market lately have been as few as they were numerous about a fortnight ago. The Carnegie Steel Co. in August averaged better than 99 per cent of ingot capacity and is averaging close to that point at present. With independent producers doing practically as well, contract obligations are being more promptly met and finishing mills have not been obliged to seek additional tonnages on the open market. Recent talk of premiums on sheet bars has entirely ceased. Consumers of billets are getting ample tonnages and there are enough wire rods to meet all current demands. Several of the producers of wire rods have some surplus tonnage over their own requirements and are offering them for prompt shipment. A sale of 500 tons of soft rods is noted to a domestic consumer at $52, Pittsburgh. Export inquiries for rods have been somewhat fewer in the past week than they were recently.

Much Tonnage Seeks Sellers

Cleveland, Sept. 9.—Sheet bar sellers in this district say they could book many thousands of tons quickly if they had the steel. Valley buyers have offered to pay the Youngstown base price of $42 at Cleveland which with freight to destination would amount to $1 advance. Some consumers have sought contracts for next year. The heavy run of specifications for sheet bars is reflected in the fact that the local maker is operating all his open hearths.

More Tonnage

Vainly Sought by Wire Consumers—Specifications Exceed Output

Pittsburgh, Sept. 9.—Consumers of wire and wire products still are pressing manufacturers for supplies and if the latter were so disposed they might take on tonnages that would insure the present rate of mill operations well into next year. As matters stand, however, with regard to prices, none of the manufacturers are inclined to take on any more business for the present as practically all production is needed in meeting current live business and mills surplus that develops readily is disposed of to regular customers. The mills in this district are running between 75 and 80 per cent of capacity, labor shortage keeping down the output, while specifications and new orders are at least 10 per cent higher. One independent company in August made shipments equal to 80 per cent of normal capacity but in doing so was obliged to draw heavily upon its warehouse stocks.

Buyers Urge Shipment

Chicago, Sept. 9.—Not only are consumers of wire seeking further tonnage, but frequent requests are being received for prompt shipment, and results of the recent car shortage are apparent. However, somewhat better car service has been given recently, and shipments are going forward in larger tonnage.

Unfilled Tonnage Gains

For the third consecutive month, unfilled tonnage of the United States Steel Corp. showed an increase in August, this amounting to 530,442 tons. The gain brought the total unfilled tonnage as of Aug. 31 to 6,109,103 tons, which is the largest since January, when the unshipped orders amounted to 6,684,268 tons.

Steady Increase

Shown in Ingot Output—August Gain is 9.5 Per Cent

For the third consecutive month, steel ingot production continued on the increase during August, although the increase was not as marked as that of July. According to the statistics of the American Iron and Steel institute, which reports the figures of 30 steel companies making 84.03 per cent of the country's steel output in 1918, a total of 2,746,081 tons were produced in August. This compared to the July output of 2,508,176 tons is a gain of 237,905 tons or 9.5 per cent. The gain of July over June was 13 per cent.

Following are the institute's figures from January, 1918, to August, 1919:

Months	Open hearth, gross tons	Bessemer, gross tons	All other, gross tons	Total, gross tons
Jan., 1918	1,763,356	429,588	10,901	2,203,845
Feb.	1,805,233	454,457	14,051	2,273,741
Mar.	2,331,048	763,255	16,078	3,110,381
Apr.	2,377,974	769,249	16,187	3,163,410
May	2,475,131	796,244	15,858	3,287,233
June	2,281,718	786,380	15,348	3,083,446
July	2,311,545	784,997	17,093	3,113,635
Total for 8 months.	17,645,182	5,551,030	123,159	23,319,371
Aug.	2,299,177	766,860	17,643	3,083,689
Sep.	2,407,993	772,863	16,802	3,197,658
Oct.	2,527,776	807,043	17,377	3,352,196
Nov.	2,291,720	753,409	15,631	3,060,760
Dec.	2,273,189	706,844	12,273	2,992,306
Total 1918.	27,145,860	8,591,189	185,242	35,922,291
Jan., 1919	2,351,153	749,346	7,279	3,107,778
February .	2,043,635	655,206	5,842	2,704,683
March ...	2,100,528	555,332	6,405	2,662,265
April	1,732,447	500,770	6,494	2,239,711
May	1,506,015	414,392	8,617	1,929,024
June	1,692,257	521,634	5,328	2,219,219
July	1,875,630	625,246	7,300	2,508,176
Aug.	1,988,651	748,212	9,218	2,746,081
Total for 8 months.	15,290,316	4,770,138	56,483	20,116,937

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Sept. 3.....	23.50	53.25	6.00	7.40	33.00	8.50	41.00
Sept. 4.....	23.50	53.50	6.00	7.45	33.00	8.50	41.00
Sept. 5.....	23.50	53.50	6.00	7.425	33.00	8.50	41.00
Sept. 8.....	23.50	53.50	6.00	7.425	33.00	8.50	41.00
Sept. 9.....	23.50	53.50	6.00	7.375	33.00	8.50	41.00

* August shipment from Singapore, c.i.f. New York.
† American Smelting & Refining Co.'s price.
‡ Producers' price. Outside market unchanged 22.25c to 22.50c, casting 21.75c to 22c, lake 22.50c to 24c.

NEW YORK, Sept. 9.—In response to the improvement in general sentiment on the labor situation, the metal markets improved perceptibly the past week. This was particularly true of consumers in the iron and steel industry, whose inquiries for tin and zinc were one of the features of the week. The markets continued to reflect the activities of second hand sellers, especially in copper.

Between 5000 and 10,000 tons of electrolytic copper were sold in the outside copper market last week, the metal going for the most part into the hands of strong consumers. The prices paid were 22.25c for September, 22.50c for October, as compared with the producers quotations of 23.50c for September and 24c for October.

The zinc market experienced a good demand a large number of galvanizers being in the market for September and October shipment prime western. However, prices did not reflect this inquiry to any extent, the market ranging from 7.40c to 7.45c, East St. Louis basis, all week, considerable business being done at the lower figure. Today the market turned weak, 7.37½c to 7.40c on prompt September.

The lead market also experienced an improved inquiry the past few days, several thousand tons being sold. The outside market again was slightly below the producers' price, some outsiders quoting prompt shipment down to 5.90c and spot in the East at 5.85c. By Sept. 8, however, this disparity largely disappeared, some business being done for prompt shipment on the basis of 6.05c, New York.

Solder and babbit makers have bought heavily of 99 per cent tin, such as English Lamb & Flagg and domestic grades and the supply of spot 99 per cent is scant. Prices advanced to 55c, New York. Tin plate makers also have been heavy buyers for shipment in September and October.

Antimony is quiet and unchanged at 8.50c.

The aluminum market is quiet and devoid of developments.

Nickel prices are as follows: Shot, 43c; electrolytic, 45c; and ingot, 41c.

September Exports On Increase

Railway Equipment Builders Propose to Form Export Banking Company—China and the Orient Generally Enlarge Their Purchases — Mills Filling Up With Orders, Discourage Foreign Buyers—Many Sales Reported

NEW YORK, Sept. 8.—September business in iron and steel is opening up with a bound. Export agents are more concerned with the problem of finding the materials in the American markets than to make sales abroad. One of the largest and oldest established houses declared that if this rate of increase continues the United States could sell at least 15,000,000 tons of iron and steel in 1920. That is a figure, however, which he estimated the American steel industry would be unable to produce for foreign customers. By next year the domestic needs should be normal, it is pointed out, and the surplus left for exporting will not be adequate to care for all the inquiries from abroad.

The rapid filling up of the mills with orders has made the export situation more acute. The United States Steel Corp. has notified the exporting houses that it cannot fill any orders for tin plate, galvanized sheets, barbed wire, and wire nails until next January. The Consolidated Steel Corp. sold out on sheets some time ago, and the Gulf State Steel Co. cannot furnish either wire or nails until next December. The Jones & Laughlin Steel Co. are sold up for several months. Foreign business is picking up rapidly but the mills are inclined to discourage inquiries and it is becoming highly difficult to obtain deliveries.

This healthy increase in business comes from the Orient and South America almost exclusively. The European situation is very poor and only a few of the companies with especially strong financial backing are attempting to develop any kind of a market there. It is learned from some houses that unusual sales have been made to Spain and it is believed that these orders have been for resale in France and Italy. The pesata is still selling at a premium and this is a natural encouragement to the Spanish to make purchases in the American market. The exchange is reputed to be operating in such a manner as to make it profitable for the Spanish merchants to resell American iron and steel in Europe to nations where the exchange now prevents us making sales direct. This is a situation which is also said to be duplicated in a modified way in the Scandinavian countries.

One small house reported the sale of 7000 boxes of tin plate and 1000 tons of galvanized sheets to Spain. Spain is also said to have been buying much railroad material. The trade has been talking about an inquiry from Russia for a considerable quantity of rails and railway equipment.

Competing with England

A sale of 1000 tons of ship plates to France was reported. England has removed her import restrictions but there appears to be no great rush of business as a consequence. The weak exchange is preventing sales and the artificial import restrictions no longer are necessary. In other countries of Europe it is difficult to obtain import permits and many of the export houses consequently are prevented doing any business. The Steel corporation appears to be the only agency which is equipped to cope with such a situation. The corporation has been doing a constant business in England.

Among the recent inquiries from Italy were 1000 tons of pig iron, 1000 tons of structurals and 1000 tons of plates. Portugal has been inquiring for hoops in small quantities. Australia has purchased some fabricated copper and 200 tons of galvanized wire, while she has inquiries out for 500 tons of bars and 3000 kegs of nails. The Philippines have purchased over 900 tons of light rails and some tin plate.

One of the larger houses reports the sale of 10,000 tons of ship plates to Japan. Another has sold Japan 24,000 boxes of tin plate. That country also recently has purchased 5000 boxes of tin plate and 2000 bundles of galvanized wire from another seller. An inquiry has been received for 150 tons of light sheets and 200 tons of bars. One house reports the sale of 200 tons of plates to Japan. One of the smaller export houses which normally does not attempt business in the Orient has received an inquiry from Japan for 3000 tons of galvanized sheets and 2000 tons of steel bars.

China has purchased 3000 boxes of tin plate, 500 tons of galvanized wire, 10,000 kegs of nails and nearly 800 tons of steel. This is the recent business signed up by one house alone. Other houses have been selling China bars, shapes, plates and sheets. It is said that millions of dollars worth of machinery has been sold in China since the armistice, and the machinery purchases today are running large. With some exporters this kind of business has been the most prosperous they have had with that country. China has sent in an inquiry for 1500 kegs of wire nails and 3000 tons of bars. It was recently announced that 18 000 freight cars had been ordered in the United States for that country.

A greater interest is shown today in the South American business than probably ever before. The field is fairly generally open and the independent export houses are enabled to go in there and develop business. Among the recent sales made to Cuba and South America was 6000 tons of barbed wire. Most of this was either painted or naked wire. Heretofore South Americans have insisted upon galvanized wire.

Argentine has purchased 9000 tons of steel bars. The barbed wire orders received from Brazil and Argentine would total several thousand tons. Brazil has been purchasing tin plate in quantity in addition to wire. One house sold Brazil 3000 cases of tin plate and over 300 tons of varnished wire. Chile purchased 15,000 boxes of tin plate.

Railway equipment men are planning to take the foreign exchange situation in their own hands to organize a banking corporation which will finance their foreign sales. Among the equipment manufacturing companies interested in this plan are the American Car & Foundry Co., the Baldwin Locomotive Co., the Railway Steel Spring Co., the Haskell & Barker Car Co., and the Standard Steel Car Co.

One of the largest prospective orders for equipment emanates from Belgium, and calls for 400 locomotives. It would place 200 immediately if desired credits were granted. Poland, which recently placed 150 locomotives with the Baldwin Locomotive Co., is in the market for several hundred more. Some of the Balkan states are making tentative inquiries.

Action on Steel Strike Indefinite

Federation of Labor Officials Hold Conference and Announce They Will Issue Statement, But it is Believed Final "Show-Down" Will be Delayed—Mitchell's Death Makes For Delay

WASHINGTON, Sept. 10.—At the conclusion of their conference Tuesday on the calling of a strike in the iron and steel industry, officials of the American Federation of Labor and representatives of unions having members in the industry announced that they would issue a statement in regard to their intentions Wednesday.

When word of the death of John Mitchell was received from New York Tuesday it was thought the conference would be postponed, but later the representatives decided to discuss the situation, even if no decision was made. It is taken for granted that the statement to be issued today will not contain a strike ultimatum.

Conservative leaders among the labor union officials, including President Gompers, it is understood counseled further deliberation, and the death of one of the federation's foremost leaders occurring just as the representatives were about to consider final action is believed to have had some effect in delaying action. The conservatives are understood to have sought the postponement of the conference for a month.

John Fitzpatrick, the chairman of the committee in charge of organization efforts in the steel industry, said "progress" had been made at the conference. He would not deny or affirm that it was decided to issue notice that unless President Wilson agreed to intervene within 48 hours a strike call will be issued. This report is taken to discredit earlier reports issued from the federation's headquarters that President Wilson had agreed to use his good offices toward obtaining a conference between the union officials and E. H. Gary, chairman of the United States Steel Corp.

Differences in Federation Reported

WASHINGTON, Sept. 9.—The meeting here today of 24 presidents of international unions included in the iron and steel industry is supposed to determine whether or not a strike will be called. Despite this, the belief still prevails that the principal differences are not between the American Federation of Labor and the iron and steel manufacturers, but rather that they lie between the radical and conservative elements of the federation. The former apparently are ready to attempt a strike, while the latter hesitate to resort to such action, believing it would fail.

A telegram was sent to President Wilson last Friday by the executive committee, signed by President Samuel Gompers and other members of the steelworkers' committee, following a two-day meeting, asking President Wilson to report what success he had achieved toward effecting a conference between the workers' representatives and Chairman E. H. Gary, of the United States Steel Corp. The President replied the following day, but what he said has not been disclosed.

It is thought that Gompers sent the telegram in an effort to force a meeting between the committee and Judge Gary, the influence of the President being sought to attain this end. Judge Gary has consistently refused to grant such an interview with the committee, holding that it does not represent the employes of the Steel corporation. It also is thought that some members of the committee are so radical in their views that no possible good could arise from such a conference.

Attempting to Magnify Situation

While the impression has prevailed that today's conference of the 24 union presidents was called after the telegram had been sent to the President, the fact of the matter is that the conference was called before. Right upon the heels of the calling of this conference and the exchange of telegrams with President Wilson, the statement was made by John Fitzpatrick head of the steelworkers' committee, that "We have every hope of arranging a settlement." Whether there was anything in the President's reply to prompt Mr. Fitzpatrick's announcement is not known, but in some quarters it was taken as further evidence that union representatives have been attempting to magnify the steel strike situation.

President Questions Union Tactics?

It is a question as to whether the President does not resent the tactics of the union men in trying to force a conference with the manufacturers, using him as a means to this end, instead of waiting for the general labor conference to be held here Oct. 6. Gompers' telegram follows:

The Gompers telegram to the President follows:

"The executive committee representing the various international unions in the iron and steel industry met today to consider the awful situation which exists in many of the iron and steel industry centers. The coercion, the brutality employed to prevent men and unions from meeting in halls engaged, upon private property, in the open air the thuggery of the corporation's emissaries, the wholesale discharge of numbers of men for no reason than the one assigned, that they have become members of the union, have brought about a situation that it is exceedingly difficult to withhold or restrain the indignation of the men and the resistance that they declare it is their purpose to prevent.

"The executive committee, relying upon the case as presented to you last week, and your earnest declaration to endeavor to bring about a conference for the honorable and peaceful adjustment of the matters in controversy, have thus far been enabled to prevail upon the men not to engage in a general strike. We cannot now affirm how much longer we shall be able to exert that influence, but we urge you, even in the great work in which you are engaged, to give prompt attention to this most vital of issues; for, if the men can no longer be restrained, it is impossible to foretell what the future may hold in store for an industrial crisis which may ensue and frustrate the project which you have worked at for peaceful and honorable adjust-

ment of industrial affairs in our country.

"A meeting of all presidents of the 24 international unions in the steel industry has been called to take place on Tuesday, Sept. 9, in Washington, D. C., to take such action as they may deem necessary. May we not have your reply on or before that time as to whether or not a conference with the Steel corporation is possible."

Employers Fear No General Strike

PITTSBURGH, Sept. 9.—Recent developments in the labor situation in this district all have been favorable from the viewpoint of the steel manufacturers and apprehension regarding a general strike of steel plant workmen rapidly is subsiding. Even the report that the President may have given some sort of a promise to organized labor leaders to bring about a conference between them and officials of the United States Steel Corp., is not disturbing.

It is pointed out that the corporation officials have yet to admit either by act or word that a controversy exists between the company and organized labor and therefore that the only purpose a conference, if one is called, can serve is to allow the labor leaders to air before Judge Gary in person the views they already have submitted to him in writing. Recognizing no controversy, it is argued, the company would be absolutely within its rights in declining to enter into a conference, even if called by the President.

Leaders of the movement to unionize the iron and steel workmen of the country continue to tell of the tremendous task they have in keeping the men from striking, but talk of this sort is discounted in steel trade circles here. The fact that the significance also is attached here to the full attendance of workmen at the various plants in this district on Labor day and the day afterward. If the men were so eager to go out, as claimed, a good many of them undoubtedly would have been absent that day.

They worked that day and also came back in full ranks on Tuesday, even at one of the plants, where a strike was called for that day in sympathy with the striking coal miners.

It is doubtful if the claims of the union leaders at any time could be substantiated, but it may be said that the movement has less force now than it had at the crest of the wave of organizing activities. It is said that English-speaking workmen who joined the unions during a moment of enthusiasm, aided by the information that the initiation fee of $3 was a special one and just for the occasion, now are beginning to regret the step, especially since they have learned that the local officers of the new branches in most instances were foreigners, both in speech and ideas. Pittsburgh is hoping that Judge Gary will refuse to confer with labor leaders even at the suggestion of the President and thus bring the matter of a strike to a head.

Incline to Basing Custom

WASHINGTON, Sept. 9.—If the present trend of the arguments on the question of basing steel prices at Pittsburgh is maintained throughout the controversy, and the federal trade commission which is to hear the case is governed accordingly, it appears the present trade custom will remain unchanged.

Among the views opposing the trade custom are those expressed by Franklin D. Roosevelt, acting secretary of the navy; Maj. Gen. George W. Burr, representing the war department, and Walter D. Hines, director general of railroads. The Emergency Fleet corporation, one of the largest purchasers of steel during the war, is noncommittal in its letter on the subject.

Consumers who have expressed views in opposition to the trade custom include the Johnson Iron Works, Ltd.; Southern Iron & Equipment Co.; Carolina Wholesale Hardware Co.; J. S. Schofield's Sons Co.; Southern Bridge Co.; McVoy Sheet & Tinplate Co.; Bailey, Burruss Mfg. Co.; Cary Safe Co.; Fuller & Sons Mfg. Co.; Gibbes Machinery Co.; Carbo Steel Products Co.; Great Western Manufacturing Co.; J. H. Williams & Co.; E. C. Adams, of Kansas City; Tomlin Harris Machinery Co.; Sales Iron Works; Lombard Iron Works & Supply Co.; Riddell Bros., Inc.; Oscar Daniels Co., and Athens Foundry and Machine Works.

Thirty-three individual views have been submitted favoring the basing point custom, while in addition some of the manufacturers answering and expressing views submit letters from customers indicating their disposition to favor the practice. The individual views submited are by the Superior Steel Co.; Pittsburgh Steel Co.; Knoxville Iron Co.; N. and G. Taylor Co.; Gulf States Steel Co.; Lackawanna Steel Co.; Jones & Laughlin Steel Co.; Union Drawn Steel Co.; National Bolt & Nut Co.; Bonner Steel Co.; W. A. Collings Co.; Weirton Steel Co.; Wheeling Steel & Iron Co.; Central Tube Co.; Indiana Bridge Co.; Republic Steel Co.; Youngstown Sheet & Tube Co.; Bethlehem Steel Co.; Trumbull Steel Co.; Reading Iron Works; Stark Rolling Mills; Atlantic Steel Co.; West Virginia Rail Co.; Mansfield Sheet & Tin Plate Co.; Eastern Steel Co.; McKeesport Tin Plate Co.; American Steel Co.; Carnahan Tin Plate & Sheet Co.; Morris & Bailey Steel Co.; Kokomo Steel & Wire Co.; the Bolt, Nut and Rivet institue; Crawfordsville Wire & Nail Co., and the Chamber of Commerce of Pittsburgh. Other steel companies have applied to the commission for copies of the original complaint, but have not filed views. The commission desires to hear from some others and letters may be sent to them.

Manufacturers Are Exempt

Pittsburgh, Sept. 10.—(By wire).—An opinion handed down by Judge Charles P. Orr in the United States district court here yesterday in the case against the Basic Products Co. is in favor of the defendant, and holds that the law creating the federal trade commission neither empowers nor gives a party the right to investigate into the affairs of any manufacturing company even though the products of the company may find its way into interstate commerce.

"Imagination cannot suggest an extension of constitutional limitations as may justify the investigation undertaken by the commssion in this state," said the court. "Indeed, so far as the matter has been brought to the attention of the court, no such assertion of power has ever been made to the court. The investigation under subdivision A, section 6, is limited to corporations engaged in interstate commerce. The defendant is engaged in manufacture."

Installing and Operating an Industrial Cafeteria

Information Regarding Equipment Required, Method of Operating, System of Financing and Cost of Installing a Modern Lunch Room for Employes

BY E. F. ROSS



Fig. 1—An Industrial Cafeteria Affords Good Food at Moderate Prices

WITH the movement of recent years for employers to take a greater amount of interest in the personal welfare of their employes has come the need for industrial dining rooms or cafeterias. Not many years ago lunch rooms maintained by corporations for their employes were quite unusual. During recent years, however, a great many restaurants have been installed and, although industrial cafeterias are yet in an early and experimental stage, the results already achieved indicate that the innovation has come to stay.

Two years ago, the Russ Mfg. Co., Cleveland, manufacturer of soda fountain equipment, added cafeteria equip-



FIG. 2—IN THIS INSTALLATION, THE KITCHEN AND SERVING TABLE HAVE BEEN COMBINED THEREBY SAVING SPACE, LABOR AND TIME

ment to its line of products. The company adopted the policy of building equipment to fit the place rather than to build a standard equipment which might be installed universally..

The cafeteria unit consists of a steam table, bread space, salad pan, pastry counter, milk and ice cream cabinet, coffee urn and check desk besides a complete kitchen equipment. This unit is designed with a view of serving 20 persons in a minute; in fact, 219 have been known to be served in eight minutes. Thirty minutes being the usual factory lunch hour, 250 persons are considered the maximum number to be served by one unit during this time. It has been found that the average workingman finishes his lunch in from 8 to 10 minutes and, assuming he is the last man to be served, he still has time to be out of the dining room at least 5 minutes before the whistle blows.

By operating two shifts during the lunch hour, one unit can be made to accommodate 500 persons, providing sufficient dishes and silverware is supplied for that number. The time between the serving of the last person of the first shift and the first person of the last shift is sufficient for replenishing the food supply from the kitchen even though the shifts are during consecutive half hours. In a few industrial cafeterias the tables are bussed or cleared by dining room attendants, but usually each person returns his tray and dishes to the dish cart. The tables are therefore expeditiously cleared for the next shift. It has been found most satisfactory, where two shifts were required, for the first shift to consist of the factory workers and the second of foremen and office employes. In large plants where the number of employes is large, additional units must be installed, one for each 250 persons with a single lunch hour system or one for each 500 persons with a double lunch hour system. When several units are required, as in the case of very large plants, it is best to distribute them about the factory so that employes can reach them quickly. It is considered a better policy to take the food to the employe than to require the employe to go after the food. Whether the units are close together or separated, the cooking can be done in a centralized kitchen and carried to the units on carts. The single kitchen plan makes it possible to serve exactly the same food in each dining room at the same time and, because larger quantities of food are prepared, tends toward economy.

Careful Watch is Maintained

Manufacturers who were pioneers in installing industrial cafeterias experienced difficulty in properly operating them. Inasmuch as lunch rooms of this type were new, expert advice was not available. Experience has proved that after installing a cafeteria, it is desirable either to hire an experienced restaurant man to manage it, or to consult an expert who is qualified to act in an advisory capacity. Most of the manufacturers who have purchased equipment from the Russ Mfg. Co. have adopted the latter plan. By this arrangement the restaurant expert supplies the special labor including cooks, dishwashers, etc., and supervises the operation of the cafeteria. Food supplies are purchased by the purchasing agent of the manufacturing company, but a daily form statement must be submitted to the restaurant expert to show the amounts and costs of purchases, the amount used, the number of meals served and the receipts. This statement is highly itemized in order that a very careful study of costs can be made. Suggestions and criticisms are given freely to reduce the cost of maintenance and materials.



FIG. 3—A SERVING UNIT IN THE PLANT OF THE NATIONAL ACME CO., CLEVELAND. THIS AND OTHER UNITS THROUGHOUT THE PLANT RECEIVE FOOD FROM A CENTRAL KITCHEN



FIG. 4—AN INDUSTRIAL CAFETERIA OF THIS TYPE AFF AND AVOIDS THE NECESSITY FOR EMPL

Serving has been reduced to a science. The unit is provided with racks for salads and pastries to facilitate placing them on a tray. Serving spoons and ladles are of the proper size so that one dip into a pan or bowl is just sufficient for one helping; more than one dip is a waste of time. Coffee is drawn from the urn as the line starts past the serving table so that it is still hot when carried to a table. The menu is posted in a conspicuous place, as shown in Fig. 1, to avoid delays in ordering.

A one-unit system requires the services of five or six employes permanently, but during the lunch hours extra help frequently is needed to facilitate serving. Rather than engage outside assistance some companies prefer to loan to the cafeteria staff for an hour or so each day the services of four or five women employes willing to assist in serving in exchange for their own lunches. This plan materially lessens overhead expenses and also makes it possible to serve company guests in private dining rooms.

As a rule, no attempt is made to repay the initial installation costs, rental for the space, or even depreciation or



LL OF THE CONVENIENCES OF A COMMERCIAL RESTAURANT LEAVING THE PLANT DURING LUNCH HOUR

breakage of the equipment. Most manufacturers consider these expenditures made in the light of an investment in factory equipment, and allow a certain sum of money annually for depreciation and breakage. The space is donated. It is the aim of restaurants to operate on a minimum or very reasonable margin of profit. In most cases the profit is placed in an employes' recreation fund or credited to a similar account. Some companies use portions of the profits to provide entertainment, occasionally during lunch hours, including music, readings or even cabaret shows. One corporation found that cabaret show during the first lunch hour following pay day encouraged piece work production. Some manufacturers prefer to donate a certain sum of money each month toward the overhead expenses of the restaurant, with the understanding that food will be sold to workers at prices low enough to insure a deficit equal to the donation.

The dining room should be sufficiently large to prevent congestion around tables and in the aisles. In good practice, 9 square feet is considered the minimum space which should be allowed per person and 4 feet the width of all aisles. A room arranged according to these specifications is quite comfortable. Decorations should be simple but attractive. A dining room should be used in double capacity, as a dining room and a recreation center, thereby not only economizing in space but acquainting employes with the fact that the cafeteria is provided for their use. Some factories use the dining room for committee meetings, educational classes, reading rooms, rest rooms and occasionally for dances.

Although the cafeteria unit is finished in white porcelain for reasons of sanitation and cleanliness, the remainder of the equipment, including tables and chairs, may be of any design and quality which the company desires to provide. For dining rooms in which the furniture is not moved around to any extent, the tables and chairs often are of heavy, sturdy construction, but for others which must be cleared for dances and employes' gatherings, lighter furniture has been found to be advantageous. Collapsible tables and chairs fill the latter need admirably and at the same time are easily removed and replaced. Porcelain-topped tables, while adding to the air of cleanliness, give a dining room the aspect of the commercial restaurant and totally fail to produce a home-like atmosphere. A home-like room attracts the man in overalls whereas the other fails. Given the space for a one-unit lunch room feeding 250 persons at one time, a model cafeteria can be installed for approximately $5000.

Kitchen Can Serve Several Units

Additional units, also feeding 250 persons at one time and supplied by the one central kitchen can be installed for approximately $2500 each. The central kitchen, when called upon to feed more than 1000 persons at one time, requires additional equipment to facilitate the proper handling of food and dishes. The serving table for a single unit has a frontage of about 35 linear feet.

A study of labor conditions in factories in which cafeterias have been installed has developed interesting conclusions. Employes may bring any amount of food from home and buy any amount in the dining room, but the number bringing even a portion from home has greatly decreased. As a result, the habit for employes to eat part of the lunch before noon has been reduced to a minimum. Not only is the occasional lunching during the morning injurious to the workmen, but it loses time, consequently lowering production. When employes live close to the factory they usually go home for lunch, necessitating a rush home, a hastily swallowed meal and a rush back to work before the whistle blows. This practice also is undesirable for the health. With the advent of cafeterias, the workman has found that he can purchase a warm lunch for less than it can be prepared at home, that he has plenty of time to eat it without fear of indigestion and that his wife has more time to devote to her family and household duties. In some factories, which run day and night, the cafeteria or lunch counter is kept open 24 hours and employes are allowed to purchase food during any of the rest periods.

In operating an industrial cafeteria, the manufacturer must bear in mind the class of workers he must feed in order that they be given the proper food for maintaining their bodies in an efficient condition. Brain workers do not require quantity of food or food of high heat energy while the physical worker requires the reverse. When these two classes are served at different times, proper food can be prepared and served to each, but when they must be served at the same time, the problem re-



FIG. 5—A REAR VIEW OF A LARGE INSTALLATION TO SHOW HOW THE SPACE UNDER THE SERVING COUNTER IS UTILIZED



FIG. 6—A CORNER OF THE DINING ROOM IN A CAR BUILDING PLANT—MANY EMPLOYERS UTILIZE THEIR DINING ROOMS IN THE EVENING BY REMOVING THE TABLES, THUS MAKING THE ROOMS AVAILABLE TO THEIR EMPLOYES FOR DANCING

quires skillful attention. The manager usually handles this difficulty by offering a good selection of food to enable the worker to select the food he needs.

W. H. Wilcox, Cleveland, a cafeteria expert, who acts as advisor to a great number of manufacturers operating industrial cafeterias, firmly believes that the industrial restaurant has an important place in industry. "The industrial restaurant is an important asset to American production," claims Mr. Wilcox. "It is not an expense, it is not a liability; it is and can be made the medium for improving production in the plant."

Consumption of Gas in Case Hardening

Although the advantages afforded by the gas fired furnace for carburizing have been generally recognized in the past from such points of view as close temperature regulation, decreased attendance, convenience, etc., but little information has been published regarding the consumption figures for this process. The following information has been supplied by the Davis Furnace Co., Diamond Foundry, Luton, Beds, Eng. It deals with one type of furnace which this company makes provided with regenerators of an efficient design and fired with artificial gas at ordinary pressure. The air is introduced to the furnace under slight pressure, about 3 or 4 inches water gage. The figures recorded are for a case hardening job which required that the material be charged into a cold furnace, raised to 900 degrees Cent., and maintained at that temperature for eight hours to give the necessary depth of case. The work consisted of automobile gear wheels, packed in six boxes and having a total weight of 713 pounds.

The required temperature of 900 degrees Cent. was obtained in 70 minutes after lighting up. The figures for the entire run were as follows:

	Cu. ft. Per lb.	Total Cu. ft.
Gas to raise furnace and charge from cold to 900 degrees	1.29	925
Gas to maintain 900 degrees for 1st hour	.38	275
Gas to maintain 900 degrees for 2nd hour	.42	300
Gas to maintain 900 degrees for 3rd hour	.38	275
Gas to maintain 900 degrees for 4th hour	.42	300
Gas to maintain 900 degrees for 5th hour	.49	350
Gas to maintain 900 degrees for 6th hour	.49	350
Gas to maintain 900 degrees for 7th hour	.45	325
Gas to maintain 900 degrees for 8th hour	.45	325

The total gas consumption for this run of nine hours and 10 minutes was 4.8 cubic feet per pound of load. From these figures it is of course readily possible to calculate the approximate quantity of gas required for any period of carburizing and therefore for any depth of case.

Mechanism of Fracture in Steel Explained

An interesting paper on "The Mechanism of Fracture in Steel" was read before the Metallurgical Society of America recently by W. E. Ruder, research laboratory, General Electric Co., Schenectady, N. Y.

The paper begins with a review of the existing knowledge of the change of physical conditions in the variable constituents of steel when subjected to static or alternating stress.

Microscopic examination shows that steel is crystalline in nature and heterogeneous in composition. Each constituent has its own physical and chemical characteristics, and the results which we get from the test bar are really summations of the physical characteristics of the constituents. The mechanism of plastic yield is explained and the relation of the crystalline to the amorphous phase discussed. It is pointed out that alternating stress is one of the most accurate methods for the determination of the true elastic limit.

In discussing the different theories advanced to explain the great strength of the grain boundaries, Howe's modification of Rosenhain's amorphous theory is favored by Mr. Ruder. Thompson's surface tension theory is rejected on the ground that it adds very little to our knowledge and rather complicates our conception as to what actually happens. That surface tension actually exists, there is little doubt, but it is not believed that it is a determining factor. The author's own opinion as to what happens in the fracture of steel is that the first effect of stress is to cause a flow of amorphous material surrounding the grains, indicated micrographically by a ridging along the grain boundaries and a slight molecular yield in the space-lattice of the crystals. When the elastic limit is reached the amorphous cement, as determined by its strength and amount, breaks transversely, owing to its weakness in that direction and the load is suddenly thrown upon the crystal. The plastic yielding, due to slipping causes a sudden drop in the applied stress, which, after sufficient intercrystalline amorphization takes place again causes the applied stress to rise, but this time with considerable elongation.

Coincidence or Copy in Tin Hat?

Most Perfect Helmet in War Developed by American Experts Found Duplicated in Germany, Both Produced Too Late for Use—Lessons Gleaned From Ancient Armor Making an Aid in Modern Manufacture

THERE were but two great nations in the war which went to the Middle Ages for ideas as to protective armor, the United States and Germany. Another coincidence, and this was considered particularly strange to American ordnance experts, Germany late in the war produced a helmet almost identical with the best model that had been developed by Americans. The latest type of German helmet, however, was produced too late in the war to be of service. In the war department's forthcoming book on its activities in the war it is said:

"Germany at the start consulted her experts on ancient armor and worked along lines which they suggested. The German helmet used in the trenches was undoubtedly superior to any other helmet given a practical use. Yet it may be said that the development in this country eventually produced a helmet, entirely America's own, which, had the war continued six months longer, would have been produced in large quantities and which was far superior to any helmet used at the front. Yet it is a notable fact that the German armor experts, working, of course, entirely independently, late in the war produced a helmet almost identical with the best American model.

"The first helmets to be used in the great war were of French manufacture. They were designed by General Adrien, and 2,000,000 of them were manufactured and issued to the French army. These helmets were the product of hasty pioneer work, but the fact that they saved from 2 to 5 per cent of the normal casualties of such a war as was being fought at once impelled the other belligerents to adopt the idea. Great Britain, spurred by the necessity of producing quickly a helmet in quantity, designed the most simple helmet to manufacture, which could be pressed out of cold metal.

"When America entered the war she had, naturally, no distinctive helmet; and the English type, being easiest to make, was adopted to fill the gap until we could design a more efficient one ourselves. Consequently 400,000 British helmets were bought in England and issued to the vanguard of the American expeditionary forces.

"In one respect we had the advantage of the ancients in that we have at our disposal the modern alloy steels of great resistance. An alloy of this kind having a thickness of 0.036 inch is able to stop at a distance of 10 feet a jacketed, automatic pistol ball, 0.45 caliber, traveling at the rate of 600 feet a second. This was important not only from the standpoint of helmet production, but from the further inference that body armor of such steel might be profitably used at the western front. The records of the hospitals in France show that seven or eight of every 10 wounded soldiers were wounded by fragments of shell and other missiles which even thin armor plate would have kept out. The German troops used body armor in large numbers, each set weighing from 19 to 24 pounds. In this country we believed it possible to produce body armor which would not be difficult to carry and which would resist the impact of a machine-gun bullet at fairly close range.

Adopted British Model

"The production of helmets, however, was our first concern; and in order to be sure of a sufficient quantity of these protective headpieces, we adopted the British model for production in the United States and went ahead with it on a large scale.

"We began receiving substantial quantities of finished helmets by the end of November of the first year of the war. On Feb. 17, 1918, practically 700,000 had been shipped abroad or were ready for shipment at the ports of embarkation. Later in the spring of 1918, when we began sending men to France much beyond our earlier expectations, the orders for helmets were greatly expanded. In July the total orders reached 3,000,000, in August 6,000,000, and in September 7,000,000. This gave us enough to meet all requirements until June, 1919.

"When the armistice was signed the factories were producing more than 100,000 helmets every four days, and were rapidly approaching the time when their daily output would be 60,000. The government canceled all helmet contracts as soon as the fighting ceased, having received up to that time a total of 2,600,000 of them.

"We also produced helmets for special services, one with a visor to protect machine gunners and snipers, and another, known as model 14, for aviators, it being little heavier than the leather helmet which airmen wore in the war and 20 times as strong a defense for the head. A third special helmet, known as model 15, was for operators of tanks. It was provided with a neck guard of padded silk to stop the lead splash which penetrated the turret of the tank.

"The engineering division of the ordnance department developed a body defense including a light front and body plate, these together weighing 9½ pounds. One lot of 5000 sets was manufactured and were shipped abroad for testing; but the report was not favorable, as the American soldier did not wish to be hampered with armor, and it was almost impossible to induce him to wear it.

"A few defenses for arms and legs were prepared which, although light in weight, would protect the wearer from an automatic-pistol ball at 10 feet. Seventy per cent of the hospital cases in France were casualties caused by wounds in the arms and legs. These defenses, however, were rejected on account of their impeding to a certain degree the movements of the wearer.

"Our development in armor also produced an aviator's chair weighing 60 pounds. It would protect the pilot from injury from below and from the back, withstanding armor-piercing bullets fired at a distance of 50 yards. Since the piercing of the gas mask canister by a bullet might result in the death of the soldier by admitting gas directly into the breathing system of his mask, the ordnance department designed an armored haversack for the gas mask and its canister, this haversack incidentally serving as a breast defense.

"Another large ordnance operation was the production of bayonets for the service rifles. The British bayonet had proved to be highly satisfactory in the war; and, since it was already designed to fit the Enfield rifle, which we had adopted for our own, we took the British bayonet as it was and with only one slight alteration, set out to produce it in this country.

"The government found both the Remington Arms-Union Metallic Cartridge Co. at its Bridgeport, Conn.,

works, and the Winchester Repeating Arms Co. building these bayonets for the English government. The latter's bayonet needs by 1917 were being well supplied by home manufacture, and this permitted us to buy approximately 545,500 bayonets which had already been manufactured for the British.

"The ordnance department at once started out these two concerns on contracts for bayonets for the American government, Remington with total orders for 2,820,803 bayonets and Winchester with orders for 672,500. Remington delivered in all 1,565,644 bayonets and Winchester 395,894. This was a total of 1,961,500 bayonets.

"The total production of 1917 rifles was about 2,520,000. These figures indicate that we were short over 500,000 bayonets at the time hostilities ceased; and as a matter of fact this shortage had already become acute, especially in the training camps.

"The bayonets had not come as rapidly as we had expected, because to produce them at the rate originally planned would have interfered with the more essential production of rifles by these same companies. Accordingly in 1918 additional contracts for 755,000 bayonets were made. The latter contracts, however, were suspended after the armistice was signed.

"While this production was under way we were also manufacturing bayonets for the model 1905 Springfield rifle. The Springfield armory produced 347,533 of these and the Rock Island arsenal 36,800. In addition the Springfield armory delivered 50,000 bayonet blades as spare parts."

Iron and Steel Famine Exists in Russia

BY JOSEPH HORTON

British Correspondent of The Iron Trade Review

REMARKABLE statements are reaching England via Copenhagen of the demand in Russia for iron and iron materials of all kinds. Enormous destruction of machinery has been caused by ruthless Bolshevism, and very few machines remaining in some districts can be used without extensive repairs.

Farm implements cost from 20 to 200 times what they cost before the war. Nails cost 700 rubles per pound, and even at that price are almost unobtainable. Iron pipe costs 230 rubles per pound.

There is a famine in domestic utensiles and cutlery so that ordinary dinner knives formerly costing three-fourths of a ruble now sell for 50 or 60 rubles. The Soviet industrial commissary at Charkaw recently reported that 300,000 tons of pig iron is immediately necessary for certain indispensable industrial undertakings. A further report states:

"The re-establishment of Russia's manufacturers needs, first of all, a settlement of the iron and steel question, and as even the home mechanism of production has suffered it will be indispensable not only to import large quantities of iron and steel which can be had only from England or America but to invite foreign experts, a move entirely consistent with Comrade Lenine's new program. The re-establishment of the railways in the Southwest district is inconceivable without foreign help."

It is evident from further reports that Germany is being appealed to in various ways to render help.

* * *

Sir Robert Hadfield paid a compliment to the American patent system at a conference of inventors Aug. 1 in London. He said the Federation of British Industries favors a much longer term of years for British patents. It also is agreed as to the desirability of a more extensive examination of the report of applications made for patents.

He apologized for referring so often to America but said the more he studied the American system in the patent office at Washington the more pleased he was with it. Under the "file wrapper" system he said he had been saved costly litigation, because he was able to obtain information about certain people who were attacking patents in which he was interested.

A further point on which the federation is agreed is that a specialist judge should try patent cases. He said the provisional protection of six months granted in Great Britain should be increased. He called attention to the fact that American patent rights do not extend from the day of application, but from the day they are granted and added that an Englishman might waste 12 or 15 months before getting a patent. It was the consensus of opinion of those present that the cost of obtaining a patent in England should be reduced one-half.

* * *

Sir Robert Hadfield took 300 of his employes by special train from Sheffield to London recently.

* * *

Further progress has been made in the search for oil at Heath and Hardstoft, near Chesterfield. At the Heath No. 1 well a gas-fired boiler necessary for the drilling plant is being operated by means of natural gas escaping from the bore hole. At Hardstoft, where the boring is being carried down to 3130 feet the oil is bubbling up to the surface, and is conveyed by iron pipes to a tank of 200,000 gallons capacity. The flow continues at the rate of 400 gallons in 24 hours, but it is expected that when a new pump has been installed the flow will be greatly increased. The oil is coming up under a gas pressure of 1100 pounds to the inch and the effervescence at the mouth of the well gives the impression of boiling oil.

Natural Gas in Italy

Some years ago a natural gas stratum was struck at Aguano, near Pisa, Italy. It is now proposed to exploit this owing to the coal shortage. The 3-foot peat stratum containing the gas lies under a 100-foot bed of clay and rests on sand. When the boring tubes tapped the peat layer large quantities of gas rose up, having the following composition: Marsh gas (methane), 85 per cent; unsaturated hydrogen gas, 2 per cent; various gases (carbonic acid, etc.), 13 per cent. This natural gas burns in the bunsen burner with a weak flame, but develops twice as much heat as ordinary artificial gas. When used with incandescent mantles it gives a bright light. At present it is being collected in six pipes and conveyed to the Pisa gasworks, where it is led through the town mains. A further boring has been made which includes 12 tubes. Pisa will save $30,000 per annum by using this gas. The supply of gas from the deposit is sufficient to last some years. (*Nuova Antologia; Zeitschrift des Oesterr. Ingenieur-und-Architekten-Vereines.*)

According to the *Neues Pester Journal,* negotiations are being carried on between German and Rumanian merchants and the Hungarian government concerning a scheme to transport petroleum oil from Rumania over the inland waterways into Germany.



Fig. 1—General View of By-Products Plant Showing Loaded Coal Barges in the Harbor, Coal Unloading Dock, Coal Handling and Storage Plants and Ovens

New Coke Plant Serves Ohio River Furnaces

BEING one of the first by-product coke plants in the Pittsburgh district and the only modern plant of its kind in the Ohio valley, is the distinction which belongs to the new 94-oven plant of the La Belle Iron works, located on the south bank of the Ohio river, opposite the company's main plant at Steubenville, O. The new plant, which has two batteries each of 47 standard 12½-ton ovens, designed and built by the Koppers Co., Pittsburgh, and is planned to permit duplication, replaces beehive ovens formerly operated by the company at La Belle, Pa.

Officials of the La Belle company originally planned to build the plant on the Ohio side of the river, adjacent to the steel mill and furnaces, but the West Virginia site was decided upon when it was found impossible to secure enough land contiguous to the present plant to allow room for future expansion. The choice of the West Virginia site added considerably to the cost of the plant. A great amount of extra foundation work was necessitated and a fill of 15 to 20 feet over the entire site was required to bring the plant to an elevation above the flood stage of the river. The ovens were carried 8 feet above the new level in order to bring the stack flues above the flood stage. More than 900 yards of filling material and 70,000 yards of concrete were used in the construction of foundations. Void wall construction was used in the oven foundation which extends to a depth of 28 feet below the oven matt, the voids being filled with granulated slag. Piers and curtain walls were used in the foundations of all the buildings and the floors laid on a granulated slag fill. All underground conduits and piping were laid before the fill was made, being erected on concrete piers.



FIG. 2—A SECTION OF THE COKE WHARF

To provide traffic communication between the two plants and insure an uninterrupted supply of fuel for the furnaces, it was necessary for the company to erect and maintain its own bridge across the river. This structure, which is of the cantilever type, is 1520 feet long and consists of four 100-foot girder spans, two 30-foot anchor spans and a main-channel span 660 feet long. It was planned and built by the American Bridge Co., New York, and is the first cantilever bridge ever erected without a traveler or creeper, a crane with a 110-foot boom being used in its erection throughout. The supporting piers are of reinforced concrete, 120 feet high and were sunk to bed rock, a distance of 43 feet below pool level, the caisson method being employed.

A unique feature of the new plant is the coal handling system. The coal used, excepting a small percentage which is mined in the nearby West Virginia fields and brought to

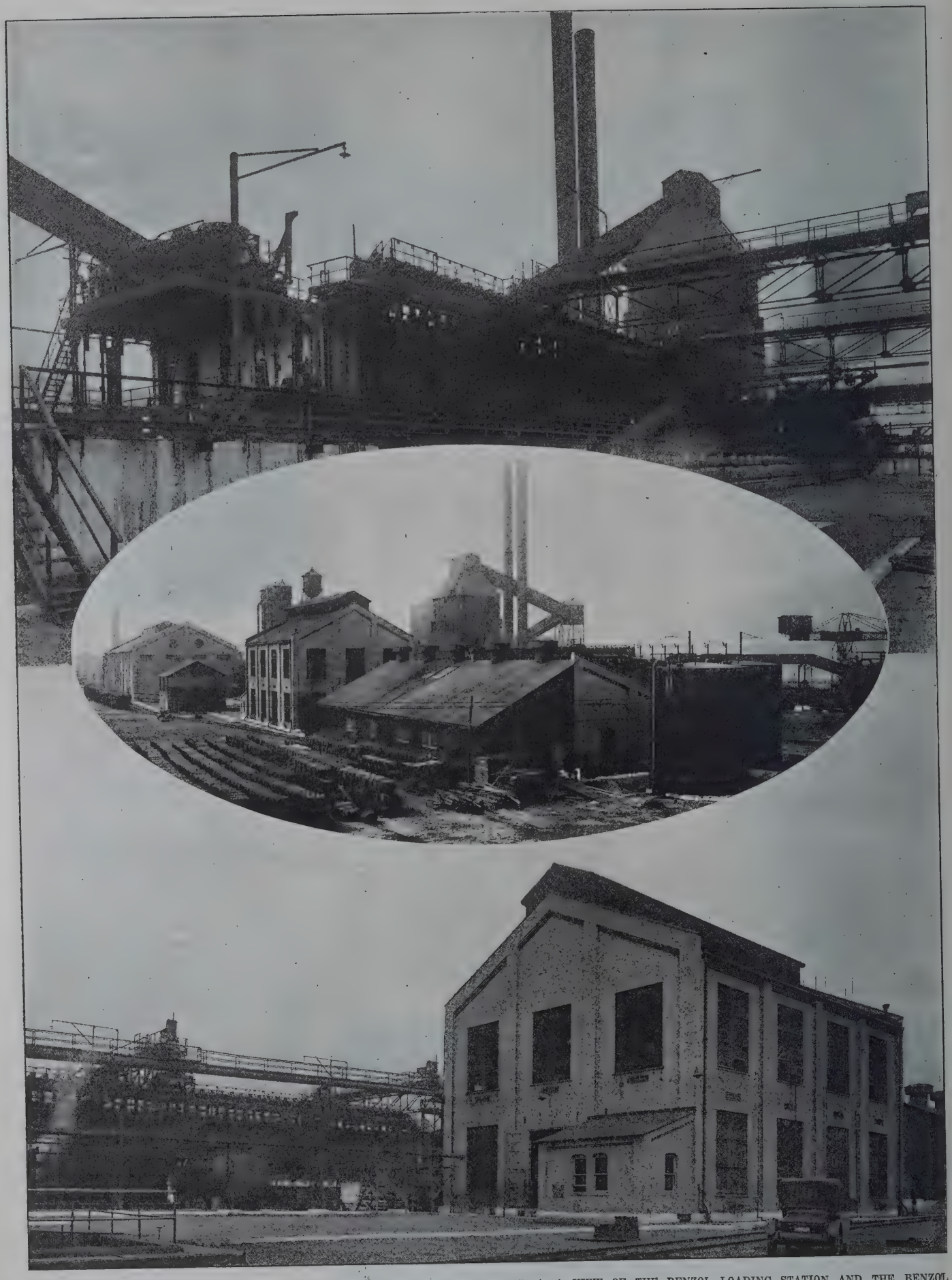


FIG. 3—COKE SIDE OF THE BY-PRODUCT OVENS AND THE COAL GALLERIES FIG. 4—A VIEW OF THE BENZOL LOADING STATION AND THE BENZOL BUILDING IN THE REAR FIG. 5—BENZOL BUILDING SHOWING WASH OIL COOLERS, CIRCULATING TANKS AND OVENS

the plant by railroad, is transported over the Monongahela and Ohio rivers from the Pennsylvania coal district. For this purpose, barges having a capacity of 350 to 600 tons are used, the barges being towed down the river in fleets of six to ten. Harbor facilities are provided where approximately 30 loaded barges may be tied up awaiting their turn at the unloading dock, while the same number of empties also can be accommodated. A truck hopper handles the coal shipped in by rail and a storage yard of 100,000 tons capacity is provided to insure an adequate supply for use during the winter months when the river may be closed to navigation.

Coal is unloaded from the barges by two traveling gantry cranes, with 100 foot bridge built by the Heyl & Patterson Co., Pittsburgh. These cranes are each mounted on four 2-wheeled trucks. They also may be used to handle coal in the stock yard. They are equipped with 3½-ton buckets and have a hoisting speed of 500 feet per minute. The buckets are specially designed with a view to clean unloading in minimum time with minimum labor.

When unloading, the crane remains stationary on the dock, the barge being moved along the dock by an electrically operated barge shifter. Under normal conditions the coal is dropped into a small hopper located on the dock. It is then fed through the bottom of this hopper onto a 30-inch conveyor belt which discharges into the track hopper. If it is desired to stock the coal, empty cars are placed over the track hopper and the coal discharged from the conveyor into them.

Loaded cars are moved by means of a cable haul to one of the several unloading pits which are located every 125 feet along the entire length of the storage yard. From these pits it is transferred to the storage pile by one of the gantry cranes, When it is desired to use coal from stock this operation is reversed, the crane loading the cars which are then transferred to the track hopper and unloaded.

The unloading dock, which is 100 feet long and has a 100-foot fender at each end, was built by the National Contracting Co., Cleveland, while the coal-handling and storage-yard systems were designed and built by the Heyl & Patterson Co.

From the track hopper, coal is carried by a short-length pan conveyor to a 36-inch conveyor belt, which is driven by two 50-horsepower motors made by the General Electric Co., Schenectady, N. Y. The belt travels on a 20-degree incline to the top of the breaker building where it delivers the coal to a breaker. The coal is broken into 1½-inch lumps and the slate and sulphur is removed. From the breaker the coal is carried by a conveyor belt to the proper one of three mixing bins. From the latter it is fed by gravity into the regulator by adjustable gates so that any desired percentage of each grade of coal can be secured. The three-mixer belts discharge into the same chute which leads to the hammer mills where the coal is pulverized to a fineness of 85 per cent through a ⅛-inch screen. It is then elevated by conveyor belts to an 1800-ton storage bin located above the charging floor, between the two batteries of ovens.

The chutes on either side of the hammer mills are equipped with rotary feeders which insure an even and constant feed and eliminate about 90 per cent of the dust. All the coal handling equipment is individually motored and the control is interlocked in such a way that no conveyor belt or crusher can be started or operated until the machine next in progression is in operation. By means of this arrangement spillage or accumulation of coal, if one machine should stop is eliminated. Three-phase, 220-volt, alternating current is used throughout the coal-handling plant. All control boards for the various motors are housed in the control building which is located at a sufficient distance from the main plant that the delicate electrical-control instruments may not be injured by coal dust; a push button located near each motor enables the operator to stop and start the machine at will.

The pulverized coal from the storage bin is fed by gravity into one of the two charging machines. The ovens are of the standard Koppers 30-flue type. The heating system is so arranged that gas is burned in the 15 flues at one end of the furnace and the heated air and products of combustion pass out through the remaining 15 flues to the flue stack giving off heat as it goes. This arrangement is reversed every 30 minutes, insuring a continuous even heat at all times. This change is made automatically, the gas valves, stack dampers and draft dampers being controlled from the control house which is situated between the two batteries of ovens. The entire operating mechanism is governed by an electric clock, no attendant being required. The machines which operate these valves and dampers are electrically driven, but a steam engine is provided for use in emergency. In the central building are also located a venturi-type gas meter for recording the gas consumed and other devices for indicating the temperature, gas production, etc.

The discharging, quenching and handling machinery is all standard Koppers equipment. The coke after quenching and cooling is dumped



FIG. 6—GENERAL VIEW OF PLANT SHOWING POWER STATION, TIME AND GENERAL OFFICES AND BY-PRODUCT BUILDINGS

onto a wide chute from which it is fed through gates onto a conveyor belt. The latter transfers it to the grader where it is graded into various sizes. Part is transported across the river to the furnaces, part is sold for commercial consumption and the breeze is used in the power plant.

The by-product gas, which is given off at about 1000 degrees Cent., is drawn through a 16-inch main by two steam-driven blowers. The latter were built by the Connersville Blower Co., Connersville, Ind., and displace 128 cubic feet of gas per revolution. The fan is driven by means of a 250-horsepower compound engine, and forces the gas through water tube coolers where it is cooled to about 28 degrees Cent. The sudden cooling condenses the tar vapors, the tar flowing into a settling reservoir. Here the gas liquors which are lighter than the tar, rise to the top of the condenser and are drained off. The tar in this state is pumped to the nearby plant of the American Tar Product Co.

The gas, relieved of its tar contents, passes into the reheater, where it is brought to a temperature of 60 degrees Cent. It is forced into the saturator where the ammonium sulphate is removed and then into a centrifugal dryer where the ammonia liquor is distilled. The pure ammonia gas is used again. Electric current at 22,000 volts, 60 cycles and 3 phase, is supplied by the West Penn Power Co. from its Beech Bottom, W. Va., plant, and is stepped down to 2200 and 220 volts, by a series of transformers built by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Develops Center Which Turns With Work

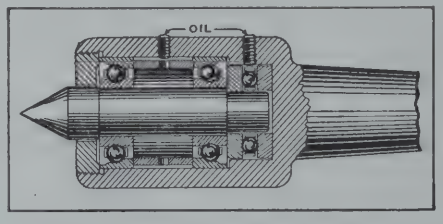
To eliminate friction originating at the tailstock lathe center, a ball bearing center has been designed by Kell, Hock & Co., Newark, N. J. This center, as shown in the accompanying illustration, turns with the work. A high-speed ball and thrust bearing carries the radial and thrust load of the work in the lathe. The advantages claimed for this device are that centers cannot be burned or enlarged and that chattering is reduced to a minimum. Precision work is facilitated with the new center. No oil is needed at the center and since the bearings run in an oil bath, little attention need be paid to further lubrication except at long intervals. Wear in the bearings is adjusted readily by turning the front plate a few degrees. The manufacturer claims that a lathe can be run at extremely high speed without any trouble developing at the center. Four sizes are made for use with all sizes of lathes.

Celebrate Centenary

Of Founding of Connecticut Hardware Manufacturing Company

Southington, Conn., a thriving little manufacturing town of 6500 inhabitants, now boasts a unique soldiers' memorial in the form of a granite pedestal inscribed with the list of 139 revolutionary war heroes followed by the names of every man Southington has sent to any war in which Uncle Sam has engaged since 1776. There are 921 names in all, 425 of them representing her contribution to the world war.

The memorial was dedicated on the afternoon of August 30 as a part of the 3-day festivities that jointly



BALL AND THRUST BEARINGS SUPPORT THE RADIAL AND THRUST LOADS

marked the welcoming home of Southington's soldier sons, the celebration of the 198th anniversary of the founding of the village, and the centenary of the birth of its leading manufacturing interest, the Peck, Stow & Wilcox Co., makers of hand tools and tinners' machines. The formal presentation to the village was made by Gov. M. H. Holcomb, of Connecticut, on behalf of the Peck, Stow & Wilcox Co.

Friday, Aug. 29, the opening day of the centennial, was given over to an old-fashioned community basket picnic at Lake Compounce, a summer resort near Southington. During the afternoon Lyman H. Treadway, president of the company, presented every employe with a service badge. Twenty-three who had been in the company's employ more than 40 years were given gold badges. Five of these had been 50 years on the company's payroll. Fifty-three who had been in service 25 years or more were given sterling silver badges, and all others, down to the 4-year men, were given bronze badges. Each badge was inscribed with the name and the service record of the recipient. The unveiling and presentation of the monument on Saturday afternoon followed the parade of returned soldiers and sailors, one feature of which was an elaborate pageant commemorating the development of manufacturing in the Connecticut hardware belt and incidentally emphasizing local historical events. A reception to the public by officers and directors of the Peck, Stow & Wilcox Co. and a community dance in the newly added 5-story addition to the plant completed the day's program in Southington. President Treadway was later toastmaster at a banquet to the officers and directors at the Hartford club.

The Peck, Stow & Wilcox Co. has distributed a booklet entitled "One Hundred Years of Progress," which sets down, briefly, the interesting history of the company since 1819. The concern represents the consolidation, in 1870, of the Peck-Smith Mfg. Co. of Southington, the S. Stow Mfg. Co., of Plantsville, Conn., and the Roys & Wilcox Co., of East Berlin, Conn. Samuel C. Wilcox was president of the Roys & Wilcox Co. at the time of the consolidation.

Besides Mr. Treadway, the present officers of the company are L. E. Fichthorn, vice president, and E. N. Walkley, secretary-treasurer.

Seth Peck of the Peck-Smith Mfg. Co. patented in 1819 the first machine for making tin wire and in this was laid the foundation of the present organization.

Mining in British India

The annual report of the chief inspector of mines in India for 1917 gives many interesting figures regarding output. There was a substantial increase in the amount of coal mined over that of 1916, the amount for 1917 reaching 17,326,384 tons. This is an increase of 5.53 per cent over 1916.

A decrease is shown in the amount of manganese mined, the total being 497,252 tons as compared with 568,032 tons in 1916. This is a decrease of 12.49 per cent. The output of wolfram increased from 59,094 hundredweights for 1916 to 79,312 hundredweights for 1917. The increase was most noticeable in the first half of the year.

The gold output decreased slightly being 22,991 ounces against 23,235 ounces for 1916, a decrease of 1.05 per cent. The copper output increased to 20,108 tons from 2671 tons in 1916. The increase is nearly 653 per cent. There were increases shown in limestone, iron ore, magnesite, molybdenite, chromite, clay, tin, steatite and fullers' earth and decreases in slate, salt, bauxite, galena, silver and graphite.

Foundry Seeks Difficult Work

Extensive Study of the Purposes for Which a Casting is Intended and the Properties Desired in the Part is Made Before Production is Attempted in This Steel Foundry

By D. M. AVEY

NEW foundrymen seek trouble. In fact the average producer of commercial castings is generally content to wait until difficulty stares him in the face. Then, if he is reasonably energetic, he grapples with the problem, and not infrequently concentrates the energies of the entire shop organization on its solution. But in most plants, seeking troubles before they appear is looked upon as a needless waste of time and effort. In a certain steel foundry in Indianapolis which handles a variety of light and medium work, this condition is reversed. This foundry, operated by the Electric Steel Co. of Indiana, literally hunts for trouble, and by meeting it more than half way overcomes it in its incipiency.

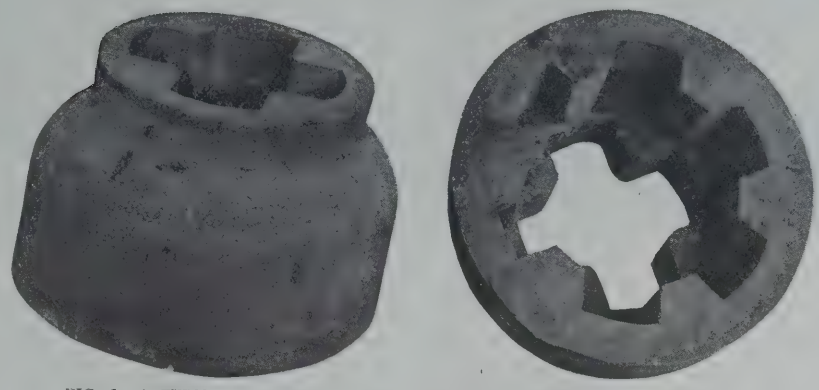


FIG. 1—A TYPICAL CASE WHICH WAS THOROUGHLY DIAGNOSED BEFORE AN ATTEMPT WAS MADE AT MOLDING AND CASTING

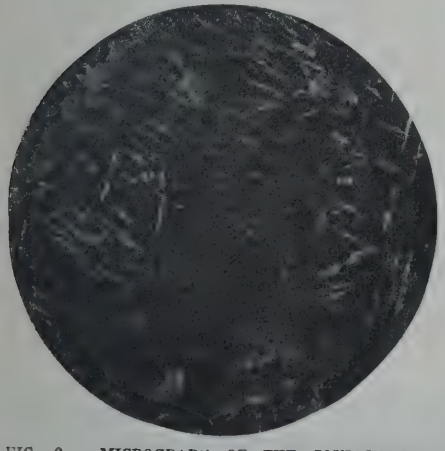


FIG. 2 — MICROGRAPH OF THE COUPLING-BOX CASTING WHICH FAILED — SPECIMEN WAS ETCHED WITH 2 PER CENT NITRIC ACID IN ALCOHOL AND MAGNIFIED 60 DIAMETERS

Any new job offering special difficulties in any of the processes of molding, casting or annealing is met with a spirit of real pleasure. Metallurgical troubles especially are welcomed, as are new problems capable of solution with the aid of chemical reagents and the micro-camera.

Fig. 1 shows a typical "case" brought to this plant and solved with satisfaction to the customer and apparently greater pleasure to the management. The illustration shows two views of a rolling mill coupling-box or as it is sometimes called a *wabbler* or *crab*. This coupling casting may vary in size from a few inches up to more than two feet in diameter. It slips over the end of the roll spindle and forms a connection with the driving pinion by which the roll is turned. The coupling box is designed to drive the mill, to take tremendous stresses when the rolls are reversed, and further to act as a safeguard and break at a lower stress than the roll spindle. This nice point of design in a coupling-box is difficult to attain. It must be strong enough and yet not too strong.

Answering the Query—Why?

A certain steel mill had difficulty with its coupling-boxes. At times the casting would last several weeks, but more often a few days constituted the life of this part. The job of making some of these coupling-boxes was offered the foundry which welcomed trouble. The search for the difficulty was started with a casting which had failed, and one of them was obtained at once by the Indianapolis foundry for inspection and test. No glaring structural defects which would indicate faulty molding or casting were apparent. The break was more in the nature of a tear where the torsion of the spindle was resisted by the metal section of the coupling-box. This offered a clue.

A test section was cut out from the broken part. This was submitted for analysis, physical test and micro-inspection. The analysis showed carbon, 0.39 per cent; silicon, 0.22 per cent; manganese, 0.63 per cent; phosphorus, 0.021 per cent; and sulphur, 0.045 per cent. It was thought that the carbon was too high, and probably for this reason the casting was not sufficiently ductile under changing stresses. This theory was upheld by the physical tests which are presented in Table I accompanying. It will be noted, although the elastic limit is 47,850 pounds per square inch and the ultimate strain is 76,300 pounds per square inch, that the elongation is only 7.0 and the reduction of area only 6.8 per cent. The micrograph which is reproduced in Fig. 2 shows a coarse grained structure which to the management of the foundry indicated a faulty anneal. The knowledge contributed through this thorough analysis gave a starting point and definite objective. It was decided that a lower carbon steel was desirable for ductility and that a thorough annealing would give a better structure. The new coupling-boxes were molded and a metal of the following analysis was used in pouring them: Carbon, 0.22 per cent; silicon, 0.245 per cent; manganese, 0.640 per cent; phosphorus, 0.034 per cent; and sulphur,

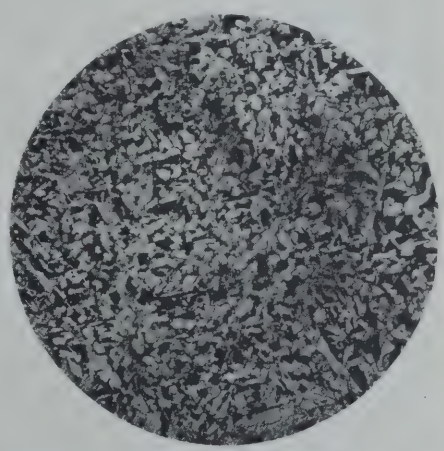


FIG. 3—MICROGRAPH OF SPECIMEN FROM THE NEW COUPLING-BOX METAL — TEST PIECE WAS ANNEALED WITH THE CASTINGS AND GIVEN THE SAME ETCHING AND MAGNIFICATION

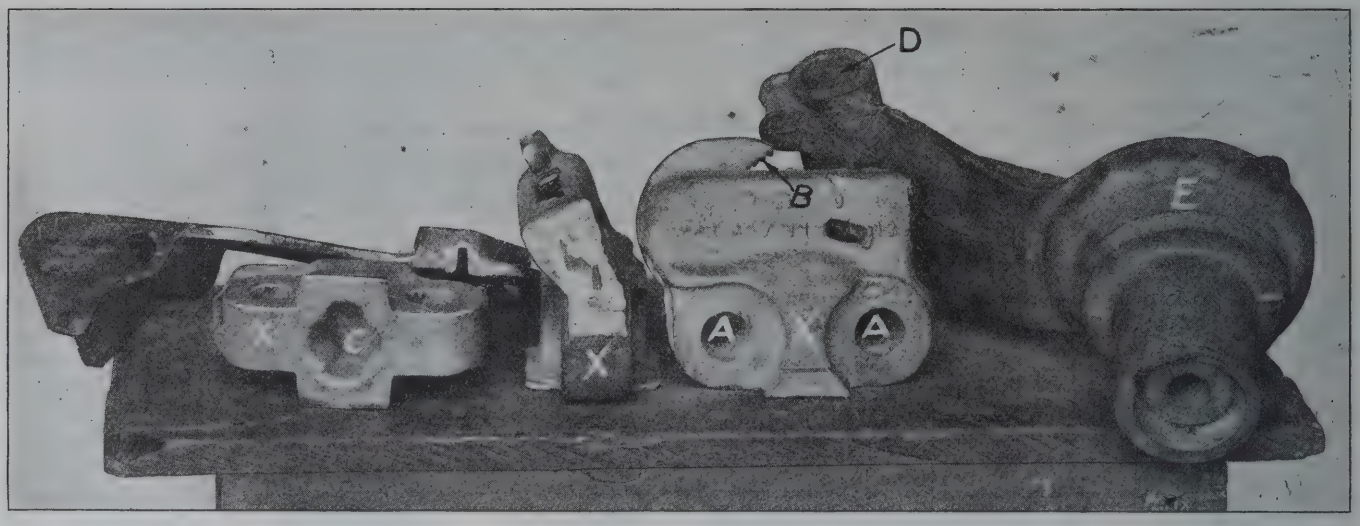


FIG. 4—TYPICAL SMALL CASTINGS MADE IN THIS FOUNDRY FROM ELECTRIC FURNACE STEEL

0.032 per cent. The physical properties demonstrated by an annealed test section similar in size to that used to represent the broken casting showed both elastic limit and ultimate strength slightly lower than before. The material in the new castings developed 38,100 and 73,100 pounds per square inch for the elastic limit and ultimate strength respectively. However, the percentage of elongation shown in the new metal was 21.0 and the reduction in area was 30.9 per cent. Ductility and resilience under repeated and reversing stress were attained, and without the sacrifice of a yield point which would permit the coupling box to fracture before the spindle failed. The micrograph, Fig. 3, shows the grain structure of the new castings. These coupling boxes have been in service continuously for about five months, and have vindicated the policy of "troubling trouble before trouble troubles you."

The diversity of the work handled by the Electric Steel Co. of Indiana presents many interesting points in molding, casting and finishing castings. Each job which enters the shop forms the basis for thorough investigation before actual production is started. Experimental castings are made, tested, sawed apart and thoroughly studied. The service to which each part is destined directs the course of the investigation

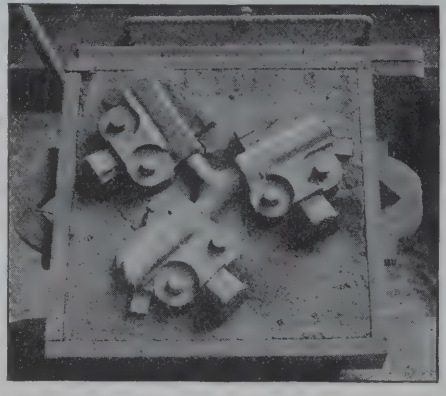


FIG. 5—SAND MATCH AND PATTERNS FOR COAL CUTTER CASTINGS

and every care is exercised to build up the physical properties desired.

Diagnosis is the first step toward performing a cure of any ill. The Electric Steel Co. has devised a simple but comprehensive system for performing a general diagnosis of its casting ailments. The accompanying Table II shows the system that is used. This chart contains a list of the various causes that produce failures in the castings. Opposite these are spaces representing each day of the month and a column for the total and percentage of defectives due to each cause. As may be noted, this gives an immediate check upon the most general ailments and steps then may be taken to rectify molding and casting errors.

A number of representative castings are shown in Fig. 4. Complicated form and section characterize the crooked little casting shown in the three views *X*. A quantity of these castings are made on intermittent orders furnished by a large manufacturer of mining and conveying machinery. The casting shown is a holder for a tool used in cutting through a bed of coal. A cutting tool is wedged into the notched jaw shown at *B*. The tool holder casting then is linked into an endless chain with a number of other similar cutters, and as the cutting machine is moved forward, the successive cutters drag across the coal surface and cut a groove with an action similar to the teeth in a

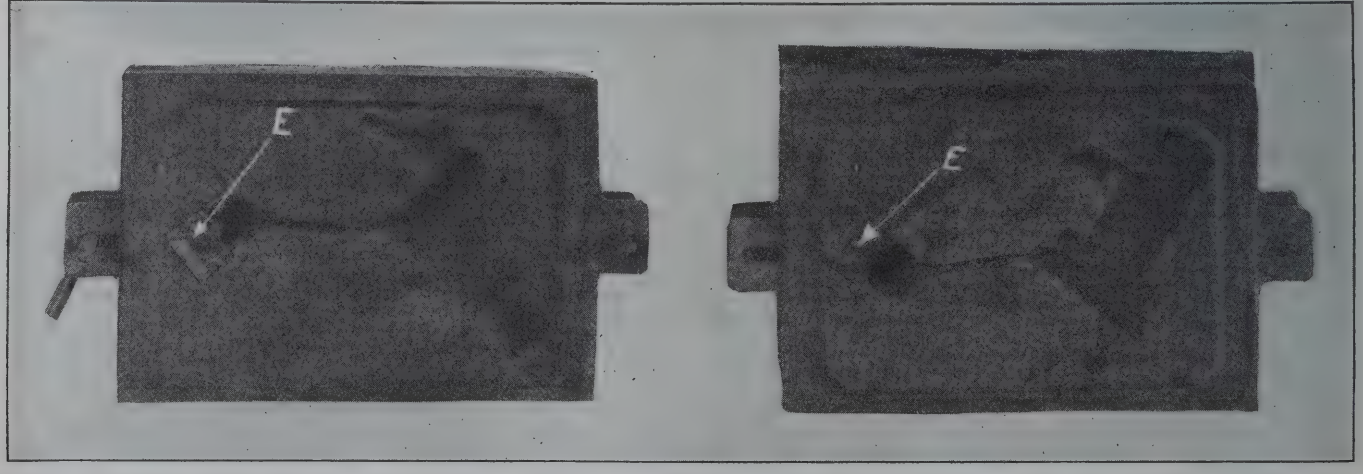


FIG. 6—MOLD FOR A TIRE-HOLDER CASTING MADE FROM MATCH PLATES



FIG. 7—ANNEALING OVEN WHERE SMALL AND MEDIUM CASTINGS ARE TREATED

band saw. The cutter castings are made from seven different patterns, similar except for the angle between the portion which holds the cutting tool and the base portion which is linked through the pin holes *A* to the endless chain. This angle may be noted in the end view of the cutter casting in Fig. 4. The seven different castings are set into the endless chain in such a manner that each succeeding cutter widens the cut until the seventh will leave an opening wide enough for the entire cutting chain to enter.

Molding rather than metallurgical problems are encountered in the manufacture of this casting. It was decided to use a sand match as comparatively few are needed at one time and repeat orders bring the job into the shop only at intervals. The inexpensive rig used is shown in Fig. 5. The patterns are set in a sand match with a set gate. The drag is rammed in a snap flask, rolled over and the match is drawn leaving the patterns in place in the drag. The cope flask then is set, rammed and removed, the patterns are drawn from the drag and the cores are set. Five small cores are used. One which carries a chill forms the recess in the base at *C;* a single long core forms the opening in which the cutting tool afterward is set; two round cores form the holes for the connecting-link pins and a single small core makes the hole in the side of the casting as shown in *D*. The prints for all these cores are shown on the patterns in Fig. 5.

Another interesting casting which forms a continuous job for this foundry is that shown at *E*, Fig. 4. This is a mounting to carry a spare wheel and tire for a passenger car built in Indianapolis. The part formerly was made from malleable iron, but last year steel was chosen for this part and an extra strengthening web was added to give additional rigidity. This job is molded from two match plates. The completed cope and drag are shown in Fig. 6. It will be noted that in addition to using flask pins for locating the two halves of the mold, male and female guides are provided on the match plates. The prints of these may be seen in the molds. The hub is cored out, as is also the bolt hole shown at *D*, Fig. 4. Two small bosses at the back of this part are formed by the small cores set in the mold as shown at *E*, Fig. 6. The mold is gated midway in the angle formed by the casting and runners are carried to the two extremities. A single riser is used at the lower extremity of the casting. The difficulty incident to this job was mainly due to the two thin-web sections set at right angles to each other, and joined to a heavier portion at the two ends. The method of



FIG. 8—BUSINESS END OF THE THREE-TON ELECTRIC FURNACE—NOTE THE SCREW DOWEL FOR CONNECTING NEW CARBON TO THE OLD ONE

Table I

Physical Tests of Steel for Old and New Boxes

Specimen	Area in sq. in.	Elas. limit in lbs.	Elas. limit per sq. in. in lbs.	Ult. strain in lbs.	Ult. strain per sq. in. in lbs.	Elong. Per Cent in Length	Area of Reduc. Sec. in Inch.	Reduc. of Area	Per Cent of Reduc.
Old	0.2006	9560	47850	15280	76300	7.0	0.1870D	0.0136	6.8
New	0.2003	7680	38400	14220	71100	22.0	0.1359	0.0644	32.0

gating and pouring chosen has resulted in clean sound castings.

Proper pouring and correct gating are phases of the foundry problem which receive much attention at this plant. Occasions are mentioned where a new job has been gated in several different ways and the resultant castings have been sawed in different sections to hunt for hidden defects. Slag inclusions are guarded against at every point in the operations. The large *teapot* type ladle shown in Fig. 9 is used to receive the metal from the electric furnace. In this ladle, the metal enters at the bottom of the portion which corresponds to the teapot spout, and rising to the edge, flows over the lip. This prevents slag from overflowing from the molten surface, and gives the advantages of bottom pouring without the pressure and washing effect which is sometimes experienced with the bottom-pour ladle. The medium and light castings are poured from bull ladles and shanks filled from the crane ladle.

Steel for all classes of castings made by this company is furnished from a 3-ton acid lined Heroult furnace. Current from the Indianapolis city power mains is delivered 4300 volts and stepped down to 90 to 110 volts for use in the plant. Five heats are made every 24 hours. Three 14-inch carbon electrodes are



FIG. 9—TEAPOT LADLE USED TO RECEIVE STEEL FROM THE ELECTRIC FURNACE—THE METAL RISES THROUGH AN OPENING AT THE BOTTOM OF THE SPOUT

used. These are operated and controlled by an automatic device manufactured by the General Electric Co., Schenectady, N. Y.

A unique condition governs the direction of this furnace and its operation. The melter is in all cases subject to the guidance of the metallurgist who presides over a small but complete chemical laboratory located within a few steps from the furnace. In many foundries the melter and chemist co-operate but the melter runs the furnace, and consults the chemist only for information on the progress of the heat, and the compositions obtaining. In this plant, however, the metallurgist is skipper and the melter is first mate.

When a casting emerges from the sand in this shop its progress is only partially complete. Near the shake-out floor is a track which leads directly into sand-blast room. This sand-blast installation, which was built by the Pangborn Corp., Hagerstown, Md., permits the debris removed from the castings, together with the used abrasive to drop through a grated floor. It then passes through a separator which delivers the clean sand to a storage bin for reuse. All castings are thoroughly sand-blasted as they rest upon a small car on the narrow-gage track within the sand-blast room. They then are shoved out onto a turntable at the back through another set of doors. From this point, the casting car is shunted on into the grinding and shipping room adjacent, or else is rolled upon another track which runs to the annealing oven located parallel with the sand-blast equipment on

Table II

Chart for Studying Causes of Defective Castings

Day of the Month

Causes of defectives	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total ea.	Per cent defective
Bad metal	4																												4	0.022
Bad molds					5						10													6					21	0.116
Blowy (mold)																														
Blowy (metal)																					4			7				11	22	0.121
Castings broken																														
Check-hot																														
Cold shot																														
Cold metal																														
Cope reversed																														
Core crushed																														
Core mis-set																														
Core omitted																														
Core raised																														
Core shifted																														
Core wrong																														
Composition (off)																														
Dirt																										3			3	0.016
Gated incorrectly																								2					2	0.011
Lost																														
Oxidized																														
Porous										20			18																38	0.210
Runout																														
Shifted																				1									1	0.0055
Shrinkage	1				1															3									5	0.0310
Slag	1				1															5				8					15	0.0930
Tests failed (physical)																														
Tests (cut up for)																														
Thin section					1					1	1		2							2								4	59		70	0.3870
Washed																														
Wrong grade																														
Total																													181	100.0

Number of castings made during month..... 2678
Per cent rejected by number..... 0675
Total weight rejected 7751 lbs.; shipped, 80,546 lbs.; 9.6 per cent;
Per cent welded, 0.225; Number welded, 613.

the same side of the molding floor. The annealing furnace is 5½ x 10½ feet inside, and 4½ feet high. It is oil-fired through three burners, two located near the bottom of the firing chamber at one side and the third on the opposite side near the roof. Pyrometric control is attained through three thermocouples, one midway of the side having the two burners with the other two, spaced equally on either side of the third burner, which is located on the opposite wall.

The pyrometers were made by Leeds & Northrup, Philadelphia. The sand sealing arrangement may be noted from Fig. 7. As the fire-brick paved car is shoved into the furnace, the overhanging sides of the car slide into the sand in the two troughs, one of which is at the left of the door. This seals the furnace at the bottom, and the door drops upon the extending end of the car platform and forms practically an air-tight closure at the front of the oven.

Great care is exercised in annealing. A study of the intended uses of the castings is used as a basis, and the method of anneal is varied to suit the requirements. Small castings are annealed up to 1650 to 1675 degrees Fahr. The temperature is raised gradually and held for from 3½ to 5 hours for a 0.30 per cent carbon steel. The castings then are cooled in the furnace, removed and cooled in air, or quenched in a tank of water directly at the side of the runout track from the furnace, as may be desired. The quenching tank is merely a boiler shell buried to its rim and protected by a wooden cover when not in use. The temperatures obtained in all parts of the furnace chamber are practically the same. The variation between the three thermocouples is seldom found to be over 10 to 15 degrees.

Shop is Well Equipped

The shop is liberally equipped with molding machines, swing and stand grinders, sand mullers and handling equipment. The medium sized flasks are handled from molding machines by air-operated jib cranes, and the main bay is served by two electric overhead girder cranes each rated at five tons.

Sand is carried from the shakeout floor to a corner of the shop where an overhead bin feeds down into a Simpson grinding pan, manufactured by the National Engineering Co., Chicago. Outside sand storage is adjacent to this point, and the new material is wheeled to the mixer. Core sand is mixed on the opposite side of the shop near the core department. Three large core ovens provide ample facilities for the great number of small cores needed in this plant. These are all coke fired.

Chinese Industry Has Prosperous Year

During 1918 the Hanyang Iron & Steel Works, China, according to *Commerce Reports*, produced 118,932 tons of basic iron; 31,655 tons of foundry iron; 20,093 tons of rail steel and 40,839 tons of mild steel. This company controls the most important single industry in China and by a process of amalgamation, large coal and iron mines, near which it is located, have come under its control. The consolidation of the steel plant and mines is known as the Han-Yeh-Ping Iron & Coal Co., Ltd. The output of coal and iron ore from the mines of the company exceeded all expectations, the iron ore production being 541,699 tons and the coal output 288,688 tons. Besides this the mines produced 67,368 tons of white limestone, 10,178 tons of blue limestone and 14,620 tons of dolomite. The production of coke amounted to 252,326 tons. Little improvements have been added to the plant since 1917, when a modern ore unloading plant was constructed. In October of last year, pig iron rose 50 per cent. An increase of 100 per cent for plates and 80 per cent for shapes was experienced in September. These prices were maintained until the end of the year.

Another Chinese interest which has done considerable work during the past year is the Yangtze Engineering Works, Ltd., which built gunboats for the Chinese government, railroad bridges and various industrial construction. According to a report of the company's directors for the year just passed, the principal work engaged in by the works was railway work, such as bridges, passenger cars, etc. A fair amount of structural work for blast furnaces and repairs to machinery, boilers, etc., also was executed. According to the comment of *Commerce Reports* the plant of this company is modern, is running under good management, and can easily be adapted to the construction of concrete vessels. Its location for shipbuilding is such that vessels can reach the sea from the company's docks during eight months of the year.

Germany Lacks Coal

Owing to the interruption in the output of coal from the German collieries, the production of soda ash is so much restricted that all industries dependent on that product are seriously hindered. A demand for 6000 tons is met by an output of only 800 tons. The textile, leather, metal, soap, dyestuffs and aluminum industries, as well as some others of less importance, are suffering from the shortage. The nitrate industry, too, is suffering in common with the rest from lack of coal. Some of these works have been brought to a standstill. Production is now only half of what is needed to meet the demand in peace time. The consequences are becoming disastrous to agriculture. (*Zeitschrift für angewandte Chemie.*)



FIG. 10—METHOD OF HOLDING ROLLING MILL SPINDLE FOR GRINDING THE END AFTER REMOVING THE GATE

Book Review

Iron and Steel, by Erik Oberg and Franklin D. Jones; cloth, 328 pages, 6¼ x 9¼ inches; published by The Industrial Press, New York; furnished by THE IRON TRADE REVIEW for $2.50 net.

For the student in technical schools and for those engaged in machine building and mechanical engineering fields, *Iron and Steel* is a valuable text book. It gives a broad general survey of the smelting, refining and mechanical processes in the manufacture of iron and steel, including the chemical and physical characteristics of wrought iron, various grades of steel, and iron and steel castings. The authors have endeavored to furnish the student with complete information pertaining to the commercial forms and grades of iron and steel products and the particular class of service to which these are applicable.

Beginning with a short general classification of iron and steel, manufacturing processes from the smelting of the ore to the production of the finished product are described. Terms commonly used in the iron and steel industry are defined.

More than a hundred pages are devoted to the classification of steel and to the details of the bessemer, open-hearth, crucible and electric processes of manufacture. There is also a chapter on the rolling mill industry in which the manufacture of bars, rails, plates, shafting, wire, etc., is described. The concluding chapters are devoted to iron and steel castings. The book is well illustrated and contains a complete alphabetical index for the convenience of the reader.

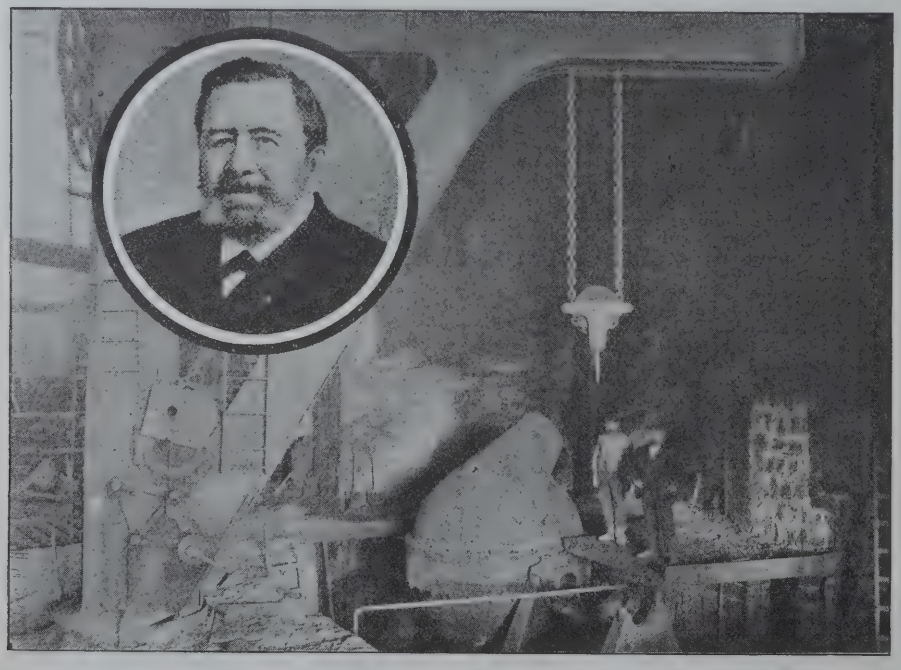
Recovery of Manganese Ore From Slag

A German patent describes means for recovering manganese from low-percentage manganese carrying blast furnace slag. In an electrical furnace a sump bath of iron, or clippings and turnings, is melted without access of air, and into this the blast furnace slag of basic proportion of 1 to 0.8 is put, and the bath raised to the highest temperature possible. When fusion has taken place, as much lime is added as the fluidity of the bath will permit. A better reduction of the manganese is thereby effected, due to the increased basic qualities of the slag. The sulphur and manganese compound of the blast furnace slag is broken up, and the sulphur carried over to the final slag. To the whole molten bath a reducing agent is then added in the form of small pieces of coke, whereupon the reduction of the manganese and oxygen compounds takes place according to the equation $MnO + C = Mn + CO$. The reduction is greatly facilitated by the use of lime and coke, prepared in the electric furnace, where, under the action of the electric arc, calcium carbide is formed, which substance serves as the carrier of the carbon required. The molten iron takes up the reduced manganese, forming a ferroalloy.

During 1918 the production of domestic ores containing not less than 10 per cent manganese, was 1,150,000 tons, according to figures compiled by the United States geological survey.

Revive Bessemer Practice in Early Days

THE memory of G. F. Goransson, founder of the Sandvik Steel Works, Sandviken, Sweden, has been perpetuated by a statue unveiled at that city on July 18. On account of the indefatigable energy which he displayed in furthering its progress, the name of Mr. Goransson, who was born in Sweden 100 years ago, occupies a leading place in the annals of the Swedish iron and steel industry. He is recognized throughout the steel-producing world for his achievement in putting Sir Henry Bessemer's theory into practical use. The bessemer theory of steel production, which was at first confined almost exclusively to laboratory experiments, had, up to the year 1856, been crowned with so little success, from a practical point of view, that it was abandoned in England as a commercial venture. Despite this development, Mr. Goransson visited that country in 1857 and purchased the patent rights for Sweden. With the assistance of two engineers, C. Lundvik and C. P. Lindberg, in November of the same year, at Edsken, Sweden, he made new attempts toward the materialization of Mr. Bessemer's theory. After many trials and failures, Mr. Goransson, on July 18, 1858, succeeded in producing bessemer steel on a commercial basis. By reason of the successful result of the attempts at Edsken, confidence in the bessemer process was revived. In order to develop this method on a larger scale, Mr. Goransson, with others, established the Sandvik Steel Works, at Sandviken, Sweden, in 1862 and 1863, and here the first movable bessemer converter, shown in the accompanying illustration, was erected. The Sandvik Steel Works today is one of the largest establishments of its kind in Sweden and is sending its products to nearly all parts of the world.



EARLY MOVABLE BESSEMER CONVERTER BUILT BY G. F. GORANSSON AT SANDVIKEN, SWEDEN. MR. GORANSSON IS SHOWN IN THE INSERT

Iron and Steel Electrical Engineers Will Meet

The Association of Iron & Steel Electrical Engineers will hold its thirteenth annual convention at St. Louis, Sept. 22 to 26. Headquarters of the convention will be Hotel Statler. The following program is announced:

Monday, Sept. 22

9:00 A. M.—Registration.
10:00 A. M.—Business session.
2:00 P. M.—Professional session.
"Educational Committee Report," Chairman, A. B. Holcomb.
"Safety Rules for Government of Employes Working on Electrical Equipment," by Safety Committee, chairman, Walter Greenwood.

Tuesday, Sept. 23

9:00 A. M.—Professional session.
"Organization of the Electrical Department in the Iron and Steel Industry." (Joint paper.)
"Inspection and Operation of Electrical Apparatus," J. A. Morgan and J. J. Booth.
"Educational Training for Electrical Employes," B. A. Cornwell.
"Electrical Repair Shop," C. A. Menk.
"Storeroom and Spares," T. E. Tynes.
"Records and Tests," R. B. Gerhardt.
2:00 P. M.—Excursion.

Wednesday, Sept. 24

9:00 A. M.—Professional session.
"A. C. vs. D. C. Motors for Rolling Mill Table Drives," W. S. Hall.
"Recent Improvements in Industrial Control," H. D. James.
2:00 P. M.—Professional session.
"Present Status of Electric Furnaces in the Steel Industry." by electric furnace committee, chairman, R. D. Nye.
"Electric Heat Treatment," C. A. Winder.
7:00 P. M.—Annual banquet.

Thursday, Sept. 25

9:00 A. M.—Papers.
"Influence of Gear Ratio on Speed of Operation, Motor Heating and Contactor Wear in Auxiliary Steel Mill Drives," J. E. Fries.
"Overload Protection for Motors," Paul M. Lincoln.
2:00 P. M.—Papers.
"Overload Protection on Cranes," A. G. Place.
"General Specification for A. C. Motors for Main Roll Drive," by Standardization committee, chairman, T. E. Tynes.

Friday, Sept. 26

9:00 A. M.—Papers.
"Present Status of Arc-Welding in the Iron and Steel Industry." (Joint paper.)
Wilson Welder & Metals Co., A. Churchward.
General Electric Co., H. L. Unland.
C. & C. Electric & Mfg. Co., A. M. Bennett.
Lincoln Electric Co., R. A. Kinkead.
Electric Arc-Cutting & Welding Co., C. J. Holslag.
The Arcwell Corp., R. M. Rush.
Westinghouse Electric & Mfg. Co., A. M. Candy.
2:00 P. M.—Excursion.

Motor Starters Have Protective Devices

Two new enclosed motor starters, designed to insure safety in operation and protection from abuse have been designed by the Cutler-Hammer Mfg. Co., Milwaukee. This apparatus, it is claimed, may be located in exposed places and successfully operated by unskilled labor without any danger to the operator or the apparatus.

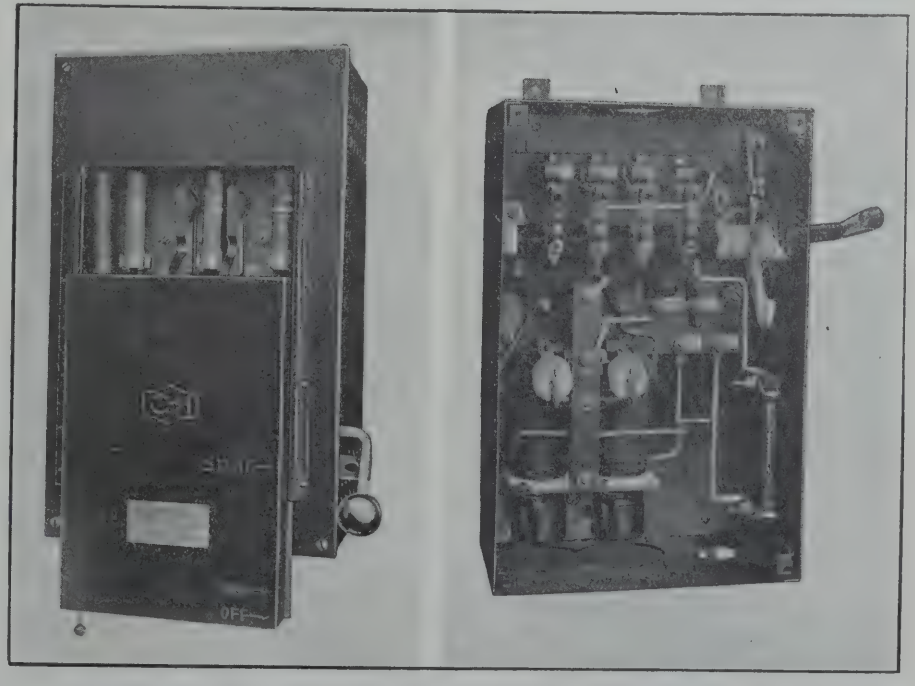
All live parts of the switches are completely enclosed but may be easily inspected by lowering a sliding panel, which automatically opens the switch and prevents the starter from being used until the cover is replaced. Since danger from live parts is eliminated, an unskilled person can operate either type with safety by giving the lever, which projects from the enclosed case, a short radial movement. To prevent unauthorized operation, the switch handles may be locked. Contact points and fingers are of standard drum construction, easily inspected and renewed and kept clean by their vertical position which prevents the accumulation of dirt and grease. The switch cases are arranged for conduit wiring.

The starter, shown on the left of the accompanying illustration, is a fused starter and is especially adapted for motors which cannot be connected directly to the line when starting. A resistor enclosed in the same casing with the switch decreases the initial voltage to 60 or 75 per cent as desired and maintains the balance of all three phases while starting. The fuses are out of the motor circuit until the rotor has reached normal speed, thus they do not carry the heavy starting current and need be of no greater capacity than proper protection requires. The switch is released by pulling the drop cord. This starter contains a low-voltage release coil. A duplex overload relay and a low-voltage release coil, both enclosed with the switch, are provided with the starter shown in the right of the illustration. The overload unit has an inverse time element which permits a large initial starting current or a temporary overload but protects the motor from a continuous heavy overload. This switch is made with either three or four poles. Both starters are made in several sizes for operating squirrel cage motors on potential not exceeding 550 volts.

Machinery Sellers Meet

Formed some time ago by several machine tool dealers, the Machinery Sales association will hold its fifth meeting at the New Gibson hotel, Cincinnati, Sept. 20 and 21, under the auspices of the Cincinnati associate, the Seifreat-Woodruff Co. A banquet and a ladies' entertainment program will feature this convention. Soon after, it is expected that full details of the operation of the association will be published.

Members who are expected to attend are the W. J. Baird Machinery Co., Detroit; the Cleveland-Duplex Machinery Co., Cleveland; Empire Machinery & Supply Co., Buffalo; Eastern Machinery & Equipment Co., Philadelphia; McCoy-Brandt Machinery Co., Pittsburgh; Stocker-Rumely-Wachs Co., Chicago, and the Seifreat-Woodruff Co., Dayton and Cincinnati.



TWO NEW MOTOR STARTERS. THE ONE ON THE LEFT HAS A RESISTOR FOR REDUCING THE VOLTAGE WHILE THE ONE ON THE RIGHT HAS AN INVERSE TIME ELEMENT FOR LARGE CURRENTS

July Exports Cut Almost in Half

Outgoing Shipments Reach the Lowest Figure Since May, 1915 and Total 287,685 Tons—Imports Make a Gain of 34.2 Per Cent—Exchange and Dockmen's Strike Assigned as Cause

IRON and steel exports, after gaining rapidly for four consecutive months, took a sharp drop in July and reached the lowest figure since May, 1915. Imports on the other hand, continued on the increase and registered the largest gain since March of the year. To the foreign exchange situation may be ascribed the greatest cause for these changes in foreign business with the harbor strike in New York as a contributory factor on the export side.

July exports totaled 287,685 tons compared with 561,020 tons in June, a difference of 273,335 tons or of 48.7 per cent. By this precipitate drop the July figure is reduced to the lowest point in over four years or since May, 1915, when the total was 262,306 tons. Compared to the high record of exports in December, 1917, of 653,344 tons, the July tonnage represents only 44 per cent. Although a few products showed slight gains in tonnage over the previous month, the majority showed losses, some of large proportions. Pig iron with a total of 39,758 tons in June increased to 42,327 tons in July while steel billets, ingots and blooms fell from 46,016 tons to 21,318 tons.

Imports for July gained 34.2 per cent compared to a gain of 17.7 per cent in June. The total was 28,258 tons and the largest since July, 1917, when 28,859 tons of iron and steel were imported. The June total was 21,056 tons or 7202 tons less than the July total. The greater part of the gain was made by the importation of scrap which gained from 10,830 tons to 20,393 tons.

The largest losses in finished steel exports were in wire rods, steel rails, steel bars, structural iron and steel, hoops and bands, sheets and plates, tin and terne plate, wire, and pipes and fittings. A gain was shown in scrap iron.

Iron ore imports for July decreased from 30,605 tons to 23,347 tons, shipments from all countries being lower.

EXPORTS PIG IRON AND SEMI-FINISHED

(Gross Tons)

	Pig iron	Semi-finished material
1916—		
January	19,319	55,315
February	15,061	87,406
March	19,439	107,675
April	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
August	60,264	160,921
September	64,122	163,104
October	92,756	162,669
November	106,781	120,883
December	105,195	162,901
Total	607,236	1,504,563
1917—		
January	69,146	183,656
February	49,018	131,566
March	69,629	193,469
April	44,783	162,209
May	61,112	168,158
June	83,406	190,907
July	32,305	106,085
August	62,083	170,503
September	44,287	148,932
October	47,115	209,667
November	25,733	150,120
December	67,593	203,085
Total	656,210	2,018,357
1918—		
January	20,581	195,385
February	10,540	173,272
March	9,849	144,443
April	11,282	177,128
May	22,567	159,299
June	22,896	139,377
July	20,265	139,612
August	26,028	189,851
September	34,494	135,450
October	35,452	125,023
November	30,825	150,024
December	24,577	63,890
Total	269,356	1,792,754
1919—		
January	36,757	11,594
February	20,840	10,407
March	22,158	8,176
April	17,038	11,488
May	37,087	20,771
June	39,758	46,016
July	42,327	21,318
Total seven months	215,965	129,770

IRON ORE IMPORTS

(Gross Tons)

From:	July 1919	July 1918	Seven months ending July 1919	Seven months ending July 1918
Spain	6,245	8,277	48,737	15,563
Sweden	5,827	....	34,808	.....
Canada	418	22,693	8,760	51,250
Cuba	10,857	86,905	129,586	377,174
Other countries	....	....	702	.....
Total	23,347	117,875	222,593	443,987

IMPORTS VARIOUS ORES AND FERROALLOYS

(Gross Tons)

	July 1919	July 1918	Seven months ending July 1919	Seven months ending July 1918
Ferromanganese	1,081	3,952	16,393	22,426
Ferrosilicon	1,260	363	11,594	1,953
Manganese ore	15,585	30,886	241,570	275,722
Tungsten-bearing ore	452	858	4,472	4,345
Nickel ore	1,611	5,063	13,007	33,214
Total	19,989	41,122	287,036	337,660

IRON AND STEEL IMPORTS

(Gross Tons)

	July 1919	July 1918	Seven months ending July 1919	Seven months ending July 1918
Pig iron	3,949	4,305	31,008	25,942
Scrap	20,393	2,685	75,568	26,327
Bar iron	123	97	887	988
Ingots, blooms and billets	3	3,512	3,943	18,532
Structural shapes	125	8	693	1,627
Rails	3,065	539	13,671	3,403
Sheets and plates	157	61	658	1,249
Tin and terne plate	34	.....	104	.....
Tin scrap	394	478	3,425	3,329
Wire rods	15	104	99	5,858
Total	28,258	11,789	130,056	87,255

IRON AND STEEL EXPORTS

(Gross Tons)

	July 1919	July 1918	Seven months ending July 1919	Seven months ending July 1918
Pig iron	42,327	20,265	216,050	118,151
Scrap	2,949	.....	7,875	1,608
Steel billets, ing. and bl'ms	21,318	139,612	129,263	1,122,051
Wire rods	6,124	11,051	77,779	86,202
Steel rails	32,707	27,350	413,230	239,720
Steel bars	48,171	42,842	327,159	18,660
Iron bars	2,065	3,527	45,160	28,153
Struc. iron and steel	19,201	19,215	240,551	132,710
Hoops, bands and scroll	1,658	5,033	34,385	31,880
Sheets and plates	50,705	81,009	650,558	46,136
Ship and tank plates, punched and sheared	718	4,473	6,578	20,088
Tin and terne plate	9,731	28,817	132,280	174,559
Barbed wire	7,616	27,650	52,007	109,632
All other wire	14,584	15,899	115,296	87,391
Cut nails	196	195	2,250	2,608
Wire nails	5,207	7,694	61,188	48,500
All other nails incl. tacks	497	1,404	12,103	6,393
Pipes and fit'gs	17,637	17,718	195,534	95,824
R. R. spikes	1,698	696	17,809	6,021
Bolts, nuts, rivets and wash.	2,077	2,333	26,647	14,959
Horseshoes	341	109	2,141	2,172
Cast radiators	158	226	1,868	1,236
Total	287,685	457,118	2,767,711	2,394,654

IMPORTS AND EXPORTS

(Gross Tons)

	Imports	Exports
1916		
January	15,824	360,102
February	20,279	368,980
March	15,159	438,649
April	20,176	384,452
May	32,114	538,657
June	26,885	515,214
July	14,774	502,330
August	23,255	571,401
September	25,559	643,762
October	30,169	588,892
November	42,545	554,219
December	44,134	580,988
Total	310,891	5,947,646
1917—		
January	40,910	608,281
February	24,947	449,099
March	37,943	606,559
April	48,213	519,397
May	26,479	582,303
June	29,080	629,305
July	28,859	346,393
August	26,129	503,075
September	19,058	499,067
October	14,310	571,868
November	13,995	473,549
December	14,642	653,344
Total	324,565	6,442,240
1918—		
January	12,475	490,259
February	12,941	438,848
March	14,345	379,924
April	11,371	462,887
May	14,387	488,515
June	13,913	418,605
July	11,511	452,759
August	12,520	512,104
September	8,440	473,688
October	15,744	426,767
November	11,582	471,427
December	28,996	356,641
Total	168,225	5,372,424
1919—		
January	16,913	371,570
February	12,302	344,180
March	17,632	367,224
April	16,560	396,813
May	17,885	422,282
June	21,056	561,020
July	28,258	287,685
Total seven months	130,606	2,750,774

Plenty of Coal, No Advance if-

Operators Tell Senators Supplies at Fair Price Will Be Plentiful, Barring Strikes, Car Shortage and Severe Weather—Hines Declares Pretext Will be Found to Raise Price, and Urges Extension of Government Control

WASHINGTON, Sept. 9.—Because of the vital need in the iron and steel industry and in affiliated lines of production of obtaining adequate supplies of coal at fair prices, testimony given last week before the subcommittee of the senate committee on interstate commerce is important. While conflicting views were expressed by witnesses, all agreed that barring labor troubles and unusually severe weather, sufficient coal will be available, despite the present shortage of production. Under favorable conditions there is no reason, according to coal operators, why prices should be increased further, although all expressed uncertainty as to conditions in the near future.

Director General Hines urged that operation of the Lever act to control prices be resumed, a recommendation strongly opposed by Frank S. Peabody, of Chicago, a prominent coal operator.

Regarding the car supply situation, interesting figures as to the number of cars built by the railroad administration, the number delivered, the number being stenciled preparatory to being placed in service, and the number under contract, were presented by Frank K. McManamy, assistant to the director of operations, in charge of mechanical matters.

Hines' Charge Denied By Coal Operators

DIRECTOR GENERAL HINES told the subcommittee that wartime powers placing coal under government control should be extended. He made this recommendation on the ground that coal operators might be expected to exploit and exaggerate transportation difficulties this winter in order to increase prices.

Mr. Hines urged that an appropriation be made to enable the geological survey to get accurate data on coal produced, the amount required and the probability of requirements being met. Chairman Frelinghuysen said he would try to obtain the appropriation. Mr. Hines also asked that the committee ascertain the cost of coal at the mines and prices at which it is sold to retail dealers. He expressed the opinion that the railroad administration will be able to furnish adequate transportation facilities to supply coal this winter.

Frank S. Peabody, of Chicago, a coal mine operator, formerly chairman of the committee on coal production of the council of national defense, declared operators are not waiting for a pretext to raise prices. He said coal operators in Franklin county, Ill., could sell their coal today at $1 a ton above what they are selling it for, but are not going to ask for the additional dollar.

"We are not going to claim that it is for any humane reason, or not wanting the money, because we do want it," said Mr. Peabody. "But we are afraid of the nationalization of coal mines. We are afraid if the public begins to clamor against prices the senators and representatives here will try and pass some drastic laws that will take our properties away from us. That is why we are not getting the price we could get today."

Mr. Peabody denied that unduly high prices are being charged for coal, and said legislation intended to alter the laws of supply and demand will not remedy the coal problem. He thought coal men of the country would be glad to have congress pass a law allowing them 6 or 10 per cent gross profit.

Concerning the supply of coal, Mr. Peabody said he did not think there is a probability of a coal shortage this winter unless deliveries are held up by car shortage or labor troubles.

Mr. Hines said that undoubtedly there is going to be a continuation of transportation difficulties. It was his judgment, however, that the railroad administration will overcome them to the extent of transporting the coal which the country needs. The railroad administration, Mr. Hines said, is trying to avoid waste of cars. The peak of cars loaded with coal for the railroads was reached on June 6, when the number was 51,770. The number has been dropping ever since, being 33,790 on Aug. 22. The railroads have 12,500,000 tons of coal in stock, practically all of it on the ground or in the chutes.

Discussing the general coal situation, Mr. Peabody said:

"The possibility of strikes is the most dangerous thing we have in the future, a card shortage already exists, severe weather conditions may or may not come. With strikes, car shortage and bad weather there is nothing, in my opinion, that can save the United States from a very serious coal famine."

The physical capacity of the mines, he said, is sufficient to produce 40 per cent more coal than the possible demands of the United States. Because of this, the coal problem comes back to the question of car supply. By placing the Lever bill in operation again, he said, it will automatically put up the costs to the railroads from 20 to 50 cents a ton, because the railroads bought their coal from 20 to 50 cents per ton lower than the government prices.

Official Explains Car-Supply Situation

FRANK K. McMANAMY, assistant director of operations in charge of mechanical matters, United States railroad administration, pointed out that in July, 1918, there was a total of 62,270 locomotives on lines in federal operation, 14.9 per cent of which were out of service for repairs, with 798 locomotives stored in serviceable condition on account of not being needed. In January, 1919, there were 63,969 loco-

motives with 16.9 per cent out of service for repairs and 1582 stored serviceable. In April, 1919, there were 64,499 locomotives with 18.4 per cent out of service for repairs and 4604 stored serviceable. In July there were 64,828 locomotives in service with 17.9 per cent out of service for repairs and 3668 stored serviceable. Mr. McManamy said:

"The number of locomotives held out of service for repairs closely follows the number stored serviceable, and as the number of stored serviceable increases the number held out of service for repairs shows a similar increase. This indicates that the number of locomotives held out of service for repairs does not always correctly represent the actual condition of motive power. In this case it simply indicates that due to the fact that there is a surplus of locomotives in good condition locomotives are held for repairs which would be continued in service if needed.

"The general condition of locomotives is better today than it has been at any time during the period of federal operation or during the three-year test period preceding. So far as locomotives are concerned there is no ground for apprehension, as there will be sufficient power to handle all business offered to the maximum capacity of terminal facilities."

With respect to freight cars, Mr. McManamy said the situation is different. On July 1, 1918, 167,403, or 7.1 per cent of the freight cars were in bad condition. A vigorous campaign to reduce the number of freight cars had been under way for some months. The force of shop men was at its maximum at that time and was being worked approximately 70 hours per week. As a result of this, said Mr. McManamy, the percentage of bad order freight cars gradually decreased to 130,506, or 5.4 per cent in December, 1918.

Immediately following the signing of the armistice the hours of the employes in the car department, who for many months had been working 10 hours or more per day, seven days a week, were reduced to nine hours per day, six days a week, and on Dec. 9 they were further reduced to eight hours per day, or 48 hours per week. The decrease in business was sufficient to keep down the percentage of bad order cars.

Views Vary Widely on Shortage of Labor

ACCORDING to testimony given by C. E. Lesher, statistical expert of the geological survey, shortage of labor in coal mines is only of a local character. While he conceded there was an unusually heavy emigration of laborers he did not think it was of sufficient proportions to cause alarm. Mr. Lesher pointed out that oil is displacing coal to some extent, and expressed the view that there will be enough labor this fall and winter to produce the necessary supply of coal.

Contrasting views were expressed previously by J. D. A. Morrow, vice president of the National Coal association. He submitted letters from the Pittsburgh district showing heavy shortages of labor in coal mines. One showed that the Carnegie Steel Co. is short about 500 men below the capacity of the mines to employ men. The Pittsburgh Coal Co., it was stated, was short 6714 men in July, 1919. The Hillman Coal & Coke Co. was reported to be of the opinion that it and its subsidiaries are short of miners to the extent of 20 to 50 per cent, varying in conditions in the individual mines. The Verner Coal & Coke Co. reported a shortage of 500 men, or 28 per cent, while the Henderson Coal Co. reported a shortage of 35 per cent.

Mr. Morrow coupled this situation with the shortage of cars, resulting in decreased production of coal. Giving figures of immigrants and emigrants, Mr. Morrow showed that for the five years, 1910 to 1914, the average number of immigrants that came into the United States was 1,034,920. The average movement out was 288,578, so that the net increase from immigration alone was 746,362 each year. In the five fiscal years since 1914 it was stated, the number coming in had been 278,899, and the average going out was 191,292, or a net gain of 87,606, on an average, for those five years.

"It is significant that for the year 1919," said Mr. Morrow, "the number going out has exceeded the number coming in by 98,818. The bituminous coal mining industry recruits a large number from the steel industry, a supply which has been cut off materially for a number of years. The fields most affected are the eastern districts, West Virginia, Pennsylvania, eastern Ohio, and, to some extent, some of the other districts, but those primarily, are the ones to which this information applies particularly."

Mr. Morrow said that increases in price of coal are due to natural conditions. Referring to the fact that at the end of May coal in the Pittsburgh district was selling at $2.32 a ton, while at the end of 21 days of August it had advanced to $2.47, Mr. Morrow said one reason for the higher prices is the increased industrial activity in the Pittsburgh district. He quoted production figures of pig iron to show the expanded operations in the iron and steel industry. Steel companies, he said, when not taking the full deliveries on their contracts for coal, are allowing the mines to ship some of that tonnage in other directions, and in a certain month or week there is more free coal on the market, creating a depressing factor on price.

He submitted a report from Pittsburgh district coal operators showing that the average cost of production per ton in 1918 was $2.06 while the average price that was realized, including shipments on contract and all other items, was $2.48. This showed an average in cents per ton of 42 and an average per cent on the capital invested of 6.5 for that year. Further analysis by months showed that for the six months ending June 30, 1919, average cost per ton was $2.05, while the average price realized was $2.24, an average of 2.9 per cent on the capital invested.

John Callahan, traffic manager of the coal association, presented numerous telegrams showing a car shortage in practically every bituminous coal district. Renewing charges against the railroad administration, Mr. Callahan said hundreds of cars filled with slag from blast furnaces and steel mills and other socalled waste material were permitted to stand on sidings for weeks at a time.

Settle Iron Roads' Case

WASHINGTON, Sept. 9.—Several iron ore mines, blast furnaces and steel plants and two railroads in eastern Pennsylvania and western New Jersey are involved in a complicated industrial railroad rate case tentatively disposed of Sept. 5. Chief Examiner

Thurtell, of the interstate commerce commission, filed recommendations as to how the commission should decide issues raised in complaints of the Empire Steel & Iron Co., against the Central Railroad, of New Jersey, and others, and the Thomas Iron Co., agains tthe Central Railroad, of New Jersey and others.

The Mount Hope Mineral railroad and the Ironton railroad companies are the ones directly involved. The first mentioned serves the complainants by hauling iron ore to their blast furnaces in connection with the trunk lines serving Wharton, N. J. The Ironton railroad, owned by the Thomas Iron Co., serves that company and many other shippers in and around Hokendauqua, Pa. It is an industrial railroad for which the proprietary interest furnishes only 15 per cent of the traffic.

In the case of the Mineral railroad, request was made for Wharton and New York district rates, the first on short haul traffic and the latter on long haul traffic. In the case of the Ironton railroad the request was that the Hokendauqua rates be applied to tracks of the Ironton line, formerly owned by the Thomas Railroad Co., on which cars must be spotted before true delivery can be made to the Thomas Iron Co. These requests were of an alternative character. They provided that either the trunk lines give the rates and service or make allowances for the performance of terminal services by the Ironton line or road-haul service by the Mineral railroad.

It was recommended by the chief examiner that both roads be held to be common carriers. It was also held that the application of rates to and from Mineral railroad stations equal to the combination on Wharton, N. J., had not been shown to be unreasonable. He also recommended that the request for joint rates be denied.

The Mineral railroad is owned by the Empire and Thomas companies. The railroad owns two locomotives and two combination cars but no freight cars. Therefore on that phase of the combined cases, the Thomas Iron Co. will lose its contentions, if the commission approves the report made by the chief examiner.

Concerning the refusal of the trunk lines to spot cars for the Thomas company on that part of the Ironton railroad formerly constituting the property of the Thomas railroad and prior to that the industry tracks of the Thomas Iron Co., the decision recommended, if aproved, will result as follows: Either the Ironton railroad will receive allowances for the terminal service it performs in spotting cars for the Thomas company or the trunk lines will make an arrangement with the Ironton railroad for the the use of its tracks for the performance of spotting services for the Thomas Iron Co. The chief examiner recommended that the refusal of the trunk lines to maintain joint rates, including terminal and spotting costs to and from the Thomas Iron Co.'s furnace tracks at Hokendauqua, including terminal costs at competitive furnace points in eastern Pennsylvania, constituted undue prejudice. A further recommendation was that the practice of the trunk lines in assessing demurrage charges predicated upon the time of the placement on interchange tracks and application individually by the trunk lines of the average rule was unreasonable and unduly prejudicial. Mr. Thurtell also recommended the grant of reparation as to demurrage assessed and collected under such conditions.

Fabrication Case Heard

WASHINGTON, Sept. 9.—With the commencement of a hearing scheduled to begin in Philadelphia today on the question of extending the fabrication-in-transit privilege of iron and steel articles regardless of what use the materials are intended for, shipbuilders who for more than 18 months have been contending for this concession from the railroad administration believe they have all but won their fight.

J. L. Eysmans, chairman of the Philadelphia district freight traffic committee, under the eastern territory section of the division of traffic, United States railroad administration, upon instructions from the administration, formerly gave notice of the hearing late in August and will preside. The hearing is the result of an application made in February, 1918, by G. Lloyd Wilson, traffic manager of the then Chester Shipbuilding Co., Ltd., but now Chester plant of the Merchant Shipbuilding Corp. The application was held up first because of more pressing war matters and later by the failure of the railroad administration to give it the attention which the shipbuilders believed it should have.

The hearing is on proposed revision of rules covering fabrication-in-transit on iron and steel articles at fabricating points provided in current tariffs. Under the proposal carload shipments of iron and steel may be forwarded to these points for bending, bolting, boring, counter sinking, cutting, drilling, painting, planing, punching, reaming, riveting, sawing, sheathing and welding. Rolling, crimping, burning, forging and chipping are not included. The privilege processes may apply to the following articles: Angles, bars, beams, bolts, castings, channels, columns, ells, girders, masts, plates, nuts, rivets rods, tees and zees when shipped in the rough.

The privilege will be granted to only those operators including fabricators, of plants "who keep records. file reports and handle shipments in the manner prescribed" in the rules and who permit inspection of records by the freight inspection bureau having jurisdiction. Plants are not required to preserve the identity of inbound material which may be consolidated and applied against tonnage balances without regard to origin of the material. Time allowed for the privilege will be limited to six month from date of the inbound freight bill. After expiration of the time limit charges will be billed on the basis of full tariff rates.

Proposed revisions include rules for application, transit plants reached by two or more roads, nontransit tonnage, substitution, deduction, records, claims, settlement and rates, deficiency in weights, mixed shipments, shippers' certificates, etc.

The rates to be charged under the fabrication privilege is 2.5 cents per 100 pounds, which is one cent more than the rate at present in effect on steel for buildings, bridges and tunnels. While no estimate is available as to what this privilege means in savings to industries heretofore not enjoying it, it has been estimated by steel shipbuilders that in their own industry fully $50,000,000 annually will be saved. This, of course, means a loss of that amount to the railroads but, according to those advocating the extension, it will so stimulate shipbuilding and other industries by reducing their costs as to increase freight shipments and more than make up the difference to the carriers.

The regular annual meeting of the stockholders of the National Malleable Castings Co., Cleveland, has been called for Sept. 24. Election of nine directors and transaction of other business will take place.

Deny Employes Run Arsenals

Secretary of War and Chief of Ordnance Repudiate Reports That Government Has Relinquished Its Authority and Has Applied the Principles of the Plumb Plan—Men Merely Have Representation, Says Baker

WASHINGTON, Sept. 9.—Quick denial was made by officials of the war department that the government has turned over control of production activities at arsenals to workers under an arrangement which was reported to be application by the government itself of principles of the Plumb plan. Advocates of this plan seized upon the announcement that had been made regarding the experiement inaugurated at the Rock Island, Ill., arsenal by which employes and officers of the arsenals determined prices to be bid on work done, as well as the appointment of foremen by employes. These advocates said the plan was a straight-out adoption of their system.

The statement of Secretary of War Newton D. Baker said that publication of correspondence between representatives of arsenal employes and himself has led to widespread misunderstanding of the situation. The statement in part follows:

"The war department has encouraged the formation of committees of its employes in the arsenals, which committees consult freely with the men and act in an advisory capacity to the management on questions of shop conditions, production and wages.

"By this means hearty co-operation has been secured and complete sympathy between the management and the employes has resulted. The authority of the management, however, is wholly undimished by the advisory relation of the committees—the management of the plants is undisturbed—the government operates them, and the authority of the commanding officer is as complete as it has always been.

"The whole purpose of the steps which have been taken is to bring about understanding and good feeling, but not in any sense to part with either the responsibility or the authority of the government in the management of these industrial enterprises."

Share in Responsibility for Bids

The employes, through sharing in the responsibility for submitting bids for work, it is explained, do have an important part in conducting the operations of the arsenals. The arsenals can often submit figures which private plants cannot meet because the former disregard capital investment, overhead charges, insurance, and even profits. Private producers, therefore, who are essential to the country both in war and peace, are placed at a tremendous disadvantage by the arsenals through the apparent socialistic system that has been placed in operation.

It seems evident that the system has been the outgrowth of dissensions between arsenal employes and the management, such as those relating to the Taylor scientific shop management system. It is shown in correspondence passing between Secretary Baker and the employes that the latter have in the past actually curtailed production purposely.

The correspondence given out includes a letter written to the secretary of war by the arsenal employes' representatives on the arsenal orders branch of the office of chief of ordnance, memorandum submitted by the employes' representatives with the letter of the secretary, and the letter of the secretary to the employes representatives, expressing pleasure at the results obtained from the so-called spirit of co-operation between the employes and the management.

Retains Responsibility

Later Secretary Baker had a conference with Brig. Gen. C. C. Williams, chief of ordnance, who also repudiated the intimation that the government had relinquished any of its authority at Rock Island to the workers or adopted the Plumb plan ideas. General Williams sent a telegram to Col. Harry B. Jordan, commandant of the Rock Island arsenal in which he denied that the harness shop at the arsenal had been turned over to the workers or that such steps for so-called "democratization of the industry" would be followed in other plants of the government. The telegram follows:

"Referring to statement in many papers that the harness shop at Rock Island arsenal had been turned over to the workers, the secretary of war informed me personally that he had no intention of allowing interference in any way with the authority and responsibility of management in conducting affairs at the arsenals. You are authorized to give publicity to this statement."

General Williams said emphatically that not only had the government not turned over the harness shop to the workers, but that it did not propose to turn over the management of the arsenals to them.

"The policy," he said, "is that the government is responsible for the management of these arsenals, and it intends to cling to that responsibility."

It was insisted by General Williams that nothing which had been done in the experiment at Rock Island was to be regarded as being in any wise a radical move. He said he was familiar with what had been done in private industry in an effort to improve relations with workers, and that the experiment at Rock Island paralleled what had been done in certain plants of private industry.

Machinists on Strike

About 1500 machinists in Boston and vicinity are on strike for higher wages and a shorter working day. Union organizers demand that a scale of 90 cents an hour for skilled machinists and toolmakers, 75 cents for specialists and 60 cents for helpers be put in effect by Oct. 1, and threaten to call out more men unless the demand is granted. The machinists now out are making various demands, some asking for a 44-hour week with pay for 48, while others are asking for a 48-hour week with pay for 54 hours. About 12 shops are affected.

Machinists are on a strike in several other cities, including Springfield, Mass., and Akron, O. In Springfield, the National Equipment Co. informed all employes that they must sign a contract not to join a union while in the employe of the company, or resign. Approximately 550 out of 750 quit. The company asked for an injunction to restrain the machinists' local from interfering with its business.

Much of the trouble experienced with machinists now on strike is said to be due to the fact that men comparatively inexperienced in machine-shop work were given considerable help to enable them to "fill in" during the war. Unskilled laborers in many instances were taugh repetitive work after machines had been set up for them; they joined machinists' unions and now expect the same wages paid to experienced machinists.

British Plants Are Active Again

Blast Furnaces and Steel Works, Temporarily Halted by Coal Strike, Resume Production—Demand for Pig Iron, However, is Light—Bars are Advanced—Americans Undersell Welsh Tin Plate Makers

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Aug. 25.

BLAST furnaces gradually are resuming full production after the termination of the Yorkshire coal strike. The strike caused a loss of about 4,000,000 tons of coal, a deficiency which cannot be made up this year. Those furnaces which were damped down will not resume operation until ample supplies of fuel are assured. The fact that the strike has caused so little pressure for pig iron is regarded as ominous, indicating a great reduction in consumption, especially in the Midlands.

One effect of the strike is an increase in the scarcity of foundry material, since lack of fuel invariably reduces quality, and compels a larger proportion to be classified as forge material, instead of foundry. It seems likely that this condition will continue as fuel will be scarce during the winter. Coal production has been reduced 10 to 15 per cent by the operation of the seven-hour working shift.

In the Cleveland district forge iron appears to be superabundant, with the result that values have decreased, and the gap between forge and foundry values is widening. This must have an effect on Derbyshire and Northamptonshire prices, as some Midland buyers are now finding it convenient to go to Middlesbrough for their raw material. The partial cessation of some of the largest northern steel works using pig iron has allowed of a certain amount of shipment to foreign customers. The loadings for this month are almost double those for the same period last month. The stoppage of numerous Sheffield steel works also has liberated for export fair quantities of East Coast hematite pig iron. The necessary licenses are easily obtained, so that this branch of the business shows more activity than for many months.

Cleveland Material in Demand

Efforts are being made to decrease the make of forge iron, and increase the proportion of better qualities but not much progress is being made. As Cleveland has been placing foundry iron on the market at 160s ($33.84) per ton as compared with £9 7s 6d ($39.66) for Derbyshire No. 3 iron, there is some keen buying of the Cleveland material, especially as buyers do not anticipate a continuation of these competitive supplies. If the competition continues, the general expectation is that prices will be lower.

The announcement by Lloyd George that general import prohibitions are removed, effective Sept. 1, has directed attention to the question of protecting tungsten producers, and a demand has been made that the new industry be regarded as a "key" industry, and thus protected from injurious foreign competition.

The great Sheffield and North of England works, which were wholly or partially stopped by the coal strike, are resuming operations. A few companies, such as Cammell Laird & Co., Hadfields and Vickers had fuel stocks sufficient to keep their works operating during the strike. Brown Bayley & Co. have put 50 per cent of their men at work and will gradually increase the number employed. Other large Sheffield concerns are operating to a limited extent.

The holidays have interfered with joint action on the question of prices, but, either jointly or individually, finished iron prices are gradually being advanced to cover the additional cost of production due to more expensive fuel. Marked bars produced in South Staffordshire are now £25 ($100.75) and unmarked material £22 10s ($95.17) to £23 ($97.28). An advance of £2 ($8.46) has been made on ⅜-inch rounds, making the price £27 2s 6d ($114.74). Makers of puddled bars have been obliged to advance their prices 10s ($2.11) the present price being £17 5s ($72.97). Even at this figure, makers complain that production is unremunerative.

The galvanized sheet trade, suspended during the war is gradually being resumed. The selling price of sheets is £29 ($122.67) f.o.b. Liverpool. In the Birmingham district makers have been cautious in restarting mills, but present demand is such that if workmen could be obtained all the mills could be fully employed.

Substantial improvement has taken place in the Welsh tin plate trade, which is now busier than at any time since the armistice. The Welsh mills have two months' work on hand, despite keen competition from America. A peculiar fact is that American tin plates are selling in this country at 4s (85c), per standard box, below Welsh prices, but American supplies are limited and prices are now stiffening, so that the two products are expected soon to be quoted at about the same price. The recent advance in coal prices added 1s (21c) per box to the price of tin plates and satisfied buyers that no further reduction could be looked for. Accordingly there has been a rush to place new business. During the past few weeks prices have increased 3s (63c), and orders for delivery at the end of October have been placed in Swansea at 35s 6d ($9.52) a box. There is a world-wide demand for tin plates, and among eager buyers Germany is taking large quantities for shipment to Hamburg. There are many rumors as to the establishment of new tin plate mills in foreign countries, but these are not taken seriously, and the Welsh makers look for a big business.

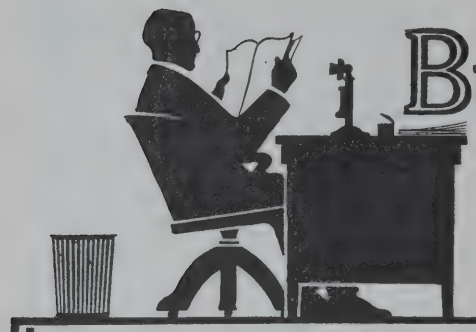
Bessemer and siemens bars are now quoted at £14 ($59.22) but an advance is expected soon. Inquiries are frequent from the continent, especially from France and Italy. A deputation of Welsh tin plate makers and operatives now is visiting the United States in connection with the wage agitation which has disturbed the trade here, the idea being to report on American conditions of tin plate production, and their effect on competition between the two countries.

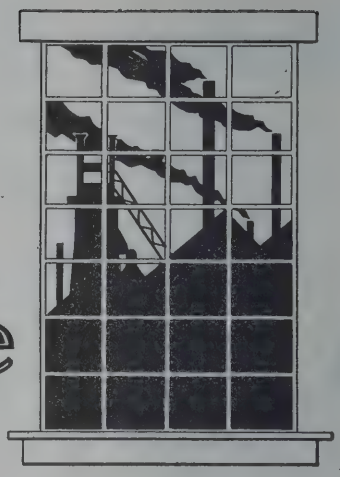
A vigorous effort is being made by British steel masters to meet American competition. The success of the latter has been reduced through the transport difficulties. Although a great deal of American steel has been ordered, and is understood to be on the way, the total arrivals make a small tonnage, and the inability to rely on such supplies intereferes with business with America.

As showing the inability of Sheffield to deal with the enormous amount of cutlery business offered it is stated that Sheffield makers have been obliged to refuse orders for 3,000,000 dozens of scissors. Most of this business has been passed on to America.

The operating deficit of the Gulf States Steel Co. in July was $9422 as compared with a deficit of $19,569 for June.

Little Stories of Business Life





Manganese Defies Electricity

"A FELLOW never gets too old or too wise to learn something new," said B. T. Bacon, of the Pickands, Brown & Co. organization, the other day. Inasmuch as Mr. Bacon has been selling pig iron for a good many years in Chicago and has seen pretty nearly everything there is to be seen in that branch of the industry it would seem that few things would remain as a novelty for him.

"I just got a phone message from the plant that the Interstate Iron & Steel Co. complains that a carload of pig iron, manganese 4 to 5 per cent, can't be unloaded. The magnet won't pick it up. Some of the same stuff has been tried at the furnace and it refuses to have anything to do with the magnet. There's pretty nearly 95 per cent iron in those pigs and that ought to be enough to make it attractive to a magnet."

But the fact remains that manganese of that proportion seems to make the pigs lose their magnetic qualities. The magnets have been tried with other iron and the manganese pigs have been tried with other magnets, always with the same result. Applied to a mixture of ordinary pigs and manganese pigs the former are picked out and the latter left inert.



Poetry In Tool Selling

SO far as is known, the Cleveland Duplex Machinery Co., 1224 West Sixth street, Cleveland, is the only machine tool dealer that combines poetry with such a prosaic thing as a proposal sheet on which prices are quoted to its customers. To date a series of four have been issued, namely: "If," by Rudyard Kipling; "Today," by Douglas Malloch; "Opportunity," by Walter Malone; and the prose poem "I Believe," by Rev. Charles Stelzle. They are printed on page 2 of the proposal sheet, size 11 x 8½ inches and the right edge is perforated so that it may be used for hanging upon office walls, with or without frame. This company also claims to be the first in the Cleveland district to make use of display space on the sides of buildings, billboards, ect., to advertise its business. Several of these advertisements now are complete and more are contemplated.



Plant Lice Tackle Iron

OPERATIONS of various sorts were curtailed and suspended in Egypt about 5000 years B. C. because of plagues of flies, locusts, etc., but the Groton Iron Works, Groton, Conn., recently had an experience which is unique in these ultra-modern days. For the first time so far as is known, plant lice had grown tired of their acustomed habitat and endeavored to change their diet to iron plant. The aphids or tiny green bugs were so numerous that they got into the eyes, mouths and ears of the Groton company's workmen and kept them busy driving them away. Biblical history thus has repeated itself. The invasion covered everything and everybody and it finally became necessary to close the entire works in order to wage a battle of extermination. Needless to say the bugs were not the victors and after the interruption, the plant resumed its accustomed work.

Worthy of His Hire

A SALES manager for a large export house was speaking of the wage question. This man has sold iron and steel for the largest of the American producers and is now selling it in international trade.

"Do you realize that the office men, the salaried men, are seriously considering the advisability of organizing? They feel compelled to take this stand, not because of any dissatisfaction they have with their employers, but for self-preservation against conditions that have arisen during the past four years.

"Big salaries in the office force can be counted on the fingers of your hands. Our salaries have not increased and there is no indication that they will be increased. The public believes us well paid because of the money turnover in the steel business, and it would surprise many to know that a man on the road selling iron or steel receives a smaller remuneration than the drummer selling hosiery, clothing or groceries."

Peculiarly enough this same suggestion that the salaried man is thinking of organizing was voiced by another steel employe the very next day.



Carnegie's "Steel Center"

ANDREW CARNEGIE was considerably given to prophecy and lived to see the realization of many of his forecasts, particularly in reference to the steel industry. He did not always hit it exactly but, as he once remarked to a friend with whom he was discussing his early business

ventures and failures, "the percentage was in my favor." Writing in the *New York Evening Post* of Jan. 12, 1901, he ventured this prediction: "The present center of steel is in the square made by a line drawn from Pittsburgh to Wheeling, northward to Lorain, eastward to Cleveland and south again to Pittsburgh. So far as I can see, there is nothing to change this center of steelmaking in this new century; it is in the central west and there it is likely to remain." Another prediction, set down on the same occasion, made good in less than the time limit imposed: "Ere the present century runs one-third its course, perchance only one-fourth, the United States is to make more steel than all the rest of the world combined and supply the wants of many lands besides our own."



Where Trains Don't Go

NOT long ago a representative of THE IRON TRADE REVIEW found the head of a machinery manufacturing company sitting at his desk in more or less of a dazed condition.

"A Peruvian was in here a little while ago," said the machinery man, "in an effort to locate a small lead rolling equipment that would suit his special requirements. He said that the roads over which the mill would have to be carried were in very bad shape and the means of transportation limited to the llama, and he wanted to know if the equipment could be made in small units which could be assembled at destination. As his plan was not practical I suggested that he buy a caterpillar tractor with which to haul the parts over the road. This had never occurred to the man from Peru and I understand that he is going to proceed along this line.

"One of the reasons for wanting the lead rolling equipment, the Peruvian said, was for rolling out sheets for roofing the buildings and huts in the mining camps. He stated that it had been customary to use galvanized sheets, which were obtained from the United States and taken to their destination on the backs of the llamas, for this roofing. However, the sheets were of such size that they had to be bent to fit over the backs of the mules, and the bending and the vibration on the backs of the animals had the effect of scaling off most of the zinc. He also stated that the intense heat expanded the metal so much in transit that the sheets lengthened out and worked against the ears of the llamas. As a result, the Peruvian assured me, nearly all of the llamas lose their ears through this friction."



A Time To Produce

THAT part of the war production which was at the cost of undue strain and fatigue is of course no longer necessary or justifiable but, making full allowance for this, the present let down of effort from the war standard represents a serious loss in production," recently declared Charles G. Du Bois, the newly elected president of the Western Electric Co.

"Moreover this material loss is accompanied by a mental unrest that threatens even more serious consequences. The relief from the emotional strain of war affects us all. Some realize soberly the difficulties that must be surmounted and appreciate that the only practical course of action is to work steadily ahead under the existing conditions. Others, who are less practical or whose minds have been inflamed by visionary ideas or strained perhaps by personal misfortune, think they see the dawn of a millenium and demand swift and radical economic changes in the unreasoning hope that somehow a great betterment will result.

"Rather than a lessening of effort, is it not the time to increase our effort, both for quantity and quality? Shall we be content with the total of what we have had and spend the rest of our strength in quarreling over its division? The one way is full of inspiration and promise, not only for a better America but for a better world. The other is both toilsome and unfruitful and seems easy only because we are used to it."



Expert Workmanship

WHEN he visited Scotland in 1903, the late Andrew Carnegie was enrolled as a burgess of the town of Kilmarnock, where he laid the cornerstone of a large technical school. It is related that he spread the mortar with consummate care and, as soon as the stone was in place, applied the level on all four sides. Then, finding it correctly on the square, he thumped the stone vigorously with the mallet and said with grave modesty: "I now declare this stone to be well and truly laid by an experienced workman."

Safety Exhibit

Will be Feature of National Council's Convention in Cleveland

The most complete collection of commercial and noncommercial safety guards, appliances, devices and accident prevention data ever arranged in the history of the National Safety council will be shown at the exhibit in Grays' Armory, in Cleveland, Oct. 1 to 4, inclusive, in conjunction with the council's eighth annual safety congress.

Every foot of space at the armory has been reserved. There will be 70 booths in which will be shown types of safety equipment applicable in every industry. The exhibit will be under the auspices of the National Safety council and the Safety Institute of America. Fully 350,000 cards of admission will be distributed among delegates and workmen of plants in and around Cleveland.

An unusual shop-lighting exhibit will be conducted by the National Electric Lamp association, of Cleveland, to which has been assigned the entire stage of the armory. This company will show a shop in operation, with three lighting installations, one poor, one mediocre and one ideal from the point of view of safety engineering. The light will be flashed on and off alternately while the advantages and defects of the different systems will be explained. This exhibitor will also show a model office and model drafting room with indirect light installations.

There will be several safe clothing exhibits including a special live model display of safe clothing for women and girls in industry. Sanitation and recreational facilities at industrial plants also will be shown.

Among other features will be an Americanization exhibit, an industrial housing exhibit and a women-in-industry exhibit, supplied by the United States department of labor. The sessions of the congress will be held in Hotel Statler.

Takes Casting Contract

The Wheeling Mold & Foundry Co., Wheeling, W. Va., has taken a contract for 300 tons of tunnel lining castings for the Lehigh valley railroad.

The new plant of the Elliott-Blair Steel Co., at Mercer, Pa., which replaces an old one destroyed by fire several months ago, has been completed and is ready for operation.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

GROUND will be broken within a few days for the plant of the Ward Tool & Forging Co., Latrobe, Pa., on a 5-acre site in West Latrobe and located on the main line of the Pennsylvania railroad a few hundred feet west of the Latrobe station. The plant will comprise a modern 1-story brick and concrete factory and office building and also a steel heat treating plant. It will be equipped with a line of modern automatic machinery to produce rivet sets, punches, dies, regular and special reamers of all kinds, chisel as a line of small special forgings and blanks and similar small tools as well automobile valves. It is expected to have the works completed and in operation by Jan. 1. J. W. Ward, formerly general superintendent of the Pittsburgh High Voltage Insulator Co., is president and general manager of the new company, while A. Otto, formerly of the Mesta Machine Co., Pittsburgh, is to be factory superintendent.

* * *

THE United States Crane Co., 122 South Michigan avenue, Chicago, has been incorporated under an Illinois charter, with capitalization of $250,000, to manufacture locomotive cranes. The company has just completed an order for cranes for the government and now intends to enter the industrial field with its new type of crane. A. W. Woodman is president and treasurer, A. Eilersgaard vice president and general manager and J. O. Hunt secretary.

* * *

THE B. F. Sturtevant Co. has closed is gray iron foundry at Hyde Park, Mass., and in the future will get all its castings for its manufacturing plant from Framingham, Mass. Work now is in progress on the remodelling of the old foundry to adapt it to use as part of the general plant. The company has felt for some time the need of increasing facilities at Hyde Park and it is this which has led to the abandoning of the foundry.

* * *

NEGOTIATIONS have been practically completed for the purchase by the New Departure Mfg. Co., Bristol, Conn., of the Meriden, Conn., branch factory of the Colt's Patent Fire Arms Mfg. Co., Hartford, Conn. The plant which has practically been idle several months, since the completion of the government's war contracts, is said not to have been a paying venture for the company. The New Departure Mfg. Co. has doubled its output, and is in the midst of the most flourishing season of its history.

* * *

NEGOTIATIONS are under way for the sale of the controlling interest in the Ferguson Steel & Iron Co., Buffalo steel fabricators, to B. L. Worden, manager of the Submarine Boat Corp., Newark, N. J. The Ferguson Steel & Iron Co. was organized six years ago and has enjoyed a steady expansion. It is the intention of the new interests to enlarge the facilities of the company. Capt. J. E. Ferguson, who founded the business and who has been its president since its inception, will continue with the company.

* * *

THE Embossograph Products Corp., Boston, incorporated under the laws of Massachusetts, July 25, with $1,000,000 capital, has purchased the plant of the Stanley Marine Engine Co., in Salem, Mass., and will occupy it for the manufacture of specialties, including the embossograph machine. It will remove the fixtures of a plant recently acquired in Cambridge, Mass., to the Salem plant. William F. Choate is president and William F. Stone, Newton, Mass., treasurer of the corporation.

* * *

THE Standard Oil Co. has purchased an 800-acre tract at Ironville, near Toledo, O., and has 600 men engaged in the construction of a $25,000,000 refinery. Several companies awarded subcontracts now have machinery and other equipment on the ground. The Great Lakes Dredge & Dock Co., Cleveland, is dredging a 60-inch concrete water main from the interior of the tract to the ship channel in the bay. It also is dredging out the bay near the Case farm shore so that ships may run in from the channel. The Standard company's plans provide for the construction of large docks where its property fronts on the bay. Foundations for 20 large stills are being installed by the Austin Co., Cleveland, and the James Stewart Co., Philadelphia, which has the contract for the powerhouse and the electrical work, has commenced construction of temporary buildings. A contract has also been let for 11 miles of water mains.

* * *

THE Hartford Electric Light Co., Hartford, Conn., has commissioned Stone & Webster, Boston, engineers, to prepare preliminary sketches for a generating plant station with a capacity of 100,000 kilowatts, or 125,000 horsepower, to be located on the Connecticut river in that city, which will use oil for fuel. The proposed plant is to be more than three times the size of the present plant at Dutch Point. The station at Dutch Point is equipped with facilities for using oil in cases of necessity. The high price of coal is a reason for the change.

* * *

BUILDING operations of the Ilg Electric Ventilating Co., Chicago, are to commence immediately and will be completed about Jan. 1, 1920. The first unit of the 2-story building will occupy ground space, 200 x 300 feet, and will be of reinforced concrete construction. It will be equipped with a sprinkler system and a concrete tower will enclose the sprinkler tank. The interior will have ample daylight throughout with adequate facilities for the comfort of employes. The total cost of the building will approximate $300,000. Alfred S. Alschuler, 1900 Steger building, Chicago, is the architect.

* * *

GROWTH of the sheet metal products business conducted by the Thomas & Armstrong Co., London, O., has made larger quarters necessary. The company has purchased from John Peard in that city foundry property adjoining the Pennsylvania railroad, including a building and four acres of ground. Work of razing the building already has commenced and in its place will be erected a modern 1-story structure 50 x 340 feet. Two auxiliary buildings, each 40 x 50 feet, also will be erected together with storage sheds, etc. Main offices of the company will remain in their present location until some time next year as plans call for completion of the new plant by Jan. 1.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

ORGANIZED as a sales company for the distribution of iron and steel pipe, the Superior Tube Co. has established general offices in the R. A. Long building, Kansas City, Mo. Yards already have been provided at a number of the principal oil fields and some attractive contracts have been closed for pipe with mills in the Pittsburgh district. The company has purchased the unfilled order book of the Moore-Kile Co., representing a substantial tonnage under purchase with several tube mills. In addition, those interested in the enterprise placed some large contracts several months ago after the organization was assured, with the result that the business was on an operating basis when the company formally began its career Aug. 15. Hoyle Jones, who is president and treasurer of the Superior Tube Co., was manager of sales at that city for the La Belle Iron Works, Steubenville, O., for 10 years. J. D. Holloway is vice president and secretary, with headquarters at the company's Pittsburgh office, from which point all purchase orders will be placed and contracts negotiated. He formerly was Pittsburgh manager of sales of the Wheeling Steel & Iron Co. L. W. Kile, 405 Exchange National Bank building, Tulsa, Okla., vice president and manager of sales, has charge of the company's interests in Oklahoma and Texas. He formerly was president of the Moore-Kile Co., Tulsa, which has been taken over by the new organization.

* * *

PLANS now are being prepared by Frank D. Chase, Inc., Chicago, industrial engineer, for the heating plant to be erected for the Samson Tractor division of the General Motors Corp., at Janesville, Wis. The first unit will have 2000 horsepower and will be equipped with well known makes of boilers, stokers, etc. An enclosed building will be built for coal storage and the coal will be delivered to the bunkers above the stokers through a track hopper, crusher and elevating system. Mechanical means will also be arranged for the removal of the ashes and a crane will be installed to handle both coal and ashes in an emergency as well as for the handling of storage coal to the track hopper. The heating plant will be doubled as the tractor plant grows.

* * *

EFFECTIVE Aug. 1, the promotion and inspection bureaus of the Universal Portland Cement Co. have been combined under the name of the service bureau.

J. H. Liberton, formerly engineer promotion bureau and inspection engineer in the general offices at Chicago, has been made the manager of the service bureau, and G. E. Warren, assistant manager. Department heads are: J. W. Lowell, eastern manager, Pittsburgh; J. H. Chubb, northwestern manager, Minneapolis; and O. L. Moore, general cement inspector, Chicago.

In combining the two bureaus, service will not be changed in policy or scope. Formerly their duties were distinct, the promotion bureau handling special service and giving information to users, while the inspection bureau had charge of physical tests at the mills.

* * *

CONSTRUCTION of an additional warehouse at Irvington, N. J., for Wheelock, Lovejoy & Co., Inc., Cambridge, Mass., is well under way. This 1-story brick building will provide approximately 16,000 square feet of floor space and will be fully equipped with modern facilities for handling large stocks of steel bars. The company intends to carry a stock of several thousand tons of high speed, carbon and alloy tool, open hearth alloy and machinery steels, and drill rods as well as spring and cutlery steels. An up-to-date heat treating plant will be installed. The warehouse is situated on the Lehigh Valley railroad and will have an extensive siding, capable of handling a large number of cars at one time. The completion of this building will make the third distributing point for warehouse shipments, others being located at Cleveland and Cambridge.

* * *

IT has been incorrectly reported that the Continental Axle Co., Edgerton, Wis., recently purchased the business, equipment and materials of the Higgins Spring & Axle Co., Racine, Wis., and that the Racine shops were to be abandoned and the stock and equipment removed to Edgerton. The purchase by the Continental Axle Co. involved only the machinery and stock of one department which the Higgins company inaugurated about a year ago, in which axles were manufactured for motor trucks, trailers and tractors. The Higgins Spring & Axle Co., which has been in business for the past 36 years, will continue on a larger scale than ever, in the manufacture of springs and axles for horse-drawn vehicles as well as springs for passenger automobiles, motor trucks, trailers and tractors. Up-to-date machinery is being installed in order that the demands of the trade for its products may be met efficiently. The Continental Axle Co. will not manufacture springs but will confine its efforts to produce axles for motor trucks, trailers and tractors.

* * *

THE Ramstack & Sons Mfg. Co. has been organized with a capital stock of $100,000 by Franklin Ramstack and sons of Milwaukee, who have retired from the J. E. F. Spark Plug Co. and will establish a new plant for the manufacture of patented ignition specialties for internal combustion engines. The J. E. F. company is completing a $45,000 machine shop in Milwaukee. The Ramstack company will take over the old J. E. F. works.

* * *

GRADING and track laying are in progress at the Niles, O., plant of the Youngstown Steel Car Co., Haselton, O., according to an announcement made by President William Wilkoff. Erection of the superstructure of the first unit of the plant, 80 x 400 feet, will begin in the immediate future. Mr. Wilkoff said. The erection of the first building is to be followed by a second of identical size. The new plant will begin operations by repairing cars for railroad companies and private owners. Industrial cars of smaller dimensions than standard rolling stock will be built early in 1920. It is declared the new plant will be in operation in January, 1920.

Must Face Fiercest Competition

Judge Gary Discusses World-Wide Economic Situation and Its Trend—Favors Resumption of Trade With Germany—Suggests Court Injunctions to Prevent Harmful Business Practice—Says Federal Control Fails

ECONOMIC progress in the world during the next few years will be won in the face of the fiercest competition that has ever been known, in the opinion of Chairman E. H. Gary of the United States Steel Corp., as expressed in his address delivered at the annual meeting of the American Bar association at Boston, Sept. 4. He advanced the hope that an international tribunal would be established to supervise the conduct of individual nations and to restrict all within the bounds of law, reason and justice.

Judge Gary, in his address, advocated the resumption of business relations with Germany and Austria immediately on the ground that goods from these countries are desired to supply wants and such purchases would have a favorable influence in re-establishing normal international exchange. The principle of international co-operation as distinguished from hostilities or selfish, secret isolation must be practised, he said, and fair and persistent competition between nations is necessary to the highest progress and prosperity. In practice the peace treaty and league of nations as finally established should be accepted by everyone, he declared.

Judge Gary pointed out the fundamental defects for success of governmental management. He advocated the use of injunction proceedings to insure against abuse or unfair practices by large aggregations of capital. He believed a nonpartisan tribunal made up of men specially qualified for such duties might properly be created to pass upon the various questions of corporation organization or management subject to final review by a federal court.

World Looks to America

"The inhabitants of other lands are looking toward us with various emotions; some with envy or jealousy, some with distrust, perhaps some with bitterness, and some with covetousness; but, it is believed, the large majority with friendliness, confidence and hope," said Judge Gary. "However this may be, when it comes to economic considerations there is little doubt that the peoples of every country are at present endeavoring to ascertain how they can most readily improve their pecuniary standing by reconstruction and readjustment; to secure their full share, or more, of the wealth of the world; and foreigners are gazing upon this country as the most fertile field of adventure and exploitation. They will carry their endeavor into the markets of nonproducing countries. By every known plan of operation, producers in Great Britain, France, Germany and other lands will seek to control or excel in the oversea trade. Long before the war was ended committees were formed and studies commenced by them with the idea of entering a post-war commercial strife for the world's business. These committees have personally, or through representatives, visited and for months remained within the limits of other countries making examination of properties, manufactories, terminals and transportation facilities, learning the various situations, and making reports on the same. They have been preparing for the most stubborn contest in economic warfare. Evidences of this disposition and intention have been seen on every hand. Besides this, the men occupying high official positions abroad are talking of these matters, lending encouragement and making promises of assistance by governmental action or otherwise. The credit of different governments will be furnished to private enterprise and management. It is reported that attempts have already been made by individuals, on their own account, to secure control of some of the most valuable and necessary raw products located in foreign lands, and this scheme will no doubt embrace the most desirable seaports for loading and delivery, and also the most advantageous coaling stations. Considerable success has already resulted. Arrangements, by contract or otherwise, have been or will be made for obtaining preference as to time and terms in the loading and unloading of goods, and also in the sale of materials and the obtaining of supplies. In short, everything practicable within the limits of law and opportunity will be done by foreign governments and their merchants to extend trade and to promote their own financial interests, even to the extent of proceeding within the natural domain of other outside spheres. The contest for commercial position and progress will be fiercer than ever before, with the difference, it is hoped, that there will hereafter be an international tribunal which will exercise supervision over the conduct of individual nations and will restrict all of them within the limits of law, reason, propriety and justice. Heretofore, wars have generally resulted from economic rivalries; from the struggle for commercial supremacy; and the late wars, in the opinion of many of us, were no exception.

"In justice to ourselves, we must be diligent and aggressive. We must conserve our strength and our resources. We must view the world situation from the point of experience, caution and wisdom. We should profit by the deliberations, discussions and conclusions of others. As of vital consequence there should be the most consistent and intense spirit of co-operation between all our people, between capital and labor, employers and employes, between the state and private interests, between the various groups of individuals or collection of individuals, between producers and consumers, between professionals and nonprofessionals. Good-natured rivalry, sharp competition, aggressive effort for legitimate success, faithful administration and observance of the laws, loyalty to country—all these must be encouraged and required; and everything that destroys or obstructs or interferes with legitimate enterprise, or limits prosperity, or that tends to minimize the motive for attempting to accelerate and sustain orderly progress in business, should be discouraged.

"From a economic standpoint, considering of paramount significance the question of benefit to ourselves, we ought to resume business relations with Germany and Austria at once. They are capable of producing many articles of commerce which we need and desire, and which are not produced elsewhere in like quality, much as it may be regretted.

"There are at least two good reasons why we should liberally resume the buying of German and Austrian goods. We desire them to supply our own wants, and besides the purchases will have a decided influence in re-establishing the rates of international exchange. We should seek and fully reciprocate the friendship of all other nations whenever it is compatible with principle. We should, if practicable, be neutral as between all other countries if we are to have their respect and confidence. Our position should be uniformly honest, dignified, kind, impartial, and in all respects above reproach. This is right and it will be profitable. It is a time for the exercise of patience and wisdom and the application of the highest ideals of propriety and virtue in dealing with world affairs. No man liveth to himself alone, and no nation liveth to itself alone. These are truths of daily illustration.

"Henceforth there should be maintained in practice the principle of international co-operation as distinguished from hostility, or selfish, secret isolation. Fair, honest, friendly, and persistent competition between nations is desirable and necessary to the highest progress and prosperity, but mean, tricky, overbearing and destructive competition

is unwholesome, unhealthful and disadvantageous to all who are affected. In practice the peace treaties and league of nations as finally established should be accepted by every one.

"The labor question at present is of commanding interest, first because labor is essential to economic growth and virility, and secondly because it is persistently sought by self-appointed leaders to enlist the sympathy and support of workmen in agitation for the substitution of the rule of force for the rule of law and reason. It is commonly designated as bolshevism. These agitators will not succeed in the United States. I have heretofore spoken on this subject and will not repeat. However, it may be observed that the antidote for this poison is plenty of work at reasonable rates of compensation when compared with the cost of living; healthful, safe and agreeable working conditions, opportunity for workmen to advance in positions according to merit; and a chance to invest their savings in the business with which they are connected. The employers must not and will not give the employes good ground for complaint, and intelligent public sentiment will exercise a controlling influence in preventing a return to barbarism. Employers and employes are under equal responsibility to the general public, of which they are an important part, to assist in maintaining industrial peace and prosperity.

"Probably it will be generally conceded that during the war, when the largest production of war material was demanded by our government for the military necessities of itself and associates in the war, the large and integrated concerns with highly perfected organizations and abundance of working capital, saved the situation. Except for them such necessities could not have been adequately supplied. What would have happened without their facilities no one could, with a feeling of certainty, express an opinion.

"But now the question occupying the thoughts of men, to a large degree, is what, if anything, can properly be done to conserve these means of economic stability and progress when war is not upon us and, let us hope, not threatening our future safety.

Government Control Fails

"Government, state or municipal control or management, is frequently suggested and stubbornly urged by public speakers and publicists. The reasons given ordinarily relate to the protection of the public against imposition or inefficiency, which is desirable. Here again experience, especially during the war, is illuminating. The government took over the possession and management of certain *quasi* public concerns, and, with the assistance of a large part of the previously formed organizations, realized some success in operation; but, as a total result, the experiment was a failure.

"During the war the government seriously contemplated taking over the management of additional large business lines, but after full investigation, discussion and consideration, concluded it would be unwise, although there were persistent and able advocates who favored the proposed action. The results fully justified the determination arrived at. It was believed by many that the government assumed the management of many departments of business activity other than those actually included in the government list. This was because there was co-operation between governmental agencies, such as the war industries board, and aggregations of private interests, represented by small committees, whereby voluntary arrangement was made for allocations of burdens or distributions of products. The control of operations, from the raw products to the finished materials was continued in the hands of the owners. There was clearly demonstrated during the war the value and practical benefit of private management as compared with public management. If it be said that government conduct of business has sometimes been successful the answer is that the same business in the hands of private, responsible individuals, with capital and success at stake, would have resulted more favorably.

"The ideal plan merely for the extension of enterprise, development of resources and the certainty of greatest production, with resulting increases to the public treasuries through taxation, assessment of dues, etc., and a corresponding benefit to the large numbers of workmen, would be to leave the matter entirely and independently in the hands of the private individuals who furnish the necessary capital and who would be inspired by the desire to reap pecuniary advantages. However, it is a patent fact that the ability of capital to accomplish desirable results also involves opportunity to do harm; that uncontrolled concentration of capital, with unbridled license in operations, may be injurious to the welfare of others, including the general public.

"In view and by reason of these conceded facts and considerations there has been attempted to establish by law a preventive against wrong and, in numerous instances, it has been invoked. However, it provides for the punishment of offenders and for the destruction in whole or in part of the property and business involved. This seems remarkable and irrational, especially after the experiences of the last few years, and on the eve of the greatest struggle for economic progress the world has ever witnessed. If the legal department of the government, basing action on its interpretation of the law, had been upheld in its contention, unlimited by the rule of reason, as applied by the courts to the industries of this great country, property and business in an alarming proportion would have been destroyed and its benefits to the general population eliminated in the effort to prevent future harmful practices.

"Proceeding on the assumption that large capital is desirable and necessary for the safety and legitimate progress of the nation, and yet that it must be controlled against possible harm, we are confronted with what has appeared to many to be a difficult problem.

"The general proposition is ventured that whenever it is practicable and effective, resort should be made to the prevention of threatened or possible harm, without destroying the property or business in question, and which can, if preserved, be of substantial benefit to the community and to the nation. This principle has sometimes been invoked by the courts so far as it was believed the provisions of the law permitted. Why not have the law so framed and administered as to allow the courts to cover the whole subject by injunction, rather than by the destruction of property or business? If capital is proceeding or threatens to proceed improperly, it can be restrained by injunction and the order enforced in the regular way. A court of equity should have, if necessary, enlarged powers of preventive remedy, unlimited by statutory provisions. If there is to be punishment inflicted it should be upon the individuals who are reprehensible, and not upon the owners, as stockholders or otherwise, of the properties involved, who are in no respect responsible for misconduct.

"If it be said that preventive measures are too late after there has been established unreasonable concentration of capital, which naturally and necessarily includes the power to do harm, or that in the administration of affairs pertaining to organization or management there is involved too much detail or complication for practical hearing and determination by a court, then it might be answered that there should be no objection to the whole matter of previous assemblage of capital by corporations, form of organization, or management of affairs being subjected to the consideration and decision of a competent nonpartisan tribunal, consisting of men selected for their peculiar qualification defined by the creative law, having adequate jurisdiction and powers, subject, however, to appeal and a final determination by a federal court concerning certain defined and vital questions relating to monopoly and restraint of trade. Federal incorporation or license is desirable. It might and probably would satisfactorily solve the problems relating to concentrated wealth in control of corporations."

Occupies New Quarters

The Pennsylvania Steel Export Co. has moved from the Widener building, Philadelphia, to a large building at 940, 942 and 944 North Front street that city. At the new location it has spacious offices, 10,000 square feet of warehouse space and a railroad siding into the warehouse. In addition to being the headquarters for the company's export business, the building will be stocked for a domestic warehouse business which will be operated by W. W. Baker & Co. The latter is a partnership whose members are the officers of the Pennsylvania Steel Export Co.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JOHN N. ALLEN has resigned as general manager of the mining and transportation department of the Brier Hill Steel Co., Youngstown, O., effective Sept. 6, to accept the position of manager of the steel, coal and coke department of the National Trading Co., Swetland building, Cleveland. Mr. Allen has been in the steel industry for a number of years. He has been connected with the Brier Hill Steel Co. for seven years, going with the company just at the time it began building its steel plant at Youngstown. He first occupied the position of purchasing agent, holding this post for five years. For the last two years he has been supervising the mining, movement and purchase of heavy raw materials, as well as the transportation end of the business. Prior to his connection with the Brier Hill Steel Co., he was purchasing agent of the Lackawanna Steel Co. at Buffalo, for a period of six years, going to the Lackawanna company from the Illinois Steel Co. He occupied the position of chief clerk in the purchasing office of the latter for a number of years.

J. Roscoe Stroh, for some years assistant manager of the lining and transportation department of the Brier Hill Steel Co., has been made manager succeeding John N. Allen who resigned recently to become a department manager of the National Trading Co., Cleveland. Mr. Stroh's title is manager of the mining department, the old designation of the department having been changed to the present form with the retirement of Mr. Allen.

R. M. Pearce has been elected secretary and treasurer of the Standard Metal Products Co., Rock Island, Ill.

Adam Weppler, traffic manager for the Hershel Mfg. Co., Peoria, Ill., has resumed his duties after spending 10 months in army service in France.

J. Leonard Replogle, director of steel supply in the war industries board, and Bernard M. Baruch, chairman of the board, were members of the committee of 13 named by Secretary of War Baker to meet General Pershing upon his arrival in New York this week. Others on the committee were William G. McAdoo, John D. Ryan, Hugh Frayne, Thomas L. Chadbourne, and others, all of whom took some part in the governments war machinery supplying the overseas forces with fighting material.

George T. Clift has been made superintendent of the Nazareth Foundry & Machine Co., Nazareth, Pa.

A. M. Crain, Detroit, consulting engineer, has been made vice president of the Witherspoon-Englar Co., Chicago.

George L. Connelly has been made eastern sales manager with offices at 802 Kinney building, Newark, N. J., for the Cleveland Steel Tool Co., Cleveland.

C. A. Thayer has resigned his position with the Canadian Steel Corp., Ltd., Ojibway, Ont., to become chief engineer of the 118th street steel plant of the Interstate Iron & Steel Co., Chicago.

Harlow A. Varney has been made district sales manager for the Schroeder Headlight & Generator Co., Evansville, Ind., and has opened offices at 1051 McCormick building, Chicago.

D. B. Fulton, assistant to the chief engineer of the American Brake Shoe & Foundry Co., New York, has become assistant in the sales department of the Railway Steel Spring Co., Chicago.

E. McCormack has been made assistant to the president of the Railway Steel Springs Co., New York City. He formerly was treasurer and H. S. Bankhart succeeds him in that office. B. C. Dunn now is assistant treasurer.

William Parry, an assistant superintendent of the Sharon Steel Hoop Co. plants in the Youngstown district, has tendered his resignation. He will become assistant superintendent of the Union Alloy Steel Co., Canton, O. He was formerly connected with the Carnegie Steel Co. at Sharon, Pa.

A Brauer, who has been connected with the Mansfield Steel Corp., Detroit, for six months as body designer, has been promoted to the position of assistant to the general manager, in charge of production, quantity of surveys and production engineering.

Henry F. Merker has been appointed chief of construction of the new plant which the St. Louis Coke & Chemical Co. is erecting in Granite City, Ill. He has recently resigned as engineer of maintenance of way of the East St. Louis & Suburban Railway Co.

W. J. McClain, who has been associate manager of the Buffalo office of the Republic Iron & Steel Co., has been placed in charge of that office. He has had experience in the mills of the Republic company at Youngstown and while affiliated with the Carnegie Steel Co.

Enrique Touceda will be the speaker at the first of the regular monthly meetings of the Pittsburgh Foundrymen's association which is to be held Monday evening, Sept. 15, at the Chatham hotel, Pittsburgh. Mr. Touceda's topic is: "Some Pertinent Facts in Connection with Gray Iron and Malleable Castings."

Thomas Silk has resigned as superintendent of the steel barrel and range boiler department of the Whitaker-Glessner Co., Portsmouth, O. Since 1911, he had been connected with the company, developing, installing and operating new lines in stamping and fabricating sheet steel. He now fills a similar capacity at the plant of the Boyle Mfg. Co., Los Angeles.

A. A. Schneider, formerly with the raw materials department of the Midvale Steel & Ordnance Co. and Cambria Steel Co., has been appointed manager of the newly created raw materials division of the American Steel Export Co., Woolworth building, New York City. In his new field Mr. Schneider will handle imports, exports and domestic sales of pig iron, iron ores, ferroalloys, coal and coke. Development of markets for these commodities, particularly on pig iron, alloys and ore is a new undertaking for the American Steel Export Co. Mr. Schneider entered military service in 1917, as a lieutenant of field artillery, and prior to that had been assistant to H. F. Black of the Midvale and Cambria companies in Pittsburgh.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

GEORGE W. MIXTER, vice president, Deere & Co., Moline, Ill., has been named vice president and general manager of the Pierce-Arrow Motor Car Co., Buffalo. Mr. Mixter was graduated from Sheffield school of science, Yale university, in 1895, and soon after entered the employ of Deere & Co. He was advanced through various departments until he was elected vice president. When the United States entered the war, Mr. Mixter volunteered his services and was assigned to organize a department for the inspection of airplane parts and because of the efficient manner in which he discharged his duties, he was promoted to the rank of colonel. He will continue his business relations with Deere & Co., and also will retain his legal residence at Moline. Mr. Mixter also holds an executive position with the Van Brunt Mfg. Co., Horicon, Wis., manufacturer of grain drills and other seeding machinery, on of the constituent companies of Deere & Co.

Andrew H. Green, for many years manager of the Detroit plant of the Solvay Process Co., will become a vice president of the parent concern with headquarters at Syracuse.

G. E. Carpenter, for many years connected with the automotive industry, has been appointed purchasing agent of the Lincoln Motors Co., Detroit.

M. A. Davis has been appointed general manager of the Lapeer Tractor-Truck Co., Lapeer, Mich., to succeed C. W. Smith, who has been named a director of the company.

John G. Whittam has been appointed New England district sales manager of the Central Iron & Steel Co., Harrisburg, Pa., to succeed Joseph A. Brainerd, who is retiring on account of poor health. The district office headquarters are at 131 State street, Boston.

Marshall J. Root resigned recently as president of the Seneca Falls Mfg. Co., Seneca Falls, N. Y., lathes, to become vice president of the Fairbanks Co., New York. William H. Foxall, Rochester, N. Y., formerly treasurer of the Seneca Falls company, succeeds Mr. Root as president and Levi S. Chapman, Syracuse, has been elected president.

Raymond S. Coe, assistant advertising manager of the Norton Co., Worcester, Mass., has resigned because of ill health and returned to his former home in Cromwell, Conn.

N. Prentice Winchell Jr., advertising manager of the Coppus Engineering & Equipment Co., Worcester, Mass., has resigned to accept a similar position in New York.

Robert Field has resigned as foundry foreman for the Fairbanks Co., Rome, Ga., effective Sept. 15. On that date he will become associated with the pig iron and coke department of Fairbank & Co., Wade building, Cleveland.

Clarence R. Howe, for 18 years a salesman for the Providence, R. I., branch of the Crompton & Knowles Loom Works, Worcester, Mass., has resigned to become treasurer of the Glendana Silk Mills, Pawtucket, R. I.

H. C. Jones has become affiliated with the sales force of the J. R. Stone Tool & Supply Co., Detroit. For several years, he was with the Lodge & Shipley Machine Tool Co., Cincinnati.

Eric Zachau, electrical engineer in the crane department of Manning, Maxwell & Moore, Inc., Park building, Pittsburgh, sailed for Europe Sept. 6, and will visit Sweden, Norway and England.

S. Herbert Lanyon has been appointed Pacific coast representative of the Schroeder Headlight & Generator Co., Evansville, Ind., with offices at 507 New Call building, San Francisco.

Fred Gehbauer has been appointed special navy yard representative for the Chicago Pneumatic Tool Co., Fisher building, Chicago. His headquarters are at the company's Philadelphia office, 1740 Market street.

E. D. Westrip resigned recently after a service of 15 years as general manager of the Rockford Machine Tool Co. He expects to settle in Los Angeles. Prior to becoming affiliated with the Rockford company, Mr. Westrip was engaged in selling or manufacturing machine tools for many years and for several years was with Hill, Clarke & Co., Chicago, and later with the Treadwell Engineering Co., Easton, Pa.

Emlen S. Hare has resigned as vice president of the Packard Motor Car Co., Detroit. William Burleigh, assistant superintendent of the Packard company for three years, has become chief engineer of the Machinery Sales & Electric Co., Detroit.

E. H. Bull and D. A. Livensparger, the former for seven years in the engineering department, and the latter for nine years in the sales department of the Green Engineering Co., have taken over the Chicago sales office of that company.

H. C. Bayless, formerly mechanical engineer for the Great Northern railroad, has been made combustion engineer and manager of the Superior Pulverizer Co., Chicago, in charge of engineering, sales and general supervision of coal installations.

Robert S. Lehman, superintendent of the grinding department of the Studebaker Corp. for the last seven years has organized the Lehman Precision Grinding Co., with plant at 40 Lafayette avenue, east, Detroit. Wilmer Rumsey is vice president and Ernest Steiler, secretary and treasurer.

E. L. Sullivan now represent the Green Engineering Co., East Chicago, Ind., in the Pittsburgh district, which includes western Pennsylvania, eastern Ohio and western West Virginia. For 10 years, Mr. Sullivan has represented the McDonough Regulator Co., six years in Chicago and four in Pittsburgh.

P. W. Hood, assistant secretary of the Timken-Detroit Axle Co., has been made sales manager and will be assisted by Advertising Manager Frank N. Sim. C. G. Rowlette, formerly assistant treasurer, has been elected treasurer to succeed C. W. Dickerson, who will remain as secretary and credit manager.

T. Phelps Hollister, Windsor, Conn., who recently received his discharge from the aviation section of the navy, has taken charge of the branch office of the Pratt & Whitney Co., Hartford, Conn., which is to be opened in Pittsburgh. Before the war Mr. Hollister was connected with the Cincinnati office of the same company.

Uncertainty Subdues Optimism

Resumption of Speculative Activity in Stocks Brings Forth Criticism—Credit for Legitimate Trade Threatened—New Equipment Export Company Planned—American Locomotive Report—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

WALL street's outbreak of speculation last week in the face of a number of uncertain factors in the economic outlook has been characterized as exceedingly unwise by some sober observers and likened to the "orgy of extravagant spending" prevalent in the country, by others. The suddenness with which the stock market checked its flight upon the news of Samuel Gompers' message to President Wilson, soliciting his aid in arranging a tete-a-tete between the unions and Judge E. H. Gary, indicated the uncertain foundation of the movement.

The market had seized upon the apparent lull in the labor situation and proceeded to work up a speculative fever over it. The Gompers message destroyed illustions respecting the complete quietude of labor and the market was brought back to earth again to wait further developments.

The three outstanding factors in the present situation are the labor unrest, the high prices of necessities and the demoralized foreign exchanges. In his speech before the American bar association in Boston last week Judge Gary said that the best antidote for bolshevism was plenty of work with reasonable wages in comparison with the cost of living. If this prescription is sound America has nothing to fear from revolutionary tendencies for it is applying the remedy in liberal doses. Not only is there no labor surplus but most sections of the country report a shortage that is acute in some lines of business. Despite the ravings of the union leaders and agitators who are seeking to awaken a class consciousness among labor, wages are high almost without exception. As Judge Gary pointed out the only actual sufferers from the high cost of living are those subsisting upon fixed salaries or incomes.

The majoritiy of American laboring men think too straight to allow themselves to be led into the folly of killing the goose that lays the golden egg. The worldwide shortage of goods assures a market for almost every manufactured product that can be turned out for months to come, providing industrial conditions are not upset, and this means plenty of work at high wages with a receding cost of living as production catches up with the demand.

In its current monthly bulletin the federal reserve board points out why in its opinion prices are high in this country. It says America is exporting twice as much as she is importing and is failing to conserve foods or goods that Europe may be supplied. As a result Americans are forced to compete with Europe in buying necessities. No real remedy for the high prices is seen by the board unless the country is willing to accept its advice to "work and save," and to increase production to meet abnormal exports. Of course prices could be smashed ultimately, by checking exports, but this might be fatal to Europe, as well as harmful to our own prosperity. As a matter of fact, however, the economic forces of the foreign exchanges are bringing about a decrease in exports. In July exports to Europe fell 38 per cent below those for June.

In a statement issued by Thomas W. Lamont, partner in the banking firm of J. P. Morgan & Co., member of the American peace mission and of the supreme economic council, the immediate ratification of the treaty of peace and extension of financial aid to Europe is urged. Prolonged delay Mr. Lamont says will mean starvation for millions and chaos in Europe. Herbert Hoover last week declared that large stores of food were piling up in European ports, while starving nations were unable to buy them because of the lack of credits. England is meeting the situation by the formation of a plan to extend $130,000,000 in credits to encourage trade with disorganized Europe.

The plan of financing as adopted by the British board of trade and disclosed in recent cables provides for the government to make advances up to 80 per cent of the cost of goods. Before making these advances however the board of trade requires a guarantee from an approved bank in the buyer's country undertaking to deposit and maintain sufficient currency at exchange rates to cover the cost of the goods plus a 15 per cent margin. If application for an advance is accompanied by a banker's guarantee of sterling payment at maturing of the bill it will receive preferential treatment. If with these safeguards the seller fails to obtain full payment the board of trade will bear the proportion of the loss represented by its advance. It will thus be seen that Great Britain not only is prepared to make export sales possible by arranging credit at the time of purchase but it will undertake to guarantee payment to the British seller. The federal reserve board and other American officials have denounced government participation or guarantee for exports, declaring that the task was one for private enterprise.

No comprehensive financing plan can be formed until the attitude of this country toward the treaty is definitely settled. However an important step was taken last week by the house in passing the senate bill permitting national banks to invest up to 5 per cent of their resources in foreign financing corporations. Action was expected to be taken in the senate this week on the Edge bill which would authorize the organization of great corporations for the extension of credit to Europe. As was indicated by the statement of President Fletcher in the annual report of the American Locomotive Co., railroad equipment concerns are organizing a railway equipment combination, under the Webb act, to make it possible for American equipment makers to accept some of the great volume of foreign business being offered. Acceptance of this business involves the necessity of extending credits of from 5 to 10 years a burden which individual companies do not care to assume.

Stock is Transferred

Youngstown, O., Sept. 8.—Rearrangement of the holdings of the Cullinan interests has resulted in the transfer of stock held by the Petroleum Iron Works Co. in the Pennsylvania Tank Car Co. and the Pennsylvania Tank Line Co. to the American Republics Corp. in return for an interest in that concern. Arrangements

for the transfer of the stock were made at the recent annual meeting of the Petroleum Iron Works Co. at Petroleum, O. The Petroleum Iron Works Co. and the Pennsylvania Tank Car Co. operate plants at Petroleum, in Trumbull county.

American Locomotive Has Best Year in History

Although unsettlement of the railroad problem is paralyzing new domestic business and the upset exchanges and difficulties of arranging foreign credits are retarding the volume of foreign orders, the American Locomotive Co. reports the most successful year in its history ending with June 30. Gross earnings were $108,923,524 against $80,588,070 in 1918, while the balance before common dividends and $5,000,000 reserved for improvements to offset the reduced hours of work and increased cost of labor, amounted to $10,262,567 as compared with $4,161,137 the preceding year. Unfilled orders on hand when the war ended sustained production during the six months of 1919.

The balance sheets show current assets of $53,507,069 and net working capital of $35,508,423. The inventory has been decreased from $25,411, 834 on June 30, 1918, to $11,018,309 on June 30, 1919. In his statement to stockholders President Fletcher says that manufacturing expenses during the year included $1,155,556 for depreciation and $548,491 covering expenses during the war for new patterns and drawings. The tonnage during the year he said was 23 per cent greater than the 1918 production. This was due to the high records of output obtained during the fore part of the fiscal year. The amount of unfilled orders on the books June 30 was $16,034,678 compared with $74,736,543 on June 30, 1918, and $54,517,373 on Dec. 31, 1918. Improvements are in progress at a number of the company's plants.

The Pittsburgh plant has been closed down to concentrate business in more efficient works. During the year the company completed 1181 standardized locomotives for the railroad administration. President Fletcher does not hope for further domestic business until the general railroad question has been decided. In order to encourage foreign business he suggests a combination of railroad equipment and allied companies together with banking interests under the form of a foreign railway equipment finance corporation. This would be permissable, he explains under the Webb act. The company has decided to change its fiscal year to correspond with the calendar year. Following is the comparative income account:

	1919	Increase
Gross earnings	$108,923,524	$28,335,453
Mfg., maint. and admin. exp. and dep.	91,569,915	21,211,349
Manufacturing profit	17,353,608	7,124,349
Interest, etc.	418,252	118,835
Net earnings	16,935,356	7,005,267
Deduct for U. S. and Canadian income and war profits taxes	4,922,789	903,838
Available profit	12,012,566	6,101,429
Dividends—		
7 per cent pfd.	1,750,000	.....
6 per cent com.	1,250,000	.....
Surplus	9,012,566	6,101,429
Reserve for additions and betterments	5,000,000	4,000,000
Net credit to profit and loss	4,012,566	2,101,429

Lake Superior Corp. to Build Shape Mill

The decline in earnings of the Lake Superior Corp., from $6,551,495 in 1918 to $5,441,574 in the 12 months ended with June 30 was the logical result of the cancellation of war orders and the lack of sufficient peace business to keep the mills operating at above 50 per cent during the first half of 1919, according to President Wilfred H. Cunningham in the company's annual report. Canadian buyers who have been holding in anticipation of lower prices, he declares, will soon be forced into the market and repairs and replacements must in due course absorb considerable quantities of steel.

In his report the company's president announces that the directors have concluded that the time has come for the establishment of a structural mill —one that in addition to rolling beams will be able to produce heavier and longer rails to meet the increasing demand. Contemplated improvements along this line are held vital to the company's success. The new plant will be completed in 18 months it is estimated. The report shows the pig iron production of the Algoma Steel Corp., the Lake Superior Corp.'s chief subsidiary, during the year was 336,657 tons against 314,188 the previous year; of steel ingots 414,932 tons against 499,712 in 1918; of steel products 322,011 against 329,438; of coke 406,398 against 379,040. The principal items of the income account of the parent and all subsidiary companies follows:

	1919	1918
Net earnings	$5,441,574	$6,551,495
Interest on bonds of subsidiaries	1,235,710	1,315,041
Sinking fund	324,463	278,186
Reserve for depreciation	260,000	1,508,912
Reserve against abnormal cost of new plant	365,000	1,000,000
For general depreciation	1,500,000	1,500,000
Dividends to Lake Superior Corp.	1,054,000	705,000
Surplus	1,589,388	668,292

Strong Undertone

Rules in Coal Products Market—Benzol Active—Toluol Gains

New York, Sept. 8.—A strong undertone is noted throughout the coal tar products market. Benzol, both pure and 90 per cent, is moving rapidly, and this buying, in conjunction with a heavy demand for motor benzol, is keeping supplies at a minimum. The market on pure benzol may be quoted at around 25 to 29 cents per pound, and 90 per cent material at 24 to 28 cents.

Considerable activity is in evidence in toluol, turpentine and rosin manufacturers closing on good quantities. The market is very firm at 26 to 30 cents per gallon. One degree toluol is holding at 29 to 33 cents. While these prices are unchanged from last week, there is undoubtedly a tendency upward. Solvent naphtha may be quoted at 22 to 27 cents for both spot and contract business.

Although the drug trade is buying but little, large quantities of naphthalin are being moved. This is resulting from a heavy demand by the dye industry, which has virtually stripped the market of spot material. Some sellers now are considering no orders for shipment before the middle of October. Prices have not been changed however, flakes still holding at 6½ to 7½ cents per pound and balls at 8½ to 9½ cents.

While there is a strong undertone to the sulphate of ammonia market, prices continue unchanged. Sulphate on the contract basis is holding at $3.25 to $3.40 per 100 pounds and on the spot basis, at $3.40 to $3.65. Buying still is being confined principally to the fertilizer industry.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Tuluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

Machine Tool Inquiries Increase

Though Few Sizable Lists are Current Sellers Concentrate on Many Smaller Requests—Goodyear Tire Issues Formal List—Columbia Axle Buys —Prices Continue Upward—Crane Movement Lags

INCREASING inquiries feature the machine tool market of practically every district. In the middle west, some sellers claim that business is 50 per cent better than in 1914 before the war which, however, could not be regarded as an active period. This improvement comes from concentrated effort on many small inquiries rather than upon large lists, although some fair sized ones are being closed in Cleveland. These include one from the Goodyear Tire & Rubber Co., Akron, O., for shipment to Los Angeles and one from the Wisconsin Parts Co., Oshkosh, Wis., for about $40,000 worth of equipment. Chicago dealers are at work on the tool room requirements of the Moline Plow & Tractor Co., Moline, Ill., which recently suffered a fire. Its machine shop list is expected shortly. Allied automotive industries lead in the demand in practically every selling center.

Sizable orders for tools have been received from the Columbia Axle Co., Cleveland, and from Montgomery, Ward & Co., Chicago, the latter taking about $100,000 worth. Makers are kept so busy on orders from dealers that attractive deliveries no longer are possible, the best obtainable being from 10 to 12 weeks and in some cases four months. Prices continue to tend upward, an increase of 25 per cent on drills being slated for Oct. 1. Recent increases noted include one of 15 per cent on milling machines and one of 10 per cent on punch presses.

With the advent of more settled labor conditions, it is thought a great deal of business will come out. This is true of cranes and other heavy equipment in Pittsburgh, where several steel companies are withholding action on known needs, not so much on account of price as on account of the situation as regards labor. Railroads have commenced to make some slight purchases, mostly for one or two tools for replacement purposes. The Cumberland Valley railroad was the biggest purchaser in the east, while the Santa Fe has asked for bids on a few machines required by its different shops in the west.

Japan continues to occupy the leading position among export buyers. A slight improvement is noted in the export market and it is indicated many sales would be made abroad were some credit plan perfected or if exchange rates would become stabilized.

Crane inquiries, for the most part are small, the largest reported coming from the Cambria Steel Co. for a 75-ton ladle crane and four 10-ton overheads. Other small inquiries come from S. L. Smieth & Co., New York City; York Safe & Lock Co., York, Pa.; Campbell Foundry Co., Harrison, Pa.; Meade-Moorison Mfg. Co., East Brooklyn, N. Y.; the Standard Oil Co., Bayway, N. J., and the Goldberg Iron & Steel Co., Columbus, O. Recent buyers of cranes include Midvale Steel & Ordnance Co., Coatesville, Pa.; the Bethlehem Steel Corp., Sparrow's Point, Md.; Richmond Lebering Co., New York, for the Island Refining Co. of Louisiana; the Witherow Steel Co., Corapolis, Pa., and the Hyper-Humus Co., Newton, N. J.

East Demands Miscellaneous Tools in Small Lots

DEMAND in the eastern machine tool market is comprised chiefly of a widely scattered volume of small inquiries. Virtually no new large lists are current, and buyers appear to be confining their purchases to single tools needed for replacing old equipment or rounding out installations. The railroads are said to be doing considerable buying of this character. Various lines are in the market, buying one and two tools at a time, and are stated to be doing, in the aggregate, more trading than in months. The only recent large single order, however, for railroad account was that involving about 30 machines for the Cumberland Valley road which was placed within the past month.

Despite the depressing influence of the labor situation during the past few weeks, several sellers report that their sales have been increasing steadily since early in May. These interests generally appear to be optimistic regarding the fall buying. Developments in the export market are said to be more favorable, and there appears to be a perceptible improvement in labor conditions throughout the east. The largest export buyer of late has been Japan, this country buying heavy quantities of metalworking equipment of practically all descriptions. Japan, as a matter of fact, has been a large purchaser for several months.

Prices of machine tools continue to tend upward. One of the heaviest advances now in prospect is a 25 per cent advance by one of the leading drill manufacturers scheduled for Oct. 1.

Although there have been no instances of large buying in the eastern crane market during the past week, there has been a fair amount of trading. The Midvale Steel & Ordnance Co. has placed a 40-ton ladle crane for Coatesville, Pa., with the Alliance Machine Co., at 15-ton overhead for the Sparrows Point, Md., plant of the Bethlehem Steel Corp., is also understood to have been placed with the Alliance company. No action, it is said, will be taken on the three other overhead cranes for the Sparrows Point plant at this time, the inquiry



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only being issued for estimating purposes. Some sales have also been reported in the locomotive crane market. The Richmond Lebering Co., 120 Broadway, New York City, has bought a 15-ton crane from the Ohio Locomotive Crane Co. for the Island Refining Co. of Louisiana. The Witherow Steel Co., Corapolis, Pa., has purchased a 20-ton used Orton & Steinbrenner crane from the Titan Equipment Co., 30 Church street, New York City. The Hyper Humus Co., Newton, N. J., which recently was inquiring for a new 15-ton locomotive crane, has closed upon a used crane of similar capacity.

Possibly the largest new business now pending is an inquiry by the Cambria Steel Co. for a 75-ton ladle crane, and four 10-ton overhead cranes. S. L. Smieth & Co., 50 Church street, New York City, is inquiring for a 10-ton, one motor crane, with 47-foot span. The York Safe & Lock Co., York, Pa., is inquiring for a 5-ton overhead crane. There is some confusion over the requirements of this company, as two other inquiries, one for a 10-ton crane and another for a 3-ton crane, have been issued, and it is not clear as whether these inquiries represent three separate requirements. It is generally believed they do not. The navy department is in the market for a 10-ton overhead crane for a project at New Orleans. The Campbell Foundry Co., Harrison, Pa., it is understood, will be in the market shortly for a least one overhead crane for a new addition. W. A. Bishop, Newark, N. J., is architect in charge of construction. The National Marine Engineering Works, Scranton, Pa., has withdrawn its inquiry for a 10-ton overhead crane, the company having for the present at least, given up a plate mill project for which the crane would have been required. The Meade-Morrison Mfg. Co., East Boston, Mass., is expected to close shortly upon the 10-ton crane inquired for a few weeks ago. Uncertainty as to developments in the labor situation is said to have been the delaying factor. The Standard Oil of New Jersey, 26 Broadway, New York, is asking for figures on one 20 and one 30-ton locomotive cranes for Bayway, N. J. It is believed that action will not be taken for some time.

Moline Plow Issues Formal List

SELLING of machine tools in the Chicago district continues to be made up largely of a considerable number of single tools or small lots. Dealers in general find this character of trading more profitabe and satisfactory. An advance of 15 per cent on milling machines and 10 per cent on punch presses has been announced recently by some manufacturers who made a reduction several months ago which was not followed by others in the same lines. Present advances are made to equalize prices with those of other makers.

The Moline Plow & Tractor Co., Moline, Ill., has completed its specifications and is taking bids on toolroom equipment to replace that lost in a recent fire. Specifications have not yet been made up for the equipment in the general machine shop, which also was burned. The latter consists largely of chucking lathes, screw machines and similar equipment. For the tool room the company will require a 30 to 36-inch planer, a horizontal boring mill, a 15 to 24-inch shaper, universal milling machine, 24-inch upright drill, four-foot radial drill, 10 lathes, 14 to 24-inch, speed lathes, tool and surface grinders and single spindle high-speed ball bearing drills. Montgomery, Ward & Co., Chicago, have placed orders for practically all the equipment for its engine plant at Springfield, Ill., totaling about $100,000, and including turret lathes, drills, milling machines, tapping machines, grinders and miscellaneous tools. The Santa Fe railroad has recently asked bids on a few machines required by its various shops.

The Belden Mfg. Co., Chicago, is building a wire factory for which equipment will be required. The Anderson Foundry & Machine Works, Anderson, Ind., will build two additions. The Moore Plow & Implement Co., Greenville, Mich., will build a foundry. The Auto Specialty Mfg. Co., St. Joseph, Mich., will build four additions to its plant. The Bayer Steam Soot Blower Co., St. Louis, will build a plant.

Tool Demand Increases in Pittsburgh

GOOD demand exists in the Pittsburgh district for machine tools and delivery dates are being extended as the manufacturers become booked up. From 10 to 12 weeks now is the best delivery that a number of makers of lathes, drills, millers and shapers are promising. On a recent order for a 26-foot lathe taken by a Pittsburgh agent, delivery will not be made short of f[illegible] prices show much strength and announcement recently was made by a Rockford, Ill., company of an advance in upright drills which practically restores the war price.

Little has been going on in cranes and other heavy equipment lately, but a large prospective business is in sight and likely to seek manufacturers with the advent of a more settled labor situation. Steel manufacturers, who have had inquiries out for much equipment are believed to be delaying the placing of orders less on account of prices than because they want to be certain that they are not going to have plant suspensions.

Considerable Business Current in Cleveland

BETTER than in several months and approximately 50 per cent larger than at this period in 1914, prior to the war, machine tool business in Cleveland continues on a satisfactory basis for sellers. Miscellaneous industries are well represented in the buying and in the increased number of inquiries received, although the automobile industry and lines of activity related to it continue in the lead. Talk of price increases continues to be heard, particularly on drills. Makers are requiring longer periods of time to make deliveries. Some sellers expect the present activity to continue well on into the winter and are concentrating on closing up prospective purchasers quickly. The D. M. Osborne Machinery Co., Cleveland, which is specializing in the sale of lathes and upright drills, reports an active movement of those types of tools.

One of the biggest transactions before sellers is the list referred to last week from the Goodyear Tire & Rubber Co., Akron, O., for shipment to the Goodyear Tire & Rubber Co., of California, Los Angeles. The formal list calls for one No. 3 B Kearney & Trecker milling machine with vise, universal head and all attachments; one No. 3 Cincinnati vertical milling machine, revolving table and vise; one 20-inch Gould & Eberhardt, Ohio or American shaper; one 4-foot radial drill; one 20-inch drill press with back gear; one 24-inch drill press with sliding head; one 14-inch center single spindle high speed drill press; one 1½-inch Acme bolt machine complete with dies, tools, etc.; one 12-inch Peerless high-speed hack saw; one 24-inch swing engine lathe with 8-foot bed, complete with taper attachment; one 30-inch swing engine lathe, 16 feet between centers with large steady rest; one 36-inch Bullard vertical turret lathe; two 62-inch King boring mills; one No. 1 Cincinnati universal cutter and tool grinder; one 42 x 42-inch x 16-foot open-side planer, and one portable key-seater with cutters to take up to 7⅞-inch shaft diameter

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Cleveland	429 Rockefeller Bldg.	New Orleans	C. O. Hinz, Hibernia Bank Bldg.		
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and keyways up to 1½ inches square. All these machines are to be arranged for 44-volt, 50-cycle motors. Another fair sized list, approximating $40,000 in value is issued by the Wisconsin Parts Co., Oshkosh, Wis., maker of axles, etc. It comprises automatic chucking machines, hand screw machines, automatic bar machines, shaft machines such as Fay or Lo-Swing and heavy milling machines. It recently purchased about $40,000 worth of tools but needs an additional number to fill its requirements. Quotations should be sent to W. F. Rockwell, general manager or R. L. Murphy, purchasing agent.

Smaller purchases are frequent and one fair sized one was consummated last week with the Columbia Axle Co., Cleveland, the Cleveland-Duplex Machinery Co., that city, taking its order for approximately 90 per cent of its requirements. Among the tools purchased are a Potter & Johnson automatic, a Baker drill, a multiple spindle drill and a lathe. It still is looking for a press and some other equipment. The Lang Body Co., Cleveland, which has increased its capital from $500,000 to $1,500,000, and which is building a 4-story extension, giving it 111,000 square feet additional floor space, closed on a large planer. It will not place orders for the remainder of its needed equipment until early in 1920. Another concern who will be in the market shortly after Jan. 1, next year, is the Auburn Mfg. Co., Auburn, Ind., automobile maker. The Lincoln Motors Co., Detroit, is understood to have purchased considerable equipment recently and is wiring to hasten deliveries. The Electric Auto-Lite Corp., Toledo, closed on one No. 11 plain grinder.

Among those inquiring for small lots or single tools are the Timken Roller Bearing Co., Canton, O., which is putting up a $15,000 addition. It wants among other tools, two universal grinders. The Erie Forge Co., Erie, Pa., wants a 54-inch lathe. Another concern who is looking for a large lathe is the Crucible Steel Co. of America, Cleveland, while the Crucible Steel Forge Co., that city, wants a 60-inch cold cutting saw. The Electric Vacuum Cleaner Co., Inc., Cleveland, wants a No. 1½ milling machine and a drill press, while the Ohio Pottery & Glass Co., that city is advertising for a Cleveland automatic with 2¾, 3¼ and 3¾ chuck capacities one each 6-inch and 11-inch Gleason double gear generators; one No. 2 La Pointe broaching machine; one Cincinnati No. 3 milling machine and one Landis bolt threader. The Acklin Stamping Co., Toledo, O., wants among other equipment, one tool room lathe. The Goldberg Iron & Steel Co., Columbus, O., wants shears and a locomotive crane with magnet for its enlarged scrap yard. The P. A. Geier Co., 5112 St. Clair street, Cleveland, is said to be in the market for considerable equipment for a 2-story addition, 39 x 301 feet. The Louisville Frog & Swith Co., Louisville, Ky., also is in the market for some equipment.

Considerable interest is manifest in the $25,000,000 refinery project of the Standard Oil Co., at Ironville, near Toledo, O. While no formal list of equipment requirements is out, it is expected that these will be large and include not only a number of cranes but pipe cutting and threading machinery as well as general machine shop equipment. The Peerless Motor Car Co., Cleveland, is expected to indicate additional machinery needs for an addition it is building, 33 x 333 feet, and a list is awaited from the Cleveland Tractor Co., that city, which is putting up two additions. Other projects in which equipment sellers are interested include a plant for the A. M. Mayle Mfg. Co., Toledo, O., dies, jigs and tools; a factory for the Elyria Steel Products Co., Elyria, O., or Cleveland, in which steel stampings, automobile parts, etc., will be manufactured; a building for the American Metal Products Co., Cincinnati; a new building, 50 x 340 feet, for the Thomas & Armstrong Co., London, O., manufacturer of sheet metal products, with two other auxiliary buildings, 40 x 50 feet each.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

WESTMINSTER, VT.—Plans are being figured for a 1-story, 30 x 120-foot addition to the machine shop of the Abenaque Machine Works.

BOSTON.—The Compressed Shafting Co., 393 Dorchester avenue, is taking bids for a machine shop, 1-story, 60 x 320 feet.

BOSTON.—The Renim Specialty Co. has been incorporated to build electrical machinery with $50,000 capital by Arthur Watson, William J. Barkley and Frank G. Crowley.

BOSTON.—The L. E. Fosgate Co. has been incorporated to build farm machinery with $10,000 capital by Leo E. Fosgate, William H. Heintz, West Medford, Mass., and John J. Lane.

BOSTON.—The F. & F. Mfg. Co. has been incorporated to make mechanical products with $5000 capital by Ferdinand Christensen, Frazier L. Davis and William Flotow.

BOSTON.—The Magee Furnace Co., Inc., has been incorporated with $60,000 capital by Alfred P. Stockbridge and Alfred E. Perrin, both of Somerville, Mass., and Clarence F. Wiley, Taunton, Mass.

BOSTON.—The Winnier-Erickson Engine Co. has been incorporated with $100,000 capital by Albert J. Winnier, Natick, Mass., Walter E. Erickson, Brookline, Mass., and Samuel W. Culver, Dorchester, Mass.

CAMBRIDGE, MASS.—Page & Shaw, 18 Ames street, have awarded contracts for a plant and power house, 6-stories, 60 x 140 feet.

FALL RIVER, MASS.—The Rochon Mfg. Co., Inc., has been incorporated to make screens, etc., with $100,000 capital by Charles Rochon, Arthur J. B. Cartier and Horace Chenard.

GREENFIELD, MASS.—The Woods' Method Corp. has been incorporated to make castings, dies, machinery, pumps, etc., with $99,000 capital by Edward D. Woods, John L. Eppler and M. B. Markle.

HOLYOKE, MASS.—David H. Barowsky, scrap iron and metals, is having plans made for a 4-story warehouse.

NORTHAMPTON, MASS.—The forge shop of the C. A. Maynard Hoe Mfg. Co. was damaged by fire recently.

SOUTH BOSTON, MASS.—Plans are being made for a 2-story, 45 x 100-foot addition to the machine shop of the Underwood Machinery Co.

SPRINGFIELD, MASS.—The Duckworth Chain & Mfg. Co. has let the contract for a 1-story, 50 x 120-foot plant.

SPRINGFIELD, MASS.—The American Machinery & Equipment Co. has been incorporated with $100,000 capital by Ralph W. Ellis, Percy G. Clemence and Theodore W. Ellis.

WORCESTER, MASS.—The Walden-Worcester, Inc., wrenches, has let the contract to the W. F. Kearns



Say, Fella's—

Just got off that boat I was tellin' y' about. Had some time! Rather roll with Hubbard Rolls than with these boats. Those rolls are steadier and as they're rollin' all the time they get to be a habit.

You'd better get the steady habit that comes with Hubbard Rolls.

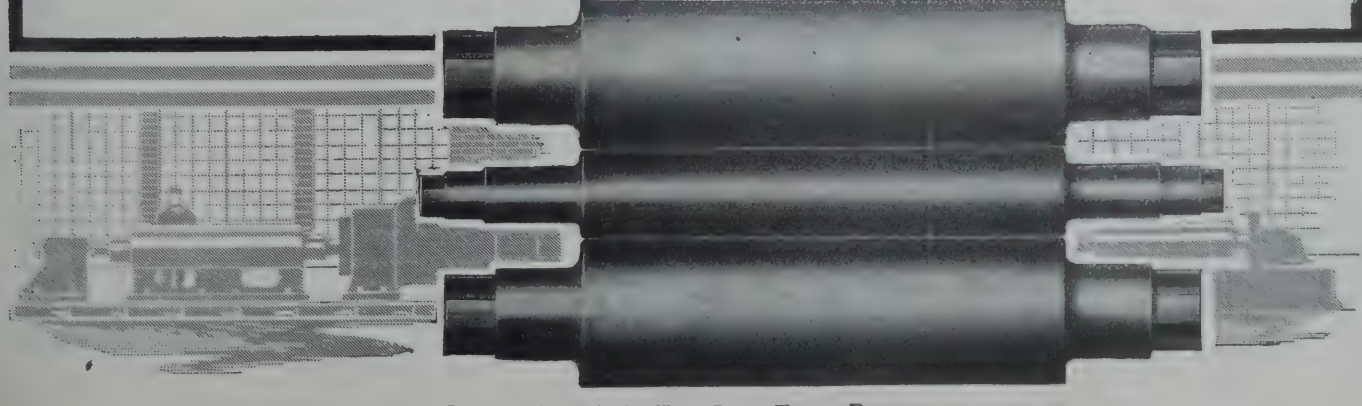
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



Say you saw it in THE IRON TRADE REVIEW

Construction Co., Boston, for a 4-story, 60 x 333-foot factory. The contract for a 1-story, 100 x 60-foot hardening building, 40 x 50-foot boiler house and a 40 x 60-foot garage will be let soon.

WORCESTER, MASS.—The Coppus Engineering & Equipment Co. has let the contract to the G. W. Carr Co. for a 56 x 180-foot foundry addition to cost $25,000.

WATERTOWN, MASS.—Revised bids close Sept. 22 for a 100 x 455-foot storehouse for machinery at the United States Arsenal.

BRIDGEPORT, CONN.—Bids have closed for a 2-story, 20 x 150-foot addition to the plant of the Bridgeport Hardware Mfg. Corp.

BRIDGEPORT, CONN.—The Harvey Hubbell Co., manufacturer of electrical specialties, has started on the erection of a 1-story plant addition, 82 x 140 feet, to cost $18,000.

BRISTOL, CONN.—The New Departure Mfg. Co. has taken over the former woolen mill at Meriden, Conn., and has commenced work altering the plant. In addition to this work, the New Departure Co. has plans for further expansion in Bristol.

HARTFORD, CONN.—The Hartford Mill Supply Co. will build a 2-story, 75 x 100-foot store, office and storage building to cost $35,000.

NEW HAVEN, CONN.—The American Radiator Co., Chicago, has let the contract for a 2-story, 100 x 135-foot warehouse to cost $85,000.

WATERBURY, CONN.—The Scovill Mfg. Co. has let the contract for an office building and garage to cost $125,000.

WATERBURY, CONN.—The Manufacturers' Foundry Co. will build a 2-story, 50 x 120-foot foundry, 1-story, 100 x 100-foot storage building and a 1-story, 50 x 50-foot carpenter shop to cost $45,000.

WEST HAVEN, CONN.—Bids art in for a 44 x 100-foot machine shop to cost $30,000 for the New Haven Machine Co.

North Atlantic States

BUFFALO.—The Carter-Hager Electric Corp., electrical construction, has been incorporated with $10,000 capital, by L. E. Carter, P. J. Hager and J. J. Askley Jr.

CARTHAGE, N. Y.—The Northwestern Telephone Corp. will erect a 2-story machine shop at a cost of $20,000.

CLEVELAND, N. Y.—E. Moreness & Co. is having plans prepared for a 2-story plant addition, 30 x 100 feet, to cost $10,000.

JAMESTOWN, N. Y.—The Jamestown Tool & Die Works has awarded a contract for a machine shop, 1-story, 50 x 185 feet, to cost about $30,000.

NEW YORK.—The American Truck Co. will erect a plant at an estimated cost of $1,500,000.

NEW YORK.—The Keister Automatic Mfg. Co. has been incorporated with $500,000 capital, by A. W. Britton, W. R. Randall and P. L. Neiser.

NEW YORK.—The Spank Enameling & Stamping Corp. has been incorporated with $10,000 capital, by B. Skar, E. A. and B. L. Spank, 19 Park place.

NEW YORK.—The Federal Oil Tank & Pump Co. recently was incorporated with $5000 capital, by B. Simon, M. Saller and D. Klein, 1432 University place.

NEW YORK.—The Adelaide Navigating Co. has been incorporated with $100,000 capital, by A. B. Lampke, S. D. Stein and H. V. Williams, 92 Broadway.

NEW YORK.—The Miller Safe & Lock Co. has been organized with $25,000 capital, by H. B. and H. D. Brassington and C. P. Jackson, 319 Canal street.

NEW YORK.—The Wyman Steamship Corp. has been incorporated with $50,000 capital, by V. B. Bendix, R. L. Lake and L. Akerstrom, 561 West 179th street.

NEW YORK.—The Pneumatic Heel Machinery Corp. has been incorporated with $20,000 capital, by T. F. Hardy, W. B. and A. H. O'Relle, 807 West 181st street.

NEW YORK.—The Matthews Lighting Co. of New York, Inc., has been incorporated with $150,000 capital, by J. Speer, W. N. and C. F. Fahell, 706 Riverside Drive.

NEW YORK.—The Dualite Mfg. Co., metal goods, recently was incorporated with $10,000 capital, by E. Holloway, P. L. Woodward and T. H. Wight, 30 Church street.

NEW YORK.—The Universal Body Corp., motors and mechanical appliances, recently was incorporated with $200,000 capital, by W. M. Hall, J. N. Scelba and K. Lorenz, 35 Wall street.

NEW YORK.—The Selective Gas Process Co. has been incorporated with $300,000 capital, by J. B. Wuinlan, J. J. A. Carney and G. W. Colton, 196 Berkeley place, Brooklyn, N. Y.

NEW YORK.—Charles A. Grice & Co. have been organized to manufacture power presses and pumping machinery by Charles A. Grice, John J. Kling and Standish Chard, 45 East Sixty-second street.

ROCHESTER, N. Y.—The North East Electric Co., 348 Whitney street, has awrded contracts for an addition, 76 x 140 feet to cost about $60,000.

ROCHESTER, N. Y.—The Corporation Pattern Works has been organized by George J. Fink, William H. Kramer and others, to manufacture mechanical pattern specialties.

UTICA, N. Y.—The Utica Heater Co., Lafayette street, is having plans prepared for three 1-story plant additions to cost $20,000.

BEAVER FALLS, PA.—The Keystone Driller Co. is having plans prepared for a plant, 2-stories, 40 x 60 feet, to cost about $15,000.

CARBONDALE, PA.—A $60,000 machine shop will be erected her by the Carbondale Machine Co., 80 x 220 feet.

EDGELY, PA.—The William Woodhouse Chain Mfg. Co. has been incorporatel with $25,000 capital. William Woodhouse, Trenton, N. J., heads the company.

ERIE, PA.—The Westcott Valve Co. is having plans prepared for a plant at Seneca Falls, N. Y., to cost $25,000.

PHILADELPHIA.—The Kensington Copper Works has awarded a general contract for an addition, 48 x 100 feet.

PHILADELPHIA.—The Electric Storage Battery Co. has awarded a contract for a $14,000 addition, 32 x 97 feet.

PHILADELPHIA.—Connery & Co., Second and Luzerne streets, manufacturer of boilers, plans a 1-story assembling shop, 75 x 90 feet.

PHILADELPHIA.—The Wirt Co., Arma and Lena streets, electrical specialties, has plans for a new plant, two stories, 62 x 158 feet, to cost $60,000. Charles Wirt is president.

PHILADELPHIA.—The Clearfield Textile Machine Co. recently was incorporated with $100,000 capital by Carl Klenk and others. The company has a plant at 1826 East Clearfield street.

WILKES-BARRE, PA.—The Guaranty Silk Corp. is taking bids for a power house.

YORK, PA.—The York Body Corp. plans a plant, 4-stories, 72 x 106 feet, to cost $35,000.

ATHENIA, N. J.—The Athenia Steel Co. has awarded a contract for a plant extension, 1-story, 100 x 150 feet.

HARRISON, N. J.—The Campbell Foundry Co. plans an additional foundry, 105 x 120 feet. The foundry will be equipped with two cranes of five and ten tons capacity.

HOBOKEN, N. J.—The Front Drive Motor Co. plans a 1-story plant extension.

JERSEY CITY, N. J.—The Drop Forging Co. of New York, 301 Westside avenue, has filed plans for a 2-story addition to cost $37,000.

JERSEY CITY, N. J.—The British-American Rotary Valve Co. has been incorporated with $1,500,000 capital, by Edward Eriksen and others to manufacture valves, etc.

NEWARK, N. J.—The American Transformer Co. will make alterations to its plant.

NEWARK, N. J.—Property has been purchased by the Ellis Motor Car Co. at New and Wilsey streets, for the erection of a plant.

NEWARK, N. J.—The Eastwood Wire Works is having plans drawn for a plant addition, 2-stories, 35 x 45 feet, to cost $15,000.

NEWARK, N. J.—The Advance Metal Stamping Corp. has been incorporated with $25,000 capital, by Samuel Cohen, Joseph Sennabend and Sarah Search.

NEWARK, N. J.—The Transfer Metal Castings Co. has been organized by William Karnatz, 133 Chestnut street, and Joseph Keegan, 85 Somme street.

PAULSBORO, N. J.—The land and buildings of the American Standard Metal Products Co. have been sold to the General Tractors, Inc., which is reported planning to utilize them for the production of tractors. The company was recently incorporated in Delaware with $60,000 capital.

TRENTON, N. J.—The Trenton Malleable Iron Works will take bids shortly for a boiler and power house, 1-story, 40 x 60 feet.

BALTIMORE.—The Baltimore Spring Works, 118-20 Dolphin street, plans a 3-story plant addition.

BALTIMORE.—The Baltimore Water & Electric Co. has awarded contracts for a pumping house, 1-story, to cost about $15,000.

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts:

Two band saws, four chuck columns, two platform and crane scales, miscellaneous cylinder boring and pipe threading machines and two electric welders, 4497, Puget Sound.

Two turret lathes, 4505, Puget Sound.

One power hacksaw, five arbor presses and two cutting cold saws, 4506, Puget Sound.

Four bench drills, one centering machine and three precision lathes, 4507, Puget Sound.

Four radial drills and six drill presses, 4508, Puget Sound.

Two buffing machines and various kinds of grinders, 4509, Puget Sound.

Two grinding machines, 4510, Puget Sound.

Six milling machines, 4519, Puget Sound.

One crank slotter and one cutting machine, 4520, Puget Sound.

Miscellaneous engine lathes, 4521, Puget Sound.

Three planers, two turret lathes and two boring mills, 4522, Puget Sound.

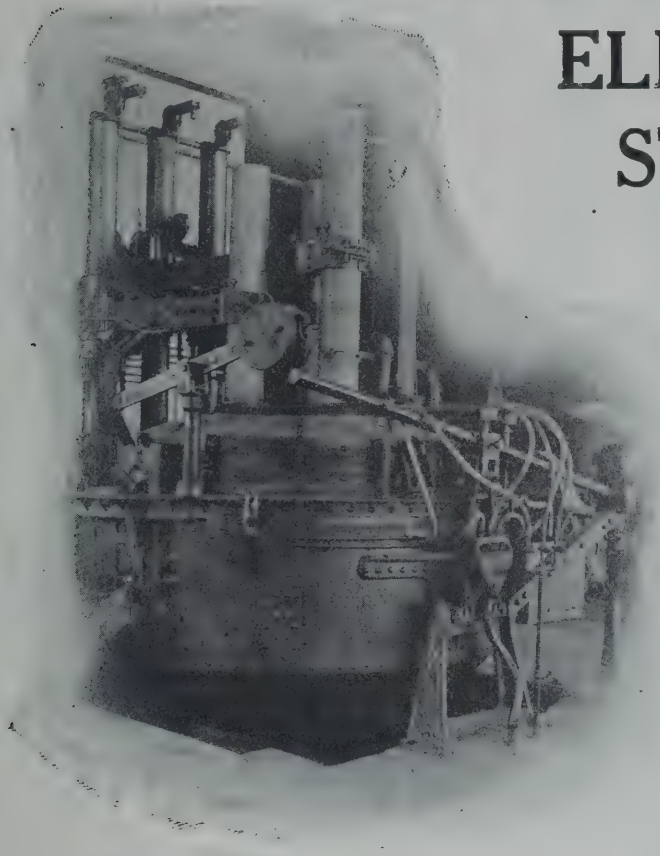
Four crank shapers, 4523, Puget Sound.

Two boring, drilling and milling machines, 4524, Puget Sound.

Schedule numbers, dates of opening and places of delivery follow the specifications of the tools.

FARRELL-CHEEK

ELECTRIC FURNACE STEEL CASTINGS



Every electric furnace steel casting made in our foundry is carefully nursed from the day it enters as an order until it is ready for the final, critical examination. The same master workmen, who made the enviable reputation of the Farrell-Cheek Foundry, are now turning out superior electric furnace steel castings.

MEMBER OF STEEL FOUNDERS' SOCIETY OF AMERICA NEW YORK, U.S.A.

And so it is easy to understand why Farrell-Cheek electric furnace steel castings make good. They ***are*** better. The metal is right to start with, and every operation in the making is scrutinously watched to ensure the maintaining of the high standard which characterizes all Farrell-Cheek Castings.

Your work is completed and delivered quickly. Give this exceptional service your consideration, too.

Write!

FARRELL-CHEEK STEEL FOUNDRY CO.

"Makers of steel castings that are a little better than the next best."

Sandusky, Ohio

F C

Central States Activity

BELOIT, WIS.—The local plant of the Stewart-Warner Speedometer Corp., consisting of brass and iron foundries, machine shop, etc., will be enlarged.

CHILTON, WIS.—The Aluminum Specialty Co., Manitowoc, Wis., has decided to establish a plant here and awarded the contract to the Blake Construction Co., Appleton, Wis., for a 2-story building, 60 x 200 feet.

CUDAHY, WIS.—The Utility Mfg. Co., Squire and Kingham avenues, increased its capital from $25,000 to $125,000. The company manufactures tire machinery and equipment. A. H. Willson is general manager.

EDGERTON, WIS.—The Continental Axle Co. has awarded the general contract fo a 1-story machine shop, 125 x 300 feet.

KENOSHA, WIS.—The Frost Mfg. Co., brass founder, will erect a $25,000 addition to its foundry and build a new office building.

KENOSHA, WIS.—The Arneson Foundry Co., which built a branch foundry a year ago, has decided to make this its main works and will enlarge it by building an addition, 80 x 225 feet, which will cost $35,000. C. H. Arneson is president.

KENOSHA, WIS.—Contracts have been awarded by the Macomber & Whyte Rope Co. for additions which will cost about $150,000. Plans call for the following buildings: Wire mill, rope mill, machine shop, galvanizing plant, blacksmith shop, and office building.

MADISON, WIS.—A new plant will be erected by the Capital City Pattern Works, of which T. Roston is president and manager. Tentative plans call for a 1-story shop, 100 x 300 feet.

MANITOWOC, WIS.—The Aluminum Specialty Co. has awarded a contract for a plant and power house, 1-story, 30 x 40 feet, to cost $40,000.

MILWAUKEE.—The Koehring Machine Co. has let a contract for a plant addition, 1-story, 60 x 117 feet.

MILWAUKEE.—Fire recently damaged the warehouse of the R. J. Schwab & Sons Furnace Co., 280 Reed street, causing a loss estimated at $25,000.

MILWAUKEE.—Bliss Bros. Tool Co., Manufactures Home building, has increased its capital to $25,000. The company makes tools, dies, jigs, etc. W. D. Bliss is manager.

MILWAUKEE.—The Moe-Bridges Co., 60-64 Third street, manufacturing gas and electric fixtures and accessories, increased its capital from $20,000 to $40,000. Charles A. Bridges is secretary.

OSHKOSH, WIS.—The Bull Dog Tractor Co., a new corporation with an authorized capital of $750,000, has elected officers and is negotiating for suitable buildings in which to establish a machine shop and assembling plant.

PORTAGE, WIS.—The Slinger Foundry & Machine Co. contemplates an addition to its machine shop and foundry to cost about $20,000. H. W. Slinger is general manager.

RIPON, WIS.—The Ripon Toy Corp., organized with $150,000 capital as a reorganization of the Kangaroo Toy Co., Chicago, has started work on its new plant, to be 60 x 150 feet. W. R. Keene is general manager.

SHEBOYGAN, WIS.—The Wald Mfg. Co., bicycle, automobile and motorcycle parts and accessories, increased its capital from $30,000 to $90,000 and will build a machine shop addition. Herman Pawsett is secretary and treasurer.

WEST BEND, WIS.—The West Bend Barn Equipment Co. has increased its capital from $50,000 to $125,000 and plans a 2-story addition, 80 x 160 feet. The name of the corporation has been changed to West Bend Equipment Co. The proposed new addition will be used mainly as a machine shop.

ANN ARBOR, MICH.—The Machine Specialty Co. has increased its capital from $10,000 to $135,000 and will erect a new plant. F. E. Royce is sales manager.

BAY CITY, MICH.—The C. R. Wilson Body Co. will build a dry kiln 100 x 325 feet and a storage shed 154 x 200.

BAY CITY, MICH.—The Union Truck Co. has been reorganized with capital of $500,000 and has purchased 15 acres on which a plant 100 x 500 feet will be built.

DETROIT.—The Anderson Electric Car Co. has plans for a plant, 5-stories, 50 x 180 feet.

DETROIT.—The American Blower Co. is having plans prepared for a factory addition and foundry.

DETROIT.—The Production Tool Co. contemplates a machine shop, 1-story, 30 x 80 feet, to cost $20,000.

DETROIT.—The Lancaster Steel Products Co., Lancaster, Pa., will open a Detroit office as well as a local warehouse.

DETROIT.—The Cadillac Motor Car Co. has awarded a contract for a machine shop, 1-story, 50 x 220 feet, to cost $15,000.

DETROIT.—The Parker Rust Proof Co. has let the steel contract for its 2-story factory and office building to the American Bridge Co.

DETROIT.—The Murphy-Shipman Machine & Tool Co. has been incorporated with $10,000 capital, by T. F. Murphy, 841 Howard street, and others.

DETROIT.—The Dorney & Murphy Machine Co. recently was incorporated with $8000 capital, by Charles Dorney, 372 Ferdinand avenue and others.

DETROIT.—The stockholders of the Paige-Detroit Motor Car Co. voted to increase the capital from $3,500,000 to $5,000,000 to care for plant expansion.

DETROIT.—The Powrlok Co., Cleveland, formerly the M. & S. Corp. of Detroit, will establish an assembly plant at Walkerville, Ont. D. C. Nale will be manager.

DETROIT.—The Hudson Motor Car Co., Roy D. Chapin, president, has purchased 48 acres adjoining its plant to permit expansion of the Essex Motor plant, a subsidiary.

DETROIT.—A branch tractor and automobile plant will be established in Mt. Clemens, Mich., by the Henry Ford interests. A $500,000 plant will be erected on the banks of the Clinton river, utilizing water power.

ECOURSE, MICH.—R. A. Murdock, 706 Free Press building, Detroit, is preparing plans for a 150,000-gallon steel tank on tower and two motor-driven centrifugal pumps of 500 gallons per minute capacity for this city.

FLINT, MICH.—The Champion Ignition Co. has appropriated $1,000,000 for plant extensions.

GRAND RAPIDS, MICH.—The Rathbone Mfg. Co. is building a foundry addition 100 x 100 feet. W. G. Renwick is secretary-treasurer.

GREENVILLE, MICH.—The Moore Plow & Implement Co. will build a foundry, 50 x 80 feet. F. P. Allen & Son, Grand Rapids, are engineers.

HIGHLAND PARK, MICH.—The Ford Motor Co. is taking bids for a power plant, 1-story, 265 x 370 feet.

JACKSON, MICH.—Capitalized at $25,000, the Acme Welded Pipe & Coil Co. recently was chartered by Andrew J. Weatherwax and others.

KALAMAZOO, MICH.—The Kalamazoo Spoke & Nipple Co. has been incorporated with $50,000 capital, by M. E. Durkley and others.

KALAMAZOO, MICH.—Kalamazoo will vote in November on a proposal to spend $1,200,000 for the extension of its power and light plant.

LANSING, MICH.—The Hugh Lyons Co. has started on the erection of an addition, 2-stories.

LANSING, MICH.—The Lansing Tool & Stamping Co. will double its capacity. George Conway is general manager.

LANSING, MICH.—The Olds Motor Works is spending $2,000,000 for additions including an axle plant 140 x 750 feet, assembly building addition, 61 x 600 feet, and a sheet metal plant.

MANISTEE, MICH.—The Manistee Drop Forge Co. has been organized to manufacture forged parts for motor cars. Capitalization is $200,000 and P. P. Schnorbach is president.

MARINE CITY, MICH.—The Marine City Iron Works, which just completed new melting capacity, plans other plant additions.

MENOMINEE, MICH.—The Tideman Electric Mfg. Co., Cairo, Ill., has disposed of its original plant here to the Signal Electric Mfg. Co., a new Michigan corporation with an authorized capital of $150,000. Henry Tideman will act as chairman of the board of directors of the new company.

MUSKEGON, MICH.—The Enterprise Brass Works is erecting a 3-story building, to be used as a sand and core room when completed.

MUSKEGON, MICH.—The Maring Wire Corp. has been organized her by Albert Maring and others, to manufacture wire. The company is capitalized at $50,000.

PONTIAC, MICH.—The Oakland Motor Car Co. will erect a 4-story administration building, 54 x 284 feet, to cost $250,000.

ST. JOSEPH, MICH.—The Auto Specialty Mfg. Co. will build four additions costing $100,000 each. Davidson & Weiss, 53 West Jackson boulevard, Chicago, are architects.

TRENTON, MICH.—The Purdy Boat Co., capitalized at $75,000, has purchased a site here and will build boats.

YALE, MICH.—The Currier Machine Shop has been sold to Charles E and William Houser, Port Huron, Mich., who are reported planning to expand the business.

AURORA, ILL.—The Allsteel Equipment Co. is having plans prepared for an addition, 1-story, 80 x 100 feet.

CARBONDALE, ILL.—The contract for a building for the Peroxide Chemical Co. recently was awarded.

CHICAGO.—The Commercial Steel Co. has been incorporated by E. D. Goodrich, M. Leinder and O. E. Lasater.

CHICAGO.—The Grip Nut Co., 122 South Michigan avenue, has taken out a permit to erect a plant, estimated to cost $60,000.

CHICAGO.—The Belden Mfg. Co., Joseph C. Belden president, 2300 South Western avenue, is building a 4-story wire factory, 90 x 114 feet.

CHICAGO.—The Westerlin & Campbell Co., manufacturer of ice making machinery, 26 North Clinton street, plans a plant, 50 x 75 x 125 feet, to cost $50,000.

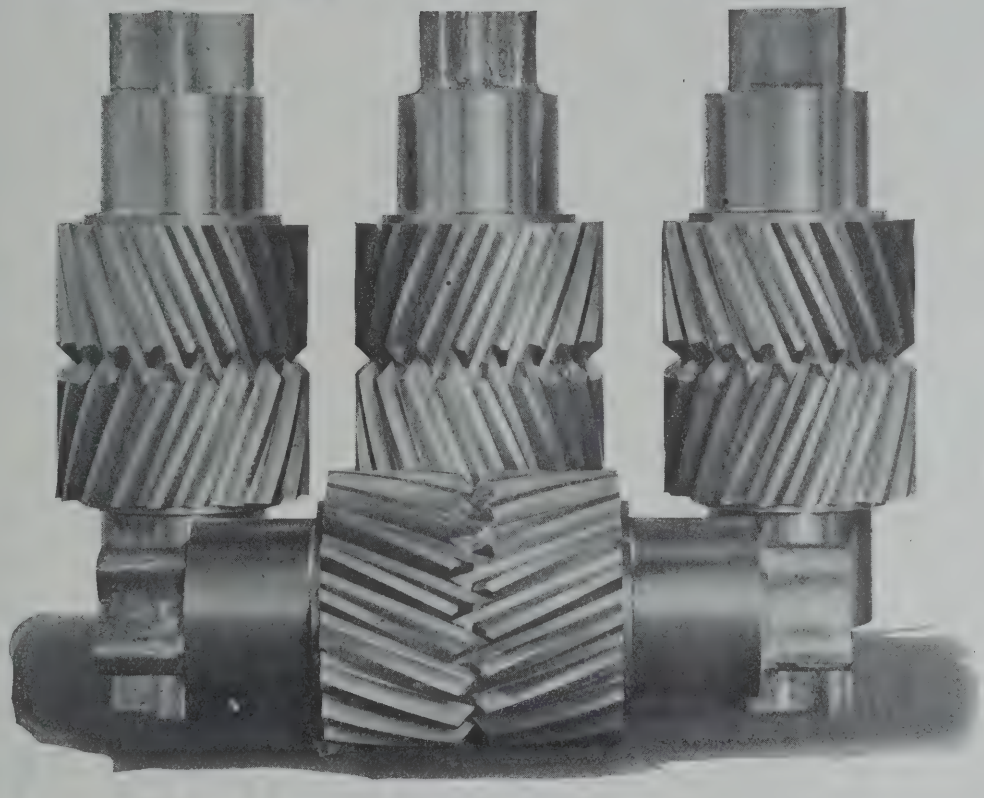
CHICAGO.—The Hy-Speed Wrench Co., 139 North Clark street, has been incorporated with $40,000 capital, by Israel Lipman, Ray Rhyman and William Frankel.

CHICAGO.—Architect A. V. Caprano, 923 Blue Island avenue, is preparing plans for a plant and boiler house to be built at Michigan City, Ind. The name of the owner is withheld.

DECATUR, ILL.—The Comet Automobile Co. has let a contract for a power plant to cost $22,000.

HERRIN, ILL.—The U. S. Reduction & Atomizing Co. will erect a plant, 40 x 120 feet, 3-stories,

Gears for All Types of Rolling Mill Service



Open Hearth Steel Castings
FALK HERRINGBONE GEARS

Combine high efficiency, great reliability and long wearing quality with low upkeep.

These advantages, and many others can be derived from an installation of Falk Herringbone Gears.

Steel Castings from 1 to 100,000 lbs.

Write for Particulars

The Falk Company Milwaukee, Wis.

REPRESENTATIVES:

PITTSBURGH, W. O. Beyer, 1024 Park Building
SAN FRANCISCO, F. W. Grimwood, Rialto Bldg.
NEW YORK, M. P. Fillingham, 50 Church Street
DENVER, COLO., Denver Engineering Works
WILKES-BARRE, PENNA., Vulcan Iron Works

and a boiler house, 40 x 40 feet, at an estimated cost of $100,000.

MOLINE, ILL.—The Moline Iron Works will erect a foundry at an estimated cost of $250,000.

ROCKFORD, ILL.—The Rock River Tool Co., capitalized at $10,000, has been chartered to manufacture tools by John Jensen, F. W. Trostle and M. B. Trostle.

ANDERSON, IND.—The Anderson Foundry & Machine Works plans two additions, 80 x 100 feet and 80 x 150 feet to cost about $125,000.

EVANSVILLE, IND.—Gilmore M. Haynie & Co., capitalized at $20,000, has been chartered to manufacture power and light plants by Isidore Kahn, M. S. Haynie and Gilmore M. Haynie.

INDIANAPOLIS.—The Equator Mfg. Co., capitalized at $20,000, has been chartered to manufacture tools and machines by A. T. Potter, M. M. Pool and R. E. Berry.

INDIANAPOLIS.—The Dunn Motor Co., capitalized at $50,000, has been chartered to manufacture motors by George H. Rossebo, Henry F. Dunn and Benjamin D. Aufderheide.

INDIANAPOLIS.—J. D. Adams & Co., 317 South Belmont avenue, road building machinery, will build a storage house, 1-story, 162 x 175 feet, at an estimated cost of $60,000.

INDIANAPOLIS.—The Wheeler Automatic Transmission Co. has been organized with $500,000 capital, by George W. Ray and others. The company will manufacture an automatic transmission.

INDIANAPOLIS.—An addition to the plant of J. D. Adams & Co., 317 South Belmont avenue, manufacturers of road building machinery, is being planned. It is estimated the improvements will cost about $100,000.

LEBANON, IND.—Leroy M. Cline and Peter F. Emmert, machinists, have organized a company to manufacture automobile truck cabs and tops and do general machine repair work.

LEGONEIR, IND.—The Legoneir Auto Body Co., capitalized at $135,000, has been chartered to manufacture automobile bodies and accessories by Maurice Loeb, Alexander Weiss and Sigmund Loeb.

MARION, IND.—The Fairmount Drop Forge Co. has perfected an organization and has purchased three acres as a site for a plant. The company was incorporated with $100,000 capital recently.

VINCENNES, IND.—The Vincennes Auto Radiator Co. has been incorporated with $2000 capital, by Leo E. Beck, William H. Duchrane and John N. Fitzgerald.

AKRON, O.—The Akron Electro Plating & Novelty Mfg. Co. has been incorporated with $20,000 capital, by Barnard H. Campbell and others.

BARBERTON, O.—Contractors are erecting an addition, 60 x 260 feet, to the Pittsburgh Valve & Fittings Co.

CINCINNATI.—The American Metal Products Co., 1225 Budd street, is increasing the capacity of its plant. A. L. Holmes is general manager.

CINCINNATI.—The Bahmann Iron Works Co. has taken over the plant of the International Clay Working Machinery Co., and is reported planning extensions.

CLEVELAND.—The Atlantic Foundry Co. is constructing a $100,000 extension.

CLEVELAND.—The Lang Body Co. has plans for a plant, 4-stories, 160 x 263 feet, to cost $150,000.

CLEVELAND.—The Chandler Motor Car Co. has plans for an addition, 3-stories, 80 x 400 feet, to cost $200,000.

CLEVELAND.—The Fixit Body & Fender Repair Co. has awarded contracts for a plant, 62 x 100 feet, to cost $45,000.

CLEVELAND.—The Crescent Brass Mfg. Co., 8410 Lake avenue, plans to rebuild its plant which was recently damaged by fire.

CLEVELAND.—The Ohio Stamping & Engineering Co. has been incorporated with $25,000 capital, by William E. Blackie, David W. Davies and others.

CLEVELAND.—The Cleveland Tractor Co. plans two plant additions to cost $400,000. They will be 1-story, 182 x 440 feet, and 2-stories, 90 x 190 feet.

CLEVELAND.—Plans are being prepared for an assembly building for the Collier Motor Truck Co., care of R. A. Palmer, Bellevue, O. The building will be 1-story, 60 x 400 feet, and will cost $100,000.

CLEVELAND.—Contracts have been awarded by the Vita Mfg. Co., Williamson building, for a plant, 132 x 252 feet, which when completed will be devoted to the manufacture of magnetos and automobile specialties. George D. Rogers is president of the company.

DAYTON, O.—The Dayton Engineering Laboratories Co. contemplates a plant to cost $200,000.

ELYRIA, O.—The Elyria Steel Products Co., which was recently incorporated with $150,000 capital, is making preliminary plans for an automobile body plant to be erected either in this city or Cleveland.

HAMILTON, O.—The Iron City Foundry is reported planning a plant addition.

LIMA, O.—The Universal Knitting Machine Co. recently was incorporated with $300,000 capital, by J. E. Sullivan and others.

LORAIN, O.—Work on a plant for the Lorain Steel Stamping Co., which was recently incorporated, is expected to be started shortly. The company has purchased a site. A. Bregman is general manager.

LOUDONVILLE, O.—The Flexible Side Car Co. has awarded a contract for a plant addition, 1-story, 100 x 100 feet, to cost $60,000.

MARIETTA, O.—The Ohio Valley Foundry Co. has been organized by C. Lanam and others to operate a gray iron foundry.

TOLEDO, O.—Enlargement of the plant of the McCarthy Drill & Tool Corp., Clinton and Oakwood streets, is planned by the Fastfeed Drill & Tool Corp., New York, which has purchased the Toledo plant. The New York company recently was incorporated with $500,000 capital.

LOUISVILLE, KY.—The Labor-Saving Appliance Co. has been incorporated with $10,000 capital, by J. Harry Ives, J. Clifford Lee and Lee Read.

HUNTINGTON, W. VA.—The Electric Unit System Corp. has been incorporated to conduct an electrical business with $50,000 capital, by C. C. Hartzell, E. F. Kincaid, E. L. Smith, H. T. Lovett and H. Blaisdell.

MOUNDSVILLE, W. VA.—The United States Stamping Co. will build a plant to cost $75,000. J. M. Sanders is president.

PENNSBORO, W. VA.—The Pennsboro Drilling Tool Co., capital $75,000, has been incorporated by R. Yeates, C. J. Kerr, C. M. Denning, S. W. Collins and B. F. McGinnis, all of Pennsboro.

WHEELING, W. VA.—The Wilcox Machine Co. is reported contemplating an addition.

WHEELING, W. VA.—The Wheeling Stamping Co. has let the contract for a $30,000 addition.

WHEELING, W. VA.—The Wilcox Machine Co. will build a plant at Shadyside to cost $300,000.

WHEELING, W. VA.—The J. E. Moss Iron Works is reported planning to build a plant, 125 x 250 feet.

WHEELING, W. VA.—The Wheeling Can Co. has bought a plant in South Warwood, and will remodel it for its own use.

WHEELING, W. VA.—The Wheeling Stamping Co. is planning to erect extensions at an estimated cost of $30,000, according to a report.

Throughout the West

HASTINGS, MINN.—The state board of control plans a power house 45 x 140 feet, to cost with equipment $125,000. C. H. Johnston, Capital Bank building, St. Paul, is engineer.

MINNEAPOLIS.—The Northwestern Cutting & Welding Co. has awarded a contract for a welding shop, 2-stories, 40 x 56 feet, to cost $10,000.

NEW ULM, MINN.—William Aab will erect a plant, 20 x 40 feet, for the manufacture of a device for reboring automobile cylinders.

DAVENPORT, IOWA.—Work has started on the first unit of the Linograph Co.'s 4-story building.

DAVENPORT, IOWA.—The Voss Mfg. Co. will erect a 4-story plant addition, 50 x 150 feet.

DES MOINES, IOWA.—H. L. Barquist, 418 West Eighth street, plans a sheet metal plant, 1-story, 38 x 109 feet.

SPIRIT LAKE, IOWA.—The city plans water works extensions to cost $50,000. C. H. Currie, Webster City, is engineer.

KANSAS CITY, MO.—Bids closed Sept. 17 for a steam-driven pumping unit for the city.

ST. LOUIS.—The plant of the Standard Grinding Co. recently was damaged by fire. The loss has been estimated at $13,000.

ST. LOUIS.—The Miller Lightning Rod Co. has awarded a contract for a plant, 2-stories, 75 x 100 feet, to cost $40,000.

ST. LOUIS.—The Bayer Steam Soot Blower Co., L. J. Bayer president, 2828 La Salle street, will build a plant 120 x 140 feet, costing $100,000.

FT. SMITH, ARK.—The Solid Steel Scissors Co. will enlarge the capacity of its plant.

BEAUMONT, TEX.—The Gulf Coast Machine & Supply Co. recently incorporated, plans a machine shop, 36 x 128 feet, at an estimated cost of $10,000. C. T. Willis is manager.

DALLAS, TEX.—According to a report the present plant of Sutton Steele & Steele, Forney avenue, which was recently incorporated in Delaware with $1,000,000 capital, will be greatly enlarged. The improvements will include an iron foundry. Walter L. Steele is president of the company.

JENNINGS, TEX.—The Bradford-Parsons Co. has been incorporated with $50,000 capital, to manufacture farming machinery, by W. H. Bradford and others.

SAN ANTONIO, TEX.—The San Antonio Machine Co. is having plans prepared for a machine shop to cost $25,000.

SAN ANTONIO, TEX.—The Stroud Motor Mfg. Association has been organized with $2,000,000 capital, to build a plant for the manufacture of automobiles, trucks and tractors. A 50-acre site has been purchased.

VERNON, TEX.—The Kell Milling Co. recently awarded a contract for a boiler shop and power house, to cost $30,000.

CHANUTE, KANS.—Bonds for $250,000 has been voted for building waterworks and electric light plants.

CHERRYVILLE, KANS.—The city plans a waterworks plant costing $40,000.

MANHATTAN, KANS.—The Rocky Ford Milling & Electric Co. has plans for a power plant, to cost $400,000.

BOISE, IDAHO.—The Idaho Power Co. placed orders for machinery necessary for a new 8000 horsepower additio nto its power plant on the Snake river. Additional improvements have been authorized.

ANACERTES, WASH.—J. W. and P. E. Wright, Tillamook, Oreg., have established an iron foundry here.

COLFAX, WASH.—Commercial Agent Farquahr of the Washington Water Power Co., Spokane, has informed city officials that his company will spend $28,000 in completing a heavier line to this city.

SEATTLE.—The N. & S. Foundry Co. will erect an addition, 60 x 90 feet.

SEATTLE.—W. B. Erskine will erect a machine shop at 1513 Eighth avenue.

SEATTLE.—Cramer & Sons, 4414 Twelfth avenue, will erect a machine shop at an estimated cost of $10,000.

SEATTLE.—The Majestic Furnace & Mfg. Co. has been incorporated with $100,000 capital by W. H. Carsten, L. M. Morelius and E. C. Morelius.

WENATCHEE, WASH.—The sawmill, planing mill, box factory and boiler room at the plant of the Peshastin Lumber Co. recently were damaged by fire.

ASTORIA, OREG.—The Pacific Power & Light Co. has purchased a 15-acre tract upon which it will construct a power and light plant.

BAKERSFIELD, CAL.—The Kern County Motor Co. is having plans prepared for a 1-story machine shop, 58 x 132 feet.

LODI, CAL.—The Bailey Mfg. Co., capitalized at $400,000, has been chartered to manufacture irrigation and well drilling devices by Eric M. Woock, Harry T. Bailey and Walter R. Woock.

LOS ANGELES.—The Pacific Electric railway has filed plans for an electric power station, to cost $12,000.

LOS ANGELES.—The Columbia Brass Foundry, 722 High street, has been organized by P. N. Bailey, C. L. Draper and others.

LOS ANGELES.—The Oscillator Machine Co., capitalized at $75,000, has been chartered to manufacture machinery by C. A. Campbell, Will S. Preston and E. C. Gates.

LOS ANGELES.—The Layne & Bowler Corp., 900 Santa Fe avenue, has acquired 9 acres, on which it plans a plant for the manufacture of well pumping machinery.

LOS ANGELES.—The Four Wheel Hydraulic Brake Corp. has been incorporated with $20,000 capital, by E. A. Featherstone, O. C. Gutsmithl and D. O. Scott.

SAN BERNARDINO, CAL.—The Hanford Iron Works has broken ground for a foundry, 50 x 50 feet. W. J. Hanford is president.

SAN FRANCISCO.—The Acme Engine Co. is reported planning to enlarge its plant.

SAN FRANCISCO.—The Universal Steel Products Co. has been chartered with $100,000 capital, by B. Norman, L. Norman and others.

SAN FRANCISCO.—The California Diesel Engine Mfg. Co., capitalized at $50,000, has been chartered by George Clinger, John A. Roberts and T. C. Moore.

SAN GABRIEL, CAL.—Boegan & Ruthkamp, 433 South California street, plan a 1-story machine shop.

Business in Canada

KRYDOR, SASK.—Joseph Moody will build an electric light plant here at a cost of $30,000.

SYDNEY, N. S.—The Sydney Foundry & Machine Co., who conduct a repair business in marine lines, is looking for a site on which to erect a drydock here.

LACHINE, QUE.—The department of public works, Quebec, Que., will build a filtration plant and addition to waterworks plant here.

MONTREAL, QUE.—The Booth Coulter Copper & Brass Co., 19 Queen street, has awarded the general contract for a factory.

MONTREAL, QUE.—The gray iron foundry which is under construction for the Thomas Davidson Mfg. Co. is nearing completion.

MONTREAL, QUE.—The Montreal Locomotive Works, Ltd., 145 St. James street, has let the general contract for foundry buildings to cost $150,000.

MONTREAL, QUE.—Paul Lemaitre, Ltd., has been incorporated to carry on the business of machinists, iron founders, metallurgists, etc., with $90,000 capital, by Joseph Savage, Hon. Albert Sevigny, Emil A. Brodeur and others.

MONTREAL, QUE.—The Alliance Steamship Co., Ltd., has been incorporated to build and operate steamships, boats, vessels, drydocks, shipyards, etc., with $1,000,000 capital, by Frederick H. Markey, Waldo W. Skinner, George G. Hyde and others.

MONTREAL, QUE.—Robert McCleery, formerly works manager of the John McDougall Caledonia Iron Works, is associated with R. W. D'Arcy in the D'Arcy Engineering Co., efficiency engineers and machinists. The new company has leased property at 34 St. Ferdinand street here, and is installing equipment.

THREE RIVERS, QUE.—Plans are under preparation for an addition to the machine shop of the Tidewater Shipbuilders, Ltd., here to cost $50,000.

BRANTFORD, ONT.—The Brantford Computing Scale Co., 14 Grey street, has let the contract for a factory addition.

CARTRIGHT, ONT.—The town council is preparing to build a waterworks plant and system.

DUNNVILLE, ONT.—The Security Auto Theft Signal Co. of Canada, Ltd., has been incorporated with $100,000 capital, by William Smith and others.

GUELPH, ONT.—The Live Wire Co., Ltd., has been incorporated to manufacture insulated wire and cables, iron and steel, etc., with $100,000 capital by Charles L. Dunbar, Leo W. Goetz, John Sutherland and others.

LAFAYETTE, ONT.—The United Portland Cement Co., Brantford, Ont., is making preparations for a plant here.

NIAGARA FALLS, ONT.—The Niagara Wire Weaving Co., care of Architect C. M. Borter, 102 Main street, has awarded the general contract for a manufacturing plant here.

OTTAWA, ONT.—The Canadian Auto Accessories Co., Ltd., has been incorporated with $40,000 capital, by F. E. Henry, Thomas E. Powers and others.

ST. CATHARINES, ONT.—A new Canadian company, composed of Canadian interests of P. R. Mallory & Co., Inc., Liberty Electric Corp., and the Abenderoth Co., all of Port Chester, N. Y., and P. G. Nichoff & Co., Chicago, leased the factory formerly used as a munition plant by the St. Catharines Machinery Co., Ltd., and will install the necessary machinery for the manufacture of tungsten products.

TORONTO, ONT.—Harry Alexander, Ltd., has been incorporated with $40,000 capital to engage in business as iron founder, mechanical engineer, etc., by G. N. Shaver, 135 Winchester street, A. R. Cochrane, 6 King street west, and others.

TORONTO, ONT.—The Glo Products, Ltd., has been incorporated by Ira Marks, 351 Markham street; Wilton Marks, 438 Lansdowne avenue; James R. Curry and others to manufacture machinery, tools, etc., with $100,000 capital.

TORONTO, ONT.—The Eureka Pattern & Mfg. Co., Ltd., has been incorporated to manufacture patterns, castings, etc., by Thomas Bathgate, 115 Marchmont road, David B. Adamson, William Owen and others. The company is capitalized at $40,000.

TORONTO, ONT.—The Mustikon, Ltd., has been incorporated to manufacture machinery, tools, motors, engines, automobile accessories, etc., with $250,000 capital, by William A. J. Case, room 801, Dominion Bank building; James B. Taylor, 78 Belhaven road; George E. Atwood and others.

WALKERVILLE, ONT.—The American Auto Trimming Co. will build a plant addition at an estimated cost of $160,000.

WALKERVILLE, ONT.—The Union Cap Screw Co., Ltd., has been incorporated with $100,000 capital, by James G. Bass, Charles A. Whitman and others.

WALKERVILLE, ONT.—The W. E. Wood Construction Co. has the general contract for an addition to the plant of the Motor Products Corp. here.

WINDSOR, ONT.—The Fisher Body Co., Detroit, will build a 5-story factory here at a cost of $350,000.

WINDSOR, ONT.—The Franklin-Harris Co. has been incorporated to manufacture and deal in iron, steel, scrap metals, etc., with $40,000 capital by Charles H. Franklin of Jackson, Mich.; Myer J. Franklin of Battle Creek, Mich; Albert Harris of Windsor, Ont., and others.

WINEGO, ONT.—The Winego Power Co. is having plans prepared for a power plant here.

In The South

CHATTANOOGA, TENN.—The John C. Vance Iron & Steel Co., Carter street, has purchased land adjacent to its plant, which it is reported will be used as a structural yard.

JACKSON, TENN.—The Harvey Steel Products Corp. has succeeded the Southern Engine & Boiler Works. W. J. Harvey is president and general manager.

KNOXVILLE, TENN.—Plans have been prepared for modern buildings to be constructed for the Knoxville Tinware Mfg. Co. The main structure will be two stories high, 130 x 140 feet.

APEX, N. C.—The Apex Motor & Machine Co., recently incorporated, will build a plant, 32 x 135 feet. J. A. Dean is president.

ROCK HILL, S. C.—The Anderson Motor Co. has increased its capital to $43,625,000 and plans to enlarge its works by an additional factory building 350 x 250 feet.

ATLANTA, GA.—The Lanham Cotton Cultivator Co., 425 Empire building, has bought land on which it is reported planning to build a plant.

SHREVEPORT, LA.—The Power Farm Tractor Co., Continental Bank building, B. S. Braswell, president, will build a plant for the manufacture of farm tractors.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25

Chicago to:

Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½

Lap Weld

2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½

Lap Weld

2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½

Lap Weld

2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$20.50 to 21.00
Chicago	19.00 to 19.50
Eastern Pennsylvania	18.50 to 19.50
Cleveland	19.75 to 20.00
St. Louis	19.50 to 20.00
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.00 to 15.50
Cleveland	15.00 to 15.50
Birmingham	20.00 to 21.00
Valleys	20.50 to 21.00
Boston (dealers)	16.50 to 17.50

BUNDLED SHEETS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	15.00 to 16.00
Cleveland	15.00 to 15.50
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	12.00 to 12.50

STEEL RAILS, SHORT

Chicago	$21.50 to 22.00
Cleveland	22.50 to 23.00
Boston (dealers)	16.00 to 16.50
St. Louis	22.50 to 23.00
Birmingham	19.00 to 20.00
Cincinnati	18.00 to 18.50

STOVE PLATE

Pittsburgh	$18.00 to 19.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	20.00 to 21.00
Cleveland	19.25 to 20.25
St. Louis	23.00 to 23.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	16.00 to 16.50
Birmingham	20.00 to 21.00
Boston (consumers)	21.00 to 22.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$18.00 to 18.50
St. Louis	18.00 to 18.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.00 to 21.50
Chicago	21.00 to 21.50
St. Louis	20.50 to 21.00

BALED SHEETS

Pittsburgh	$18.50 to 19.00
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	$19.50 to 20.00
St. Louis	20.00 to 20.50
Eastern Pennsylvania	18.50 to 19.50

BOILER PLATE, CUT

Chicago, No. 1	$16.00 to 16.50
St. Louis, No. 1	16.00 to 16.50

ANGLE BARS—STEEL

Chicago	$20.00 to 21.00
St. Louis	21.50 to 22.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$23.00 to 24.00
Pittsburgh, No. 2	22.00 to 23.00
Chicago, No 1	21.00 to 21.50
Chicago, No. 2	19.75 to 20.00
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	24.00 to 24.50
St. Louis, No. 1	21.00 to 21.50
St. Louis, No. 2	20.00 to 20.50
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	17.00 to 19.00
New York, No. 1 (dealers' price)	23.00
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$19.50 to 20.50
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	16.25 to 16.50
Boston (dealers)	15.50 to 16.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers' price)	19.50 to 20.00

BUSHELING

Chicago, No. 1	$18.50 to 19.00
Chicago, No. 2	13.50 to 14.00
Cleveland, No. 1	19.00 to 19.50
Cleveland, No. 2	16.00 to 16.50
St. Louis, No. 1	19.00 to 19.50
Buffalo, No. 1	16.50 to 17.50
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.50 to 14.00
Chicago	9.00 to 9.50
Eastern Pennsylvania	15.00 to 15.50
Eastern Pennsylvania (blast furn.)	12.00 to 13.00
Cleveland	11.00 to 11.25
Buffalo	12.00 to 12.50
New York (dealers' price)	11.00 to 11.50
St. Louis	11.00 to 11.50
Cincinnati	7.50 to 8.00
Birmingham	13.00 to 14.00
Valleys	13.00 to 13.50
Boston (dealers)	11.00 to 11.50
Boston (blast furnace) (dealers)	11.00 to 11.50

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	13.25 to 13.75
Eastern Pennsylvania	15.00 to 16.00
Cleveland	14.50 to 15.00
St. Louis	12.50 to 13.00
Buffalo	13.50 to 14.00
New York (dealers' price)	11.00 to 11.50
Cincinnati	9.00 to 9.50
Birmingham	13.00 to 14.00
Valleys	15.00 to 15.25
Boston (dealers)	11.00 to 11.50
Boston (blast furnace) (dealers)	11.00 to 11.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	31.00 to 32.00
Eastern Pennsylvania	35.00
Cleveland	35.00 to 36.00
St. Louis	34.00 to 34.50
Buffalo	28.00 to 29.00
Cincinnati	26.50 to 27.00

IRON RAILS

Chicago	22.50 to 23.00
Cleveland	17.50 to 18.50
St. Louis	24.00 to 24.50
Buffalo	24.00 to 25.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	16.50 to 17.00
Cleveland	17.50 to 18.50
St. Louis	17.50 to 18.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$21.00 to 21.50
Cleveland	19.50 to 20.50
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	18.50 to 19.50

FORGE FLASHINGS

Cleveland, large	$14.50 to 15.00
Cleveland, small	18.00 to 18.50
Chicago, small	14.75 to 15.25
Boston (dealers)	12.00 to 12.50

FORGE SCRAP

Chicago	$19.50 to 20.00
Eastern Pennsylvania, No. 1	14.50 to 15.50
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	25.50 to 26.00
St. Louis	25.50 to 26.00

ANGLE BARS—IRON

Chicago	$23.50 to 24.00
St. Louis	23.50 to 24.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
Cleveland	16.00
Buffalo	16.00 to 17.00
Chicago	14.50 to 15.00

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	31.50 to 32.00
Buffalo	28.00 to 29.00
Chicago	29.50 to30.00
New York (dealers' price)	24.00 to 25.00
Birmingham	21.00 to 23.00
Boston (dealers)	25.00 to 26.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	21.00 to 22.00
Chicago	26.00 to 27.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$25.00 to 25.50
Pittsburgh, steel	22.50 to 23.00
Chicago, iron	23.50 to 24.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, Iron	22.75 to 23.00
St. Louis, iron	22.50 to 23.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	21.00 to 22.00
Birmingham, tram car	21.00 to 22.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$24.00 to 25.00
Chicago, cupola	26.50 to 27.00
Eastern Pennsylvania, cupola	24.50 to 25.50
Cleveland, cupola	23.00 to 23.50
New York, cupola (dealers' price)	21.50 to 22.50
Cincinnati, No. 1, cupola	21.50 to 22.00
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	26.00 to 26.50
Buffalo	24.50 to 25.00
Boston	27.00 to 28.00
Valleys	23.00 to 23.50

HEAVY CAST

New York (dealers' price)	21.00 to 22.00
Buffalo	21.00 to 22.00
Pittsburgh	21.00 to 21.50
Cleveland	17.75 to 18.25
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$21.00 to 22.00
Pittsburgh, agricultural	20.00 to 21.00
Chicago, railroad	21.00 to 21.50
Chicago, agricultural	21.00 to 21.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	20.50 to 21.00
Cleveland, agricultural	18.00 to 18.50
St. Louis, railroad	20.00 to 20.50
St. Louis, agricultural	19.50 to 20.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	$25.50 to 26.00
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	26.50 to 27.00
Birmingham	20.00 to 22.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	$20.50 to 21.00
St. Louis	21.50 to 22.00

BOILER PUNCHINGS

Chicago	$22.00 to 23.00
Eastern Pennsylvania	23.00 to 24.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

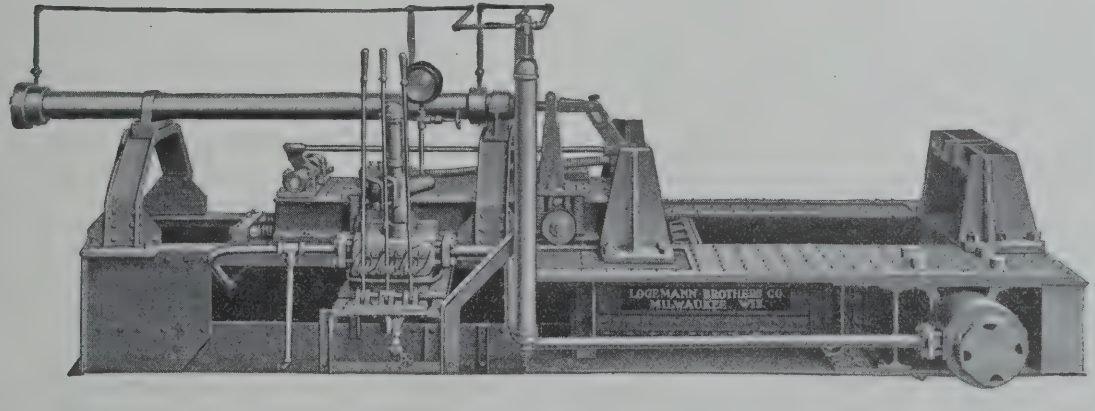
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg., Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A party in Greece desires to get in communication with exporters with a view to getting an agency for the sale of crude-oil engines, hydraulic presses, agricultural implements, flour-mill and oil-mill engines, steam engines, boilers, motor cars and trucks, mechanical tools, blacksmithing machinery, electrical machinery, etc. Opportunity No. 30454.

A Spanish mining company is planning to increase its production and will erect a new plant, which will involve the purchase of crushing machines, jigs, concentrating tables, fine-grinding machines and equipment for oil flotation. Opportunity No. 30460.

A firm of import merchants in India desires to connect with selling agents of American manufacturers of hardware, mill and railway stores; machinery; electrical supplies, etc. Opportunity No. 30462.

The president of a Spanish mining company is in the United States and desires to purchase mining machinery, gasoline and kerosene engines, electric motors and equipment and agricultural machinery. Opportunity No. 30498.

Business Changes Recently Announced By the Trade

NEW branch offices have been established by the Keller Pneumatic Tool Co., Chicago and Grand Haven, Mich., at Birmingham, Salt Lake City, Utah, and at San Francisco. The former is located in the Jefferson County bank building, under the management of H. I. Kahn. The Salt Lake City office is located in the Newhouse building, under the management of the C. H. Jones Co., and the latter office is in care of Eccles & Smith Co., whose main headquarters are in San Francisco, with branches in Portland and Los Angeles. Complete stocks of pneumatic tools and repair parts will be carried at all branches.

JENIFER blast furnace, at Jenifer, Ala., will be operated as the Jenifer Iron Co. in the future. W. Aubrey Thomas, of Jenifer, is president; John M. Thomas, Milwaukee, vice president, and T. E. Thomas, Niles, O., secretary and treasurer.

* * *

The Sun Machinery Co., 150 Nassau street, New York City, has established show and sales rooms at 278 Washington street, Newark, N. J., with Alvin R. Whitehead in charge as sales manager.

* * *

The Allen Motor Co. has completed the transfer of its factory and offices from Fostoria, O., to Columbus, O.

* * *

The Dace Auto Wheel Equipment Co., Bridgeport, Conn., has changed its name to the Dace Rim Co.

* * *

C. L. Post, vice president of the Condron Co., engineers, Chicago, has opened a branch office in the Central Savings & Trust building, Akron, O.

* * *

The Automatic Furnace Co., Dayton, O., has opened up a branch office at 231 Insurance Exchange building, Chicago, with Alfred J. Saxe in charge.

* * *

The Colonial Supply Co., Pittsburgh, has opened a branch office in Youngstown, O., which is located in the Stambaugh building, with William H. Harris in charge.

* * *

The Chicago Pneumatic Tool Co., Chicago, has removed its Cincinnati office from the Mercantile building to the Walsh building, Pearl and Vine streets, where a service station with a complete stock of its tools and repair parts will be maintained.

* * *

The buyer's office of the Remington Typewriter Co., Inc., was removed Sept. 1, from Syracuse, N. Y., to Ilion, N. Y. L. Rayburn is buyer for the company's factories at Syracuse and Ilion, N. Y., and Bridgeport, Conn.

* * *

The Pennsylvania Iron & Steel Products Co., Ellwood City, Pa., has established a sales office in the Oliver building, Pittsburgh, in charge of R. L. Mason as general agent.

* * *

The Bridgeport Electric Products Co., Bridgeport, Conn., has changed its name to the Liddell Electric Mfg. Co.

* * *

All offices of the United States Chain & Forge Co. now are located on the second floor of the Union Arcade building, Pittsburgh. Previously some of the offices were on the third floor of that building.

* * *

Luria Bros. & Co., Reading, Pa., scrap iron brokers, with branch offices at New York and Pittsburgh, have opened an office in the Board of Trade building, Boston.

* * *

The Nortmann-Duffke Co., Milwaukee, is the new corporate style of the former Nortmann-Duffke Foundry Co.

* * *

The Central Steel Co., Massillon, O., has removed its Detroit district sales office into new quarters at 1053 to 1055 Book building, 35 Washington boulevard, Detroit.

* * *

Representing Heller Bros. Co., Newark, N. J., high grade tool steel and files, B. C. Heacock has removed his offices to 206 Columbia building, Cleveland. This agency formerly was conducted by Norcross & Heacock.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, September 18, 1919 *No. 12*

Industry Calmly Awaits Events

Pending Strike Developments Have Small Effect on Trade Situation—Mills Sold up to Year End in Many Lines—Larger Independent Allotment of Steel is Sought for Export—Heavy Materials Are Improving

WHETHER the strike call of the radical union element against the steel industry is withdrawn, or not, apparently remains a matter of no great consequence to either producers or consumers. Both are taking the situation with the same calmness and lack of anxiety that have marked their attitude from the beginning. In reality the opinion is held in many responsible quarters that an attempt of the newly-recruited unions to dictate forcibly their program would be attended by a salutary and clarifying effect upon the unsettled labor situation of the whole country. It has been shown that the great bulk of the organized faction has been enrolled among the foreign and more ignorant classes. The American-born and skilled workmen as a rule have refused to joint in the movement and has been making a growing protest against interference with their conditions of employment. The trade situation in iron and steel continues highly favorable with production for the most part still on the upward curve.

Orders Are Declined

While new buying in those products which have been most active is not so vigorous on the whole, it is chiefly because it cannot be accommodated before an extended date. There is a liberal bidding for new tonnage by buyers but much of it is being declined by the mills. Specifications have been flowing in upon producers so heavily that very little free mill space remains up to Jan. 1 in steel bars, sheets, wire products, tin plate and lapweld tubes. Buyers are beginning to seek mill positions for 1920.

Heavy lines in which the demand has been lightest are improving but in an erratic way. The price softness in plates continues, attractive orders readily bringing out 2.50c Pittsburgh. Both the Carnegie Steel Co. and the Jones & Laughlin Steel Co. quoted to the navy this week 2.50c on plates and 2.40c on shapes on 5500 tons of material. Shipwork continues to develop. New lake contracts virtually closed call for a heavy tonnage of steel.

A continued expansion of new construction is shown by the 78½ per cent of fabricated steel capacity which was booked in August representing about 141,000 tons, a gain of about 7800 tons over July. With two exceptions the record is the best since December, 1916. Despite current reports, the railroad administration is yet to award the 100,000 tons of rails upon which bids recently were taken.

Ask Increase for Export

Growing prospects and sales abroad are denoted by the effort of the export agency of independent mills, to obtain an increased allotment of foreign tonnage from its principals. At present 10 per cent of the output of the associated plants is set aside for this purpose, this representing about 80,000 tons monthly. It is a question whether this additional tonnage can be spared because of the pressure of domestic demand. France has placed 6000 tons of ship plates in the east. A Belgian inquiry for 10,000 freight cars now pending will call for about 80,000 tons. An interesting purchase by Italy calls for the unassembled material for a 5500-ton fabricated ship. A 15,000-ton sale of plates to Japan is reported. Brazil has inquired for 15,000 tons of rails and an inquiry for 6000 tons of light rails is current from Europe.

In this connection, further light is shed upon the outlook for French competition in the foreign field by the exhaustive report of the official British inquiry into the new steel conditions of Europe, copies of which have reached this country. It is declared such competition is not to be expected until the destroyed works have been reconstructed and put in full operation, three to five years hence.

Iron Stocks Dwindle

Pig iron stocks with merchant furnaces have been dwindling steadily and now represent in total less than a month's shipments or production. August was the third successive month to show an excess of deliveries over output. The aggregate decline of furnace stocks since June 1, is estimated at about 150,000 tons. A further round increase in total orders was netted in August. The effect of this condition is a growing scarcity of foundry iron for this year. Sellers are having little trouble to get 50 cents to $1 a ton advance where they ask it and can deliver. Alabama No. 2 has been sold at $27.50 and $27.75 furnace.

SEPTEMBER 18, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
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BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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The Real Immigration Problem

FROM all that has been said during the past few months in regard to "the immigration problem" it is apparent that there is no such problem, except as some congressmen at the behest of a radical labor constituency are attempting to create one. There is no occasion for alarm in regard to the number of aliens departing from the United States, nor yet regarding the number of European workmen who may come to this country. But there is reason to fear that congress may suspend all immigration for a number of years, and thus bring about a more serious situation in this country than any which it may hope to improve.

Last spring the American Federation of Labor adopted as one of the features of its labor program for congress' consideration the suspension of immigration for five years. The federation at that time had no difficulty in finding congressmen to propose such a measure. Industry was not in such a favorable position as it is today; while there was some unemployment, the United States employment bureau exaggerated the state of affairs. It became an easy matter for congressmen to say that they would exclude all aliens for a number of years "to protect the American workingmen." Such a statement fitted in with the popular misconception that there was an oversupply of labor.

It was plausible enough at the time, but conditions have changed since then. The shortage of labor in the United States today is increasing steadily and threatens to become serious, and yet the bills to suspend immigration are still urged as a means of keeping alien workmen out of our "overcrowded labor market." Conditions which the sponsors of the bills said dictated the suspension of immigration have been reversed; there is a shortage of between 5,000,000 and 10,000,000 workmen in the United States; but regardless of that fact the friends of the federation insist that the supply be limited still further. The fact is that the measures were introduced not so much for the purpose of protecting the great body of American workingmen, 37,000,000 independent workers, but to give the American Federation of Labor a club with which to hold up employers for the benefit of 3,000,000 union men. The real danger lies in the fact that the suspension of immigration may force the suspension, or at least make impossible the extension of some of the country's industries.

There is no difference of opinion in regard to the exclusion of the mentally and physically unfit, and there should be none in regard to the admission of able-bodied, clean-minded men of Europe who might seek to make their homes in the United States.

In regard to the estimates of the number of aliens who are preparing to leave the United States it is significant that in no single year has the outgoing number exceeded the incoming; in other words, the balance at the end of the fiscal year has always been in favor of this country. Monthly returns have shown losses for such periods, but even during the war a net gain was shown each year. The net loss of some 15,000 in the first six months of this year probably may be offset by gains during the remainder of the year. The large amounts of money the aliens are reported to be taking from this country may aid toward improving the exchange situation, but does not represent a serious loss. Presently we may expect to see a majority of them back in this country. The high cost of living here may not seem so high after all when they have been called on to pay the war debts of their fatherlands, and no doubt many of them will be quick to reflect that they left liberal wages and comfortable living conditions back in the United States.

James Watt, His Work

DURING the latter part of the eighteenth century a crude type of steam pump was employed in the northeastern part of England to drain water from the coal mines. This clumsy apparatus consisted of a boiler, in which steam at a pressure

only slightly exceeding that of the atmosphere was generated, and an engine whose principal parts were a vertical cylinder, a piston and a counter-weighted beam. When the low pressure steam was admitted to the cylinder, the piston, aided by the counter-weight on the beam, was forced upward. The steam was then shut off and a jet of cold water was introduced into the cylinder to condense the steam. This reduced the pressure and allowed the atmospheric pressure to force the piston down to its original position. The water was drained from the cylinder into a well.

This engine, invented and improved by Thomas Newcomen, represented the most advanced development of the time. In 1764, James Watt, mathematical instrument maker of the University of Glasgow, attempted to repair one of these engines in the university laboratory. He became interested in the problem of reducing the consumption of fuel and water, and as a result of extensive tests he conceived the idea of condensing the steam in a separate vessel, thus avoiding the wasteful practice of alternately heating and cooling the cylinder. This was Watt's most important invention. Later he placed heads on both ends of the cylinder, introduced a steam jacket in the cylinder walls, suggested five methods of converting the reciprocating motion of a piston into rotary motion, built the first double-acting engine, introduced the cut-off admission valve and invented the well known parallel motion, the throttle valve, centrifugal governor and the indicator.

When the Scottish engineer commenced his remarkable work, he found the Newcomen engine, which consumed from 20 to 30 pounds of coal per horsepower hour. A score of years later, as a result of Watt's improvement, engines using only 6 pounds of coal per horsepower hour were in operation. In the century following the death of Watt the world has witnessed the introduction of high pressure steam, the development of compound engines and steam turbines, and the extensive use of superheated steam. However, the entire effort directed toward fuel economy since the days of Watt has resulted in reducing the pounds of coal per horsepower hour from 6 to 1¼ pounds, less than one-fourth of the reduction effected by Watt. The reduction is much less, if the typical modern engine of small rating is compared with Watt's engine. Moreover, there are a great number of pumps and engines in operation today whose performance shows far less economy than obtained by the Scottish engineer more than a century ago.

In observing the centennial of the death of James Watt, the engineers assembled at Birmingham do honor to one of the foremost contributors to modern industry. The new emphasis, bound to be given to the importance of his work by the centenary, is especially desirable in these days when economy, so urgently needed, is rarely achieved.

Coke Supply, France's Big Problem

NOTWITHSTANDING her tremendously increased resources of iron ore and her possession of numerous former German works in Lorraine, in addition to her own plants as a nucleus for a great industry, France has one vital problem which she must solve before she can take her place among the leading iron and steel powers of the world. This is the providing of an adequate and dependable source of coke or coking coal supply. Under present conditions the menace of Germany still is cast over the French industry, because the latter largely is dependent upon Westphalian coal for its furnace coke. What reliance may be placed upon this source for sustained supplies is significantly shown by the failure of the German government to fulfill its obligations under the armistice to deliver to France a certain tonnage of furnace coke daily.

This unstable position of France with regard to coke supply is one of the most striking of the many important conclusions contained in the report of the British commission appointed to examine the conditions of the iron and steel works in Lorraine in the occupied areas in Germany, in Belgium and in France, a copy of which has reached this country and has been digested in this issue. As a result of this fuel situation, a trade arrangement whereby France will furnish Great Britain basic pig iron in exchange for coking coal is emphasized as more than a strong possibility.

The report of the British commission is the most comprehensive and complete in detail of any study that yet has been made of the iron and steel conditions in continental Europe as altered by the results of the war. It describes the conditions of the works as they were found at the time of inspection, the progress of reconstruction and of extensions carried on by the Germans during the war and reveals many facts which heretofore had been veiled by the secrecy of war. None of these is more interesting than the account of Germany's unsuccessful efforts to cope with her shortage of ferromanganese which had been forced upon her by the blockade of her ports. She made many ingenious efforts to overcome this obstacle but the results as gaged from sound steel practice, were a failure.

Because of its exhaustive thoroughness and its wealth of detail the report of the British commission is one of the notable contributions that yet has been made on the subject of the recast steel boundaries of Europe and the future. The fact that the inquiry was made by eminent British steel masters greatly adds to its practical weight and importance.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 800 AND 802

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	27.00 to 27.25
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	29.75 to 32.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$30.50 to 31.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 28.50
No. 2 Northern, Boston	32.40
No. 2 foundry, Cleveland furnace	27.25
No. 2 foundry, Ironton furnace	27.50 to 27.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	29.50 to 30.50
No. 2X, eastern, N. J. tidewater	29.35 to 30.85
No. 2X, eastern, Boston	32.90
No. 2X foundry, Buffalo furnace	28.00 to 29.50
No. 2 foundry, del., Philadelphia	28.50 to 29.50
No. 2 foundry, N. J. tidewater	28.35 to 29.85
No. 2 southern, Birmingham	26.75 to 27.50
No. 2 southern, Cincinnati	31.35 to 31.60
No. 2 southern, Chicago	31.75 to 32.50
No. 2 southern, Phila.	33.25 to 34.00
No. 2 southern, Cleveland	31.75 to 32.50
No. 2 southern, Boston	35.50 to 36.00
No. 2 southern, St. Louis	31.00 to 31.75
Virginia, No. 2X, furnace	29.00
Virginia, No. 2X, Philadelphia	33.10
Virginia, No. 2X, Jersey City	33.40
Virginia, No. 2X, Boston	33.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	28.00 to 29.00
Silveries, 8%, furnace	40.25 to 43.00
Ohio Silveries, 8%, Chicago	44.05 to 46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	39.80 to 41.80
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	32.75

Coke

(At the ovens)

Connellsville furnace	$4.75 to 5.25
Connellsville foundry	6.00 to 6.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	8.50 to 9.50
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	7.50 to 8.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$105.00 to 110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	$105.00
Spiegel, 18 to 22 per cent furnace, spot	35.00 to 38.00
Ferrosilicon, 50 per cent, spot and contract, delivered	85.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.20 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	28 to 30 cents
Ferrovanadium, 35 to 40 per cent, per pound, maker's furnace	$6.00 to $7.50
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsburgh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.50c to 2.65c
Tank plates, Chicago	2.77c to 2.92c
Tank plates, Philadelphia	2.745c to 2.895c
Tank plates, New York	2.77c to 2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.62c
Bar iron, common, New York	2.62c to 2.77c
Bar iron, common, Pittsburgh	2.75c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	38.00 to 40.00
Relaying rails, Pittsburgh	39.00 to 41.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 800.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 800.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$58.80
Four-inch, New York	57.30
Six-inch and over, N. Y.	54.30
Six-inch and over, N. Y.	52.70 to 53.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.76½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.74½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	2.70c to 3.10c off
Hot pressed, square tapped	2.45c to 2.85c off
Hot pressed, hexagon blank	2.70c to 3.10c off
Hot pressed, hexagon tapped	2.45c to 2.85c off
Cold pressed, square tapped	2.85c off
Cold pressed, square blank	3.10c off
Cold pressed, hexagon blank	3.10c off
Cold pressed, hexagon tapped	2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Sept. 17, 1919	Average prices Aug. 1919	June 1919	Sept. 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	32.75	32.75	31.75	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
*Southern, No. 2, Birmingham	26.75	26.75	24.25	33.00
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa.	27.00	27.00	25.50	32.00
**No. 2X, Virginia, furnace	29.00	28.25	26.50	33.50
*No. 2X, eastern del., Philadelphia	29.75	29.60	29.60	34.50
Ferromanganese, 80 per cent, delivered	107.50	110.00	114.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.50	38.00	47.50
Bessemer sheet bars, Pittsburgh	42.00	42.00	41.50	51.00
Open-hearth sheet bars, Pittsburgh	42.00	42.00	41.50	51.00
Open-hearth billets, Pittsburgh	38.50	38.50	38.00	47.50
Steel bars, Pittsburgh	2.35	2.55c	2.35c	2.90c
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73

	Prices Sept. 17, 1919	Average prices Aug. 1919	June 1919	Sept. 1918
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.62	2.62	2.53	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Philadelphia	2.45	2.45c	2.45c	3.00c
Tank plates, Pittsburgh	2.695	2.695	2.695	3.23
Tank plates, Chicago	2.55c	2.65c	2.65c	3.25c
Tank plates, Philadelphia	2.92	2.92	2.92	3.52
Sheets, blk., No. 28, Pittsburgh	2.795c	2.895	2.895	3.48
Sheets, blue anld., No. 10, Pittsburgh	4.35	4.35c	4.30c	5.00c
Sheets, galv., No. 28, Pittsburgh	3.55	3.55c	3.50c	4.25c
Wire nails, Pittsburgh	5.70	5.70c	5.65c	6.25c
Connellsville furnace coke	3.25	3.25c	3.25c	3.50c
Connellsville foundry coke	4.75	4.30	3.90	6.00
Heavy melting steel, Pittsburgh	6.25	5.20	4.70	7.00
Heavy melting steel, eastern Pa.	20.50	21.25	17.25	20.00
Heavy melting steel, Chicago	19.00	19.60	16.15	28.50
No. 1 wrought, eastern Pennsylvania	19.00	20.75	16.75	29.00
No. 1 wrought, Chicago	27.00	27.25	22.50	34.00
Rerolling rails, Chicago	21.00	23.25	18.70	33.50
	25.50	29.00	19.25	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Early Foundry Iron Grows Scarce

Makers Find Little Trouble in Getting Advances When They Ask it—Alabama Makers Sell at $27.50 and $27.75 for No. 2—1920 Buying Still Held Back—Stocks Recede Rapidly

Cleveland, Sept. 16.—Increasing difficulty of buyers to get foundry iron for this year is evidenced by the growing sales of furnaces outside their ordinary geographical zones. Local stacks have been making various sales at distant points and at $27.75 for 2.25 to 2.75 silicon. In some cases Cleveland furnaces have sold at $27.75 for 2.25 to 2.75 silicon. This situation apparently is produced by the sold-up condition of many stacks. In fact some furnaces who have been selling right along, are being obliged to decline some orders. A valley furnace which recently blew in on foundry iron has withdrawn after booking a liberal tonnage for this year on the $26.75 basis. Sales for 1920 still are avoided by most producers in lake and valley territory, although one interest which has been accepting tonnage for next year from its regular trade booked about 5000 tons more for that period in the week. This business was done at the $26.75, furnace base, the same as the large tonnage which previously had been entered for next year by this producer. A fair amount of inquiry is current, much of which is for next year. The Westinghouse interests are in the market for several thousand tons of foundry iron for eastern plants. A 4000-ton inquiry for a western Pennsylvania consumer is out. There are no developments in steelmaking iron. Shipments continue heavy and furnace stocks are shrinking steadily.

Ask for Premium on 1920 Iron

Boston, Sept. 15.—The outstanding feature in the pig iron market here at present is the apparently unrestricted offer of 1920 iron at $29, furnace, for 2X eastern (2.25 to 2.75 silicon) by a Buffalo producer. Few other furnaces are offering any 1920 iron and they are holding out for a premium of approximately $1 above the price for this year. No sales of any importance have been made here during the week and the aggregate is made up of small tonnages. The few representatives who have 1920 iron to offer report a quiet condition with no sales above 300 tons. One small furnace in eastern Pennsylvania is offering 1920 iron and several small sales to eastern Massachusetts consumers have been reported for first quarter at $32, furnace, for No. 2X. Sales for this year from the Buffalo district have been made at $29 for No. 2X. Indications point to the placing of some large business for next year's requirements in the near future. The Draper Corp., Holyoke, Mass., is said to be considering a large purchase. A Boston foundry bought 300 tons of No. 2X for last quarter at $30, eastern Pennsylvania furnace. Several eastern Massachusetts consumers placed orders ranging from 100 to 300 tons of 2X eastern for first half delivery at $29, Buffalo furnace. Eight or nine Connecticut consumers placed orders for small tonnages of 2.25 to 2.75 silicon for this year. Virginia furnaces still are selling only in special cases, and in small lots, and nothing for 1920 has been reported in New England.

Foundry Grades in Demand

New York, Sept. 16.—Foundry grades continue to be popular in this market for such sales as are being made by pig iron producers. But such furnaces as care to sell at this time are taking on only small tonnages, which in the aggregate, however make up a fair total. A large seller in this market has taken on 10,000 tons in the week upon which full prices have been paid. This aggregate was divided about equally between iron for delivery this year and early next year. A couple of hundred tons of No. 2X, (2.25 to 2.75 silicon) have gone at $30, eastern Pennsylvania furnace. Iron is not being pressed upon the market from any producing district, a fact which shows stacks are comfortably filled with business especially for this year's delivery. Gray iron foundries in the metropolitan district, including northern New Jersey and eastern New York, are becoming busier and are taking additional small tonnages of iron. Still, some of them find a scarcity of molders which is tending to keep down the melt somewhat since they have orders that would keep them fairly well occupied. Virginia furnaces are still selling small lots of higher silicon iron in this district and are getting $32 and upward at the furnace in some instances, which quotation in other instances shows the furnaces are virtually out of the market. Low phosphorus and basic grades are quiet while charcoal producers are so well sold they have been practically out of the market for this year's delivery.

Maneuvering for Position

Philadelphia, Sept. 16.—Maneuvering for position in the future pig iron market, both buyers and sellers are observing each others movements circumspectly. Each side frankly admits the other has reason for its position and both are studying market conditions with care. Buying is being done on limited scale and in most

cases grades involved are foundry. General quotation in Philadelphia market for No. 2X (2.25 to 2.75 silicon) is $31 delivered, although one seller with more favorable freight rate is said to have quoted the equivalent of $30. Buffalo iron appears to be keeping out of the Philadelphia market and Virginia furnaces are not trying to push metal either, as high quotations of the leading producer in that territory would indicate. The most interesting inquiry out today calls for 1000 tons of low phosphorus, high manganese iron put out by Pennsylvania railroad for this year at Altoona shops. Confirmation is found in east of declaration by Lake Superior charcoal iron producers that they are sold up for sales agents at Philadelphia report failure to receive a single quotation on even as small lots as 200 tons wanted for this year, and upon which the price was a consideration secondary to delivery. Not one inquiry for basic iron is out in this market and bessemer is just as quiet, while neither of them appear to have anything on low phosphorus in absence of activity. Consumers of the latter grade still are absorbing wartime allocations, whenever they can, and this phase of the market is clearing up slowly but steadily.

Chief Interest in Foundry Iron

Pittsburgh, Sept. 16.—Considerable paucity still marks the demand for pig iron in this market and with the exception of foundry grades and possibly off grades of irons of special analyses, trading has been entirely in lots of one and two carloads. One house reports sales aggregating more than 1800 tons made up of numerous small lots. The National Transit Co., Oil City, Pa., has put out an inquiry for its foundry requirements for the last quarter which reached a maximum of 3800 tons. The Westinghouse Machine Co. is looking for 1500 tons of foundry for last quarter delivery and also would place its requirements for the first quarter of next year. One interest here quoted 28.75, furnace, for 2.25 to 2.75 silicon for shipment next year, more for the purpose of discouraging the purchase. Merchant blast furnaces still are fighting shy of commitments for 1920 for they have no way of determining the conditions that will exist by the time production against such business begins. Premiums of 25 to 50 cents a ton and occasionally a little more, are being obtained on small tonnages of foundry iron for prompt shipment. In the steelmaking grades the market is as dull as it has been at any time this year and while prices nominally are holding around $25.75, furnace, for basic, they can hardly be said to be firm as the business has been solely of small lots for immediate shipment and provides no real test of the market. A Pittsburgh district steel manufacturer is understood to have bought his requirements of basic for this month, amounting to between 2000 and 3000 tons, at 50 cents a ton below the regular base price. Significant of the fact that the situation is much more favorable in foundry than in steelmaking iron is a report that when the Ella furnace, West Middlesex, Pa., operated by E. W. Mudge & Co., Pittsburgh, is lighted it will go on foundry instead of basic and bessemer ordinarily produced at this furnace. Little is going on in low phosphorus iron.

Marked activity is observed in the demand for silveries from the automobile companies who seemingly have been obliged to make new purchases because of their failure to secure shipments against contracts they placed some time ago, due to the suspension of the Jackson county, O., furnaces on account of labor troubles. Shipments of silveries are reported to be moving forward from these furnaces but not so freely as buyers could desire. Most business reported through this market has been at a basis of $40.25, furnace, for 8 per cent. Higher prices than this are reported from outside markets, but a Pittsburgh interest making silveries still is far from being booked up at the lower figure.

Take 1920 Business at Advance

Buffalo, Sept. 15.—An increase in the foundry melt is shown by the enlarged demand for pig iron, and the entering of specifications against shipment. Furnaces are more inclined to quote on 1920 business, and some iron has been contracted for in small tonnages at an increased price. Such business, however, is small as furnace interests are cautious pending labor developments.

1920 Buying Increases

Chicago, Sept. 16.—While demand for pig iron for use during 1919 has fallen off to a negligible quantity, increased inquiry is being received for 1920 delivery about equally divided between malleable and foundry grades. This demand is coming principally from larger users and is not a general demand, nor does it seem likely to grow into a general buying movement for some time. Inquiries at present range from 500 to 5000 tons each. Already considerable tonnage has been sold in this market for next year. The principal seller is quoting $26.75, furnace, for No. 2 foundry (1.75 to 2.25 silicon), but for silicon grades above 2.25, $1 is being added to the usual differentials. It is understood an Ohio furnace recently selling silveries has booked all the tonnage it needs and has retired from the market for the present. An important southern interest has sold some small tonnages in the north recently at $28, furnace, for 1.75 to 2.25 silicon, with an increase of 4 per cent for each successive step in silicon content, making 2.25 to 2.75 silicon $29.50, furnace, and 2.75 to 3.25 silicon $30.25, furnace. Another southern producer which has no No. 2 foundry for delivery this year is selling some higher silicon on a basis of $28.50, furnace, for 1.75 to 2.25 silicon. Aside from bookings of 1920 iron as previously mentioned, the market is dull.

Buying in South is Light

Cincinnati, Sept. 15.—Southern furnaces are not yet willing to take on any business for next year. There is still some No. 2 foundry iron as well as odd lots of off metal to be had in the South for last quarter shipment, but during the past few days buyers have made few additional purchases, even though some of them will need extra iron to carry them through the year. Inquiry is exceedingly light, and sales equally limited. Southern Ohio furnaces are now practically out of the market for either first quarter or first half and the only business previously booked by them included a few medium tonnages taken at $28.75, Ironton. It is currently reported that one of the lake producers is still willing to accept some 1920 business from old customers at $26.75, furnace. The silvery iron situation is unchanged and all the Jackson county, O., furnaces are still idle. The minimum quotation on Virginia foundry iron (1.75 to 2.25 silicon) is now $30, furnace, but little iron is to be had in that territory for this year's shipment.

Small Lots Sold at St. Louis

St. Louis, Sept. 13.—Business in small lots of pig iron continues brisk, but there is a notable absence of large orders, either for foundry grades or steelmaking irons. The character of the buying, however, indicates an extremely healthy condition among consumers, and the outlook for the winter is considered good. Several selling agencies report much difficulty in procuring supplies for their customers. Authority to sell at certain figures is given, but if orders materialize is any volume, the authority is revoked, and a higher price quoted. This served to terminate what promised to be a fair buying movement earlier this month. Virtually nothing is being sold into 1920, and very little for the last quarter of this year. The great bulk of current transactions are for spot delivery, or shipment through September and October. Prices on all grades are strong. There has been no improvement in the demand for basic. Deliveries are far from satisfactory, due to the freight car shortage, and producers and their agents are being urged to hurry forward material on contracts.

Prices Up, Sales Exceed Output

Birmingham, Ala., Sept. 16.—Pig iron sales in the South every week aggregate more than twice the tonnage produced. Consumers are asking for delivery just as quickly as possible. The car shortage has caused delays and purchasers are apprehensive. Production improved slightly this week, the month's output will show a fair increase.

Prices continue to strengthen and an increasing number of sales have been made at $27.50 and $27.75, furnace, for 1.75 to 2.25 silicon for this year's delivery. One sale of more than 1000 tons at the lower figure was made. One leading Alabama producer has adopted a new schedule of silicon differentials, adding 4 per cent to the price for each one-half of one per cent of silicon above 2.25. This is slightly less than the percentage of increase in the government schedule.

John P. Brennan Dies

John P. Brennan, aged 62, dean of coke operators of the Connellsville, Pa., regions, died suddenly on the morning of Sept. 16, at his home

in Scottdale, Pa. Death was due to asthma which resulted from hay fever. It was thought that Mr. Brennan virtually had recovered from the attack and the preceding night had spent several hours on the front porch of his home. During the night he suffered a relapse and the end came quickly. Last May, Mr. Brennan retired from active business life, after a career of over 40 years, when the Hillman interests assumed control of the Thompson-Connellsville Coke Co., of which he had been president since its organization in 1906. He remained a heavy stockholder and retained his position as president of the Producers' Coke Co.; vice president of the Connellsville-Central Coke Co., and director of all three companies.

Ore Shipments

Now Handicapped by Car Shortage—New Tax May Foreshadow Raise

Cleveland, Sept. 12.—The sale of 15,000 tons of ore to one furnace interest is the only new development in the iron ore market. The company making this sale received another inquiry for a comparatively small tonnage, but the order has not been placed. The market continues quiet, and ore companies report they do not expect much new business to develop during the remainder of the season. Their chief activity now is toward getting the ore down in time to fulfill contract requirements.

The movement of ore is handicapped by a shortage of cars to convey it to the docks. So acute is this shortage that at a number of mines the operation of steam shovels has been suspended. The strike of workmen on the coal docks at Duluth has been called off, but a number of boats are still waiting to be unloaded, and more coal is needed at the mines.

A report to one of the ore companies received in Cleveland Sept. 12 was to the effect that the house of the Minnesota legislature has passed a bill placing a 10 per cent tonnage tax on ore shipments. The state voted to give its returned soldiers $15,000,000 extra pay for the time they were in service, and as the state's finances were in poor shape the Nonpartisan league immediately renewed its efforts to have a tonnage tax placed on ore. A special session of the legislature was called to vote additional sums for the soldiers, and the advocates of the tonnage tax bill forced it through the house before the ore companies knew what transpired. The legislature is to be in session but 10 days and it is hoped to defeat the bill in the senate.

As last season's shipment of ore from Minnesota approximated 45,000,000 tons, the proposed tax would amount to $4,500,000. Ore companies having mines in that state say that if this additional tax is placed it may result in increasing prices next year. They point to the fact that since 1916 the average selling price of ore has increased but $2 while the operating cost has exceeded that figure.

There has been some demand this season for low phosphorus ores, and furnace interests are now paying a premium of about 50 cents a ton to obtain this grade, the net price being $7 a ton.

Coke Market Still is Easy

Spot Demand for Furnace Grade is Light, Standard 48-Hour Fuel Selling at $4.75, Ovens—Foundry Coke Active, Price Averaging $6.25

Pittsburgh, Sept. 16.—Spot demand for furnace coke has been as light recently as it was a fortnight ago, and the softness in prices which began to develop a week ago still exists. Buyers have not specified fully against their contracts and there is not only that surplus for open market sale, but also some additional production which has resulted from the fact that embargoes against eastern shipments have produced a somewhat easier market in coal. While much of the current business in standard 48-hour fuel still is at $4.75, ovens, it is believed that a firm bid a little below that price would not go a begging. No gains are noted in the list of active blast furnaces and a large independent steel company, which for several weeks has been a rather free buyer of spot coke now is producing all of its requirements, and has withdrawn from the market. It is reported that two or three contracts are under negotiation for the remainder of the year, but they are not expected to be closed until all doubts about the labor situation are cleared up. It is said that $5.50 is the minimum on contracts to run over the remainder of the year. The demand for foundry coke still is brisk and producers are having little or no trouble making sales in open top cars at $6.25, while occasionally they are getting $6.50. No bases in sales exists for a price lower than $6, ovens, for 72-hour coke. Production of this grade is being kept well within the limits of contract obligations. Connellsville production of coke for the week ended Sept. 6 is estimated by *The Connellsville Courier* to have been 263,742 tons as compared with 242,395 tons in the previous week.

Strong Demand at Boston

Boston, Sept. 15.—Demand for coke for the balance of the year has continued strong and despite the advance for next year considerable business is being placed for that delivery. The local producer has adopted the flat price of $11.90 to cover first quarter and first half contracts, and it is understood that even at that figure the producer is reluctant to sign up any large volume of business. The coal situation has eased up, and with a strong demand for spot deliveries, and with good prices obtaining, the by-product coke companies are content to let the 1920 situation develop naturally.

Incline to Higher Prices

New York, Sept. 16.—Sellers of foundry coke have stiffened in their ideas of price within the past week, and whereas some had been talking $6, Connellsville ovens, in the past week, now reports of some likelihood of a $6.50, ovens, are heard. Sales of small tonnages at $6 are reported, however, all for delivery this year. Most consumers appear interested in this year's coke, and sellers are encouraging them to confine their interest to that delivery, at least until the labor situation grows clearer.

Cincinnati Market Grows Stronger

Cincinnati, Sept. 15.—Connellsville furnace and foundry grades continue to gain strength and current quotations on furnace coke range from $4.00 to $4.25, and higher. It is estimated that fully two-thirds of the Connellsville producers are asking $6.50 per ton, oven, for foundry coke for either prompt or future shipment, although some brands are still available as low as $6.00. Wise County and Pocahontas foundry grades are around $8.00, ovens, but none can be had in the last named field. New River is quoted at $9.00 to $9.50, but both furnace and foundry are almost unobtainable.

Car Shortage Increases Demand

St. Louis, Sept. 13.—Demand for coke in this district is considerably in excess of supply, due to the shortage of freight cars. Dealers are beset with demands for spot coke because of slow deliveries on regular contracts. Several foundries, which are working at capacity may have to slow down because of their inability to secure coke. Eastern oven interests report that it is virtually impossible to get equipment of any sort, and box cars are about as scarce as at any time in the history of the industry. Appeals to state, regional and national railroad officials have proved futile. Some contracting for the first quarter of 1920 is reported, but ovens are uncertain as to future costs, and will not sell too far into the future.

Southern Prices Firm

Birmingham, Ala., Sept. 16.—Coke producers are receiving inquiries daily, but are selling cautiously. All independent companies have sold fairly well ahead and the pig iron producers need most of the coke they can manufacture. Labor shortage and other difficulties are delaying construction of by-product coke ovens.

Cleveland-Cliffs Takes Over More Mines

Recent reports that the Cleveland-Cliffs Iron Co. has taken over several of the Great Northern ore properties in Minnesota are now confirmed by the company. The properties taken over include the Bourne, Trumbull, North Star, Bingham and Hill mines. They will produce grades of ores which will round out the company's assortment of old range ores produced from the Marquette range for the past 60 years. Several steel companies are associated with the Cleveland-Cliffs Iron Co., in the ownership and operation of these mines, and the operating company will be called the Mesaba-Cliffs Iron Mining Co.

Scrap Market is Waiting

Buyers Watch Developments in Strike Situation—Prices Irregular in Various Districts—Government Sales and Offerings Heavy

FOR COMPLETE SCRAP PRICES SEE PAGE 802

Chicago, Sept. 16.—Although the possible postponement of the date of a general strike call of steel workers has given the market a better feeling, because of the growing idea that the threat largely is a bluff, the possibility of trouble is holding the scrap iron and steel market at a decidedly lower level than otherwise would be the case. Consumers as a rule are taking comparatively little scrap and prices are barely holding their own, with occasional small declines. In spite of this condition dealers believe the market is intrinsically strong and are not willing to part with their accumulations. A dealer who recently sounded out the market for shell steel found an unusually receptive condition and disposed of 5000 tons in one lot to an eastern consumer and has several live prospects in addition. Railroad tonnages continue to be small. The Northern Pacific offers 725 tons, the Chicago, Burlington & Quincy 3500 tons, the Chicago, St. Paul, Minneapolis & Omaha 400 tons, the Chicago Great Western 300 tons, the Kansas City Terminal five carloads and the Michigan Central has issued an open list.

Boston Market Unsteady

Boston, Sept. 15.—Despite activity among foundries, the scrap, iron and steel market has been unsteady during the past week. Local demand for some grades has been strong, but the absence of the normal buying by the steelmakers has been felt on all sides. Heavy melting steel has sold as low as $15 to dealers, although $16 has been paid in some cases. A Worcester consumer of this grade purchased a moderate tonnage at $18.50, delivered. Several sales of from 50 to 200 tons of No. 1 machinery have been reported at about $28, delivered. One eastern Massachusetts consumer offered $28.75, and a sale is believed to have been made at this figure. Government scrap has again been sold during the past week by the Boston district ordnance office. However, the government refused to sell several lots at prices offered. The American Metal Co., Philadelphia, was high bidder on 130 tons of 1 7/16-inch screw stock, at South Boston, at $33.40 per ton, but no award was made. The Cape Anne Tool Co., Pigeon Cove, Mass., was awarded 23 tons of special chrome nickel steel at its own plant at $50 per net ton. The United States navy yard, Boston, awarded several lots of scrap. Fifty tons of turnings were sold for $10.80, at the yard. Steamship plate scrap, tubes and structural scrap was sold to Boston dealers at prices practically uniform with the established market. Malleable scrap has been in demand. A Boston manufacturer bought 50 tons at $21, delivered. A small tonnage was also sold to a Connecticut consumer at the same price.

Supplies Plentiful, Market Quiet

New York, Sept. 15.—Although some dealers report fair activity, the local scrap market as a whole remains quiet. Cast scrap appears in best demand, but even in this material the movement is relatively small. Supplies appear plentiful, but there is little or no shading. City wrought scrap, long stock, seems slightly weaker, but there has been no material change in offerings. A bullish factor at this time is the attitude of government authorities regarding prices. As reported last week, bids on several government lots have been rejected as too low. Bids on 28,775 pounds of drop forging flat steel bars will be received by the government authorities here up to Sept. 16, and bids on 845 tons of shell forgings will be received up to Sept. 25. The Norfolk & Western railroad will take bids on a large tonnage of miscellaneous scrap up to Sept. 17.

Lighter Grades Are Advanced

Philadelphia, Sept. 16.—Sales of scrap in this district the past week have been chiefly in the lighter grades. Consumers of heavy melting steel seem disinclined to enter the market while the labor situation remain unsettled. The lighter grades are scarce and under the steady demand have advanced $1 a ton, this applying especially to machine shop and blast furnace turnings and cast-iron borings.

The Philadelphia district ordnance bureau will receive bids until Sept. 24 on approximately 750 tons of 9.2 high explosive shell forgings at the plant of William Wharton Jr. & Co., Easton, Pa., and until Sept. 23 on approximately 5386 tons of the same material also at the plant of William Wharton Jr. & Co. Bids will be received until Sept. 24 on 755 tons of 75-millimeter forgings at the plant of the Worthington Pump & Machinery Corp., Hazelton, Pa.

Fair Demand for Cast Iron Scrap

Pittsburgh, Sept. 16.—A rather good demand is noted here for cast iron scrap with some fair sales of cupola, heavy breakable and stove plate being made at prices from 50c to $1 a ton over those which recently prevailed. Some demand also is noted for wrought scrap, and with offerings extremely scant the market is showing considerable strength in that direction also. Malleable scrap constitutes a strong spot in the market as offerings are below requirements. On strictly steel plant material trading is as dull as it has been for several weeks past and the price tendency is toward lower levels because of a little more anxiety on the part of dealers to sell. Buyers probably would have no difficulty now in picking up heavy melting steel at $21 per gross ton, delivered, Pittsburgh. No large tonnages of this grade are available, but at the same time quite a few cars are coming onto the market because of rejections by original producers. A Pittsburgh district steel manufacturer report the purchase of 1000 tons of machine shop turnings at $12. Some disposition is noted among dealers to doubt the accuracy of this report in view of the fact that some of them, short of the market, have been offering 50 cents to $1 a ton more than the figure at which this purchase was made. Bundled sheets are not in particularly strong demand and can be bought for slightly lower prices than recently prevailed. Sales of No. 1 cupola cast recently have been made as high as $26 and of heavy breakable cast as high as $23.

Mills Buying More Scrap

Buffalo, Sept. 15.—Mills are steadily increasing production and demand for scrap is stronger. Fair tonnages have been sold to the mills at prevailing market prices. There is a heavy demand for borings and heavy axle turnings. The car shortage is worrying shippers.

Large Steel Purchase Reported

Cleveland, Sept. 16.—Quite a few scrap iron and steel dealers here look for scrap to drag for several weeks. Not only are melters out of the market entirely, but trading among dealers appears to have dropped to a minimum. The report that the leading user of heavy melting steel here has bought 50,000 tons of high-grade scrap steel from the government at about $21.50 is generally credited, and removes this melter from the active trading list. Most melters seem to be well stocked, and say they are awaiting labor situation developments. Considerable scrap is moving on contracts. Cars are increasingly difficult to get. Prices are weaker all along the line, but trading to give a basis for marking down is lacking.

Cincinnati Market Soft

Cincinnati, Sept. 15.—A soft spot has developed in the scrap market, due to slow demand during the past few days. Foundry scrap is just holding its own, but melters are not willing to contract ahead and the bulk of the business done is for metal to be shipped during the remainder of the year. Steel mill scrap is not in demand, and prices are not firm. The absence of business makes it hard to determine what present values are. Considerable complaint is still being made as to the shortage of cars.

St. Louis Market Unsettled

St. Louis, Sept. 13.—The scrap market is unsettled and some price reductions were made in dealers' lists during the week. Mills are not buying in this district, but foundries are extremely active, having all the work they can do through the balance of this year. Grades suitable for foundry use are in excellent demand. No. 1 railroad cast is quoted from $26.50 to $27, although a slight reduction from these figures is probably nearer actual

values. No. 1 cast agricultural machinery ranges from $26 to $26.50. Offerings by the railroads included the following: Wabash, 1800 tons; Frisco, 800; Missouri, Kansas and Texas, 1200, and the Mobile & Ohio, 600. All of this material was sold to dealers at slightly lower prices than have prevailed.

The St. Louis ordnance office is offering for bids, Sept. 23, approximately 4000 gross tons of 8-inch common shells and for bids Sept 25, 3543 gross tons of the same material, both at the plant of the Wagner Electric Mfg. Co.

Birmingham Market Improves

Birmingham, Ala., Sept. 16.—Demand for scrap iron and steel has improved and indications now point to considerable activity during the last quarter of the year. Prices remain firm and it is predicted by dealers may be advanced by the end of the month. Scrap is being shipped by dealers in this section to St. Louis and Chicago. Country scrap is being gathered more freely.

Wire Orders

To be Had Readily at Advances—Mills Are Sold Up

Pittsburgh, Sept. 16.—Makers of wire and wire products are sold up so close to probable production over the next few months as to be unable to give much consideration to new demands. Specifications are coming along quite freely and it is stated that new orders might readily be placed at premiums over the March 21 figures, now asked by most of the independent companies, if they would take the business. The American Sheet & Tin Plate Co. alone is holding to the March 21 prices and is in the same position as the independents in the matter of new bookings, being sold ahead over the remainder of this year. Specifications are running considerably ahead of production and only by drawing on warehouse stocks are manufacturers able to keep abreast of the buyer's requirements.

Consumers Taking Wire, Nails

Chicago, Sept. 16.—Continued heavy demand for wire and nails is being received by makers and with a better supply of cars shipments are moving forward in large volume. Jobbers are large buyers and ask immediate shipment because they are unable to accumulate stock, as consumers are taking the material as fast as it reaches them. This shows a gratifying state of the market and with heavier demand than mills are able to meet, prospects for future business are excellent. Most makers are unable to entertain all the inquiry presented them.

The J. I. Case Plow Works, Racine, Wis., has been re-incorporated without change in name under the laws of Delaware, with a capital of $5,000,000 first preferred; $5,000,000 second preferred and 125,000 shares of non-par value common stock. The new company absorbs the Wallis Tractor Co., Racine, Wis.

Plate Gain is Continuing

France Places 6000 Tons—Belgian Cars Require 80,000 Tons—Lake Ships Call for Thousands of Tons—Prices Easy

Philadelphia, Sept. 16.—More business has been taken this week by one leading eastern plate mill than in any previous month, this being the fourth successive month to show such gains. Considerable domestic plate specification has come out, while export tonnages have increased. One mill has taken 6000 tons for shipment to France to go into two ships, while marine boilermakers are closing on some good domestic business. The Belgian car inquiry on which American builders are figuring calls for 10,000 cars of which it is estimated to require eight tons of plates. One mill that recently operated at 30 per cent now is running at 60 per cent.

Eastern Market Quiet

New York, Sept. 16.—With ship and car builders still out of the market for actual tonnages, the eastern plate market in this section continues quiet. Several prospects, however, are before the trade which involve several lots of oil tankers. One such includes plates for four or six tankers while another is said to involve 20 tankers of 10,000 tons capacity, one to be delivered in six months, and one every six weeks thereafter, all being intended for European oil trade. However, mill circles have not been asked to figure on the plates involved in any of these projects as yet.

Quote 2.50c on Large Lots

Pittsburgh, Sept. 16.—Plate mill capacity still is far from being heavily taxed and manufacturers no longer are holding out for the March 21 base, except on small tonnages and even then have difficulty in getting it. Several of the independents are meeting the price of 2.50c, recently quoted by the Carnegie Steel Co. on a navy department battleship inquiry, on large tonnages, while on orders of less than 500 tons, 2.55c to 2.60c, Pittsburgh, are the more common quotations. Few of the mills have more than a few weeks' rollings in sight.

Vessel Contracts Reported

Cleveland, Sept. 16.—Reports are current of large vessel contracts, pending or placed with lake yards. One estimate places the steel requirements of these contracts at many thousands of tons. These negotiations have been under way for several weeks and have been previously referred to. It is understood that the contract for tanks and stills for the new Standard Oil of Ohio refinery at Cleveland, placed with an Alliance, O., shop, involves about 3000 tons and represents only a portion of the work of this kind. The total of the latter it is said may run 8000 to 10,000 tons.

Western Market Easy

Chicago, Sept. 16.—Demand for steel plates in the West is less active than for bars and while the leading independent has sufficient business on its books to take care of almost its entire production to the end of the year, the leading interest has considerable capacity not yet covered by contracts and is able to take on more tonnage. Indications are that considerable demand for ship material will come from Pacific coast builders within a short time and take care of part of this capacity. Repairs of freight cars, which is being undertaken on a larger schedule than formerly is also counted on to give considerable assistance.

Order Books

In Tin Plate Fill Mills to Dec. 1—1920 Sales Soon

Pittsburgh, Sept. 16.—Although new business in tin plate recently has been of moderate proportions, order books are filled up to a point where the present rate of operations, which average around 95 per cent of capacity, will be necessary until about Dec. 1 to get the material out. The American Sheet & Tin Plate Co., probably will open its books for first quarter and first half of 1920 business about Oct. 15. As specifications for January shipments must be placed by Nov. 15, and as present bookings are sufficient to keep the mills going practically full through November, the prospect is for no interruption for the next five or six months. Some export inquiries still are coming out for tin plate but those calling for prompt delivery are being declined. Inquiry is noted for 10,000 boxes of tin mill black sheets from Japan. Quotations are firm at $7 per base box, Pittsburgh, on domestic orders. While a little less has been accepted on export orders some tonnage also has been booked above that figure.

Japanese Inquiry Current

Youngstown, O., Sept. 16.—Orders for tin plate in this district are heavy but makers decline to close for any further tonnages. An inquiry for 8000 boxes of 20 x 30-inch, charcoal plates from a Japanese interest is before a dealer here. The leading maker is out of the market until the end of the year.

Strip Steel Makers Take Little New Business

Pittsburgh, Sept. 16.—Strip steel manufacturers in this district are not taking on much new business except from regular customers due to the fact that present bookings of both hot and cold rolled are sufficient to absorb probable production over the remainder of the year. While occasional sales are being made at premiums over the March 21 prices no concerted effort is being made to obtain an advance, although a number of insistent demands daily are coming out on which buyers probably would be glad to pay higher prices to secure supplies.

Select New Bar Orders

Demand Continues in Excess of Capacity—Mills Scheduled Well Into Fourth Quarter—Small Sizes Active

Chicago, Sept. 16.—Demand for soft steel bars is in excess of mill capacity and makers are unable to care for all the business being offered. After warning that deliveries during the present year might be uncertain unless specifications were filed promptly, contract holders have sent in specifications until mill schedules are cared for almost through the fourth quarter in some instances.

Hard steel bars are in good demand without any change in price. Manufacturers utilizing this form of steel are taking large tonnages while reinforced concrete work is not represented to any extent.

Bar iron is the weakest and most unsatisfactory product and western mills are operating only part time. A fortnight of idleness resulted in accumulating scarcely sufficient business to operate for a full week. This condition is attributed to the absence of railroads from the market. Prices remain firm at 2.62c, Chicago mill, which it is claimed is perilously close to the cost level, while one mill which is now idle is unwilling to take anything under 2.75c, mill.

Mills Falling Farther Behind

New York, Sept. 16.—Steel bar producers have settled down to getting out production while in the meantime trying to keep customers satisfied on deliveries. New sales are few and not invited since mills are gradually fall farther behind. Some of the larger producers say they have nothing to offer customers here under three and even four months. However, most of the latter appear covered for immediate requirements.

Export Trade Reviving

Philadelphia, Sept. 16.—Steel bar mills report being filled for next three months on practically all sizes for domestic delivery and are not seeking new business. Somewhat of a revival in the export bar trade is being felt to Italy, Japan and South America. Mills are firm on present prices. Iron bars show no additional activity and general quotation still is 2.50c, Pittsburgh.

Turning Down Much Business

Pittsburgh, Sept. 16.—Steel bars running 1 inch and smaller still are in brisk demand but inquiries for these sizes are not getting much attention due to the fact that practically all manufacturers are sold up for the next 60 days at least and some of them for an even longer period. Considerable business of this sort is being turned down and those manufacturers not in a position to take on additional tonnages are showing a disposition to book only such specifications as are attractive from a mill standpoint. Demands for the larger sizes outside of some moderate inquiries for 3-inch rounds for export are light and on these bars all manufacturers can make fairly early delivery. Little basis exists in sales except possibly for export for a price higher than 2.35c, Pittsburgh, although the Cambria Steel Co. continues to quote 2.50c and some export business continues to be taken at that price. Concrete reinforcing bars are in good demand for quick shipments with few of the mills in a position to take on much tonnage of that sort. Demand for iron bars is reported to be better owing to the sold-up condition of the steel bar makers and common bars now are firmly held at 2.75c, Pittsburgh, and refined at 3.00c. Chain makers are not especially heavy buyers of iron bars at present as demands upon them are moderate.

Turn Down Bolt Inquiries

Chicago, Sept. 16.—Practically all manufacturers of bolts and nuts are working on full order books and with heavy inquiry constantly being received, they are forced to turn down business continually. Demand is coming from all classes of users and is much heavier than can be booked. Prices are firm and no indication is shown of a change in either direction.

Demand Gaining Steadily

Pittsburgh, Sept. 16.—Makers of cold finished steel bars and shafting note a moderate but steady gain in both orders and specifications, but while a fair amount of business is before them no great difficulty is being experienced in supplying the needs at a mill operating rate of around 60 per cent of capacity. Prices are holding at 3.60c, base Pittsburgh.

Bands Sell at 3.50c for Export

Pittsburgh, Sept. 16.—Small sales of band steel for export are reported to have been made as high as 3.50c, Pittsburgh, and the manufacturer taking this business is quoting 3.35c, against domestic inquiries for this class of material. The regular market base is 3.05c, Pittsburgh, and no business to speak of has been placed at a higher price. The quotation of 3.35c is frankly admitted to be merely a notice to buyers that the company quoting the price is out of the market for immediate business. Only a moderate demand exists for hoop sizes and not much mill capacity now is being devoted to cotton ties, as makers rolled comparatively generous tonnages and are meeting specifications from these stocks.

Full Market Prices Cut on Navy Bids

Washington, Sept. 16.—Both the Carnegie Steel Co. and the Jones & Laughlin Steel Co. submitted bids lower than the prevailing market prices on an aggregate order of 5500 tons of plates and shapes for the tender DOBBIN being built by the navy at the Philadelphia navy yard. The bids were opened here last week. Both companies bid 2.50c on approximately 4000 tons of plates and 2.40c on approximately 1500 tons of shapes. These are the same prices submitted by the Carnegie company in bidding on 28,000 tons of plates, shapes and bars for battleships No. 49 and No. 50. Contracts for the steel for the tender have not been awarded. Other bidders on this tonnage at the full market prices of 2.65c and 2.50c respectively, were the Bethlehem Steel Co., Midvale Steel & Ordnance, and the Brier Hill Steel Co. R. C. Hoffman Co., offering Phoenix Iron Co. steel, bid on some schedules at market prices.

Ample Supplies

Now Apparent in Sheet Bars—Wire Rods Are Tight

Pittsburgh, Sept. 6.—Ample supplies of sheet bars and rolling billets now are moving to the finishing mills on contract. Talk of a shortage of sheet bars has entirely ceased, and open market activities are extremely limited. Practically full ingot capacity operations by the Carnegie Steel Co., for several weeks past have enabled that company to catch up with its specifications and other steel companies having a surplus of semifinished steel over their own finishing mill requirements appear to be in pretty much the same position. Shipment of billets, sheet bars and other semifinished steel can be made in open cars and since there has been no such scarcity of this kind of equipment the movement of the finishing mills has been practically unhampered. Makers of wire rods not only are meeting contract obligations, but also have moderate tonnages available for the spot market. Prices of billets, sheet bars and rods are steady at the March 21 levels.

Eastern Producers Sold Up

New York, Sept. 16.—Eastern consumers of wire rods have been seeking some mill that would take on tonnages of small size but have found producers slow to accept such business except from old customers. The quotation of $52, Pittsburgh, which has been standing for some time for domestic business, continues to be put out, and in one instance of 500 tons, a Pittsburgh district maker sold at that figure. Most producers, however, are inclined to refuse to quote, since they are filled up tightly and are limited in their supply of steel. It seems possible that a figure of $54 to $55 might bring out some rods, but this is a question, as deliveries are uncertain.

Served Regular Trade Only

Youngstown, O., Sept. 16.—Sales of sheet bars in this district are few and are limited to regular customers. The mills are committed until the first of the year and decline to take on any tonnage beyond then. A Cleveland interest and several dealers in the Pittsburgh district are offering tonnages of sheet bars in the market here. These tonnages, it is understood, are of a resale nature. One large producer of semifinished ma-

terial here remains out of the market entirely, having only enough material to supply his own needs adequately.

Would Reroll Shell Tonnage

Philadelphia, Sept. 16.—The semi-finished steel trade in the East continues to feel the adverse influences of the labor unsettlement as well as government offerings of wartime material. One purchaser of French shell tonnages scattered all over the country and said to aggregate 130,000 tons, has been negotiating with eastern mills to have them reroll 60,000 tons into bars or small billets but cannot find takers.

Good Buying

In Cast Iron Pipe in West—Mill Product Demand Keeps Up

Chicago, Sept. 16.—Detroit, which has been the best customer for cast iron pipe of any city during the season, will open bids Sept. 18 on 5000 tons of medium sized pipe. Figures will be taken at Columbus, O., Sept. 29, on 650 tons of 36-inch pipe. Shops are anxious to obtain business in larger sizes, as they have more orders for small pipe in proportion than they care to take. The United States Cast Iron Pipe & Foundry Co. has taken 1600 tons at Salt Lake City, and 60 tons at Pine Bluff, Wyo. The National Cast Iron Pipe Co. has taken 370 tons at Spirit Lake, Iowa. Quotations remain unchanged, but on small sizes some makers are increasing their prices somewhat, while the tendency is to shade prices a trifle on larger sizes, which are now more desirable.

Municipal Buying is Lacking

New York, Sept. 15.—Activity in the eastern cast iron pipe market still is being confined chiefly to buying for private account. No municipal demand of consequence is noted, and export buying, although somewhat improved, is still far from being large. No sales of more than 100 tons were reported during the past week in the foreign market. Most prices are firm.

New Features Are Lacking

Pittsburgh, Sept. 16.—Practically no change is seen in the tubular goods situation from that of the past few weeks. Plenty of demand still exists for lapweld pipe, particularly for line pipe for oil producers, but early 1920 is the best possible delivery against new business. Manufacturers are adverse to taking on commitments beyond the end of the year. Demand for buttweld pipe is good, and the boiler and mechanical tube business is improving, although in the latter more or less price-cutting still is going on.

Southern Plants Busy

Birmingham, Ala., Sept. 16.—Orders for cast iron pipe are being received steadily, and the plants of the United States Cast Iron Pipe Co., the American Cast Iron Pipe Co. and the National Cast Iron Pipe Co., are working almost at full capacity. The melt of pig iron is larger than in several years, and prospects are bright for several months of good business.

Ferro Market Unsettled

Some English Makers Reported to be Quoting $105—Domestic Price of $108 Named—1920 Spiegel Wanted

New York, Sept. 16.—The ferromanganese market naturally has been quiet after the mild flurry that was created by the filing of the formal complaint against the importers' price with the Washington federal trade authorities. Foreign makers are quoting $105 and upward through their New York representatives, but no active negotiations are said to be on just now, beyond the effort of several Ohio river and valley consumers to cover on 200 and 300-ton inquiries. One representative of a British producer has received advices that the quotation of $105 was its lowest, since it has found its producing costs have advanced $2.50 a ton since its last American sales. It is the belief of some British agents here that some small shipments of Russian manganese ore have been made from the vicinity of Poti in the past several months, but that no regularity can be figured on as yet from that source of supply.

Buying of ferroalloys has been light the past week, due probably to the uncertainty of the labor situation. Considerable interest was shown in the possible effects of the plan to impose a duty on imports of tungsten ore, but the consensus of opinion in the ferroalloy trade is that the bill will not pass the senate in the form in which it passed the house. Domestic makers report sales of ferrotungsten at $1.25 to $1.30 a pound contained. The ferrovanadium market is unchanged, sales of alloy low in silicon being again made at $7 to $7.50 a pound, contained, in good quantities, and $9 or higher for small lots. The ferrosilicon market is somewhat stronger than it was for several weeks, but prices below $85, delivered have not altogether disappeared. However large makers are asking upwards of $100 a ton, delivered, and a large tonnage probably could not be obtained at the lower prices. The ferrochrome market is irregular, prices being reported on a range all the way from 25 to 32 cents, in carload lots, for alloy containing 4 to 6 per cent carbon. Ferromolybdenum is obtainable with little inquiry at $2 a pound contained, delivered, any quantity.

Spiegel is Firmer

Philadelphia, Sept. 16.—Eastern spiegel producers have firmed up on prices and today $38 furnace for 18 to 20 per cent is declared to be the general quotation, although some domestic makers are said to have quoted even higher. Small sales have been made at $38 delivered.

English Makers Lift Prices

Pittsburgh, Sept. 16.—Although more or less unsettled, the market here for ferromanganese has a stronger tendency due to advices from the East that some of the English makers of this material late last week advanced their quotations to $105, c.i.f. Atlantic ports. Accompanying this report was an intimation that English producers at no distant date would seek to place their prices on a parity with those of American producers. This action of the English makers is believed to have been the direct result of the recent protest filed by the federal trade commission by American manufacturers of ferromanganese in which they claimed that English makers were "dumping" on American markets. News of the increase by the English producers has led one domestic maker to hold up a sale of 400 tons of 80 per cent ferromanganese which had been practically completed at about $108, delivered.

The market on 50 per cent ferrosilicon also is unsettled but by contrast with ferromanganese the price tendency is toward lower levels. Although some makers are quoting that material as high as $100, furnace, freight allowed, that price has found no recent basis in sales in this market; indeed, $80 appears to be the maximum price here and it is understood that a few carloads have been sold to Pittsburgh district consumers in the past few days at less than $80, furnace, freight allowed.

An inquiry is noted for 750 tons of 10 to 12 per cent bessemer ferrosilicon and a few other smaller inquiries also are coming out for this material, but actual sales are few, as most consumers are covered by contract and are depending on shipments against these bookings to meet their immediate requirements.

1920 Spiegel Wanted

Cleveland, Sept. 16.—Some consumers of spiegeleisen in Cleveland and surrounding territory are beginning to inquire for their first half needs but makers have not yet named a price for that delivery. One inquiry for 1000 tons is current. The market situation as to British ferromanganese is still clouded. Some of these producers are making no quotations whatever, awaiting developments in the "dumping" protest to the government by domestic makers. A quotation of $108, delivered, on domestic metal was made this week. Buyers are holding off some closing on inquiries recently put out and several thousand tons are pending in this territory.

Government Offers Spiegel

St. Louis, Sept. 15.—Bids will be taken by the local ordnance office up to Sept. 24 on 2034 tons of spiegeleisen at the plant of the Scullin Steel Co.

Imported Ore at 55 Cents

New York, Sept. 15.—The manganese ore market continues extremely dull. The price on imported ore has been established at 55 cents seaboard on a few scattering sales. Some spot Caucasian ore changed hands at this price, exwarehouse, New York.

Shape Market Uncertain

Structural Bookings for August Gained 4½ Per Cent, But Demand Seems Slowing up—Labor Difficulties Interfering With Building Work

New York, Sept. 15.—As the month progresses considerable uncertainty develops as to the showing September will make in the eastern structural market. During the first week it was generally thought the month would surpass even August, but the market has since become spotty, and fabricators at this time are exceedingly reticent about venturing an opinion as to what the month will develop. The present situation appears to be due chiefly to the unsettled labor situation. Many jobs, it is said, are being held in abeyance until labor becomes better stabilized. Architects and contractors state they find it difficult to make estimates. Some sizable tonnages have been placed, and there are other good contracts pending. In addition, there are a number of small awards which point to a good month. Prices on the general run of fabricated material range around $75 to $85. Structural bookings for August, according to the monthly statement of the Bridge Builders and Structural society, amounted to 141,000 tons, or 78½ per cent of the shops' total capacity. This is a gain of 4½ per cent or 7800 tons over the preceding month. August was the third largest month since December, 1916, only being eclipsed by July, 1918, when the total amounted to 116½ per cent, and December, 1917, when the tonnage aggregated 121 per cent. Following is a comparative statement:

Month	Per cent	Approximate tonnage
August, 1919	78½	141,000
July	74	133,200
June	65	177,000
May	49	88,200
April	24½	48,100
March	17½	32,300
February	12½	22,500
January	12	21,600
December, 1918	29	52,270
November	27	48,700
October	43	77,400
September	60	108,000
August	57	102,000
July	116½	209,700
June	56	100,800
May	60	108,000
April	64	115,200
March	47	84,600
February	55	99,900
January	53	95,400
December, 1917	121	205,200
November	77	138,600
October	61½	110,700
September	29	52,200
August	38	68,400
July	41½	74,700
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000
December, 1916	86	148,000
November	78	134,000
October	77	133,500
September	52½	99,400
August	64	112,600
July	47½	83,600
June	58	100,000
May	80	137,000

Large Jobs Held Up

Boston, Sept. 16.—The threatened strike has had the effect in New England of bringing to a head many small projects using structural steel. Plans for this work in most cases have been changed to permit the use of shapes on hand in Boston warehouses, even though this often meant greater expense. The effect has been the opposite on larger work which has been held up pending developments. Deliveries from mill are far behind thus delaying work already started. Only small contracts have been let recently. Broadway theater, South Boston, will take 250 tons.

England Places Small Lot

Philadelphia, Sept. 16.—Eastern structural lettings generally continue slow as building is confined mostly to residences. The unusual feature of market is receipt of order from England for several hundred tons of shapes following receipt of similar order by same eastern mill little over a month ago. Such orders have been rare as the British appear to aim at retaining at home all such business.

Just a Fair Demand

Pittsburgh, Sept. 16.—Shape mills in this district are not heavily pressed with business while the fabricating interests are booking a fair number of orders that are not specifying especially freely for the plain material. The market is looking a shade better on fabricated steel because of the fact that several good sized lettings have increased shop bookings and competition on new work is a little less severe. The American Bridge Co. has taken orders for eight barges involving about 2500 tons of steel.

Building on Increase

Chicago, Sept. 16.—Increased tonnages of structural shapes are being required in western territory and building operations seem to be steadily on the gain. The largest tonnage closed recently involves 4000 tons for a building in Los Angeles, the owner not being known. The steel has been placed with the Inland Steel Co. Three bridges across the Mississippi river, in or near Minneapolis, have been placed within the past few days. Awards amounted this week in this territory total about 10,000 tons.

Labor Uncertainty New Factor

Cleveland, Sept. 15.—Demand for structural shapes in this district continues active but is confined to small tonnages. One of the largest fabricators reports that deliveries cannot be made from its plants in less than two months, and from present indications this time will be increased in the near future, as the mills are filling up. Prospective builders are being warned of the possibility of delay in shipments due to labor difficulties, but instead of this hastening action it apparently has had a tendency to slow up demand. The uncertainty regarding labor is not confined to the fabricating plants but extends into other lines of building activity. The current week is the first since building activity began in the spring in which no large tonnage for building purposes was placed. The city ordinance restricting the height of downtown buildings having been liberalized to allow 20 stories, some of the large buildings now under way will be carried up further. One of these is the Hanna building which would mean the additional need of 3000 to 4000 tons. The Cleveland Trust Co. is planning an extension of its building which will require approximately 4000 tons, but the general contract has not yet been awarded.

CONTRACTS AWARDED

Building for the Columbia Chemical Co., Barberton, O., 260 tons to the McMyler-Interstate Co.

Two bridges for Boston & Maine railroad, 400 tons each; to American Bridge Co.

Bridge for Baltimore & Ohio railroad, 400 tons; to McClintic-Marshall Co.

Highway bridge in South Carolina, 300 tons; to independent.

Government hangar at Lakehurst, N. J., 8300 tons; to Bethlehem Steel Bridge Corp.

Building for Manistique Pulp & Paper Co., Manistique, Mich., 400 tons; to Pittsburgh Bridge & Iron Co.

Six barges for the Standard Oil Co. of Louisiana, 2000 tons; to the American Bridge Co.

Two barges for the Standard Oil Co. of California, 500 tons; to the American Bridge Co.

New factory building for the Chevrolet works of the General Motors Corp., Flint, Mich., 600 tons, to the McClintic-Marshall Co.

Addition for the Manhattan Silk Co., New York, 150 tons; to the Bethlehem Construction Co.

Coke drier building for Union Carbide Co., Niagara Falls, N. Y., 100 tons; to Buffalo Structural Steel Co.

Ice deflector for Niagara Falls Power Co., Niagara Falls, N. Y., 100 tons; to Buffalo Structural Steel Co.

Building at Los Angeles, owner withheld, 4000 tons; to Inland Steel Co.

Kahl office building, Davenport, Iowa, 1200 tons; to American Bridge Co.

Franklin avenue bridge, Minneapolis, 580 tons; to Minneapolis Steel & Machinery Co.

Cedar avenue bridge, Minneapolis, 554 tons; to Illinois Steel Bridge Co.

Ore handling plant for Belfont Iron Works Co., Ironton, O., 500 tons; to Mt. Vernon Bridge Co.

Hull theater and office building, Peoria, Ill., 254 tons, to Decatur Bridge Co.

Lyndale avenue bridge across Mississippi river, Savage, Minn., 238 tons; to W. S. Hewett.

Deck plate girder spans, for the United States railroad administration, Chicago Rock Island & Pacific railroad, 231 tons; to American Bridge Co.

Home Oil Refining Co., Franklin, Pa., 210 tons; to American Bridge Co.

Foundry for Ohio Steel Foundry Co., Lima, O., 452 tons; to Toledo Bridge & Crane Co.

Building at Chicago for the Manz Engraving Co., 156 tons to Vanderkloot Iron Works.

First unit of Nash Motors Co. machine shop and assembling plant at Milwaukee, Wis., 430 tons; to Northwestern Bridge & Iron Co.

CONTRACTS PENDING

Additional steel for Chicago Tribune building, Chicago, 340 tons; bids being taken.

Additional steel for Chicago Tribune building, Chicago, 340 tons. Taking bids.

Two armories at Ames and Iowa City, Iowa, 420 tons each. Bids asked by board of trustees, University of Iowa.

Foundry for Chain Belt Co., Milwaukee, 400 tons. Bids being taken by F. D. Chase, Inc., Chicago.

Foundry and machine shop addition for James Mfg. Co., Fort Atkinson, Wis., 800 to 850 tons. Bids to be taken soon.

Car Repairs

Main Business Before Builders—5500 Tons of Light Rails Up

Chicago, Sept. 16.—Most car builders find themselves faced with the probability that comparatively little buying of new cars will be done for some time to come and are centering their efforts on obtaining repair work. A number of inquiries for this sort of service have been put out by railroads and are being figured, one of them covering 4000 cars. Inasmuch as a great deal of this repair work represents almost the entirely rebuilding of cars, it is too heavy to be handled in railroad shops. It is understood that all box cars bought by the railroad administration have been assigned and accepted but that some gondolas remain in the hands of builders. Several smaller car building companies have as much repair work as they can handle during the remainder of 1919 and for some distance into 1920. The Southern Pacific railroad has let 15 baggage cars to the Pullman Co., and the Fremont & Gulf railroad is inquiring for 10 flat cars.

Inquiry for light rails continues active and mills have their production booked ahead for considerable distance. Inquiry for standard rails for 1920 delivery is being put forth by important lines acting on the assumption that railroads will be returned to their owners at the beginning of the year. This tonnage promises to be heavy.

Europe Wants Rails

Philadelphia, Sept. 16.—The one interesting export inquiry for rails calls for 6000 tons of 12-pound sections for European delivery. Various European countries are after small tonnages of rails of almost all weights up to 45 pounds.

Car builders are following closely the Belgian inquiry for rolling stock which calls for about 10,000 freight cars.

Big Demand for Light Rails

Pittsburgh, Sept. 16.—Heavy demands are coming out for light rails, especially for export, but not much activity is noted in standard sections or in track equipment. One of the export inquiries for light rails is for 100 miles, or about 5500 tons, but the source of the inquiry is not made public. These rails, rolled from new steel, are held firmly at 2.45c, Pittsburgh, but that price is being shaded by makers who reroll old standard sections to the lighter gages. Makers of spikes are booked to the end of the year on the smaller sizes and not inclined to take on new orders for delivery during this period.

Sheets Sold

To End of Year Generally—Many Orders Cannot be Accommodated

Youngstown, O., Sept. 16.—Sheet mills throughout the Mahoning valley are rolling again at top speed. Enough business is scheduled to warrant steady operations until the first of the year. Makers have no desire to commit themselves beyond this date. Although a large quantity of the business is of a contract nature still a good assortment of new specifications are current. One large maker here is taking only specified business for next quarter delivery. During the past two weeks a large quantity of business has been refused by several makers in this district.

Blue annealed sheets are in strong demand but the mills are not in a position to handle any further tonnages. Enameling interests are particularly active for blue annealed. Considerable tonnages are wanted by consumers in Cuba, South America and Japan. The Japanese continue to inquire heavily for galvanized also.

The Consolidated Steel Corp. is asking the various independent steelmakers, affiliated with it, to increase their allotments of finished product for export. At present the mills allied with this corporation agree to supply it with 10 per cent of production. It is understood that the valley interests affiliated with the corporation are not in position to comply with the request now. The Deforest plant, Niles, O., of the Republic Iron & Steel Co. is in operation.

No Room for New Business

Pittsburgh, Sept. 16.—Makers of sheets still are besieged with new demands to which they can give no consideration. Practically all such inquiries, even from regular customers, are being turned down because all manufacturers are committed for their probable production during the remainder of this year. No signs are apparent that buyers will not take every ton of sheets they have ordered and it is only through failure on the part of buyers to specify against orders that any tonnage would become available for the spot market. Mill operations continue at a high rate with the American Sheet & Tin Plate Co., doing better than 95 per cent of capacity and the independents also averaging close to that rate at mills not affected by labor troubles. Prices show no particular change and the market is firm at the March 21 basis.

Mills Sold for Year

Chicago, Sept. 16.—Producers of steel sheets are practically sold up for the remainder of 1919, and strong inquiry for 1920 delivery is being received. Producers are holding off as long as possible on this business and hope to be able to get well into October before being forced to take on tonnage for next year. Buyers are offering to accept contracts for 1920 tonnage without a definite price, on assurance they will be charged whatever price is current at the time of delivery. Current business is almost impossible to place. Prices remain firm and unchanged.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Sept. 10	Holiday	.....	....	....	.....	....	.....
Sept. 11	23.50	53.375	6.00	7.30	33 00	8.50	41.00
Sept. 12	23.50	53.375	6.00	7.25	33.00	8.50	41.00
Sept. 15	23.50	54.50	6.25	7.20	33.00	8.50	41.00
Sept. 16	23.50	54.50	6.25	7.15	33.00	8.50	41.00

* August shipment from Singapore, c.i.f. New York.
† American Smelting & Refining Co.'s price.
‡ Producers' price. Outside market unchanged 22.25c to 22.50c, casting 21.62½c to 22c, lake 22.50c to 24c.

NEW YORK, Sept. 16.—Business sentiment in the nonferrous metal markets has risen and fallen with the various turns in the labor situation. Consumers have not been active buyers of metals for a month or more. Zinc has been affected primarily by the threatened steel strike.

Further offerings of copper by second hand sellers appeared in the outside market the past week, but activity was light. The leading producers continued to quote 23.50c New York, for September delivery, 24.00c for October. Outside holders offered electrolytic at as low as 22.00c for ingot bars in warehouse, up to 22.50c for wire bars and contracts not yet specified against. Fourth quarter deliveries were sold at 23.00c. Some speculative operations were noted, short sales for deliveries the first and second quarter of next year being reported at 23.00c and 23.25c, respectively. Casting copper prices ranged from 21.75c to 22.00c, but supplies were scarce at these prices. Lake copper was offered by second hands at 22.50c, 23.50c to 24.00c by producers. Export business continues slow.

Several important galvanizers were in the zinc market just before the labor leaders announced the calling of a strike for Sept. 22, but upon that announcement they withdrew their inquiries and have not yet bought. The brass mills have not been buying heavily of late and the export trade continues checked by reason of the low exchange rates. The zinc market has declined steadily, sales today being reported at 7.15c to 7.20c, East St. Louis basis, September shipment. Fourth quarter shipment is held at about 10 points premium over nearby or 7.25c.

The American Smelting & Refining Co. advanced its lead price Sept. 15 to 6.25c, New York, an advance of $5 a ton. This was the first change in nearly seven weeks. During this time buying by consumers has been slack, but recently producers have been heavy buyers, either because they considered lead was a good investment under the present statistical position or because they wanted to cover certain contracts. Supplies are short and the production is asserted to be less than consumption.

Tin has been advancing steadily, both in this country and in London. Inquiry is brisk, over 500 tons being in the market Monday. Some tin plate makers are short of supplies of nearby tin, although they have contracts covering forward requirements. These interests also have been trying to pick up spot or nearby tin, but supplies are scarce, both here and in London. The market for Straits tin for August shipment from the Straits advanced from about 53.25c to 55.00c the past week; September from 53.00c to 54.50c; October-November-December shipment from 53.00c to 54.00c. Spot electrolytic tin was advanced to 55.75c, Perth Amboy. Spot 99 per cent tin is scarce at 55.00c, New York.

Export Inquiries Are Increasing

International Merchants Building up Trade on Service Basis—Steel Building Material and Steel Furniture Finding Sale in Europe—English Purchasers Interested in American Specialties—Greece Begins to Buy

NEW YORK, Sept. 15.—With the passage of the Edge bill by congress, which is now anticipated by exporters, the formation of foreign credits corporations, a relief from the hardships from a depressed foreign exchange, is in sight. This movement, already recognized in the action of the railway equipment houses, will be of more immediate benefit to the large dealers in export goods.

The foreign iron and steel trade opening up during September is showing a livelier tone in finished products than has been the case heretofore. While the orders are small in tonnage and money value, the total is measuring up to the best hopes of most houses. Foreign purchasers of American goods, it is said, are more frequently concerned with the service they are able to obtain in this market than over the matter of price. This is a feature of exporting to which various houses have been giving special attention and with satisfactory results.

The effect of this altering sentiment is recognized in markets as far apart as England and Japan. Merchants in both countries have recently let trial orders for certain iron and steel articles and have since confessed that they were merely testing out what kind of service they could obtain. In general they have been so pleased with this service that they are now promising to come back into the market with real orders. Judging from the volume of inquiries now coming in every day, it would seem as though these statements of foreign customers are being borne out.

Japan has been buying heavily of electrical machinery for mining. Some sales of pig iron to Japan were also noted. One house has sold Japan 2000 tons of pig iron and has received inquiries from the same source for approximately an equal tonnage. A sale of 15,000 tons of plates to Japan has been reported. An advance in the freight rates to the Orient is anticipated. The rate to India from Atlantic ports has been advanced 10 cents, it now being $1.10 per 100 pounds.

Oriental business continues to boom. One house is now quoting on 60,000 base boxes of tin plate. This commodity is becoming more scarce, and it is now said that it cannot be purchased in the United States for less than $7, although foreign purchasers are hoping to be able to cut under that price. Only recently the United States Steel Products Co. was quoting $6.75 on tin plate, but it is said that this price now has been advanced.

Buying Mining Machinery

South America is still purchasing the usual line of finished steel, and also mining and hoisting machinery. Brazil and Argentine are planning harbor improvements and material for building docks are being inquired for in this market. Brazil has purchased through one house 5000 reels of barbed wire, and has sent in inquiries for approximately 15,000 tons of rails. Argentine has been buying tubes, wire, pipe, sheets and tin plate. Both Colombia and Uruguay have been buying bars, although in small quantities.

The Balkan states have been sending in inquiries for all kinds of material but little, if any business has been closed. Shipments are difficult and the arrangements for payments have not been at all satisfactory. Greece has purchased a small tonnage of pig iron, and is interested in truck tractors, structural shapes, and railroad material.

English merchants are showing a greater activity than for some time past. American salesmen are unable to account for this, and while some are inclined to attribute the English inquiries to unstable conditions in that industry, others are suspicious that the Britons are starting negotiations with American producers merely to delay foreign sales on the part of the United States until they have settled themselves down on a basis of competition.

As a matter of fact some promising business has been closed with the English. England has been buying small tonnages of pig iron and has increased its purchases of steel billets. One house reported the sale of 500 tons of steel screw stock. English merchants have also become interested in American novelty goods, as the export houses prefer to call them. One of the English purchases reported was 500 tons of strip steel.

Belgium has been buying to the limit of her ability, and the total shows a healthy growth. Belgium has been especially interested in steel furniture and many sales are said to have been made.

Coal sales have been flourishing, American houses making sales to France, Holland and Belgium. This business is recognized as a temporary matter until the English mines resume full operations. French sales are picking up a little, although nothing of great purport has as yet been sold. It is said that the French are now buying mining machinery. A French sale of 10,000 tons of pig iron was lost recently, but a different quotation has been forwarded on a second inquiry for the same amount which it is hoped will get the business. A sale of several hundred tons of plow shapes was noted.

Some doubt is being expressed as to whether the French will purchase ship plates to any great extent in the United States. It is now said that the French will let contracts for the building of the ships to American yards, wherefore the plate business resulting therefrom would not technically be an export business at all.

Italy has purchased 300 tons of pig iron through one house, and a sale of 1500 tons of rods to Denmark was reported.

Export houses have not become very anxious over the threat of American steel workers to strike. They are inclined to believe that labor troubles will not be the basic reason for advances in prices. The prospective increase in prices will result more readily from the fact that many mills are filling up with orders, and in many lines have completely sold out for the fourth quarter. One of the largest mills has advanced its quotation to 2.50c, base, on bars. A small mill is still quoting 2.35c, but generally the mills are asking 2.40c and more. Notwithstanding the advance in price it is difficult to get deliveries. The mills will promise to deliver only within 60 or 90 days.

Exporters are expecting all iron and steel products to advance, although they acknowledge that for the moment the prices are holding firm. Plates and structurals are the only commodities which remain weak, and this is due to the fact that the mills have not as yet sold up to capacity.

Unions Divided on Steel Strike

Representatives Meet in Pittsburgh to Decide Question of Postponing Action Until After Industrial Conference—Radicals Said to Have Support of Amalgamated Association of Iron, Steel and Tin Workers

PITTSBURGH, Sept. 17.—Factional differences in the American Federation of Labor over the question of calling a strike in the iron and steel industry became more pronounced as the representatives of the 24 labor unions interested in the industry went into conference in this city today. The radical element urged that the unions proceed with their announced plan to strike Sept. 22, while the more conservative members counseled delay until after the industrial conference in Washington, Oct. 6. Both factions hoped to dispose of the question before adjourning.

Before issuing the strike call for Sept. 22, the committee last week had received telegrams from President Wilson and were fully informed of his desire that the strike call be held in abeyance until after the industrial conference. Notwithstanding this, however, representatives of the union now claim that they did not understand the President's position until after the call was issued.

The executive board of the Amalgamated Association of Iron, Steel and Tin Workers which met here yesterday is understood to have decided to urge the representative to stand firm for a strike next Monday. President Gompers did not attend the conference today, but it was stated that he would be represented. The general understanding is that Gompers has urged the representatives to delay the strike.

It is noted that the organizers no longer claim they have 90 per cent or more of the workmen signed up. They have modified their claims to about 52 per cent and when pinned down do not claim that many of the skilled workers are among their ranks. Instead of wholesale dissatisfaction among the men, it is doubtful if more than 5 per cent or at most 8 per cent of the men can be thus classified. A thorough investigation has shown that most of the new union recruits have been obtained from the foreign and more ignorant classes in the Mahoning valley. It is understood 80 to 90 per cent of the organized membership is from this source.

Unions Losing Favor With Public

WASHINGTON, Sept. 16.—While organized labor is keeping its own counsel as to plans for a strike in the iron and steel industry, events of the past week have given rise to speculation as to whether it will attempt to put its threat into effect. Even to those inherently prejudiced in favor of organized labor it is evident that it has lost much prestige by recent performances. This is reflected in part by speeches made in congress by members who either have been extremely favorable toward organized labor in the past, or at least have not opposed its principles. In addition to this it is believed the sentiment of the public has turned against organized labor.

This attitude has developed largely as the result of the strike of the Bos-

Unions Make $3 Cut Rate To New Members

THE effort of organized labor to attempt unionization of the iron and steel industry had its birth at the St. Paul convention of the American Federation of Labor, June 10 to 20, 1918. The labor leaders then declared that the failure of unionism to make any headway in the iron and steel industry during the past 25 years had demonstrated that the task was too great for any one craft to undertake. Therefore it was decided that the various unions whose crafts were represented among the employes of the iron and steel industry should join forces in a special movement against the industry. Accordingly, the national committee for organizing the iron and steel works was formed in Chicago, Aug. 1, 1918, with Samuel Gompers, chairman, John Fitzpatrick, acting chairman, and W. Z. Foster, Pittsburgh, secretary and treasurer.

The 24 organizations which joined with this plan were the International Brotherhood of Blacksmiths; Brotherhood of Boiler Makers and Iron Ship Builders of America; United Brick and Clay Workers; Bricklayers', Plasterers' and Masons' International union; International Association of Bridge and Structural Iron Workers; Coopers' International union; International Brotherhood of Electrical Workers; International Brotherhood of Foundry Employes; Amalgamated Association of Iron, Steel and Tin Workers; International Association of Machinists; Metal Polishers' union; International Union of Mine, Mill and Smelter Workers; United Mine Workers of America; Molders' union; Pattern Makers' league; Plumbers and Steam Fitters; International Union of Quarry Workers; Railway Carmen of America; Seamen's Union of America; Sheet Metal Workers; Stationary Firemen; Steam and Operating Engineers; Steam Shovel and Dredgemen, and Switchmen's union.

The first large obstacle which the combined unions encountered in their campaign for converts from the iron and steel industry was the high initiation fee prescribed by the constitutions of the various individual organizations. It was recognized that the amount of these entrance payments would limit seriously the number of recruits it was hoped to obtain since a strong effort was to be made to enroll the common laborers of the iron and steel industry. To overcome this difficulty, it was decided to set aside the constitutional provisions as to initiation fees of the various unions affiliated with the movement. All but three of the 24 organizations threw out the constitutions on this point and fixed a special initiation fee of $3; two of them reduced to $5 and one to $7.25.

ton police. Their position has been denounced broadcast and even by officials of the American Federation of Labor. Matthew Woll, vice president of the federation, in an address in New York last week apologized for the Boston strike by saying the federation granted charters to unions of policemen and firemen with the understanding that they would not resort to strikes. What was almost equivalent to an apology was the statement of Samuel Gompers that the situation in Boston is leading to anarchy, although he sought to place the blame upon the city and state authorities for not withdrawing their order against police affiliation with the federation. He recommended that the police return to work pending President Wilson's labor conference. Seeing the futility of their strike, the policemen have attempted to be reinstated, but their request has been refused by the authorities.

President Wilson and such members of congress as Senators Thomas and Myers have denounced the Boston strike as a crime. The senators have been extremely vigorous in criticizing the efforts of organized labor to unionize police, firemen and other public servants. Senator Myers said: "The strike at Boston is the most dastardly act since the time of Benedict Arnold." One high government official said it was nothing short of treason and should be treated as such.

These acts of organized labor, with the consequent resentment of the public, have a direct bearing on attempts to extend the tentacles of the federation throughout the industrial life of America. The attempt to force a strike in the steel industry is accepted by many as being one of the first steps in this direction, which it is hoped to further at the conference called for Oct. 6 in Washington.

To strengthen their position as much as possible, union leaders have given out figures purporting to show what the cost of a strike will be. It has been declared that a strike of the employes of the United States Steel Corp. will cost $11,500,000 a week. It also has been asserted that the weekly cost to union men will be more than $2,000,000, this statement being credited to Vice President Johnson, of the Bridge and Structural Iron Workers' union, who attended meetings at the offices of the American Federation of Labor.

"Most of this money will be spent by the 24 unions involved in payment of strike benefits," said Mr. Johnson. "Each union will be required to handle all benefits for its own members."

Mr. Johnson did not say how many union men in the steel industry would be given these "benefits," although some of his colleagues have said that the number ranges from 250,000 to 300,000, and that the number actually affected through affiliated industries will be as high as 500,000.

One of largest steel companies in the country has only 400 men who are affiliated with the union. It is estimated that the Steel corporation has 200,000 mill workmen. No figures as to how many are affiliated with the union are available here, but the proportion is known to be extremely small.

Announcement was made that Attorney General Palmer has begun a study of conditions in steel mill districts in some of which union men have said "the rights of free speech and free assembly have been violated," but this is considered to be a formal procedure on the part of the department of justice, undertaken at the instance of organized labor.

Gompers Unwilling to Take Responsibility

Washington, Sept. 16.—The fact that President Gompers said this afternoon that he will not go to Pittsburgh tomorrow to attend the meeting of 24 presidents of the steel workers' unions is taken to emphasize the fact that wide differences still prevail between the conservative and radical elements of organized labor regarding the proposed steel strike. It is believed that Gompers and the conservative faction favor postponement of the strike, with a probable decision to call it off altogether. While apparently some of the more radical members are ready to begin the strike next Monday, it is felt by some that the conservatives will maintain the upper hand and have it postponed, with the idea of avoiding a strike through conference here next month. The lack of strength of organized mill workmen is one reason for this attitude of conservatism.

Gompers claims he does not know what may be done at the meeting tomorrow, while according to reports from Pittsburgh the members of the committee give the impression that the decision is up to Gompers. This kind of tactics is taken to indicate that none wants to assume the responsibility for a strike and that it may be intended as a device to withdraw as gracefully as possible.

Await Rail Awards

Washington, Sept. 16.—Announcement by the railroad administration of its awards for 100,000 tons of steel rails is not expected to be made until after the return from his vacation of Director General Hines on Tuesday of next week. It is not certain that it will be made immediately after that, but the belief prevails that it will. No reason has been assigned for the delay in letting the contracts. So far as known Director General Hines has not protested against the prices, although it is well known that, in the course of the controversy Mr. Hines had with the defunct industrial board, he insisted that the prices of steel rails should be cut at least $10 a ton.

Resumes Meetings

Regular monthly meetings of the Pittsburgh Foundrymen's association for the 1919-20 season were inaugurated Sept. 15 at the Chatham hotel, with a paper by Enrique Touceda, consulting engineer, Albany, N. Y., whose subject was: "Some Pertinent Facts in Connection With Both Gray Iron and Malleable Castings." Mr. Touceda traced in interesting fashion the geology of iron, its early smelting and finally treated castings from a technical standpoint, the latter part of the talk being illustrated by lantern slides.

A. M. Fulton, vice president of the Fort Pitt Malleable Iron Co., elected president of the association at its June meeting, presided, and in addition to naming the regular committee appointed a committee to consider the revision of the by-laws.

The new committees follow:

Executive: C. S. Koch, Fort Pitt Steel Casting Co.; Henry Spilker, Sterrit-Thomas Foundry Co.; J. S. M'Cormick, J. S. M'Cormick Co.; J. Lloyd Uhler, Union Steel Castings Co.; C. F. Williams, Allen S. Davison Co.

Program: G. F. Tegan, THE IRON TRADE REVIEW, chairman; H. M. Meixner, Pittsburgh Piping and Equipment Co.; J. W. Guay, Fort Pitt Steel Castings Co.; T. J. O'Brien, Fort Pitt Malleable Iron Co.; R. A. Walker, *Iron Age*.

Entertainment: O. C. Dobson, Carborundum Co., chairman; C. W. Forcier, Mackintosh, Hemphill Co.; G. A. Bauman, Jones & Laughlin Steel Co.; C. L. Kirk, Kirk Supply Co.; L. W. Mesta, Mesta Machine Co.

Membership: L. A. Way, Lewis Foundry & Machine Co., chairman; John B. Coates, Pittsburgh Malleable Iron Co.; F. H. Clay, Allegheny Steel Co.; R. F. Eissler, Chicago Pneumatic Tool Co.; Thomas E. Reynolds, M'Conway & Torley Co.; Thomas Wilson, Rogers, Brown & Co.

Foundry fund trustees: William J. Brant, J. Lloyd Uhler, Chas. H. Gale.

Call Institute Meeting

The sixteenth general meeting of the American Iron and Steel Institute, it is announced, will be held at the Hotel Commodore, New York City, Oct. 24 and 25.

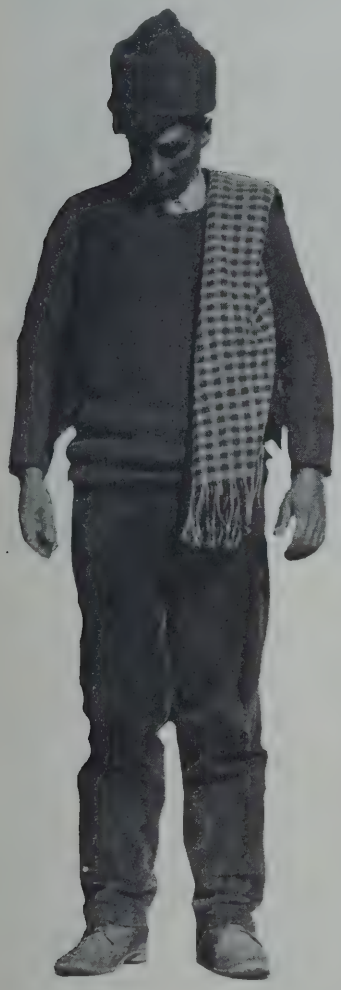
Suspend Immigration? What of Industry?

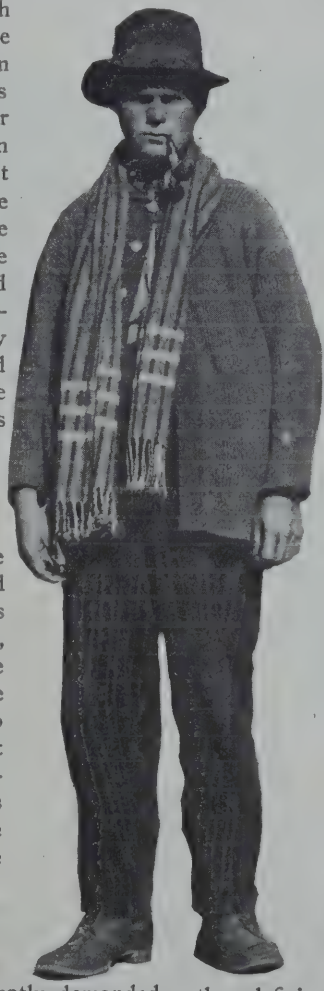




BY A. J. HAIN

DURING the war when resentment against aliens of certain nationalities was keenest, when the country was reported to be overrun with enemies nurtured here for years, a great number of American citizens believed all foreigners should be excluded from the United States for all time. It was an extreme opinion due to the patriotic fervor of the times, and not concerned with economic conditions which might arise in the future. A man's patriotism was measured in many instances by the extent to which he said he would go in keeping aliens from our shores — even if he would not go all the way to the trenches. The man who said he would exclude only criminals and the illiterate from this country after the war was supposed to be less patriotic than the man who would keep all aliens out for a time, and the one who said he would keep them all out forever frequently was awarded the palm as the premier patriot. With the war ended and the transition of industry begun another factor was considered. The United States employment service issued reports stating that there was a great surplus of labor, and trades unions promptly demanded that the doors be closed against aliens. Bills were introduced in congress to suspend immigration for a number of years.





Industry navigated the perilous shoals much better than labor statistics indicated it would, and when the supply of men and of work balanced a bill was introduced in congress to exclude aliens but two years. Industry continued to make rapid progress until reports of a shortage of labor became frequent. Now with plenty of work for all those in this country who wish to work, and with many mills and factories unable to produce enough to meet demand, the opinion is general that the United States should invite the brawn of Europe and exclude only the criminal class.

Congress was becoming converted to this opinion, notwithstanding insistent efforts made to induce it to pass a restrictive measure and thus shorten the supply of labor, with the inevitable consequence of forcing up wages. But recently reports were sent out from London that 10,000,000 aliens are making preparations to come to the United States. On what basis this estimate was made is not clear, and it must be considered in connection with the fact that European countries are passing laws and taking other means to restrict emigration. England is considering important regulations.

Frederick C. Howe, commissioner of immigration at Ellis Island, New York, after an extensive survey made personally in European countries, recently estimated that 5,000,000 wish to come to this country. According to figures compiled by American industrial executives that number of immigrants, assuming all were men, would not supply more than half the number of workmen needed in the industrial establishments of this country today. It would make up only the deficiency due to the suspension of immigration during the war. The experience of France is similar in some respects to that of the United States. "France for the French!" was the cry of all French-



men as the war came to an end. The restoration of industry in France has been slower than in any of the large European countries, save possibly Italy, but France now is importing thousands of Italian workmen to work her furnaces and mills. While work is not so plentiful in Europe nor wages so high as in the United States, a fact which will weigh against a serious exodus of aliens in the United States, nevertheless industries over there are steadily increasing their operations. The demand for finished materials is so great that as the industries recuperate the number of aliens seeking to come to the United States may be expected to decline.

In the meantime, European nations probably would welcome any action on the part of the United States barring their workmen, and such legislation would be more effective than any of that which they themselves could hope to enforce.

* * *

THE United States gained in population by immigration each year during the war, the total net gain for the entire period being 522,768. This represents the distinctly alien class, and does not include those who arrived or departed for temporary purposes.

In the five fiscal years previous to the war the net gain in population by immigration was 3,371,809. Assuming that immigration would have continued at the same average rate, this country would have added 3,209,041 more aliens to its population had the war not occurred. Computed on the basis of the average percentage of males among immigrants in the past 20 years, the loss to this country was 2,182,120 men. No allowance in this calculation is made for a progressive increase in immigration which might naturally have occurred. It represents a loss as to which there can be no doubt.

In the fiscal year ended June 30, 1908, the net gain in population was but 387,797, following a period of financial depression. In February, 1908, the tide turned strongly toward Europe, and the net loss in population during that month was 10,432. By 1909 conditions were somewhat righted and the net gain was 525,984, increasing to 839,134 in 1910, and dropping again to 582,921 in 1911, from which point it steadily rose to 915,142 in 1914.

The year 1915 left us with a net gain of but 122,626, many aliens in this country having been called to the colors. In succeeding years, however, while the doors of this country were still open to them, a noticeably less number of foreigners departed. The number to leave constantly diminished, while at the same time European nations were forbidding emigration. The net gain in population in 1916 was but 169,061. The figure increased to 229,126 in the following year, and then fell abruptly as the United States entered the war. The net gain in the fiscal year 1918 was but 16,033, and in 1919, 17,610.

How intimately the subject of immigration is bound up with that of labor supply is evident from an analysis by the president of a large manufacturing plant. He states that there is a shortage of 11,000,000 workmen in this country, nearly one-fourth of which he ascribes to the interruption of immigration. The analysis is interesting in the light of efforts now being made to suspend all immigration:

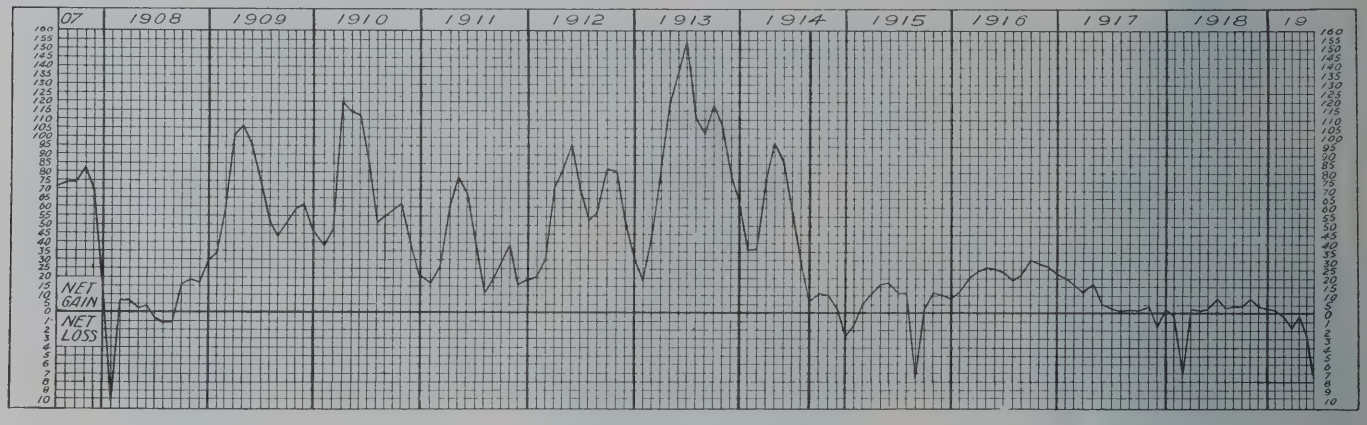
Due to lack of immigration	2,500,000
Due to decrease of working hours from 10 to eight on the basis of 10,000,000 workmen	2,000,000
Men engaged in the automobile and truck industry, including factory workers, garage workers, chauffeurs, etc., not similarly engaged a few years ago	5,000,000
Greater demand for help everywhere, in homes and on farms, due to higher wages and more luxurious living	1,000,000
Unusual amount of road work, due to appropriations by congress and states	500,000

Estimates of the number of men needed in American industries today may vary, but the fact remains that an increasing number of industrial establishments, and mine operators are reporting their inability to get men, regardless of the amount of wages paid, and that this condition obtains while demands on plant capacity are steadily increasing, on the eve of what is predicted to be "America's greatest period of industrial prosperity."

* * *

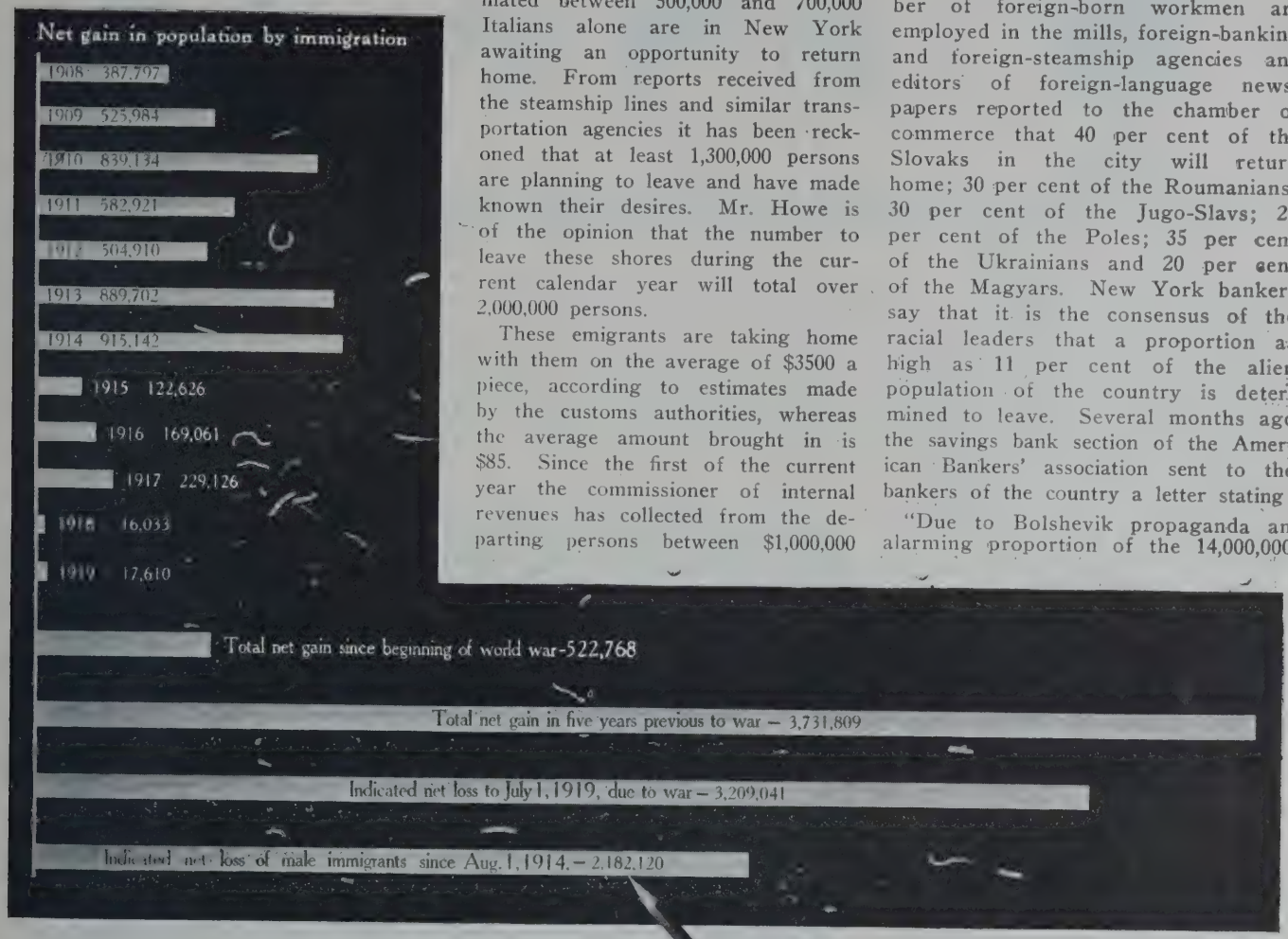
LONG lines of foreign-born workmen waiting to withdraw their savings, obtain passports or steamship tickets in the principal industrial centers of the country have caused some fear the emigration movement may attain serious proportions, but statistics compiled by the bureau of immigration up to July 1 show that since the war ended the number of emigrants has not greatly exceeded the immigrants. However, the government did not abolish passport-permit requirements until July 11, and it has not yet lifted the restrictions as applied to subjects of Germany, Austria-Hungary, Bulgaria and other nations which were associated with them. Estimates of the number of aliens preparing to leave the United States vary from 1,300,000 to 6,000,000.

According to a canvas made by the Inter-Racial Council, New York, those who have made preparations to leave, and who have either tried to book passage or have actually made a deposit on passage, include 300,000 Poles; 40,000 Greeks; 100,000 Jugo-Slavs; 150,000 Russians; 60,000 Czechoslovaks; 150,000 Hungarians; 300,000 Italians; 50,000 Lithuanians; 50,000 Ukrainians; and 200,000 of other races.



THE "WAVE" OF IMMIGRATION, MONTH BY MONTH, SHOWING NET GAIN OR LOSS IN POPULATION IN THOUSANDS

These figures are the result of a canvas made by the council in June and it is believed that they are conservative. The council believes that at least 1,500,000 foreign-born are preparing to leave immediately, which is a number equal to all the domestic servants in the country, equal to all the carpenters and coal miners, or equal to all persons engaged in clerical occupations in the United States. The council also is advised that the possible immigration will be composed chiefly of Jews and Syrians, trading peoples primarily and not usually laborers.



Emigration during the first eight months following the armistice exceeded the immigration by but 15,117 persons, according to statistics published by the department of labor. The departures from our shores, however, are comprised largely of grown men, potential laborers, whereas the small volume of immigrants has consisted of the usual mixture of men, women and children.

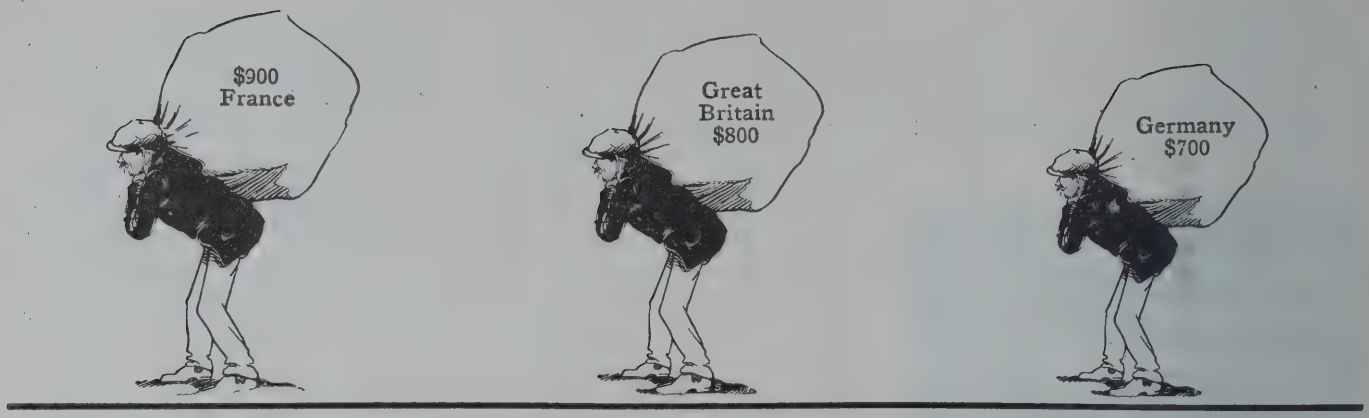
According to the opinion of Commissioner Howe, the outgo of laborers will increase with the fall months. During November, 1918 the emigration totaled less than 4000 persons, whereas during June, 1919, the total was in excess of 25,000.

The departure of these persons has been delayed chiefly by the lack of steamship accommodations. Commissioner Howe said that they have been leaving at the rate of 1500 persons a day, that it has been estimated between 500,000 and 700,000 Italians alone are in New York awaiting an opportunity to return home. From reports received from the steamship lines and similar transportation agencies it has been reckoned that at least 1,300,000 persons are planning to leave and have made known their desires. Mr. Howe is of the opinion that the number to leave these shores during the current calendar year will total over 2,000,000 persons.

These emigrants are taking home with them on the average of $3500 a piece, according to estimates made by the customs authorities, whereas the average amount brought in is $85. Since the first of the current year the commissioner of internal revenues has collected from the departing persons between $1,000,000 and $2,000,000 in income tax. It has been estimated that they have taken out of the country to this date something between $2,000,000,000 and $3,000,000,000. Mr. Howe pointed out that while statistics of the department made it appear that 231,957 persons arrived in this country during the first eight months following the armistice, and only 247,074 departed, as a matter of fact the departures consist chiefly of laborers, whereas most of the men arriving are commercial travelers. He is of the opinion, consequently, that the ranks of American labor have been depleted tremendously without any corresponding gain through the immigation of laborers. The westbound movement of ships was taken up almost exclusively with troops in the month following the armistice. As a consequence there were no third class or steerage quarters available. This situation is now altered and Mr. Howe thinks that beginning in September or October the influx of immigration will be perceptible. He does not anticipate, however, that the immigration during the next six months will be sufficient to replace the number that previously have departed.

In Cleveland, where a great number of foreign-born workmen are employed in the mills, foreign-banking and foreign-steamship agencies and editors of foreign-language newspapers reported to the chamber of commerce that 40 per cent of the Slovaks in the city will return home; 30 per cent of the Roumanians; 30 per cent of the Jugo-Slavs; 20 per cent of the Poles; 35 per cent of the Ukrainians and 20 per cent of the Magyars. New York bankers say that it is the consensus of the racial leaders that a proportion as high as 11 per cent of the alien population of the country is determined to leave. Several months ago the savings bank section of the American Bankers' association sent to the bankers of the country a letter stating:

"Due to Bolshevik propaganda an alarming proportion of the 14,000,000 foreign-born aliens are drawing their money from the banks, selling their Liberty bonds and houses and returning to Europe. The New York custom houses authorities announce that those now sailing from this port carry with them from $2000 to $15,000 each in United States currency. It is estimated that about 1,300,000 cannot be stopped from going, and that they will carry with them nearly $4,000,000,000, or four-fifths of the total currency in circulation and in re-



ONE REASON WHY THE ANTICIPATED "EXODUS" OF ALIENS MAY NOT ATTAIN SERIOUS PROPORTIONS

serve in the United States before the war.

"It is estimated that unless vigorous action is taken over 6,000,000 of these aliens may be lured abroad by this vicious propaganda, taking with them cash equal to the total present currency resources of the United States. This is certainly serious."

Another letter, which was also sent to the savings bank officials throughout the country, said that "it is for the purpose of bringing these people and their collective wealth within reach upon their native soil that the most insidious of all the Bolshevik propaganda is being practiced to entice them to return to their mother countries in Europe with the allurement 'sell your Liberty bonds and real estate, draw your savings and bank accounts, return to your native country and enjoy free land, only five hours a day work, no compulsory military service and unrestricted personal liberty.'"

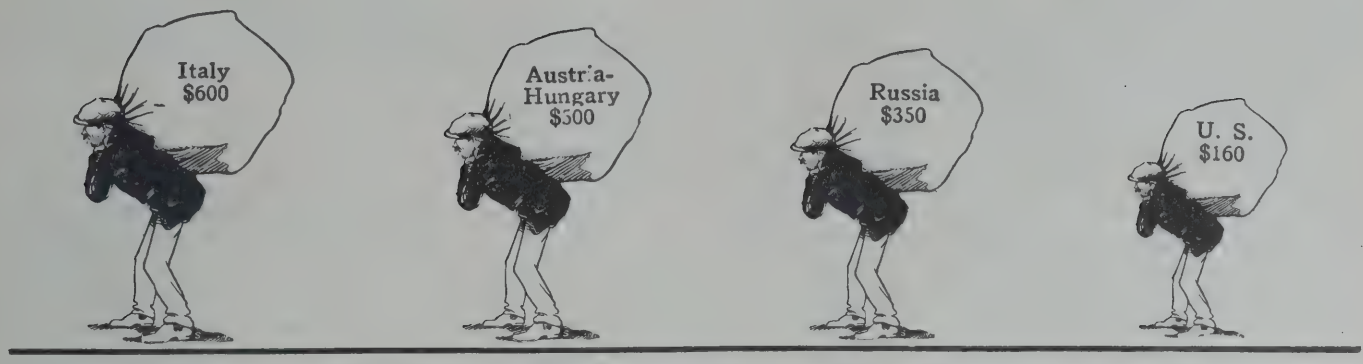
Regardless of the accuracy of estimates of the number of aliens planning to leave our shores there are several reasons why the movement will not prove serious. One is the tax-ridden condition of European countries. The per capita debt is several times larger than that in the United States, and the workman in America will not be slow to grasp the significance of this fact. He realizes, or will realize when he has heard from the old country, that it is not to his best interest to rush "home" and give a large share of his earnings to pay the debt piled up by the war, merely to satisfy his curiosity, when he may remain in the United States, where his employer contributes so largely to paying off this country's obligations. He realizes that over here work is plentiful, and that he receives the highest wage in the world paid to a man of his ability. These conditions will out-



Not all the aliens going home are leaving of their own volition. This shows the embarkation of "undesirables" at Charleston, S. C.



A great number of aliens arriving are commercial travelers and business men. The proportion of laborers and skilled workmen is small



THE PER CAPITA DEBT OF EUROPEAN COUNTRIES IS AN ARGUMENT FOR ALIENS TO REMAIN IN THE UNITED STATES

weigh purely sentimental reasons for his going abroad, or remaining there if he does.

* * *

EMPLOYERS and civic bodies are likely to be heard on the subject of suspending immigration when the house committee on immigration begins consideration of the bills now pending. Local chambers of commerce have been making surveys and forwarding data to the Chamber of Commerce of the United States. That body has not taken action in regard to any of the bills introduced in the house, but it is understood that the consensus of opinion among the members is that the legislation should be limited to the exclusion of undesirables. This opinion, it is said, is not based on any selfish grounds and does not proceed from any purpose to antagonize the American Federation of Labor, which is seeking to erect a barrier against foreign labor, but is based on the conclusion that if we are to increase our industrial operations we must have more men with which to do so and that it is contrary to American principles to shut out the honest law-abiding alien who seeks to establish his home in this country.



Aliens in New York waiting to pay their income taxes and obtain their passports. Similar lines may be seen in other large cities



Aliens in Chicago are here seen waiting to withdraw their savings deposits. Many going abroad are leaving a portion of their money in this country

The National Federation of Construction Industries, Philadelphia, is now taking a poll of its members to determine their attitude on the question. The questions set forth on its ballots are:

Do you believe that the present immigration laws, as amended at the last session of the congress, with provisions for stringent literacy tests, ought to be given an opportunity for trial before further legislation is enacted?

Do you feel that with the marked emigration of labor, which has been going on during the past few months, it would be desirable to amend existing legislation to eliminate, or make less stringent, literacy tests?

Do you feel that it would be

desirable for legislation to be enacted which would stop all immigration for a period of three or four years,

Are you now experiencing a labor shortage, either skilled or unskilled?

Do you expect that you will have a shortage of labor in the near future?

Compromise Measure Submitted

The last bill introduced in the house, Aug. 20, by Representative Johnson, of Washington, chairman of the house committee on immigration, was prepared as a compromise, to represent the composite views of the members of the committee. It bars for two years all aliens except travelers, students, professional men, steps to become a citizen of the United States.

An alien will not be entitled to citizenship unless he has continuously resided in the United States five years. If within one year from the date when he is first entitled to the privilege he fails to become a citizen he will be deported. An alien who fails to register is also subject to deportation.

On May 19, Representative Johnson introduced his original bill to suspend immigrations for two years and to deport "any alien who believes in, practices, advocates, teaches, sanctions, or encourages the extortion of money or property or avenging grievances through threats of bodily injury or injury to property, or is a member affiliated with any organization that so practices . . . "

Would Require Registration

This bill proposed that within one month after it became effective all aliens be compelled to register. They would be required to register thereafter semiannually and renew their certificates of identification for four years. It was proposed to charge a fee for registration and the issuing of certificates, the fees to be reduced as the registrant submitted proof of his ability to read and write the English language and the acquirement of a "fair knowledge" of the American form of government. No fee would be charged after the alien became naturalized. The bill also provided for the provisional admission under bond of certain aliens whose records the government might desire to investigate.

Proposes to Limit Immigration

A bill was introduced by Representative Dillingham, Aug. 15, limiting the admission of aliens to 5 per cent of the number of their nationality already resident in the United States.

Representatives Raker and Lufkin introduced bills proposing to suspend immigration for four years, and Representative Harrison submitted a bill



skilled labor and aliens who departed to aid the allies. Those who are admitted must make affidavits and procure passports. After the termination of the period of suspension an alien will be admitted when he has sworn to a statement:

That he is coming to the United States for the bona fide purpose of becoming a citizen.

That at the earliest possible moment he will learn the English language and become acquainted with the form of government and the institutions of this country, and that he will obey the laws.

That he will register once each year until he becomes a citizen with the county clerk of the county wherein he may reside, or with an immigration officer designated.

That he understands and agrees that he may be deported for failure to register or to take the necessary

increasing this to five years. Other bills have been introduced to deport those aliens who proved disloyal to the United States during the war, or who refused to fight for the United States on the ground of noncitizenship.

From the number of bills introduced it is evident that the United States is going to be more particular in the future as to what goes into the "melting pot." The literacy test, it is said, has not safeguarded the interests of the United States as fully as present demands require. The drawback to that legislation is that it has served to keep industrious men out of the country while offering no barrier to those of limited intelligence but infinite capacity for doing wrong.

So far as concerns the suspension of immigration, President Wilson has not expressed himself to congress, but he has most emphatically declared in favor of continuing war-time restrictions against the admission of aliens with evil purposes. The exclusion of the criminal classes has been adopted as a national policy, but on the question of suspending all immigration there is much difference of opinion.

"Two versions of the immigration situation have been presented to our committee," says Representative Knutson, Republican whip, and a member of the immigration committee.

"One was that European countries, especially those in which fighting took place, will need the service of every able-bodied man in the task of rehabilitating the devastated regions. This demand should create working conditions and such attractive wages as to induce the workers to remain in their native lands.

"The second theory was that because of unsatisfactory living conditions in Europe there will be a tremendous exodus as soon as transportation facilities make it possible.

"Commissioner Howe originally took the first view of the situation. According to some of his more recent articles, however, he has revised his opinion and now expects to see our immigration stations jammed with applicants unless congress decides to impose restrictions.

"As to the attitude of our committee, the majority members take the view that it is up to us to report out legislation that will prevent a glutting of the American labor market. I think a temporary period of suspension of immigration will be the inevitable result. This period may be fixed at two to four years."

A double barrier may be erected against the Europeans who may wish to come to the United States. England, France, Italy and Germany have taken measures to keep their workmen home. Laws, either proposed or in process of enactment, have been supplemented with associations to procure work and induce men to remain. In May there was started in Germany the Reichastelle fur deutsche Answandrung und Ruckwanderung to work for the return of Germans now in other countries. All of these efforts combined with the increasing amount of work provided in foreign countries will have some effect in limiting immigration at least within the next few years, regardless of what action congress may take.



GOODBYE!

Every steamship bound for Italy is crowded with passengers. Here is a typical crowd aboard the steamer Caserta, which sailed July 15

Cleveland Engineers Meet

Approximately 175 northern Ohio engineers attended the first of the 1919-1920 series of joint meetings of the Cleveland section of the American Society of Mechanical Engineers and the Cleveland Engineering society, Tuesday, Sept. 9.

At the opening session, held at 10 a. m. in the Hotel Cleveland, Conrad Hibbeler, Mercury Mfg. Co., Cleveland, explained the use of tractors for transporting materials in industrial plants, warehouses, etc. His talk was accompanied by two reels of moving pictures showing the construction of tractors in the plant of the Mercury Mfg. Co., and their performance in several branches of industry. W. E. Pease, Cleveland & Youngstown railroad, Cleveland, outlined the proposed plans for establishing a new freight and passenger railroad, interurban and local electric line terminal in Cleveland. By means of slides, he showed the development of the new rapid transit system which now is nearing completion.

From the hotel, the engineers were taken over the new rapid transit line to the Shaker Heights Country club where lunch was served. The afternoon was devoted to an inspection of the engineering features of the transit and terminal development. Following a dinner at the Hotel Cleveland in the evening, Dr. Willis A. Moore delivered an address, "Doing the Impossible," and O. M. Smart, trade commissioner, United States department of commerce, Washington, spoke on "Commercial Conditions in Europe."

The Bethlehem Fabricators, Inc., Bethlehem, Pa., have completed a new fabricating shop, 60 x 280 feet, which, when completely equipped, will give employment to 150 additional men. At present the company's force numbers 200.

French Industry Moving Slowly

Labor and Transportation Problems and Shortage of Coal and Coke Put Heavy Burden on Owners of Steel and Iron Works — Large Tonnage for Reconstruction of Bridges in France Goes to German-Owned Thyssen Plant

BY FRANCIS MILTOUN

Paris Correspondent of The Iron Trade Review

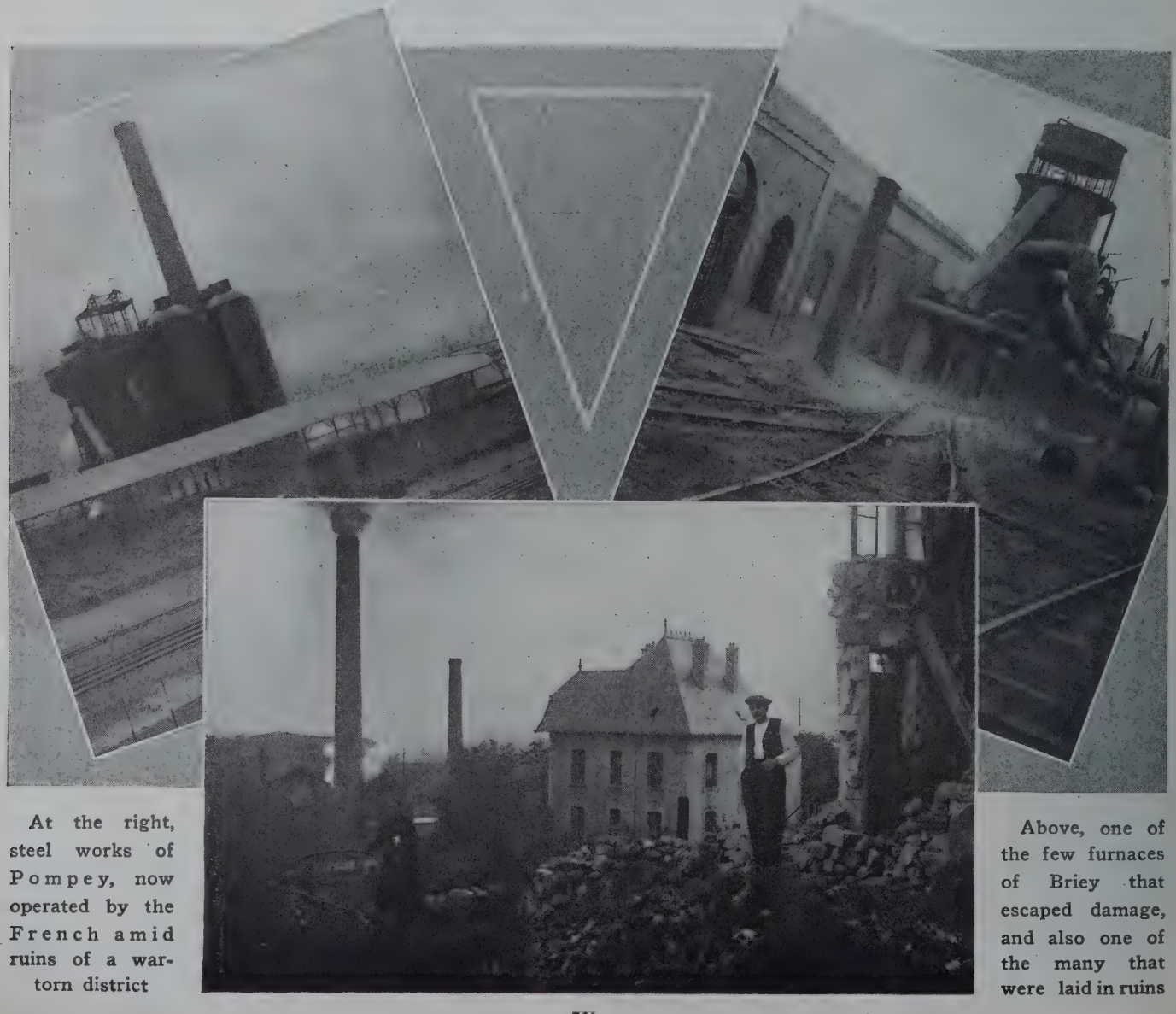
PARIS, Aug. 18.—Production in the iron and steel trades in August has not improved much over what it was some months ago, because the labor and transport situations are still acute. Beside, there is the problem of obtaining sufficient coal. No supplementary licenses can be had in England for the exportation of coal to France, while Belgium states that she can only supply France with any excess above her own needs, which for the present are insistent.

Certain qualities of Belgian coal notably those for gas making and generators are not permitted to be exported. It is feared that Belgium also will soon restrain the export of coke, in view of the needs which its own iron and steel industries promise to have for its limited supplies. This would seriously affect the operation of French blast furnaces and foundries. As a solution of the problem it is proposed to compel Germany to make up the deficit in French requirements. Energetic pressure is urged for the strict observance by Germany of the coal clause in the peace treaty.

The transport problem affects all other industries. Only on two of the seven great trunk lines of France is service approximating normal. On the Nord and Est railroads, precisely where there is need for intensive traffic, the situation is still chaotic.

Coke for industrial use is about to be increased 50 per cent, when obtainable, making the price of washed coke 150 francs a ton. All metallurgical products of France will have to be advanced to meet this extra cost.

Reconstruction of French blast furnaces is proceeding slowly. In the



At the right, steel works of Pompey, now operated by the French amid ruins of a war-torn district

Above, one of the few furnaces of Briey that escaped damage, and also one of the many that were laid in ruins

Longwy region, out of 36 furnaces which existed before devastation by the Germans but two are now in operation, one as a dependent of Senelle-Maubege and the other of the Providence-Rehon plant. Senelle-Maubege has, in addition, another furnace in course of construction. The production of this region is now but 320 tons of pig iron a day, whereas before the war it was 4670.

In the region of Nancy and in contiguous eastern France six blast furnaces are in operation, producing 510 tons per day. Another blast furnace is operating at the Marine et Homecourt plant, two at Micheville, two at the Montataire plant at Frouard, two at Pompey, while the Micheville stacks in Champagne are also lighted.

Notable effort at production has been made at the Acieries de la Marine et Le Boucau, where three furnaces have been lighted, one at Alais, two at the plant of the Society Metallurgic of the Ariege, five at Commentry-Fourchambault, two at Perigord, one at Allevard in Dauphiny, one at the Saut du Tarn and three at Creusot.

Production in the steel plants likewise has been handicapped for the reasons stated. To help out the labor situation recourse has been had to imported Italian labor, as was the custom in the shipyards and machine shops of southern France before the war. The lack of rolled bars and sheets is being felt more and more. Wire is imported almost wholly from America at present, and the French wire mills, not being able to use their plants, are protesting.

A curious epitome of the situation is that the Thyssen plant at Haganodange, now under sequestration, has received an important order for bridge girders for bridge reconstruction on the main line of the Nord railroad, from Paris to the North. The situation in Lorraine, now French again, is improving. While the extraction of ore in the basins of Briey, Landres and Crusnes has been comparatively feeble it has reached 600,000 tons a month, about a third of the rate of production before the war. Approximately the ore is being distributed as follows: 300,000 tons to Lorraine plants, 100,000 tons to Luxemburg, 100,000 tons to the Saar and 100,000 tons to non-occupied Germany.

Steel production in Lorraine, though manifestly low, is nevertheless amounting to a respectable tonnage, all things considered. The steel plants are finding their chief markets in Belgium and Switzerland, each of them countries where the working up of semifinished material has ever been a source of profit.

Luxemburg foundry iron is quoted as follows, on cars within the duchy, the basis of exchange being 7 francs, 60 centimes to the dollar: No. 1, 245 francs a ton; No. 2, 235; No. 3, 230; No. 4, 220; hematite, 250. Swedish iron, not exceeding .20 to .30 per cent silicon, is offered laid down at Rouen at 385 francs a ton.

On Aug. 1 Lorraine ore was increased in price 3 francs a ton, ore on cars now selling at 15 francs.

New D. C. Motors and Generators Developed

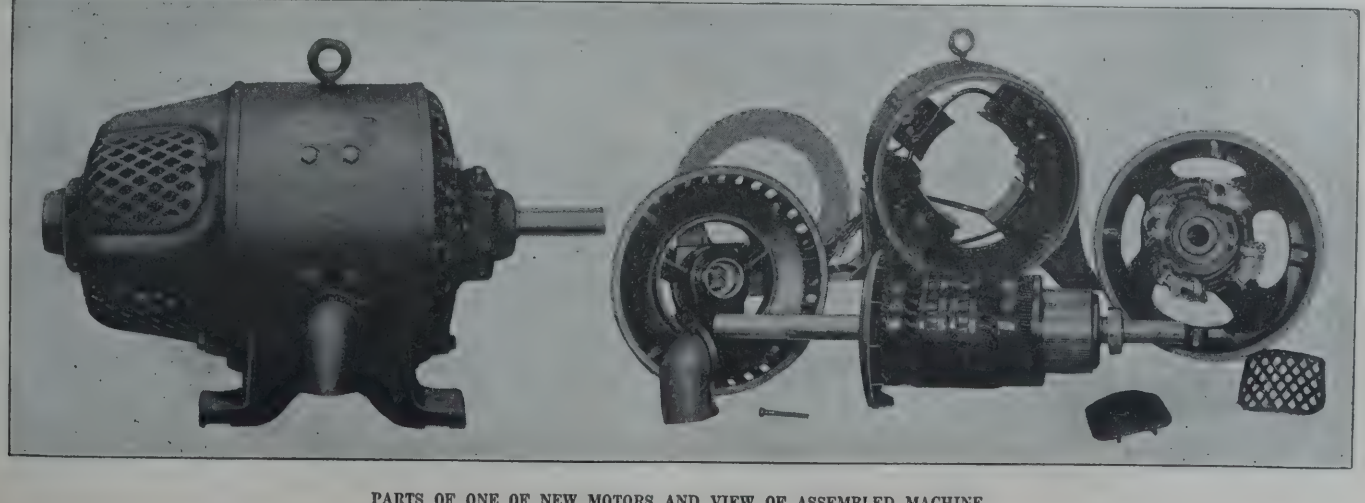
A new type of commutating-pole, direct-current motors and generators, has just been developed by the Allis-Chalmers Mfg. Co., Milwaukee, and is said to embody many details which contribute to accessibility, reliability and safety. Machines of standard ratings have been designed throughout; the motors ranging in size from ½ to 50 horsepower and the generators from ½ to 40 kilowatts.

The constant speed motors have the same rating and speed of 60-cycle induction motors and can be used interchangeably with induction motors for direct-connected applications without changing the method of drive or the ratio of gearing. The adjustable speed motors, intended particularly for machine tool and similar applications, are provided for 2:1, 3:1 or 4:1 speed range. The generator speeds also correspond to those of induction motors, thus permitting the direct coupling of the machines to form motor-generator sets in various combinations.

Cast steel yokes are used in machines of the larger ratings while the smaller machines, which are of the bipolar type, have riveted frames. The accessibility of the commutator is indicated in accompanying illustration. Protecting grid covers can be provided for these openings in the front bearing bracket and may be attached readily even to a machine in service. Solid covers are used with completely enclosed motors, the rating of these machines being somewhat lower than that of the open or semi-enclosed motors.

All machines have ring-oiling, dust proof bearings, while the windings are treated to resist oil and moisture. The conduit terminal boxes have removable covers to afford access to the terminals. Box type brush holders are adjustable for tension and suitable for rotation of the armature in either direction. Each holder can be removed independently with a screw driver or wrench.

The armature core has the laminations riveted together, permitting the removal of the shaft without dismantling the core or commutator while with the 20-horsepower and larger machines, the core and commutator are built on a sleeve so that the shaft can be pressed out of the finished armature without disturbing the windings. An air ventilating system is an important feature of this machine. A fan mounted on the rear armature head causes cool air to flow in through the liberal ventilating ducts and to take up the heat from the iron and windings.

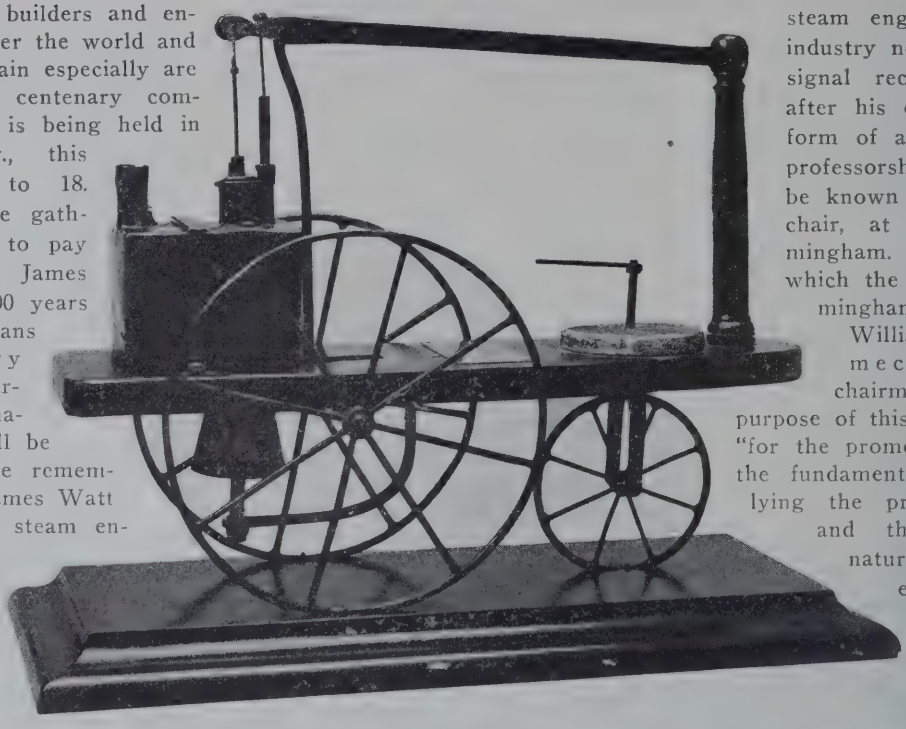


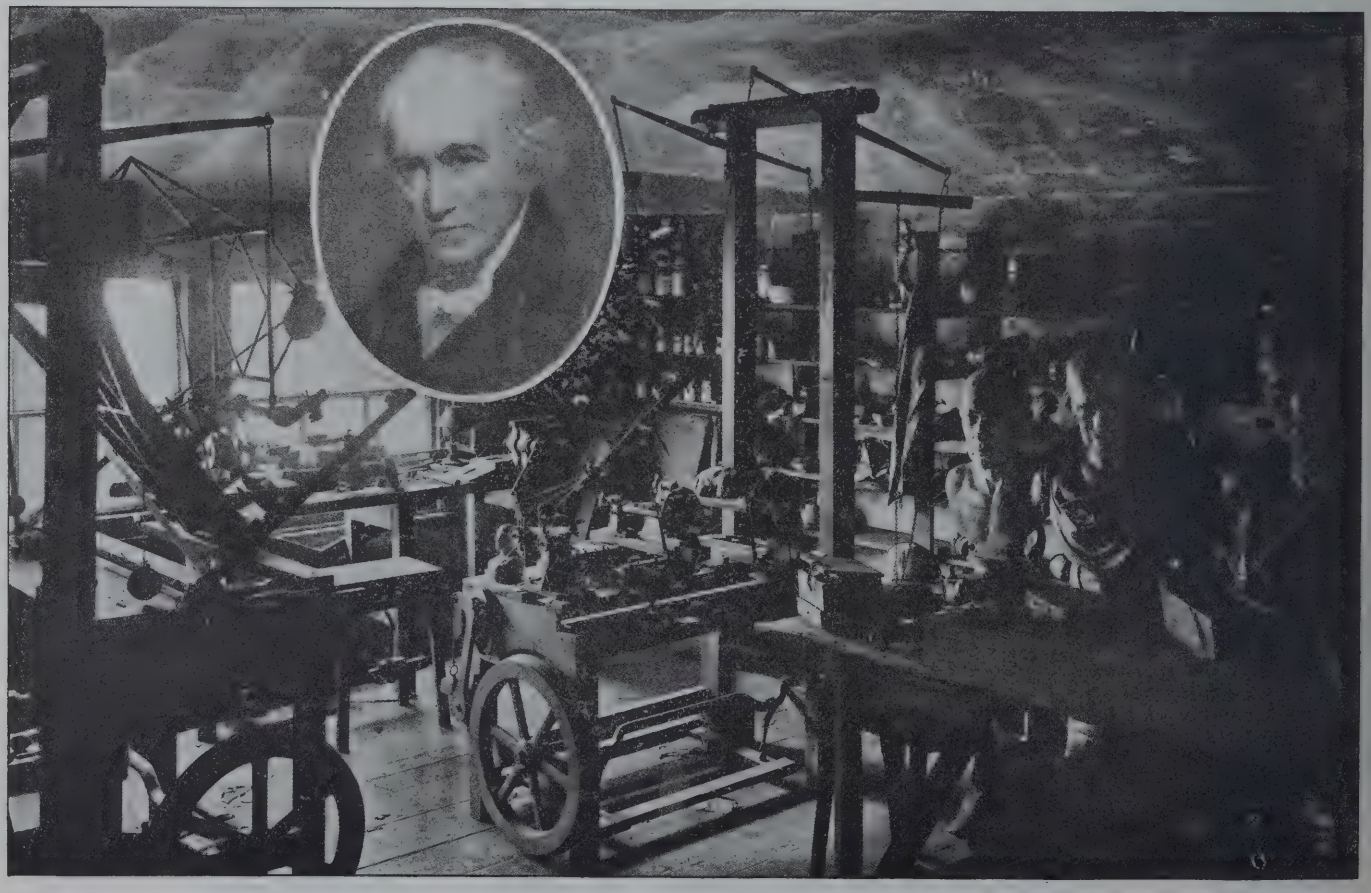
PARTS OF ONE OF NEW MOTORS AND VIEW OF ASSEMBLED MACHINE

Britain Holds Watt Centenary

Distinguished Company of Engineers Gathers at Birmingham, England, to Honor James Watt Who Died in 1819, Having Perfected Steam Engine and Other Inventions—Will Erect Permanent Memorial

STEAM engine builders and engineers all over the world and in Great Britain especially are interested in the centenary commemoration which is being held in Birmingham, Eng., this week, Sept. 16 to 18. Many of them are gathered in that city to pay their respects to James Watt, who died 100 years ago and if the plans of the centenary committee are carried out, an international memorial will be erected. It will be remembered that while James Watt did not invent the steam engine, he so improved an imperfect and wasteful machine that it became the powerful and economical steam engine with which all industry now is familiar. This signal recognition, 100 years after his death, will take the form of an endowment for a professorship of engineering, to be known as the James Watt chair, at University of Birmingham. The committee, of which the lord mayor of Birmingham is president and William Mills, leading mechanical engineer, chairman, states that the purpose of this endowment will be "for the promotion of research in the fundamental principles underlying the production of power and the conservation of natural sources of energy." This committee also proposes to erect a James Watt memorial building and pub-





JAMES WATT AND HIS GARRET WORKSHOP AT HEATHFIELD HALL. ABOVE, EARLY TYPE OF STEAM ENGINE

How Strike Was Settled at Watt Plant in 1791

DATED March 23, 1791, and written to James Watt, No. 6 Green Lattice lane, Cannon street, London, from Soho by his business partner, Matthew Boulton, the following report indicates that strikes and labor disturbances were not lacking 128 years ago. It also indicates that reasons for strikes then were no more fantastic than at the present time. The strike about which Mr. Boulton reported and with which he successfully coped seems to have been called because the men wanted time off in the afternoon in order that they could drink their ale comfortably. The letter, which is preserved by Tangyes, Ltd., refers to the burning of the Albion mills near London bridge and the offer of $2500 reward (never successfully claimed) for the name of the incendiary and continues:

"Last night a commotion arose amongst all B. and W. enginesmiths and other workers but as I found they were drunk before Mr. Foreman informed me and as it's in vain to reason with drunken men I waived facing them until this morning. They all struck, viz., grounded their arms at 5 o'clock yesterday and appeared riotous this morning. At 10 o'clock I met a deputation from them in Mr. Foreman's rooms, from which I learnt that they had entered into three resolutions which I put down and then said I hoped they would allow me to enter into three resolutions, which I also put down and read to them and they agreed they were fair and just. I then met the main body below and went over the same ground I had done with their deputation and after reading their resolutions, read my own and promised them upon my word and honor that I would never depart from them be the consequences what they may. They swallowed all their own resolutions and said they would set to work if they could be allowed to drink their ale comfortable in an afternoon. I agreed to allow the hard-working smiths half an hour and as they expressed a wish for peace, I forgave them all except Joe Turner whom I assured I had marked and if you had been at home I would have turned off for I am persuaded I could get his work done for nearly half his price. He was the ring leader in this rebellion and in former ones. I read the resolutions twice over to them."

The two sets of resolutions which form a part of the letter are as follows:

At a general meeting of the enginesmiths:

RESOLVED FIRST, that if any man set to work in B. & W. shops, he shall be discharged and until he is, no man shall set to work.

RESOLVED SECOND, if B. & W. turn anyone away in consequence of this commotion, all the rest are resolved to strike.

RESOLVED THIRD, we insist upon having one hour allowed in the afternoon for refreshment, otherwise to leave work at 6 o'clock.

Mr. Boulton resolved on the part of B. & W. and pledged his word and honor for abiding thereby:

RESOLVED FIRST, that I will not consent to allow the old accustomed hours of all Birmingham manufacturers (except so far as to allow such of the enginesmiths as work hard, half an hour to refresh in the afternoon and no more).

RESOLVED SECOND, that we will employ whom we think proper and turn away whom we think proper and will not be dictated to in these respects by any of our workmen.

RESOLVED THIRD, as to those who work piece work, may work only half days if they please. But if they neglect our business we must get others in their place, and as to those who work day work, we have a right to our time and customary hours and will on Saturday nights stop for all deficient hours.

lish an appropriate memorial volume.

The building will serve as a meeting place and library for scientific and technical societies and from this center, engineers will co-operate in dispensing scientific knowledge. Because a large sum of money will be required for these purposes, the committee now is soliciting subscriptions and already has received contributions of $5000 each from the Birmingham Small Arms Co., Ltd., and W. & T. Avery, Ltd. Some plan is to be perfected to keep all subscribers to the memorial informed of the progress of the research carried out under the professorship.

Tuesday, Sept. 16, was devoted to the registration of visitors in the morning and a memorial service and



HEATHFIELD HALL, NEAR BIRMINGHAM, ENGLAND, THE HOME OF JAMES WATT FROM 1790 UNTIL HIS DEATH IN 1819. SINCE 1876 IT HAS BEEN OCCUPIED BY GEORGE TANGYE

garden party in the afternoon at Heathfield hall, which was the home of James Watt from 1790 until his death in 1819. Through the courtesy of George Tangye, who has lived there since 1876, the visitors were shown the garret workshop of Mr. Watt, in which everything remains virtually untouched and as he left it. In the evening a reception was held at which a number of lectures were delivered. These were continued on Wednesday and visitors were taken to see an early type of the Watt engine, working under steam at Ocker Hill, near Wednesbury, about six miles from Birmingham. This engine originally was erected in 1776 at Smethwick for the Birmingham Canal Co., and is the earliest pumping engine built for sale by Boulton & Watt. It was working regularly until 1892 and was re-erected in 1898 in its present location. Visits also were made to another Watt engine at Bordesley, about a mile from the center of Birmingham, and to the Soho Foundry, formerly occupied by Boulton & Watt, now operated by W. & T. Avery, Ltd., where some of the original buildings erected by Messrs. Boulton & Watt were seen. Here too was viewed the first gasholder ever made, an invention of William Murdoch, whose entire business career was spent at Soho works which were first lighted by gas in 1802. Mr. Murdoch also was first to introduce the use of compressed air for the distribution of power. In the evening of Wednesday the centenary dinner was held, with a large attendance of distinguished engineers.

On Thursday, those in attendance were taken on excursions to various points of historical interest in the neighborhood of Birmingham, including Stratford-on-Avon, Warwick, etc., and the visits to the engines were continued. One of the interesting features of the commemoration is the large collection of Watt, Boulton and Murdoch relics, including those presented in 1915 to Birmingham by George Tangye.

Watt's Career Most Interesting

Since the steam engine has had a greater effect in the evolution of modern industrial life than perhaps any other single influence, the life of James Watt, who was the pioneer in the steam engine's development, holds much of interest. Born in Greenock in 1736, Mr. Watt commenced his business career as an instrument maker, being employed in that capacity by the University of Glasgow. There he was led to the study of the steam engine while repairing a model of a Newcomen engine. Noting how wasteful it was in the consumption of fuel, he studied the properties of heat and soon discovered that the great defect of the Newcomen engine lay in the injection of water into the cylinder. This led to the invention of the separate condenser, with which his name will always be associated. As usual the early days were fraught with discouragements and disappointments but in 1774 he became affiliated with Matthew Boulton and the following year a partnership was formed which lasted a quarter of a century. In 1776 began a series of successes with their engines on which their patent had been extended for 25 years. Many times when Mr. Watt became discouraged and depressed with the responsibilities and financial worries which always beset a firm promoting a new industry, Mr. Boulton would shoulder them and his abounding cheerfulness brought them through. His belief in the genius of Mr. Watt never was shaken and in 1800 Mr. Watt retired from the firm.

The first engines of Watt mainly were used for pumping in Cornwall, where the deepening of the mines made an economical source of power essential. It was not until nearly 10 years after he settled in Birmingham that the first rotating engines were produced. He adopted the sun and planet motion and the rotative engine at the Albion Flour Mills, London, and another at Whitehead's Brewery, that city, were really the commencement of the use of steam power for industrial purposes. The use of the independent valves for the admission and exhaust of steam, the slide valve, the governor, the indicator, all found their inception in the brain of James Watt. When he retired in 1800, the steam engine possessed practically all the features it has at the present time.

Indicative of Mr. Watt's scientific ability, it is conceded that he discovered and stated the composition of water although he did not prove it by experimental methods. This was reserved for Vavendish at a later date.

From 1800 when he retired from business life until 1819 when he died, James Watt spent all his time in scientific and mechanical pursuits. His workshop in the garret of Heathfield hall is preserved as he left it, with all his tools in good condition. Between the stair rail and the door is a block of wood like a small shelf. On this food was left by the servant so that the inventor might not be interrupted. Sometimes it was eaten; more often not. On the table inside the room are three busts; the one in the middle is considered the best likeness of Watt extant. It was executed by Chantrey in 1818, one year before his death. The bust on the left also is of Watt by Turnerelli in 1807. The third bust, on the right, is of Sir John Rennie, also by Chantrey.

Other Evidence of His Genius

The illustration of the Watt room, reproduced herewith does not show the stove which Watt used. Like everything else in the room, it has not been disturbed and the cinders of the last fire burnt in it, remain in the grate and on the top of it in a little crucible, are the ashes of Watt's last assay.

In a large nest of drawers are preserved numerous small inventions, unconsidered trifles, odd bits of metal, nuts and screws, scraps of wood, mathematical instruments, etc. Watt invented the metal pen, delivering a mighty blow to the quill trade and revolutionizing the handwriting of generations to come. Another Watt invention, the copying press, which of course necessitated the invention of copying ink, stands dusty and cobwebbed. Near the window stands Watt's lathe with its lamp and tools as he left them. The machine which stands out prominently in the center of the room is the first copying or medallion machine, which operated on the principle of the pantograph. Instead of a pencil, the Watt machine carried a cutting tool, which bit its way into wood, marble or iron. The machine at the left is of the same type but so constructed that it is not limited to raised surfaces (medallions) but can be used for copying statuary. Watt used to make copies of his own bust and presented them to his friends as the "works of a young artist in his eighty-first year."

Among the interesting things in the interesting room are evidences of the processes by means of which the inventor arrived at the invention of photography upon metal about the same time as Daguerre. Mr. Watt also perfected the process of gilding on china for Josiah Wedgwood.

In one corner of the room is a model of the famous governor or steam regulator; in another is a model of the parallel motion mechanism.

The $1,000,000 plant of the Hastings Consolidated Press & Tool Co., Kalamazoo, Mich., has been purchased by the General Motors Corp.

Special Rig Aids Foundry Output

Four Machines Make Molds With Green-Sand Cores for Tractor Transmission Housings — Floor Space Saved by Pouring as Soon as Molds are Finished, and Shaking Out While Hot

WHEN we consider the advances made in the development of labor saving machinery in recent years, it may seem strange that automatic machinery is not used more extensively in the foundry industry. The explanation for this peculiar state of affairs may be found partly in the fact that a great many castings are individual and are never repeated; others are made only intermittently, and others again are not made in sufficient quantities to warrant the installation of special machinery for their production.

Where similar castings are made in large quantities, however, installations of automatic appliances are becoming more and more numerous and the foundry executives are proving themselves, in this respect, no whit behind their contemporaries in other industrial lines. Indeed, when we consider the many and complex factors entering into the production of castings, it will be admitted that foundrymen are alert and progressive to take hold of all mechanical means to advance their work.

Under ordinary circumstances it is necessary to provide floor space and to stock a sufficient number of flasks to accommodate all the work made for each day's cast. One of the first problems therefore, which confronted those who wished to secure a larger output in a given length of time was to find a way of doing so without increasing the number of flasks or providing a larger floor space. The logical solution was to provide a continuous pouring and molding system so that the flasks could be released and returned to the molding floor as soon as the castings were poured. This system is now in operation in most of the foundries engaged in repetition work.

Having satisfied themselves that the system was practicable the foundrymen then directed their energies to devising methods to keep the pouring side of the proposition working to capacity. On plain, straight work this feature presented no unusual difficulties; but on large complicated jobs, those for instance which were completely cored out, special treatment and equipment were required.

A successful method of producing tractor transmission housings entirely in green sand has been designed and patented by S. W. Stoney, foundry superintendent of the Ferro Foundry & Machine Co., Cleveland. It has been installed at the company's plant under the direction and supervision of S. W. Seblin, plant engineer.

This company specializes in automobile castings and has a daily melt of 150 tons. When the tractor transmission housings were first made the interior was formed by one large dry-sand core, made in halves and pasted together. Mr. Stoney improved on this idea some time ago by

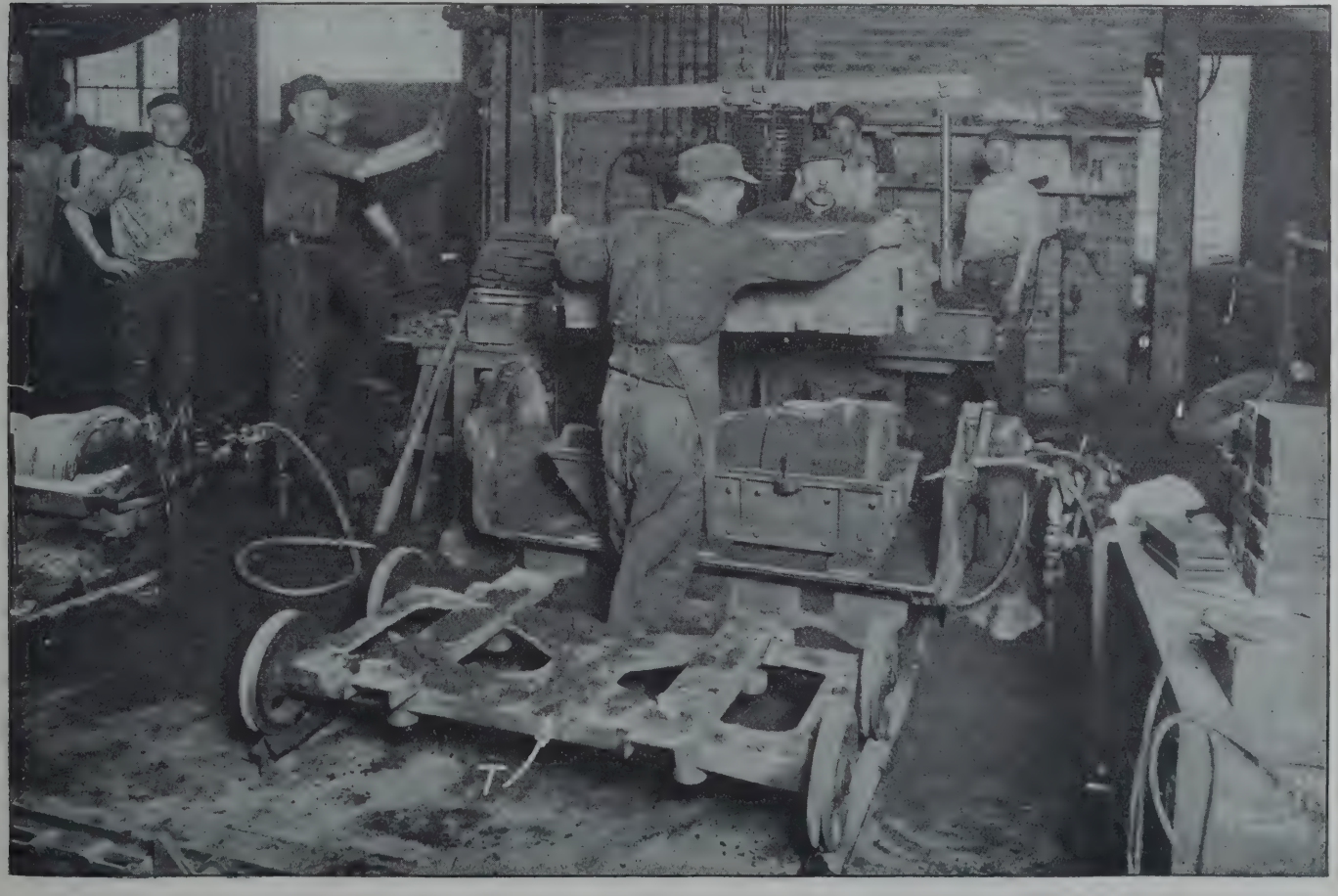


FIG. 1—LOWERING DRAG INTO COPE CORE BOX CONTAINING COMPLETED CORE

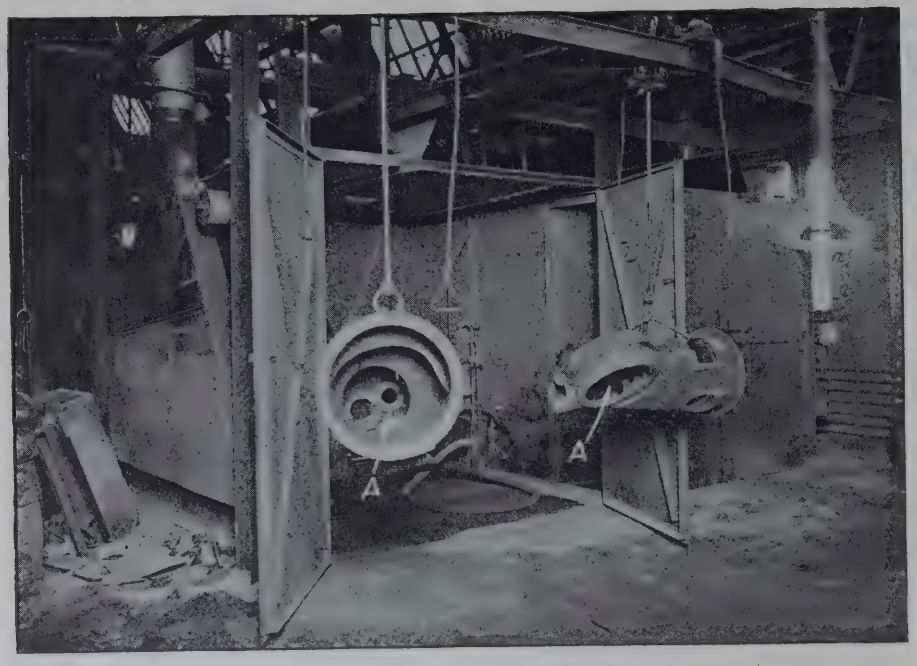


FIG. 2—AT *A* IS SHOWN THE DIAPHRAGM WHICH MADE IT NECESSARY TO PROVIDE A COLLAPSIBLE ARBOR

omitting the dry top core and substituting a green sand top which was *blocked* on thus making a core half green and half dry. From this point it was a natural gradation to the query, "Why not make the complete core in green sand?" The idea seemed feasible and details of a plan for not only making a green-sand core but also of a continuous molding and pouring system were worked out. This system was built and installed in the Ferro foundry and is now in successful operation.

As originally outlined the plan proposed to deliver 200 molds a day, or 400 by working a day and night shift. A comparison of the old and new way will show what an enormous saving in floor space and the number of flasks necessary was effected by the change. The flask measures 3 feet 6 inches by 2 feet, which means that it requires 7 square feet of floor space. Placing the flasks 10 in a row for pouring means 70 square feet in each row. Allowing for 20 double rows and nineteen 3-foot gangways, the total floor space required for the production of 400 molds would be 4020 square feet. In estimating the floor space account must also be taken of the room required to make and dry 400 large cores.

Under the new system the total area required is a space 90 feet by 35 feet, or 3150 square feet, while the number of flasks required has been reduced to 50.

The installation consists of two units of four machines each; a moving platform, level with the floor, extending from the molding floor to the shaking out pit, and a bucket conveyor for carrying the sand back to a central hopper from which it is distributed to the molding machines by a side dump car. A track is also provided on both sides of the floor for carrying the empty flasks from the shaking-out station back

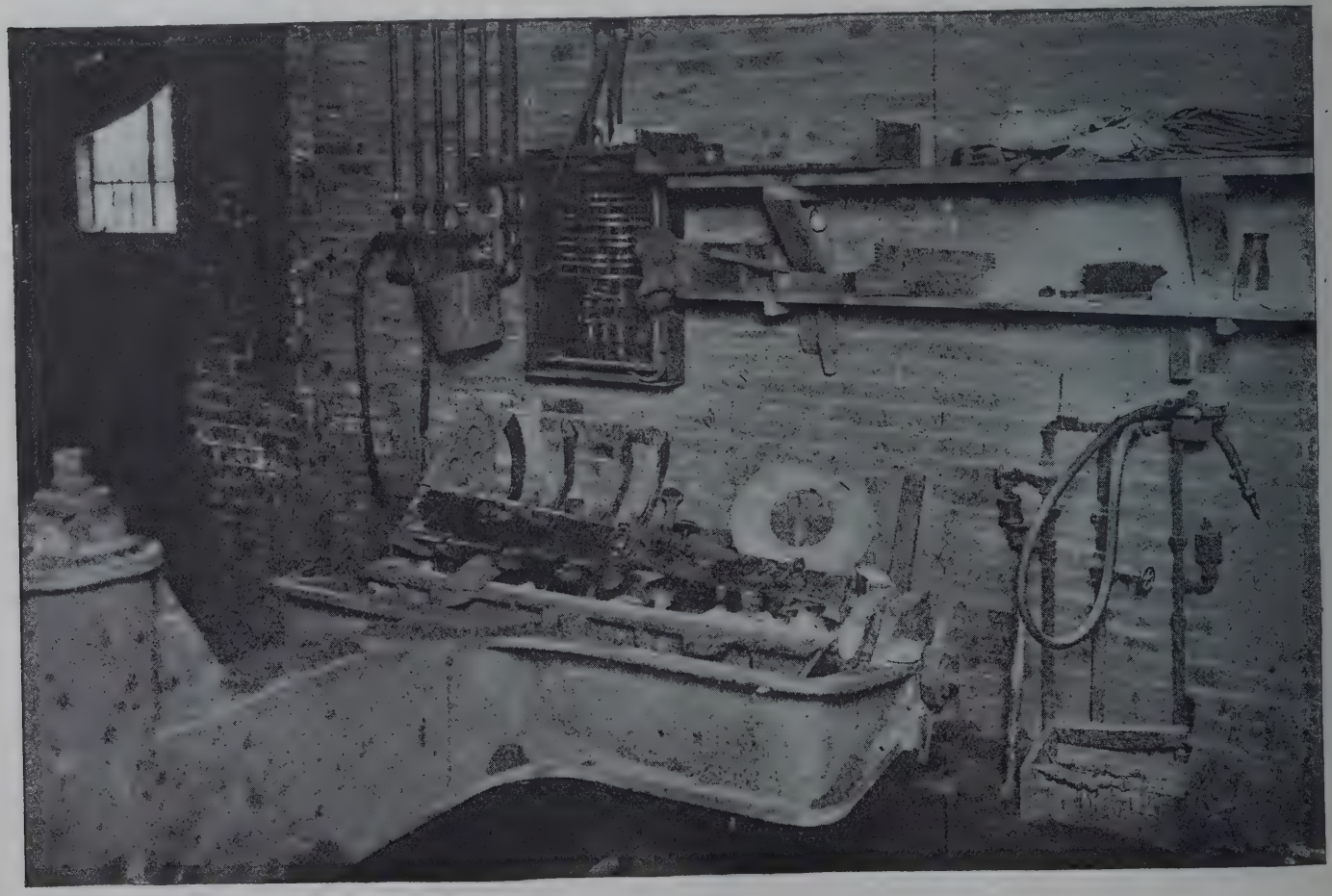


FIG. 3—THE ARBOR ASSEMBLED. ALSO THE ROUND PLATE WHICH FITS IN THE ROUND PRINT IN THE BOTTOM OF THE CORE BOX

to the molding machines. The trucks are mounted on ball bearings and run so easily that one man can push a load of several flasks. Jib cranes carrying air hoists are situated at convenient points for handling the flasks. Each unit is also provided with an electric hoist which runs on a monorail. A Whiting cupola lined to 72 inches has been installed to provide metal for this installation. As each casting weighs 200 pounds, allowing for gates and scrap, the daily melt for 400 molds will be 50 tons. The iron is tapped into a large receiving ladle. This ladle is used for filling smaller ladles which are then hauled over to the pouring floor. An electric hoist running on a monorail serves to pick up the ladle which holds enough to pour three castings.

The flasks used on this job are all interchangeable with the exception of course that the bars in the cope and drag are right and left hand respectively. The joints of both copes and drags are planed and the bottom of the drag is also trued up on the planer so that it will sit snugly on the bottom plate. The sides and ends of the flasks and also the bars are provided liberally with vent holes. The bottom plates are perforated freely with ¾-inch holes. The plates are quite light in section but are reinforced strongly with an exterior flange and several ribs running longitudinally and laterally.

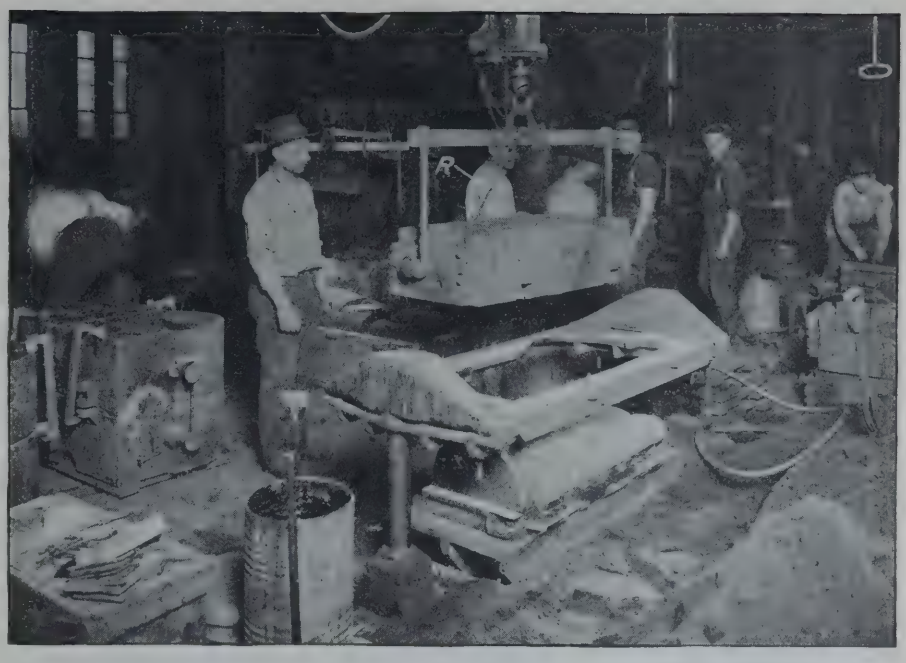


FIG. 4—STRIPPING PLATE MACHINE FOR MAKING COPES. NOTE THE CLAMP *R* TO PREVENT FLASK FROM ROLLING OVER

As may be seen at *A*, Fig. 2, there is a diaphragm dividing the casting into two chambers connected by two small openings. There are also two large circular openings near one end. On account of these features the core arbor had to be made of the collapsible type, so that it may be removed after the casting is poured. One of the arbors is shown in Fig. 3. The main part of the arbor is cast solid. The ends and wings are slipped on before the arbor is placed in the



FIG. 5 MACHINE FOR MAKING COPE CORE IN LEFT BACKGROUND. IT ROTATES AROUND THE CYLINDER *C*. NOTE COUNTER WEIGHTS TO BALANCE THE LOAD

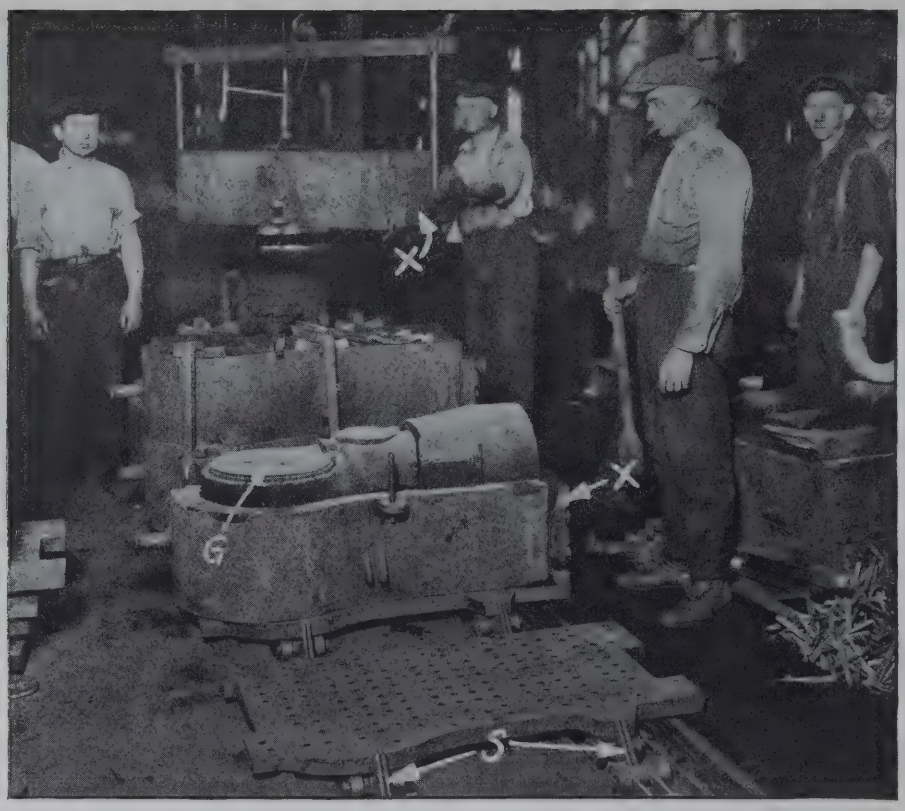


FIG. 6—READY FOR CLOSING DOWN THE COPE. NOTE THE SUBSTANTIAL CONSTRUCTION OF BOTTOM PLATE

corebox. The backbone of the arbor is tapered from one end to the other. Each wing has an opening corresponding in size to the position it is to occupy on the assembled arbor. By this arrangement it is impossible to misplace the wings and it is only necessary to tap them with a hammer to tighten them up. The round plate, Fig. 3, is detachable and serves to carry the sand in the round end of the core. The arbor contains two ¾-inch threaded holes in the lower side which comes in contact with the bottom of the corebox. Bolts are inserted in these holes through corresponding holes in the corebox and are for the purpose of anchoring the core securely while the box and core are being rolled over.

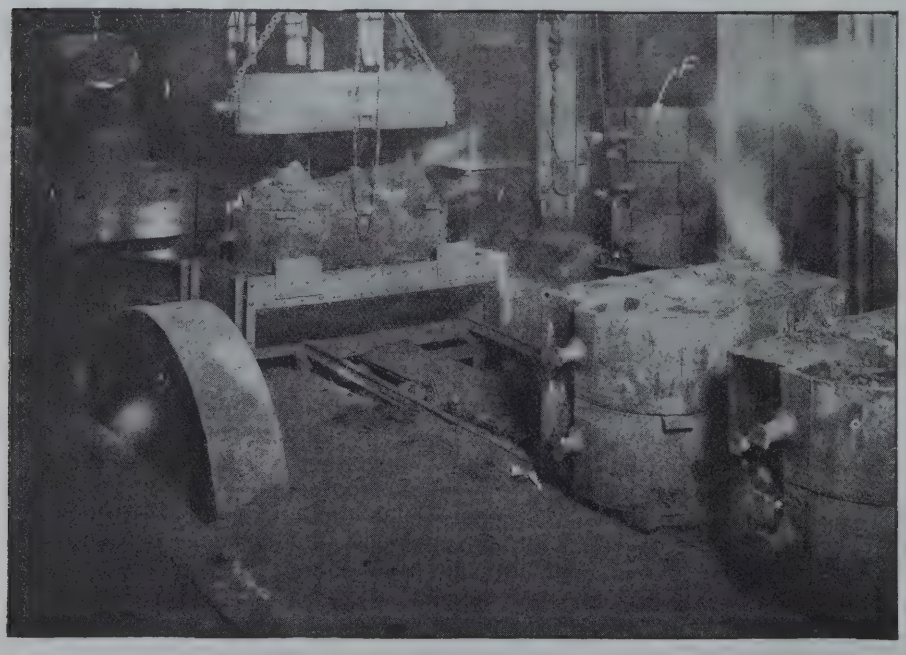


FIG. 7—WHERE THE CASTINGS ARE REMOVED AND THE SAND SHOOK OUT OF THE FLASKS. AT *F* IS SHOWN A LOAD OF EMPTY FLASKS LOADED ON A TRUCK ON THEIR WAY BACK TO THE MOLDING FLOOR

Two sets of four machines are provided for the actual molding of the molds and cores. Each set forms a complete unit. One unit is situated on each side of the central conveyor. The machines are all of the jar-ram type and were built by the Cleveland-Osborn Mfg. Co., Cleveland, with the exception, however, of the machine for making the cope half of the core. This machine possesses several unique features and was constructed by the Ferro Foundry & Machine Co. in its own shops.

The machines for making the copes and drags are identical in operation. One of them is shown quite clearly in Fig. 4. When the flask has been rammed the stripping plate is raised, carrying the flask with it. Then the flask is lifted off the machine and lowered into its respective position, depending whether it is a cope or drag. The machine for making the drag half of the core is shown in Fig. 3. It is provided with mechanism for rolling the box over and subsequently drawing the box off the core. The machine for making the cope core is shown in the left background, Fig. 5. It is the most comprehensive of the set. It embodies some special features incorporated purposely for the installation under discussion. It is a jar-ram machine but in addition to the roll-over and pattern-drawing devices possessed by the drag core machine this machine can be rotated through an arc of 180 degrees horizontally. In the accompanying illustration it is shown raised and 90 degrees from normal position.

A crew of nine men is employed on each unit, two men on each machine, with one man to finish the molds and close them. Another man is employed in assembling the arbors and clay washing them for both gangs.

In ordinary molding practice the drag is made first and set down, then the drag half, or sometimes the whole core is lowered into place; this is followed by the cope after which the completed mold is clamped and poured. The sequence of operations under the new regime at the Ferro foundry is radically different. The cope half of the core is made first, the drag half is placed on top of it, then the drag half of the mold is set on in the position it leaves the molding machine. The drag and completed core are then rolled over all together and then the cope is set on.

Taking the entire operation of making a mold in order and in detail, the sequence of operations is as follows: The cope core is made first. One man sets in the loose pieces, also the cores for making the diaphragm

and brackets shown at *B*, Fig. 6. The other man riddles a thickness of sand into the box and both of them set a number of short rods in the prominent corners to reinforce the sand. Then they fill the box with sand from the heap and one man opens the air valve and jolts the box four times. This part of the core must be left comparatively soft to prevent the iron from *kicking* off it. The sand is butted lightly by hand after which the surplus sand is struck off. The face is gone over with a vent wire after which all the loose pieces are drawn out and any loose particles of sand removed with the air hose.

In the meantime two men have cleaned out the corebox for the drag half of the core. One man sets the loose pieces, also the cores for making the diaphragm and brackets. The flat piece of iron used for striking off the surplus sand is laid over the opening in the diaphragm core to prevent any sand from entering while the green sand core is being rammed. The arbor and lifting plate are then set in and one man riddles on a thickness of sand. The other man sets eight gaggers at strategic points. He also inserts the two screws previously referred to.

The arbor is provided with suitable bearings at each end to fit snugly in the ends of the corebox and later in corresponding bearings in the ends of the flask. In this way an iron to iron contact is assured which precludes the possibility of the core shifting or cutting through. The box is then half filled with sand, the air valve opened and the core jolted from six to eight times. The sand is then finger tucked under the projecting lugs after which the box is heaped up with sand and butted off. The surplus sand is scraped off, the face vented, and the loose pieces of pattern removed. The box is then rolled over after which the bracket rotates and carries the drag core around until it is over the cope core. The drag core is lowered into position, a sprinkle of flour being dusted on first to assure a close contact. The box is rapped, drawn off, and swung back into its former position by the bracket of the machine.

While the cores are in process of making, two men are preparing the drag and cope of the mold on molding machines similar to the one shown in Fig. 4. They are of the ordinary stripping plate type and present no unusual features. The drag machine is located nearest the core machines. When the drag is ready it is picked up by the crane, swung around and



FIG. 8—METHOD OF POURING THE CASTINGS. THE LADLE HOLDS SUFFICIENT IRON TO POUR THREE EACH TIME

lowered into place on the machine which holds the completed core. In other words, the drag is closed down over the core instead of, as in usual practice, lowering the core into the drag. It is secured to the table of the machine by four clamps. The table of the machine is then raised, the load rolled over and the truck shown in Fig. 1 is run in underneath. The table of the machine, which is now in an inverted position, is lowered until the drag touches the floor of the truck; travel is then stopped until wedges have been driven under the cleats of the box in order to hold the mold level while the corebox is being withdrawn. The clamps are released and the table of the machine again raised, carrying the corebox with it. The truck is then pulled out to the end of the short track. The finisher sprays the core with water and repairs any irregularities.

A bottom plate is set on the conveyor so that one edge comes in contact with the stops *S*, Fig. 6. The drag containing the core is set on this plate and as the conveyor carries it past the cope machine a cope is lowered on. The flask is then clamped and the open ends made up to prevent runouts. A false end is attached to the end of the flask for this purpose and is clearly shown at *X* and *X*, Fig. 6. When the mold is closed the space between the end of the flask and the false end is packed full of sand.

The mold is poured through one runner connected to three branches in the round end of the cope core. A strainer core is placed at the bottom of the runner and is shown at *G*, Fig. 6.

The end of the conveyor where the castings are removed and the sand shaken out is shown in Fig. 7. From here the castings are taken to the cleaning room, the sand falls through a grating into a pit from which it is taken back to the molding floors and the empty flasks are loaded on trucks and returned to the molding machines thus completing the cycle of operations.

Invents Steel Skid Leg for Truck Platforms

A new type of steel skid leg for elevating truck platforms, especially designed to support heavy loads, has been developed and placed on the market by the Lyon Metallic Mfg. Co., Aurora, Ill. The skid leg consists of two welded feet which are welded to a steel channel provided with conveniently spaced bolt holes for fastening the leg to a wood or metal top. As shown in the accompanying illustration the leg has rounded corners and a wide bearing surface in order to prevent it from



PLATFORM ON STEEL SKID LEGS SUPPORTING LOAD OF 14,000 POUNDS

damaging floors. The top of the platform is not standardized; it may be made of steel or wood, and in any practicable size. On account of the simple design of the leg and the ease with which it can be fastened to the top, additional platforms, unassembled, can be kept in the stock room, occupying but little space. When a new platform is desired holes can be drilled in one of the reserve tops and the steel legs bolted on, the whole operation occupying but a few minutes.

Furnace Association Meets

A meeting of the Electric Furnace association will be held in Chicago at the Congress hotel, Monday, Sept. 22, the day before the meeting of the American Electro Chemical society. The meeting will open at 11 a. m. with a business session at which formal reorganization, election of officers and other business will be given attention. Following a luncheon for members, there will be a general session devoted to the electric furnace and its products. Several papers will be presented and and the commercial future of the electric furnace industry will be discussed.

Will Dedicate New Experiment Station

MANY mechanical and mining engineers and others interested in the problem of obtaining greater efficiency in the burning of coal will attend the dedication of the new million dollar laboratories of the United States bureau of mines, in Pittsburgh, Pa., Sept. 29, 30 and Oct. 1. A view of the laboratory building is shown in the accompanying illustration.

The bureau of mines, in co-operation with the Pittsburgh chamber of commerce, has prepared an elaborate program of events. The ceremonies proper will open Monday morning, Sept. 29, when the new laboratories, 4800 Forbes street, will be open for inspection. At 10:30 a. m. the dedicatory ceremonies will be held on the lawn in the rear of the laboratories with Dr. Van H. Manning, director of the bureau, presiding. After invocation by Dr. S. B. McCormick, chancellor of the University of Pittsburgh, there will be an address of welcome by Hon. E. V. Babcock, mayor of Pittsburgh. Response will be made by the Hon. Franklin K. Lane, secretary of the interior, to be followed by addresses by Horace B. Winchell, president of the American Institute of Mining and Electrical Engineers, John L. Lewis, acting president of the United Mine Workers of America, and Hon. William C. Sproul, governor of Pennsylvania. The formal ceremony of handing over the keys of the building by Secretary Lane to Director Manning will follow.

Official Program

Monday, September 29

8:30 A. M. Bureau Buildings open for Inspection.
10:30 A. M. Dedicatory Ceremonies in rear of Main Building, 4800 Forbes Street.
2:00 P. M. Special Train and Automobiles to Experimental Mine near Bruceton, Pa.
3 to 6 P. M. Mine Explosion and Inspection of Experimental Mine and of Explosives Testing Plant near Bruceton, Pa.
6:00 P. M. Return by Special Train and Automobiles to B. & O. Depot, Pittsburgh.
8:00 P. M. Informal Meeting and Organ Recital Carnegie Music Hall.

Tuesday, September 30

9 to 12 A. M. Elimination Mine Rescue Contests.
2:30 to 5 P. M. Final First-Aid Contest.
5:00 P. M. Coal-Dust Explosion.
8:00 P. M. Pageant Glorifying the Mining Industry, Forbes Field.

Wednesday, October 1

9 to 12 A. M. Final Mine Rescue Contest.
2:00 P. M. Announcement of Joseph A. Holmes Safety Association Awards.
2 to 5 P. M. Elimination First-Aid Contests.
5:00 P. M. Coal-Dust Explosion.
8:00 P. M. Smoker, with Award of Prizes to Winning Teams.

After luncheon at the bureau of mines buildings, the guests will board special trains on the Baltimore & Ohio railroad to the experimental mine of the bureau of mines at Bruceton, Pa., 14 miles from Pittsburgh. Upon arrival there a prearranged explosion of coal dust will take place in the experimental mine as a demonstration to the visitors and after that there will be an inspection of the mine and the explosives testing plant, the guests returning to the city at 6 p. m. At 8 p. m. there will be a general meeting at Carnegie Music hall under the auspices of the Pittsburgh chamber of commerce.

On Tuesday, Sept. 30, the new laboratories will be open for inspection by the guests the entire day and at 2 p. m. the elimination contests in the national safety first-aid and mine-rescue meet will be held at Forbes field also the awarding of the state championships. At 5 p. m. at Forbes field, there will be a demonstration of the explosibility of coal dust and at 8 p. m. the chamber of commerce will present a pageant typifying the spirit of the mining industry.

On Wednesday the final mine rescue contest and other events, including a pageant in the evening, will be held.



NEW LABORATORY BUILDING, BUREAU OF MINES, FORBES STREET, PITTSBURGH, WHICH WILL BE OPEN TO THE PUBLIC SEPTEMBER 29 TO OCTOBER 1. RESEARCH AND ROUTINE WORK IN THE LABORATORIES WILL BE CONFINED ENTIRELY TO TYPICAL COALS

Coke Bars France's Steel Future

British Official Commission, After Comprehensive Study, Analyzes Main Factors Underlying Changed Iron and Steel Conditions of Lorraine, Saar, Belgium and Cologne Districts—First Copy of Report Reaches This Country

Outstanding Conclusions of British Official Report

FRANCE'S iron and steel development at present is at the mercy of German coal. To remove this menace, French steelmakers hope to trade basic pig iron for British coke and coking coal.

France is a potential competitor of Great Britain in steel in the world's markets but not until the destroyed works have been reconstructed and put in full operation, three to five years hence.

Much new construction was carried on by the Germans in German Lorraine during the period of hostilities. These extensions in partial or completed form have fallen to permanent French possession.

Germany operated some of the French works in occupied territory during the war; attempting unsuccessfully to start others. She stole the equipment and set it up in plants in German Lorraine.

Without Lorraine Germany's modern iron and steel development would have been impossible. Outside France, Germany can obtain ore only from Sweden and Spain. Both need their ore for their steel development.

Germany failed to solve the problem of a shortage of ferromanganese during the war. Calcium carbide which was extensively used proved unsatisfactory, producing unsound steel and a scrap loss of 30 per cent.

COAL and coke are the key materials which will determine the future development of France as great iron and steel power and her ability to compete industrially with Germany, Great Britain and the United States.

Despite her position of great superiority in the possession of iron ore resources and her control of a great number of new works in physical operating condition, France remains a dependent on Germany in the matter of fuel supply. The result is that the Lorraine iron and steel works, now French in name and fact, have been placed in a very unenviable position.

These are the striking conclusions which stand forth in the confidential report to the ministry of munitions by the British commission appointed to examine the condition of the iron and steel works in Lorraine, in the occupied areas of Germany, in Belgium and in France, a copy of which has just reached this country.

This report, which is the most comprehensive by reason of the ground covered by the inquiry and is the fullest in descriptive detail that yet has been prepared on the changed iron and steel situation of continental Europe, represents the results of the official British inquiry into this broad subject. The members of the commission appointed by the British minister of munitions were drawn from among the eminent names of the British iron and steel industry. Those who made a study of Lorraine and the Saar valley consisted of Sir William J. Jones, K. B. E., ministry of munitions, in charge of commission; Percy S. Cooper, Esq., the Partington Iron & Steel Co.; Roland C. Harding, Esq., Robert Heath & Sons, Ltd., and Cosmo Johns, Esq., Vickers, Ltd. Those visiting the Cologne section of Germany, and Belgium, were Dr. F. H. Hatch, representing the ministry of munitions and in charge of the section; L. Ennis, of Messrs. Dorman, Long & Co., Ltd.; James Henderson, of the Frodingham Iron & Steel Co., Ltd., and Richard Mather, of the research department, Royal Arsenal, Woolwich.

The commission was charged with reporting upon the conditions in these districts along several important lines. These were

(a) The character and extent of the technical and other developments that have taken place during the war, with special reference to the steps taken for the development of munitions output.

(b) On the present conditions of plant and machinery.

(c) The prospect of these areas either as competitors with, or markets for, British industries.

(d) The developments in fuel economy in the steel trade of these areas.

The tour of the commission was made during April and early May. The itinerary embraced all the leading steel works in Lorraine, in the Saar valley, in the Cologne district and in Belgium. The report is dated July 19.

MUCH attention is given in the report to the coke difficulties in France. In this connection it is pointed out how the German government has failed to fulfill its obligations to supply France with coke.

"Under the terms of the armistice the German government engaged to deliver 13,700 tons per day of suitable furnace coke, which obligations they have never fulfilled," says the report. "During November and December, 1918, very little furnace coke was supplied; from Jan. 6, 1919, to Feb. 6, 1919, the average deliveries were between 5000 and 6000 tons per day; from early February to the end of March the average daily delivery fell to between 2000 and 3000 tons; since the end of March up to the time of our visit the quantity delivered has been negligible. At the date of our visit only about 500,000 of coke had been received in Lorraine from Germany instead of well over 1,500,000 tons due to have been received or roughly, one-third. Efforts are being made by the French officials to obtain furnace coke from Belgium; the first delivery was made on April 20, but only of 1000 tons. Some of this coke was seen at Knutange and appeared to be of good quality. The minimum tonnage required daily to keep the 60 furnaces in blast in the Lorraine district is between 12,000 and 13,000 tons.

"Only one coke oven was seen in the Lorraine area, namely at Moyeuvres works of Messrs. De Wendel, where there are 105 Koppers ovens installed for producing coke for their

own use. Here is used in the ovens about 75 per cent of Saar coal (from their Petit Rosselle mine in Lorraine, a continuation of the Saar coal field), and about 25 per cent of Westphalian coal; it makes a coke which can be used in the blast furnaces at these works, but cannot stand transportation, being too friable. Some of the coke which we saw appeared to be quite as good as that produced in this country for furnace purposes.

"It is generally agreed that it is necessary to add a minimum of about 25 per cent of Westphalian coal to the Saar coal, as the latter alone is not a strongly coking coal and is unsuitable for transportation. This was confirmed by our observations at the steel works in the Saar valley, where there are many coke oven installations, following the same practice, although coke was being made in one works (Neunkirchen) from Saar coal alone."

The possibility of a reciprocal trade arrangement between France and Great Britain, whereby the former would obtain coal in exchange for basic pig iron, is hinted at.

"The French dread the present position of dependence upon Germany for coke supply as, although the peace treaty may give France control of the Saar valley coal fields for 15 years or perhaps for good, the fact remains that under existing conditions they must have coal or coke from Westphalia for their blast furnaces, the coke from Saar coal alone apparently not being satisfactory, so that, so long as this position continues, their industry will remain, to a great extent, at the mercy of the Germans, which the French naturally are most anxious to avoid," the report states.

"But the ideal of the French iron and steel makers in the Lorraine area at the present time, is that means should be devised whereby a reciprocal business may be done with this country, by their supplying us with basic pig iron while we supply them with furnace coke or coking coal," says the commission. If the anticipated output of oven coke in this country is realized we should have some to spare, but the difficulties of transport, trans-shipment, etc., and the resultant breakage are serious factors to be considered. Possibly solution of the present problem may be found in the erection of coke ovens in Lorraine close to the furnaces, and the production of coke on the spot from a mixture of Saar coal and Durham coking coal. The supply of the latter cannot take place until better and cheaper means of transport are available.

"Speaking of the potentiality in the French steel districts, either as competitors with markets for British industries, the opinion is voiced that the 'acquisition by France of these areas and their corresponding loss to Germany should be an advantage to British enterprise.'"

It is probable that France may become a competitor with Britain, in so far as her surplus steel production is concerned, taking the place of Germany to some extent, but not until the destroyed works have been reconstructed and full production reached in three to five years hence.

Due to the result of the war France has replaced Germany as the possessor of the largest iron ore supplies in Europe, France's reserves having been increased by over 2,000,000,000 tons, making them now about four times those of Germany. Before the war they were approximately the same. The production of ore in German Lorraine in the year 1913 was about 21,000,000 tons, and in French Lorraine for the same year the production was 19,800,000. France's present output, therefore, should be nearly double that of her prewar output. Germany's total output of iron ore for 1913 was 28,600,000, of which 21,000,000 tons came from Lorraine, as stated above.

With France's new possession of Lorraine and the Saar valley she is in a position to produce 11,000,000 tons of pig iron annually. In 1913 France's production of pig iron was about 5,000,000 tons. Prior to the war German steelmakers frequently complained of the difficulty of obtaining adequate supplies of foreign ores, which was one of the chief causes of the war, as they hoped thereby to obtain possession of France's ore reserves.

Without the acquisition of the Lorraine iron ore deposits in 1871 it would have been quite impossible for the German iron and steel industry to have developed as it did.

In Lorraine comparatively few developments of the works took place during the war. New construction of this character is given in detail by the report.

At Hagondangue a new six-stand Morgan continuous train was nearing completion on the date of the commission's visit, together with a new five-stand mill.

At Moyeuvres there were no developments during the war, but while the Germans ran the works, billets and blooms were produced and were sent to the Jamaielle and Hayange works of Messrs. De Wendel for reduction into machine wire and small rounds.

At Uckange a new aerial ropeway 17 kilometers long, to bring iron ore from the mines to the furnace, was erected during the war by the Germans, who had contemplated erecting a steel works in conjunction with the existing blast furnaces. A new engine house was erected and a steam turbine stolen from Belgium was installed. This plant has been dismantled by the French authorities and the equipment returned to its owners in Belgium.

At Knutange (Nilvange, formerly Knutingen) there were no developments during the war but considerable tonnages of shell steel and finished shells were produced.

At Maizieres (formerly Moselhutte, belonging to the Rombas group) a new blast furnace was erected for the purpose of supplying hot metal to the new steel works under erection.

At Carlshutte much progress was made during the war for the erection of a large steel works in connection with the existing blast furnaces. The new power house and engine foundations were completed, along with the necessary foundations, pipe and wire culverts, etc. Likewise, 13,000 tons of structural steel mixer, converters, blowing engines, mill stands and rolls, rolling mill engines, etc., which had been stolen by the Germans from works in France and Belgium, were on the site.

At Hayange no extensions were made. The works were run by the Germans and large tonnages of structural steel, cross ties, sheets and

Works Escape Bombs

BOMBING by allied airmen of German steel works in Lorraine and in the Saar and of those plants in French territory occupied by Germany, was ineffective according to the report.

"The damage suffered by the various steel works during the war from bombing was comparatively insignificant," it is stated. "In Lorraine, the works at Hagondange received 400 bombs and 150 bombs were dropped on De Wendel's works at Hayange but the total damage was estimated at not more than £5000. The loss of life was comparatively slight. The German manager at the latter works was evidently very frightened, having constructed a bomb-proof portable cupboard for himself. The same conditions obtained in Saar valley works. In one of these, it was noted that great precautions had been taken to prevent damage to the generators by providing very thick ferroconcrete protections.".....

plates were produced, together with low-carbon sheets for steel cartridge strip.

At Rombas, extensive enlargements were made and have continued under way, although the total output was much less than in normal prewar years, owing to the irregular operations. A new blast furnace at the time of the visit was practically complete. In the large extensions to the steel works then under construction it was intended to install one 500-ton mixer, one 1200 mixer, six 30-ton converters, four 60-ton tilting open-hearth furnaces and a complete equipment of mills.

At Volklingen, Saar valley, a large construction program was carried on during the war, although the works were remodeled in 1900 and well equipped. Waste heat boilers, to use exhaust gases, were undergoing installation late in April and a 15-ton Rochling Rodenhauser electric furnace was being built for the production of steel castings and special steel. Three small open-hearth basic furnaces were erected during the war to produce high explosive shell steel. A steel foundry was built. The works belong to Rochling Bros., who were building the large new steel works in connection with their blast furnaces at Carlshutte.

At Dillingen, in the Saar, nothing of importance was built during the war.

Mark Helps Germany

IF it were not for the depreciation of the mark giving Germany the advantage in foreign trading, England would not have much to fear from the competition of that country, the commission concludes after its study of conditions in the Cologne steel district.

"Germany is suffering more than England from labor unrest, high wages, and shortage of food and material," says the report. 'Trade unionism has taken a strong hold; labor has asserted itself and the indications are it intends to hold the advantages gained. For this reason, the commission formed the opinion that but for the advantage to German exporters of the low exchange value of the mark, England would have less to fear in the immediate future from competition with Germany than it has had in the past. In the larger industrial towns of the occupied territory, there is evidence of malnutrition, especially in the workmen and their families."

At Burbach, in the Saar, one of the blast furnaces worked on German spathic iron ore, a low grade manganese ore from Bingen for the production of ferromanganese. This works appears to have been the only one which succeeded in making satisfactory steel rounds for high explosive shells from bessemer basic steel without a very heavy percentage of rejections. The output was said to have been 2000 tons of 85 millimeter diameter rounds per month. Nearly all the high explosive shell steel was made in the open-hearth furnaces and the basic converter steel mainly was used for structural steel, light rails, wire rods, reinforcement bars, etc.

At Neunkirchen, in the Saar, a new benzol plant was built in connection with existing coke ovens, with a capacity of 200 tons per month. A new blast furnace was nearly completed and a new 900-ton mixer was being installed in the bessemer plant. A 12-ton electric furnace using molten converter steel was installed during the war to produce high explosive shell steel. An extension to the open-hearth department containing three 35-ton furnaces of special design was nearing completion. These furnaces are to be worked from mine Poetter producers.

The works at Joeuf and at Homecourt (both in France just over the Lorraine border) have been badly damaged and are not in working condition—Homecourt, indeed, has been completely destroyed, with the exception of the blast furnaces and some of the power gas engines.

Germany's Operating Difficulties Told

SOME of the operating difficulties which Germany encountered in keeping up production in the Lorraine plants are told by the report. The works suffered severly from the shortage of fuel especially during the later period of hostility. "Many times the blast furnaces have been damped down and the steel works closed entirely for several weeks on end, due to the inability of the Germans to send the furnace coal and coke required, owing to difficulties of transport caused by military exigencies coupled with the bad condition of the railway system and rolling stock in Germany at this time," declares the commission. "Some of the French-owned works in Lorraine were kept at work by the Germans, others just inside the French border, Joeuf and Homecourt, have been idle since the beginning of the war although the Germans made an effort to restart them. They apparently gave up the attempt, stole from the French works the bulk of the plant, tools, buildings, and stores, and destroyed the remainder. The stolen plant, etc., was installed in German-owned works in Lorraine which were kept going as far as ever possible. The Germans also sent a large portion of the Homecourt works plant to Thyssen's works at Bruckhausen.

"Toward the end of the war the difficulties already named due to fuel shortage were accentuated by the absence of lubricants and there is considerable evidence of machinery having become seriously damaged and finally rendered inoperative in some cases, owing to the latter cause. This condition of affairs obtained not in Lorraine alone but also in the German works situated in the Saar valley."

Germany's ineffectual efforts to overcome the shortage of manganese caused by the blockade shutting off imports of manganese ore, are related. It is stated that during the latter period of the war the shortage in manganese was great and its allocations to the different steel works and for specific purposes was in the hands of a commission especially appointed by Germany.

"As a substitute calcium carbide was tried in conjunction with reduced quantities of manganese and this continued for some time," the report states, "there was a consensus of opinion expressed to the commission that it gave very bad results and that about 30 per cent of the steel so produced was scrap, the tops of the ingots being very unsound and the waste in the metal much higher than usual—especially in shell steel. At only one works, Volklingen, it was stated by the management that calcium carbide had been used at all satisfactory. Powdered anthracite was used for the oxidizing purposes in the same way as calcium carbide but was not a success. Apparently many experiments were tried with other materials as substitutes for manganese, great secrecy being observed in regard thereto. But it would seem clear that no satisfactory substitute was found notwithstanding the confident asertions made in the German press during the war. The allocation of manganese for making steel for rails was 2 kilos of metallic manganese, in the form of spiegel or ferromanganese, per ton of rails. During the war the

(*Concluded on Page* 785)

World Wants Fabricated Ships

United States in Best Position to Supply Immense Demand Forthcoming from Foreign Countries, According to Shipping Board — Italian Firm Orders Four Duplicates of 5350-Ton Steamers Made for American Government

WASHINGTON, Sept. 16.—Immense demand for steel for fabricated ships for foreign account will be made upon manufacturers in this country, according to shipping board officials. The fabricated ship, an American innovation, adopted as a war measure, has found favor abroad and it is expected that there will be an unlimited field in foreign markets for this type.

In support of this opinion, the shipping board has announced that H. R. Carse, president of the Submarine Boat Corp., Newark Bay, N. J., last Friday laid before Chairman Payne, of the board, a proposal from an Italian shipping company to purchase all fabricated parts, machinery and equipment for a 5350-ton steamship. The Italian corporation added that it is disposed to purchase four vessels of the same type and tonnage as the ships being built by the Submarine Boat Corp. for the shipping board.

The Newark Bay plant is operated for the shipping board and for that reason it was necessary to obtain official sanction for acceptance of this foreign order. This was accorded, and Henry R. Sutphen, vice president of the company, will sail this week to confer with the Italian company. The fabricated parts are to be assembled in Palermo.

The shipping board believes that as there is world shortage of vessels many nations in great need of them will have to place orders in the United States. Italy and Japan are said to be short of iron ore, while production of ore in Spain and Sweden has fallen off. The United States, it is explained, can deliver its steel in every port of the world at a cheaper rate than any competitor. Its chief rival is Great Britain. The latest available quotation for steel ship plates made in British plants for export is £19 5s per ton, equivalent at the present rate of exchange to $79.79, United Kingdom ports. The American price for steel plates is around $53 per ton, United States ports.

Believes Industry Will Grow

The fact that parts can be fabricated in American shipyards, transported abroad and there assembled at a less cost than they can be built by the old method, makes it apparent to the shipping board the new industry is likely to undergo a great expansion with a consequent stimulation of manufacture in many sections of the country.

The Submarine Boat Corp., which only two years ago built its plant on a New Jersey meadow, has delivered 60 vessels to the shipping board since then, and launched a total of 75. This is the company which last April, when estimates for ship construction were at $225 per deadweight ton, made an offer to the shipping board to build 12,000-ton freighters at a flat price of $149 per deadweight ton. Mr. Carse said the price was made possible by economy in production, due to standardization and fabricated parts.

This government shipyard employs about 12,000 men, and among the bridge and structural steel plants and machine shops of the country are upwards of 30,000 men employed in producing material for this yard. This diffusion avoids housing problems and the consequence of local labor unrest.

The localities from which fabricated parts are supplied to the Newark Bay yard are Milwaukee, Mount Vernon, O.; Decatur, Ill.; Chicago, Pittsburgh, Louisville, Buffalo, Boston, Philadelphia and Syracuse, N. Y.

Increasing supply of shipping tonnage through redeliveries by the war department to commercial owners and the shipping board, in the meantime, is proving an aid to the export situation. During August 151,000 deadweight tons of shipping were redelivered by the war department to commercial owners, and 74,000 tons to the shipping board, a total of 225,000 tons. This brings the total redeliveries by the department to 3,282,000 tons.

There are in operation in the army's transatlantic fleet 519,000 deadweight tons of shipping, divided as follows: Troop ships, 505,000; refrigerator, 5000; cargo, 9000. There are 381,000 tons out of operation and awaiting redelivery.

Six Million Tons of Ships Being Built

WASHINGTON, Sept. 16.—The advance of the United States among the nations to the post of leadership in shipbuilding is a fair augury for the permanence of its new merchant marine, built under the stress of war. Figures compiled by the United States shipping board show that in June, 1914, the total gross tonnage under the American flag, including coastwise shipping and the fleets operating on the Great Lakes, was 4,287,000 tons. In June, 1919, the gross tonnage was 11,983,000, or an increase of 278 per cent. The steam tonnage under the American flag on June 30, 1919, was 24.8 per cent of the steam tonnage of the world. In the four years preceding the war the shipyards of the country turned out a total of 107 seagoing vessels, of 1500 tons and over. This represented 805,037 deadweight tons. During 1918 there were launched from the yards under the control of the shipping board, a total of 4,216,656 deadweight tons, approximately five times the tonnage of the four prewar years. These shipyards during 1918 delivered 3,107,093 deadweight tons of completed ships.

From Jan. 1, 1919 to Aug. 29, 1919, approximately 3,983,135 deadweight tons were launched and 3,845,140 deadweight tons delivered, a total for the 20 months since the beginning of 1918, of 8,199,791 tons launched and 6,952,233 tons delivered.

The original construction program called for the building in this country of 17,807,071 deadweight tons, consisting of 2105 steel steamships of 14,351,971 deadweight tons; 1017 wood steamships of 2,978,100 tons; 50 composite ships of 175,000 tons and 43 concrete ships of 302,000 tons, a total of 3215 vessels. Of this program 1292 vessels, totaling 7,125,225 deadweight tons have been delivered. They consist of 899 steel steamships of 5,733,622 tons, 378 wood steamships of 1,339,103 tons and 15 composite ships of 52,500 tons. Recent figures

show that at present there are 408 steamships of 1,920,724 deadweight tons, being fitted out in wet basins.

There are a total of 497 vessels, totaling 3,286,105 tons now on the ways, consisting of 389 steel steamships of 3,015,605 tons, 99 wood ships of 207,000 tons and 9 concrete ships of 63,500 tons. Contracts for the construction of 227 steel steamships of a total deadweight tonnage of 1,476,610 tons have been let, on which work has not yet started.

After the signing of the armistice a great number of contracts were cancelled and suspended, in all totaling 886 vessels of a total deadweight tonnage of 4,515,285 tons. These contracts were for 421 steel steamships of 3,077,935 tons, 404 wood ships of 1,111,850 tons, 32 composite ships of 112,000 tons and 29 concrete vessels of 213,500 tons. Subtracting these figures from the total tonnage to be built at the time the armistice was signed, leaves a total of 6,683,439 deadweight tons yet to be delivered to the shipping board, and on which work is now progressing.

Since the shipping board was organized latest figures show that 1307 ships totaling 7,254,042 deadweight tons have been delivered. These include 15 steel steamships of 85,000 gross tons delivered from Japanese yards.

Tariff Board Reports on By-Products in 1918

Washington, Sept. 16.—The tariff commission has just made public a report of a census of dyes and coal tar chemicals in 1918, supplementing a report of a census in 1917 made at the request of President Wilson. The latest report was submitted to the President on his return from the Paris peace conference.

In 1918, 25,997,580 tons of coke, or 46 per cent of the total production of 56,478,372 tons, were produced in by-product ovens. The year's entire output was 1,738,610 tons less than in 1917, but the by-product coke tonnage was 3,558,300 tons greater.

From the output of by-products in 1918, 44,804,900 gallons of pure benzol were obtained, as compared with 36,804,228 in 1917, and 21,079,500 gallons in 1916. Values in the three years fluctuated, the record output in 1918 having been worth only $12,341,779 as compared with $16,576,865, the value of a smaller production in 1917 and $13,159,374 for an even smaller output in 1916. In the case in toluol, 8,861,948 gallons were obtained in 1918, 7,395,174 in 1917 and 3,939,636 in 1916. Here, however, the 1918 value, $12,709,460, was proportionately in excess of 1917, $10,140,013, which, in turn was less than in 1916 when the value was $11,238,268.

Solvent naphtha was produced in steadily increasing quantities but with fluctuating values, as for instance: 1918, 3,540,162 gallons, $498,621; 1917, 2,115,516 gallons, $351,130; 1916, 1,350,726 gallons, $383,584. Sulphate of ammonia was obtained in greater amounts each succeeding year with the values increasing with volume as follows: 1918, 436,388,134 pounds, $19,637,466; 1917, 352,722,848 pounds, $11,973,468; 1916, 271,832,816 pounds, $8,496,278. The naphthalin production and values were: 1918, 16,087,498 pounds, $655,132; 1917, 17,276,044 pounds, $569,449; 1916, 8,820,405 pounds, $289,688.

Comparisons in quantity and value of phenol are given only for 1917 and 1918. In these years the output and value were respectively: 64,146,499 pounds, $23,715,805, and 106,794,277 pounds, $37,270,284.

New Tube Mill

For Lapweld Pipe Will be Built by Youngstown Sheet & Tube Co.

Plans have been formulated for the erection of an additional mill for the production of lapweld pipe from 4 to 10 inches in diameter, at the plant of the Youngstown Sheet & Tube Co., Youngstown, O. As outlined, the addition, which it is expected will add a capacity of 50,000 tons to the mills, will be ready for operation about April 1, 1920, and will cost about $1,000,000. The new mill will increase the total pipe output of the company to 550,000 tons annually and will bring the total yearly capacity of the plants in the Mahoning valley to approximately 900,000 tons of pipe.

The present equipment of the tube department of the Youngstown Sheet & Tube Co., consists of five mills making buttweld pipe from ⅛ inch to 3 inches, and five mills producing lapweld pipe from 2 to 20 inches in diameter. It will not be necessary for the company to provide additional skelp capacity, as existing mills are in a position to care for the new mill.

Call Boiler Meeting

A special convention of the American Boiler Manufacturers' association will be held at the Hotel Astor, New York City, Sept. 24. William H. Barr, president of the National Foundrymen's association, is scheduled for an address on a timely topic. A discussion on boiler costs is expected to arouse much interest. The program contains other interesting features.

Output Hampered

In Refractories by Car and Labor Conditions—Demand Good

Pittsburgh, Sept. 16.—Good demand is noted for refractories, both for steel plant and blast furnace use and recent prices are being well maintained. Plant operations, however, are not expanding materially. Labor, to begin with is none too plenty, while car shortages still are restrictive influence in several producing districts, while in the west, operations have been affected by the inability of manufacturers to secure full supplies of coal, the direct result of the car scarcity.

Present prices, it is claimed, do not allow a number of makers a living profit, but with the iron and steel industry taking about 90 per cent of the refractories production and with iron and steel prices holding stationary, no attempt at boosting brick prices is apparent. Production of magnesite brick still is behind the demand, for the one domestic producer of the basic material of a quality suitable for refractories is not yet back to a normal rate of shipments. Importations still are too small to be a help to the situation.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 41.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent	$ 40.00 base
76 per cent	100.00 base

Walter-Wallingford & Co. now are the exclusive agents in the Chicago and Cincinnati districts for the Woodward Iron Co., Woodward, Ala., operating five merchant blast furnaces and producing basic, foundry and forge iron.

Says Pittsburgh Base Blocks West

Western Association of Rolled Steel Consumers Files Supplemental Declaration in Basing Point Case—Cites Instance of Alleged Discrimination and Individual Transactions Where Base Price System Was Not Followed Formerly

WASHINGTON, Sept. 15.—Upon the allegation that fabricators of steel in the Chicago district and westward, are unable to compete at points east of Gary, with similar companies in Pittsburgh and the East, because of the practice of the steel producers in naming prices on a Pittsburgh base, plus the freight, the Western Association of Rolled Steel Consumers have filed with the federal trade commission, a supplemental declaration in its complaint against the Pittsburgh basing system. In the new declaration, specific instances are cited which it is claimed illustrate the discrimination against the western fabricators. It is pointed out that Chicago fabricators and dealers in rolled steel products are put at a disadvantage in the state of Illinois as compared with their competitors at Pittsburgh and the Pittsburgh district, to the extent of 7 cents per 100 pounds in the case of Streator and Peoria, 6 cents at Bloomington, Fulton, Galesburg and Quincy, 5 cents at Springfield, East St. Louis and Centralia and 12 cents at Cairo and Johnston City. Instances then are cited pertaining to certain individual members of Western Association of Rolled Steel Consumers to show how the competitors of these companies are favored at specific points.

"Prior to the formation of the United States Steel Corp. and its absorption of the various competing producers of rolled steel, there was no practice of using Pittsburgh as a basing point on all iron and steel shipments—such as is now in existence, and herein complained of by the applicant association," says the new declaration.

"To whatever extent such Pittsburgh basis, or Pittsburgh as a basing point for iron and steel was followed in the trade, prior to the formation of the United States Steel Corp., it prevailed during the time and grew out of the fact that Pittsburgh was the principal manufacturing point for iron and steel, in and near which, and in that district substantially all the rolled iron and steel was produced which is no longer the case or fact.

"That such Pittsburgh base was not, during that time adhered to, but manufacturers of rolled steel, at divers places, in the Pittsburgh district or tributary thereto, such as Buffalo, Phoenixville, Bethlehem, and Wheeling and along the Ohio river in Ohio and Kentucky and other places never observed the Pittsburgh base, but by the absorption of the freight rate, or otherwise, made the price to their customers so as to put those customers on as good a basis as competitors who were near Pittsburgh or as their own proximity to the consuming trade justified.

"That during such time, manufacturers at Pittsburgh and in the Pittsburgh district, who used the Pittsburgh base, customarily, if such base were named, absorbed the freight to the purchaser's destination, or some portion thereof, as they might determine, in getting the order and fixing the prices.

"That such practice of using the Pittsburgh base, during such time, did not apply to or include rolled steel manufacturers outside of such Pittsburgh district, or not near or tributary thereto. For instance, the rolled steel produced at Birmingham, Ala., was sold f.o.b. Birmingham; the rolled steel produced by the Colorado Fuel & Iron Co. was sold f.o.b. Pueblo, Col., where its plants were; producers of rolled steel in or about Chicago and the Middle West sold to consumers at Chicago and in that district f.o.b. Chicago, or the purchaser's destination.

"Manufacturers of rolled steel in the Pittsburgh district, for instance Jones & Laughlin, who are large producers of structural steel and steel used by fabricators, customarily sold their rolled steel products to customers in or about Chicago, or in that district, f.o.b. Chicago, and themselves absorbed the freight rate from Pittsburgh, or their mills, to Chicago?"

Various Sales Are Cited

In support of the declaration that Pittsburgh base was not employed on all iron and steel products prior to the formation of the United States Steel Corp., various sales to buyers in Chicago territory by different steel companies in 1898 to 1903 are enumerated.

Discussing further the Pittsburgh base, it is declared, "that the adoption and application of such basis could only be successful when put into effect by agreement of the different producers, which would be or result in the lessening of competition among such producers and which is in restraint of trade.

"That such an arrangement and practice by agreement or concert of the producers, and its consequent restraint of trade, could be reasonable and lawful, if at all, only where the competing trade is in a single place or district, and does not include producers widely separated, as are producers at Pittsburgh and in the East, and Chicago and the Middle West, and where the districts of large consumption and demand are also widely separated, and one of such districts is near or tributary to the rolling mills and supply of one set of producers, and another district of consumption and demand is in proximity or tributary to another and different place of production; as is the case with the Pittsburgh district, and the Chicago and Middle West district."

Duluth Files Claim for Recognition as Base

The state of Minnesota by its governor and attorney general and the Joint Committee of Civic Organizations of Duluth have intervened in the Pittsburgh basing point controversy and have presented to the federal trade commission the claim of Duluth for being made a basing point. The committee in its complaint says:

Further claiming the Joint Committee of Civic Organizations of the city of Duluth states, that the United States Steel Corp. has in Duluth a plant for the production of steel, the construction of which is of the very best modern type for economical production and is capable of producing at the lowest possible cost, taking advantage of the latest devices and improvements for that purpose and making use of all by-product processes. This plant is located on Lake Superior in close proximity to the iron ore supply, and yet by reason of artificial, unfair and arbitrary price fixing methods employed by the combination of steel interests named herein, this community is deprived the right of erecting and operating of subsidiary mills for the fabrication and sale of secondary iron and steel products in competition with Pittsburgh, which is highly and wrongfully preferred in price schedules by said combination of steel manufacturers, all of which denies to this community and the state of Minnesota the right to develop the iron industry within its borders and enjoy the fullest economic advantages from its natural resources; denies to the producers on the farms of the state the right to enjoy the broader nearby and logically higher market price for his products which would result from the largely increased population, incident to the full development of the iron industry and large saving of freight charges, middldemen and losses in transit.

Further claiming this committee asserts that there should be a base price established f.o.b. the mills of the United States Steel Corp. in Duluth, and that such base price so to be established at such mills be on a parity with that of Pittsburgh and no less favorably to the consumers in Duluth and Minnesota.

Corporation Says Price Pivots On Pittsburgh

In its answer to the action brought by the Western Association of Rolled Steel Consumers just filed with the fed-

eral trade commission, the United States Steel Corp., the Carnegie Steel Co., the Illinois Steel Co. and the Minnesota Steel Co., set forth the interesting claim "that the determination as to whether Chicago shall be a basing point in fixing the manufacturers' price for iron and steel would necessarily involve the determination of the price at which such manufacturers shall sell their products and that such determination is beyond the powers conferred upon the federal trade commission by law." Furthermore it is stated "to merely order that the Chicago manufacturers shall sell such materials as they manufacture at a Chicago base price without fixing such price would but require a change in the name by which the transaction is described without affecting in any way the substance thereof." Some of the salient points of the answer are summarized as follows:

That the Pittsburgh base price is not the result of any agreement by the producers nor arbitrary, but that the prices so charged are controlled by supply and demand.

That the practice of selling at the Pittsburgh base price plus the freight has not been adhered to at all times under all circumstances, depending upon supply and demand.

That the Pittsburgh base is a settled custom in the trade and that vast investments of capital for manufacturing and fabricating plants have been made in reliance upon it.

That Chicago could not properly be made a basing point and that Pittsburgh will continue to be the basing point and in a sense, will continue to control prices of iron and steel so long as the country is dependent upon it, for a substantial portion of its supply. If the leadership in production shall ever pass to Chicago it will automatically become a basing point.

It is denied that discrimination is made between the purchases of iron and steel in the Pittsburgh and Chicago district. It is stated, however, that sales generally are made to the manufacturers of agricultural implements and that steel rails and accessories are sold to the railroads on a different basis and in certain products at a lower price than to other customers, but that these buyers are not in competition with other classes of users.

Put Automatic Puddler in Operation

THE Lebanon Valley Iron & Steel Co., Lebanon, Pa., appears to have reached a solution to the labor problem at least so far as concerns wrought iron bar manufacture, that likely will serve as a most practical object lesson to the trade both in the East and in the West. On Sept. 11 the company put into initial operation its new and unique wrought iron rolling mill which practically eliminates and actually reduces to a minimum hand work in the manufacture of bar iron. This elimination of hand labor has been attained through the very ingenious application of steel mill equipment and practice to the manufacture of iron bar.

The equipment includes principally eight revolving automatic puddling furnaces, each of which is designed for and those now operating actually do produce five heats per hour. Each heat produces a ball ranging in weight from 600 to 1200 pounds, as desired, the size being gaged accurately. Each of the eight furnaces rotates upon a horizontal axis much after the style of a tumbling barrel. Two of these furnaces were put in operation Sept. 11 and two more had been lighted, while four others have been completed.

Each furnace is fired separately by a stationary fire box built much after the style of the ordinary heating furnace fire box, and the heated gases, etc., pass through a 24-inch bricked arch into the puddling furnace proper. This latter furnace is lined with standard-size magnesite brick, and upon this lining through the charging door is charged the scrap by means of an ingeniously rigged, hand-operated machine after the general style of an open-hearth charging machine. The waste heat and gases pass through another brick arch way into a 250-horsepower vertical water tube boiler which supplies the steam for the roll ing mill engines. One of these boilers is attached to each of the furnaces.

The door of the revolving puddling furnace contains the newest idea in furnace construction. This furnace is the invention of Walter C. Ely, treasurer and general manager of the Highland Iron & Steel Co., Terre Haute, Ind., from which the Lebanon company purchased a license to construct and operate. Mr. Ely has been operating at the Highland plant similar furnaces for something like two years but the fact never was generally known and was kept quiet under the wartime secrecy generally having been observed by the iron and steel trade. This door is of a size designed to allow a 600 to 1200-pound ball of heated iron to drop from the bottom of the furnace onto a link belt below. The door is operated by the same man who controls the rotating of the furnace itself, and is closed and opened by a 15-horsepower motor attached to the moving furnace itself. The charge of metal includes either No. 1 wrought, turnings or light material all of which is stored on the charging platform which is 100 x 43 feet 6 inches on each side of the center of the mill, two furnaces being served from each charging floor. After the ball has been heated sufficiently, the furnace itself having sufficient depth to permit a slag bath of 7 to 9 inches in depth, thus preventing dry heating, it is discharged through the open door by gravity upon a link belt conveyor moving 400 feet per minute and designed to carry balls up to 1200 pounds weight. This conveyor moves the ball to an automatic dump which serves the 72-inch squeezer. After the bloom has emerged from the squeezer another conveyor, moving 150 feet per minute, carries it to the muck rolls for the first pass. The bloom then passes through the various passes of a specially turned 22-inch, 3-high muck mill and is rolled out as muck bar or billets, down to 2 x 2 inches. The revolving furnace is mounted upon carrying rings, 10 feet 5⅛ inches in diameter which revolve on driven pulleys which are 14 x ⅞ inches outside diameter and 5-inch face. A 20-horsepower motor rotates each furnace.

The finished muck bar and billets are carried out on sprocket driven rolls in the floor to the steel-rail built cooling bed. Other conveyors handle the product to the shears at the end of the mill, the product later being handled by electric magnets. In fact, the provision for scrap unloading from cars to the charge platform and the various arrangements around the cooling beds, allow for electric magnet operation with the greatest facility. The interior of the plant is served by three 5-ton electric cranes which also operate magnets.

The main mill building is 380 feet long, being constructed of 19 bays, each 120 feet long and the total width of the main building is 147 feet 8 inches. The building is of steel and brick with steel sash and glass. The roof is of special cement block. Concrete construction underlies every portion of the main mill floor, charging floor, etc. Forced draft to the furnaces is furnished by blowers situated underneath the charging floors. The furnaces are fed at this time with bituminous slack, each furnace by one laborer, while the rest of the automatic operation is directed by a third man who controls both the rotating furnace and the operating door on two furnaces. Thus, each furnace is served by 1½ men.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WILLIAM BARRY has resigned as superintendent of the plant of the Pittsburgh Iron & Steel Foundries Co. at Midland, Pa., and his place temporarily is being filled by Benjamin F. Parlett Jr., assistant superintendent. Mr. Parlett, who has been the company for the past six years, recently was promoted from the position of production clerk to assistant suprintendent.

A. L. Fay has resigned as manager of the Chicago office of the Werner G. Smith Co., Cleveland.

John P. Fahy has accepted a position as foundry superintendent with the Coe Mfg. Co., Painesville, O.

J. A. Moore has resigned his position as foundry superintendent of the American Blower Co., Detroit, Mich.

I. H. Carbaugh has been appointed general foundry superintendent for the United Roll & Foundry Co., Ravenna, O.

Pierce G. Smith, formerly sales manager of the American Malleables Co., Lancaster, N. Y., and Owosso, Mich., has been elected vice president.

J. Carroll Kennedy recently was made works manager of the Kennedy Valve Mfg. Co., Elmira, N. Y., succeeding the late Daniel J. Kennedy.

O. J. Rice who until recently was in government service on the Panama canal has accepted a position as foundry foreman with the Aurora Foundry Co., Seattle, Wash.

Louis Rasmussen formerly with the Northern Foundry Co., Marinette, Wis., has accepted a position as foundry superintendent for the Nash Motors Co., Racine, Wis.

N. M. Loney has been elected vice president of the Thompson-Starrett Co., 51 Wall street, New York. He resigned recently as chief engineer of the American Can Co.

John O. Tucker has been placed in charge of the Detroit office of the La Belle Iron Works, Steubenville, O. It is located in the Book building and Mr. Tucker is manager of sales.

A. H. Moreland has been elected treasurer of the Slick-Knox Co., Wheatland, Pa. He formerly was treasurer of the Carnegie Steel Co., Youngstown, O.

William G. Hammerstrom, formerly general superintendent of the Lynchburg Foundry Co., Lynchburg, Va., has been named general manager of the Steel Castings Corp., Altavista, Va.

Scott Mackay, recently with the British Forgings, Ltd., Toronto, Ont., and previously with Jones & Laughlin Steel Co., Pittsburgh, has been made general superintendent for the Stowell Co., South Milwaukee, Wis.

Henry M. Robinson, whose resignation as commissioner of the United States shipping board has been accepted by President Wilson, completed his work last Saturday and left for his home in California.

William H. Bruce, sales manager for the Mark Mfg. Co., Chicago, who has been stationed at Minneapolis, has been made southern sales manager for this company and the Steel & Tube Co. of America, with headquarters at New Orleans.

Frank P. Colville has been appointed manager of the Ashland, Ky., office of Eaton, Rhodes & Co., Cincinnati, pig iron, coal and coke merchants, with whose sales force he has been connected for some time.

Urban W. Frink, for the past three years manager of Boston office of the E. J. Woodison Co., Detroit, has left the employ of the company to open an office for the sale of foundry supplies and equipment in Boston.

L. E. Paynter, formerly foundry superintendent for the Sowers Mfg. Co., Buffalo, has accepted a similar position with the Connersville Foundry Corp., successors to the Hoosier Castings Co.

Erwin L. Malone has been appointed Cleveland district representative for the Hess Steel Corp., Baltimore. His headquarters at present are in care of the Cleveland Athletic club, Cleveland.

Ernest A. Foster, who for the past nine years has been manager of the Birmingham, Ala., plant of the American Radiator Co., has been transferred to the Detroit works, where he will occupy a similar position.

Graham Macfarlane Jr., late lieutenant of engineers, American expeditionary forces, has been appointed assistant to the president of the Red River Iron Works, Clarksville, Tenn., and the Dover Iron Co., Carlisle, Tenn.

S. E. Weaver now is identified with the sales force of the Davidson Tool Mfg. Corp., New York, as manager of the eastern Pennsylvania and southern territory. For several years he represented the Union Twist Drill Co., in a similar capacity.

Austin T. Hunt has been appointed manager of sales of the Seneca Iron & Steel Co., Buffalo, succeeding S. B. E. McVay, resigned. Mr. Hunt has been connected with the sales department of the company for the past 10 years.

R. W. McPhee and John Fechnay have become affiliated with the sales department of Barbour, Love & Woodwood, Singer building, New York City, machine tool dealers. They formerly were associated with L. Stewart Love, who is a partner in the new enterprise.

William Burleigh has become chief engineer of the Machinery Sales & Electric Co., Detroit, in charge of designing, estimating and engineering of elevating and conveying equipment. For the past three years he has been assistant superintendent of the Packard Motor Car Co., Detroit.

W. H. Baltzell, chief engineer of the Canadian Steel Corp., Ojibway, Ont., paid a short visit to Pittsburgh recently. Mr. Baltzell formerly was chief engineer of the American Steel & Wire Co., and before making his present connection was chief engineer of the Pittsburgh Crucible Steel Co., Midland, Pa.

Sam A. Schaeffer, who several years ago left the Clarage Fan Co., Kalamazoo, Mich., where he was foundry superintendent to accept a similar position with the Sheffield Car Co., now the Fairbanks-Morse Mfg. Co., Three Rivers, Mich., has returned to the Clarage Fan Co. as assistant to the general superintendent. B. C. Page, formerly with the Northwestern Harvester Co., Spokane, Wash., succeeds Mr. Schaeffer with the Fair-Banks-Morse Mfg. Co.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

GEORGE E. RANDLES, who has become president of the reorganized Foote-Burt Co., Cleveland, manufacturer of single and multiple spindle drilling machines, has been vice president for some time. He has been acting head of the company for the past 10 years, having become affiliated with it when it became incorporated in 1906. Former President and Treasurer A. W. Foote and Secretary S. G. Burt have retired. T. H. Doan Jr. succeeds Mr. Randles as vice president. W. S. Quinlan is secretary and S. E. Gross, treasurer. During the war, Mr. Randles served in Washington as director of maintenance of the motor transport division of the entire United States army at home and overseas.

George R. Sumard resigned recently as sales manager of the Ferro Stamping Co., to become affiliated with the Cadillac Tool Co., Detroit.

Glenn C. Crips has been appointed general office manager of the Republic Motor Truck Co., Alma, Mich., to succeed E. A. Godley, resigned.

Albert V. Pickering, a Worcester, Mass, mechanical engineer, has been elected president of the Victor Service Sales Co., recently organized in that city.

Spencer A. Reed has resigned as cashier of the Orange National bank, Orange, Mass., to be treasurer and office manager of the Athol Mfg. Co., Athol, Mass.

Charles B. McBride, Brooklyn, N. Y., is a director of the recently incorporated Milner-Flower Electric Co., Inc., Buffalo, formed to deal in electric machinery, etc.

Carroll Miller, for several years general manager of the Philadelphia Co., has been made vice president of the Guffey-Gillespie Oil Co., Union Bank building, Pittsburgh.

J. G. Brezinski recently was appointed general foundry superintendent for the Star Mfg. Co., New Lexington, O., manufacturer of mine and contractors' cars, semisteel car wheels, mine equipment and forges. Mr. Brezinski formerly was with the Kanawha Mfg. Co., Charleston, W. Va.

Charles M. Booth, sales manager of the Worcester, Mass., district of the American Steel & Wire Co., is confined to his home in that city suffering from a nervous breakdown.

John W. Odlin, advertising manager of the Clinton-Wright Wire Co., Worcester, Mass., has been elected first vice president of the Advertising Club of Worcester.

John T. Chidsey, president and treasurer of the C. J. Root Co., Bristol, Conn., has been nominated for president of the Bristol chamber of commerce for election at the annual meeting, Oct. 14.

J. D. Weekes has been appointed district representative with offices at 704 Keith building, Syracuse, N. Y., for the Heppenstall Forge & Knife Co., Pittsburgh, and the Heppenstall Forge Co., Bridgeport, Conn.

Kenneth Joslin has become factory manager for the Goddard Tool Co., Chicago. He resigned as chief inspector for the Goddard company some time ago to assume similar duties with the Universal Engineering Co., Maywood, Chicago.

Leroy S. Starrett, president of the L. S. Starrett Co., and president and treasurer of the Athol Machine Co., both of Athol, Mass., has transferred as a gift land to the town as a site for a $200,000 town hall as a memorial to soldiers and sailors.

John Kopf has been appointed manager of the engineering department conducted by the Duff Mfg. Co., Pittsburgh, lifting jacks, etc. Before becoming affiliated with the Duff company, Mr. Kopf was with the bureau of aircraft production, Dayton, O.

Capt. Robert E. Nugent, who was manager of the housing development for the Groton Iron Works, Groton, Conn., during the war, has joined the sales force of the Norton Co., Worcester, Mass. Before entering the service Captain Nugent was with the Barrett Co. for nine years.

John W. O'Leary, of the Arthur J. O'Leary & Son Co., Chicago, has been elected a vice president of the Chicago Trust Co. Mr. O'Leary is president of the National Metal Trades association and a director in several industrial corporations.

George S. Barton, president and treasurer of the Rice, Barton & Fales Machine & Iron Co., Worcester, Mass., is chairman of the Worcester committee in charge of the campaign to raise an endowment fund for Harvard university of $11,000,000 next month.

George W. Short who on Aug. 30 severed his connection with the Sharon Steel Hoop Co., recently was tendered a farewell reception by the officials of that company at the Poland country club, Youngstown, O., on which occasion he was presented with a gold watch.

George H. Ashley, of the United States geological survey, an expert on coal lands of the eastern part of the United States, is to be the new state geologist of Pennsylvania and will be named to be chief of the new bureau of geological and topographical survey of the department of internal affairs. The formal announcement will not be made for some days. Mr. Ashley, who has spent much time studying Pennsylvania, has been engaged in government work in various coal-producing states.

C. N. Replogle, formerly general manager of the Ralston Steel Car Co., Columbus, O., has been made general manager of the new plant being erected at Cleveland and Fifth avenues, that city, by the Timken Roller Bearing Co., Canton, O. Two years ago, Mr. Replogle became general manager of the Symington Forge Co., Rochester, N. Y., which manufactured shells for the government. Later he went to the Symington-Chicago Corp., Chicago, as general manager.

W. A. Downing has been made sales manager for the Cutter & Wood Supply Co., Boston. For over three years he has been affiliated with the George F. Foss Machinery & Supply Co., Montreal, Que., in the joint capacity of manager of the small tool department and of general advertising. Prior to his connection with the Foss organization, he specialized in small tool equipment, serving many American manufacturers in various capacities. As manager of the small tool department of the George F. Foss Machinery & Supply Co., he is succeeded by A. G. Clark, who for five years has been that company's accountant.

Ready to Build Mills at Duluth

Steel Corporation Has Plans Prepared for Sheet and Wire Plants—Nail and Tin Plate Mills to be Constructed Later — Additional Blast Furnaces and Coke Ovens Also Considered—Tonnage Tax Bill Up Again

(*Special Correspondence*)

DULUTH, Minn., Sept. 12.—Charles P. Craig, chairman of the Duluth steel base committee, has received a letter from E. H. Gary, chairman of the United States Steel Corp., relating to the corporation's plans for building sheet, wire, nail and tin plate mills at Duluth.

"We have this very day been considering plans for the improvements at Duluth," Judge Gary wrote. "We shall proceed as rapidly as circumstances permit."

From another source it was learned that tentative plans have been drawn for the sheet mill and the wire and wire fence mill. Duluth business men frequently made inquiries regarding the plans of the corporation, announced last October.

The sheet mill will have a monthly capacity of 20,000 tons, while the wire and fence mill will have a capacity of 10,000 tons.

The combined capacities of the two mills, and that of the merchant mill at the Minnesota Steel Co.'s plant, it is estimated, will more than take care of the local works' monthly capacity of nearly 60,000 tons of semi-finished steel.

A site for the sheet mill has been surveyed on the tract of land between the steel plant and the Universal Portland Cement Co.'s plant. The wire mill will be built along the river near the present machine shop.

Persons in close touch with the situation assert that the construction and operation of the two mills will create new demands for steel that may be met by the construction of units already planned as additions to the Minnesota Steel Co.'s present plant. These include additional blast furnaces, another battery of coke ovens, 14 open-hearth furnaces, and an enlargement of the open-pit furnace building. In commenting upon the situation, Mr. Craig said:

"Duluth's prospects today as regards developments in the steel industry are better than ever. Unless we had steel plants here, the elimination of the Pittsburgh plus base method of basing steel prices would mean little to us. Much good would result to this city, however, if the local steel plant was in a position to utilize the ore at its doorstep, and turn it into finished products for distribution from this territory. That we shall have both of the steel plants and the benefit of the removal of the Pittsburgh-plus millstone, now seems to be the promise of the near future."

Tonnage Tax Bill Up Again

The tonnage tax bill has bobbed up again at the special session of the Minnesota state legislature. The bill introduced by Representative Bendizen provides for a 5 per cent tax, but efforts are being made by the nonpartisan party interests to raise it to a tax of 10 per cent on the net value of the ore. The idea of the promoters of the bill is to put the members on record without referring the bill to a committee. The plan is believed doomed to failure, as the legislative session has been limited to ten days, and also to the discussion of special business.

Shipments of ore from the docks have been curtailed by the strike of the coal dock workers. While the Oliver Mining Co., has been drawing coal supplies for its mines from the Misabi coal docks at Duluth, the independents have not been so fortunate in obtaining fuel to keep them going. Nearly all the operators have been on short allowances of coal for some time. Some coal was imported from western Canada, and other lots were brought in from various points. The difficulties of the iron ore mine operators as regards coal are thought to be about over, however, as the backbone of the dock strike has been broken.

Reports from the ranges are to the effect that mine operators are speeding up as much as possible, and it is hoped that a fair showing will be made in ore shipments from the docks during the present month. With a shortage of over 9,000,000 tons reported in shipments from the Lake Superior district up to Sept. 1, it is now thought extremely doubtful if the total for the season will exceed 47,000,000 tons. "Shipments during the remainder of the season will depend largely upon weather conditions," said an operator. "The mines are in position to ship the ore down, provided vessels are available to keep the docks clear. Nearly all the furnace interests in the East will be fairly well supplied with ore, considering the fact they had large stocks on hand when the season opened."

The Oliver Iron Mining Co.'s last payroll in the Hibbing, Minn., district is said to have been the largest at that point in the company's history. That company has been pushing its mining operations in spite of unsettled labor conditions, and heavy disbursements are being made in connection with building operations at its new townsite in the central addition of Hibbing.

Mining operations on the Cuyuna range are below normal at present with all the manganiferous ore properties idle on account of the large supplies carried over from last season by consumers.

The properties now operating on that range include the Sagamore and Croft mines, being developed by John A. Savage & Co., and the Armour No. 2 and the Cuyuna-Duluth mine, owned by the American Manganese Manufacturing Co. The last named mine expects to ship out 100,000 tons this season.

Six Stacks

Eventually Planned for St. Louis Plant—First Unit is Contracted for

Chicago, Sept. 11.—Construction of a 500-ton blast furnace plant and a battery of 80 Roberts by-product coke ovens at Granite City, Ill., by the St. Louis Coke & Chemical Co., is the beginning of what is laid out eventually to contain six blast furnaces and 320 Roberts ovens.

The pig iron from this blast furnace has been contracted to the National Enameling & Stamping Co., of Granite City, which owns a large interest in the St. Louis Coke & Chemical Co. It is expected this stack will be completed and in blast at least by June 1, 1920. As plans now are outlined, a second stack will be started before the first one is completed and construction of the remaining stacks will follow as circumstances warrant. Building of additional coke oven units will keep pace with the blast furnace growth.

The Roberts type of by-product ovens will use 100 per cent Illinois coal for the production of the coke. This it is declared has been demonstrated to be a successful process by

the coking of some 9000 tons of Illinois coal in a Roberts plant owned by the M. A. Hanna Co., at Canal Dover, O. The coke so produced was used and tested in blast furnace practice.

The ore for this blast furnace plant will be brought from the Mesabi ranges by boat to Chicago and thence by rail to Granite City. Arrangements are being made for construction of an unloading plant on the south branch of Chicago river, where the ore will be transferred from boat to storage or to cars ready for shipment. Some move has been made toward handling the ore by rail to Minneapolis and then by barge on the Mississippi river to Granite City but this probably will not be developed until later.

It is not presumed that the National Enameling & Stamping Co. will be able to take the entire output of the plant as it grows larger, but the consuming capacity of other plants in the East St. Louis district is believed to be sufficient to absorb the entire tonnage, especially now that southern iron is practically excluded from the northern market.

Considerable economy in operation is expected to result from the use of Illinois coal in coke making, as the freight on this fuel from the Illinois field is only a small fraction of the freight on eastern coal, which is almost universally used for the production of by-product coke.

The St. Louis Coke & Chemical Co. is a subsidiary of the American Coke & Chemical Co., 208 South La Salle street, Chicago, which controls the Roberts type of by-product ovens. Freyn, Brassert & Co., engineers, 122 South Michigan avenue, Chicago, are in charge of design and construction of the blast furnace plant, while engineers of the American Coke & Chemical Co. are constructing the coke ovens.

It is expected to have the plant in operation on June 1, 1920.

Interested in the development of the project are the American Coke & Chemical Co., the National Enameling & Stamping Co. and the St. Louis Coke & Chemical Co. The directors are: Scott Brown, Chicago, managing director Studebaker Bros. Trust; George T. Buckingham, Chicago, Defrees, Buckingham & Eaton, attorneys; L. E. Fischer, St. Louis, general manager St. Louis Coke & Chemical Co.; George B. Hagerty, New York, treasurer National Enameling & Stamping Co.; John Henry Hammond, New York, Brown Bros. & Co.; Breckinridge Jones, St. Louis, president Mississippi Valley Trust Co.; George W. Neidringhaus, president National Enameling; Fred C. Orthwein, St. Louis, capitalist; F. B. Richards, Cleveland, M. A. Hanna & Co.; Clement Studebaker, Chicago, president Studebaker Bros. Trust, and George M. Studebaker, Chicago, vice president, Studebaker Bros. Trust.

The officers are: Clement Studebaker, president; Arthur Roberts, chairman of executive committee; George W. Niedringhaus, vice president; George T. Buckingham, vice president and general counsel; Scott Brown, secretary and treasurer; W. G. Maguire, assistant secretary in charge of sales; L. E. Fischer, general manager; M. W. Ditto, consulting engineer; C. S. Lomax, chief engineer in charge of operations; P. E. Irvine, general superintendent, and A. C. Parclay, comptroller.

British Steel Report

(*Concluded from Page 777*)

blast furnaces especially in Lorraine were compelled to use spiegel slag to provide the manganese required, owing to their inability to obtain manganese ore from India, Caucasus or Brazil. The manganese content in this slag is about 10 per cent or less and reduces the output of the furnaces. This condition of affairs remained at the time of our visit. No doubt the shortage was felt equally as severely at the blast furnaces as at the steel converters and furnaces. In some of the Saar valley works it was found that low grade native manganese ore had been and was being used. It was stated that during the war the Germans used liquid air in some of the iron ore mines in Lorraine in place of explosives for blasting purposes."

Picture of Belgian Industry is Gloomy

THE Cologne section of the commission reporting its observations drew a gloomy picture of the outlook of the future of the Belgian plants which it had visited. If contrasted, the shattered condition of these works with the well-ordered state of the German plants in the occupied territory.

"The German works in the occupied territory and those with German interests in Luxemburg and Belgium are all in good order and ready to start at full blast as soon as the restrictions on the supply of raw material are removed," the report says.

"The responsible officials of all the Belgian works visited took a gloomy view of the future. Nearly all had made inquiries in England and elsewhere, for plant and machinery to restore their works, but found the prices quoted for machinery and structural steel for reconstruction purposes so high as to make them hesitate in starting work.

"The commission obtained the impression that the Belgian manufacturers believe that the world has not realized the disastrous extent to which the basic industries of iron and steel have been injured in Belgium. Of 60 blast furnaces, existing in Belgium before the war, not one is today in blast; and it is anticipated that not more than 40 per cent of these can be got to work within the next 12 to 18 months.

"The unemployment in the industrial areas is appalling. The commission was informed by the Baron Forgeur, of the ministry of economics in Brussels, that out of 1,200,000 workmen, 800,000 are still unemployed, and that these and their families to the number of at least 2,000,000 are receiving doles.

"The Sambre-et-Moselle works at Charleroi, which is the most completely equipped and the best furnished plant in Belgium, was left practically intact by the Germans and ready to start work almost at once, the only material removed being the copper fittings and cables and the bench floor plates of the coke ovens. On making inquiries, the commission learned that the reason for sparing these works was the large interest held by the German capitalist, Thyssen.

"The works in the Chareroi district owned by the Belgians were completely destroyed and will require several years to reconstruct.

"It may be assumed that the destroyed works of Belgium and France will be restored on the most modern lines and that they will thus eventually (say in five to 10 years) be excellently equipped for efficient production. In addition, Germany may by that time have resumed a stable position in the trades in which case the total competition from those countries may be more severe than it has been in the past. But, as regards the immediate future the commission is of the opinion that a big and valuable market during the next two or three years would be secured for British iron and steel, machinery and plant in Belgium and France if suitable financial arrangements could be made."

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

WITH a capital stock of $100,000, the Goldberg Iron & Steel Co., Columbus, O., has been formed by I. L. Goldberg, who recently purchased the Topper Bros. Iron Co., in that city, conducted by Isaac Topper. The purchase includes the business and equipment and also covers the lease to two acres of railroad property used as yards. Harry Goldberg is president of the new company; Joe Topper, vice president; I. L. Goldberg, treasurer and Arthur Goldberg, secretary. These and A. Goldberg constitute the directorate. The plant is to be rebuilt and a locomotive crane as well as additional shears installed.

* * *

T. L. DODD & CO., Railway Exchange building, Chicago, have been appointed western sales representatives of the Worth Steel Co., Claymont, Del.

* * *

MORE than $500,000 worth of machinery has been added to the steel plant at Wheatland, Pa., since it was acquired by the Slick-Knox Co. The plant is expected to begin operations before Oct. 1 and will specialize in motor truck frames. The output is expected to reach 900 daily with present equipment.

* * *

FOR the purpose of making fine steel for high-grade wire rope, the Black Steel & Wire Co., Kansas City, Mo., has purchased an electric furnace from the Pittsburgh Electric Furnace Corp., Pittsburgh, for its new steel plant. W. E. Moore & Co., Union Bank building, Pittsburgh, are the engineers.

* * *

BEFORE Oct. 1, the Maibohm Motors Co., Sandusky, O., expects to occupy its new plant. This 118 x 620-foot building is one story high, of saw tooth, fireproof, daylight construction, with concrete foundations and walls are of steel sash set in brick. The 18 x 522-foot loading platform is served by side lines from the New York Central and Big Four railroads. The site on which the building is being constructed by the Northwestern Bridge & Iron Co., Milwaukee, general contractor, comprises 18 acres. The plant will have a daily capacity of 50 cars. It includes a complete body building plant, with wood and sheet metal working machinery, painting, trimming and top-building equipment. Power-driven conveyor equipment for chassis assembling also is included. All equipment has been purchased. The production schedule for 1920 will be 7500 cars.

* * *

A BUSINESS connection has been made with the J. R. Stone Tool & Supply Co., 997 Woodward avenue, Detroit, by the Victor Tool Co., Waynesboro, Pa., and the former company now is its exclusive agent in Michigan. It will handle the Victor Tool Co.'s entire line of self-opening die heads, collapsible and adjustable taps, reamer holders, nut facing machines. Stocks of these tools will be carried in its Detroit quarters.

* * *

THE Journal of Better Bearings is the name of the house organ of the Damascus Bronze Co., Pittsburgh, the first number of which made its appearance in August. The front cover, which is in three colors, contains a bird's eye view of the company's plant and carries the line, "Bearing Tidings from Damascus", illustrated by a figure mounted on a camel moving across the desert from a Moslem temple to a steel plant. The publication contains much of interest not only to those connected with the organization but also to users of bearings.

* * *

THE Dearborn Iron & Power Co., capitalized at $500,000, with offices at Dearborn, Mo., and Kansas City, Kans., has been incorporated to take over the plant and assets of the Kansas City Malleable Foundry, the Kansas City Pattern Works, National Machine & Construction Co. and the Star Brass Works. The new company has assembled them under one head at its plant at First and Washington streets and will manufacture malleable, semi-steel, gray iron, brass and aluminum castings, as well as operate pattern and machine shops. Complete modern equipment has been purchased and the company will soon have in operation a large foundry at Dearborn, specializing in light soft gray iron castings for machine work.

* * *

THE plant of the Shenango Iron & Steel Co. at Wheatland, Pa., which was purchased a number of years ago by Max Soloman of Beaver Falls, Pa., and which has been idle for the last 11 years, has been sold to the New Process Iron & Steel Co. of Noblestown, Ind. The plant is to be dismantled and the machinery, equipment and buildings removed. Mr. Solomon retains the water line, car plant and sidings on the Pennsylvania and Erie railroads. When last in operation the plant employed 500 men and produced sheets and puddled iron.

* * *

THE Harry M. Hope Engineering Co., Unity building, 165 Devonshire street, Boston, is purchasing equipment for the new factory of the Seamless Rubber Co., Inc., New Haven, Conn. It is in the market for hard rubber dust grinding and sifting equipment; steam-jacketed and hydraulic press vulcanizers; tubing and washing machines; buffing and grinding wheels; steam as well as steel and wood factory tables; steel storage racks, bins, shelves, etc.; heavy metal pans and trays; steam-jacketed and plain cooking kettles; wet and dry tumbling barrels; soft metal melting furnace; factory trucks and dummy elevators, etc.

* * *

THE Willys Corp., New York, has purchased two plants of the Duesenberg Motors Corp., one at Elizabeth, N. J., and the other at Poughkeepsie. It is said some new financing will be undertaken in connection with the transaction. When it was announced that the Willys Corp. had been formed to manufacture a new 6-cylinder car it was stated that this was necessary as the Willys-Overland Co. could not undertake the manufacture because its own plants were being pressed to capacity. The Poughkeepsie factory formerly was the Fiat plant. It is intended to enlarge both plants.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

A REORGANIZATION of the Foote-Burt Co., Cleveland, manufacturer of single and multiple spindle drilling machines, has been effected. The company was incorporated in 1906, prior to which time the business was conducted as a partnership for 14 years by A. W. Foote and P. H. Burt. The Burt estate, representing the preferred stock interest, has been retired. Mr. Foote and S. G. Burt retire as president and treasurer and secretary respectively. G. E. Randles, formerly vice president, becomes president; T. H. Doan Jr., vice president; W. S. Quinlan, secretary, and S. E. Gross, treasurer. The board of directors consists of Messrs. Randles, Doan and Quinlan with J. R. Blakeslee and S. L. McCune. The erection of a modern plant at St. Clair avenue and the Belt Line railway is contemplated by the new company, in order to care for the increasing demand for its product as well as complete equipments for quantity production from the automobile field. Refinancing and reorganization has been through the medium of the Foote-Burt Machine Co. and Cleveland Investment interests.

* * *

THE Southern Wheel Co., Birmingham, Ala., announces it has just placed orders for new foundry and machine shop equipment to greatly increase its output of hollow-axle mine car trucks.

* * *

C. D. NEWTON, SALES ENGINEER, INC., is the name of a new corporation formed in Wisconsin with headquarters at Milwaukee by Clarence D. Newton, James B. Welch and M. A. Hintz. The new corporation will engage in the manufacture and sale of mechanical appliances. It has a capital stock of $15,000.

* * *

F. L. McDERMOTT, for many years foreman for the New England Iron Works, New Haven, Conn., has purchased the property and business of John Spargo in that city and will incorporate it under the name of the McDermott Iron Works. He also has leased adjoining property for yard room. With Mr. McDermott will be associated his brother, James M. McDermott. The corporation will do a general contracting business in structural and ornamental iron, giving special attention to forge work, and expects to commence operations early this month.

* * *

ADDITIONAL machinery is being installed by the American Cement Machine Co., Inc., Keokuk, Ia., in its plant which is being enlarged. It desires copies in duplicate of catalogs with price lists from manufacturers and jobbers of iron, steel and mill supplies.

* * *

IN addition to its regular line of hard bars, the Witherow Steel Co., Pittsburgh, now is producing medium carbon rods for forging and machining purposes. This company recently purchased about 30,000 tons of shell steel, practically all 3¼-inch rounds, from the French government and it is from this material that the company will roll these medium carbon rods.

* * *

THE Standard Screw Products Co., Detroit, has purchased all the real estate holdings of the McDonald Coal & Brick Co., adjoining its present plant on the west side of Bellevue avenue and the Belt line railroad and also all of the frontage of this plant on the east side of Bellevue avenue. Contracts have already been let for a 2-story manufacturing building to be used further to expand the Standard Screw Products Co.'s business.

* * *

SUTTON, STEELE & STEELE have incorporated with a capital of $1,000,000 in order to extend the enterprise, their immediate plans provided for doubling the present works at Dallas, Tex., at a cost of $200,000. Buildings will be erected and machinery installed for an iron foundry and a testing laboratory on a 3-acre site. The product of the works is a machine to separate ores or other materials of differing specific gravity.

* * *

THE United Hammer Co., Oliver building, Boston, now is prepared to furnish power hammers in sizes up to and including those 500-pound rams, that size with the 400-pound size recently having been added to the line. Heretofore they have only been built with rams weighing up to 300 pounds. These heavier hammers have been brought out to supply the demand from locomotive and car shops, shipbuilding plants and tube and steel mills as well as oil well tool work.

* * *

THE Bridgeport Castings Co., now in process of incorporation with capital of $100,000, will engage in the manufacture of brass, bronze and aluminum castings. It will utilize the plant formerly occupied by the Bridgeport Tube works, recently sold at public sale. The new company expects to begin manufacturing about Sept. 10. The incorporators are: Harry B. Houghton, Edward P. Quinn, Torrington, Conn.; Thomas R. Good and William H. Monagan, Waterbury, Conn. The Bridgeport Brass Co. also recently announced the building of a new foundry, at about $100,000.

* * *

THE Electrolytic Oxy-Hydrogen Laboratories, Inc., New York, as announced in the Aug. 28 issue of THE IRON TRADE REVIEW, page 600, has formed a sales and manufacturing company under the name of the Electrolabs Co. This provides an organization to meet the increasing demands of the business. The Electrolytic Oxy-Hydrogen Laboratories, Inc., will continue in charge of the laboratories and maintain a technical supervision over the work of the new company. The general offices and works of both companies have been moved from Dayton, O., into larger quarters at 2635 Penn avenue, Pittsburgh. The facilities for production of the new plant will be many times greater than the old plant, and will make possible even better deliveries than in the past. The general sales offices are being continued at 15 William street, New York City, and branch sales offices have been opened in the Morris building, Philadelphia, and the Merchants Exchange building, San Francisco. I. H. Levin continues in charge of technical and research work, and D. J. Tonkonogy in general charge of sales.

Edge Bill Stimulates Exchanges

Senate Passes Measure Which Would Permit New Trading Corporations to Finance Exports to Europe—Designed to Lend Sorely-Needed Aid to Disorganized Nations—Some Prefer Comprehensive Plan—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

THE recovery of the demoralized foreign exchanges which greeted the senate's passage of the Edge bill last week, though neither pronounced nor long sustained, at least served to indicate the importance of this measure as a possible remedy for the present unbalanced international financial conditions.

The bill would amend the federal reserve act to permit the organization of corporations of not less than $2,000,000 capital to do ordinary international banking and also with powers to issue debenture bonds based upon foreign securities. It is designed to provide a means for the advancement of credits to the disorganized nations of Europe, enabling them to purchase the food, the materials and the tools imperatively needed if starvation and chaos are to be prevented, and industrial rehabilitation accomplished.

How far the measure will go, if passed, in mending the sorry state of the exchanges remains to be seen. Some believe that the task is too stupendous to be left to the individual action of private corporations or groups of corporations, holding that one comprehensive nationally organized effort alone would suffice to bring the immediate corrective which the situation demands.

With the balance of exchange running so heavily against them during the war and since the armistice, European countries are finding their money at tremendous depreciation in America. The pound sterling is fluctuating between discounts of 12 and 15 per cent, the franc at above 40 per cent and marks at between 80 and 90 per cent. Consequently with such unparalleled premiums upon the dollar for purchases made in this country Europeans are being forced drastically to curtail expenditures here.

Exports Fall Off Sharply

As a consequence this country's exports are bound to decline. In July they were $350,000,000 less than in June. To what extent the curtailment was due to the exchange influence cannot be told with certainty until the August export figures are reported. Shipments to Europe in July fell 38 per cent, but exports to South America, where the dollar is near par, declined 39 per cent and to Asia and Japan, where the dollar is slightly depreciated, the decrease was even more. From this it would seem that the harbor strike in July probably shared with the exchanges the responsibility for the decrease in exports during that month.

The Edge bill or any other measure that may be devised can offer nothing more than a temporary relief for the world situation. It is essential that Europe be enabled to buy the things vital to its prosperity. It will not be possible, however, for this country to go on supplying the nations abroad with goods and credit indefinitely, despite the arguments that a credit plan is needed to maintain American exports at their present level.

As soon as Europe gets on its feet it will want to export to us and not import. To do otherwise would be to pile up such an enormous debt total that payment would be hopeless. It is only by sending goods and reducing the heavy excess of imports from this country that Europe can repair the shattered exchanges. Likewise thus only can we collect our huge final debt of from $12,000,000,000 to $15,000,000,000. The government alone up to Sept. 1 had extended credits to Europe totaling $9,684,272,567.

If the United States is to keep up its great export record, beyond the comparatively short time required to reconstruct Europe, it will have to look to other markets than Europe. From the humanatarian standpoint, credits to Europe now to save it from chaos are as important as in war, but the practical results, so far as our foreign trade is concerned, will be eventually to increase our imports and not our exports. This, of course, providing there is no complete industrial collapse abroad.

Some criticism has been directed toward the Edge bill because it does not provide for government participation. Exponents of the comprehensive financing plan, believe that the needs abroad are on too vast a scale to be met by private initiative and that the only way European resources can be pledged in order to command prompt credit in this country is through foreign government sources, supported by the United States government. They fear that the unco-ordinated efforts of a variety of corporations under the Edge bill, even if such companies are formed with sufficient speed, will represent a diffusion of effort where concentration is needed. The federal reserve board and other federal officials, however, are opposed to government participation although England has adopted a broad scheme of government aid to exporters to disorganized Europe.

Debentures May be Sold

The Edge measure as it stands permits producers in all lines to combine and organize trading corporations which can finance their foreign trade. Operations of such organizations will be under the supervision of the federal reserve board. Mortgages may be taken upon foreign properties and the American corporation may sell debentures the proceeds of which will go to pay the American exporter.

Senate amendments to the bill would tax the trading corporations as national banks; prohibit their dealing in foodstuffs or the dictation of prices to prevent competition; and make their stockholders liable in double the amount of their holdings for the obligations of the corporations. Another amendment eliminates the clause exempting the corporations from the provisions of the Clayton act. A bill passed by the house one week ago would permit national banks to invest up to 5 per cent of their resources in such corporations.

General Wire Co. Absorbs Another Producer

The Clinton-Wright Wire Co., which is to increase its capitalization from $12,500,000 to $16,000,000 and change its name to the General Wire Co., has taken over the Spencer Wire Co., with plants in Worcester and Spencer, Mass., one of the oldest industries of its kind in the United States. The new arrangements will occasion no change in the officials of the Clinton-Wright Wire

Co. or the new General Wire Co., except that Harry W. Goddard, president and treasurer of the Spencer Wire Co., succeeds George M. Wright as chairman of the board of directors. Mr. Wright, the former president of the Wright Wire Co., will remain upon the board of directors.

Several officials of the Spencer Wire Co. become identified with the new company, including Frank Kilmer, secretary and assistant treasurer, who has been elected treasurer, and George M. Thompson, manager, who has been elected a vice president and will have charge of the operation of the plants. Additional officers elected by the Clinton-Wright Wire Co. include Clarence D. Mixter, for many years credit manager of the Wright Wire Co., who has been made assistant treasurer; Charles H. Keenan, formerly chief clerk for the Morgan Spring Co., who is made auditor; Albert C. Lorion, purchasing agent for the Wright Wire Co., who has been made purchasing agent for all the plants, and Harry F. Hildreth, chief factory accountant.

Unite for Export

Washington, Sept. 16.—The Pipe Fittings & Valve Export association, organized under the provisions of the Webb-Pomerene act, has filed the necessary papers with the federal trade commission showing its members to be the Nelson Valve Co., Chestnut Hill, Pa.; the Malleable Iron Fittings Co., Branford, Conn.; the McNab & Harlin Mfg. Co., New York City; Stanley S. Flagg & Co., Philadelphia; the Pratt & Cady Co., Inc., Hartford, Conn.; the Jarecki Mfg. Co., Erie, Pa., and the Walworth Mfg. Co., Boston. Stanley S. Flagg Jr. is chairman of the new association with A. E. Rowe, secretary, and J. S. Mattimore, treasurer. The association's address is either in care of A. E. Rowe, Branford, Conn., or in care of J. S. Mattimore, Park Row building, New York City.

A. S. T. M. Establishes New Headquarters

According to a circular just issued to members of the American Society for Testing Materials, the establishing of headquarters in the building of the Engineer's club, Philadelphia, 1315-17 Spruce street, forecast in the last annual report of the executive committee, is now assured. The headquarters of the society will be on the third floor of the building, where extensive alterations are now being made. Pending the completion of this work, the society will temporarily occupy rooms on the first floor.

All correspondence with the society should now be addressed: American Society for Testing Materials, 1315 Spruce street, Philadelphia.

The society also announces the publication of the 1919 membership list, a booklet of 298 pages, and "A. S. T. M. Standards Adopted in 1919," a paper-covered pamphlet containing the 10 standards adopted in accordance with a recently canvassed letter ballot.

Obituaries

Alfred White, a machinery exporter, at 227 Fulton street, New York City, died recently at his home at 175 West Seventy-second street.

George A. Driggs, president of the American Pin Co., Waterbury, Conn., died at his summer home in Watch Hill, R. I., Aug. 28.

George G. Ferguson, chief expert steam fitting engineer of the American Radiator Co., Chicago, died Aug. 24 at his home in Dubuque, Iowa.

Edward A. Bannon, head of the welfare department of the Babcock & Wilcox Co., steam boiler manufacturers, died at his home in Bayonne, N. J., at the age of 44 years.

Oliver Wheeler Farrar, treasurer and general manager of the Granular Metal Co., Boston, operating a brass foundry in Roxbury, Mass., died at his home in Brookline, Mass., Sept. 1, aged 81 years.

Dwight P. Allen, an agent for the Standard Plunger Elevator Co., Worcester, Mass., died suddenly of apoplexy in Rochester, N. Y., Sept. 5. He was at one time superintendent for P. Blaisdell & Co., now part of the Whitcomb-Blaisdell Machine Tool Co., and also for the former Worcester Elevator Co.

Frank J. Patterson, Cleveland, well known as an owner of foundries, died Sept. 3, at the home of his sister in that city, after an illness of several months. From 1914 to 1918 he was owner of a machine shop in Philadelphia. Mr. Patterson was born in Cleveland 55 years ago and became associated with his father in the City Foundry Co., that city. Later he organized and was president of the Patterson Foundry Co., and of its successor the Ajax Foundry Co. Several years ago he bought a rolling mill in Wisconsin and in 1914 sold out and removed to Philadelphia, where he established a machine shop. Poor health caused him to retire last year. He was a member of the Philadelphia chamber of commerce and of the Duquesne club, Pittsburgh.

Benzol Active

Large Supplies Being Purchased—Prices Unchanged—Naphthalin in Demand

New York, Sept. 13.—Benzol again leads the list in the movement of coal tar products. Large quantities of pure and 90 per cent material, it is said, are still being bought, the rubber industry being especially active. Prices, however, remain unchanged, pure benzol holding at 24 to 29 cents and 90 per cent at 24 to 28 cents. Motor benzol can only be had for future shipment.

With cooler weather at hand, turpentine and rosin manufacturers are commencing to operate on a larger scale and are coming into the market for toluol on an increasing scale. As a result, the market presents a very firm tone. Toluol is quoted at 26 to 30 cents per gallon, and one degree toluol at 29 to 33 cents. Firmness also characterizes solvent naphtha, spot and contract business ranging 22 to 27 cents.

Fertilizer manufacturers continue to cover on good tonnages of sulphate of ammonia. With export demand dull, activity appears to be centered around these interests. No change is noted in prices. Contract sulphate holding at $3.25 to $3.40 per 100 pounds, and spot at $3.40 to $3.65.

With the exception of benzol, naphthalin is, possibly the most active of all coal tar products at the present time. The spot market has been virtually stripped of all supplies. This situation is attributable largely to the heavy buying of the dye industry. Prices, despite this continuous activity, are unchanged. Flakes are holding at 6½ to 7½ cents, and balls at 8½ to 9½ cents.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Tuluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

Tool Trade Calm Toward Strikes

Labor Disturbances on Machine Industry's Horizon Cause But Little Holding up of Business—Machinists' Threats Are Watched—Firestone Tire Issues New List—Locomotive Companies Buy Tools and Cranes

UNRUFFLED to any appreciable extent by numerous strike threats, the machine tool market is forging ahead. It is true, however, that some holding back of orders until the situation becomes clarified is noted particularly in heavy equipment in the Pittsburgh district, but on the whole, the possibility of a general strike is discounted. Possible strikes among machinists are receiving the most attention. In the East, a 25 per cent increase on Oct. 1 has been demanded. Some northern New Jersey plants have ceased to operate. A strike in Cincinnati is threatened and toolmakers there are not guaranteeing deliveries.

Business coming to machine tool sellers consists chiefly of numerous inquiries for single tools and small lots and frequent orders of similar size. The automotive and allied industries continue in the lead as buyers. In the East, however, the Baldwin Locomotive Works, Philadelphia, is the biggest buyer, taking an assortment of tools, including $25,000 worth of drilling and grinding machines. The Standard Oil Co. has placed its order for 50 tools for Roumania, with one New York seller and delays action on its punching and shearing equipment. In Pittsburgh, the Duquesne Light Co., Cheswick, closed on a number of tools, while in Cleveland, various small purchasers have placed orders. The largest inquiry current in the Middle West outside of those which still are hanging fire from previous weeks, is one for 14 tools from the Firestone Tire & Rubber Co., Akron, O. Montgomery, Ward & Co., Springfield, Ill., has placed orders for its engine plant equipment and the Studebaker Corp. ordered its requirements in Detroit for its Detroit and South Bend plants. Smaller inquiries in Cleveland come from the J. H. McClain Co., Canton, who wants hand power traveling jib cranes, portable hoists, etc.; Armstrong, Blum & Co., Chicago, miscellaneous equipment, and the Economy Baler Co., Ann Arbor, Mich., four tools.

Chicago buyers returned from sales in the East of the American Can Co, and the Eddystone Munitions Co., having booked but a few machines, since prices were too high. These buyers have been informed that the Moline Tractor Co. will fill its requirements from government-owned machines and that they will only be about half of what was originally announced. Other tractor concerns to buy in the West are the Samson Tractor Co., Janesville, Wis., and the Holt Mfg. Co., Peoria, Ill.

Prices on tools are on a wartime level in Pittsburgh and in New York recent advances include one of 12½ per cent on turret lathes, one of 10 per cent on upright drills and one of 15 per cent on radial drills.

Most crane business is prospective although the American Locomotive Co. ordered 15 overhead cranes from the Shaw works at Muskegon, Mich., for Montreal, Schenectady, N. Y., and Chester, Pa. The Robins Conveyor Belt Co., New York City, made a small crane purchase as did the Pittsburgh Crucible Steel Co., Midland, Pa. The Slick-Knox Steel Co., Wheatland, Pa., ordered a number in Cleveland. The Interstate Iron & Steel Co. is inquiring in Pittsburgh for five cranes. Other small inquiries come from the Diamond Alkali Co., Pittsburgh; Cambria Steel Co., Johnstown, Pa.; American Steel Foundries, etc. Prospective purchasers include the Kelly-Springfield Tire Co., Cumberland, Md.; the Central Tube Co., Economy, Pa.; the Firestone Tire & Rubber Co., Akron, O.; the Upson Board Co., Lockport, N. Y.; and the Pusey & Jones Co., Wilmington, Del., which is to erect two large drydocks at Gloucester City.

Labor Situation Disturbs Eastern Tool Buying

SELLERS of machine tools in the east continue to report a fairly good volume of small orders. Large lists, they assert, are virtually nil, but contracts for one or two machines are quite numerous. A tendency still exists among some buyers, however, to hold off owing to labor trouble. In some plants, especially in northern New Jersey, operations have been suspended entirely. That about 33,500 machinists in Brooklyn will demand a 25 per cent increase in wages Oct. 1 is a probability which points to further difficulty in the more immediate vicinity of New York.

Possibly the largest buyer of the past week has been the Baldwin Locomotive Works, Philadelphia, which has bought an assortment of machine tools, including about $25,000 worth of special drilling and grinding machines. The Standard Oil Co., after several weeks delay, has finally placed the formal order for about 50 machine tools for shipment to Roumania. This business went, in its entirety, to one New York seller. Action on the punching and shearing equipment required for that country is still pending.

Measures now being taken by the railroad administration for returning the railroads to their owners on Dec. 31 are adding an optimistic note to sentiment in the equip-



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ment market. While it is realized it may be many months before a heavy volume of railroad buying sets in, the first material move of Director General Hines for the return of the railroads, in the nature of a request for the inventory of supplies, is being regarded with considerable satisfaction after the long period of uncertainty and delay. Railroad demand at the present time is being confined principally to small orders. Included in current railroad inquiries is a list of several machines for the Pennsylvania railroad.

It is understood that a line of turret lathes has been advanced approximately 12½ per cent. One maker of upright drills is said to have boosted prices about 10 per cent, and a line of radial drills has increased 15 per cent. Aside from these instances, no price changes of moment have been noted.

The award of 15 overhead cranes by the American Locomotive Co. constitutes the largest contract to be placed within the past week in the eastern crane market. This business went, in its entirety, to the Shaw Electric Crane Co., Muskegon, Mich. Of these cranes, two 10-ton cranes and one 20-ton were for Montreal; one 30-ton, one 15-ton, and one 10-ton crane for Schenectady, N. Y.; and six 10-ton, two 30-ton and one 20-ton crane for Chester, Pa. Another order to be placed is one involving two 10-ton cranes, of 48 and 58-foot spans respectively, for the Passaic, N. J., plant of the Robins Conveyor Belt Co., 13 Park Row, New York City. The Bedford Foundry & Machine Co., was the successful bidder. The Worcester Pressed Steel Co., Worcester, Mass., has placed its order for a 5-ton crane with 30-foot span with the Northern Engineering Works, Detroit, while the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., has awarded a 10-ton overhead crane with 56-foot span to the Niles-Bement-Pond Co., New York.

Included in prospective business is some conveying equipment for the new plant of the Upsom Board Co., Lockport, N. Y. It is understood that at least one overhead crane will be required. The Aberthaw Construction Co., is in charge of construction, through its Buffalo offices. Another development of interest to eastern crane sellers is the announcement that the Pusey & Jones Co. will spend approximately $3,800,000 on its Gloucester City shipyard. It is the intention of the company, according to William G. Cox, general manager, Wilmington, Del., to install a complete ship repair works, including two drydocks, one with a capacity of 3000 to 6000 tons and the other with 10,000 tons. Peate Bros., Flushing, L. I., contractors, are in the market for a 15-ton new or used locomotive crane.

Frequent Though Small Sales Made at Pittsburgh

FAIR sized demands still are noted in the Pittsburgh district for machine tools. Neither the fact that prices are back close to the war levels or that as builders become filled up and are extending delivery dates is proving much of a deterrent to sales. The Duquesne Light Co. closed recently for a number of tools for its new plant at Cheswick, Pa., while individual tool orders continue to pour in freely upon dealers.

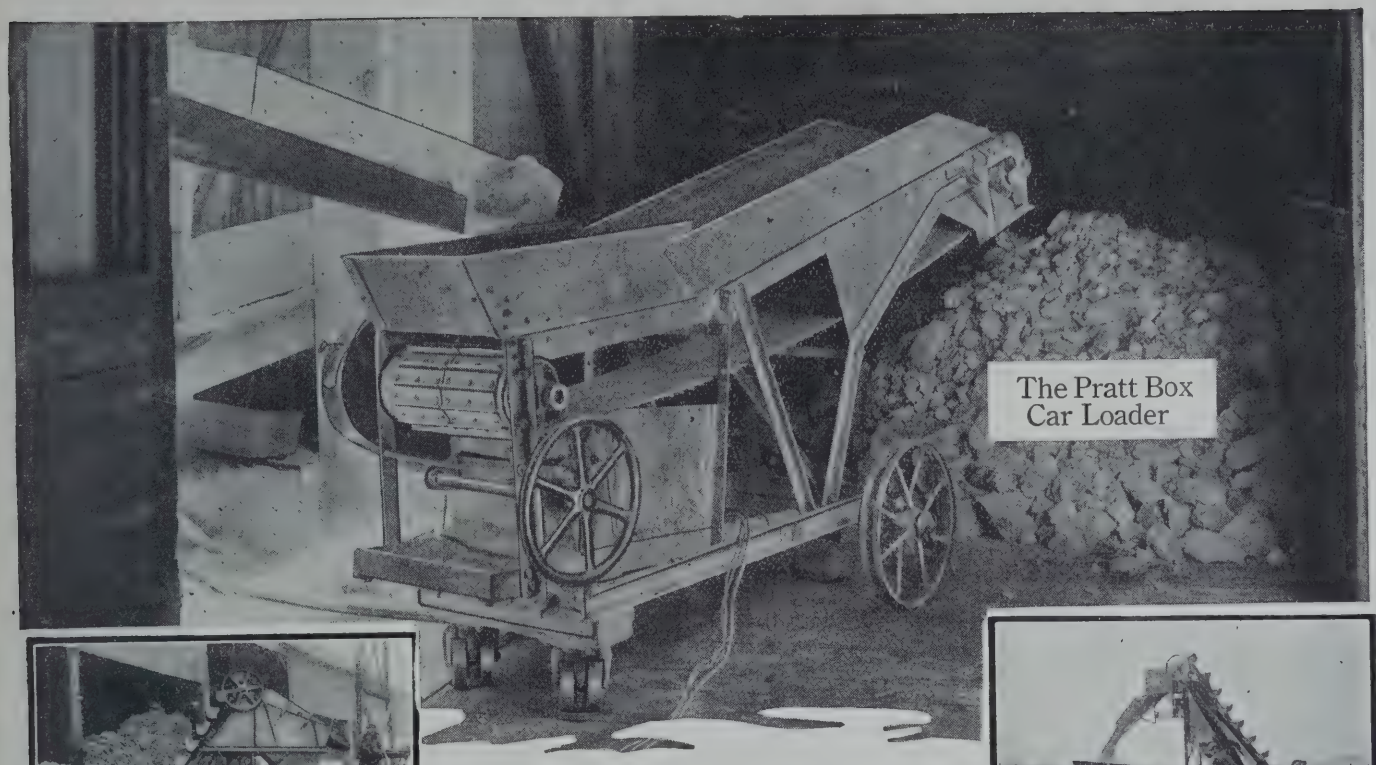
In the heavier lines, business is better in the prospective than in the actual. While the more general belief is that a general steel plant strike is improbable and that even if the men are called out, too few men will respond to result in anything more than a partial and short-lived suspension of operations, it appears that a desire to see a definite clearing up of the situation is delaying orders in connection with a number of steel plant installations. It is expected, however, that the Diamond Alkali Co., which is in the market for a crane will close shortly and that orders in connection with the plant extensions now under way at the Cambria Steel Co., Johnstown, Pa., are not far off. The Pittsburgh Crucible Steel Co., Midland, Pa., probably will close on a bucket crane in a few days. The Slick-Knox Steel Co., Wheatland, Pa., has closed for a number of cranes, with the Cleveland Crane & Engineering Co., Wickliffe, O. The Interstate Iron & Steel Co. has an inquiry out for five cranes.

Other prospective business includes equipment for the new automobile spring plant of the American Steel Foundries, the new plant of the Kelly-Springfield Tire Co., Cumberland,

Machinery Exports Reduced 48.4 Per Cent

EFFECTS of the low exchange rates abroad and harbor strikes in New York upon the foreign trade of the United States are clearly indicated by the greatly decreased machinery exports for July as compared with June. In June the total value of machines exported was $8,606,565 while in July equipment valued at only $4,440,819 went out of the country. This is a difference of 48.4 per cent. Lathe exports were reduced more than 50 per cent; shipments of other machine tools as well as sharpening and grinding machines were approximately the same for the two months; while all other metalworking machinery fell from $5,129,486 in June to $2,056,701 in July. France which has led the foreign countries in purchases in America for several months, in July gave way to England, which has held second place. France now is second and Belgium third. England took $1,475,698 worth; France $1,130,486 and Belgium $558,038. Perhaps the greatest reduction to be noted is in the case of China. Comparative figures for June and July are $967,417 and $10,385 respectively. A complete table follows:

	Lathes		Other Machine Tools		Sharpening and Grinding Machines		All other Metalworking Machinery		Total	
	July	June	July	June	July	June	July	June	July	June
France	$107,663	$ 254,089	$ 235,944	$ 282,878	$174,644	$181,755	$ 612,235	$1,302,460	$1,130,486	$2,021,182
England	335,390	451,459	558,795	311,683	100,334	147,036	481,179	983,693	1,475,698	1,893,871
Italy	8,136	5,614	29,250	134,424	8,601	3,850	68,577	62,758	114,564	206,646
Belgium	174,435	377,971	53,284	72,840	43,278	70,712	287,041	471,522	558,038	993,045
Japan	6,318	160,269	16,348	73,699	13,412	30,730	50,359	488,221	86,437	752,919
South America	49,604	113,973	18,912	36,147	15,787	7,100	144,716	199,053	229,019	356 273
Canada	27,225	21,765	50,285	60,970	17,485	10,713	86,741	117,433	181,736	210,881
China	555	30,926	2,007	4,090	3,046	145	4,777	932,256	10,385	967,417
Netherlands	11,157	95,012	7,051	4,493	3,900	2,420	21,840	58,173	43,948	160,098
Norway	7,412	16,655	12,781	12,541	1,078	3,193	11,338	47,961	32,609	80,350
Sweden	19,208	24,129	10,402	7,556	29,341	26,583	66,376	61,266	125,327	119,534
Denmark	5,934	.....	18,136	13,872	9,931	25,460	36,403	48,875	70,404	88,207
Total	$753,037	$1,551,862	$1,013,195	$1,015,193	$420,837	$509,697	$1,871,582	$4,773,671	$4,059,651	$7,849,423
All other countries	87,154	161,037	77,187	193,874	32,708	45,416	185,119	355,815	381,168	757,142
Grand Total	$840,191	$1,712,899	$1,090,382	$1,209,067	$453,545	$555,113	$2,056,701	$5,129,486	$4,440,819	$8,606,565







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Kansas City, Mo.	306 Elmhurst Bldg.
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Md., and for the extension to the plant of the Central Tube Co., Economy, Pa.

Moline Plow to Take Government Tools

SALES of machine tools in the Chicago district are on a heavy scale with most business continuing in small sales. It develops that the Moline Tractor Co., which needs considerable equipment to replace that damaged in a recent fire, will buy only about half as much as it had in the plant at the time of the fire, since its post-war requirements are considerably less. It also develops that under the direction of George N. Peek, its new president, the company will place most of this business with the government, taking machines thrown back in war settlements. The Samson Tractor Co., at Janesville, Wis., has covered pratically all of its requirements with the exception perhaps of a few tools of minor nature.

Western buyers have returned from the east where they attended sales by the American Can Co. and the Eddystone Munitions Corp., but they booked little of this equipment because prices appeared too high. It is believed considerable more equipment of this sort will come out shortly, as soon as government settlements with manufacturers are completed. Considerable equipment from the plant of the American Can Co., near New York City, was bought for shipment to Honduras. The Studebaker Corp. has covered the greater part of its requirements for the South Bend plant through Detroit dealers. The Holt Mfg. Co., Peoria, Ill., has bought part of its requirements for its tractor plant addition. Montgomery Ward & Co| have placed orders for equipment for an engine plant at Springfield, Ill. The Santa Fe railroad has not yet closed on the few tools inquired for.

The Moline Forge & Mfg. Co., Moline, Ill., will build a machine shop. The Burd High Compression Ring Co., Rockford, Ill., will build an addition to its plant.

Tool Inquiries and Sales Are of Fair Size

WERE it not for the fact that the present unsettled state in labor circles generally, is acting as a brake upon the machine tool industry, sellers in Cleveland believe they would be facing the same condition as regards deliveries that obtained two years ago at the height of the war activity. As it is, the numerous inquiries being received serve to indicate that many industries are going ahead with expansions despite disturbances and frequent orders, while the demands for single tools or small lots, indicate a healthy situation. Machine tool interests refuse to believe that a general strike in the iron and steel industry will be called but see signs of further disturbances among machinists. It was reported that machinists in Cleveland would walk out because some machine shops were doing work for Akron, whose machinists were on strike. A strike among machinists in Cincinnati is considered as a possibility and makers of machine tools there are taking orders but are not guaranteeing deliveries.

While not very large, another list from the Firestone Tire & Rubber Co., Akron, O., for general machine shop equipment, now is the biggest new inquiry before dealers. It comprises 14 tools, including lathes, drill press, milling machine, shaper, radial drill, arbor press, etc. Another fair sized list comes from Armstrong, Blum & Co., Chicago, manufacturer of hacksaws, etc. A smaller list from the Economy Baler Co., Ann Arbor, Mich., calls for one heavy duty radial drill, one 42-inch vertical boring mill, a fair sized gear cutting machine and a shear suitable for cutting ¼-inch plate disks, 3 feet in diameter. The White Sewing Machine Co., Cleveland, wants a 14-inch x 5-foot stud lathe. The Slick-Knox Steel Co., Sharon, Pa., desires to locate a 96 to 120-inch double geared press, with platen from 48 to 60 inches wide. The press is to have a 20-inch minimum stroke with a capacity of from 1000 to 2000 pounds. The C. M. Yoder Co., Cleveland, manufacturer of special machinery, wants one 4-foot plain radial drill. The B. F. Goodrich Co., Akron, O., which is in the market for a quantity of machinery, is making strong efforts to locate a 4-inch pipe machine, and has even wired the Cleveland chamber of commerce. Other Akron companies who remain in the market for equipment are the Goodyear Tire & Rubber Co., the Firestone Steel Products Co., the Crescent Garage & Machine Co., and the Summit Welding Garage & Machine Co. The Wellman-Seaver-Morgan Co., Cleveland, is taking quotations on multiple spindle drills for its tractor project at Akron, for which a quantity of both special and standard equipment will be required. This has not progressed sufficiently far to bring out a formal list. The Ohio Pottery & Glass Co., 5211 Euclid avenue, Cleveland, has not closed on its small list noted last week, and so far as can be learned the Safety Mfg. Co., Alexandria, Va., still is in the market for one 3 x 36-inch double spindle lathe; one 16-inch x 5-foot tool room lathe with taper attachment and compound rest; one 18-inch or larger surface lathe; one heavy short lathe 18 or 20-inch swing, 24 to 30 inches between centers; one 16 or 18-inch shaping machine; one single spindle sensitive drill; one 30 to 36-inch sliding head drill press; one 30 x 30-inch x 12-foot single or double head planer; one new or used geared crank hack saw, capacity 5-inch diameter. The Guide Motor Lamp Mfg. Co., Cleveland, wanted a 30 to 48-inch square power shears. Used polishing lathes are sought by the Aetna Brass Mfg. Co., that city. The Kappa Machine Co., Louisville, Ky., wants a machine for reboring auto cylinder blocks.

Several fair sized sales have been made by various dealers during the past week. Small purchasers include the Federal Machine & Products Co., Cleveland, which ordered a 3-foot radial drill, and the Peninsular Auto Parts Co., Detroit. The Cadillac Motor Car Co., Detroit, purchased among other tools, two No. 13 drilling machines, while the White Motor Co., Cleveland, added one No. 1 Blount grinding machine to its purchases. The Colburn Machine Tool Co., Franklin, Pa., which is to remove to Cleveland, bought a No. 14 drill press with plain table. It is understood that a site for its Cleveland plant has been purchased on East 152nd street, and plans are being prepared. Equipment is being bought by the Byron Engineering Works, Louisville, Ky., to make auto trailers.

Automobile companies continue expansion programs. The Nash Motors Co., Kenosha, Wis., has bought 20 acres and will erect a plant. The Hudson Motor Car Co., Detroit, is to spend $1,000,000 on equipment and $1,250,000 in new buildings. The Brown Body Corp., Cleveland, has selected its site, 200 x 1000 feet, on which it will erect a $500,000 building.

Several machine shop projects are interesting to dealers at this time. The Homer Engineering Co., Canton, O.; the Carbondale Machine Co., Carbondale, Pa.; Wilcox Machine Co., Shadyside, Bellaire, O.; all are erecting shops of various sizes.

The prosperity of the automotive industries continues to be evidenced by the new buildlings and additions which are being erected. The Lorain Steel Stamping Co., Lorain, O., A. Bregman, general manager, will erect a plant soon; the Vita Mfg. Co., Williamson building, Cleveland, will construct a plant 132 x 252 feet to manufacture magnetoes and automobile specialties; the Wheeler Automatic Transmission Co., Indianapolis, will build a plant to make transmissions which will do away with the shifting of gears; the Ovee Mfg. Co., Louisville, Ky., will build a $50,000 plant to manufac-



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Masonic Temple, Mobile
211 Hammond Bldg., Detroit

ture automobile supplies; the Robert H. Hassler Co., Indianapolis, will increase its capacity for making automobile parts; and the Curtis Airplane Co., New York City, has leased a building in Waukegan, Ill., to manufacture airplanes as soon as equipment and machinery can be installed.

Construction and Equipment

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Among New England Plants

ROCKLAND, ME.—The East Coast Fisheries Co. contemplates building a machine shop, drydock, oil and fertilizer reduction plant and an ice making and refrigerating plant.

BOSTON.—The Murphy Shipbuilding Co. has been incorporated with $80,000 capital by James Bailey, Richard A. Murphy and L. E. Murphy.

BOSTON.—Plans are being drawn for a 1-story, 400 x 500-foot plant, a 1-story, 161 x 400-foot shipping and receiving building, a 4-story, 60 x 120-foot office building and a 2-story, 84 x 87-foot power house, for the Nelson Corp.

CAMBRIDGE, MASS.—The Riverside Boiler Works will build a 2-story, 85 x 90-foot warehouse.

EAST BOSTON, MASS.—The Simpson-Patten Dry Dock Co. will build a 2-story, 40 x 120-foot carpenter shop.

EAST BRAINTREE, MASS.—The contract has been let for a $3,000,000 oil refining plant for the Massachusetts Oil Refining Co.

EAST WHITMAN, MASS.—The National Foundry Co. is to build a 70 x 120-foot addition.

GREENFIELD, MASS.—The American Tap & Die Corp. plans a 1 and 2-story addition, to cost about $35,000.

LOWELL, MASS.—The United States Bobbin & Shuttle Co. will build a 3-story, 45 x 80-foot storage building.

NEWTON, MASS.—The Saco-Lowell Shops has let the contract for a 1-story, 160 x 200-foot addition to its automatic building.

QUINCY, MASS.—The Pneumatic Scale Corp. has let contracts for a machine shop, tool office and boiler house addition, to cost $55,000.

SPRINGFIELD, MASS.—The National Equipment Co. contemplates a plant addition, 3-stories, 15 x 350 feet, to cost $100,000.

SPRINGFIELD, MASS.—The Reed Gauge Co. has been incorporated with $10,000 capital by Louis Reed, Frederick A. Calderwood and E. N. Worthen.

TAUNTON, MASS.—The L. C. Blanke Twist Drill Co. contemplates a plant addition, 1-story, 50 x 112 feet.

WALTHAM, MASS.—The Waltham Blearchery & Dye Works will build a 2-story, 50 x 120-foot machine shop.

WATERTOWN, MASS.—Bids close Sept. 22 for a 1-story, 100 x 445-foot storehouse for tools at the United States arsenal, this being in addition to the proposed storehouse for machinery.

CRANSTON, R. I.—The Massachusetts Steam Specialty Co. has been organized by Wallace E. Tillinghast, 627 Park avenue, and others.

RIVERPOINT, R. I.—B. B. & R. Knight, Inc., plans the erection of two mills, one, 3-stories, 150 x 500 feet, with a carpenter and machine shop and a power plant.

WOONSOCKET, R. I.—The Woonsocket Wagon Works has plans for a 1-story boiler plant.

BRANFORD, CONN.—The Malleable Iron Fittings Co. has started on a 1-story, 23 x 92-foot extension.

BRIDGEPORT, CONN.—The Bryant Electric Co. will build a 4-story, $125,000 addition.

BRIDGEPORT, CONN.—The G. Drouve Co., sheet metal products, has awarded contracts for a new plant, 120 x 200 feet, with extension, 30 x 80 feet, and an office building, 40 x 42 feet.

BRIDGEPORT, CONN.—The Locke Steel Belt Co. has let the contracts for a 1-story, 70 x 150-foot storage warehouse.

DANBURY, CONN.—Doran Bros. recently let a contract for a 90 x 200-foot machine shop.

EAST NORWALK, CONN.—The Crofut & Knapp Co., South Norwalk, plans to build two plant additions, 5-stories, 60 x 300 feet, and 3-stories, 210 x 300 feet. A power plant, 60 x 150 feet, will also be erected.

HARTFORD, CONN.—The Whitlock Coil Pipe Co. has awarded a contract for a machine shop, 1-story, 48 x 71 feet, to cost $15,000.

HARTFORD, CONN.—The Hall Thompson Co., 844 Windsor street, has plans for a 3-story addition, 35 x 60 feet, to cost $26,000.

MERIDEN, CONN.—The M. B. Schenck Co., division of the Bassick Co., Bridgeport, Conn., iron founder, has let the contract for an addition, 55 x 65 feet.

WEST HAVEN, CONN.—Bids have closed for a 2-story, 44 x 100-foot machine shop for the New Haven Machine Co.

North Atlantic States

ALBANY, N. Y.—The Kelly-Dennin Co. is planning a 1-story machine shop and auto service works, 150 x 150 feet, to cost $50,000.

BABYLON, N. Y.—The Parker Plate & Machinery Co. has been incorporated with $10,000 capital, by W. R. Bross, E. B. and J. W. Eaton.

BROOKLYN, N. Y.—The Waterbury Co., 132 Taaffe place, wire rope, has plans for a 1-story plant addition, 17 x 139 feet.

BROOKLYN, N. Y.—The White Metals Specialties Corp., metal tubes, has been incorporated with $100,000 capital, by T. W. Constable, R. L. Gray and M. M. Kotzen, 51 Chambers street.

BROOKLYN, N. Y.—The Tunley Machine & Tool Works, Inc., has been chartered ith $10,000 capital, by E. H., M. D. and W. S. Tunley, 160 Albany avenue.

BROOKLYN, N. Y.—The Gehnrich Indirect Heat Oven Co., 60 Franklin street, has acquired additional property, on which it is reported planning to erect a new plant.

BUFFALO.—The A. F. Oliver Gear & Machine Co., 60 Cherry street, has plans for a 1-story plant addition, 50 x 60 feet, to cost about $10,000.

BUFFALO.—The Wire Wheel Co. of America, has plans for four buildings besides the one now under construction.

BUFFALO.—The Buffalo Body Corp., auto and carriage bodies, recently was incorporated with $1,000,000 capital, by K. B. Macdonald, R. J. Mackenzie and W. R. Daniels.

BUFFALO.—The Ferguson Steel & Iron Corp., boat building, recently was incorporated with $963,500 capital, by B. L. Worden, R. A. Kellogg and E. M. Knauth.

CORTLAND, N. Y.—The Edlund Machinery Co. has increased its capital from $63,000 to $157,500, and according to a report will increase the capacity of its plant.

GENEVA, N. Y.—The O'Malley Motor Co. contemplates a 3-story machine shop, 50 x 100 feet, to cost $50,000.

FALCONER, N. Y.—The Falconer Iron Works has awarded a contract for an additon, 2-stories, 40 x 120 feet.

MERRICK, N.Y.—The Merrick Steel Products Corp. has been incorporated with $10,000 capital, by M. Bloss anl C. Deitzel.

NEW YORK.—The Metropolitan Chain Corp. has been organized by J. Mesnick and I. Freedman, 1791 Gleason avenue.

NEW YORK.—The B. & A. Machine Co. has been organized by M. E. Archer, Ralph Q. Kelly and C. Uslan, 260 Grafton street, Brooklyn, N. Y.

NEW YORK.—The J. Edward Ogden Co., 147 Cedar street, door mechanisms, etc., has plans for a 1-story addition, to cost about $12,000.

NEW YORK.—The Arrow Metal Bed Corp. has

HANNA



M.A. HANNA & Co

Sales Agents

Iron Ore
Coal
Coke
Pig Iron

"BUFFALO" "DOVER"
"FANNIE" "VICTORIA"
"CHERRY VALLEY" "ZUG"

Sales Offices

Cleveland
Buffalo **Pittsburg**
Detroit **Toronto**

M·A HANNA & Co

Say you saw it in THE IRON TRADE REVIEW

been incorporated with $10,000 capital, by J. and W. Greenblatt and F. Topper, 235 West 112th street.

NEW YORK.—The S. G. V. Electrical Co. has been incorporated with $10,000 capital, by J. Goldfarb, J. and M. Knapp, 136 Broadway.

NEW YORK.—The General Ash Can & Metal Ware Co. recently was incorporated with $10,000 capital, by I. J. Friedman, I. A. Ruskin and J. Klein, 12 West Twenty-seventh street.

NEW YORK.—The Consolidated Products Co., forging and oil mill machinery, has been incorporated with $15,000 capital, by W. M. Sheldon, J. Guter and A. M. Kahn, 1051 Boston road.

NEW YORK.—The Continental Castings Corp. has been incorporated with $250,000 capital, by H. O. Bonner, F. E. Beidler and J. J. Flannery, 149 Broadway.

NEW YORK.—The Bertolini Motor Carburetor Co. recently was incorporated with $100,000 capital, by B. Venusti, S. Mangiapane and J. Coppola, 291 Broadway.

NEW YORK.—The Motorware Mfg. Co., auto accessories, has been incorporated with $10,000 capital, by R. and R. I. Isaksen, L. M. Schwartz, 1159 East Parkway, Brooklyn, N. Y.

NEW YORK.—The Selective Gas Process Co. has been incorporated with $300,000 capital, by J. A. Carney, J. B. Quinlan and G. W. Colton, 196 Berkeley place, Brooklyn, N. Y., to manufacture gas machinery.

NIAGARA FALLS, N. Y.—The Nypano Specialties, Inc., efficiency devices, has been incorporated with $40,000 capital, by J. E. Bossard, C. L. Webb and W. S. Smith.

ROCHESTER, N. Y.—The General Railway Signal Co. has awarded a contract for a foundry addition, 110 x 220 feet.

ROCHESTER, N. Y.—The Burke Steel Co., Scherer street, has completed plans for a 1-story forge shop, 48 x 60 feet.

ROCHESTER, N. Y.—The Davenport Machine Tool Co. has been incorporated with $625,000 capital, by W. S. Davenport, C. R. Burt and C. W. McKay.

ROCHESTER, N. Y.—The Rochester Blower Pipe Co. has been organized with $15,000 capital, by C. G. Diehl, A. I. Bull and Frank J. Weinmann, 483 Colvin street.

SYRACUSE, N. Y.—The H. H. Franklin Mfg. Co. has had plans drawn for a plant addition.

SYRACUSE, N. Y.—The Durston Gear Co., 213 Maltbie street, has arranged for a 2-story addition, 75 x 200 feet, to cost $15,000.

SYRACUSE, N. Y.—The Syracuse Chilled Plow Co. recently was incorporated with $300,000 capital. The company operates a plant at 111 Wyoming street.

SYRACUSE, N. Y.—The Gabrielson Mfg. Corp., milling, machine, foundry and factory supplies, has been incorporated with $50,000 active capital, by A. Meldrum, M. V. White and C. Gabrielson.

SYRACUSE, N. Y.—Local interests have organized the Gutliph-Knapp Pattern & Casting Co., Inc., with a capital of $25,000. Directors are William H. Gutliph, John R. Sheldon, John Pickard and Charles E. Knapp.

ALLENTOWN, PA.—The Penn Foundry & Machine Co. is reported to be planning the organization of a subsidiary company at Bath, Pa.

CARNEGIE, PA.—The Adler Stove & Range Co. has been acquired by the Keighley Mfg. Co., formerly of Follansbee, W. Va.

LANCASTER, PA.—The Monitor Bi-Loop Radiator Co. is having plans prepared for a 2-story building, 45 x 65 feet, to cost $20,000.

MANHEIM, PA.—The Bond Foundry & Machine Co. contemplates an addition, 25 x 150 feet, to cost $20,000.

PHILADELPHIA.—The T. S. Johnson Sons Co., 622 Cherry street, metal products, is taking bids for a 2-story shop addition, 44 x 50 feet.

PHILADELPHIA.—The Hale & Kilburn Corp., Eighteenth and Lehigh streets, plans a 5-story plant addition, 196 x 260 feet, to cost about $100,000.

PHILADELPHIA.—The Kensington Copper & Machine Works has plans for a 1-story shop, 48 x 100 feet.

PHILADELPHIA.—Thomas Mills & Bro., Inc., Eighth and Thompson streets, bakers' tools, has plans for a 2-story addition, 21 x 24 feet.

PHILADELPHIA.—The Penn Rivet Corp., Eleventh and Cambria streets, has acquired a 5-story building, which it plans to utilize as an addition.

PITTSBURGH.—Fire recently damaged the pattern shop of the Springfield Foundry Co., 3207 Smallman street.

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts:

One oilstone grinder, three wood trimmers, one double spindle shaper, one band saw, one sanding machine, two patternmakers' lathes, one jointer, one saw table, one single cylinder surfacer, two jointers, one mortiser and borer and spare parts, 4528, Puget Sound.

Furnishing and installing pumping system and auxiliary equipment for operating a gun forging and bending press, 4533, South Charleston, Oct. 7.

One steam hammer, one forging press, one bending roll, one crimper and beader, one plate machine, one forming machine, one cornice brake, two vertical and hand punches, one vertical shear, hand bench and squaring shear, 4534, Puget Sound.

Schedule numbers, dates of opening and places of delivery follow the specification of the tools.

PITTSBURGH.—The Radner & Dinger Co., Second avenue, sheet metal works, has acquired on a site on which it is reported planning a new plant.

PITTSBURGH.—The Nyap Machine & Engineering Co., 605 Standard Life building, has been organized and will manufacture a patented wrench. Equipment for its plant is now being purchased. R. H. Laury is president.

PORT ALLEGHENY, PA.—This town is considering a municipal electric light plant.

YORK, PA.—A 1-story machine shop will be erected by the Pfaltzgraff Pottery Co.

BELLEVILLE, N. J.—The Eastwood Wire Mfg. Co. is having plans prepared for a 2-story addition, 35 x 45 feet, to cost $15,000.

BELVIDERE, N. J.—A movement is on foot to build a new foundry for the manufacturers of iron and brass castings. Oscar Smith, formerly of the Ingersoll-Rand Co., is at the head of the project.

BLOOMFIELD, N. J.—A $200,000 chemical plant will be erected here by Lehn & Fink.

EAST ORANGE, N. J.—The Sims Magneto Co. will erect an addition, 67 x 153 feet, to cost $59,000.

ELIZABETH, N. J.—The Duesenberg Motor Corp. is having plans drawn for additions.

JERSEY CITY, N. J.—The Harrison Bolt & Nut Co. recently was incorporated with $100,000 capital, by A. F. McCabe, O. J. Skinner and N. H. McLoren.

NEWARK, N. J.—The Terminal Pattern & Model Works, 8 Railroad place, will make alterations to its plant.

NEWARK, N. J.—James Mitchell, Jersey City, has the contract to erect a plant for the Prest-O-Lite Co. The largest of the buildings will be 60 x 400 feet, and the smallest, 30 x 40 feet.

NEWARK, N. J.—A contract for a $400,000 service station for the White Co., Long Island City, L. I., has been awarded the American Concrete Steel Co. The building will be 200 x 400 feet.

NEWARK, N. J.—The Aeolian Co., musical instruments, New York, has purchased property on which to erect a plant. The first structure will be 100 x 400 feet.

NEWARK, N. J.—For the purpose of manufacturing machinery, the Sun Co. recently was organized with $25,000 capital. Frank J. McManus and William Tunick, 1408 Sterling place, Brooklyn, are among the incorporators.

TRENTON, N. J.—The Composition Machinery Corp. has been chartered with $100,000 capital by C. F. Burroughs, J. A. Bernhard and Carl Fergus.

WASHINGTON, N. J.—The Bay Way Foundry, Inc., has been incorporated with $200,000 capital, by William E. A. Wheeler and others.

WILMINGTON, DEL.—Aproximately $4,000,000 will be spent at the Gloucester City plant of the Pusey & Jones Co., according to a recent anouncement by William G. Cox, general manager. Plans have been made for turning half the plant into a repair plant with two large drydocks, one with a capacity of 3000 to 6000 tons and the other 10,000 tons.

BALTIMORE.—The Maryland Casualty Co., Baltimore street, will build an electric light plant here.

BALTIMORE.—The Baltimore Gas Appliance & Mfg. Co., Bayard and Hamburg streets, has arranged for a 1-story addition, 25 x 133 feet, to cost about $10,000. H. W. Hunter is president.

HAGERSTOWN, MD.—The Bostwick-Lyon Bronze Co. is reported planning to improve its plant.

RICHMOND, VA.—The Tower-Binford Electric & Mfg. Co., Fourth and Clay streets, is planning a 1-story building, 90 x 116 feet, to cost $35,000.

Central States Activity

APPLETON, WIS.—The Badger Furnace Co. will enlarge its gray iron foundry. H. J. Schlegel is president and manager.

FT. ATKINSON, WIS.—The James Mfg. Co., steel stanchions, etc., is reported planning plant improvements, which include malleable and gray iron foundries, as well as additions to the machine shop, sheet metal department and other shops. The first addition will be 100 x 450 feet. W. D. James is president and general manager.

HORICON, WIS.—The Ideal Barn Equipment Co. contemplates the installation of additional equipment and the construction of a shop extension.

MILWAUKEE.—The Electric Carpet Washer Co. has been organized with $25,000 capital, by J. A. Barry, E. G. Patek and John F. Bluemm, to manufacture elctric domestic appliances.

MILWAUKEE.—The American Radiator Co., 820 South Michigan avenue, Chicago, will build a warehouse here, 94 x 180 feet.

MILWAUKEE.—The Milwaukee Concrete Mixer Co. has let contracts for an addition, 35 x 330 feet. George R. Bambach is secretary.

MILWAUKEE.—The Milwaukee warehouse of Jos. T. Ryerson & Son, Chicago, is undergoing improvements, including a new unloading platform and other provisions for receiving, storing and handling material.

SHEBOYGAN, WIS.—The Globe Foundry Co. recently was incorporated with $100,000 capital by

G. F. Honould, G. A. DeWilde Jr. and Fred Leicht A modern gray iron foundry will be erected. C. B. Schneible, 1312 Farwell avenue, Chicago, is sales engineer.

ANN ARBOR, MICH.—The King-Seeley Corp. has been chartered with $50,000 capital to manufacture metal products, by Halstead Seeley and others.

DETROIT.—The Norde Mfg. Co. has been chartered with $100,000 to make auto parts, by Frank M. Pauli, 534 Sheridan avenue.

DETROIT.—The Ackwell Products Co., oiless bearings, recently was incorporated with $10,000 capital, by E. L. Ackwell, C. T. Fezzey and Irving E. Welch.

DETROIT.—The Atlas Machine Works has been incorporated with $5000 capital by E. F. Wilkinson, 207 Tennyson avenue and others.

DETROIT.—The American Steel Products Co., Inc., has been chartered with $30,000 capital by Walter I. Oeschger, 200 McLean avenue and others.

DETROIT.—The Tube Products Co. has been chartered with $25,000 capital by R. C. Jacobs, 200 East Grand boulevard and others.

Detroit.—The Hexagon Drill Co. has been incorporated with $300,000 capital, by J. W. Donaldson, 409 Free Press building and others.

DETROIT.—The Liberty Carburetor Co. recently was incorporated with $15,000 capital, by C. A. Brissette, 147 Palmer avenue and others.

DETROIT.—The Economy Tool Salvage Co., capitalized at $10,000, recently was incorporated by Joseph C. Cook, 596 Cass avenue.

DETROIT.—The Michigan Motor Specialties Co. is having plans drawn for a boiler house, 1-story, 38 x 40 feet.

DETROIT.—The Packard Motor Car Co. has awarded a contract for a plant addition, to cost $500,000.

MANISTEE, MICH.—The Manistee Drop Forge Co., P. P. Schnorbach, president, capitalized at $200,000, has been chartered.

CHICAGO.—The Hamler Boiler & Tank Co., 3908 South Halsted street, is having plans prepared for a 1-story building to cost $50,000.

CHICAGO.—C. W. Kallal, 1017 City Hall, is preparing plans for an engine room and transformer station costing $300,000.

CHICAGO.—The Super-Power Piston Ring Co. plans a plant. J. F. Seib of the Modern Die & Plate Press Mfg. Co., heads the new company.

CHICAGO.—The Wahl Co., manufacturer of adding machines, 1800 Roscoe street, has awarded a contract for a 5-story addition, 125 x 300 feet, to cost about $450,000.

CHICAGO.—The Steel Tank Products Corp., 10 West Illinois street, capitalized at $30,000, has been chartered by Edmund N. Sinnott, Martin J. Isaacs and James D. Woley.

CHICAGO.—L. G. Hallberg & Co., architects, 116 South Michigan avenue, will receive bids soon on a 2-story plant, 75 x 125 feet, to cost $130,000, for the Republic Flow Meters Co., 565 West Washington street.

DECATUR, ILL.—The Decatur Construction Material Co. has been incorporated with $15,000 capital by A. B. Alexander, Forest File and Dan Dinneen.

EAST ST. LOUIS, ILL.—The East St. Louis Castings Co., 619 North Seventy-fifth street, capitalized at $40,000, has been chartered by Ralph M. Hill, John W. Eschenbrenner and Frank J. Kurrus.

ANDERSON, IND.—The Union Traction Co. will expend $100,000 on its central power plant, installing boilers and overhauling turbine electric generators.

COLUMBUS, IND.—The Shelby Mfg. Co., the Alexander Spreader Works and the Continental Motor Shop Equipment Mfg. Co., Knightstown, Ind., have been consolidated under the name of the Shelby & Staley Corp., with $100,000 capital.

ELKHART, IND.—The Huffman Bros. Motor Co. has broken ground for a $200,000 manufacturing and assembling plant.

FRANKFORT, IND.—The Stewart Wire Wheel Co., capitalized at $500,000, has been chartered to manufacture automobile wheels by John A. Johnson, Albert E. Betts and Charles W. Pence.

FT. WAYNE, IND.—Contracts have been awarded for an addition to the plant of the Wayne Oil Tank & Pump Works, to be 135 x 373 feet.

FT. WAYNE, IND.—The Visible Automatic Pump Co. has been incorporated with $100,000 capital by Augustus Bowser, August E. C. Becker and Guy R. Brochin.

INDIANAPOLIS.—The Robert H. Hassler Co., automobile parts, has started on an addition, 100 x 120 feet.

AKRON, O.—The Williams Foundry & Machine Co. recently awarded a contract for a machine shop, 3-stories, 60 x 145 feet, to cost $100,000.

AKRON, O.—The Summit Welding, Garage & Machine Shop has had plans completed and will take bids soon, for a machine shop, 1-story, 50 x 170 feet, to cost $30,000.

CANTON, O.—The United Electric Co. is reported planning a plant addition.

CANTON, O.—The Homer Engineering Co. plans to establish a machine shop. C. V. Homer is president.

CINCINNATI.—Estimates are being received for a 2-story addition, 70 x 100 feet, to the plant of the Corcoran-Victor Co., automobile lamp manufacturer.

CINCINNATI.—The Sayers & Scoville Co., automobile manufacturer, has plans for a plant.

CINCINNATI.—Work on the plant of the Acme Machine Tool Co. is well under way.

CINCINNATI.—The Standard Railway Supply Co. has purchased a building adjoining to be used to house the company's case hardening department.

CLEVELAND.—The Russ Mfg. Co., 5511 Walworth avenue, plans a plant addition to cost $96,000.

CLEVELAND.—The Metal Plating Co., 7019 Quincy avenue, has a permit to erect a building, 1-story, 34 x 90 feet.

CLEVELAND.—The Metals Welding Co. has been incorporated with $200,000 capital by John Rice and others.

CLEVELAND.—The National Bronze Foundry Co., East Seventy-ninth street, contemplates the erection of a small addition, 35 x 60 feet.

CLEVELAND.—The Star Products & Machine Co. recently was incorporated with $20,000 capital, by Walter Urban and others.

CLEVELAND.—The Saw & Knife Specialty Co. recently was incorporated with $5000 capital, by W. E. Myers and others.

CLEVELAND.—The Great Lakes Copper Co., Trumbull avenue near Broadway, is taking bids for a plant, to cost $50,000.

CLEVELAND.—The Brown Body Corp. is having plans prepared for a plant to cost $500,000 and be 200 x 1000 feet.

CLEVELAND.—The Colburn Machine Tool Co., Franklin, Pa., has awarded a contract for a plant here, 2-stories, 44 x 78 feet, to cost $200,000.

CLEVELAND.—The Piston Ring Castings Co. has been incorporated with $25,000 capital, by Charles I. Russo, William R. Miller and others.

CLEVELAND.—The Cleveland Twist Drill Co. contemplates a forge shop, 1-story, 67 x 113 feet, to cost $12,000.

CLEVELAND.—The Foote-Burt Machine Co. has been incorporated with $650,000 capital, by George E. Randles, George Holbrook, Francis W. Crandall, Walter S. Quinlan and Samuel L. McCune.

CLYDE, O.—The Clyde Cutlery Co. is reported planning to enlarge its plant.

COLUMBUS, O.—Bids are being taken for an addition to the plant of the Sunray Stove Co. to cost $25,000.

FINDLAY, O.—The Electric Motor & Construction Co. will shortly start on a new plant, 2-stories, 50 x 200 feet.

FREMONT, O.—The Fremont Wheel & Trailer Co. has been incorporated with $100,000 capital, by A. M. Herman, W. A. Krupp, C. H. Eagon and others.

LONDON, O.—The Thomas & Armstrong Co. has started work on a sheet metalworking plant, 1-story, 50 x 340 feet.

MARTINS FERRY, O.—The Wilcox Machine Co. has let a contract for a building, 60 x 240 feet.

MIDDLETOWN, O.—The Midwest Casting Co., which was incorporated some time ago with $50,000 capital, has had plans prepared for a foundry, 80 x 250 feet.

TOLEDO, O.—The Ensign Foundry Co. has awarded a contract for a plant addition, to cost $15,000.

TOLEDO, O.—The Toledo Fence & Post Co. has been incorporated with $25,000 capital by Floyd J. Smith and others.

WOOSTER, O.—A permit has been granted the Buckeye Aluminum Co. to erect a plant to cost about $20,000.

YOUNGSTOWN, O.—The Youngstown Wire & Iron Co. recently was incorporated with $25,000 capital, by William Weidig, Thomas M. Sosso and others.

YOUNGSTOWN, O.—The Youngstown Silica Sand & Sand Products Co. recently was incorporated with $200,000 capital, by Ray T. Miller, Harold T. Moore, W. P. Barnum and others.

Business Changes

THE Shuman Advertising Co., Chicago, trade and technical journal advertising specialists, have removed their headquarters from the Westminster building to 117 North Dearborn street.

* * *

The Kennedy Valve Mfg. Co., Elmira, N. Y., announces the opening of branch warehouses in Boston and in Chicago. The Boston warehouse is located at 47 India street and that in Chicago at 204-208 North Jefferson street.

* * *

The plant of the William Kennedy & Sons, Ltd., Collingwood, Ont., has been amalgamated with two western companies and will continue business under the name of the Canadian Western Steel Corp., Ltd.

* * *

The Brewer-Titchener Corp., Cortland, N. Y., manufacturers of forgings and stampings, recently opened a sales office in Detroit which is located at 301 Majestic building.

* * *

The Shelby Mfg. Co., controlling the Alexander Spreader Works and the Continental Motor Shop Equipment Co., Knightstown, Ind., have been consolidated under the name of the Shelby & Staley Corp., Columbus, Ind., with $100,000 capital.

* * *

The name of the American Vanadium Co., recently purchased by J. Leonard Replogle and Charles M. Schwab, has been changed to the Vanadium Co. of America, Inc., 120 Broadway, New York.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N Y	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 0c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

	Black	Galv.
STANDARD WEIGHT		
Butt Weld		
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..
PLUGGED AND REAMED		
Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28
DOUBLE EXTRA STRONG PLAIN		
Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

	Black.	Galv.
THREADS AND COUPLINGS		
Butt Weld		
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½
DOUBLE EXTRA STRONG PLAIN ENDS		
Butt Weld	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads. 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric GG Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

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HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$20.50 to 21.00
Chicago	19.00 to 19.50
Eastern Pennsylvania	18.50 to 19.50
Cleveland	19.75 to 20.00
St. Louis	18.00 to 18.50
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.00 to 15.50
Cleveland	15.00 to 15.50
Birmingham	20.00 to 21.00
Valleys	20.50 to 21.00
Boston (dealers)	15.50 to 16.50

BUNDLED SHEETS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	15.00 to 16.00
Cleveland	15.00 to 15.50
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	12.00 to 12.50

STEEL RAILS, SHORT

Chicago	$21.00 to 21.50
Cleveland	22.50 to 23.00
Boston (dealers)	16.00 to 16.50
St. Louis	22.50 to 23.00
Birmingham	19.00 to 20.00
Cincinnati	18.00 to 18.50

STOVE PLATE

Pittsburgh	$19.00 to 20.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	21.00 to 22.00
Cleveland	19.25 to 20.25
St. Louis	23.00 to 23.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	16.00 to 16.50
Birmingham	20.00 to 21.00
Boston	21.00 to 22.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	26.50 to 27.00
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$18.00 to 18.50
St. Louis	17.00 to 17.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.00 to 21.50
Chicago	20.50 to 21.00
St. Louis	20.50 to 21.00

BALED SHEETS

Pittsburgh	$18.50 to 19.00
Chicago	15.00 to 15.50

FROGS, SWITCHES, GUARDS

Chicago	$19.50 to 20.00
St. Louis	18.50 to 19.00
Eastern Pennsylvania	18.00 to 19.00

BOILER PLATE, CUT

Chicago, No. 1	$15.50 to 16.00
St. Louis, No. 1	16.00 to 16.50

ANGLE BARS—STEEL

Chicago	$20.00 to 21.00
St. Louis	19.00 to 19.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$23.00 to 24.00
Pittsburgh, No. 2	22.00 to 23.00
Chicago, No 1	21.00 to 21.50
Chicago, No. 2	19.75 to 20.00
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	24.00 to 24.50
St. Louis, No. 1	20.50 to 21.00
St. Louis, No. 2	19.50 to 20.00
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	17.00 to 19.00
New York, No. 1 (dealers)	23.00
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$19.50 to 20.50
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	16.25 to 16.50
Boston (dealers)	15.50 to 16.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers)	19.00 to 19.50

BUSHELING

Chicago, No. 1	$18.50 to 19.00
Chicago, No. 2	12.50 to 13.00
Cleveland, No. 1	19.00 to 19.50
Cleveland, No. 2	16.00 to 16.50
St. Louis, No. 1	19.00 to 19.50
Buffalo, No. 1	16.50 to 17.50
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$12.50 to 13.00
Chicago	9.00 to 9.50
Eastern Pennsylvania	15.00 to 16.00
Eastern Pennsylvania (blast furn.)	13.00 to 14.00
Cleveland	11.00 to 11.25
Buffalo	12.00 to 12.50
New York (dealers' price)	11.00 to 11.50
St. Louis	11.00 to 11.50
Cincinnati	7.50 to 8.00
Birmingham	13.00 to 14.00
Valleys	13.00 to 13.50
Boston (dealers)	11.00 to 11.50
Boston (blast furnace) (dealers)	11.00 to 11.50

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	13.25 to 13.75
Eastern Pennsylvania	16.00 to 17.00
Cleveland	14.50 to 15.00
St. Louis	12.00 to 12.50
Buffalo	13.50 to 14.00
New York (dealers' price)	11.00 to 11.50
Cincinnati	9.00 to 9.50
Birmingham	13.00 to 14.00
Valleys	15.00 to 15.25
Boston (dealers)	11.00 to 11.50
Boston (blast furnace) (dealers)	11.00 to 11.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	31.00 to 32.00
Eastern Pennsylvania	35.00
Cleveland	35.00 to 36.00
St. Louis	34.00 to 34.50
Buffalo	28.00 to 29.00
Cincinnati	26.50 to 27.00

IRON RAILS

Chicago	22.50 to 23.00
Cleveland	17.50 to 18.50
St. Louis	24.00 to 24.50
Buffalo	24.00 to 25.00
Cincinnati	24.00 to 24.50

PIPES AND FLUES

Chicago	16.50 to 17.00
Cleveland	17.50 to 18.50
St. Louis	16.50 to 17.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$20.00 to 20.50
Cleveland	19.50 to 20.50
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	18.50 to 19.50

FORGE CROPPINGS

Cleveland, large	$14.50 to 15.00
Cleveland, small	18.00 to 18.50
Chicago, small	14.75 to 15.25
Boston (dealers)	12.00 to 12.50

FORGE SCRAP

Chicago	$19.50 to 20.00
Eastern Pennsylvania, No. 1	14.50 to 15.50
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	23.50 to 24.00
St. Louis	24.00 to 24.50

ANGLE BARS—IRON

Chicago	$23.50 to 24.00
St. Louis	23.50 to 24.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
Cleveland	16.00
Buffalo	16.00 to 17.00
Chicago	14.50 to 15.00

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	31.50 to 32.00
Buffalo	28.00 to 29.00
Chicago	29.50 to30.00
New York (dealers)	24.00 to 25.00
Birmingham	21.00 to 23.00
Boston (dealers)	25.00 to 26.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	21.00 to 22.00
Chicago	26.00 to 27.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$25.00 to 25.50
Pittsburgh, steel	22.50 to 23.00
Chicago, iron	23.50 to 24.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, Iron	22.75 to 23.00
St. Louis, iron	22.50 to 23.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	20.00 to 21.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$25.00 to 26.00
Chicago, cupola	26.50 to 27.00
Eastern Pennsylvania, cupola	24.50 to 25.50
Cleveland, cupola	23.00 to 23.50
New York, cupola (dealers' price)	21.50 to 22.50
Cincinnati, No. 1, cupola	21.50 to 22.00
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	26.00 to 26.50
Buffalo	24.50 to 25.00
Boston	27.00 to 28.00
Valleys	23.00 to 23.50

HEAVY CAST

New York (dealers)	21.00 to 22.00
Buffalo	21.00 to 22.00
Pittsburgh	22.00 to 23.00
Cleveland	17.75 to 18.25
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$21.00 to 22.00
Pittsburgh, agricultural	20.00 to 21.00
Chicago, railroad	20.50 to 21.00
Chicago, agricultural	20.50 to 21.00
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	20.50 to 21.00
Cleveland, agricultural	18.00 to 18.50
St. Louis, railroad	18.50 to 19.00
St. Louis, agricultural	18.00 to 18.50
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	$25.50 to 26.00
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	26.50 to 27.00
Birmingham	20.00 to 22.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	$19.50 to 20.00
St. Louis	21.00 to 21.50

BOILER PUNCHINGS

Chicago	$22.00 to 23.00
Eastern Pennsylvania	23.00 to 24.00

Shipments from Stock ——

—— Government material at

prices ~~lower~~ under present card quotations.

1500 tons Billets $7\frac{29}{32}$

2000 " Shell 3"- 4½"- 6"- 9"

1000 " Tie Bars $\frac{5}{8}$ +3"

800 " Ingots for 9" Shell

100 " C.R. Bessemer Rounds $1\frac{9}{32}$

Ask for prices on these, also let us know what other grades you need, or have for sale.

The James L. Miller Co.

McCormick Bldg

Chicago.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg., Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

An agency is desired by a party in France for the sale of steel plates and cement. Opportunity No. 30482.

A trading company in New Zealand desires to purchase and secure an agency for the sale of electric tramway rails. Opportunity No. 30485.

A party in France wishes to secure the representation from exporters of motor agricultural machinery of all kinds. Opportunity No. 30486.

Purchase of a machine for labeling bottles, etc., is desired by a firm in France. Opportunity No. 30487.

The owner of a flour mill in Italy wishes catalogs of automatic grain scales, as well as catalogs of all kinds of machinery used in building work and lock construction, such as concrete mixers, pumping machinery and dredging machinery. Opportunity No. 30511.

An American firm with offices in principal cities of Europe desires to secure agencies for the sale of hardware, enamelware and china ware. Opportunity No. 30512.

A company in France wishes to purchase well-drilling and boring apparatus, sanitary supplies, bath tubs, etc., and central heating systems. Correspondence should be in French. Opportunity No. 30513.

An agency is desired by a party in Roumania for the sale of agricultural machinery, tractors, etc. Opportunity No. 30514.

The purchase of raw materials for cotton and paper mills, metal products, machinery and accessories, is desired by a party in Italy. Opportunity No. 30515.

An agency is desired by a party in France for the sale of automobiles, agricultural implements, etc. Opportunity No. 30538.

An artificial limb factory in Greece is in need of machinery. Correspondence should be in French. Opportunity No. 30540.

A manufacturer in France desires to purchase machines for carding wool and machine parts known as "mule-jenny," as well as buckles for clothing and harness. Correspondence should be in French. Opportunity No. 30542.

A firm in Greece desires to secure an exclusive agency for the sale of sewing machines. Opportunity No. 30545.

A traveling salesman in France desires to secure an agency for the sale of tools and household articles in tin or enamel. Correspondence should be in French or Spanish. Opportunity No. 30547.

A firm in Russia desires to establish connections with American firms for the purchase of electrical machinery and supplies, telephone and telegraph supplies, metal and woodworking machinery, agricultural implements and tanning and textile machinery. Opportunity No. 50520.

An agency is desired by a firm in France for the sale of accessories for steam engines, joints and packings, and asbestos for industrial purposes. Correspondence should be in French. Opportunity No. 30521.

A county engineer of public works in Greece desires to purchase stone crushing machines for road repairs; a petroleum and gasoline engine; well boring machinery; pumps and fittings. Blasting machinery, operated by pneumatic or other power, necessary fittings, etc. Correspondence should be in French. Opportunity No. 30524.

The manager of a plantation in Spain desires to secure machinery and equipment for decorticating and cleaning fiber. Opportunity No. 30525.

A merchant in Italy desires to be placed in communication with firms for the sale of metals in general, but especially pig and manufactured copper, and electrical instruments. Opportunity No. 30526.

Agencies are desired by a firm in Australia for the sale of cylinder latches and other lines of locks, as well as pressed hollow ware, aluminum, household articles, stoves, lawn mowers, etc. Opportunity No. 30529.

The representative of a commercial body in Persia is in this country and wishes to purchase and make agency arrangements for automobiles, agricultural implements, telephone equipment, etc. Opportunity No. 30530.

A firm in Denmark desires to secure agencies for the sale of machinery, agricultural implements, tools, metal products, etc. Opportunity No. 30531.

A commercial agent with a warehouse in France desires to secure an agency for the sale of household articles, hardware, eletric lighting apparatus, metallurgical supplies. Correspondence should be in French. Opportunity No. 30533.

A company in China desires to purchase machinery and parts of machinery, rice mills, drills, air pumps, bellows and forges, crank shafts, emery wheels, crucibles for melting brass, chain blocks, air gages, belting, engines for motor boats, dynamos, magnetos, motors, nonfriction metals, pig iron and tools. The dynamos and magnetos are needed for immediate use. Opportunity No. 30588.

The representative of a firm in the Canary Islands is in this country and desires to secure an agency for the sale of various articles, including hardware, chemicals, tools, etc. Opportunity No. 30550.

A commercial agent in Cuba desires to represent in San Domingo, Porto Rico, the Dutch West Indies and Cuba, manufacturers of hardware, etc. Opportunity No. 30551.

The representative of a firm in Spain, at present in this country, wishes to secure an agency for the sale of electric machinery, central generating stations, small electric material, pumps, turbines, internal combustion motors and lamps. Opportunity No. 30552.

An agency is desired by a party in Italy for the sale of agricultural and general machinery, tools, metals, elctrical supplies, etc. Opportunity No. 30556.

An instructor in a commercial school in Switzerland desires to secure an agency for the sale of typewriting, adding machines, etc. Opportunity No. 30557.

A commission agent in Switzerland desires to secure an agency for the sale of scissors, knives, silver-plated ware, razors, spiral drills, tools, and household articles. Correspondence should be in French or German. Opportunity No. 30568.

New Trade Publications

OIL STORAGE TANKS.—A small leaflet is being circulated by the S. F. Bowser & Co., Inc., Ft. Wayne, Ind., in which oil storage tanks are described and illustrated. These tanks, although of varying capacity, may be placed in batteries, as all are of uniform height.

STEEL TREATING.—A 25-page booklet is being circulated by the Colonial Steel Co., Pittsburgh, in which the treatment of tool steel for various tools and machines, is given. Directions are given for hardening, forging, drawing the temper, grinding, cooling with air blast, furnace control, pack heating, heating, operation of furnaces, etc. The booklet also contains a list of tools and the grades of steel best adapted for their use.

OIL STORAGE.—An 8-page illustrated booklet is being distributed by S. F. Bowser & Co., Inc., Ft. Wayne, Ind., in which lubricating oil storage equipment is described. The equipment, consists of a battery of tanks, especially designed to fill the requirements of manufacturers, railroad oil houses, shops, power plants, etc. Each tank is equipped with a self-measuring pump and other accessories include barrel cradle, barrel track and a chain hoist.

CHIMNEYS.—The Webber Chimney Co., Chicago, is circulating a 56-page booklet in which it describes and illustrates reinforced concrete chimneys. The book is well illustrated, showing chimneys erected by the company including one said to be the highest in the world. It was erected for the Saganoseki copper smelter, Saganoseki, Japan. It is 570 feet high, 26 feet and three inches in diameter at the top, 42 feet and eight inches diameter at the base, and the first section of the chimney, which is 50 feet high, contains as much concrete as is required in the shaft and foundation of an ordinary chimney 150 feet high. Kent's table of chimney sizes for steam boilers is reproduced in the booklet.

MOTORS AND GENERATORS.—A new line of direct current motors and generators is described in bulletin 1106, just issued by the Allis-Chalmers Mfg. Co., Milwaukee. The machines, which are said to embody many details which contribute to accessibility, reliability and safety, range in size from ½ to 50 horsepower for motors and from ½ to 40 kilowatts for the generators. Cast steel yokes are used in machines of the higher ratings while the smaller machines have riveted frames. All machines have ring-oiling, dust proof bearings and the windings are treated to resist oil and moisture. The armature core has the laminations riveted together, permitting the removal of the shaft without dismantling the core or commutator. The adjustable speed motors, intended particularly for machine tool and similar applications, are provided for 2:1, 3:1 or 4:1 speed range.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, September 25, 1919 No. 13

American Workmen Foil Strike

Foreign Labor Deserts Plants at Agitators' Call But Loyal Employes Stand Firm—Mills Hold Upper Hand at Pittsburgh—95 Per Cent of Strikers Are Aliens—Many Are Intimidated

THE most un-American strike in the history of the country has been frustrated by the loyalty of the American workmen of the iron and steel industry. The nationwide walkout made possible by the stampeding of the foreign workmen, which it was threatened by the radical agitators would paralyze the industry, has failed at the vital points and the outlook is that it has passed the crest. It is estimated that 95 per cent of the strikers have been recruited from the ranks of foreign, common labor. The American employes as a rule, not only refused to join in the strike but have manifested a willingness to return to work the moment the opportunity presents itself. While many plants have been forced to close, this has been due in numerous cases to the crippling of certain essential departments and to the involuntary or coerced absence of nonstriking workmen, rather than to the strength of the strikers themselves. The active number of bona fide strikers has been placed at 20 per cent of the total forces now idle. Steel manufacturers have taken a calm view of the situation, awaiting the opportunity to properly appraise the extent of the offensive movement against them. It is manifest, however, that there is no disposition to adopt aggressive measures to reopen plants now idle.

Pittsburgh Runs Well

The Pittsburgh district with its predominating productive capacity has been the least affected of all the leading steel centers. Conditions there have shown progressive improvement since Monday and some of the foreign workmen who went out at the first call, have reported for work. This has enabled the restoring to production of some of the blast furnaces which had been banked. The principal plants of the Carnegie Steel Co. are running well and it is estimated 75 per cent of the capacity of the company is active. The Jones & Laughlin Steel Co., the largest independent in the Pittsburgh district, has maintained virtually full operations since the strike. In the Birmingham district, the walkout has failed signally while in the East operations in general have been interfered with but slightly. The greatest points of disaffection have been in the Youngstown, Chicago, Cleveland and Buffalo districts, where production is virtually at a standstill. In all centers, blast furnace plants because of the large percentage of common and foreign labor employed have offered a prominent target for attack.

Steel Output Curtailed

In some lines, a continuation of present conditions will bring about a sharp curtailment of finished steel production with its attendant stifling effect upon diversified industry; in others the results promise to be slight. Of those products where the recent demand has been heaviest, sheet and tin plate output is being well maintained both in the Steel corporation and the independent mills. In many of the latter, annual union agreements negotiated some months ago, are effective though in several plants the men have ignored their contracts. Production of tubular goods has been cut considerably though the two largest plants in the country are running virtually full. Apart from Cleveland, the capacity in wire products is well engaged. The most pronounced effect of the strike on the line it now has developed, probably will be in the heavier products including bars, structural shapes, plates and rails. The market on most of these materials recently has been the most contracted of all the mill list.

Pig Iron Held Up

Numerous merchant blast furnaces have been banked though the situation in this respect is considerably more favorable than with respect to furnaces joined with steel works operations. Offsetting this restriction of iron supply, moreover, is the fact that the demand has been sharply reduced by the crippled condition of various steel plants at the present time. Already this has brought requests for the suspension of shipments to the furnaces. In the East, the American Bridge Co., which has been drawing its iron from the Pittsburgh district has opened negotiations for 25,000 to 30,000 tons of basic with nearby furnaces.

SEPTEMBER 25, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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An Un-American Strike

"ALL Americans at work, all foreigners out." This statement by an official of a large steel company describing the strike situation and echoed in substance in many quarters since Monday, points to a general condition that well may challenge deep public consideration. Its significance cannot be escaped. It is the foreign element deceived or cajoled by unscrupulous agitators or wilfully vicious in its own designs that has appeared as the most conspicuous factor in the present strike and its train of consequences.

The radical agitators who have engineered this strike with a so-called union, embracing all ranks of labor admittedly have concentrated their main efforts upon recruiting the foreign workers. They have calculated by preying upon the credulity, the prejudices and the limited knowledge of basic conditions of these men that because of the large numbers represented, there could be welded together a formidable machine with which to force the manufacturers to do their bidding. Their professions of sympathetic interest in the wage rates and conditions of employment for these workmen have meant little or nothing. There is only one question involved in this strike and that is the attempt of unionism and radical unionism in its worst form to dictate to the steel industry the conditions under which it shall conduct its affairs. All other claims and protestations are pure hypocrisy or fiction, or have been set forth merely for public consumption.

As the situation has developed, the foreign workmen, necessarily the most ignorant and the lowest class of mill labor, stand in the position of attempting to dictate the form of management of American industry. It is the foreign class exploited by the worst elements of organized labor that has deprived thousands of American workmen of the peaceful right to work at their jobs, this week, is holding back American industry from promised prosperity and is helping materially to block the longed for relief to the American public from the present intolerable conditions of living cost.

And the majority of these foreign workmen have no clear or definite idea as to why they are striking. Actual contact with them in the Youngstown district and elsewhere this week proves this fact. They are striking not because they have real or fancied grievances against their employers but because they have been told to do so by the union and they are obeying. the summons.

There is nothing in this strike to mark it as American. In fact, it is essentially un-American in its organization, its designs and its methods. It represents a dangerous thrust against established American institutions. The questions it involves reach beyond the plane of industry into the realm of sound government and orderly society. The steel industry in vigorously combatting this menace of the clamorous and vicious minority is upholding the banner of true Americanism. It should have and will have the wholesouled support of all the reasonable and best elements of American life which must make its eventual victory unquestioned.

Playing Fair with the Public

IN ALL the agitation over the high cost of living the steel and iron industry stands out alone as the one and only branch of business that came to the front when the opportunity offered, cut its prices without cutting wages and has held to the program ever since. Whether the Redfield-Peek plan of interference with the natural laws of supply and demand was wise or ill-advised, a moot point, the steel industry did its bit in the effort to break the vicious circle of advancing costs and advancing wages and did it voluntarily.

Unaided by support from other industries the effort of the industrial board has been futile, but the industry has not reneged, and through the weeks and months following the fiasco prices have been held

at the level then set, with exceptions so slight as to be negligible.

Even when some elements in the trade have been forced to raise prices because costs have mounted, a strong control has been exercised in a way to leave quotations unchanged where necessary supplies could be contracted for without paying the higher figures. Without this strong hold on the lower quotation, a steadying hand that has resisted all blandishments offering a higher level, the market might have run away and surpassed the highest figures of war times.

Radicalism Must Be Eliminated

SENSIBLE suggestions for the avoidance of strikes and lockouts are carried in the proposal of Stephen C. Mason, president of the National Association of Manufacturers for which consideration is asked at the industrial conference to be held in Washington on Oct. 6. A clear conception of the necessity of capital and labor cooperating in a broad way is reflected in the interesting suggestions made. The plan appears easily workable if it were possible to rid the industrial world of agitators, who seek anything but a fair adjustment of differences tending to prevent strikes and lockouts.

It is proposed by Mr. Mason that organized labor and organized industry enter into a gentlemen's agreement to bring to an end the disputes now engaging the attention of the entire country. In short, Mr. Mason is urging that there be no interruption to production and it is his idea that this desirable state of affairs be continued until the President declares an end to the period of industrial readjustment.

The plan of Mr. Mason provides that the President shall appoint a joint committee representing organized industry and organized labor to draw up an agreement, perhaps not unlike that in effect during the war made with the war labor board and to have congress enact legislation stating that such an agreement is made in the interest of the public. Disputes would be settled by an industrial arbitration board.

The forthcoming industrial conference may well give serious attention to the proposal of Mr. Mason as an aid to the solution of the industrial turmoil. Both labor and capital can well afford to declare a truce and submit their differences to a fair board of arbitration. Such a course would probably avoid a vast waste, greatly help in reducing the cost of living, and prevent untold suffering.

It must be said that industry as a general thing has manifested a willingness to deal fairly with its employes and to go as far as it may safely go toward smoothing out troubles with labor. But organized labor, particularly its most radical element, refuses to listen to reason. It wants "direct action."

This element should be summarily delt with through any proper course that is necessary and the better wing of organized labor should join with industry in effecting a truce, under which opportunity may be given for the adjustment of differences. Organized labor must know that it is not going to be permitted to ride roughshod over the rights of employers. In the case of the steel producers organized labor has just as many rights as have nonunion men, no more, and no less, and that is the way it should be. To do otherwise would be unfair to the larger men who choose not to become associated with organized labor.

A War Bubble That Burst

SOME months ago Japanese export and import merchants appeared in the American market as heavy buyers of various kinds of raw materials, including copper, lead, zinc, chemicals, certain ferroalloys, steel products and other commodities. It is estimated that upwards of 20,000 tons of copper, 10,000 tons of zinc and 10,000 tons of lead were sold on this movement. This business was rather surprising to New York sellers at the time. It was difficult to understand why Japan, a producer of copper, should buy the red metal. A producer of zinc herself, why should she buy zinc? Why should she buy lead in the United States with Australian supplies much more convenient geographically? Some few jingoists in this country and England, too, saw war preparations in this buying, especially as the buying included ferrovanadium, used in large gun linings, and certain chemicals used in warlike as well as peaceful purposes.

But recent weeks have seen some heavy resales of copper by Japanese merchants, who reaped a speculative profit of several cents a pounds. Only a part of the copper bought was resold, but the very reselling of it was indicative of the absence of any ulterior motive. Explanation of the Japanese buying is found in the fact that Japan has advanced industrially more than any other country during the war. She has built up a large manufacture of metal products, for which she needs raw materials. Japan likewise has been having its own labor troubles and rising wages. Both copper and zinc production have been largely unprofitable under present economic conditions. It is cheaper to import slab zinc from the United States than zinc ore from Australia for smelting. It is cheaper to buy American electrolytic copper than to work the high cost Nipponese copper properties. Japanese buying can be ascribed to commercial, not to war motives.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 868 AND 870

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	27.00 to 27.25
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	29.75 to 32.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$31.50
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 28.50
No. 2 Northern, Boston	32.40
No. 2 foundry, Cleveland furnace	27.25
No. 2 foundry, Ironton furnace	27.50 to 27.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	30.50
No. X, eastern, N. J. tidewater	30.60
No. 2X, eastern, Boston	32.90
No. 2X foundry, Buffalo furnace	28.00 to 29.50
No. 2 foundry, del., Philadelphia	29.50
No. 2 foundry, N. J. tidewater	29.60
No. 2 southern, Birmingham	26.75 to 27.50
No. 2 southern, Cincinnati	31.35 to 31.60
No. 2 southern, Chicago	31.75 to 32.50
No. 2 southern, Phila.	33.25 to 34.00
No. 2 southern, Cleveland	31.75 to 32.50
No. 2 southern, Boston	35.50 to 36.00
No. 2 southern, St. Louis	31.00 to 31.75
Virginia, No. 2X, furnace	30.00
Virginia, No. 2X, Philadelphia	34.10
Virginia, No. 2X, Jersey City	34.40
Virginia, No. 2X, Boston	34.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	28.00 to 29.00
Silveries, 8%, furnace	40.25 to 43.00
Ohio Silveries, 8%, Chicago	44.05 to 46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	39.80 to 41.80
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	32.75
Charcoal, Superior, Chicago first qr. 1920	33.75

Coke

(At the ovens)

Connellsville furnace	$4.50 to 5.25
Connellsville foundry	6.00 to 6.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	8.50 to 9.50
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	7.50 to 8.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$105.00 to 110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	$105.00
Spiegel, 18 to 22 per cent furnace, spot	35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	85.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.20 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	28 to 30 cents
Ferrovanadium, 35 to 40 per cent, per pound contained, according to analysis	$6.00 to $7.50
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.50c to 2.65c
Tank plates, Chicago	2.77c to 2.92c
Tank plates, Philadelphia	2.745c to 2.895c
Tank plates, New York	2.77c to 2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.62c to 2.77c
Bar iron, common, Pittsburgh	2.75c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	38.00 to 40.00
Relaying rails, Pittsburgh	39.00 to 41.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK	
No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c
TIN MILL BLACK	
No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
GALVANIZED	
No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c
BLUE ANNEALED	
No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 800.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

	Black	Galv.
Base, Pittsburgh	Per cent off	
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 800.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$58.80
Four-inch, New York	57.30
Six-inch and over, N. Y.	54.30
Six-inch and over, N. Y.	52.70 to 53.70
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.76½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.74½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS	
(⅜ x 6 inches, smaller and shorter)	
Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off
MACHINE BOLTS	
(⅜ x 4 inches, hot pressed nuts)	
Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off
NUTS	
Hot pressed, square blank	2.70c to 3.10c off
Hot pressed, square tapped	2.45c to 2.85c off
Hot pressed, hexagon blank	2.70c to 3.10c off
Hot pressed, hexagon tapped	2.45c to 2.85c off
Cold pressed, square tapped	2.45c to 2.85c off
Cold pressed, square blank	2.70c to 3.10c off
Cold pressed, hexagon blank	2.70c to 3.10c off
Cold pressed, hexagon tapped	2.45c to 2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Sept. 24, 1919	Average prices Aug. 1919	June 1919	Sept. 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	33.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	34.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	33.00
Lake Superior charcoal, Chicago	32.75	32.75	31.75	37.70
Malleable, valley	27.25	28.65	28.65	34.90
Malleable, Chicago	27.25	27.25	27.25	33.50
*Southern, No. 2, Birmingham	26.75	26.75	24.25	33.00
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	33.00
Basic, eastern del., eastern Pa.	27.00	27.00	25.50	32.00
**No. 2X, Virginia, furnace	30.00	28.25	26.50	33.50
*No. 2X, eastern del., Philadelphia	30.50	29.60	29.60	34.50
Ferromanganese, 80 per cent, delivered	110.00	110.00	114.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.50	38.00	47.50
Bessemer sheet bars, Pittsburgh	42.00	42.00	41.50	51.00
Open-hearth sheet bars, Pittsburgh	42.00	42.00	41.50	51.00
Open-hearth billets, Pittsburgh	38.50	38.50	38.00	47.50
Steel bars, Pittsburgh	2.35	2.55c	2.35c	2.90c
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73

	Prices Sept. 24, 1919	Average prices Aug. 1919	June 1919	Sept. 1918
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.62	2.62	2.53	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45c	2.45c	3.00c
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.50c	2.65c	2.65c	3.25c
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.795c	2.895	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.35c	4.30c	5.00c
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55c	3.50c	4.25c
Sheets, galv., No. 28, Pittsburgh	5.70	5.70c	5.65c	6.25c
Wire nails, Pittsburgh	3.25	3.25c	3.25c	3.50c
Connellsville furnace coke	4.50	4.30	3.90	6.00
Connellsville foundry coke	6.25	5.20	4.70	7.00
Heavy melting steel, Pittsburgh	20.50	21.25	17.25	29.00
Heavy melting steel, eastern Pa.	19.00	19.60	16.15	28.50
Heavy melting steel, Chicago	19.00	20.75	16.75	29.00
No. 1 wrought, eastern Pennsylvania	27.00	27.25	22.50	34.00
No. 1 wrought, Chicago	21.00	23.25	18.70	33.50
Rerolling rails, Chicago	25.50	29.00	19.25	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Demand for Prompt Iron Grows

Banking of Numerous Furnaces Causes Consumers to Cast About for Supplies — American Bridge Co. Seeks Basic Tonnage in East, Due to Pittsburgh Conditions—1920 Sales in N w England Are Active

Philadelphia, Sept. 23.—Pig iron demand aparently has been stimulated by the fear on the part of some consumers that operations at the blast furnaces may be curtailed by the strike. Numerous consumers having ample storage facilities are inquiring for large tonnages for prompt and nearby delivery and since these tonnages are in excess of the consumers' capacity, the furnaces figure these users desire to protect themselves against eventualities. Among current inquiries are 5000 tons of foundry iron for the Bridgeport Crane Co., 4000 tons for the Whitin Machine Works, Whitinesville, Mass., 3000 for the Draper Co., Hopedale, Mass., and others. Inasmuch as furnaces in most cases have disposed of their output through this year, it is hard to get large tonnages for early shipment. Considerable iron was held the past week for this year at higher prices. In fact eastern Pennsylvania market now may be quoted at $29 furnace for No. 2 plain (1.75 to 2.25 silicon), $32 for No. 2X (2.25 to 2.75 silicon). Makers who had been holding for these figures for some weeks without doing any business, report sales of thousands of tons the past week. Included in the sales was 1000 tons of high manganese for Pennsylvania railroad. A promising inquiry due to strike is from American Bridge Co., for basic which is due to the situation in the Pittsburgh district obstructing shipments to that consumer. It is inquiring as to available tonnage this grade in case it has to purchase for its Pencoyd plant. It is believed this interest may buy 25,000 to 30,000 tons within few days. Otherwise basic is featureless. The only low phosphorus sale reported the past week was 400 tons of copper-bearing. Otherwise the low phosphorus market is featureless and unchanged. Virginian foundry is being sold here for delivery next 30 to 60 days at $30 furnace for No. 2X. Very little Virginia No. 2 plain is available. Considerable Virginia high manganese and high silicon is being sold with usual differentials.

One maker has taken orders for 2600 tons copper-bearing low phosphorus iron so far this month with minimum price of $35, furnace.

Foundry Sales Are Numerous

Boston, Sept. 22.—With 1920 iron offered at the same level with this year's delivery, New England foundries have been rushing into the market. During the past week, approximately 14,000 tons of foundry iron for 1920 delivery was placed through Boston dealers. This was mostly No. 2X (2.25 to 2.75 silicon), although several lots were for the higher silicon grade. One order of 600 tons of 3.75 and above, silicon, was sold to a special machine manufacturer in eastern Massachusetts for first quarter delivery at $33 Buffalo. The largest buyers have been the textile machine plants, and sales to this class of consumers have amounted to approximately 10,000 tons. The Draper Corp. has not yet purchased, although it is understood an order in the neighborhood of 15,000 tons is contemplated, and may be placed this week. The orders that were placed, ranged from small tonnages to 4000 tons and for the bulk of the 1920 business the price was $29 Buffalo for No. 2X. Sales from other districts have been reported at an advance of more than $1 above this, delivered to consumer. Alabama furnaces are quoting 1920 iron at $30 for No. 2, 1.75 to 2.25 silicon, $31.20 for 2.25 to 2.75 silicon, and $32.40 for 2.75 and up. One thousand tons of malleable was sold to a Rhode Island consumer at $32.90 delivered. The Chapman Valve Co., Springfield, Mass., bought 500 tons of No. 2X at under $31 delivered. The steel situation has as yet had little effect on the foundry iron market. One western Pennsylvania furnace wired its refusal to accept orders for foundry iron which it has received. Many jobbing foundries have been in the market for immediate or last quarter requirements. Several orders were for Alabama iron, of which 250 tons were sold to a western Massachusetts consumer at $36.50 delivered for No. 2. Massachusetts stove plate manufacturers bought 1000 tons, machine tool plants placed several orders and jobbing foundries in Connecticut and Massachusetts were active in the trading. A large Rhode Island consumer has placed orders for this year which will cover the normal requirements for the entire year of 1920. Total sales of the week through New England representatives is estimated at 20,000 tons.

Prompt Iron Scarce

New York, Sept. 22.—Pig iron for spot and nearby shipment now is harder to obtain in the East. This is due not only to the large amount of business on furnace books for this year, but also to the fact that producers who recently booked considerable business with the intention of going into blast are blowing in at a later date than they originally expected. Consequently, their output must be applied to contracts and very little is available for disposition at this time. The principal inquiry in the market in this district at this time is one from the Crane Co., Bridgeport,

Conn., for more than 5000 tons, involving 2500 tons of 2.25 to 2.75, and 2500 tons of 2.75 to 3.25 silicon foundry, and 350 tons of malleable, all for prompt shipment. Owing to the scarcity of prompt iron, not as many furnaces as usual are able to quote on this inquiry. Sales during the past week have been restricted to the usual small number of furnaces, since most makers are out of the market due to their previous bookings. Of the iron sold here during the past week, a fair tonnage was sold by a Virginia maker who now is asking $31, furnace, for 2.25 to 2.75 silicon, and $32 furnace for 2.75 to 3.25 silicon; this interest has a base price of $30 on 1.75 to 2.25 silicon, but there is very little foundry iron with such a low silicon content obtainable in the Virginia market at this time. Several thousand tons of Buffalo and western Pennsylvania iron, foundry and malleable, have been sold in this district during the past week, and at least two eastern Pennsylvania makers have booked fair tonnages. It is estimated that sales made during the past week in this district totaled at least 15,000 tons. There is considerable export inquiry before the trade but due to adverse exchange and other factors, these inquiries are materializing into little business.

Strike Interferes With Business

Pittsburgh, Sept. 23.—Consideration of inquiries for pig iron has given way to more important matter of the strike, which has resulted in the banking of several merchant furnaces. Inquiries for foundry iron recently have been quite numerous. Among them was one for 10,000 tons for last quarter for shipment to the East, reported by a brokerage interest, while the inquiries of the National Transit Co., Oil City, Pa., and the Westinghouse Machine Co., East Pittsburgh, were still uncovered when the strike broke. In addition, at least two good inquiries for foundry iron for delivery over first half of next year were under negotiation. This business is off until the situation clarifies and the producers know where they stand. Little interest lately has been observed in the steelmaking grades, but deliveries against contracts were proceeding at a satisfactory rate. It is too early to tell how the strike is going to affect shipments, but as the furnaces which now are idle are merely banked, producers evidently are figuring upon an early resumption. Merchant furnaces to suspend as a result of the failure of sufficient workmen to report are the Alice furnace of the Valley Mold & Iron Corp., Sharpsville, Pa.; the Sharpsville furnace, Sharpsville, Pa., operated by the Allen S. Davison Co., Pittsburgh; the Claire furnace, West Middlesex, Pa., operated by E. W. Mudge & Co., Pittsburgh; the Mattie furnace of the Struthers Furnace Co., Struthers, O.; and the furnace of the Stewart Iron Co., at Sharon, Pa. The Fannie furnace, West Middlesex, Pa., operated by the M. A. Hanna Co., and the three stacks of the Shenango Furnace Co., at Sharpsville, Pa., have not been affected by the strike. Prices of all grades of iron are nominal at the moment in the lack of important sales upon which to base accurately.

Merchant furnaces to bank as a result of the failure of workmen to report are the Alice furnace of the Valley Mould & Iron Corp., Sharpsville, Pa., the Sharpsville Furnace, Sharpsville, Pa., operated by Allen S. Davison & Co., Pittsburgh, the Claire furnace, West Middlesex, Pa., operated by E. W. Mudge & Co., Pittsburgh, the Anna furnace of the Struthers Furnace Co., Struthers, O., and the furnace of the Stewart Iron Co., at Sharon, Pa. The Mattie furnace of the A. M. Byers Co., Girard, O., occasionally a merchant stack, also has been forced to bank. The Fannie furnace, West Middlesex, Pa., operated by the M. A. Hanna Co., still is blowing and two of the three stacks of the Shenango Furnace Co., Sharpsville, Pa., continue in blast. Prices of all grades of iron are nominal at the moment in the lack of any important sales upon which to base them.

Adopt Waiting Policy

Buffalo, Sept. 23.—Furnaces in this territory are pursuing a waiting policy pending the strike and are showing a considerable degree of caution. Only two of the four Buffalo interests are directly affected by the strike. One of the interests affected sold 3500 tons of foundry iron during the past week but is not quoting this week. The two interests unaffected are not selling iron. One is sold up for 1919 and declines to quote for 1920. The other is not willing to take chances with the present unstable labor situation, although it had contracted for limited tonnages of 1920 iron prior to the strike. This maker reports inquiries for between 5000 and 6000 tons of malleable and foundry iron, but is not now quoting.

Demand at Chicago Brisk

Chicago, Sept. 23.—As a result of the banking of merchant stacks, deliveries of pig iron have been interrupted and demand for spot iron is brisk. Sellers having cars in transit are disposing of iron promptly, with a large number of inquiries unsatisfied. Producers are selling only subject to the strike, and orders are not being sought. One broker on Monday sold all the iron he had in transit from the south and other points. Current inquiry includes 500 tons of malleable, 200 tons of No. 2 foundry, and 1000 tons for a Michigan buyer for the first quarter. There are many inquiries for carloads. The coke shortage is the worst menace to the foundries. The supply of Tennessee silveries is nearly exhausted. Small sales are being made. Ohio silveries are also being sold here. Five hundred tons are going to southern Wisconsin. Agricultural manufacturers are inquiring in the open market for small tonnages of basic and bessemer. The strike is limiting most inquiry to prompt shipments, although sellers are willing to book 1920 iron at the present price.

Shipments Are Held Up

Cleveland, Sept. 23.—Orders for holding up basic pig iron and other raw materials have been received by producers from various steelmakers in this and surrounding districts whose operations have been affected by the strike. In one or two cases foundries which have been working on orders for steel plants have asked for suspension of shipments because of the interruption of deliveries on this work. These requests for the holding back of deliveries of iron, however, have been the exception rather than the rule. On the other hand, a good many consumers continue to exert efforts to cover themselves on their requirements after Jan. 1, and some sizable orders have been closed within the past day or two, including one of 6000 tons of foundry iron placed yesterday. Another order of 2000 tons also was closed. These orders were accepted by the makers on the basis of $26.75, furnace, for 1.75 to 2.25 silicon. Other sales of the week have been scattered and light. Furnace operations in this district have been only partially affected by this strike. The two furnaces of the Cleveland Furnace Co. are active but the four stacks of the McKinney Steel Co. are banked. At Toledo and Erie, production is going forward as usual.

Some Contracting Done

Cincinnati, Sept. 22.—The sole topic discussed here is the probable effect of the steel strike on the iron market. The decline in the inquiry for foundry iron is noticeable. There is no demand for either basic or bessemer. Shipments of southern foundry iron are going forward as fast as the furnaces can obtain cars. Some last quarter contracting was done last week, but it is understood that a large part of the iron will be shipped during the first quarter. Southern furnaces are running short of iron with a silicon content of 1.75 to 2.25 per cent, but some of them can still take on a fair tonnage of iron ranging from 2.75 to 3.25 silicon. No southern Ohio furnaces have been affected in any way by the strike, nor is any trouble anticipated. Delayed shipments of coke may cut down producion in the Ironton district unless there is an early improvement. Southern foundry iron (1.75 to 2.25 silicon) is around $28 for this year's shipment, and northern foundry ranges from $27.75 to $28, Ironton, for the same delivery. No quotations are out for next year.

St. Louis Market Quiet But Steady

St. Louis, Sept. 20.—Aside from the sale of a few small scattered tonnages for prompt delivery, principally to the foundries, the pig iron market here is quiet. Consumers are disposed to await labor devolpments before formulating new plans. A brisk inquiry for 1920 iron developed, but was retarded by the strike situation. Consumption in this district continues on a large scale, all foundries being run at full capacity. Strenuous efforts are being put forth by these interests to keep up their supplies of raw material, and considerable trouble is being experienced because of the difficulty in securing the desired grades of iron, and the car shortage. There are many complaints relative to deliveries. Prices hold steady, but with a strong undertone. Southern furnaces are asking $28, Birmingham, for No. 2 (1.75 to 2.25 silicon), for

shipment over the balance of the year. Selling agencies here are earnestly hoping that there will be no advance in price and are advising their principals to hold the market steady.

Southern Market Firm

Birmingham, Ala., Sept. 23.—Pig iron sales are still being made, but cautiously, in southern territory. The market is firm, despite the labor situation. Coal and ore miners are not included among the strikers, and raw material is being kept moving to the furnaces. Labor at the furnaces in this district is colored and the negroes are remaining at their posts. The railroad car shortage is still felt and stocks of iron show but little reduction. It is currently reported that sales have been made for 1920 delivery on a basis of $29 for No. 2 foundry (1.75 to 2.25 silicon).

Uncertain Supply

In Semifinished Material Due to Strike —Finishing Mills Doing Well

Pittsburgh, Sept. 23.—Although the strike of the steel plant laborers has not been more general than was expected by manufacturers it has caused the temporary suspension of some of the independent producers of sheet bars and billets, and a dislocation of production and shipments is probable, rendering uncertain the supplies to the finishing mills. Comparatively little sheet or tin mill capacity is affected by the strike and it is noted that the Carnegie Steel Co., the most important commercial producer of sheet bars and billets, taking in all of its plants throughout the country, is operating at 75 per cent of capacity. At Homestead, Duquesne and Braddock, Pa., the plants of this company were practically unaffected by labor troubles. Youngstown, O., producers, however, have been affected. Wire rods appear to be in ample supply for prompt shipment, and on export business it is hinted that the full premium of $5 per ton over domestic prices is not being insisted upon.

Business is Unattractive

Philadelphia, Sept. 23.—The semifinished market, which for months has been dull here, continues featureless, no orders of size being booked. However, this is not disappointing to the mills as they say the semifinished business is not attractive at present prices. None of western makers are in a position to take any of this business by reason of the strike.

Export Billets Held Up

Chicago, Sept. 23.—With heavy inquiry for semifinished steel in the form of billets and sheet bars for export to England, the leading independent is equally anxious to book 50,000 tons or more of this material to fill in on some new equipment. The foreign exchange situation, however, is such that neither buyer nor seller can absorb the loss brought about by the low price of sterling and it has been impossible up to this time to arrange for the financing of this tonnage.

Coke Shipments Suspend

Banking of Furnaces Brings Flood of Orders to Delay Deliveries — New Demands are Light

Pittsburgh, Sept. 23.—Banking of a number of merchant and steel plant blast furnaces as a result of the strike, has been accompanied by a flood of orders to producers of beehive furnace coke to hold up shipments. New demands, meanwhile, have tapered off to negligible proportions, and the basis on which sales might be made is a matter of conjecture. While oven operators lately have been naming $4.75, ovens, on standard 48-hour fuel, and in some instances have been able to make sales at that figure, the price has in only a few cases been exceeded, and it is doubtful if a bid of $4.50 would have been refused. The market reflects not only the lighter demand, but since the coke market recently advanced partly as a result of a strong coal market, it naturally has been affected to some extent by a weaker coal market, produced by restrictions placed on eastern shipments of coal. Permits now are essential for shipments of coal east, and only by producing evidence that the shipments were intended for export have shippers obtained permits, issued through the Tidewater Exchange. Until the coke producers are able to adjust production to consumptive requirements, it is probable that the market will rule in the buyers' favor. No reliable quotations can be given at present in the lack of business on which to base them. Quotations purely are nominal. Foundries generally are unaffected by the strike and a fairly steady demand still exists for standard 72-hour fuel, with the market well established at a minimum of $6, ovens, and choice brands doing $6.25 to $6.50. The production of coke for the week ended Sept. 13, is estimated by *The Connellsville Courier* to have been 259,900 tons, against 263,742 tons in the previous week.

Germans Take Coke Trade

New York, Sept. 22.—Italian orders, which were beginning to be conspicuous in the demand for American coke for export, have fallen away during the past few weeks, because of the ability of the consumers to obtain fuel in Germany at a considerably lower price and with a much lower freight rate. What the price was is not being divulged, but it is known that considerable tonnage of German coke already has been sold. Domestic coke business in the East comprises a fair amount of spot buying and also some for shipment over the remainder of the year.

Coke Moving Slowly

Cincinnati, Sept. 22.—Considerable complaint is made relative to slow shipments of both furnace and foundry coke. Supplies to some of the southern Ohio furnaces are low and it is now reported that by-product coke is moving very slowly. Some of the delays may be attributed to the shortage of cars, which seems to be increasing. It is almost impossible to get any coke from the Wise County and New River districts. Pocahontas foundry fuel also is unobtainable Connellsville furnace coke is around $5 and foundry grade from $6 to $6.50 New River foundry coke is quoted at $9 to $9.50 and Wise County at $8, ovens.

Car Shortage Still Felt

St. Louis, Sept. 20.—Coke dealers and consumers continue to complain of the car shortage. Eastern producers report they have ample stocks to ship on contracts and orders, but cannot obtain cars. Some borrowing is reported, and the leading by-product interest has been able to furnish small tonnages. Several foundries which have taken on new business for prompt delivery are much worried relative to their coke supplies. Generally, the market has undergone no change, the demand being good. Little is heard in regard to contracts for next year. Most producers not caring to book that far ahead. A fair tonnage of foundry coke was placed during the week for a local foundry.

Strong Demand in South

Birmingham, Ala., Sept. 23.—Demand for coke continues strong. Inquiries are coming in for heavy tonnages of foundry grades. Two or three companies are practically out of the market so far as coke for delivery this year is concerned. Unless the union miners become involved in the iron and steel strike there will be no interference with the coke market in this district.

More Ore Sold

Orders Totaling 130,000 Tons Largest Placed in Month

Cleveland, Sept. 22.—Attention in the ore market is centered almost entirely on the strike in the iron and steel industry and its possible consequences in the market. Despite the strike, sales or ore during the past week were the largest reported for any one week in more than a month. One interested received orders for more than 100,000 tons, 75,000 of which were from a connected interest, while another company has received orders for several small tonnages totaling 30,000 tons. A large company with extensive furnace interests has closed its books for the season, and is now devoting its efforts entirely to getting the tonnage down from the upper lakes. Another company has placed all its tonnage of low phosphorus ores. Companies still having ore to sell are optimistic in regard to the future; they still expect some demand to come out. The strike situation as it pertains to the ore industry is reviewed more fully in connection with the strike developments printed elsewhere in this issue.

Scrap Trade is Curtailed

Strike Condition Causes Holding Up of Shipments—Prices Generally Steady, Though Weaker at Chicago

FOR COMPLETE SCRAP PRICES SEE PAGE 870

Chicago, Sept. 23.—With the inauguration of strikes in steel mills, buying and shipment of iron and steel scrap is almost stopped, dealers having received orders from some customers not to ship any more material until further notice, which probably means until the situation has resolved itself sufficiently to indicate what scale of operation can be maintained. Most grades are somewhat weaker with declines of about 50 cents per ton, but cast scrap is strong and moving well. A sale of 2000 tons at close to the prevailing quotation was made recently with numerous smaller sales bringing the aggregate fairly high. Railroad offerings are unusually light, the Chicago & Alton closing a small list and the Chicago, Burlington & Quincy offering a list of only 500 tons.

Foundry Requests Increase

Boston, Sept. 22.—The affect of the steel situation in the scrap market here has been to increase greatly the spread between the grades used by the steelmakers and those used by the foundries. The demand from the steel plants has fallen off sharply simultaneous with an increased demand from foundries. The Cambria Steel Co. has stopped shipment on all scrap originating in this territory, and other steel concerns are doing the same. Heavy melting steel for the first time in several months is accumulating at plants. Steel rails have dropped $1 and heavy melting steel has fallen off nearly as much. It is interesting to note in this connection, that one of the New England steel plants has been buying a fair amount of heavy melting steel during the last 10 days, and today placed an order for several hundred tons. No. 1 machinery has jumped to $29, consumers' price, and sales above this figure have been reported. The local ordnance department is offering further lots of scrap steel.

Dull Market Prices Steady

New York, Sept. 22.—Although trading in the local scrap market is dull, prices continue to hold nominally unchanged. Heavy melting steel is being quoted at $15 to $15.50, although there is not enough business to test the market. From all early reports the mills in the Lehigh valley are able to continue operations, unmolested by strikes, and this has added a note of confidence to sentiment. It is believed generally, however, that buying for the time being at least will be only on a hand-to-mouth basis, pending a decisive development in the steel labor situation. A fair demand is in evidence for cast scrap, and according to dealers this is virtually the only material moving.

Only One Mill Buys

Philadelphia, Sept. 23.—Strike situation has flattened out the scrap market. Only one mill has shown an inclination to buy heavy melting steel during past week but dealers are not interested. In fact, mills generally are unwilling to buy because in case of a tie up they would have great difficulty in receiving shipments and dealers are unwilling to sell since they cannot see any attraction in an order unless there is some assurance they will be able to ship. Sales of other grades are small. Included in the business of the past week was a good sized lot of borings and turnings for chemical use at price which establishes the market on this grade at $17 to $18.

Market is Unsettled

Pittsburgh, Sept. 23.—Business in scrap iron and steel here which for several weeks has been on an extremely limited scale, has come to a halt. Dealers report quite a number of requests for suspensions of shipments on contracts, but quite as many consumers still are taking in shipments coming to them. Prices merely are nominal for under the circumstances consumers are not interested and dealers realize the futility to make sales at the moment.

Scrap Market Not Yet Affected

Buffalo, Sept. 23.—The strike in this district has not yet had any noticeable effect on the scrap market. There is still a strong demand for most grades of scrap, and an exceptionally strong demand for cast iron borings. It is believed that it will be only a matter of a few days, should the strike continue, that the market will begin to feel the effects of a lessening demand. Although only one group of mills have been crippled, it is believed that makers will not want to pile up an excess of stocks.

St. Louis Market Irregular

St. Louis, Sept. 22.—Irregularity continues to feature the scrap iron and steel market, while the undertone is bearish, and prices have a downward tendency. Dealers lists show reductions during the week ranging from 50 cents to $2 on virtually all grades. The steel strike situation is the principal factor making for unrest. Consumers show a disposition to hold off, and dealers are not doing much speculating, while offerings are not large. Some of the industries, notably the foundries, are making inquiries, but are not willing to pay what dealers ask. Mills are well supplied with material under contract, but foundries have enjoyed a business far in excess of expectations, and some have been obliged to enter the market. Fair quantities of various grades of scrap still remain in the yards, as a result of the buying during the past few months. The strength of the pig iron market is a source of considerable encouragement to scrap interests. There is a marked scarcity of low grade pig, and consumers are using scrap whenever possible.

Dullness More Pronounced

Cleveland, Sept. 23.—Dullness which has featured the local scrap iron and steel markets the past few weeks has been accentuated by the strike. The leading users of scrap in this district have shut down, and although the prospects of their resuming at an early date are fair, they have fairly large stocks on hand and claim they will be out of the market for some weeks. The largest buyer in this district has been buying shell scrap from the government and has many months' requirements cared for in this manner. Prices, as a natural result of market conditions, are weak and tend downward.

Plate Orders Are Moving

Eastern Mills Book Fair Amount of Tonnage—8000 Tons of Ship Work Pending—Prices Still Show Spread

Philadelphia, Sept. 23.—Offering of plates has been little affected by the strike as eastern output is not much curtailed by the strike. The Lukens Steel Co. whose operations yesterday were handicapped by the crippling of the gas producer department has succeeded in replacing strikers and now is running on same schedule as last week. The Midvale Steel & Ordnance Co. also has made some improvement in this direction at Coatsville. Therefore the plate orders being accepted same as before. Considerable tonnage has been booked lately and one eastern mill by reason largely of export orders is practically closed upon its tonnage for the rest of the year. Among new plate orders is one for 8000 tons of plates and shapes for vessel work in this district which is on the point of being closed. The prevailing eastern price on domestic business is 2.65c Pittsburgh but sevtral orders lately have been taken at less and in some cases at 2.50c. The American Locomotive Co. last week placed a tonnage at latter price.

Demand Still Extremely Light

Pittsburgh, Sept. 23.—While good demands are being made upon the plate mills by the tank makers, almost no demand is coming from car and shipbuilders and the requirements of the former are providing no tax upon mill capacity. Both of the latter appear to have ample supplies of plates and are practically out of the market. Prices still are comparatively soft, with 2.50c, Pittsburgh, the basis of most of the current busi-

ness save in those cases where the inquiry involves only a small tonnage. While the plate card does not call for a quantity differential, a higher price than 2.50c in most cases is merely a quantity differential.

Western Demand Fair

Chicago, Sept. 23.—In view of present producing capacity of plate mills, present demand for this product is relatively light and most mills are able to take on considerable more tonnage than they have booked at present. The leading independent in this district has filled its books on plates and is out of the market for any delivery before the first of the year.

Pipe Output

Interrupted at Some Plants—National Tube is Little Affected

Pittsburgh, Sept. 23.—While the National Tube Co. and the Jones & Laughlin Steel Co. are practically unaffected by the strike, other makers of tubular goods are in a less fortunate position. The valley makers have suspended operations as have also the Wheeling, W. Va., manufacturers. The A. M. Byers Co., makers of wrought iron pipe, operating under an agreement with the Amalgamated Association of Iron, Steel and Tin Workers, has its Pittsburgh works running full, but its Girard, O., skelp works are idle because common labor went out at most of the blast furnaces and the rolling mills left the puddlers idle although they were ready to work. No letup is noted in the demand for lapweld pipe, but with production likely to be thrown out of gear by the disturbance, all inquiries are being turned down.

State Wants Tonnage

New York, Sept. 22.—Bids are being closed this week by the commonwealth of Pennsylvania on about 1500 tons of pipe for use in connection with the soldiers and sailors memorial bridge at Harrisburg, Pa. This is one of the largest tonnages up at the present time, although there appears to be an improvement in municipal demand, which is resulting in more sizable inquiries coming out.

Chicago Buying Slow

Chicago, Sept. 23.—Practically no tonnages of cast iron pipe have been closed in the Chicago district recently, although a number of projects are under consideration. Bids were opened at Detroit Sept. 18 on about 5000 tons on which the award has not yet been decided. Bids will be opened Sept. 29 on 100 tons of 12-inch pipe at Milwaukee and Broadwater, Nebr., will open bids Oct. 7 on 100 tons. One important maker has advanced its quotations on smaller size pipe, asking $59.80 delivered Chicago, on six and eight-inch, $62.80, on four and $69.80 on three-inch.

Oklahoma Buys Much

St. Louis, Sept. 23.—The United States Cast Iron Pipe & Foundry Co. has taken 1872 tons for Enid, Okla., and 850 tons for Ponca City. Inquiry for the south and southwest is unusually strong, and considerable business is expected to follow later.

Shape Demand Continues

Structural Market Fairly Active Despite Strike—Chicago Building Trades Resume Work

Chicago, Sept. 23.—With the strike and lockout of building trades in Chicago settled and workers returning to their duties the first of this week, the already heavy demand for structural material is expected to enlarge considerably. Unless the steel mill strike prevents delivery of this material, large tonnages should be placed within the next few weeks from among projects temporarily held up by the former strike. The leading independent has its structural capacity well sold except for heavy sections which it cannot book at present from lack of roll equipment on its new mill. Specifications are being received already on contracts placed for structural work in Chicago which had been held back by the local situation. The largest tonnage of structural material placed in the west during the past few days involves 810 tons for two armories for the University of Iowa, at Ames and Iowa City. The Times-Picayune building at New Orleans, which required 624 tons of structural steel, has been changed to reinforced concrete. The buildings for Montgomery Ward & Co., at Springfield, Ill., to be used as an engine manufacturing plant, are being redesigned and temporarily are out of the market.

Big Bridge in Prospect

New York, Sept. 22.—Little activity is in evidence in the local structural market. Several sizable tonnages which have been before the trade for some time are still pending, and new inquiries of importance are scarce. A new project of considerable importance, although in the preliminary stages, is a New York Central railroad bridge over the Hudson river, near Albany, N. Y. It is expected that about 15,000 tons will be involved. At the present time there is some controversy between railroad officials and state authorities as to the type of the bridge. Prices are strong, it appearing $90, erected, is the lowest available quotation on the general run of material. So far as can be learned, eastern fabricating shops have as yet been little affected by the strike.

Eastern Mills Get Orders

Philadelphia, Sept. 23.—Shape offerings have not been interfered with in the east by the strike as no eastern shape mills are down. The inability of the western mills to make promises is enlarging somewhat the new business of eastern makers. Due to fears of extension of the strike, consumers are specifying liberally on contracts and want deliveries so as to have some material in reserve. The market is devoid of structural lettings.

Not Crowded with Orders

Pittsburgh, Sept. 23.—The position of the shape mills in the matter of bookings shows little improvement. Few of them have more than a few weeks' business in sight, though fabricating interests are getting some business and report a heavy volume of inquiries. While it cannot be said that structural jobs are bringing materially higher prices, a somewhat firmer tone is apparent and some tendency is observed on the part of investors to speculate, which is ascribed in some quarters to a belief that the latter expect higher prices. A case is cited of a project involving 2500 tons, the erection work on which will hardly get under way until next summer, while the buyer is now seeking an option on the steel.

Report Business Still Good

Cleveland, Sept. 23.—The strike in the iron and steel industry has not as yet affected the market in this district for small tonnages of structural shapes, and the leading fabricators report that business is still good. The inability of small mills to produce material may eventually force some of the fabricators out of the market, but the general opinion among the fabricators, who have sought to appraise the strike situation because of its possible effect on their business, is that there is no cause for alarm. They believe the strike will be short lived, and say their reports indicate that it will be a failure. The Fort Pitt Bridge Works took 420 tons for an extension to the plant of the Erie Tire & Rubber Co., Sandusky, O., and several smaller jobs involving in the aggregate a good tonnage. Another interest received orders for several hundred tons of shapes.

CONTRACTS AWARDED

Extension to plant of Erie Tire & Rubber Co., Sandusky, O., 420 tons; to Fort Pitt Bridge Works.

Building for International Motor Truck Co., Allentown, Pa., 1000 tons, to the Austin Co., Cleveland.

Plant for the Cleveland Rubber Mold Foundry & Machine Co., Cleveland, 275 tons, to J. E. Morris Iron Works.

Two armories for state University of Iowa, 810 tons, to McClintic-Marshall Co.

Times-Picayune building, New Orleans, 624 tons, to reinforced concrete.

Galvanizing building for Hubbard & Co., Chicago, 378 tons, to Union Foundry Works.

Bridge near Lick, Ill., for the United States railroad administration, Chicago & Northwestern railroad, 187 tons, to American Bridge Co.

Alterations and extensions to power house, for Little Rock Railway & Electric Co., Little Rock, Ark., 181 tons, to American Bridge Co.

High school building at Aurora, Minn., 122 tons, to American Bridge Co.

CONTRACTS PENDING

Two highway spans for state of Idaho, 250 tons, inquiry pending.

Factory building for Bridge & Beach Mfg. Co., St. Louis, 800 tons, bids being taken.

Hotel at Detroit, owner withheld, 1400 tons, Fridstein & Co., engineers, taking bids.

Lima hotel, 300 tons; bids being taken.

The Gary Foundry & Machine Co., Gary, Ind., has raised its capital from $15,000 to $100,000.

Urge Shipments of Bars

Consumers Besiege Mills for Quick Shipments—New Business Generally is Being Declined by Makers

Chicago, Sept. 23.—All classes of steel bar consumers have been besieging mills for as prompt delivery as possible, indicating either a heavy consumption in manufacturing operation or desire to put as much stock on their yards as possible before the strike could cut off their supplies or reduce them. New business in soft steel bars is fairly slow, and offers small tonnages at the moment, probably largely the result of the strike situation. The leading independent is completely sold out on soft steel bars for the remainder of this year and has withdrawn from the market for the present.

Quietness, which has prevailed in the bar iron market for some time, continues to be much in evidence and one mill, which has been down the past two weeks, was started Monday with sufficient tonnage to insure operation during the present week. No change in quotations has been made. Demand for hard steel bars rerolled from rails holds up well, with demand coming mostly from manufacturers and comparatively little from reinforced concrete users.

Some Bar Mills Affected

Pittsburgh, Sept. 23.—With the Youngstown district plants of the Carnegie Steel Co. and those of the Republic Iron & Steel and the Youngstown Sheet & Tube companies, Youngstown, O., and the Cambria works of the Midvale Steel & Ordnance Co., Johnstown, Pa., idle as a result of the strike, much steel bar mill capacity is down. Bar mills in this district of the Carnegie Steel Co. are only slightly affected and the Jones & Laughlin Steel Co. is running its bar mill practically full. The operation of the bar iron mills here are unhampered as leading manufacturers are working under an agreement with the Amalgamated Association of Iron, Steel and Tin Workers. Good demand is noted for both steel and iron bars but under the circumstances little business is being done. Strong demand also is noted for concrete reinforcing bars. The Witherow Steel Co., Pittsburgh, has been awarded 2000 tons for a new warehouse in Baltimore.

Accept New Business Carefully

Philadelphia, Sept. 23.—Because of the strike situation, the mills are careful in entering new business, particularly in steel bars in which makers are booked up most heavily. Several mills are out of market entirely on bars while they are accepting specifications on contract they are not giving any assurances whatever as to when they will ship. One mill which now is out of the market sold considerable tonnage last week prior to its withdrawal at its new price of 2.50c, Pittsburgh.

Bolt Shipments Heavy

Chicago, Sept. 23.—Mills producing bolts and nuts are unusually busy with specifications on contracts being filed in heavy tonnage, while new business is being offered in steady volume. Most makers are unable to take on further orders or at least cannot extend their sales beyond the needs of regular customers. In most instances present obligations will cover production practically to the end of the year.

Demand Unevenly Distributed

Pittsburgh, Sept. 23.—Fairly good demand still is reported for cold finished steel and shafting, but it is not especially well distributed in the various sizes and shapes, as automobile and tractor builders still are by far the best buyers. The new card issued as of Aug. 18 is being employed by all makers and all confusion attending its introduction has disappeared.

Stock Demand Grows

New York, Sept. 22.—Local warehouses are in receipt of an increased demand, and this development is accounted for in part by the steel strike. Consumers, fearing that there may be a shortage as a result of possible seriously curtailed mill operations, are said to be buying from the warehouses on a larger scale than at any time this year. This buying still, however, is being confined chiefly to sheets and bars, particularly the former. Structural shapes and plates do not appear to be affected to any extent by the improved demand for warehouse materials generally. While the strike may result in a considerable movement of warehouse supplies, it presents a possibility of considerable difficulty to warehouse interests in keeping up supplies. Prices are firm but unchanged.

Warehouse Prices Unchanged

Boston, Sept. 22.—New England warehouse prices have not changed, although an advance has been expected daily ever since the New York and Chicago districts adopted new schedules. Trading is heavy, particularly in sheets and plates, and this together with the steel situation is said to bring about conditions which compel an early price advance. Galvanized sheets are expected to advance within the next few days, and according to one warehouse man undoubtedly they will go up before the end of the week. For some time past deliveries from the mills have not been keeping pace with sales, and this condition alone points to a rising market.

Sheet Mills are Still Busy

New Demands Coming Out, But Producers are Committed to End of Year—Strike Has Little Effect

Pittsburgh, Sept. 23.—The strike of steel plant workmen has affected the sheet mills considerably less than most of the other finishing mills. A large number of the independent manufacturers are working under agreements with the Amalgamated Association of Iron, Steel and Tin Workers, the members of which have been cautioned not to quit work at such plants. All of these "closed shop" plants are running 100 per cent, but a number of independent mills running as "open shops" also are unaffected. Should the strike become more general and last any considerable length of time, the latter as well as the union plants would be affected through a failure of the sheet bar supply. The Apollo Steel Co., Apollo, Pa., suspended Monday through the failure of enough men to report, but this plant expects to resume shortly as the men are believed to be satisfied, but in fear of bodily injury. Some of the plants of the American Sheet & Tin Plate Co. were adversely affected by the strike, but none of them was obliged to suspend operations. New demands for sheets still are coming out, chiefly from consumers, who are fearful of not obtaining full shipments against their contracts and want to be protected. Little attention is being paid to these demands, as every plant in the country is committed for probable production over the remainder of the year, and manufacturers do not want to obligate themselves into 1920, as they would by taking on new business.

Try to Accumulate Stocks

Philadelphia, Sept. 23.—Sheet business here is good and the market can be considered strong. Makers report that in addition to new orders received, consumers are specifying actively on contracts in order to accumulate a reserve of material in case the strike prevents shipments later. Eastern makers are not affected by the strike so far although it is considered likely that trouble along this line will not be escaped altogether.

Accept No New Business

Youngstown, O., Sept. 22.—With virtually the entire steel producing capacity of the Mahoning valley either closed down or seriously crippled by the strike, books of all important companies have been closed to new business. All of last week witnessed a heavy volume of inquiries for sheets, tubular goods and other products, with the exception of plates. Many buyers were anxious to get on the mills' books before the strike, although the normally swelling demand accounted in large measure for the stimulated business.

The export inquiry continues heavy

with black and galvanized sheets 16 to 30 gage being in exceptional demand. Domestic users are particularly insistent upon Nos. 14, 16, 18 and 22 sheets. Dealers' stocks in the valley are low with pickled sheets for stamping especially scarce and in great demand. One dealer reports a few odd lots of galvanized and blue annealed sheets on hand. Deliveries are difficult, however, because of the lack of common labor. One interesting development of the market growing out of the strike and the consequent shortage of products, is that dealers with stocks on hand are getting from $4 to $10 per ton or even higher premiums above the old price. Because of uncertainty regarding their ability to deliver orders and the price adjustments that will be necessary at the conclusion of the present trouble, producers are flatly refusing to book new business.

Wire Mills

Are Little Affected in Various Districts—Nails Are Sought

New York, Sept. 22.—The plant operations of eastern wiremakers have been practically unaffected by the strike call. The mills at Worcester, Clinton, New Haven, Trenton and Allentown are reported to be operating at 100 per cent. Wiremakers continue to find it necessary to pursue a careful policy in booking business due to the large amount of unfilled orders on their books. In fact, the mills continue to limit their customers to the tonnages which they booked in normal years in the past, as they are unable to exceed those deliveries at present.

Most Makers Down

Pittsburgh, Sept. 23.—The Pittsburgh Steel Co., the Cambria Steel Co., and the Youngstown Sheet & Tube Co. are closed down because of labor trouble and wire mill production consequently is much curtailed. The Jones & Laughlin Steel Co., however, still is running with a full complement of men and the Schoenberger plant of the American Steel & Wire Co. has not lost a man as a result of the strike. Marketwise, conditions are in an unsettled state.

Nails Especially Sought

Chicago, Sept. 23.—Manufacturers of wire and nails find two factors united to increase demand for nails on top of the heavy requirements of the market previously. Settlement of the strike and lockout of the building trades, work being resumed this week, has brought about a tremendous demand for nails through Chicago jobbers. The recent heavy storm on the gulf coast of Texas has given a tremendous increase to the need for nails in that locality. Manufacturers are making special efforts to meet these demands and care for other trade at the same time. Imminence of the steel strike has also caused jobbers and users to ask anticipation of shipments wherever possible.

Ferromanganese Quiz On

Trade Commission Questioning Importers of English Product—Inquiries Light—Little Business in Spiegeleisen

Philadelphia, Sept. 23.—The letter which domestic ferromanganese producers recently sent to federal trade commission accusing English producers of violating antidumping law apparently has had effect of advancing price on English metal. One importer now is offering English metal at $110 delivered which is equivalent to approximately $105, tidewater, the usual method of quoting English metal. The new English figure is the same as the present domestic price. Other English producers continue out of the market. Practically no ferromanganese is being sold. Such inquiry as was pending has been withdrawn owing to the strike.

While some business in spiegeleisen done at $38 furnace it was small and exceptional and metal can be had freely at $35 for 18 to 20 per cent, a round tonnage of spiegeleisen was sold at $35 and several inquiries in market for 1000 to 2000 tons.

Investigation Proceeds

New York, Sept. 22.—The federal trade commission is proceeding with an investigation of charges recently brought by domestic producers of ferromanganese that English makers have been violating the antidumping act. Some of the importers have received inquiries from the commission for information.

No English ferromanganese now is being sold or offered here as far as known, since these producers have withdrawn from the market. At least one of them has no more metal to offer for shipment this year. It is learned that approximately 3000 to 4000 tons of English ferromanganese were sold at $95, c.i.f. Atlantic tidewater, prior to the withdrawal. It appears that there is no foundation for any reports that English ferromanganese was offered at lower than $95. Inquiry for ferromanganese now is limited. One West Virginia user had an inquiry out for a round tonnage but has withdrawn.

Current inquiries for spiegeleisen call for 1000 to 2000 tons. There has been very little business and the market largely is nominal. Metal containing 18 to 22 per cent manganese may be quoted at $35 furnace.

While most of the important Canadian makers of 50 per cent ferrosilicon are asking prices approximating those named by American makers or around $95 to $100 delivered, it is understood some holders of Canadian alloy are making sales much lower. Some of this alloy or further lots of American resale metal figured in the recent sales of small tonnages around $80 to $83 delivered.

The tungsten situation is unchanged. Recently a meeting of consumers and importers of tungsten ore was held in New York to determine the attitude of the trade to the bill now pending to impose a duty on imports. The meeting was unanimously opposed to the amendment imposing a retroactive duty on stocks of ore already here, while opinion as to the bill generally was divided. A committee was appointed to watch the bill. The ferrotungsten market has taken little note of the bill, prices remaining about $1.20 to $1.30 a pound contained.

Ferrovanadium is unchanged at about $6 a pound contained for high silicon alloy and $7 to $7.50 a pound for low silicon alloy. The ferrochrome market is irregular. Some small lots have been sold at 31 cents a pound for 4 to 6 per cent carbon.

Market is Unsettled

Pittsburgh, Sept. 23.—Business in ferromanganese has nearly come to a halt, not so much as a result of the labor troubles as because of uncertainty in regard to prices. Both domestic and English producers recently have quoted $110 on 80 per cent material, the former making the price delivered, while the latter's quotation has been c.i.f. Atlantic seaboard. Latest advices from the East are that most of the English makers have withdrawn all quotations. The market is weak on 50 per cent ferrosilicon, for demands are confined entirely to small lots for immediate shipment. Such sales have averaged about $80, furnace, freight allowed, but less than that price was done recently on sales to Pittsburgh district consumers. Although some makers are holding this material as high as $100, furnace, freight allowed, the market as far as actual sales are concerned is more nearly quotable from $76 to $80. Little interest is noted in the other ferroalloys. Ferrotungsten still is offered as low as $1.15 a pound here.

Tin Plate Mills

Little Affected by Strike—New Inquiries Fairly Numerous

Pittsburgh, Sept. 23.—Beyond the suspension of the operations by the McKeesport Tin Plate Co., which shut down its plant last week because of a congestion in its shipping department, and a walkout of sufficient men to hamper some of the mills of the American Sheet & Tin Plate Co., matters are moving along in the tin plate industry much as though the strike had not been called. Mills working under an agreement with the Amalgamated Association of Iron, Steel and Tin Workers are unaffected, while a number of open-shop plants also are operating at full capacity. Unless the strike becomes more general and lasts long enough to affect supplies of sheet bars, mill operations are likely to continue comparatively full. New tin plate demands still are fairly numerous, especially for export, but most makers are too heavily committed to give them much attention.

Mining Engineers Meet

Conventions of Five Societies Open in Chicago — Fifth Exposition of Chemical Industries Surpasses Previous Shows

CHICAGO, Sept. 22.—An important convention week was ushered in at noon today when the fifth national exposition of chemical industries opened in the Coliseum and the First Regiment armory. The exhibition, which comprises equipment used in the electrochemical, mining and metallurgical industries, occupies every foot of space available in the two large halls and surpasses previous shows of its kind in the number and diversity of products shown. Among the booths in the Coliseum attracting attention is that of the Buffalo Foundry & Machine Co., where vacuum drying apparatus, caustic pots, nitrators, etc., are exhibited. The advance made by American manufacturers of dyes during the war is reflected in the exhibit of the National Analine & Chemical Co., New York, which is displaying fabric dyes, an assortment of colored fabrics, and views of dyeing operations. The exhibit of the Semet-Solvay Co., Syracuse, N. Y., consists of the reproduction of a blast furnace. Electric furnaces, tool steel and pyrometers and other accessories used in the treatment of steel are attractively displayed.

The exposition is being held concurrently with the annual meetings of the American Institute of Mining and Metallurgical Engineers, the American Electrochemical society, the Technical Association of Pulp and Paper Manufacturers, the American Steel Treaters' society and the American Ceramic society. The first technical sessions of the American Institute of Mining and Metallurgical Engineers were held this morning when papers devoted to nonmerrous metallurgy and metallography and coal and gas were read. In the afternoon simultaneous sessions devoted to coal and gas, geology, milling and industrial organization were held. At the last named session, three papers prepared by Charles F. Willis, dealing with the method of curtailing forces, methods of educating workmen and the operation of a system of physical examination for employes were read by T. T. Read, United States bureau of standards, Washington. The paper, entitled "Physical Examination Previous to Employment," was published in the Aug. 7 issue of THE IRON TRADE REVIEW. In this paper, Mr. Willis shows that physical examination before employment has proved satisfactory and presents a strong argument in favor of the system, which is the basis of one of the alleged grievances of labor union agitators. In his paper dealing with educational methods, the author emphasizes the need of administering courses for workmen in accordance with the capabilities, habits and environment of those to be trained. "The educational processes," he states, "must be suited to the existing mental development. Traditional methods of training are unsatisfactory."

Monday evening the members and guests of the institute were entertained at a smoker held at the Chicago University club. At the same time, Gov. Frank O. Lowden, of Illinois, delivered the address of welcome at the exposition. John W. O'Leary, president of the Metal Trades association, of Chicago, spoke on the relation of the chemist to the manufacturer.

Engineers Elect Officers

St. Louis, Sept. 23.—More than 225 members of the Association of Iron and Steel Electrical Engineers have registered at the Hotel Statler for the thirteenth annual convention which began Monday. At a business meeting held this morning, the following officers were elected: President, B. W. Gilson, Carnegie Steel Co., Youngstown, O.; first vice president, H. C. Cronk, McKinney Steel Co., Cleveland; second vice president, F. A. Wiley, Wisconsin Steel Co., South Chicago, Ill.; directors, W. S. Hall, Illinois Steel Co., South Chicago, Ill.; C. E. Bedell, Wheeling Steel & Iron Co., Wheeling, W. Va.; J. E. Fries, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.; and R. F. Gale, Midvale Steel & Ordnance Co., Philadelphia; treasurer, James Farrington, LaBelle Iron Works, Steubenville, O.; secretary, J. F. Kelly, National Tube Co., McKeesport, Pa. The report of the secretary shows that during the past year a gain of 90 active and 110 associate members was made, bringing the total membership, including firm members, up to more than 1000.

Walter Greenwood, Carnegie Steel Co., Youngstown, O., submitted the report of the safety committee which comprised safety rules for the government of employes working on electrical equipment. A. B. Holcomb, Standard Tin Plate Co., Canonsburg, Pa., presented the report of the educational committee. The necessity of training electrical employes of foreign birth, inspectors, linemen, armature winders and electrical foremen was strongly emphasized. Much attention was attracted by an exhibition of electrical apparatus. The convention will continue until Friday, Sept. 26.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Sept. 17	23.50	54.50	6.25	7.15	33.00	8.50	41.00
Sept. 18	23.50	54.50	6.25	7.15	33.00	8.50	41.00
Sept. 19	23.50	54.00	6.25	7.15	33.00	8.50	41.00
Sept. 22	23.50	53.50	6.25	7.10	33.00	8.50	41.00
Sept. 23	23.50	52.75	6.25	7.00	33.00	8.50	41.00

* September shipment rom Singapore, c.i.f. New York.
† American Smelting & Refining Co.'s price.
‡ Producers' price. Outside market unchanged Sept. 17, 22.25c; Sept. 18, 22.12½c; Sept. 19, 21.75c; Sept. 22, 21.50c; Sept. 23, 21.50c; lake, 22c; casting, 21.12½c.

NEW YORK, Sept. 23.—With the steel strike hanging over the markets, activity in the nonferrous metals has been almost suspended the past week. Consumers of metals have shown little interest in their forthcoming requirements, while metal traders have been reluctant to commit themselves in any direction pending definite clue as to the extent and importance of the strike.

The small second hand holders of copper have shown weakness, with resultant shading of prices in the outside market, but the large producers and selling agencies have stood pat. The producers prices for electrolytic copper remain at 23.50c for spot, 24.00c for October delivery. The outsiders have dropped their quotations to 21.50c for spot, 21.75c to 22.00c for fourth quarter. Casting copper is quoted 21.00c to 21.12½c and lake at 22.00c in the outside market. Copper business is extremely slow.

The tin market dropped about two cents a pound the past few business days. As this week opened, Straits tin or September shipment from the Straits could be bought at 53.50c, while shipment in October, November or December was quoted 53.25c, declines of about a cent. These positions now are 52.75c and 52.50c. Spot tin prices dropped under pressure of the arrival of several unsold lots from England. Spot Straits is 55.00c.

The zinc market suffered as a result of the steel labor agitation, prices dropping 15 points in two days, to 7.00c East St. Louis, for prompt and September shipment, 7.10c for last quarter shipment.

American Smelting & Refining Co. advanced its lead price last week to 6.25c, New York, 6.00c East St. Louis, following which action independent producers also put their prices at that level.

Strike Failing at Vital Points

Drive at Iron and Steel Industry by Radical Leaders of American Federation of Labor Falls Far Short of its Goal — Only 20 Per Cent of Workers Who are Idle are Strikers—Ninety-five Per Cent of Latter Foreigners

LATEST reports from the centers of the strike in the iron and steel industry show that the drive launched Sept. 22 by the radical leaders in the American Federation of Labor not only failed to attain its objective but has met with some serious reverses which indicate its ultimate defeat.

The strike is proving not only the most ill-advised and ill-timed of all great labor disturbances in the history of the country, but the most unAmerican and most unpopular as well. Standing out above all other features of interest to the general public is the fact that it is a strike primarily of foreigners against one of the nation's most important industries—a strike of foreigners on American soil that has thrown out of employment thousands of American workmen, whose sympathies are not with the strikers.

How long the handful of extremists in the American federation can thus withhold employment from loyal American workmen is problematical, but there are strong indications on every side that public sentiment is aroused.

Blast Furnaces are Seriously Crippled

The relatively few Americans who are members of newly organized unions are reported to be dissatisfied with the strike, while the great body of workmen forced into idleness are bitter. A conservative estimate places the proportion of those who are out of their own free will at but 20 per cent of the total number of those idle. Further, it is estimated that 95 per cent of the bona fide strikers are foreigners. The foreigners, mostly all of whom are laborers and illiterate, are keeping from work men who earn from $10 to $30 a day.

In the Pittsburgh, Wheeling and Youngstown districts the latest returns indicate that 80,000 men are out, only 16,000 of whom are organized and went out on strike. In the Pittsburgh district operations on Tuesday were much better than on Monday.

Blast furnaces were the most seriously crippled of all the industries in western Pennsylvania and through the valley, due to the preponderence of common and foreign labor employed. The number of active stacks of the Carnegie Steel Co., has been reduced from 47 to 20 since the outbreak of the strike, while 10,000 of the 52,000 men employed by the company are idle. This company, in common with other interests, declares that 95 per cent of the American workmen are loyal.

Union leaders commanded considerable strength in the Youngstown district, principally among the alien workers. It is estimated that 30,000 men are out. With the exception of the Trumbull Steel Co., and the Liberty Steel Co., in Warren, O., both companies employing 5700 men, operations in every large iron and steel plant in the Youngstown district are suspended. Work in the mills also is stopped, the members of the Amalgamated Association of Iron, Steel and Tin Workers being thrown out of employment. The members have a contract with the mills, and pledged themselves to honor it. But while their president, M. F. Tighe, a member of the American Federation of Labor, ordered them to abide by the contract, other members of that same federation were calling out men whose absence made the fulfillment of the contract impossible.

Out of 20 iron and steel plants in the Cleveland district, only those of the Empire Rolling Mill Co., the Union Rolling Mill Co., the Riverside and Lakeside plants of the Otis Steel Co., and the blast furnaces of the latter company are operating. All plants of the American Steel & Wire Co., the only subsidiary in the district of the United States Steel Corp., have suspended operations. Union estimates of 20,000 men idle are disputed by the employers, who claim the majority of those actually out are loyal workers who have been intimidated, or who are unable to work because plants are shut down.

The only plant of which there is a record wherein the members of the Amalgamated association voluntarily violated their agreement is that of the Lake Erie Nut & Bolt Co., Cleveland. Tighe threatened to revoke the charter of the local union if the men did not return.

Practically the entire iron and steel industry in the Chicago district is tied up, and the companies are not making any efforts to combat the strike. In this district strikers went the limit in their efforts to terrorize those who refused to join them. They did not succeed with other measures so much as they did in intimidating the wives of the workers. The women were told that the men would be killed if they persisted in working. Employers have called a meeting to decide combative measures on the question of shutting down all plants.

Three plants in the Buffalo district are tied up. The Lackawanna Steel Co. has suspended, the Rogers, Brown Co. has suspended, and the Donner Steel Co. has announced its decision to suspend, with 10,000 men out.

Southern Territory Not Greatly Affected

The strike has not greatly affected plants in the St. Louis district, Birmingham district, eastern Pennsylvania and New England, while all plants on the Pacific coast are operating as usual. All employes in the St. Louis district are at work, and in Alabama, the Tennessee Coal, Iron & Railroad Co., and American Steel & Wire Co., report more men were at work Tuesday than on Monday. These two companies are operating their plants in Alabama at practically the same rate as before the strike was called. No trouble has been experienced, although union organizers are making frantic appeals to the men. In the New England states, where there has been considerable labor disturbances during the past few months, all iron and steel plants are reported to be operating without trouble.

Repeated efforts have been made by officials of the unions represented in the strike to involve others, but thus far the federation as a national body has not attempted to call out organized labor in other trades. A deadlock in the iron and steel strike may cause the federation to throw its weight in favor of the strikers, although for the present it is pursuing a policy of watchful waiting, with President Gompers remaining aloof and not in any way antagonizing the wishes of President Wilson.

The miners of the country in conference in Cleveland voted to leave the matter of a sympathy strike to the officials of their union, thus postponing action on the issue

which was brought before them. In a few instances, switchmen and dock workers have quit, but the number is inconsequential. Officials of the lake seamen's union claim that the seamen's ballot on the question of a strike favored a walkout, but they must now meet and canvass the vote. From developments in the strike thus far it is apparent that the conservative leaders in the American Federation of Labor still retain control. It must be patent to them that to sanction a nation-wide strike to support the union steel workers would be to plunge the country into industrial chaos—and they have succeeded in keeping a steady hand on the helm, thus far.

The United States senate has passed a resolution providing for an investigation of the strike by a committee, and it is reported that E. H. Gary, chairman of the United States Steel Corp., will be asked to testify, together with John J. Fitzpatrick, chairman of the national committee organizing the steel workers.

Comparatively little violence has broken out in the strike districts, although some companies complain that police protection for nonunion workers has not been adequate. Resentment against the strikers has found expression in many localities. Near Pittsburgh business men and farmers at one furnace town became so aroused over the fact that foreigners interfered with the operations of a plant that they offered their own services to operate it.

PITTSBURGH: *Situation Improves as Some Men Return; Furnaces Affected Most, Due to Aliens*

PITTSBURGH, Sept 23.—The second day of the strike finds the situation in the Pittsburgh district better from the standpoint of the manufacturers than it was the first day, due to the fact that in a number of the plants workmen who stayed away on Monday returned to work Tuesday.

The National Tube Co. is practically unaffected by the strike, while the American Bridge Co. is running with its full complement at Ambridge, Pa. The Schoenberger works of the American Steel & Wire Co., have not lost a man, while among the independents, the Jones & Laughlin Steel Co., had less than 100 men quit work and is running substantially full.

More men reported for work today at the plants of the Allegheny Steel Co. and the West Penn Steel Co., at Brackenridge, Pa., which permitted those companies to increase their operations. The Cambria Steel Co., Johnstown, Pa., is down in all departments, and the word from the valley districts is to the same effect. The Pittsburgh Steel Co. is down, but the Crucible Steel Co. and the Carbon Steel Co. are operating to some extent.

Summing up the entire situation in western Pennsylvania and the valley districts, it seems that blast furnace operations have been more seriously crippled than any other branch of the iron and steel industry. This is due to the preponderance of foreign laborers at the blast furnaces. All but a few of the active merchant stacks are banked.

The Carnegie Steel Co. reports a decrease in the number of its active stacks from 47 to 20 since the inauguration of the strike. This does not mean that all of the men were either unionized or desirous of quitting. Plants of this company in the Youngstown district are affected by the presence of men from other plants who are intimidating the workers, because police protection is lacking. It is estimated that about 10,000 of the 52,000 men employed at the various plants of the Carnegie Steel Co. are idle, the bulk of them in the Youngstown district. An official statement issued by the Carnegie Steel Co., says that in every instance where men are out, they are the foreign and unskilled men. Ninety-five per cent of the American workmen remained at work. This is the experience of practically all companies.

Sheet mills are doing better than a number of other kinds of finishing mills. A number of the mills of the American Sheet & Tin Plate Co., are so isolated as to have escaped the attention of the organizers, while a number of the independents are working under agreement with the Amalgamated Association of Iron, Steel and Tin Workers, members of which are not subject to the strike call.

At least 12 of the independent mills are running with a full quota of men. A number of bar iron mills are running as a result of an agreement with the Amalgamated association, but at the skelp mills of the A. M. Byers Co., in Girard, O., common laborers at its blast furnace, and laborers of the Brier Hill Steel Co., which supplies the Byers company with some of its iron, went out. This left the puddlers without iron supplies, the latter being obliged to quit, although willing to work. The Lockhart Iron & Steel Co. and Brown & Co., Pittsburgh, makers of bar iron, are unhampered.

Roughly estimated, about 80,000 men are idle in the Pittsburgh, Wheeling and Youngstown districts. How many of these are striking is a question, but it is not believed they constitute more than 20 per cent.

YOUNGSTOWN: *All Iron and Steel Plants Suspended Except Two in Warren; 30,000 Idle*

YOUNGSTOWN, O., Sept. 23.—With the single exception of the Trumbull Steel Co., and the Liberty Steel Co., at Warren, both employing 5700 men, operations in every important iron and steel mill in the Youngstown district were completely stopped Tuesday. The Warren concerns have contracts with the Amalgamated Association of Iron, Steel and Tin Workers, but have not recognized any of the other unions concerned in the present walkout. Continuation of this policy is expected to result in the closing down of the Trumbull and Liberty plants through a strike of common laborers and other employes not of the Amalgamated association.

The strikers in the Youngstown district are largely made up of foreigners and common laborers, with union electricians and machinists joining in the walkout. Skilled mechanics and members of the Amalgamated association were thrown out of work because of the insufficiency of other labor to keep plants operating. Some of the Youngstown fabricating plants were affected by the strike Monday. The unions, however, urged the men to return to work and operations there were normal today.

Nearly 30,000 men are idle in this district, about 20,000 having struck, the others being compelled to stay

away because of intimidation and because work could not be provided. The following plants with the number of men out in each one were reported late Monday:

The Brier Hill Steel Co., Youngstown, O., completely down, 3400 men out. The Empire and Thomas works of the Brier Hill at Niles down, 1100 men. The Western Reserve works of the Brier Hill at Warren, 500 men, down.

Republic Iron & Steel Co., at Youngstown, completely down. With the exception of a few hundred men around the plant doing guard duty and performing other work, the Deforest Sheet & Tin Plate Co., at Niles, a Republic subsidiary, 700 men, completely down.

The Ohio works of the Carnegie Steel Co. are down and the blast furnaces banked; 8000 men out.

Sharon Steel Hoop Co., Hazelton and Lowellville works, 1400 men, down.

Struthers Furnace Co., 150 men, furnace banked.

The A. M. Byers Co., Girard, 1100 men, closed.

Mahoning Iron & Steel, Mineral Ridge, 500 men, closed.

The Youngstown Sheet & Tube Co., 11000, not operating at all.

Ohio Iron & Steel Co., at Lowellville, 230 men, closed.

All the companies that have contracts with the Amalgamated association report that the members of this union were anxious to work but that the plants were crippled to such an extent by the walkout of others that it was impossible for them to keep at work.

The Mahoning Valley Steel Co., at Niles, employing 700 men, is operating, as it has an Amalgamated contract.

CHICAGO: *Practically Entire Iron and Steel Industry Tied Up*

CHICAGO, Sept. 23.—The strike has largely tied up iron and steel production in the Chicago district. The United States Steel Corp. subsidiaries and the larger independent producers are not yet adopting aggressive measures to fight the strike, although families of the men who are working are being intimidated by the strikers. The Illinois Steel Co. is blowing four stacks each at Gary and South Chicago, but the finishing mills are idle. The Inland Steel Co. and the Steel & Tube Co. of America and the Wisconsin Steel Co. have banked all their blast furnaces. The American Steel & Wire Co. plants in Joliet, Waukegan, and others are practically closed. The smaller mills in South Chicago, including the Hubbard Steel Co., the Pollak Steel Co. and the Riverdale Iron & Steel Co. have been closed. The Federal Furnace Co. has been blown out and the only active stack of the Iroqois Iron Co. has been banked. The Interstate Iron & Steel Co.'s plants are running by agreement with the union. The Inland Steel Co.'s rerolling plant in Chicago Heights, Republic Iron & Steel Co.'s mills at Moline and East Chicago, also are unaffected, under the agreement with the Amalgamated association. The By-Products Coke Corp. plant is idle which will affect the foundries when stocks are gone.

The Inland Steel Co. had at work Monday morning 60 per cent of its first shift, but intimidation of their wives by the strikers caused the men to quit. A large number of the men are willing to work if protection is furnished the families, and in a conference today all employers were to decide what course to pursue, and they may shut down all plants. It is impossible to estimate the exact number of men striking, since so many are absent from work.

NEW ENGLAND: *All Workers are Loyal*

WORCESTER, Mass., Sept. 23.—New England is free of labor trouble in the steel industry and is expected to remain so regardless of the length of the general strike. The American Steel & Wire Co. is the largest producer, employing 5500 men in its three Worcester works and about 500 in its New Haven, Conn., works. Not a man was missing at any of the works Monday or Tuesday. The employes do not belong to unions and are not likely to be organized.

The Clinton Wright Wire Co., with four plants in Worcester, and one each in Spencer and Palmer, Mass., employing more than 2000 men, is free of trouble. About 200 employes of the Wright wire division of the Clinton Wright company are members of the recently organized wire workers' union, which has voted not to strike. No trouble is reported in any other part of New England.

Officials of the American Steel & Wire Co. say works in the Worcester district are running to capacity, and cannot take additional work from other plants affected by the strike, because they are booked ahead for many months.

Ore Shipments May be Stopped by Strike

Cleveland, Sept. 23.—Ore companies have been informed that the railroad administration is considering the advisability of declaring an embargo on the shipment of ore from lower lake docks to those furnaces which have been forced to suspend operations. Officials of the administration say that it is useless to tie up cars by sending them to furnaces which cannot unload them, much less consume the ore. If the embargo is declared, and if shipments from upper lakes districts continue at their present rate, ore companies say that all storage space at lower lake ports will be filled within two or three weeks. Such a situation would force the suspension of shipments and dam up the ore at the mines, regardless of what action the lake seamen may take in regard to a sympathy strike.

Union seamen on ore boats have completed balloting on the question of striking and their officers claim that the vote was almost unanimous in favor of a strike. The union's executive board is to meet at Detroit or Chicago to canvass the vote, the date for the meeting not being announced. It was reported last week that the lake seamen had decided to strike and present new demands, but action is being deferred until the leaders estimate the strength of the strike in the iron and steel industry. In the meantime, some disaffection is apparent on some of the docks at receiving ports. Unloading plants at South Chicago and Indiana harbor are reported idle, while at Gary, Ind., only two rigs are said to be in operation. The dock of the Cleveland Furnace Co. was idle on Monday, as were two docks at Buffalo which were forced to suspend operations because power furnished by steel plants was cut off.

The prospect of the forced suspension of shipments is said to be having some influence against a strike of the lake seamen. During the strike of workers on the ore docks the seamen, though idle, received full pay, and they would receive pay if forced into another period of idleness. They cannot help the iron and steel strikers

to any great extent by striking, but they can make a "sympathy" strike the occasion for pressing their own demands.

Ore companies have taken every possible means of getting their ore through to the furnaces ever since the strike in the iron and steel industry was threatened. Many furnaces are well supplied, and particularly those of the United States Steel Corp. While ore companies were insistently pointing out to independent furnace interests early in the season the desirability of getting in supplies, the Steel corporation was shipping from 60 to 80 per cent of the total tonnage brought down. Its shipments up to Sept. 1 averaged 58 per cent, approximately 17,171,000 tons.

CLEVELAND: *Amalgamated Men Violate Contract*

CLEVELAND, Sept. 23.—Conditions in the Cleveland district were not greatly changed Tuesday from the first day of the strike, although union leaders claimed that the total number of men out increased from 18,000 to 25,000. This was denied by company officials, who stated that developments were in their favor. Actual strikers, mill owners contend, do not number more than 40 per cent of those out, the others being forced into idleness. Out of the 20 plants in Cleveland, only those of the Empire Rolling Mill Co., the Union Rolling Mill Co., the Riverside and Lakeside plants and the two blast furnaces of the Otis Steel Co., are operating. The two former companies have agreements with the Amalgamated Association of Iron, Steel and Tin Workers.

Tuesday it developed that workmen at the plant of the Lake Erie Nut & Bolt Co. had walked out against the orders of the Amalgamated association, of which they are members, and with which the company has an agreement. This action evoked a threat from their president, M. F. Tighe, that unless the men returned to work the local's charter would be revoked. Despite this, the men have not returned to work.

All plants of the American Steel & Wire Co., the only subsidiary in this district of the United States Steel Corp., are closed. The plant of the McKinney Steel Co., the largest independent producer in the district also is closed, including the furnace, open hearth department and mills. Operations have been suspended at the plant of the Cleveland Steel Co., and the plant of the Upson Nut Co.

Officials of the various companies state that the majority of workmen allied with the union are foreigners and that practically all native American workmen are anxious to work, but are restrained through fear of bodily injury. That the zeal of the strikers is waning is shown by the falling off in the number of men attending various rallies. Fifteen thousand foreigners attended a rally Monday, but at a meeting Tuesday only 3000 workmen turned out.

BUFFALO: *Three Plants Tied Up; 10,000 Men Reported Out*

BUFFALO, Sept. 23.—Steel workers succeeded this morning in tying up the three plants in which a strike had been called. Over 10,000 or 95 per cent of the working force of these plants are on strike.

The Lackawanna Steel Co. suspended operations today. Less than one-quarter of their employes reported for work Monday morning and the Monday night and Tuesday morning shifts were so depleted as to preclude operation. The Lackawanna company employed 7500 men. The Donner Steel Co. of Buffalo is to suspend operations tonight or tomorrow. The company employs 2500 men. Up to noon today the two furnaces of the Donner company at Tonawanda, N. Y., were not affected. The Rogers-Brown Co. was forced to shut down Monday when 500 men, its entire working force, went on strike. No strike has yet been called at any of the other steel plants in this district.

W. H. Donner, president of the Donner Steel Co., said hundreds of his men would have reported for work, but for intimidation by strikers.

BIRMINGHAM: *Men Return; Plants Active*

BIRMINGHAM, Ala., Sept. 23.—The strike of iron and steel workers in the Birmingham district has been a failure. All plants of the Tennessee Coal, Iron & Railroad Co., and the American Steel & Wire Co., subsidiaries of the United States Steel Corp., are operating. Two departments in the wire plant suffered a little hindrance Monday. A conservative estimate for the four plants here, which employ under normal conditions upward of 7000 to 10,000 men, is that less than 500 went out on strike Monday and many of them were foreigners. Early Tuesday morning the foreigners began seeking reinstatement, claiming to have been misinformed as to the strike. More men were working Tuesday than on Monday. Not the least disorder was reported about the works here, and Chief of Police Shirley reduced his forces materially on the second day of the strike. Steel rails left the Ensley plant today enroute to San Francisco and Japan. Ingots were shipped Monday as usual to the Fairfield wire mill, to Bessemer, for the rolling mill, and to Westfield for the new fabricating works.

PHILADELPHIA: *Few Plants Affected*

PHILADELPHIA, Sept 23.—Although eastern steel plants are not yet affected much by the strike, the opinion prevails here that they will not escape. In fact, eastern producers gard the present situation holds possibilities for a tieup of the industry. However, they believe the strike must be fought to a finish, as a victory by labor unions would pave the way to an ultimate industrial cataclysm. Much fault is found with the daily newspapers, which evidently do not appreciate the real factors involved in the strike.

Practically the only mills affected in the East were those at Coatesville where on Monday 1200 men were out at the Midvale Iron & Steel Co.'s plant, and several hundred at the Lukens Iron Co.'s plant. The strikers were later replaced.

Philadelphia, Birthplace of A. F. A., Welcomes Foundrymen



Independence Hall
The Home of the Liberty Bell

FOR five days beginning Monday, Sept. 29, Philadelphia, the birthplace of American independence and the home of the first convention of the American Foundrymen's association, will for the third time entertain the foundrymen of the United States, Canada and abroad. As heretofore, the convention this year will include the annual meeting of the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers. It is especially fitting that the twenty-fourth annual meeting of foundrymen, the first in five years to be held in time of peace, is to take place in the city founded by William Penn, America's first well-known advocate of peace. The spirit of war, which so thoroughly entered into the activities of the last five annual meetings, will be noticeably absent this year. Especially striking will be the contrast between the Philadelphia and Milwaukee conventions. Last year, in the midwestern city, the enthusiasm of the 4000 foundrymen in attendance was focused exclusively on the work of winning the war; during the week of Sept. 29, the interest of foundrymen will be centered upon the problems of reconstruction.

Evidence of many developments peculiar to the present era will be reflected in this year's convention. In keeping with the tendency toward closer international relations, the Philadelphia meeting will be marked by a distinctive cosmopolitan aspect to a degree never before approached. In view of this development, the meeting has been named the Inter-Allied Foundrymen's Convention and Exhibition. The return of peace is permitting foundrymen to direct their efforts along lines neglected during the war. Striking proof of this is found in the space requirements of exhibitors who have demanded more than 60,000 square feet, an increase of 43 per cent over any previous show. The removal of the restraint of war also will be reflected in the program of technical papers. A special session on industrial relations has been arranged in order that the broad aspects of that problem, which are absorbing so much attention at this time, may be intelligently discussed. The consideration of reconstruction questions also will hold a prominent place in the program of technical papers to be presented before the American Foundrymen's association at sessions on steel, malleable, gray-iron and general foundry practice, and in the dozen or more papers to be presented at sessions of the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers. The 1919 annual meeting promises to outclass all previous conventions in every respect, and will emphasize, as never before, the tremendous growth of the association since its first annual meeting in the Quaker city, 23 years ago. Although the opening sessions of the convention are scheduled for Tuesday morning, the registration office in the assembly room, Commercial Museum, will open Monday morning, Sept. 29, at 10 o'clock.

Condensed Program

Monday, Sept. 29

10:00 A. M.—Registration, Philadelphia Commercial Museum.

10:00 A. M.—Opening of exhibition, Philadelphia Commercial Museum.

Tuesday, Sept. 30

10:00 A. M.—Joint session, American Foundrymen's association and Institute of Metals division of the American Institute of Mining and Metallurgical Engineers, ball room, Bellevue-Stratford hotel.

2:30 P. M.—Opening session, Institute of Metals division, American Institute of Mining and Metallurgical Engineers, Ritz-Carlton hotel.

Afternoon—Boat ride on the Delaware river, terminating with a visit to the Hog Island shipyard.

Wednesday, Oct. 1

10:00 A. M.—Professional session, American Foundrymen's association, ball room, Bellevue-Stratford hotel, for the discussion of general topics.

10:00 A. M.—Steel session, American Foundrymen's association, clover room, Bellevue-Stratford hotel.

10:00 A. M.—Professional session, Institute of Metals division of American Institute of Mining and Metallurgical Engineers, Ritz-Carlton hotel.

11:00 A. M.—Automobile trip for the ladies through Fairmount park to Valley Forge, where luncheon will be served.

2:00 P. M.—Golf tournament, Whitemarsh Valley Golf club.

8:00 P. M.—Theater party for ladies and gentlemen at Keith's.

Thursday, Oct. 2

10:00 A. M.—Gray iron session, American Foundrymen's association, ball room, Bellevue-Stratford hotel.

10:00 A. M.—Malleable iron session, American Foundrymen's association, clover room, Bellevue-Stratford hotel.

10:00 A. M.—Industrial relations session, American Foundrymen's association, red room, Bellevue-Stratford hotel.

10:00 A. M.—Professional session, Institute of Metals division, American Institute of Mining and Metallurgical Engineers, Ritz-Carlton hotel.

1:30 P. M.—For the ladies, a visit to Wanamaker's store, plant of the Curtis Publishing Co., Independence hall, and other points of interest in Philadelphia.

7:00 P. M.—Annual banquet, Bellevue-Stratford hotel, followed by dancing.

Friday, Oct. 3

10:00 A. M.—Professional session, American Foundrymen's association, ball room, Bellevue-Stratford hotel.

Program, American Foundrymen's Association

Monday, Sept. 29

10:00 A. M.—Registration, Philadelphia Commercial Museum.

10:00 A. M.—Opening of exhibition, Philadelphia Commercial Museum.

Tuesday, Sept. 30

10:00 A. M.—Joint opening session, American Foundrymen's association and Institute of Metals Division, American Institute of Mining and Metallurgical Engineers, Ball room, Bellevue-Stratford hotel.

Address of welcome, by Thomas Devlin, Thomas Devlin Mfg. Co., Philadelphia.

Response to the address of welcome, by A. O. Backert, president of the American Foundrymen's association.

Report of secretary-treasurer, American Foundrymen's association, Inc.

Report of board of directors, American Foundrymen's association, Inc.

Annual address by A. O. Backert, president, American Foundrymen's association.

"Considerations Affecting Brass Melting in Gray Iron Shops," by Russell R. Clarke, Eagle Brass Foundry, Seattle, Wash.

"The Weeks Electric Rotating Furnace as Applied to the Brass Foundry Industry," by F. J. Ryan, American Metallurgical Corp., Philadelphia.

"The Need for Co-operative Research in Alloys," by H. E. Howe, National Research Council, Washington, D. C.

Report of the American Foundrymen's association committee on foundry costs, by J. Roy Tanner, chairman, Pittsburgh Valve Foundry & Construction Co., Pittsburgh.

"Publicity Work of Foundry Equipment Manufacturers' Association," by Franklin G. Smith, chairman, publicity committee, Foundry Equipment Manufacturers' association, Cleveland Osborn Mfg. Co., Cleveland.

Appointment of nominating committee and committee on resolutions.

1:30 P. M.—Boat ride on the Delaware river, terminating with a visit to the Hog Island shipyard.

Wednesday, Oct. 1

General Topics

10:00 A. M.—Professional session, American Foundrymen's Association, Ball room, Bellevue-Stratford hotel.

"Audible Signals in Foundries," by Prof. Vladimir Karapetoff, Ithaca, N. Y.

"How to Secure Best Results in Combining Hoisting Apparatus with Molding Machines," by W. C. Briggs, Shepard Electric Crane & Hoist Co., New York.

"Foundry Sand-Handling Equipment," by H. L. McKinnon, The C. O. Bartlett & Snow Co., Cleveland.

"Concrete Foundry Molding Floors," by H. H. Haley, American Foundry Equipment Co., New York.

"The Care of Foundry Equipment," by G. L. Grimes, Grimes Molding Machine Co., Detroit, Mich.

"Uniform Methods of Cost Accounting," by C. E. Knoeppel, C. E. Knoeppel & Co., New York.

Report of the nominating committee and election of directors of the American Foundrymen's association, Inc.

Steel Session

10:00 A. M.—Professional session, American Foundrymen's association, Clover room, Bellevue-Stratford hotel.

"Electric Versus Converter Steel," by John Howe Hall and G. R. Hanks, Taylor-Wharton Iron & Steel Co., High Bridge, N. J.

"Effect of Sulphur in Steel Castings," by Professor A. E. White, University of Michigan, Ann Arbor, Mich.

"Repairing Castings on Transport Northern Pacific," by Arthur F. Braid, Metal & Thermit Corp., New York.

"Comparison of Costs of Electric and Open Hearth Furnace Practice," by E. H. Ballard, West Lynn, Mass.

Report of the American Foundrymen's Association Committee on Steel Foundry Standards, by W. A. Janssen, chairman, American Steel Foundries, Chicago.

"Operation of the Acid Electric Furnace," by L. B. Lindemuth, Carney & Lindemuth, New York.

"Values of the Present Methods of Measuring the Temperature of Molten Steel," by F. W. Brooke, Electric Furnace Construction Co., Philadelphia.

Entertainment Features

11:00 A. M.—Automobile trip for the ladies through Fairmount park to Valley Forge, where luncheon will be served.

2:00 P. M.—Golf Tournament, Whitemarsh Valley Golf club.

8:00 P. M.—Theater party for ladies and gentlemen at Keith's.

Thursday, Oct. 2

Gray Iron Session

10:00 A. M.—Professional session, American Foundrymen's association, Ball room, Bellevue-Stratford hotel.

"The Elimination of Strains in Iron Castings," by C. J. Wiltshire, General Electric Co., Schenectady, N. Y.

"The Value of a Scrap Pile," by Henry Traphagen, Toledo Steel Castings Co., Toledo, O.

"The Electric Furnace as an Adjunct to the Cupola," by George K. Elliott, Lunkenheimer Co., Cincinnati.

Report of the American Foundrymen's Association Committee on General Specifications for Gray Iron Castings, Dr. Richard Moldenke, Watchung, N. J.

"Side Blow Converter in Iron Foundry," by George P. Fisher, Whiting Foundry Equipment Co., Harvey, Ill.

"The Testing of Clays for Foundry Use," by Homer F. Staley, Bureau of Standards, Washington.

"Cerium in Cast Iron," by Dr. Richard Moldenke, Watchung, N. J.

Malleable Session

10:00 A. M.—Professional session, American Foundrymen's association, Clover room, Bellevue-Stratford hotel.

"Burning Fuel Oil in an Air Furnace," by J. P. Pero, Missouri Malleable Iron Co., E. St. Louis, Ill.

"The Application of Powdered Coal to Malleable Annealing Furnaces," by Charles Longenecker, The Bonnot Co., Pittsburgh.

"Efficient Use of Pulverized Coal in Malleable Foundry Practice," by Milton W. Arrowood, Ground Coal Engineering Co., Chicago.

"Powdered Coal as a Fuel in the Foundry," by H. A. Grindle, Combustion Economy Corp., Chicago.

"Relation Between Machining Qualities of Malleable Castings and Physical Tests," by Edwin K. Smith and William Barr, Wisconsin Malleable Iron Co., Milwaukee.

"The Refining of Cupola Malleable in the Electric Furnace," by A. W. Merrick, General Electric Co., Schenectady, N. Y.

Report of the American Foundrymen's Association Committee on Specifications for Malleable Castings, by Enrique Touceda, chairman, Albany, N. Y.

"Some Needs of the Malleable Iron Industry," by W. P. Putnam, Detroit Testing Laboratory, Detroit.

"A Note on Britain's Experimental Foundry," by G. Ernest Wells, Edgar Allen & Co., Sheffield, England.

"Galvanizing Malleable Castings," by Prof. Enrique Touceda, Albany, N. Y.

"Effects of Annealing Gray and Malleable Iron Bars in Copper Oxide Packing," H. E. Diller, THE FOUNDRY, Cleveland.

Industrial Relations Session

10:00 A. M.—Professional session, American Foundrymen's association, Red room, Bellevue-Stratford hotel.

"Training Men for Foundry Work," by C. C. Schoen, U. S. Dept. of Labor, Stamford, Conn.

"Personnel Problems of Modern Industry," by C. D. Dyer Jr., Hunt & Dyer, Philadelphia.

"Industrial Democracy and The Foreman," by John Calder, Business Training Corp., New York.

Report of the American Foundrymen's Association Committee on Safety, Sanitation and Fire Protection, by Victor T. Noonan, U. S. Mutual Liability Insurance Co., Quincy, Mass.

"Vocational Training for Foundry Occupations," by J. C. Wright, Federal Board for Vocational Education, Washington.

Entertainment Features

1:30 P. M.—For the ladies, visit to Wanamaker's store, plant of the Curtis Publishing Co., Independence hall, and other points of interest.

7:00 P. M.—Annual banquet, Bellevue-Stratford hotel, followed by dancing.

Friday, Oct. 3

General Topics

10:00 A. M.—Professional session, American Foundrymen's association, Ball room, Bellevue-Stratford hotel.

"The Economical Control and Handling of Patterns in a Large Foundry," by W. D. Jones, Canton Steel Foundry Co., Canton, O.

"Progress in the Application of Electric Arc Welding," by Robert E. Kinkead, Lincoln Electric Co., Cleveland.

"A New Cutting Gas," by Professor Alfred S. Kinsey, Stevens Institute of Technology, Hoboken, N. J.

"Welding Castings of Different Metals and Different Sections," by George B. Malone, Bayonne Steel Casting Co., Bayonne, N. J.

Report of the American Foundrymen's Association Committee Advisory to the United States Bureau of Standards, by Dr. Richard Moldenke, Watchung, N. J.

Report of American Foundrymen's Association Committee on Promotion and Membership, by A. E. Howell, chairman, Nashville, Tenn.

"High Temperature Cement for Lining Cupolas, etc.," by W. S. Quigley, Quigley Furnace Specialties Co., New York.

Installation of officers.

Departing from the precedent set in previous years, the exhibition of foundry, machine shop and rolling mill equipment in the Commercial Museum will open at 10 o'clock a. m., somewhat earlier than usual. Also the exhibition will be open Tuesday evening. The formal opening of the convention will take place in the ball room of the Bellevue-Stratford hotel, Tuesday morning, at 10 o'clock, when members of the American Foundrymen's association and Institute of Metals division of the American Institute of Mining and Metallurgical Engineers will convene in a joint session. The address of welcome, annual address of the president of the American Foundrymen's association, and reports of the board of directors and the officers of the organization will be presented at this session, together with papers on brass foundry practice. The first professional session of the Institute of Metals division will be held at 2:30 p. m., Tuesday, in the Ritz-Carlton hotel, and will be followed by two other sessions in the same hotel at 10 a. m., Wednesday and Thursday mornings. Condensed and detailed programs of both organizations appear elsewhere in this issue. The technical papers prepared for the American Foundrymen's association cover a wide range of subjects of unusual interest to foundrymen. Eleven distinct subjects are treated in the papers on miscellaneous subjects scheduled for presentation at the three sessions devoted to general topics. The authors of these papers will touch upon publicity work, the use of audible signals in foundries, combining hoisting apparatus with molding machines to good advantage, sand handling equipment, concrete floors for foundries, the care of foundry equipment, uniform methods of foundry cost accounting, scientific management as applied to foundries, handling patterns in a large foundry, various problems of welding castings by the electric arc and gas processes, and the use of high temperature cement for lining cupolas. Six papers will be presented at the steel session to be held Wednesday morning. "Electric versus Converter Steel" is the subject of a paper to be presented by John Howe Hall and G. R. Hanks. E. H. Ballard will compare the costs of electric and open-hearth furnace practice. Moving pictures showing the welding of a large steel casting on the transport NORTHERN PACIFIC, which went aground off Fire island in January, will accompany a paper on that subject to be presented by Arthur F. Braid. W. A. Janssen, chairman of the committee on steel foundry standards, will submit the report of that committee. Among the subjects to be discussed in the six papers scheduled for the gray-iron sessions to be held Thursday morning are, "The Elimination of Strains in Cast Iron," by C. J. Wiltshire; "The Testing of Clays for Foundry Use," by Homer F. Staley; and "The Electric Furnace as an Adjunct to the Cupola," by George K. Elliott. The use of powdered coal in malleable practice will be discussed in three of the 10 papers to be presented at the malleable iron session to be held Thursday morning simultaneously with the sessions on gray-iron and industrial relations. A paper entitled, "A Note on Britain's Experimental Foundry," by G. Ernest Wells, Edgar Allen & Co., Sheffield, England, who was in the British ministry of munitions, is expected to prove of unusual interest to American foundrymen who have not had frequent opportunities to obtain first-hand information on English foundry practice. Prof. Enrique Touceda will discuss malleable castings and H. E. Diller will outline the results of annealing gray and mal-



Carpenters' Hall
Where Continental Congress First Met

Program, Institute of Metals Division, A. I. M. M. E.

Monday, Sept. 29

10:00 A. M.—Registration, Ritz Carlton hotel.

10:00 A. M.—Opening of exhibit, Philadelphia Commercial Museum.

7:00 P. M.—Meeting and dinner of the executive committee.

Tuesday, Sept. 30

10:00 A. M.—Joint opening session, American Foundrymen's association and Institute of Metals Division, American Institute of Mining and Metallurgical Engineers, ball room, Bellevue-Stratford hotel. A. O. Backert, chairman, president American Foundrymen's association. (See American Foundrymen's program for details.)

2:30 P. M.—Professional session, Institute of Metals Division, Ritz-Carlton hotel.

Physical Properties of Nickel, by David H. Browne and J. F. Thompson.

Some properties and Applications of Rolled Zinc Strip and Drawn Zinc Rod, by C. H. Mathewson, C. S. Trewin and W. H. Finkeldey.

Afternoon—Boat ride on the Delaware river, terminating with a visit to the Hog Island shipyard.

Wednesday, Oct. 1

10:00 A. M.—Professional session, Institute of Metals Division, Ritz-Carlton hotel.

Five Foundry Tests of Zinc Bronzes, by C. P. Karr.

Influence of Heat Treatment on Gun Metal, by C. F. Smart.

Lead Zinc Bronzes, by H. F. Staley and C. P. Karr.

Manufacture and Electrical Properties of Manganin, by F. E. Bash.

Manufacture and Electrical Properties of Constantan, by F. E. Bash.

Tin Fusible Boiler Plug Manufacture and Testing, by L. J. Gurevich and J. S. Hromatko.

Simplification of Inverse-rate Method for Thermal Analysis, by P. D. Merica.

11:00 A. M.—Automobile trip for the ladies through Fairmount park to Valley Forge, where luncheon will be served.

2:00 P. M.—Golf tournament, Whitemarsh Valley Golf club.

8:00 P. M.—Theater party for ladies and gentlemen at Keith's.

Thursday, Oct. 2

10:00 A. M.—Professional session, Institute of Metals Division, Ritz-Carlton hotel.

Constitution and Metallography of Aluminum and Its Light Alloys with Copper and with Magnesium, by P. D. Merica, R. G. Waltenberg and J. R. Freeman Jr.

Heat Treatment and Constitution of Duralumin, by P. D. Merica, R. G. Waltenberg and H. Scott.

Heat Treatment of Aluminum Alloy Castings, by Zay Jeffries and W. A. Gibson.

Mechanical Properties and Resistance to Corrosion of Rolled Light Alloys of Aluminum and Magnesium with Copper, with Nickel and with Manganese, by P. D. Merica, R. G. Waltenberg and A. N. Finn.

Deterioration of Nickel Spark-plug Terminals in Service, by H. S. Rawdon and A. I. Krynitzky.

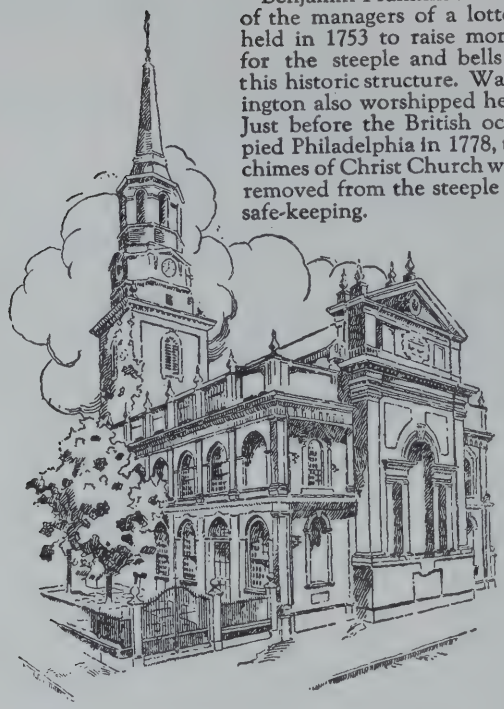
Grain Growth in Alpha Brass, by F. G. Smith.

1:30 P. M.—For the ladies, a visit to Wanamaker's store, plant of the Curtis Publishing Co., Independence hall, and other points of interest in Philadelphia.

7:00 p. m.—Annual banquet, Bellevue-Stratford hotel, followed by dancing.

Old Christ Church

Benjamin Franklin was one of the managers of a lottery held in 1753 to raise money for the steeple and bells of this historic structure. Washington also worshipped here. Just before the British occupied Philadelphia in 1778, the chimes of Christ Church were removed from the steeple for safe-keeping.



leable-iron bars in copper-oxide packing.

It is expected that an unusual amount of interest will be attracted by the session devoted to industrial relations to be held in the Red room of the Bellevue-Stratford hotel Thursday morning. The training of men for foundry work will receive considerable attention, the subject being introduced in papers to be presented by C. C. Schoen and J. C. Wright, who have had experience in dealing with this problem as members of federal boards of investigation. C. D. Dyer, Jr., will present a paper on personnel problems of modern industry and John Calder will discuss the role of the foreman in the plan of industrial democracy. The report of the committee on safety, sanitation and fire prevention will be submitted by Victor T. Noonan, chairman of that committee and a paper entitled "Safety Appliances and Welfare Work in Foundries" will be presented.

Two of the 15 technical papers on the program of the Institute of Metals division are scheduled for the opening professional session to be held at 2:30 p. m. Tuesday in the Ritz-Carlton hotel. David H. Browne and J. F. Thompson will present a paper on the properties of nickel. "Some Properties of and Applications of Rolled Zinc Strip and Drawn Zinc Rod" is the title of a paper prepared by C. H. Mathewson, C. S. Trewin and W. H. Finkeldey. At Wednesday morning's session C. P. Karr and H. F. Staley will present two papers dealing with zinc bronzes and the manufacture and electrical properties of manganin and constantin will be discussed in two papers by F. E. Bash. The subject in four of the six papers scheduled for the Thursday morning session. The other papers to be presented at this session deal with the deterioration of nickel spark-plug terminals and the grain growth in alpha brass.

The Inter-Allied Foundrymen's exhibition to be held in the Philadelphia Commercial Museum will far surpass anything ever attempted by any organization in the United States. The 60,000 square feet of floor space available in this hall, although 43 per cent in excess of any previous exhibit, has proved inadequate for the requirement of the manufacturers desiring to display equipment. In view of the extraordinary demands for space, the manager of exhibits was obliged to restrict the amount of space alloted to each exhibitor. On Sept. 8, three weeks before the opening of the convention, more than 200 manufacturers of foundry, machine shop and metal working equipment had signed contracts for space in the building. The 1919 exhibition will be different in many respects from those of the past five years. Many manufacturers of foundry equipment who, because of the pressure of war, were not able to participate in recent exhibits, will be represented at this year's show. More than 80 exhibitors who were not represented at Milwaukee last year will display equipment at Philadelphia. This year's show will be marked by an unusually large number of working exhibits, especially those consisting of machine tools and molding machines.

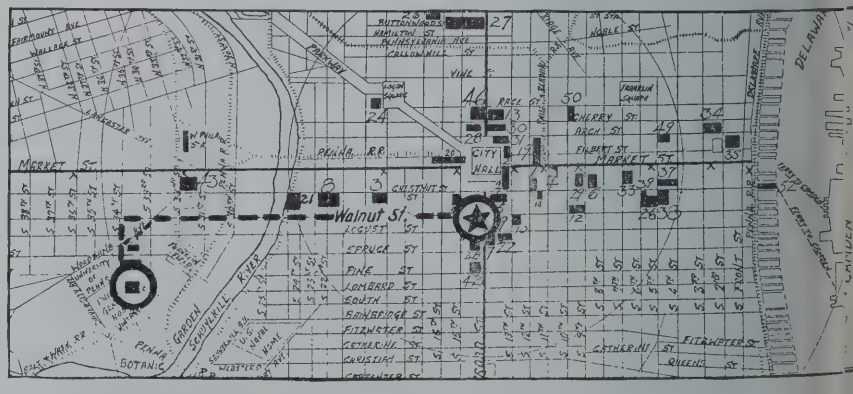
In recognition of and to commemorate the convention, the International Shipbuilding Corp. has arranged to launch a ship at the Hog Island yard on Tuesday afternoon, Sept. 30. This ship will be named AFOUNDRIA in honor of the American Foundrymen's association and the great industry which this organization represents. The AFOUNDRIA will be christened by Mrs. A. O. Backert, wife of the president of the association. The launching of the AFOUNDRIA will be one of the features of the boat ride on the Delaware river. The boat will leave the Chestnut street wharf at 1:30 p. m. The name of the ship AFOUNDRIA was coined from the first letters of the name of the association, namely, A. F. A. and the word "foundry."

Wednesday morning promptly at 11 o'clock the ladies will be taken on an automobile trip through Fairmount park to Valley Forge where luncheon will be served. A golf tournament will be held Wednesday afternoon at the Whitemarsh Valley Golf club and at 8:15 p. m. a theater party will be given for ladies and gentlemen at Keith's. Thursday afternoon the ladies will be given an opportunity to visit Wanamaker's store, the plant of the Curtis Publishing Co., Independence hall, and other points of interest in the city.

Speakers from both sides of the Atlantic will appear at the annual banquet which will be held at the Bellevue-Stratford hotel Tuesday evening, Oct. 2. The program includes Hon. James M. Beck, one of the foremost orators in the country, and Sir Ellis W. Hume-Williams, a distinguished citizen of Great Britain. Dancing will follow the banquet.

Special arrangements will be made during the week for visiting foundrymen who desire to inspect industrial plants in Philadelphia and vicinity.

How to Find Your Way in T



The Bellevue-Stratford and Ritz-Carlton hotels, where the A. F. A. and Institute of Metals di will hold their meetings are situated on opposite sides of Broad street at the intersection of Walnut e This is shown on the map by the star within a circle. The Philadelphia Commercial Museum, h

1919 Show Will Surpass All Previous Exhibitions



The Exhibition opens Monday, Sept. 29, at 10:00 a. m. It is Open Daily from 9:00 a. m. to 5:00 p. m. until 5:00 p. m. Friday, Oct. 3. The Floor Space Devoted to Exhibits is 60,000 Square Feet. Many New Exhibitors Have Reserved Space.

ABRASIVE CO., Philadelphia.—This company will exhibit abrasive wheels, bricks and sticks. Grinding wheels of a carbide of silicon abrasive and wheels of an aluminous abrasive will be shown. Basic materials of interest to foundrymen will be exhibited; represented by J. H. Byers and R. R. Stagmer.

ACHESON GRAPHITE CO., Niagara Falls, N. Y.—This exhibit will consist of threaded electric furnace products including skimmers' and cutting and welding electrodes; represented by Acheson Smith, Lyman C. Judson and Atwood Boatman.

AIR REDUCTION SALES CO., New York.—A complete line of welding and cutting apparatus, including oxygen and acetylene, and acetylene generators, will be exhibited; represented by E. L. Mills, A. S. Kinsey, E. M. Sexton, L. A. Sholes, A. R. Ludlow, A. D. Frost, W. P. Roberts, H. F. Weldin, D. Sinclair, B. N. Law and G. Walker.

AJAX METAL CO., Philalelphia.—This company will exhibit an Ajax-Wyatt electric furnace and a group of yellow brass ingots made in this furnace. The ingots have a depression on each side so that tongs will grip them securely. A series of ingots made to different formulas and a variety of castings made from similar ingots will be displayed. Babbitt metals of all kinds will be shown; represented by G. H. Clamer, Frank M. Willeson, A. MacDougall, Louis E. Purnell, John G. Miller, J. M. Graham, S. E. McClure, J. C. Brightbill, C. E. Hopkins, James R. Wyatt and William J. Coane.

AMERICAN GUM PRODUCTS CO., New York.—Cores made with the binder manufactured by this company and castings produced by the use of these cores will be exhibited; represented by Gordon I. Lindsay, W. Edward Baird, M. F. Coughlin, C. F. Witters and F. B. Thomas.

AMERICAN KRON SCALE CO., New York.—The automatic springless dial scale for foundries made by this company will be demonstrated; represented by G. H. Harper, Arnold Peterson and J. J. Kelly.

AMERICAN MANGANESE BRONZE CO., Phiadelphia—A 100,000-pound capacity electrically driven Olsen testing machine will be shown in operation. Exhibitors are invited to bring test pieces to have them tested free of charge. The company also will exhibit manganese bronze ingots and intricate castings made from these ingots; represented by C. R. Spare, T. H. Addie, C. E. Schley and C. J. Bower.

AMERICAN OIL & SUPPLY CO., Newark, N. J.—Cores made with the core oil manufactured by this company will be exhibited; represented by E. F. Hoffmann, W. H. Fitzpatrick and A. E. Jones.

AMERICAN TOOL WORKS CO., Cincinnati.—Three radial drills, a shaper, two lathes and a planer will be exhibited. (See Vandyck Churchill Co.); represented by J. C. Hussey, Robert S. Alter, H. W. Schatz, F. L. Stubenroth and C. R. Connors.

AMERICAN WOOD WORKING MACHINERY CO., Rochester, N. Y.—Wood working machines for pattern making will be exhibited; represented by R. T. Martin.

ARCADE MFG. CO., Freeport, Ill.—Various types of the molding machines manufactured by this company, including the hand-operated pattern, the air-operated and the jolt machines will be exhibited. The company will also exhibit one type of air squeezer, a combined jolt and squeezer and four different sizes of core jolters, a jarring machine and a pouring device; represented by E. H. Morgan, Charles Morgan, L. L. Munn, Henry Tscherning, R. E. Turnbull, August Christen, G. D. Wolfley and Mentor Wheat.

ARMSTRONG CORK & INSULATION CO., Pittsburgh.—Insulating materials, including insulating brick for furnaces, core ovens, boiler settings and other high temperature equipment; covering for steam lines, feed water heaters, tank, etc.; cork covering for refrigerated drinking water systems in mills, factories and industrial establishments; corkboard insulation for cold storage and constant temperature rooms, and tile for floors in offices, residences, etc., will be exhibited.

ARROW FORGING & TOOL WORKS, Chicago.—Chisels particularly designed for cleaning castings and various tools used in shipyards and machine shops will be displayed; represented by L. G. Groessl, Benedict, and H. E. Pollard.

ASBURY GRAPHITE WORKS, Asbury, N. J.—The booth occupied by this company will be fitted up as a rest room. Samples of refined graphites and crude graphite from various localities and countries, will be shown; represented by H. M. Riddle Sr., H. M. Riddle Jr. and E. H. Thompson.

ATKINS, E. C., & CO., Indianapolis.—Metal cutting band saw machines, hack saw blades, hack saw frames, metal cutting circular saws and pattern plates will be exhibited; represented by T. H. Endicott, C. F. Neth, Edward Norvel and T. A. Carroll.

AUDUBON WIRE CLOTH CO., Audubon, N. J.—This company proposes to illustrate in detail the construction of foundry riddles, various grades of wire cloth for foundry use, screening and other wire products; represented by Robert T. Korb, William H. Egee and John D. Heins.

AUSTIN CO., Cleveland.—This company will exhibit models, drawings, photographs and literature on standard buildings. Information regarding foundry and steel plant service afforded by this company will be available. The models of buildings will be large enough to show the method of construction, relative sizes and arrangement of foundry equipment; represented by Benton Hopkins, G. A. Dodge, L. D. Stauffer, J. C. Childs, W. L. Bailey and O. D. Conover.

BARRETT CO., Chicago.—Core compounds and facings will be exhibited. The booth will be fitted up as a rest room; represented by W. M. Wilson.

BARTLEY, JONATHAN, CRUCIBLE CO., Trenton, N. J.—The booth occupied by this company will be fitted up as a rest room to which foundrymen are invited; represented by S. H. Dougherty, James W. Tighe, F. P. Welton, Lee T. Ward, M. H. Fike and Lewis H. Lawton Jr.

BERKSHIRE MFG. CO., Cleveland.—Squeezer molding machines of the air and hand operated types, vibrators, snap flasks and pattern equipment will be exhibited by this company; represented by W. D. Fraser and G. L. Cannon.

BESLY, CHAS. H., & CO., Chicago.—Disc and ring wheel, single and double spindle grinders will be demonstrated. A vertical spindle grinder, particularly adapted for foundry work for grinding flasks, will be shown. A patternmaker's disc grinder also will be exhibited under power; represented by E. P. Welles and C. A. Knill.

BIRKENSTEIN, S., & SONS, Chicago.—This company will exhibit nonferrous metals including ingot brass, ingot bronze, ingot copper, pig tin, pig lead, aluminum, manganese bronze, solder, babbitt, phosphor copper and phosphor tin. Castings made from these products also will be shown; represented by H. Birkenstein, C. Raphael, M. Isaacson, E. Schwab, M. Strauss, N. A. Goldman, N. W. Slohm, H. Gildstine, C. Shamroth, J. W. Long, M. Schero and L. Kahan.

BLACK DIAMOND SAW & MACHINE CO., Natick, Mass.—A combined band saw filing and setting machine for setting and filing both wood and metal cutting band saws; a circular saw filing machine; a beveled tooth circular filing machine for wood-cutting circular saws; a brazing outfit for brazing narrow band saws, both wood and metals, and a special metal cutting band saw for sawing brass, bronze and aluminum, will be shown; represented by Walter B. Ambler, Edward Gordon and Strand and Anderson.

BLYSTONE MFG. CO., Cambridge Springs, Pa.—A 7-cubic foot motor driven core sand mixer equipped with a revolving screen will be shown in operation; represented by Luther G. Conroe.

BOOTH-HALL CO., Chicago.—Electric furnace

BORGNER, CYRUS, CO., Philadelphia.—Samples of refractories for use in foundries will be exhibited; represented by George H. Dickel Jr.

BRASS WORLD PUBLISHING CO., New York.—The booth occupied by this company will be fitted out as a rest room; represented by G. A. Tanner, C. N. Manfred, William F. Carns, George A. Jones, C. H. E. Redding.

BROWN INSTRUMENT CO., Philadelphia.—This company will exhibit a complete line of pyrometers, recording thermometers, recording pressure gages, recording tachometers, draft gages, etc. An attempt will be made in this exhibit to show by demonstration the necessity of giving considerable study to the question of core drying; represented by J. P. Goheen, C. C. McDermott, L. M. Morley, J. L. Hacker and A. H. Edwards.

BROWNING, VICTOR R., & CO., Cleveland.—Two half-ton electric hoists of the type developed by this

Convention City

...s will register and where the exhibition will be held ... South Thirty-fourth street below Spruce, as shown by ... ack square within a circle. To reach the exhibition ... Broad street, take a westbound Walnut street car, ... at Thirty-fourth street and walk south to the ... The following is a key to other points in the ... ion city:

Other Hotels

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... Bingham
... nnade
... een's
... lton
... tenhouse
... James

Railroad Stations

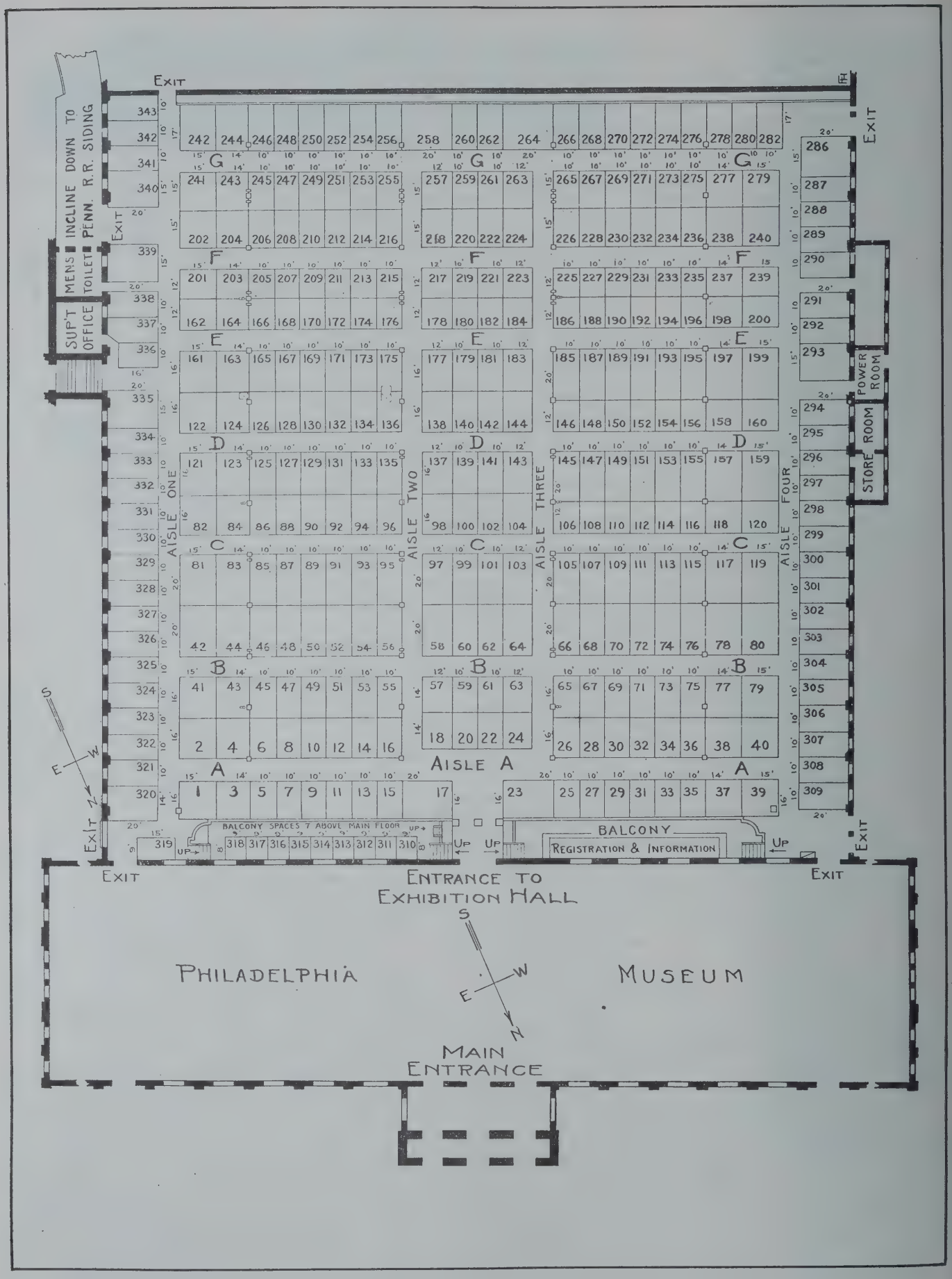
... iladelphia & Reading
... nsylvania
... ltimore & Ohio

Theaters

... ademy of Music
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Points of Interest

22. Historical society
24. Academy of Natural Sciences
26. United States mint
27. Baldwin Locomotive works
28. Academy of Fine Arts
29. Central post office
33. Franklin institute
34. Betsy Ross house
35. Christ church
36. Independence hall
37. The Bourse
38. Custom House
39. Carpenter's hall
43. Drexel institute
52. Chestnut street wharf
X. Subway—elevated stations



EXHIBITION HALL, PHILADELPHIA COMMERCIAL MUSEUM, WITH EXHIBITORS' BOOTHS NUMERICALLY INDICATED

The Philadelphia Commercial Museum is on South Thirty-fourth street below Spruce street. For directions for reaching the museum from Broad street see pages 824 and 825

List of Exhibitors at Philadelphia Show

No. of Booth	Exhibitor
8	Abrasive Co.
75	Acheson Graphite Co.
320, 321	Air Reduction Sales Co.
96, 98, 100, 102, 104	Ajax Metal Co.
65	American Gum Products Co.
10	American Kron Scale Co.
38	American Manganese Bronze Co.
178	American Oil & Supply Co.
289, 290	American Wood Working Mchy. Co.
185, 187, 189, 191	Arcade Mfg. Co.
88	Armstrong Cork & Insulation Co.
130	Arrow Forging & Tool Works.
71	Asbury Graphite Mills.
2, 4	Atkins, E. C., & Co., Inc.
315	Audubon Wire Cloth Co.
3	Austin Co., The
	American Tool Works.
311	Barrett Co.
29, 31	Bartley, Jonathan, Crucible Co.
160	Berkshire Mfg. Co.
81, 83	Besly, Chas. H., & Co.
34	Birkenstein, S., & Sons, Inc.
45	Black Diamond Saw & Machine Co.
	Blystone Mfg. Co.
168	Booth-Hall Co.
312	Borgner, Cyrus, Co.
30	Brass World Publishing Co.
36	Brown Instrument Co.
193	Browning, Victor R., & Co.
230, 232	Buch Foundry Equipment Co.
322, 323	Bullard Machine Tool Co.
216	Carborundum Co.
269, 271	Champion Foundry & Machine Co.
91	Chase, Frank D., Inc.
341, 342, 343	Chesapeake Iron Works.
101	Chicago Crucible Co.
333, 334, 335	Chicago Pneumatic Tool Co.
329, 330	Cincinnati Pulley Machinery Co.
110	Clark, Chas. J.
301, 302, 303, 304	Cleveland Osborn Mfg. Co.
96	Cleveland Pneumatic Tool Co.
51	Clipper Belt Lacer Co.
260, 262	Coale, Thomas E., Lumber Co.
221	Combined Supply & Equipment Co.
151	Combustion Economy Corp.
318	Collieries Supply & Equipment Co.
132	Corn Products Refining Co.
198, 200	Curtis Pneumatic Machinery Co.
23, 25	*Daily Iron Trade and Metal Market Report.*
277, 279	Davenport Machine & Foundry Co.
287, 288	Davis-Bournonville Co.
141, 143	Debevoise-Anderson Co.
127, 129	Dings Magnetic Separator Co.
89, 91	Disston, Henry, & Sons.
18	Dixon, Joseph, Crucible Co.
263	Electric Furnace Co.
140	Electric Furnace Construction Co.
43	Emmert Mfg. Co.
234, 236, 273, 275	Federal Foundry Supply Co.
223	Foreign Crucibles Corp.
23, 25	*Foundry, The*
238	Foundry Appliance Co.
237, 239	Foundry Equipment Co.
316	Foundry Manganese Co.
122, 124, 126, 128	Gardner Machine Co.
324, 325, 326	General Electric Co.
	Geometric Tool Co.
245	Gordon, Robert, Inc.
137, 139	Graceton Coke Co.
206, 208	Grand Rapids Grinding Machine Co.
114, 116	Great Western Mfg. Co.
106	Grimes Molding Machine Co.
57	Hardy, Clement A., Co.
12	Hardy, F. A., & Co.
5	Harris, Benjamin, & Co.
136	Hauck Mfg. Co.
194, 196	Hausfeld Co.
166	Haynes Stellite Co.
202, 204	Hayward Company.
254, 256	Heald Machine Co.
241, 243	Herbert, Alfred, Ltd.
258	Herman Pneumatic Machine Co.
	Higley Machine Co.
242, 244	Hoevel Mfg. Co.
310	Holcroft & Co.
97, 99	Hyatt Roller Bearing Co.
337	Industrial Electric Furnace Co.
175	Ingersoll-Rand Co.
	International Machine Tool Co.
39	International Molding Machine Co.
32	Interstate Sand Co.
15, 17	*Iron Age.*
23, 25	*Iron Trade Review, The*
20	Jennison-Wright Co.
215	Keller Pneumatic Tool Co.
144	Kellogg, Spencer, & Sons, Inc.
259	Kelly, T. P., Co.
61	King, Julius, Optical Co.
181	Klaxson Co.
27	Knoeppel, C. E., & Co.
	Kempsmith Mfg. Co.
172	Lane, H. M., Co.
170	Leeds & Northrup Co.
251	Liberty Supply Co.
255	Liberty Steel Products Co., Inc.
338	Lincoln Electric Co.
211	Lindsay Chaplet & Mfg. Co.
90, 92	Link Belt Co.
78, 80	Louden Machinery Co.
95	Lupton's, David, Sons Co.
113, 115	McCormick, J. S., Co.
41	McCrosky Tool Corp.
103	McLain's System, Inc.
22	Maclean Publishing Co.
278, 280	Macleod Company, The
201	Magnetic Mfg. Co.
203	Mahr Mfg. Co.
240	Malleable Iron Fittings Co.
77	Marden, Orth & Hastings Co.
205	Mason, Arthur C., Inc.
6	Maxon Premix Burner Co.
112	Menefee Foundry Co.
177	Mercury Mfg. Co.
59	*Metal Industry.*
16	Metal & Thermit Corp.
138	Michigan Smelting & Refining Co.
7	Mifflin Chemical Co.
282	Milburn, Alexander, Co.
339	Mine & Smelter Supply Co.
72, 74, 76	Monarch Engineering & Mfg. Co.
161, 163, 165, 167	Monarch Machinery Co.
286	Mott Sand Blast Co.
158	Mumford Molding Machine Co.
162	Napier Saw Works, Inc.
117, 119	National Engineering Co.
153, 155	Nicholls, William H., Co.
49	Norma Co. of America.
131, 133, 135	Norton Co.
	Oakley Machine Tool Co.
66, 68, 70	Obermayer, S., Co.
180	Ohio Blower Co.
169	Oldham, George, & Son Co.
157, 159, 118, 120	Oliver Machinery Co.
331, 332	Oxweld Acetylene Co.
264, 266, 268, 270, 272, 274,	
276	Pangborn Corp.
305, 306, 307, 308, 309	Paxson, J. W., Co.
23, 25	Penton Publishing Co.
222	Pettinos, Charles E.
13	Pettinos, George F.
207	Philadelphia Grease Co.
9, 11	Pickands, Brown & Co.
224	Pittsburgh Crushed Steel Co.
195	Pittsburgh Furnace Co.
145, 147, 149	Pridmore, Henry E., Inc.
182	Portage Silica Co.
250	Providence Gas Co.
40	Quigley Furnace Specialties Co.
210, 212	Racine Tool & Machine Co.
53, 55	Railway Mechanical Engineer.
24	Rainey, W. J.
179	Republic Creosoting Co.
225, 227, 229	Rich Foundry Equipment Co.
33, 35	Richards Wilcox Mfg. Co.
37	Robeson Process Co.
62, 64	Rogers, Brown & Co.
73	Roots, P. H. & F. M., Co.
231, 233, 235, 186, 188, 190, 192	Sand Mixing Machine Co.
121, 123	Sellers, William, & Co., Inc.
82, 84, 86	Shepard Electric Crane & Hoist Co.
47	Simonds Mfg. Co.
252	Skinner Bros. Mfg. Co.
226, 265	Sly, W. W., Mfg. Co.
63	Smith, R. P., & Sons Co.
58, 60	Smith, Werner G., Co.
291	Spencer Turbine Co.
111	Standard Sand & Machine Co.
171	Standard Shop Equipment Co., Inc.
257, 218, 220	Sterling Wheelbarrow Co.
249	Strauss & Buegeleisen.
292, 293	Sullivan Machinery Co.
184	Swan & Finch Co.
85	Swind Machinery Co.
294, 295, 296, 297, 298, 299, 300	Tabor Mfg. Co.
164	Thomas Elevator Co.
183	Thomas Iron Co.
313	Thompson, Lewis, & Co., Inc.
1	Truscon Steel Co.
219	United Compound Co.
142	United States Graphite Co.
197, 199	U. S. Molding Machine Co.
217	United States Silica Co.
42, 44, 46, 48, 50, 52	Van Dyck-Churchill Co.
336	Vibrating Machinery Co.
209	Willson, T. A., & Co.
340	Wadsforth, H. L.
176	Wadsworth Core Machine & Equipment Co.
110	Wangelin, Walter H., & Co.
56	Wallace, J. D., & Co.
327, 328	Warner & Swasey Co.
246, 248	Westinghouse Electric & Mfg. Co.
26	White & Bro., Inc.
261	Whitehead Bros. Co.
105, 107, 109	Whiting Foundry Equipment Co.
69	Wood's, T. B., Sons Co.
146, 148, 150, 152, 154, 156	Woodison, E. J., Co.
125	Whitman & Barnes Mfg. Co.
79	Young Bros. Co.

company will be exhibited; represented by Sheldon M. Hird, C. R. Rudinger and Harry H. Green.

BUCH FOUNDRY EQUIPMENT CO., York, Pa.—This company will exhibit corrugated steel molding flasks, aluminum flasks, pattern frames, adjustable jackets, adjustable steel bars and electrically and air operated jar, squeeze, rollover and pattern draw molding machines; represented by R. S. Buch and D. C. Coble.

BULLARD MACHINE TOOL CO., Bridgeport, Conn.—This company will exhibit an 8-inch automatic multiple vertical boring mill in operation; represented by S. H. Bullard, F. B. Smith, J. W. Bray, John Beirne, Frank E. Hatch Jr. and J. H. Van Yorx.

CARBORUNDUM CO., Niagara Falls, N. Y.—Departing somewhat from its usual exhibit, the company this year will feature refractories. A Gilbert & Parker furnace equipped with an entire lining of carborundum refractory material will be operated during the convention. Seven different refractory cements and other forms of refractories, including brick will be exhibited and demonstrated. As usual, abrasive materials for use in foundries will be shown; represented by C. E. Hawke, H. E. Kerwin, O. C. Dobson, W. L. Meek, H. G. Kretchmar and G. T. Estabrook.

CHAMPION FOUNDRY & MACHINE CO., Chicago.—A 16-inch jolt rollover molding machine fitted with a pattern and operated as a molding machine, and a similar machine fitted with a core box and operated as a core machine will be exhibited. An electrically operated sand riddle will also be shown in operation; represented by T. J. Magnuson, H. O. Magnuson and A. Magnuson.

CHASE, FRANK, D., Inc., Chicago.—This exhibit will consist of photographs and descriptions of foundries designed and built by this company; represented by Frank D. Chase, Morris W. Lee, W. H. Lenish, A. A. Wicklahd, C. B. Teter.

CHESAPEAKE IRON WORKS, Baltimore, Md.—The exhibit will show the features of the electric traveling crane manufactured by this company and illustrate the character of the great variety of steel structures and bridges that it has built and erected in the United States.

CHICAGO PNEUMATIC TOOL CO., Chicago.—A 14 x 9 x 14-inch air compressor will be operated by this company. It also will exhibit chipping and riveting hammers of all sizes, air and electric drills, pneumatic and electric grinders, sand rammers for bench and floor work, pneumatic geared and cylinder hoists, air hose, hose couplings, and miscellaneous accessories; represented by W. P. Pressinger, A. C. Andresen, A. M. Brown, Nelson B. Gatch, R. F. Eissler, T. G. Smallwood, Ross Watson and T. G. Slingman.

CINCINNATI PULLEY MACHINERY CO., Cincinnati.—Representative sizes and styles of drilling machines manufactured by this company, including machines particularly designed for speeds as high as 12,000 revolutions per minute will be exhibited. Three sizes of sensitive machines, an automatic drilling machine, and machines equipped with built-in tapping attachments will also be shown; represented by J. G. Hey, J. F. Mirrielees and D. A. Patterson.

CLARK, CHARLES J., Chicago.—Blast volume meters and other instruments will be exhibited; represented by Charles J. Clark.

CLEVELAND OSBORN MFG. CO., Cleveland.—Molding machines will be exhibited, including direct draw roll over jolt machines, combination jolt stripper squeezer machines, plain air squeezers, combination jolt squeezers, hand roll over machines and core jolt machines; represented by J. C. Alberts, H. R. Atwater, E. J. Byerlein, E. T. Doddridge, H. E. Deakins, R. E. Kiefer, E. W. Jacobi and F. T. Spikerman.

CLEVELAND PNEUMATIC TOOL CO., Cleveland.—Pneumatic tools and accessories including riveting and chipping hammers; air drills; foundry rammers in two sizes, for floor bench and core work; portable emery grinders in two sizes for use in steel, gray iron and aluminum work; air hose couplings in sizes from ¼ to 1¼-inch; pressure seated air valves, and air hose fittings will be exhibited. The foundry tools will be in operation during the convention; represented by H. S. Covey, Arthur Scott, H. C. Newton, Charles Garner, G. Gregory, F. E. Schwarze and Capt. Frank H. Burr.

CLIPPER BELT LACER CO., Grand Rapids, Mich.—Belt lacers, belt hooks, and twisted rawhide and composition pins used with them will be exhibited. The belt lacer which is operated by hand, will be demonstrated; represented by William F. Kall.

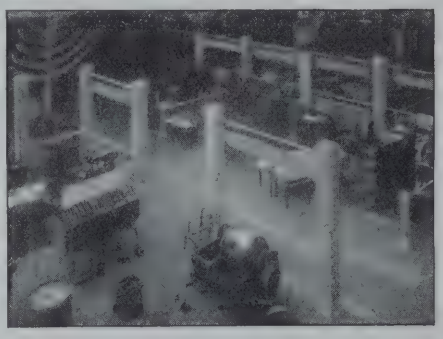
COALE, THOS. E., LUMBER CO., Philadelphia.—Pattern lumber including Michigan soft cork white pine and California sugar pine will be exhibited; represented by Thomas E. Coale and A. Warren Anderson.

COLLIERIES SUPPLY & EQUIPMENT CO., Buffalo.

COMBINED SUPPLY & EQUIPMENT CO., Buffalo.—The chaplets and skim gates manufactured by this company will be exhibited; represented by Stephen LeViness Jr. and C. L. Jackson.

COMBUSTION ECONOMY CORP., Chicago.—A new design of powdered coal feeding and burning equipment equipped with an air-tight rotary air gate, a variable speed direct connected gear case with speeds marked to conform with the operation of the air gate, and a powdered coal carburetor will be displayed. This equipment has a maximum capacity of 75 pounds of coal per minute; represented by George Furman and A. J. Grindle.

CORN PRODUCTS REFINING CO., New York.—The making of cores with the core binder manufactured by this company will be demonstrated. A collection of cores made in this manner will be exhibited; represented by S. B. Krantz, J. A. Oates, F. G. Faller Jr., A. H. Kreischer, D. T. McGrory and J. M. Remmes.



A CORNER IN SHOW TWO YEARS AGO

CURTIS PNEUMATIC MACHINERY CO., St. Louis.—This company will have an operating exhibit consisting of an overhead pneumatic crane with air hoist, an electrically driven double cylinder air compressor, a bracketed jib crane, single I-beam trolleys and air hoists. All equipment will be operating under actual foundry and machine shop conditions; represented by Joseph Macksey and C. C. Main.

DAILY IRON TRADE AND METAL MARKET REPORT, Cleveland.—This booth will be fitted up as a rest room for visitors where all are invited to make their headquarters; represented by John A. Penton, A. O. Backert, J. D. Pease, H. Cole Estep, G. O. Hays, E. L. Shaner, H. E. Diller, D. M. Avey, Pat Dwyer, Charles Vickers, J. F. Ahrens, F. V. Cole, H. O. Taylor and Paul R. Fisher.

WANGELIN, WALTER H., & CO., St. Louis.—A calculator by which mixtures of iron may be rapidly figured will be exhibited; represented by Walter H. Wangelin.

DAVENPORT MACHINE & FOUNDRY CO., Davenport, Iowa.—Molding machines, including a combination jolt roll over pattern draw machine; a 30 x 30-inch jolt stripper and a jolt squeezer will be exhibited; represented by J. T. Anderson, A. V. Magnuson, A. Ziebarth, William Hetzel and Carl Falk.

DAVIS-BOURNONVILLE CO., Jersey City, N. J.—Oxyacetylene welding and cutting apparatus, including stationary and portable equipment, acetylene pressure generators, torches, regulators, etc., and recent developments in cutting and welding machines will be exhibited; represented by W. W. Barnes and H. H. Dyar.

DEBEVOISE-ANDERSON CO., New York.—The exhibit will consist of samples of foundry, furnace and crushed coke; coke and charcoal iron; iron ore; iron ore nodules; fluor spar; ganister; limestone, calcite and dolomite; represented by N. Anderson, P. Debevoise, C. K. Sutton, P. Brooks and C. A. Wyatt.

DINGS MAGNETIC SEPARATOR CO., Milwaukee.—Three of the standard foundry type separators made by this company, including a 12 x 18-inch complete pulley separator, and all equipped with motors for self contained drive, will be exhibited; represented by E. S. Hirschberg and R. A. Manegold.

DISSTON, HENRY, & SONS, Philadelphia.—This company will exhibit a large metal cutting machine in operation. Various types of saws for cutting several kinds of metal will be displayed; represented by W. R. Kendall, Joseph Dorrington, R. B. Mackenzie, R. H. Harris and Messrs. Paul, Dorsey and Bean.

DIXON, JOSEPH, CRUCIBLE CO., Jersey City, N. J.—Various sizes of standard crucibles, covers, scorifiers and phosphorizers will be shown; represented by H. C. Sorenson, R. R. Belleville, J. A. Condit, C. A. Shaw, R. H. Brinkerhoff, R. F. Leonard and J. Moses.

ELECTRIC FURNACE CO., Alliance, O.—Castings produced in various foundries by means of the electric furnaces made by this company will be shown. Two moving picture reels of installations, one showing brass melting equipment and another showing heat-treating furnaces, will be displayed in the booth occupied by this company; represented by R. F. Benzinger and D. D. Miller.

ELECTRIC FURNACE CONSTRUCTION CO., Philadelphia.—The booth occupied by this company will be fitted up as a rest room and office, and pamphlets, photographs and possibly samples of steel produced in Greaves-Etchells electric furnaces, may be shown; represented by Frank Hodson, F. W. Brooke, H. H. Twose and Neil Neville.

EMMERT MFG. CO., Waynesboro, Pa.—A drawing instrument, adjustable drawing board equipment and universal bench vises for wood and metal workers will be exhibited. Oscillating and disc sanders, saw filing and setting machine, drill chuck, steel clamps, grinders and bench planer, a band saw, a bench saw and several other wood working tools will be shown; represented by Edward Gordon, H. S. Kuhn, A. G. Blazier, D. C. Kane and J. Lapides.

FEDERAL FOUNDRY SUPPLY CO., Cleveland.—A new molding machine designed by John T. Stoney, superintendent at the Ferro Foundry & Machine Co., Cleveland, will be exhibited. With this machine, it is claimed, that four men can mold at one time. A number of machines, including plain jolts, combination jolt and squeeze and plain squeezer machines and air and electrically operated vibrators and snap flasks will be shown; represented by Ralph Ditty, Ellsworth Kaye, W. J. Smith, John Bayer and H. W. Trevett.

FOREIGN CRUCIBLE CORP., New York.—French graphite crucibles which can be made in any of the standard American sizes for brass and steel melting will be exhibited; represented by R. N. Stevens and L. J. Rebele.

FOUNDRY, THE, Cleveland.—This booth will be fitted up as a rest room for visitors where all are invited to make their headquarters; represented by John A. Penton, A. O. Backert, J. D. Pease, H. Cole Estep, G. O. Hays, E. L. Shaner, H. E. Diller, D. M. Avey, Pat Dwyer, Charles Vickers, J. F. Ahrens, F. V. Cole, H. O. Taylor and Paul R. Fisher.

FOUNDRY APPLIANCE CO., Newark, N. J.—The cope handling device manufactured by this company will be exhibited. This device is an attachment to a squeezer type molding machine which handles the cope and draws the pattern; represented by J. N. Frantz.

FOUNDRY EQUIPMENT CO., Cleveland.—Various types of ovens for cores and molds will be shown; represented by F. A. Coleman and C. A. Barnett.

FOUNDRY MANGANESE CO., Philadelphia.—This exhibit will consist of ground and lump ferromanganese and silicon, and ground chrome ore; represented by Horace Morgan.

GARDNER MACHINE CO., Beloit, Wis.—This company will exhibit new roll grinders, representative

single spindle disc grinders, heavy duty disc grinders and a 53-inch vertical spindle disc grinder; represented by W. B. Leshman, W. L. Townsend, H. C. Steinbuck, A. A. Swinnerton and F. M. Risler.

GENERAL ELECTRIC CO., Schenectady, N. Y.—An arc welding set will be exhibited; also a cupola blower compressor driven by a 30-horsepower motor. The compressor has a capacity of 4500 cubic feet per minute with one pound pressure when operating at 3450 revolutions per minute; represented by J. M. Hollister, B. L. Spain, B. C. Tracy, L. W. Shugg, Edmond Vonseteeg and C. K. West.

GEOMETRIC TOOL CO., New Haven, Conn.—Threading tools with examples of work performed by them will be exhibited at booth of Vandyck-Churchill Co.; represented by C. F. White.

GORDON, ROBERT, INC., Chicago.—A mechanical hot blast heater will be exhibited. This heater has a capacity to circulate 10,000 cubic feet of air per minute at approximately 200 degrees Fahr. The heater will be in operation and a special casing will be designed for this exhibition so that the heater may be opened to show internal construction; represented by T. H. Monaghan, H. H. Engle and R. M. Zimmerman.

GRACETON COKE CO., Graceton, Indiana Co., Pa.—Foundry coke and castings and photographs of castings manufactured by users of the coke made by this company will be exhibited. Views of the plant will be displayed; represented by C. M. Lyngle.

GRAND RAPIDS GRINDING MACHINE CO., Grand Rapids, Mich.—The exhibit will consist of grinding machinery, including two types of universal cutter, reamer and tool grinders; five types of drill grinders, two of which will be operated, and new grinders for castings; represented by Owen Livingston and J. Cekoning.

GREAT WESTERN MFG. CO., Leavenworth, Kans.—Three types of gyratory foundry riddles, and renewable bottom sieves will be shown by this company; represented by F. A. Pickett and George W. Combs.

GRIMES MOLDING MACHINE CO., Detroit.—A new model jolt rollover molding machine and a small hand rollover molding machine will be exhibited; represented by George L. Grimes, L. V. Grimes, Charles Skeffington and Oswald Corliss.

HARDY, CLEMENT A., CO., Chicago.—Photographs of plants under construction by this company, including foundries for the Defiance Machine Works and the Hercules Gas Engine Co., will be shown; represented by C. A. Hardy.

HARDY, F. A., & CO., Chicago.—Safety goggles, eye protectors, masks, helmets, etc., will be displayed. The company also will exhibit safety signs, leggings, gloves and hospital apparatus; represented by A. U. Barnes.

HARRIS, BENJAMIN, & CO., Chicago.—Yellow brass and composition ingots and copper bearing materials will be exhibited in the booth occupied by this company; represented by Louis Goldman, Nathan Harris, Oscar Harris, Max Goldman and Dean F. Carscadden.

HAUCK MFG. CO., Brooklyn, N. Y.—This company will exhibit oil burning apparatus for lighting cupolas, heating ladles, drying molds and patching cores; furnaces for melting metals; sand dryers; hand kerosene torches; rivet forges; brazing and blacksmith forges; furnace burners of the low and also high pressure types; preheaters for welding; soldering iron heating furnaces, and salamanders; represented by Arthur E. Hauck, H. H. Kress, A. H. Stein, G. N. Broadhurst, G. T. Shanley, F. E. Giersch and A. M. Thomson.

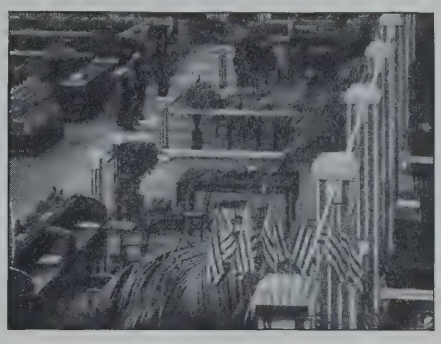
HAUSFELD CO., Harrison, O.—A noncrucible furnace of the tilting type, a tilting crucible furnace, a stationary crucible furnace, an aluminum melting furnace using a cast iron melting pot, a ladle heater and other foundry equipment for nonferrous metal will be exhibited; represented by E. B. Hausfeld, Joseph Hausfeld and J. S. Armour.

HAYNES STELLITE CO., Kokomo, Ind.—

HAYWARD CO., New York.—An exhibit will be made of working models of clamshell and orangepeel buckets and an electric motor bucket of this type also will be shown in operation. In addition to the foregoing equipment, a collection of photographs illustrating this company's machines in operation in foundries and other industries will be displayed; represented by C. F. Hutchings.

HEALD MACHINE CO., Worcester, Mass.—The types of internal grinders, a 12-inch rotary surface grinder and a cylinder grinder will be exhibited by this company. One of the internal grinders is a new machine which never has been exhibited and which has not been sold. The rotary surface grinder also is new. The cylinder grinder is designed for work which cannot be revolved; represented by S. M. Hershey.

HERBERT, ALFRED, LTD., New York.—British-made machine tools bearing the name of this company will be exhibited for the first time in the United States. All of the machines will be shown in operation. An oscillating tool grinder which produces cutting tools from bar stock by grinding and which, except for special shapes, eliminates the necessity of tool forging, will be shown. A hexagon turret lathe with a capacity of 1⅝ x 27 inches for rapid production of bar work and a combination turret lathe especially adapted for chucking work will be exhibited. Both machines are of the single pulley geared head type. The hexagon turret lathe is equipped with quick power traverse and the turret is rotated by power. A concentric chuck which is adapted for eccentric and irregular work will also be



GLIMPSE OF BOSTON SHOW

shown; represented by Messrs. Blake, Blair, A. Thornton and Albin.

HERMAN PNEUMATIC MACHINE CO., Pittsburgh.—A plain jarring machine, with the table plate off of the base to show the mechanical construction of the machine will be exhibited; represented by Thomas Kaveny, H. T. Frauenheim, Robert F. Ringle, I. J. Oesterling, R. P. Morgan, Robert Porteous, Walter Hughes, C. S. McMath and C. W. Miller.

HIGLEY MACHINE CO., So. Norwalk, Conn.—A motor-driven cold saw will be exhibited in the booth of the Vandyck-Churchill Co.; represented by C. Granger.

HOEVEL MFG. CORP., Jersey City, N. J.—This company will have a working exhibit consisting of a revolving barrel and rotary table sandblast machine; represented by H. F. Hoevel and L. B. Passmore.

HOLCROFT & CO., Detroit.—Photographs, drawings and data on various types of metallurgical furnaces and foundry ovens and also data on special electric furnaces, will be exhibited by this company; represented by Charles T. Holcroft, E. V. Holcroft, W. H. Holcroft, Harry Holcroft and H. L. Ritts.

HYATT ROLLER BEARING CO., New York.—This company will exhibit a large revolving model of roller bearing showing the principles of design and construction; a roller bearing mounted in glass showing the lubrication principles of the bearing; an automatic lantern slide machine showing pictures of roller bearing equipped machinery; and a truck test stand having roller bearing-equipped trucks and plain bearing trucks, demonstrating easy running qualities of the roller bearing equipped trucks; represented by D. Gleisen, P. C. Gunion, M. F. Lawrence, G. O. Helmstaedter, W. L. Iliff, J. M. Hancock and H. L. Littell.

INDUSTRIAL ELECTRIC FURNACE CO., Chicago.—Illustrations of the furnaces made by this company and their applications to various branches of the foundry industry will be shown. A recently developed process of preheating the charge before placing it in the electric furnace, will be described; a new jolt shakeout machine for separating sand from castings and flasks will be illustrated; represented by F. von Schlegell, W. B. Lewis and W. B. Cooley.

INGERSOLL-RAND CO., New York.—Portable pneumatic tools including sand rammers, motor hoists, chipping hammers, riveting hammers, grinders and drills will be exhibited. The sand rammers, motor hoists, grinders and chippers will be in operation; represented by W. A. Johnson, W. B. Brendlinger, P. T. Christy, N. A. Pelham and G. C. Williams.

INTERNATIONAL MACHINE TOOL CO., Indianapolis.—An 18-inch Libby turret lathe working on cast iron gears will be exhibited by this company through its Philadelphia representative, Vandyck-Churchill Co.; the International Machine Tool Co. will be represented by J. A. Villard.

INTERNATIONAL MOLDING MACHINE CO., Chicago.—Molding machines including hand and power turnover machines, jarring machines, squeezers, stripping plate machines and various types of combination machines will be exhibited; represented by Edward A. Pridmore, W. W. Miller, F. W. Hamel and E. G. Borgnis.

INTERSTATE SAND CO., Zanesville, O.—This exhibit will consist of molding sands for iron and steel castings; fire clay; silica washes and ganister; represented by L. K. Brown, E. M. Ayers and O. Tague.

IRON AGE, New York.

IRON TRADE REVIEW, THE, Cleveland.—This booth will be fitted up as a rest room for visitors where all are invited to make their headquarters; represented by John A. Penton, A. O. Backert, J. D. Pease, H. Cole Estep, G. O. Hays, E. L. Shaner, H. E. Diller, D. M. Avey, Pat Dwyer, Charles Vickers, J. F. Ahrens, F. V. Cole, H. O. Taylor and Paul R. Fisher.

JENNISON-WRIGHT CO., Toledo, O.—Samples of the wood blocks manufactured by this company for factory floors will be exhibited and a made-up section of wood block flooring will be displayed. Large photographic reproductions of wood block floors now in service in many well known foundries and machine shops in the United States will be shown; represented by F. E. Jennison and L. P. Drinker.

KELLER PNEUMATIC TOOL CO., Chicago.—A large riveting hammer mounted in a heavy gilt frame and with sections cut out to show all parts moving in the same manner as those in a standard hammer operated by air will be shown. Drills and other tools in operation with portions of the wall removed to show the movement of the parts will be displayed, together with complete models of riveting and chipping hammers, valve and valveless rotary and piston drills, jam riveters, holders-on and sand rammers; represented by W. H. Keller, J. G. Osgood, G. E. McCabe, F. S. Eggleston Jr., W. J. Devlin, C. A. Bremmer, L. B. Smyser, Edward L. Lycett and A. G. Swope.

KELLOGG, SPENCER, & SONS, INC., Buffalo.—Various grades of core oils made by this company and a number of interesting cores produced with these oils and also castings and photographs of large castings produced by the use of cores made with these oils will be on exhibition; represented by V. H. Hunter, U. L. Throm, A. P. Mason, J. N. Yaeger, W. L. Goetz, E. G. Allen and Burt Cox.

KELLY, T. P., & CO., New York.—The booth occupied by this company will be fitted up as a rest room; represented by V. J. Rohe, H. J. Winters, B. H. Forman, H. F. Maurel and W. F. Kaine.

KING, JULIUS, OPTICAL CO., Chicago.—Safety goggles, glass for goggles, and protective helmets, masks, etc., will be exhibited; represented by W. G. King.

KLAXON CO., New York.—This company will demonstrate a code calling device for locating men at any point in a manufacturing plant or foundry. The company also will exhibit industrial horns for signalling purposes and a specially designed telephone which is a loud speaking phone for quick, convenient intercommunication; represented by E. Berg, P. C. Gunion, R. L. Wilkinson and A. W. Hall.

KNOEPPEL & CO., C. E., New York.—Graphic

production control boards designed for controlling the factors effecting foundry operation and production will be exhibited. This system of vizualized control is designed to definitely govern the movement of material, application of labor, the use of equipment and machines, and furnishes records of plant conditions and performances for cost analysis; represented by J. P. Jordan and Irving A. Berndt.

KEMPSMITH MFG. CO., Milwaukee.—A horizontal plain milling machine equipped with single pulley drive, 1¾-inch arbor, two arbor supports, plain vise and necessary accessories will be shown. This machine has 18 feeds and speed changes, the feeds varying from ⅝ to 25 inches per minute. This machine will be exhibited through the Vandyck Churchill Co., Philadelphia. The Kempsmith Mfg. Co. will be represented by Peter Lowe and Mr. Drewes.

LANE, H. M., CO., Detroit.—Photographs and drawings of the engineering work of this company will be shown; represented by H. M. Lane, A. O. Thomas, Benjamin Towlen, Charles R. Seabrook, D. W. F. Nichols, A. O. Thomas, Charles Rochefort.

LEEDS & NORTHRUP CO., The, Philadelphia.—Pyrometer equipment consisting of indicating and recording instruments used in controlling temperatures in the foundry such as core ovens, etc., will be exhibited. An optical pyrometer for reading temperatures of molten metals also will be shown; represented by G. W. Tall Jr., E. B. Estabrook, Oscar Brewer and A. M. Redding.

LIBERTY STEEL PRODUCTS CO., INC., New York.—Two types of a gasoline motor driven industrial tractor and two lift trucks will be exhibited. A model of the type of sectional steel building manufactured by this company will be shown; represented by Charles K. Drury, W. Robbins, T. L. Lawry, S. W. Midgley, W. S. Ottinger Jr. and A. H. Dillon Jr.

LIBERTY SUPPLY CO., Pittsburgh.—

LINCOLN ELECTRIC CO., Cleveland.—This company will exhibit arc-welding apparatus used in foundries. A motor operating under water and several sizes and types of foundry motors will be shown; represented by Robert E. Kinkead, Dorsey C. Anderson, O. P. Lang and P. C. Pipes.

LINDSAY CHAPLET & MFG. CO., Philadelphia.—This exhibit will consist of chaplets ranging in size from those ¼-inch in length used for motor castings to large double head chaplets having ¾ and 1-inch stems and being as long as 6 inches with plates 4 x 4 inches square and ¼-inch thick used in connection with making castings for bed plate castings for gun presses; represented by Stanley B. Wentz, James C. Newlin Jr. and Herman E. Mandel.

LINK BELT CO., Philadelphia.—This company will exhibit a machine which reclaims used molding sand. This machine tempers and mixes the sand and prepares it for further use. An overhead monorail electric hoist equipped with cord operated control designed for handling molds and cores without jarring will be exhibited. A silent chain drive will be in operation; represented by A. G. J. Rapp, F. F. Waechter, James Monroe and L. Spillan.

LOUDEN MACHINERY CO., Fairfield, Iowa.—Overhead tracks and trolleys for use in foundries will be exhibited. Special carriers and containers for metal and various foundry materials will be shown; represented by H. M. Miller, L. E. Gaston, C. S. Doran, H. W. Cuddy and L. E. Berthold.

LUPTON'S, DAVID, SONS' CO., Philadelphia.—Samples of pivoted steel sash, counterbalanced steel sash, power house steel sash, and continuous sash designed for monitor, sawtooth and sidewall construction will be shown. About 10 typical cross-sections of foundries and buildings of similar nature will be shown on a mechanically operated device especially built for this exhibit; represented by Clarke P. Pond, C. F. P. Buckwalter, R. A. Sanborn and H. R. Wilkinson.

McCORMICK, J. S., CO., Pittsburgh.—Included in the foundry equipment exhibited by this company will be a pneumatic blacking mixer operated with outlets for spraying purposes; an electric magnetic separator which will be shown in operation; an embossing machine for use in the pattern shop, and samples of blacking made by this company; represented by J. S. McCormick, T. E. Malone and S. R. Costley.

McCROSKY TOOL CORP., Meadville, Pa.—This exhibit will consist of a complete line of adjustable reamers, quick change chucks and collets for drill press work, turret tool posts for lathes, and universal lamp brackets; represented by C. M. Sutton, C. Harper Halfmann and M. J. Frank.

MACLEAN PUBLISHING CO., LTD., Toronto, Ont.—The booth occupied by this company will be fitted out as a rest room; represented by A. R. Lowe, A. H. Byrne, B. G. Newton and F. H. Bell.

McLAIN'S SYSTEM, INC., Milwaukee.—Samples of semisteel castings of light sections including automobile cylinders containing from 20 to 30 per cent steel; and gears, pistons, projectiles and other samples of semisteel castings containing from 20 to 50 per cent steel will be shown. Open-hearth steel castings poured from metal made in a McLain-Carter oil-fired, open-hearth furnace will be displayed; represented by David McLain, Harry McLain and I. V. Scanlan.

MACLEOD CO., THE, Cincinnati, O.—Two sand blast barrels, a sand blast hose machine and portable oil burners will be exhibited by this company; represented by Harry Rittmeyer.

MAGNETIC MFG. CO., Milwaukee.—Various types of magnetic separators built by this company will be shown in operation. These will include a machine of all-steel construction for reclaiming metal from



A FEW BOOTHS IN 1917

foundry refuse and cupola drop. A magnetic pulley provided with ventilating device will be shown; represented by R. H. Stearns, J. P. Bethke and R. N. Stearns.

MAHR MFG. CO., Minneapolis.—This company will exhibit foundry torches, oil and gas fired rivet forges, ladle driers and ladle heaters; represented by H. H. Warner, W. G. Barstow and R. B. Ecker.

MALLEABLE IRON FITTINGS CO., Branford, Conn.—A number of vibrators manufactured by this company will be operated by compressed air on a specially built frame. A vibrator core bench for making small cores by the multiple system will be shown and girl operator will demonstrate the machine; represented by G. B. Pickop, also H. J. Felsburg of J. Jacob Shannon Co.

MARDEN, ORTH & HASTINGS CORP., New York.—The booth occupied by this company will be fitted up as a reception room. Cores made by the liquid and powdered sand binder manufactured by this company and samples of these materials will be shown; represented by H. M. Handy.

MASON, ARTHUR C., INC., Hawthorne, N. J.—The high speed, quick change sensitive bench drill manufactured by this company will be exhibited; represented by C. A. Widmer, Arthur C. Mason and William Reynolds.

MAXON-PREMIX BURNER CO., Muncie, Ind.—Fuel burners will be exhibited.

MERCURY MFG. CO., Chicago.—

METAL INDUSTRY, New York.—The booth occupied by this company will be fitted out as a rest room; represented by P. H. Langdon, Adolph Bregman, G. W. Cooper, T. A. Trumbour and H. C. Burr.

METAL & THERMIT CORP., New York.—Transparencies and photos showing various applications of thermit for welding and demonstrating the use of thermit for pipes, will be displayed. Heating cans for foundry work and small welds will be exhibited; represented by W. R. Hulbert, A. F. Braid, H. G. Spilsbury, J. G. McCarty and H. D. Kelley.

METALLIC ABRASIVES MANUFACTURERS' ASSOCIATION OF AMERICA, Pittsburgh.—Metallic abrasives for sand blasting will be exhibited; represented by G. H. Kann, Pittsburgh Crushed Steel Co.; N. C. Harrison, Harrison Supply Co.; H. M. Ream, Globe Steel Co.; I. A. Diamondstone, Harrison Bros., Inc., and R. S. Kann, Pittsburgh Crushed Steel Co.

MICHIGAN SMELTING & REFINING CO., Detroit, Mich.—Nonferrous metal products including ingot, brass and bronze, solders, babbitt metals, lead pipe, brazing spelter, etc., will be exhibited; represented by R. H. Evans, Norman Sillman, Maj. F. C. Bahr, Henry Levitt, C. T. Bragg, R. R. Arnold and William W. Eitel.

MIFFLIN CHEMICAL CORP., Philadelphia.—Samples of the core binder made by this company and cores produced by the use of this binder will be exhibited; represented by Phillip Publicker, Harry Cohen and W. J. Lehman.

MILBURN, ALEXANDER, CO., Baltimore.—Oxy-acetylene welding and cutting apparatus, including an acetylene welding generator, combination welding and cutting torches, welding torch operating on equal pressures of oxygen and acetylene, a lead-burning apparatus, portable carbide lights ranging in size from 1000 to 15,000 candlepower and a light and heating burner which uses kerosene oil; represented by A. F. Jenkins.

MINE & SMELTER SUPPLY CO., New York.—A Wiffley table of laboratory size will be shown in operation; represented by E. S. Tompkins.

MONARCH ENGINEERING & MFG. CO., Baltimore.—The following furnaces will be exhibited by this company: Four types of noncrucible furnaces including a double chamber furnace, a vertical furnace and a rotary furnace; a tilting coke-fired furnace with crucible; a tilting oil-fired furnace with crucible; three oil-gas and coke-fired core ovens; a ladle heater and a stationary oil or gas-fired steel furnace; represented by H. D. Harvey, James J. Allen, Frank P. Maujean and William Raber.

MONARCH MACHINERY CO., Philadelphia.—The following machines will be exhibited: A 32-inch shaper; several types of heavy duty and high-speed drill presses, two types of milling machines, and an engine lathe; represented by Edwin R. Mack, Austin H. Campbell, Robert L. Arms, Henry M. Shaw, Andrew J. Berger, A. W. Heppard and E. W. Stegman.

MOTT SAND BLAST CO., New York.—A sand blast barrel will be shown in operation. In addition a late type of cloth screen dust arrester will be operated and a complete line of accessories, such as hose, helmets, nozzles, gloves, etc., will be shown; represented by David Mayer, E. J. Rosenthal, E. C. Gilmour and R. E. Donnelly.

MUMFORD MOLDING MACHINE CO., Chicago.—A new combination jolt split pattern molding machine fitted with automatic, slow-start oil pattern draft cylinder, controlled by a knee valve will be exhibited. This machine is designed to give a smooth, slow start for the first three-quarters of an inch with a rapid finish for the balance of the pattern draw, thereby leaving the operator's hands entirely free to pick up the mold the instant the pattern is drawn; represented by P. W. Gates, James T. Lee, O. F. Weiss and J. O. Clark.

NAPIER SAW WORKS, Springfield, Mass.—A motor-driven horizontal band saw will be shown in operation; hack saws made by this company also will be exhibited; represented by A. C. Whitefield and H. M. Reynolds.

NATIONAL ENGINEERING CO., Chicago.—Three sand mixers varying in size from 3 to 6 feet in diameter will be exhibited. The 6-foot machine will be in operation during the convention and will mix facing sand, core sand and other mixtures; represented by H. S. Simpson.

NICKOLLS, WILLIAM H., CO., New York.—

NEW CHICAGO CRUCIBLE CO., Chicago.—Graphite crucibles manufactured by this company will be exhibited; represented by Dr. Sherman Taylor, Adolph Hottinger, LeRoy C. Taylor, James Foraker, J. W. Mann and John Kroll.

NORMA CO. OF AMERICA, New York.—Ball bearings manufactured by this company for use in frac-

tional horsepower electric motors, high speed grinders, portable electric drills, high speed sensitive drill presses, etc., will be exhibited; represented by Norman Bell, Arthur Meder, D. E. Batesole and George R. Bott.

NORTON CO., Worcester, Mass.—This company will exhibit the following: One 6 x 32-inch plain cylindrical grinding machine; one 2-inch floor stand; one 1¼-inch floor stand; one ¾-inch bench machine, motor driven; one universal tool and cutter grinder; and various grinding wheels for use in the foundry and an exhibit of tool and cutter grinding wheels. Polished stove parts ground by abrasives made by this company also will be shown; represented by S. A. Craig, W. R. Strong, E. F. Anderson, Herbert Duckworth, Wallace T. Montague, E. W. Barnes and C. H. Wood.

OAKLEY MACHINE TOOL CO., Cincinnati.—The universal cutter and tool grinder manufactured by this company, equipped with power feed, wet grinding attachment and motor drive will be operated; represented by Abbot A. Thayer.

OBERMAYER, S., CO., Chicago.—This company will exhibit a sprue cutter, tumbling barrel, ladles, and other small foundry equipment. The use of a furnace cement manufactured by this company will be demonstrated in a small electric furnace; represented by S. T. Johnston, E. D. Frohman, J. L. Cummings, William Fitzpatrick, J. J. McDevitt, W. J. Adams, I. D. Adams, J. E. Evans, O. J. Peterson, O. C. Olson, C. M. Barker and William Fenton.

OHIO BLOWER CO., Cleveland.—This company will exhibit a portable core oven complete, a section of a rack type and truck type oven showing corners and door construction; rotary ball bearing ventilators; air separators, and air traps; represented by David Johnson, George Thomson, Herbert Brandt, Thomas Whitaker, Eugene Van Note and H. A. Bogardus.

OLDHAM, GEORGE, & SONS CO., Frankford, Philadelphia.—Chipping hammers, foundry rammers and core busters will be exhibited by this company; represented by Messrs. Fraser and Biles.

OLIVER MACHINERY CO., Grand Rapids, Mich.—A complete pattern shop will be operated by this company. All of the following machines will be operated: A universal wood milling machine; a vertical disc and spindle sander; two types of hand planer and jointer; a universal bench saw; a combined band re-saw and scroll saw; a band sawing machine; a pattern maker's lathe; two types of wood trimmers, a revolving oil stone tool grinder; a pattern maker's bench; a type embossing press; a surface planer; an extra heavy duty engine lathe; a tool room engine lathe, and a die filing machine. Complete patterns will be turned out from this shop during the convention; represented by R. F. Baldwin, Arthur Blake, J. Ray Bate, G. C. Conklin, C. R. Crossley, Dolph De Young, C. A. Ginter, J. E. McLauchlen, Arie Steenbergen and A. S. Kurkjian.

OXWELD ACETYLENE CO., Newark, N. J.—This company will exhibit and make practical demonstrations of oxyacetylene cutting and welding apparatus; represented by W. E. Cotter, W. B. Wilson, V. L. Mauhowt, G. R. Mitchell and F. W. Smith.

PANGBORN CORP., Hagerstown, Md.—The exhibit of this company will be more extensive than in previous shows. The equipment, which will be in operation, will include cabinet sand blasting outfits, barrel sand blasts, rotating table cabinet and plain rotating table apparatus, hose machines, sand separators, dust arresters and exhausters. Actual installations made by the Pangborn Corp. will be shown by a stereopticon machine; represented by Thomas W. Pangborn, John C. Pangborn, Harry D. Gates, W. C. Lytle, P. J. Potter, George A. Cooley, Charles T. Bird, Jesse J. Bowen, Roy C. Koch, J. F. Tracey, T. R. Ditty, Hugo F. Liedtke and Foster J. Hull.

PAXSON CO., J. W., Philadelphia.—Products manufactured by this company, including foundry facings, foundry sands, gravels and clays and other supplies and equipment will be exhibited; represented by H. M. Bougher, Howard Evans, S. C. Bougher, H. J Bougher, F. B. Platt, J. S. Hibbs, A. G. Warren, John S. Gilbert and I. F. Kremer.

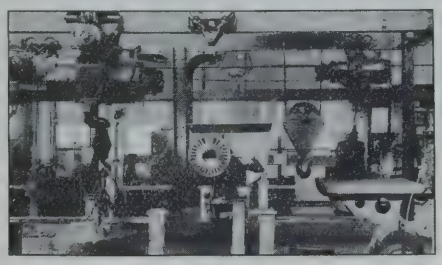
PENTON PUBLISHING CO., Cleveland.—This booth will be fitted up as a rest room for visitors where all are invited to make their headquarters; represented by John A. Penton, A. O. Backert, J. D. Pease, H. Cole Estep, G. O. Hays, E. L. Shaner, H. E. Diller, D. M. Avey, Pat Dwyer, Charles Vickers, J. F. Ahrens, F. V. Cole, H. O. Taylor and Paul R. Fisher.

PETTINOS, CHARLES E., New York.—Foundry sand suitable for steel, gray, iron, brass, bronze and aluminum castings, plumbago for various uses, and graphite will be shown; represented by Charles E. Pettinos, M. M. Houskeeper, J. H. Bing, Martin Meiss and W. H. Laros.

PETTINOS, GEORGE F., Philadelphia.—The booth occupied by this company will be fitted up as a reception room; represented by George F. Pettinos and H. B. Taylor Jr.

PHILADELPHIA GREASE CO., Philadelphia.—Various grades of the grease made by this company for lubricating all classes of machinery and especially pneumatic tools will be exhibited; represented by Messrs. Dean, Maloney, White and Horace A. Smith.

PICKANDS, BROWN & CO., Chicago.—This company will exhibit by-product coke in conjunction with the Semet-Solvay Co. The front of Independence hall, Philadelphia, will be reproduced in a structure of coke, the top of the tower reaching about 15 feet above the floor. George A. T. Long, whose work with coke has attracted considerable attention at previous shows, will erect this year's exhibit; represented by Thomas W. Glasscot, James A. Galligan,



AT THE CHICAGO EXHIBIT, 1914

James A. Ballard, William H. Ball and George A. T. Long.

PITTSBURGH FURNACE CO., Milwaukee.—Photographs of the electric furnace installed by this company in steel mills and steel castings plants will be displayed; represented by J. F. Dirzuweit and E. V. Kane.

PORTAGE SILICA CO., Youngstown, O.—This company will exhibit photographs of its plant and samples of silica rock in its natural state and of the finished sand produced from it; represented by E. E. Klooz and L. R. Farrell.

PRIDMORE, HENRY E., Chicago.—A number of molding machines, including a plain electric jolt machine, a jolt strip and jolt roll-over machine, a hand roll-over machine and a hand stripping plate machine will be exhibited; represented by Mrs. Henry E. Pridmore, H. A. Pridmore, George Furman, H. G. Schlichter, D. F. Eagan, C. H. Ellis, J. W. Dopp, Hugh Gallagher and Marshall E. Pridmore.

PROVIDENCE GAS CO., Providence, R. I.—This company will exhibit foundry coke; represented by C. H. Tholl, M. B. Beck and W. G. Rich.

QUIGLEY FURNACE SPECIALTIES CO., New York.—A refractory material for bonding fire brick will be demonstrated. Temperature tests on this material will be made by means of electric furnaces and various metallurgical applications of this material will be illustrated. A refractory fire sand for making rammed-in linings, special tile and for repairing furnace structures will also be shown. A powdered coal system for preparing, transporting and burning powdered coal will be featured; represented by W. S. Quigley, J. H. McPadden, L. G. McPhee, H. M. Miller, C. E. Pullum, George R. Powell, C. E. Klein, F. W. Reisman, S. D. Enoch and F. G. Wenzel.

RACINE TOOL & MACHINE CO., Racine, Wis.—Three types of the high-speed metal cutting machines made by this company will be exhibited. The tools exhibited will be of 6 x 6-inch, 8 x 8-inch and 12 x 15-inch capacity respectively. A 6 x 6-inch machine will be operated and a high-speed rail cutting machine will be shown; represented by A. H. Goetz, E. R. Larson, T. A. Hyde, D. B. Maxwell, Ralph Maxwell, N. R. Petersen, F. J. Kidd and William Reinhardt.

RAILWAY MECHANICAL ENGINEER, Chicago.

RAINEY, W. J., Philadelphia.—Samples of Connellsville beehive and rectangular oven foundry coke and photographs of a number of operations producing this grade of fuel will be shown. By-product foundry and furnace coke and photographs showing the erection and operation of a by-product plant at Swedeland, Pa., will be shown; represented by A. F. Kempe, R. I. Willcox, H. B. Prescott and W. H. Vermilya.

REPUBLIC CREOSOTING CO., Indianapolis.—Exhibits of interior wood-block floor installations will be featured; represented by H. G. Stephens and G. Nelson.

RICH FOUNDRY EQUIPMENT CO., Chicago.—(See Sand Mixing Machine Co.)

RICHARDS-WILCOX MFG. CO., Aurora, Ill.—This company will exhibit overhead carrying systems including trolley and I-beam types of monorail tracks with switches, cross-overs, turntables, trolleys, etc. A traveling crane and hoists will be shown; represented by A. J. Eggleston and E. J. G. Phillips.

ROBESON PROCESS CO., New York.—Cores bound with the core binder manufactured by this company will be exhibited; represented by G. I. Lindsay, C. A. Rapallo, T. J. Ryan and T. J. O'Hara.

ROGERS, BROWN & CO., Cincinnati.—This company will exhibit samples of foundry coke, alloys, pig iron and fluor spar. Finished iron castings of intricate design produced from these materials will be shown and in addition, a 12-cylinder Liberty motor loaned through the courtesy of the Lincoln Motor Co., Detroit, and especially constructed by it as a permanent exhibit at the Smithsonian institute, Wash., will be exhibited; represented by S. W. Hubbard, T. A. Wilson, A. O. Sonne, H. W. Fernald, F. E. Fitts, R. W. Clark, J. A. Claussen, George R. Sullivan, Richard Peters Jr., S. B. Morrison, H. B. Carson, F. J. Waldo, A. F. Stengle, F. W. Bauer, A. J. Wentworth and J. R. Morehead.

ROOTS CO., P. H., & F. M., Connerswille, Ind.—A number of the smaller blowers manufactured by this company will be exhibited, including the first blower ever constructed by the P. H. and F. M. Roots Bros., 60 years ago; represented by E. D. Johnston and H. M. Papworth.

SAND MIXING MACHINE CO., New York.—This company will exhibit the following products of the Sand Mixing Machine Co., the American Foundry Equipment Co. and the Rich Foundry Equipment Co., which recently were combined and now operate under the name of the American Foundry Equipment Co.: An auto sand cutter designed to cut, mix and pile sand on molding floors a rotary sand blast table room; a gravity feed barrel; an annealing oven truck, and a core making machine; represented by V. E. Minich, Elmer A. Rich Jr., Hutton H. Haley, John D. Alexander, Charles G. Smith, Jerome E. Sweet and C. B. Schneible.

SELLERS, WM., & CO., INC., Philadelphia.—This company will exhibit a centrifugal sand mixing machine, belt and motor driven; a motor-driven universal tool grinding and shaping machine, and a motor-driven twist drill grinding machine; represented by Edward L. Holljes, Charles T. Wilson and Stephen A. Smith.

SHEPARD ELECTRIC CRANE & HOIST CO., Montour Falls, N. Y.—This company will erect a special structure of which various types of hoisting equipment will be exhibited. Among the types of hoisting apparatus shown will be a standard crane trolley operated by controllers from the floor; a cage operated hoist with an electric magnet; two standard types of floor operated hoists and a new type of electric cargo winch. This winch, which will be shown in operation, consists of a cast base upon which is mounted a back geared motor with a special drum and winch head. The head is so arranged that it works independently of the drum, so that the load may be held stationary at any point by means of ratchet and pawl while the boom is either raised or lowered or swung around by the winch

head. The power is furnished through a standard slow speed crane motor and a double gear train of internal gears; represented by W. C. Briggs, R. W. Hurst, F. E. Meeks, R. J. Wadd, N. P. Farrar, D. B. Patterson, H. W. Gledhill, John Jackson, W. C. Minier, G. N. French, Walter B. Briggs, R. H. McGredy, A. J. Barnes and John Guyer.

SIMONDS MFG. CO., Fitchburg, Mass.—Saws for cutting various kinds of metal will be exhibited and a metal saw sharpening machine will be demonstrated; represented by H. B. McDonald and Spencer Patterson.

SKINNER BROS. MFG. CO., St. Louis.—A motor-driven 4 x 4-foot heater for heating foundries and industrial plants will be shown in operation. Represented by E. C. Evans, C. V. Haynes, Mr. Sewell.

SLY, W. W., MFG. CO., Cleveland.—This company will exhibit the following: A sand blast mill; a turntable cabinet complete with sand and dust elevating and separating system; a hand sand blast cabinet; a sand blast cage; a tumbling mill; a resin mill; a sand blast pressure tank, and photographs and sand blast test plates; represented by W. C. Sly, George J. Fanner, E. J. Moore, P. W. Graue, D. E. Hadley and S. H. Baird.

SMITH, R. P., & SONS, Chicago.—Safety shoes for molders and foundrymen will be exhibited; represented by J. B. Smith Jr.

SMITH, WERNER G., CO., Cleveland.—Samples of the core oils made by this company will be displayed along with specimens of cores and castings made from these products; represented by Werner G. Smith, Frank H. Dodge, L. P. Robinson, M. S. Finley, W. E. Rayel, F. K. Sawyer, J. C. DeVenne and L. F. Ferster.

SPENCER TURBINE CO., Hartford, Conn.—A 15-horsepower turbine compressor for use in supplying air for cupolas will be exhibited; represented by H. M. Grossman and S. E. Phillips.

STANDARD SAND & MACHINE CO., Cleveland.—This exhibit will consist of a motor-driven sand mixer; represented by Harry E. Boughton.

STANDARD SHOP EQUIPMENT CO., INC., Philadelphia.—Standard methods and standard equipment for properly setting up work on machine tools will be displayed. The following appliances will be shown: T-head steel slot bolts, double and single end clamps, packing and step blocks, nuts and washers, bolt spacers and drop forge wedgers; represented by H. J. Stites and M. M. Sarben.

STERLING WHEELBARROW CO., Milwaukee.—Foundry flasks, wheelbarrows, core barrows, etc., will be exhibited. A feature of the exhibit of this company will be samples of very large flasks, complete with intricate bars; represented by I. R. Smith, H. H. Baker, A. E. Welch, J. J. Coyne, H. Kalthoff, R. F. Jordan, George H. Lambkin, Charles L. Kirk, J. W. Dopp and J. M. Patterson.

STRAUSS & BUEGELEISEN, New York.—This exhibit will consist of laminated glass manufactured by this company, welding goggles and goggles for all hazardous operations in the foundries; represented by M. Walter, L. V. Siegel, D. and J. Buegeleisen.

SULLIVAN MACHINERY CO., Chicago.—This company will operate a 14 x 8¾ x 10-inch angle compound belt-driven air compressor at 50 revolutions per minute with a displacement of 445 cubic feet of air per minute. The machine will be driven by a 75-horsepower General Electric motor, and will compress air for other exhibitors at the show. A 10 x 10-inch straight line single-stage belt-driven compressor equipped with a new design of plate valve, also will be exhibited; represented by Arthur E. Blackwood, J. B. Pratt and Alexander Milne.

SWAN & FINCH CO., New York.—Cores in which the core oil manufactured by this company has been used will be exhibited; represented by Richard Thackray, Edward F. Ryan, Mr. Chamberlin, C. G. Howe, C. B. Lamson, T. P. James, George J. Graham, J. A. Ellis and H. J. Waldron.

SWIND MACHINERY CO., Philadelphia.—This company will exhibit an 18-inch x 8-foot geared head lathe; a heavy-duty drill; a sheet metal cutter and an internal grinding machine. All of these machines are motor driven; represented by L. H. Swind, J. E. Brandt, W. J. Powers, M. R. Carson and D. M. McCracken.

TABOR MFG. CO., Philadelphia.—The exhibit will include plain power squeezer, combination jarring squeezer, power squeezing split pattern, jarring squeezing split pattern, plain jarring machine, jarring and roll over, hand ramming roll over, and jarring stripping plate types of molding machines. A saw and milling cutter also will be exhibited; represented by Wilfred Lewis, H. W. Brown, J. T. Ramsden, J. H. Coleman, H. W. Impey, W. E. Sewell, D. J. Martin, John Fendner, E. S. Lewis, Jacob Degler, Philip Shire and T. L. Sumner.

THOMAS ELEVATOR CO., Chicago.—Wrenchless chucks and drill press vises will be operated; represented by Messrs. Moorse, Cassell and Bolduck.

THOMAS IRON CO., Hokendauqua, Pa.—Samples of pig iron, ore and castings in which these materials have been used will be exhibited; represented by Philip E. Wright.

THOMPSON, LEWIS, & CO., INC., Philadelphia.—Several patterns made from mahogany many years ago will be shown by this company to demonstrate the quality of this wood; represented by Charles H. Thompson Jr. and L. P. Bransford Jr.

TRUSCON STEEL CO., Youngstown, O.—The exhibit will consist of pressed steel foundry flasks; a pressed steel platform for lift trucks; photographs and layouts of various types of industrial buildings, and side wall steel windows, top hinge continuous monitor steel sash and a tension operating device; represented by G. F. Danielson, G. F. Bateson, C. I. Anten, H. W. Jencks, G. F. Sparks and C. W. Close.

UNITED COMPOUND CO., Buffalo.—Vent wax and pattern wax will be exhibited; represented by John W. Bradley and L. F. Leney.

UNITED STATES GRAPHITE CO., Saginaw, Mich.—The booth occupied by this company will be fitted up as a rest room. Graphite and graphite products will be displayed; represented by R. A. Corrigan, J. G. Drought, F. B. Godard, H. F. Gump and G. D. Robinson.

U. S. MOLDING MACHINE CO., Cleveland.—The following machines will be exhibited: A plain air squeeze machine; combination jolt and squeeze machine; a combination jolt squeeze pattern draw machine; combination jolt squeeze stripping plate machine; a combination jolt stripping machine; a jolt roll over core machine, and a plain air jolt machine. These machines will be shown in operation; represented by J. N. Battenfeld, J. L. Battenfeld, C. F. Battenfeld and J. L. Murdock.

UNITED STATES SILICA CO., Chicago.—Samples of an abrasive for sand blasting and a form of silica for steel molding and core making; also samples of castings produced by these materials will be exhibited; represented by Volney Foster, Lewis B. Reed, H. F. Goebig and Oliver Cook.

VANDYCK-CHURCHILL CO., Philadelphia.—This company will exhibit a 3-foot sensitive radial drill with tapping attachment arranged for belt drive; a 5-foot triple purpose, plain arm, high duty radial drill equipped with speed-box and arranged for belt drive; a 3-foot triple purpose, high speed radial drill, motor driven; a 24-inch shaper, motor driven; a 16-inch tool room lathe, with complete equipment, belt driven; a 20-inch x 10-foot lathe, motor driven; a 30-inch x 30 x 8-foot planer, belt driven. These tools are manufactured by the American Tool Works Co., Cincinnati. The Vandyck company also will exhibit a motor-driven multiple milling machine made by the Kempsmith Mfg. Co., Milwaukee; a 16-18-inch motor-driven turret lathe, manufactured by the International Machine Tool Co., Indianapolis; a motor-driven universal grinder made by the Oakley Machine Tool Co., Cincinnati; a motor-driven cold saw manufactured by the Higley Machine Co., South Norwalk, Conn.; an exhibit of geometric threading tools manufactured by Geometric Tool Co., New Haven, Conn. As far as possible, the machines will be demonstrated on work; represented by C. M. Hamersly, Charles F. White, A. C. L. Black, J. K. Robson, George Crawshaw.

VIBRATING MACHINERY CO., Chicago.—This company will exhibit an electrically operated sand sifter and a gas unit for welding and cutting iron and steel with artificial or natural gas; represented by J. Schroeter, J. C. Miller and William Lindsay.

WILSON, T. A., & CO., Reading, Pa.—The booth occupied by this company will be equipped as a rest room for foundrymen. Safety goggles will be displayed; represented by M. C. Rider, E. A. Wagner, G. D. Richardson and N. Roy Miller.

WADSWORTH & CO., Cleveland.—Working models of tractor, crane and screen types of the new sand cutting machine being built by this company will be exhibited; represented by H. L. Wadsworth, George W. Beyerle and John L. Lake.

WADSWORTH CORE MACHINE & EQUIPMENT CO., Akron, O.—This company will exhibit a bushing core making machine; two motor-driven core cutting off and coning machines and steel reinforced core trays and bottom plates; represented by George H. Wadsworth and M. C. Sammons.

WALLACE, J. D., & CO., Chicago.—Woodworking machines including planers and complete equipment for a modern pattern shop will be shown; represented by J. D. Wallace and H. L. Ramsey.

WARNER & SWASEY CO., Cleveland.—This exhibit will consist of a universal hollow hexagon turret lathe operating on gear blanks and a universal screw machine operating on a special design of screw; represented by L. K. Berry, E. R. Gardner, H. E. Yeager and W. L. Loegler.

WESTINGHOUSE ELECTRIC & MFG. CO., East Pittsburgh, Pa.—Electrical equipment for foundries and machine shops, including steel-clad electrical heating devices for heating pattern plates, will be exhibited. The heaters are mounted in the space below the plates within the framework of the molding machine. A 500-ampere arc-welding motor generator set, with control panel and accessories, also will be exhibited. Industrial motors, starters and controllers, meters, fans, etc., will be displayed.

WHITE & BRO., INC., Philadelphia.—Nonferrous metals of all kinds including casting copper, electrolytic copper, composition and bronze ingots, yellow brass ingots, manganese bronze, babbitt metals and other white metals; represented by Frank Krug, Raymond Hunter, Gillis Arsenault, G. Horace Krider, J. C. Ashmeads, F. A. Reinhardt, Harold F. Reinhardt and Ray Galbraith.

WHITEHEAD BROS. CO., New York.—The booth occupied by this company will be fitted up as a rest room; represented by Alfred J. Miller, Charles E. Andrews, Andrew Y. Gregory, Alexander Haigh, V. L. Whitehead Jr., R. L. Cleland, J. T. Kelly, R. J. Hashagen, T. F. Hogan and J. H. Whitehead.

WHITING FOUNDRY EQUIPMENT CO., Harvey, Ill.—This company will exhibit an operating model of a crane trolley; a round steel plate tumbling barrel; a turntable with grooved tracks; a 2-ton charging car; a 2-ton worm geared crane ladle and photographs and drawings of installations made by the company; represented by R. H. Bourne, A. H. McDougall, W. R. Hans and R. S. Hammond.

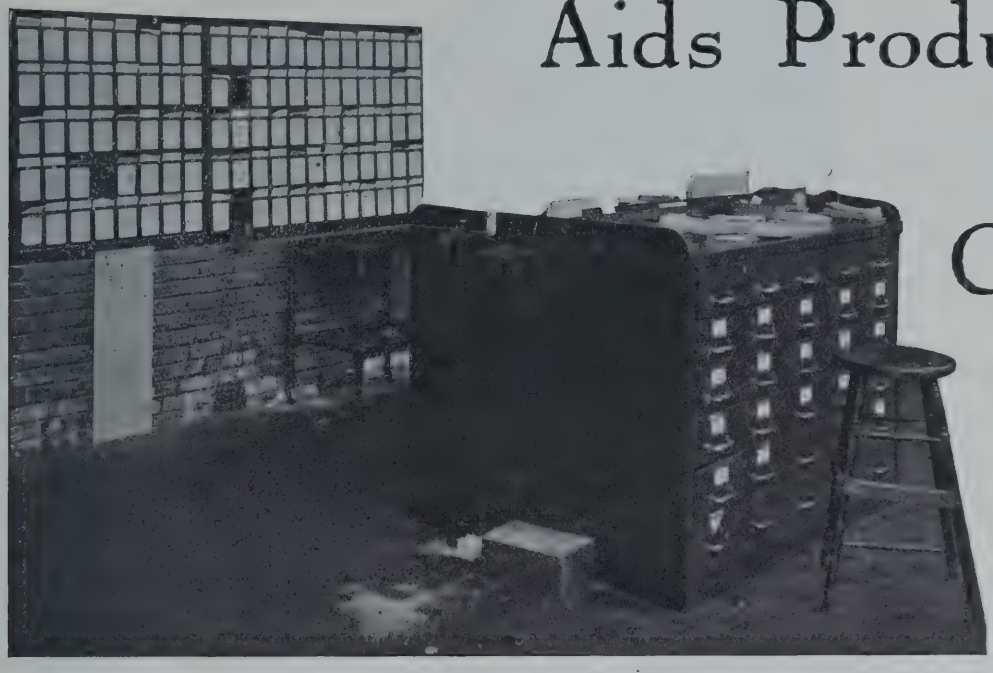
WHITMAN & BARNES MFG. CO., Akron, O.—This company will demonstrate a patented twist drill; represented by George Hine, R. A. Ammon, A. A. Williams and Ralph Templeton.

WOOD'S, T. B., SONS CO., Chambersburg, Pa.—Equipment used in connection with the system of taper snap molding employed by this company, including taper snap flasks and automatic snap jackets will be exhibited. A flask will be operated in connection with a power squeezer machine; represented by Charles M. Wood and Victor Lesher.

WOODISON, E. J., CO., Detroit.—Various types of molding machines, core machines and core oil, snap flasks, mold jackets and other foundry supplies will be shown; represented by E. J. Woodison, C. H. Woodison, J. C. Woodison, G. A. Burman, J. F. Webb, W. H. Muir, W. J. Wark, R. W. Davidson, J. M. Witters, M. A. Bell, R. S. Hoffman, W. H. Haggman, W. M. Burroughs, E. A. Mead, W. M. Maybank, H. T. Taylor, F. F. Shortsleeves, M. M. Werckman, D. D. Baxter, H. M. Chamberlin, J. W. Shotts and M. T. Thomson.

YOUNG BROTHERS CO., Detroit.—An oven compartment equipped with gas and electric heat will be exhibited. The method of heating by oil or coke also will be indicated. This oven will be arranged to handle cores on lift racks by means of a hand or power lift truck; represented by George A. Young, R. B. Reed, G. G. Parry, T. P. McVicker, W. C. Wagner and A. H. Ackermann.

Efficient Planning and Routing Aids Production in New Cleveland Plant



BY E. W. KREUTZBERG

Fig. 1—Foreman's Desk in Automatic Department. Each Compartment in the Board on the Wall Represents a Machine

IN MANUFACTURING large quantities of small parts, production depends largely upon the ease and rapidity with which the work progresses through its various stages from raw material to the finished product. Experience has proved that in order to insure the steady movement of pieces from one operation to another, each job must be carefully studied before work on it is commenced so that every detail affecting its execution may be anticipated. Once a schedule of operations has been intelligently worked out, it serves as a time table on which the production department and the foreman of the various operating units may depend in handling the job.

Routing, which is the dispatching of work from one machine or department to another, goes hand in hand with planning. Efficient routing is impossible if the operations required to finish a job are not properly planned in advance. On the other hand, the most elaborate planning system is worthless unless it is accompanied by an adequate method of routing.

An unusually good example of a plant in which carefully planned work is efficiently routed is found in the recently completed Coit road works of the National Acme Co., Cleveland. The plant is devoted exclusively to the manufacture of the products of automatic screw machines and allied secondary operation equipment, the average monthly output being in excess of 50,000,000 pieces. The problem of maintaining a satisfactory organization to handle this large production is complicated by the fact that a great many orders of widely varying sizes are executed, involving small parts of many different designs. In planning and routing work it is necessary to consider the capacities of the 1800 machines in the plant, including automatic screw machines, bolt threaders, screw slotters, drillers, grinders, milling machines, second-operation machines, etc. Allowance also must be made for handling a large proportion of the total output of the plant in a heat-treating department which accommodates among other pieces, 250,000 nuts daily and consumes 900 gallons of fuel oil.

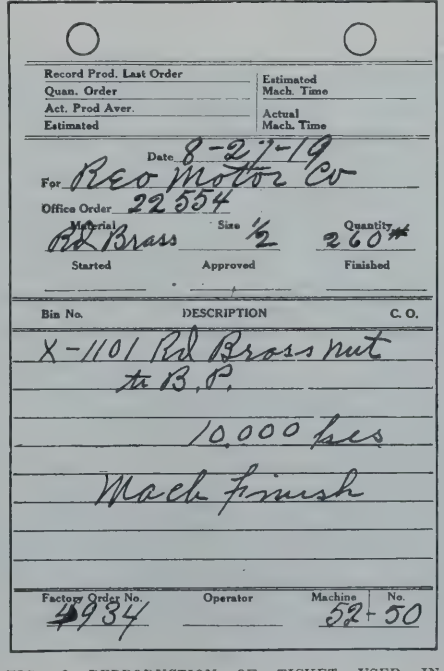

Record Prod. Last Order
Quan. Order
Act. Prod Aver.
Estimated
Estimated Mach. Time
Actual Mach. Time
Date 8-27-19
For Reo Motor Co
Office Order 22554
Material Rd Brass
Size ½
Quantity 260#
Started
Approved
Finished
Bin No.
DESCRIPTION
C. O.
X-1101 Rd Brass nut
to B.P.
10,000 pcs
Mach finish
Factory Order No. 4934
Operator
Machine No. 52-50

FIG. 2—REPRODUCTION OF TICKET USED IN THE BOARD SHOWN IN FIG. 1

The automatic machine products are made exclusively from brass, steel and iron bars which are unloaded from railroad cars and carried on electric trucks to a spacious stock room, 80 feet wide, extending across the full length of the southern bay of the plant. The machines are arranged so that the work of smallest diameter is performed in the eastern portion of the shop, the size of the work increasing progressively in each battery of machines from east to west. The bar material in the stock room is stored in a similar manner, with the small sizes in the east and the largest in the west end of the department. The bars are stacked in racks consisting of horizontal steel beams in which adjustable vertical metal posts, which serve as partitions, are fastened. The bar stock is handled by electric hoists manufactured by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., which run on an overhead monorail system and are equipped with specially designed metal slings for handling the bars. The storage racks and one of the hoists are shown in Fig. 5.

All of the work which passes through the shop is classified as stock or special jobs. Stock jobs comprise the work of standard design, such as bolts, nuts,

screws and studs, which can be finished and stored in anticipation of actual orders. Special jobs are those resulting from orders to customer's sample or blueprint and for which machines must be specially tooled to produce. The designs of a number of representative jobs are shown in Fig. 19.

When an order is received, proper record of it is made in the office of the works manager and a sample of the required piece or a blueprint with specifications is sent to the estimating department in the northeast corner of the plant, adjacent to the offices of the works superintendent and chief inspector. The estimators calculate the speed at which the job can be handled, decides upon the size and type of machine best fitted to do the work and determine the amount of metal, in pounds, required to complete the order. The preliminary survey of the job made by the estimators forms the basis of cost estimates worked out in the cost department.

From the estimators the sample or blueprint goes to the chief inspector who examines its different dimensions, threads, drilled holes, knurls, etc., and orders the required complement of gages to be used by machine operators and departmental inspectors. He also must study the job carefully, anticipating irregularities which might lead to rejection of work.

The sample or blueprint next goes to the general foreman who confers with the departmental foremen upon the method of handling the job. They decide what tools are required, issue the proper orders and send the sample or blueprint, with necessary directions, to the tool room.

Forming tools play an important part in the work of automatic machines. These, together with an adequate complement of tools for each operation, are made in the tool room and delivered to the foreman of the automatic department. After each job is completed, the tools, gages, samples of the work, and the production record are assembled and filed in a specially designed metal rack where it remains for five years.

When a job is received in the automatic department, a card similar to that shown in Fig. 2 is made out. White cards are used for stock jobs and pink cards for special jobs. When the work is assigned to a machine, the card for the job is placed in the compartment of the wall rack shown in Fg. 1 corresponding to the number of the machine. The rack serves as an indicator of the working status of the machines. The three empty compartments appearing in Fg. 1 indicate that only three machines are idle.

As soon as a job has been assigned to a machine, the sample or blueprint and the tools are turned over to the lineman who has charge of the machine. Linemen are experienced mechanics who are familiar with every detail regarding the operation of automatic machines. Each lineman is in charge of a line or battery of machines and is responsible for setting up machines for jobs and making repairs and adjustments. The time required for rigging up an automatic for a special job varies according to the intricacy of the work. When the lineman has adjusted tools and speeds until he can accurately reproduce the sample or conform to the blueprint in quantities corresponding to the speed designated by the estimator, he takes a finished piece and delivers it to the departmental inspector. When he has examined and O. K.'d the sample, the machine is turned over to an operator who is responsible for maintaining production at the prescribed rate until the job is finished.



FIG. 4—EXTERIOR VIEW OF THE COIT PLANT OF THE NATIONAL ACME CO., CLEVELAND, WHE



FIG. 3—PRODUCTION BOARD IN THE CLEARING DEPARTMENT

Each evening a night gang takes the day's run from the machines and replenishes the supply of oil for the next day. The work, which is mixed with turnings, is scooped up into pails by means of specially shaped hoes and carried on electric trucks to the cleaning department. A tin ticket bearing the number of the department and the machine is placed in each pail. In the cleaning department the pails are piled together without any attempt at classification, the tickets in the buckets being relied upon to do this later. The oil is first removed in centrifugal extractors. The dry mass of metal next is placed on a sifter whose inclined screen and jarring action causes the automatic products to gradually slide down the sloping screen into steel boxes at the foot. Most of the scrap in the form of tiny chips, falls through the sifter into boxes to be later dumped into trucks. Drillings and borings are too



UCTS ARE TURNED OUT AT THE RATE OF MORE THAN 50,000,000 PIECES MONTHLY

large to pass through the mesh of the screen and are easily removed by the workman in charge of the apparatus. The power sifter is clearly illustrated in Fig. 6.

The work, free from turnings, is subjected to a steam bath in specially designed washing machines made by G. S. Blakeslee & Co., Chicago. Each of these machines consists of a moving, electrically-operated conveyor and two tanks. Workmen place the products, still in the steel boxes in which they left the power sifters, on the conveyor which carries them into the first of the two tanks where they come in contact with a boiling solution of soda, alkali and water. The boxes next enter a rinsing bath which removes final traces of oil from the products. The boxes are removed from the conveyor, sprayed with thin oil to prevent rust and placed on trucks which carry them to the assorting department, shown in Fig. 12. Here the remaining scrap, consisting of bar ends, etc., is removed.

Progress of Work is Checked

Many of the products of the Acme company cannot be completed on one automatic screw machine and must go to other machines for supplementary operations. The clearing department, which receives the cleaned pieces from the assorting department, is responsible for routing unfinished products to the proper machines for completion. A close check is kept on the progress of each job by means of the production board shown in Fig. 3, which provides for a record of the work of every machine in the automatic department. The large numbers in a column on the left hand side of the board indicate machine departments, while the smaller numbers, in horizontal row, represent the machines. Small hooks in the board support tickets and samples of the work. Each ticket bears information regarding the progress of the work while the finished piece aids the clearing department in tracing the order.

The products of each day's run are weighed, the number of pieces being determined by weight rather than by actual count. As each pail is weighed, the tin ticket which has been previously mentioned, is removed and a white paper ticket bearing the number of the machine, the number of the department and the name of the firm for which the job is being done, is put in its place. The tin tags, having served their purpose, are returned to the automatic departments. The weight of the finished product, as determined in the clearing department, is subtracted from the weight of the bar stock used for the order, and the difference, which represents the scrap, is credited to the customer.

If the weighing of a day's run shows that production on an order is falling behind, the clearing department refers to the production board which shows at a glance which machine is behind in output. The foreman in charge of the automatic is notified of the shortage and provision is made for increasing the output.

The shipping department, a portion of which is shown in Fig. 15, is in the north side of the plant adjoining the clearing department. The finished products are carried to the shipping room in large electric trucks.

A small portion of the special work going through the plant requires polishing in addition to the regular first and secondary operations and for this class of products a special department has been established, comprising a number of vertical polishing machines, as shown in Fig. 9, and additional units of different sizes and shapes. Bolt heads, nuts, screws, etc., which require polishing, case-hardening, etc., pass through the clearing department as in the case of products direct from the machines.

Many of the nuts and screws are case-hardened before they enter the stock room. A battery of case-hardening furnaces, made by Strong, Carlisle & Hammond Co., Cleveland, is shown in Fig. 7. As the automatic products come from these furnaces, they are quenched by means of the apparatus shown in Fig. 8.

Oil Drains From Scrap

About 50 tons of turnings are produced daily from the automatics and nut and special operation machines. This is hauled out of the plant in big dump trucks similar to that shown in Fig. 6, and deposited in a large concrete pit in the rear of the plant. Here it remains for a day or two until practically all of the oil still remaining in it drains into a tank underneath the bin. The scrap is then loaded into cars by means of a locomotive crane made by the Orton & Steinbrenner Co., Chicago.

The Coit plant of the National Acme Co. embodies many features calculated to facilitate production. The main building, shown in Fig. 4, is a 1-story struc-



FIG. 5—LARGE STEEL BINS IN WHICH AUTOMATIC MACHINE PRODUCTS ARE STORED

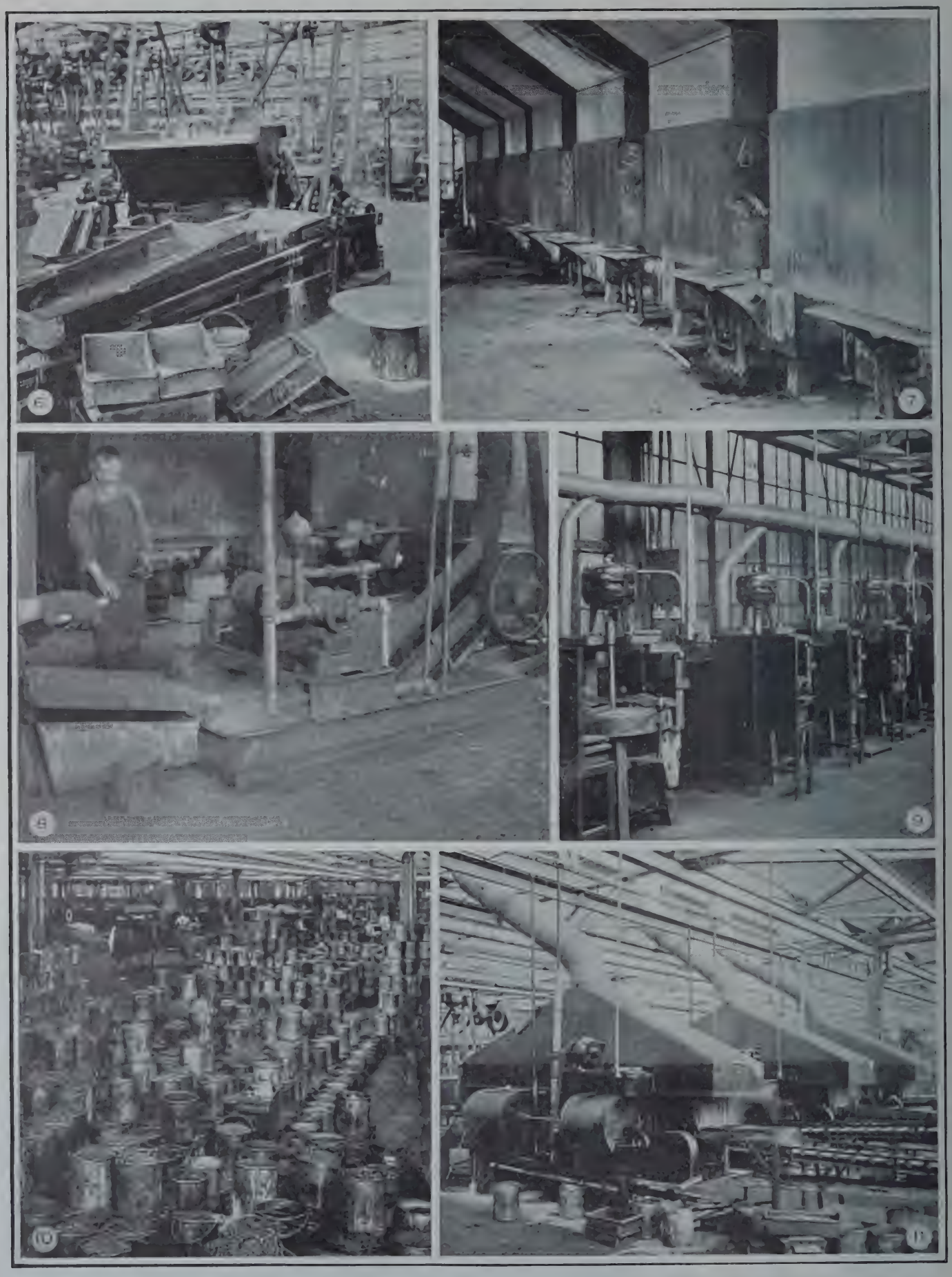


FIG. 6—A POWER SIFTER WHICH SEPARATES SCRAP FROM FINISHED PRODUCTS. FIG. 7—A BATTERY OF CASE-HARDENING FURNACES. FIG. 8—A SPECIALLY DESIGNED DEVICE FOR QUENCHING NUTS. FIG. 9—A ROLL OF HORIZONTAL GRINDERS IN THE POLISHING DEPARTMENT.—FIG. 10—MACHINE PRODUCTS AND TURNINGS AND BORINGS COME FROM THE AUTOMATIC DEPARTMENTS IN PAILS. FIG. 11—WASHING MACHINES IN WHICH FINISHED PIECES RECEIVE A STEAM BATH AND ARE CLEANED BY MEANS OF A SODA-ALKALI SOLUTION

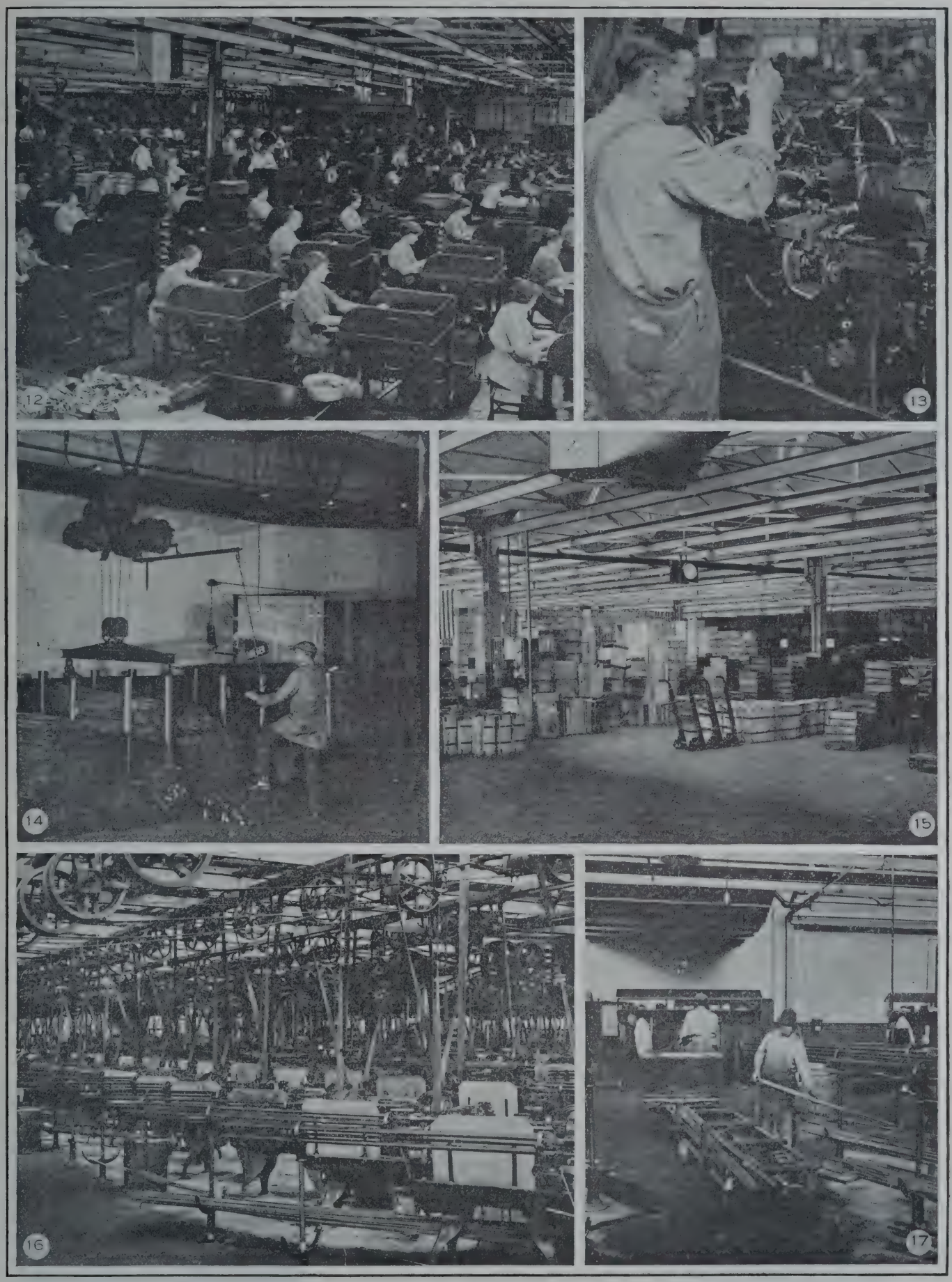


FIG. 12—A VIEW IN THE ASSORTING ROOM. FIG. 13—THE CHIEF TASK OF THE LINEMAN IS TO SET UP MACHINES FOR SPECIAL JOBS. FIG. 14—HOW BAR STOCK IS HANDLED IN THE WAREHOUSE. NOTICE THAT A SPECIAL SLING IS PROVIDED FOR HANDLING BARS. FIG. 15—A VIEW IN THE SHIPPING DEPARTMENT. FIG. 16—AUTOMATIC MACHINES ARE SET AT AN ANGLE WITH THE COUNTERSHAFT. FIG. 17—BAR STOCK IS BROUGHT TO THE MACHINES ON TRAILERS DRAWN BY ELECTRIC TRACTORS



FIG. 18—A VIEW OF ONE OF THE WASHROOMS IN THE COIT PLANT OF THE NATIONAL ACME CO.

ture with sawtooth roof covering approximately 7½ acres. This type of construction, which permits the use of large areas of continuous sash above all working floors, affords good daylight illumination. Artificial lighting is provided for by high-powered electric lamps spaced at intervals of 25 feet and located 11 feet above the floor.

An unusually effective heating and ventilating system has been installed. Each of the four units consists of a supply fan, heater, air washer and return fan, vacuum pumps and circulating pumps. The air washers of the two larger units have a capacity of 90,000 cubic feet of air per minute. The air entering the washers may come from outside the plant, or if desired, returned air may be re-employed by opening louvre dampers which control the volume of air to be recirculated. The washed air enters the heater, where it is heated by means of live steam reduced to 5 pounds pressure and exhaust steam from pumps and engines. The condensation from the heaters is collected in four heavy-duty traps and discharged by means of a vacuum pump into feed water heaters in the boiler room. The washed and heated air is distributed in the plant through supply ducts suspended above the lower chord of the trusses. The supply and return fans may be driven by motor or steam engine.

Fig. 18 shows one of the wash rooms of the plant. The floor throughout the main building is of woodblock. In each department where oil is used extensively, sawdust is thrown on the floor in the morning and swept up in the evening. The sawdust, with its accumulation of oil, is burned.

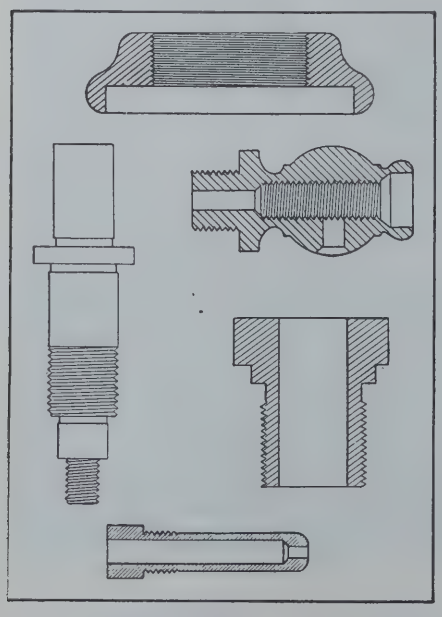


FIG. 19—CROSS SECTIONS OF CHARACTERISTIC AUTOMATIC PRODUCTS

Cafeteria Serves 1500 *Employes*

Among the features recently added to the plant is a cafeteria system, consisting of several serving units in convenient parts of the building and a central kitchen in which food is prepared for all units. The cafeteria is well equipped and amply fulfills the needs of the 1500 employes. Separate dining rooms are provided for men and women.

The National Acme Co. also operates a large plant on Stanton avenue, in which automatic machines, threading dies and taps are manufactured. Prior to the time the Coit plant was completed, the manufacture of machines and machine products was carried on in the old plant. Building operations on the Coit plant were commenced in the fall of 1917 and during the war a portion of its capacity was devoted to the production of parts for Liberty motors. The officers of the company are A. W. Henn, president; E. C. Henn, vice president and general superintendent; and N. S. Rathburn, secretary and treasurer. W. R. Mitchell is works manager of the Coit plant.

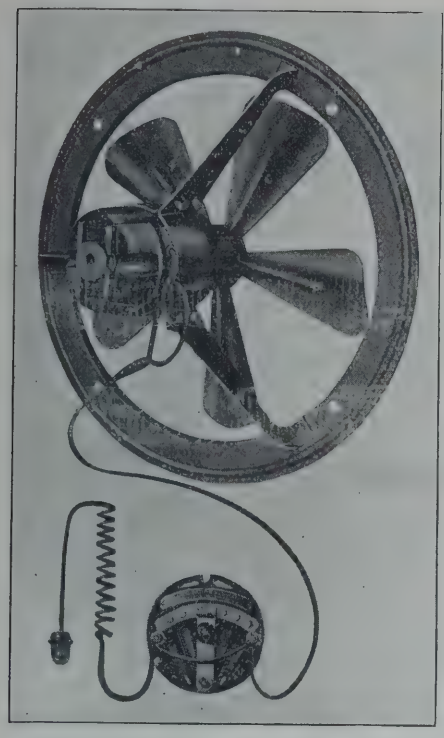
Pattern Plates Dried by Electrical Heaters

Moisture, which collects on the surface of cold-metal patterns, comes from the damp sand and from the atmosphere on humid days. When a pattern is wet the sand of the mold adheres to it causing small holes on the surface of the mold which then produces a rough casting.

The collection of moisture can be



HEATING METAL PATTERNS ELECTRICALLY



VENTILATING FAN, SPEED CONTROLLER AND FLEXIBLE CORD

prevented by heating the pattern. The heat applied, however, must not be so great as to cause the sand in the mold to dry, as it would then crumble away and again the casting would have a rough surface. Furthermore, the heat must be applied in such a way that the pattern can be conveniently changed when desired.

The usual method of heating is by means of a gas flame left burning in the space underneath the pattern within the frame work of the molding machine. It is difficult to keep the flame low enough so that it will not heat the pattern too much. A larger flame than necessary is, therefore, employed at some distance from the surface of application. This makes an inefficient arrangement, as most of the heat is dissipated into the surrounding space. Some trouble is also experienced in keeping the flame properly regulated.

In order to obtain a more efficient and convenient method for heating molds the Westinghouse Electric & Mfg. Co. manufacture electric heaters, one style of which is shown in the accompanying illustration. Two steel-clad heaters are shown mounted in the space immediately below the metal pattern plate, within the frame-work of the molding machine. In order to use as little heat as possible, they are located just below the thickest pattern used. They are attached to supporting angles connected to the frame of the machine. It is obvious then, that any pattern of any thickness and of any size within the capacity of the machine, may be attached to or removed from the molding machine without being interfered with by the heaters, and without disturbing the heaters.

An asbestos insulating plate is inserted just below the heater to prevent undue loss of heat.

The heaters consist of slotted ribbon resistors insulated in mica troughs, the whole being enclosed in a heavy sheet-steel casing. The two heaters used on each machine have a total rating of 300 watts and operate on 110 volts. Connection is made to a wall recepticle convenient to the machine, by means of a flexible cord having a separable attachment plug on the end of it.

If for any reason, such as the machine standing idle, the pattern plate should become overheated, it is only necessary to pull the plug from the recepticle and leave the heater disconnected until the plate cools to the proper temperature.

Small Ventilating Fan is Easily Installed

A light fan has been designed by the Buffalo Forge Co., Buffalo, for ventilating close or fume-filled offices, chemical plants or shops. It is claimed that the 5-blade fan, which is 16 inches in diameter, can handle 1000 cubic feet of air per minute. The motor, which is totally enclosed, has a variable speed and operates on any 110 or 220-volt direct-current or single-phase alternating-current of from 25 to 60 cycles. Ball bearings are used to produce smooth and noiseless running.

The motor is supported in a pressed steel tripod which offers small resistance to the flow of air. No wiring is necessary in installing the fan, the flexible cord and plug being made to fit an ordinary light socket. A speed controller designed to give six speeds ranging from 500 to 1000 revolutions per minute is part of the fan equipment. The fan is rated as approximately 1/30 horsepower.

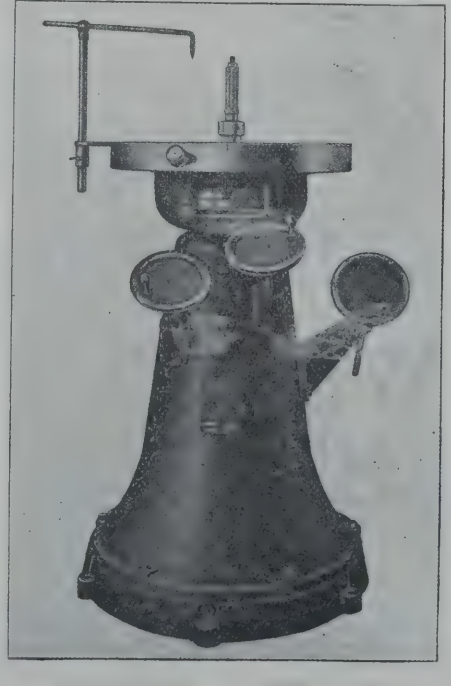
Designs New Machine for Dynamic Balancing

To insure quiet running, rotating parts should be carefully balanced. Otherwise vibration is bound to be in evidence. This applies to all revolving units that are run above normal speeds such as flywheels, gears, propellers, turbine rotors, etc. An expert workman can balance almost any running part in the engine lathe provided he is given plenty of time. However, as he is guided by rule-of-thumb only, the results are gained at a high labor cost.

To permit the balancing of rotating parts quickly, the machine shown in the accompanying illustration recently was developed by the Crawford Tool & Mfg. Co., Chicago. This machine is designed to handle rotating parts which need not be in static balance. When the machine is set in motion it indicates the amount of vibration that is present. Then, by means of tables which accompany the machine, the correct amount of metal to remove from the heavy side is readily ascertained.

The operation of the machine is comparatively simple. The operator puts the part to be balanced on the spindle and locks it securely in place. The machine is then started at low speed and if the indicator does not show a vibration exceeding 10 points the speed is increased. Then by manipulating the hand wheels at the front of the machine, the part is brought in balance. This is accomplished by throwing the spindle off center. The amount to remove from the part to bring it in balance is easily found. Thus after the heavy side has been lightened, as for instance by drilling, the part is tested again.

It is said that the machine is simple to operate and that with a little experience an ordinary operator can bring the piece to be tested into dynamic balance within eight seconds. A chart accompanying the machine gives the number and depth of holes to drill to remove various amounts of metal in balancing.



SELF-CONTAINED BALANCING MACHINE

Government's Stocks Increase

Liquidation of Contracts Progressing so Rapidly That War Department's Iron and Steel Tonnage Advances From 577,021 to 643,515 in Month — 87 Per Cent of Contracts Now Settled

WASHINGTON, Sept. 23.—Liquidation of contracts by the war department has progressed so rapidly that the stocks of iron and steel it had on hand Sept. 9, 643,513 tons, practically all of which were held by the ordnance department, exceeded by approximately 65,000 the quantities on hand Aug. 9, when the total was 577,021 tons. Figures showing the tonnage on hand on the former date are presented in an inventory completed last week by the raw materials and scrap section of the war department.

Of the stock on hand, 335,999 tons was listed as scrap. This included such items as 174,123 tons of shell forgings, as compared with 224,219 tons of similar material on hand Aug. 9. The increase in stocks on hand is reflected chiefly in adapter and booster assemblies, scheduled as scrap, of which there was 86,771 tons, as compared with only a light tonnage on Aug. 9. Billets showed a decrease from 110,382 tons to 93,186 tons, and ingots from 46,270 tons to 35,572 tons. Nonferrous metal on hand totaled about 110,000 tons.

The itemized schedule of tonnage held by the ordnance department, representing virtually the entire total, follows:

Raw Materials:	Tons
Ferromanganese	37
Ferrosilicon	162
Pig iron	4,985
Speigeleisen	476
Zirconium ore	740
Manganese ore, ground	120
Miscellaneous	24
Total	6,544
Semifinished	
Billets	93,186
Ingots	35,572
Nickel steel ingots	3,731
Total	132,489
Finished	
Band iron	23
Bar iron	42
Flat iron	52
Galvanized iron	37
Sheet iron	72
Structural iron and steel	624
Armor plate	1,800
Miscellaneous sheets and plates	75,932
Flange steel	2,088
Rails	1,065
Cold-rolled rods and sheets	16,975
Hot-rolled rods and sheets	1,721
Drill rods	237
Welding rods	69
Shell rods	37,354
Adapter steel	1,095
Annealed steel	1,011
Beveled steel	11
Coil steel	113
Copper-clad steel	5
Decarbonized steel	36
Galvanized steel	162
Gun steel	1,817
Hexagonal steel	982
Machine steel	223
Reinforcing steel	503
Screw stock	10,277
Special steel	588
Spring steel	93
Strip steel	1,431
Tool steel, carbon	2,744
Tool steel, high speed	233
Miscellaneous tool steel	827
Tin plate	1,886
Terne plate	586
Bars	93
Miscellaneous	400
Square bars, 2½ inch	30
Plates and angles	177
Strap iron	8
Tubing	538
Pipe and tube	600
Total	164,560
Alloys	
Manganese steel	105
Chrome steel	78
Chrome nickel steel	71
Nickel steel	3,179
Nickel steel plates	79
Chrome vanadium steel	511
Total	4,023
Scrap, total	335,999
Aluminum	70
Brass	108,311
Bronze	267
Copper	363
Lead	1,013
Zinc	10,887

Contracts reported on Aug. 30 as liquidated by the war department totaled 22,030, or 87.4 per cent of the 25,196 contracts suspended. Of the liquidated contracts 10,022 or 45.5 per cent relate to purchase and storage. The value of liquidated contracts is $1,981,005,000, which is 52.5 per cent of the total value suspended, $3,774,964,000. The value of uncompleted portions of contracts liquidated during the week ended Aug. 30 was $40,670,000, payment to contractors in settlement being $6,433,000, the saving effected being $34,237,000, or 84.2 per cent.

An outlay of $251,000,000 will be required to secure relinquishment of the $1,794,000,000 of suspended contracts still unliquidated, assuming that future liquidation in each bureau can be effected at the same rate of cost as has obtained in the past. The bureaus having the largest values of unliquidated contracts are: Ordnance, $1,390,000,000; air service, $250,000,000, and purchase and storage, $134,000,000.

Tractors and heavy artillery constituted a large part of the August production. The important items include 95 175-millimeter recuperators; nine 155-millimeter gun forgings; 13 155-millimeter guns; nine 240-millimeter howitzer forgings; 27 240-millimeter howitzer machinings; 18 240 millimeter howitzer recuperators; 18 240-millimeter howitzer carriages; 20 12-inch railroad car mortars; 600 Browning tank guns; 92 10-ton artillery tractors, and 53 20-ton artillery tractors.

Allied Nations in Trade Conference

WASHINGTON, Sept. 23.—Delegates from England, France, Belgium and Italy will be present as representatives of the metal industries of their countries at the international trade conference to be held at Atlantic City, Sept. 30-Oct. 3, at the invitation of the Chamber of Commerce of the United States.

Among the British delegates will be Bailie John King, chairman of the National Light Castings association. French delegates will include M. Paul Schneider, president of the French mission and of the Creusot Works; M. Pousset, M. Peson and M. Dion, engineers, the first named being assistant to M. Schneider. The French delegates will represent chiefly the steel industry. Among the Belgian delegation will be Albert Never, engineer and manufacturer, and Louis Canon-Legrande, president, permanent committee of the international congress of chambers of commerce; president of the Federation of Commercial and Industrial associations of Belgium, and president of the Chamber of Commerce of Mons. The Italian delegation will include Commander Pio Perrone, of G. Ansaldo & Co., representing the shipyards and metal manufacturers of Italy.

Under the heading of major topics at the conference is scheduled economic readjustment of commercial and industrial conditions in England, France, Italy and Belgium. It is deemed essential that a frank state-

ment be made as to what is needed to place these countries on a basis of stable and enlarged production. This may involve an inventory of available supplies and resources, with the view of arriving at an estimate to serve as a guide to American business men, manufacturers, producers, bankers, etc., in planning their trade relations in the future.

Foreign exchange and all the forms in which questions of credits may arise will be discussed. England recently announced a plan for credits up to three years in connection with sale of British goods to unsettled parts of the Near East. Italy may have special needs for capital for rehabilitation and expansion of its industries and may find value in an opportunity to describe the relation of its proposed taxation on capital to new investments. Even the German mark and its exchange value may be considered.

"It is recognized that wars have been due to trade rivalry," says the national chamber's announcement. "Perhaps it has not been sufficiently noticed that the commercial hostility which leads to armed conflict may probably be a cumulative effect of innumerable irritations of unfairness and discrimination, having an influence in official circles which are in communication and sympathy with the commercial class. These practices are all manifestations of a spirit of hostility which might possible be lessened by discussion. A general consideration of unfair competition in foreign trade to see how far the principles of fairness, which have been applied in legislative and administrative regulation to domestic trade, might be applied to international trade."

There will be an American committee for every subject, including producers, shippers and economists who will meet from day to day with the foreign delegates. By this method of procedure every foreign delegation will have opportunity to state the needs of his country to the appropriate committee.

Government to Complete By-Product Ovens

Washington, Sept. 23.—Expenditures to the extent of $15,000,000 are being made by the war department for the construction of by-product coke ovens, witnesses told the house committee on war expenditures last Friday. The building of the ovens had progressed to such a point by the time the armistice was signed that it was held to be impractical to cancel the contracts under which they are being erected. Witnesses included Col. J. H. Burns, former Capt. George R. Roe, of the ordnance bureau, and Russell S. McBride, of the bureau of standards. It was stated that the supply of toluol exceeded the army's needs.

The contracts involved four plants, including those of the Donner Union Coke Co., Buffalo; the Domestic Coke Corp., Fairmount, W. Va.; the Birmingham Coal & By-Products Co., Birmingham, Ala., and the International Coal Products Co., Clinchfield, Va. The contracts for the first three plants were given to the Koppers Co., and involve an expenditure of $13,000,000. The expert adviser of the bureau of ordnance for the building of the plants was C. J. Ramsberg, who is associated with the Koppers Co.

Captain Roe, the engineer in charge, said that the government, which is advancing the money to build the ovens, has the right to take any part of their product, with the condition that, when completed, the prospective owners will take them off the government's hand at an appraisal which may be as high as 85 or 90 per cent of the cost.

The contract for the plant at Clinchfield went to Ford, Bacon & Davis, engineers, the government advancing $2,000,000 to the owners, which is to be repaid in full in four annual installments with 5 per cent interest.

Submit Plan For Disposal of Merchant Fleet

Washington, Sept. 22.—A plan for the gradual disposition of merchant vessels will be urged upon congress by the National Merchant Marine association if recommendations of the executive committee of the association are adopted.

The committee is convinced that ultimate private ownership and operation are essential to the upbuilding of a merchant marine but at the same time its investigations have brought it to the conclusion that an immediate sale of all the ships is not only undesirable but impractical.

The committee recommends that the government sell its steel vessels of desirable types to American individuals or firms as the demand from responsible purchasers develops. The smaller vessels, the committee thinks, should be sold at once, without restriction as to purchasers.

Pending the development of a market for the government ships, the committee recommends that the vessels be chartered to private concerns. Such government vessels as are operated by the government the committee feels should be used to develop new trade routes and should not be used to compete with privately operated lines where those lines are giving adequate service.

Freight Rates to Uruguay and Argentina Reduced

Washington, Sept. 23.—Reductions ranging from $2 to $7.50 a gross ton have been made by the shipping board in freight rates on iron and steel articles from United States Atlantic ports to ports in Uruguay and Argentine. Plain wire is included in the list. The reductions, which became effective Aug. 21, include the following:

Iron and steel articles to Montevideo, Uruguay and Buenos Aires, Argentine, from $20 to $18; barbed wire, from $22.50 to $20.

Iron and steel articles to La Plata, Argentine, from $22.50 to $20; barbed wire, from $25 to $22.50.

Iron and steel articles to Rosario and Bahia Blanca, Argentine, from $25 to $23; barbed wire, from $27.50 to $25.

Iron and steel articles to Port Madryn, Argentine, from $35 to $30; barbed wire, from $40 to $32.50.

Col. Woods Makes Plea For Technical Men

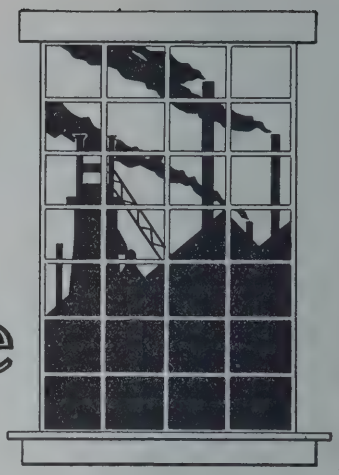
Washington, Sept. 23.—More than 15,000 discharged officers and enlisted men of technical and professional training and executive ability have been in communication with Col. Arthur Woods, assistant to the secretary of war, concerning their employment in civil life, since the establishment of his office in Washington. Of this number some 10,000 have been referred to opportunities for employment in practically every line of business requiring men of special training.

"During the war, and since the armistice, so many changes have been made in the personnel of manufacturing concerns and business organizations in general, that a large number of technical men on their return find it necessary to look for new places in their professions," said Colonel Woods. "Theirs has been a difficult problem for several reasons. One is that while they have been directing their energies along new lines, their work back home has often been undergoing radical changes.

"Some have not been placed, and others are to be relieved from service. It is for such men that we are making effort to open new fields. The revival of the construction of public works has helped much, but this source cannot be expected to assume the full burden, and we must look to the business world for opportunities. We hope that they will be offered to us."

Little Stories of Business Life





A Precious Quarter

TO write a $4,000,000 check in payment of a property which five big steel companies had tried in vain to obtain within the past two years, then be virtually held in pawn in a barber shop waiting for some one who knew him to come in and pay for his shave is an experience that befalls few of us. But it happened to Charles M. Schwab recently. Mr. Schwab went to Pittsburgh, met James J. Flannery and J. Leonard Replogle, went out to the Bridgeville vanadium works, inspected the plant and then wrote a check for $4,000,000, payable to Mr. Flannery. Later in the day Mr. Schwab stopped for a shave in the barber shop of the Dusquense club.

"Nobody I knew came in for nearly an hour," said Mr. Schwab in telling the story. "Then I saw Willis L. King, vice president of the Jones & Laughlin Steel Co., and Willis loaned me a quarter. I paid the barber and got out of 'hock.'"



Blast Furnace Twins

NOT often is it possible for two crews of blast furnace workers to compete with practically all elements exactly balanced, and to compare production figures from month to month. Such a case now exists in the Chicago district, two stacks having been built from the same plans at almost the same time by the same engineers and both under the same ownership, but located several miles apart so that absolutely separate organizations control them. One of these is at the plant of the Iroquois Iron Co., South Chicago, and the other at the plant of the Mark Mfg. Co., Mark, Ind., both subsidiaries of the Steel & Tube Co. of America. So closely do these stacks run that more than a few hundred tons difference in the monthly output never is noted. In the 31 days of August, the tonnage was about 400 tons in favor of one stack. The sport of competition between the operating forces of the two plants is keen and it serves to produce the best possible work from those responsible for results.



Preparedness

HOW the foresight of the Perrone brothers, operating the great Ansaldo Co., at Genoa, probably saved Italy from defeat at the hands of Austria is related by Frank A. Vanderlip in his new book "What Happened in Europe." When Germany began the war, and before Italy became involved, the Perrone brothers converted their plant into an ordnance establishment. They could not obtain at that time orders from either the allies or from their home government. Regardless of this fact, however, they made 2000 pieces of ordnance of the same design as the most efficient French guns.

"Then come the Ceperetto disaster," Mr. Vanderlip relates. "Not until that awful defeat did the Italian government turn to them (the Perrone brothers) with cries for guns. When the first order was placed the officials were confounded on being told that the guns were ready for immediate delivery. These 2000 guns were at once put in the field to take the place of the vast losses which the Italian army had sustained, and furnished Italy a service in stopping the advance of the Austrians the value of which can hardly be measured."

Steel Spines and Millions

FOR years metaphors have been taken from the world's great basic industry, the iron and steel business. We have heard of "the iron heel" and "the mailed fist," many times during the past five years. Ancient history refers to "the iron-clad army." Memory also brings "the iron chancellor" into prominence when Bismarck is mentioned. The Bible refers to "the pen of iron" and "the rod of iron" while Shakespeare speaks of "the steel couch of war" and wrote: "Grapple them (friends) to thy soul with hoops of steel." Modern oil stock venders, likewise make use of such similes. One Texas oil company's get-rich-quick propaganda appeals to the gambling instinct direct. The promoters are "playing a game that has made millionaires over night;" but state "it is not a game for weaklings but one for 'steel-spined speculators.'"



Averting Strike Loss

AN incident connected with the Akron, O., machinists' strike, indicates how a fair-minded operator of a machine shop in Cuyahoga Falls, O., kept his shop running full and his men at work after they had declared their intention of walking out in sympathy. One morning after the workmens' spokesman had delivered their ultimatum, the owner of the shop went out into it, called his men around him and said:

"Men, you have told me that you are going to strike in sympathy with your Akron friends and I don't blame you. Were I in your place, I should strike too. But, let's look at this proposition in the right light and do a little sane financiering. We all live

here in Cuyahoga Falls; if you strike, you'll be without work for the duration of the walk out and at the end you'll be out just so much money. I'll tell you what I'll do. You stay on and work and let the Akron men strike, if they want to. If they strike and gain their demands, whatever they are, I'll adopt them for this shop union or nonunion. If the award is made retroactive, it will be made retroactive here as well. Now, what do you say, are you going to stay on at work and keep this shop running full?"

A chorus of "sure" was the response and the shop has seen no idle moment since.



Owe Schwab a Title

SCHWAB should have been made a duke. If any man ever deserved the gratitude of England, Schwab is that man. But he has not even received the "order of the bad egg."

Thus Baron Fisher of Kilverstobne, former first lord of the British admiralty, in a recent article on the war compliments Charles M. Schwab for the service he rendered England in delivering "a batch of submarines" in record time.

"When I left the admiralty on Jan. 1, 1910, there were 61 efficient submarines and 12 were building," Baron Fisher wrote. "When I returned to the admiralty in October, 1914, there were only 51, so I sent for Mr. Schwab, of the Bethlehem Steel Works, and he delivered a batch of submarines in five months, an unprecedented feat, as 14 months was the record until then. These H type submarines built by Schwab went unconvoyed from America to the Dardanelles and acted there prodigiously."



Music Hath Charms

FEATURED at the recent convention of the National Association of Organists, in Pittsburgh, was an address by Frank E. Morton, acoustic engineer of the American Steel & Wire Co., Chicago, New York and Cleveland. It was entitled, "The Organist's Influence and Responsibility," and presented the great and pressing need of a new kind of music to be used as a stimulating force in modern industry. Mr. Morton urged the organists to realize the perils of the music famine in this vitally important field and to exert all their influence in encouraging an output of the right sort of music for use in the workshops of today. He said in part:

"For scientific agriculture the old plantation melodies are not adaptable; for the vast woolen and cotton mills of today the spinning song is out of date; the herdsman's pastoral is too feeble to combat the cacophonous chorus of a stockyard; stokers in a liner's engine room or deckhands on an oil tanker do not respond to barcarole; roller process mills fail to chime in with the rollicking ditties of the jolly miller; and the village blacksmith can sing no role in the great ensemble of an automobile factory.

"Music of today is not impotent to typify anything beyond the most primitive activities of man. Industry is not unpoetical, inartistic, unmusical because its magnitude for the moment staggers the imagination of the music purveyors so that they turn from it to paltry trifles.

"For a time science, too, lost its contact with life; perched itself on an inaccessible peak and considered it derogatory to its Godlike achievement to be of practical, human everyday assistance. But science for science's sake has had its day. Live science has become a reality, a big reality. Live music, that will do its part in turning the wheels of the world's workshops, is a possibility of the future."



Machinery by Air

THE feasibility of transporting machinery and supplies by airplane to the numerous gold and silver mines in the States of Sinaloa, Mexico, is to be investigated by the British government, according to an article in a recent issue of *Commerce Reports*. According to the story, it appears that a British company is prepared to organize and operate an air service between the mines and railway stations for the transportation of machinery and supplies to the mines, which, due to their mountainous location and the absence of roads, at present are practically isolated. At present it is practically impossible to transport heavy machinery to these mines and the only machinery which can be transported must be carried on the backs of burros, whose maximum limit of carrying is about 500 pounds each. It is understood that it would be the purpose of the proposed company, to transport machinery weighing several tons.



Eminence in Small Places

MANY articles in common use come into our hands without a thought as to their production, thus the obscure little town of Westfield, Mass., produces 90 per cent of the world's whips, and another little New England town, Alton, N. H., has the world's largest plant for the manufacture of cork screws. William R. Clough, the manager of the latter company, is the inventor of a machine which automatically turns out the completed articles. A piece of wire is fed into the machine at one end, and comes out in the form of finished cork screws at the other. These machines while in existence more than 20 years are still protected by patent interests, and although they are leased to anyone desiring to manufacture cork screws, they are never sold.



Purpose, the Stabilizer

SECRETARY LANE of the interior department, in appearing before the senate committee on education in behalf of the Americanization bill, summed up what was accepted as a comprehensive view of the reasons for the industrial unrest in this country. He said:

"The people want thought given to their concerns. They knew where they were going during the war. They were all co-operating for the destruction of the enemy. They enjoyed the definiteness and the concreteness of that objective. They could see where they were going each day. Then peace came and they lost that objective.

"Life seemed comparatively without purpose. They were thrown back upon themselves and to purely selfish concerns. We lost our national morale because we failed to keep alive the idea of Americanism as we had kept it alive in the war. We had been going forward purposefully in the great work of winning the war and we did not shift back quickly enough to the work of putting our steam into the work of giving a new motif to the American drama."



Benefic Combination

AN interesting contribution to the literature on the high cost of living comes from the department of agriculture. Incidentally, it indicates dealers apparently are making some profits which, under pressure, they are willing to forego. This is the item:

"Through efforts of the farm bureau office of Eddy county, N. M., baling ties were obtained at an actual saving of $450. The orders were pooled and placed through a local store. In addition to the above saving, prices charged by other dealers dropped from $1.75 to $1.30 a bundle."

Piez Declares for Open Shop

Former Director-General of Emergency Fleet Corp., Urges Employers Not to Yield a Particle on Principle Merely to Obtain Temporary Peace—Sees no Hope for Unions Until Leaders Who Violate Pledges are Expelled

ORGANIZED labor cannot hope to make further progress until it has purged itself of leaders who violate agreements made with employers, Charles Piez, former director-general of the Emergency Fleet corporation, told representatives of the Associated Business Papers at their annual meeting in the Congress hotel, Chicago, Sept. 18. Mr. Piez declared in favor of the open shop, and narrated the experience of the Link-Belt Co., of Chicago, of which he is president, to prove that the open-shop principle must prevail, at least until labor is ready to abide by its solemn covenants. Particular significance was attached to his reference to the open shop by reason of the attempt of organized labor in the iron and steel industry to force the issue on employers.

Mr. Piez declared the Link-Belt Co. has operated an open shop for 13 years despite frequent attempts to unionize it. It has done so, he pointed out, because on four successive occasions trade union leaders with whom it had dealings failed to keep their pledges. The employes now recognize that the company is right in refusing to deal with "the welchers" of the trade unions.

Union leaders broke their agreement in the case of the Seattle shipbuilders' strike, Mr. Piez said. The Fleet corporation was bound to certain labor policies which it did not formulate and upheld them when certain labor leaders demonstrated they could not be trusted. It demanded strict adherence to the principles to which the men had subscribed. He urged all employers to stick to principle and not yield in the slightest for the sake of maintaining peaceful relations.

The administration's labor policy, he stated, involved permission to unionize many plants which for years were nonunion, and also provided for shop committees. Labor conditions which obtained in war time have had an effect on the present, but Mr. Piez said he was not sure that shop committees will prove a solution for the labor problem, chiefly because of the delay which is necessarily encountered.

A great share of labor unrest is due to the fact that employes have a wrong understanding in regard to the profits made by employers. Foreign-language newspapers and propagandists are teaching the workers that their employers are making enormous profits, with the inevitable consequence of breeding distruct and avarice. This situation should be met squarely and employers should do all in their power to refute the statements. Mr. Piez said much depends on the training and capacity of foremen and superintendents. His experience as a manufacturer, he declared, convinced him that the only logical method for paying workmen is on a production basis.

Issue Must Be Met Squarely, Says Piez

IF there is any cloud on the horizon of American business, if there is any menace to the continued prosperity of American industry, it lies in the present day labor unrest," said Mr. Piez. "No matter where it had its origin the unrest is being capitalized today by a group which is not aiming at a mere improvement in the conditions and hours of labor, but which is aiming at the control of industry and the control of our great government as well.

"There are some 700 or 800 foreign-language publications, all of them containing poisoned articles against the fairness of the distribution of the profits of industry and against the fairness of our system of government. There are something like 2500 paid lecturers drawn from foreign-born and native intellectuals, who put up a continuous story of the wrongs of the present wage system and the present social regime. Perhaps the biggest cause of unrest, and I have met this not only in my own business repeatedly, but also in my experience with the fleet corporation, is the exaggerated notion which the men have of the profits of industry.

WE have run an absolutely nonunion shop in Chicago for 13 years, and we have done it in the face of a combined effort to unionize us. Why? The men realize that we are justified in our position because in the case of four successive agreements we had with the unions, the unions welched on each and every one of them. The men realize I won't deal with a welcher in business, and until the unions purge themselves of such leadership, a leadership that renounces a solemn covenant and is perfectly willing to breach an agreement for a temporary advantage, the Link-Belt Co. will have nothing to do with organized labor in this city.

Some six years ago we were threatened with a strike at our Indianapolis plant. We have there something like 2200 men. The superintendent called me up and asked me if I wouldn't come down and address the men. I have been in the habit of getting all our workmen together and talking to them collectively for many years, finding this to be highly effective. I hurried to Indianapolis and found when I got there that the strike was threatened not by any conditions inside of our plant but because of some grudge against another plant with which we had nothing to do, and over which we had no control. The strike involved the machinists and toolmakers, two of the very vital crafts in our industry.

"We called them together and I gave them a talk. After I got through, I asked them whether they had any questions to ask. One man who had been with us many years, a very able toolmaker, said: 'Mr. Piez, don't we earn our day's pay in two hours' work?' And I said, 'Well, now, let's examine that. How many hours a day do you work? Nine a day, don't you?' He said, 'Yes.'

"'What do you get?'

"'Sixty cents an hour.'

"'Then your proposition is that you earn $5.40 in two hours' work, for which we pay you $1.20?'

"He said, 'Yes, that is right.'

"I said, 'That means that we are making a profit of $4.20 a day out of your labor. Four dollars and twenty cents for two hours, or $2.10 per hour

profit out of your labor. That is three and one-half times your hourly rate, and if we carried this same argument through, our profit must be equal to something like three and one-half times our total pay roll.'

"I got a blackboard and went through the figures, demonstrated that if his conception of his earnings and the value of his earnings and our profits was right, the profits of the concern would have to be about three and one-half times our pay roll.

"This happened in March, soon after our annual meeting. I sent for our annual report, and then demonstrated that our profits for that particular man were less than $1 per day; the total about 25 per cent of the pay roll instead of 350 per cent. The man said he never knew our profit was so small.

"The radical preachings in the foreign press constantly emphasize the fact that between 80 and 90 per cent of the earnings of the individual go to the master as profit. In the Seattle strike the feeling was that the earnings of the owners were 90 per cent of the total earnings of the man; the company got $60, out of which it paid him $6. A very simple and quick calculation showed the absolute fallacy of that; showed that the profits computed on that conception were between four and five times the value of the annual output.

Sane-Minded Being Misled

"That statement was repeated to me at a conference held in Washington where there were 120 representatives of labor of the western coast. I am giving emphasis to it at present because I believe the fact that the sane-minded, intelligent American workmen have the idea that they are being treated unfairly, and are receiving too small a share of the profit, lies at the very bottom of the general unrest.

"I have no fear that they are going to lead the American workmen into the camp of Bolshevism, but I do fear they are going to change their perspective, because these statements are insiduously made and never refuted.

"Manufacturers shroud their business in too much secrecy. They don't talk it over with their men. I would feel like a thief if I thought that part of the earnings of our company were filched from the men by withholding from them a just part of their earnings. And on that account I am prepared at any time to discuss it with them, to be converted to their side or convert them to mine, if that is possible.

"I have thought that the best way to reach our men is to reach them through our superintendents, our foremen and subforemen. I find that most of those men are intelligent, active, alert Americans, typically good citizens, upon whose judgment we rely to create sound public opinion, and they must be the judges of the correctness of our theories and our methods, and serve as our champions.

"I find among these men there are wrong theories. Some have gotten away from the feeling that this government is a government by majority; they feel there is virtue in an organized minority, an aggressive, vociferous minority, because in certain cases the general public has bowed to the demands of just such a minority. I feel, therefore, that there is absolute need of bringing the foremen and the subforemen back to a realization of the fundamental principles of constitutional government and of business economics."

Mr. Piez then said his company operates on open-shop principles and has done so for 13 years in the face of repeated efforts to unionize it. In the case of four successive agreements his company had with the unions the unions violated them, and he declared that until the unions purge themselves of leaders who renounce their covenants his company will have nothing to do with them. Continuing he said:

"That same doctrine dominated the Emergency Fleet corporation in the Seattle strike. There, too, was an absolute breach of an agreement, solemnly signed; an agreement drawn up in the presence of the leaders of the Puget sound movement, breached three months before its expiration. Why? Because the leaders there were advised that by demonstrating their power they could win. They didn't win. Whether men are employes of the government or of private industries, if they breach an agreement they ought not to win.

"The fleet corporation took control and declined to have any conference with the men until they returned to work, and the fleet corporation resisted some very powerful political and social pressure to confer with the men. The men had had their hearing before a properly constituted board in accordance with their agreement. They were awarded less than they asked for, and they appealed to the appeal board provided in the agreement, and they lost before that. There was no opportunity for further compromise.

"Somewhere you must stop. You can't have a supersupreme court about the supreme court. That isn't democracy. We emphasized the principle there, and it was a very beneficent principle. It is a good doctrine because some employers are willing to compromise, even though a matter of principle is involved.

"The conditions under which labor should work were not developed by the fleet corporation. I accept my full share of responsibility for the things done by the corporation, but I accept no responsibility for the labor principles under which we were compelled to work. The principles involved practically permission to unionize plants that for years had been nonunion; and it involved the creation of shop committees.

"Most employers, recognizing that the administration had declared in favor of these principles, went wholeheartedly to work to carry them out as best they could, but I remember a case on the west coast in which the shipbuilder appointed a shop committee of three, which consisted of two sons and one nephew. That was hardly in the spirit of the agreement, and it came very near upsetting the entire industry in that district.

"I am not prepared to say that the shop committee is an entire solution of the difficulties that are likely to arise. Some one has said that perhaps it was a good thing the ten commandments were handed down direct, and did not come through a committee, because they might not have arrived yet.

Favors Reasonable Partnership

"I want partnership with our men, but recognize there are many ways of securing it. Partnership must be based on fairness and must involve acceptance of risk, as well as participation in profit. It must, therefore, be confined, in many cases in industry, to the immediate work which is under the control of the partner, and he must not be held responsible for the failure or success of policies or theories with which he had nothing to do. You can't make a partner of the man who is not responsible for the risk the partnership involves, and you can't expect a workman to sacrifice part of his income in such a partnership. You must confine his interest to the work under his control and give him part of the profits which extra effort or intelligence on his part bring about.

"My company has been paying on a production basis for many years and we have had no labor troubles. We try to keep step with the conditions, but we always adhere to the policy of paying on the basis of production. It is the only fair way; it is the way every man in business, from the top down, ought to be paid.

By-Product Plant

To be Built by Nova Scotia Steel Company—New Furnace Planned

Toronto, Ont., Sept. 22.—It is announced that the Nova Scotia Steel & Coal Co. will in the near future erect a by-product coke plant at its Sydney mines to cost over $2,000,000. This will necessitate a further enlargement of the present plant and the construction of an additional blast furnace, which will cost about $1,500,000.

The International Bushings Co., Ltd., has been incorporated, with head office in Toronto, and a capitalization of $25,000,000, to manufacture metals from ore to finished products.

It is understood the company will be largely a holding company, associated with the Pressed Metals Co., and will take over the latter's patent rights on bushings. It will control the output of bushings manufactured under these patents, and it plans for a large business with England, France and Germany. It is being financed in Toronto.

The company is making preparations to erect a plant in Port Huron to take care of large American contracts.

A conference was recently held between the directors of the Lake Huron Steel Corp. and the municipal officials of Goderich, Ont., as a result of which it is announced that the corporation will adhere to its original decision to establish its plant at Goderich. It receives a free site of 250 acres, and has asked for freedom from city taxes for 10 years. The company will use 14,000 horsepower of electrical energy at the outset and this may be increased to 20,000. It is estimated that 1500 men will be employed in construction, and that the maximum number of employes when the plant is working at full capacity will be 4000.

The employes of the Dominion Steel Corp., in Sydney, N. S., have petitioned the Canadian government to appoint a royal commission to inquire into the suspension of operations at the plant. The petition also asks the government to inquire into the profits made during the last five years and the amount of bona fide capital invested. It declares that no satisfaction can be obtained from the management as to when operations will be resumed, and that in view of the hardship to employes and the business interests of Sydney there is a necessity for immediate action by the government.

Steel companies in western Canada have amalgamated under the name of the Canadian Western Steel Corp., Ltd. The company will have in operation at an early date three rolling mills, located at Collingwood, Ont., Medicine Hat and Redcliffe, Alberta. A bolt and nut plant will also be established at Medicine Hat, and open-hearth furnaces will be built in Collingwood.

The Gurney Foundry Co. is about to increase its capital from $750,000 to $2,000,000 and a new issue of stock will be made.

Toolbuilders to Meet

On Oct. 15 and 16 the National Machine Tool Builders' association will hold its eighteenth annual convention at the Hotel Astor, New York City. The program is in course of preparation and soon will be mailed to the membership. Worcester, Mass., is the headquarters of the association this year, since President Albert E. Newton is vice president and general manager of the Reed-Prentice Co., that city, and association general manager is Charles E. Hildreth, president and general manager of the Whitcomb-Blaisdell Machine Tool Co., also of Worcester.

Will Hold Last Hearing

The National Screw Thread commission has returned from Europe where it held a number of conferences in England and France on the subject of international screw thread standards. The results of the conferences and other efforts of the commission, are requests from Great Britain and from France for further Anglo-American and Franco-American conferences for the purpose of arriving at an international standard for screw threads.

The last public hearing in America on national screw thread standards will occur on Monday, Oct. 6, at 10 a. m., in the Engineering Societies building, 29 West Thirty-ninth street, New York. The engineering bodies interested and the industries manufacturing and using screws will meet and give full and final consideration to the report.

The National Screw Thread commission was represented at the European conferences by the following: E. C. Peck, chairman, United States army; F. O. Wells, vice chairman, and L. D. Burlingame, American Society of Mechanical Engineers; E. Buckingham, H. L. Horning, Society of Automotive Engineers; J. O. Johnson, United States army; L. B. McBride, United States navy; H. C. Dickinson, United States department of commerce; and H. W. Bearce, United States bureau of standards, and Robert Lacy, United States army, technical secretaries.

Ore Tax Bill

Vetoed by Governor of Minnesota—Effort to Pass it Second Time Fails

St. Paul, Minn., Sept. 22.—The tonnage tax bill, introduced by Senator C. M. Bendixen, of Morgan, Minn., at the present special season of the legislature, was passed by a large majority in both houses and then vetoed by Governor Burnquist. It provides for a levy on the value of ores, to be collected from individuals, partnerships and corporations engaged in the production of ore. The tax would be placed only on the profits, and concerns operating on a bare margin would be exempt. The bill was introduced with the argument that the land from which the ore is being taken is constantly decreasing in value and in time will be practically worthless, while farming lands become more valuable.

The proposal brought a storm of protest from the mining sections of the state and large delegations called upon the legislators in an effort to defeat it. Hundreds of telegrams were sent by citizens who declared the levy would cripple the range towns and drive thousands of workmen and their families to other fields. The governor in defending his veto declared that the ore land already is assessed 50 per cent higher than farm lands, and that while the land is decreasing in value the ore is continually being made into taxable objects. The executive maintained that if the profits in one enterprise are to be taxed profits in all industries also should be taxed. He stated that one of the fundamental principles of taxation lies in equality and that taxation should not be used as an instrument to impose unfair and excessive burdens on any particular class, industry or section.

Proponents of the measure profess to see in the governor's veto a victory for the nonpartisans and socialists whom, it is contended, have been furnished an argument in favor of their own principles of taxation. Members in both houses were bitter over the governor's action and a move was started to extend the session in an attempt to pass the bill over the veto. This effort was defeated.

Group insurance for its 600 employes, for amounts varying from $750 to $3000, depending upon length of service, has been contracted for by the Pittsburgh Iron & Steel Foundries Co., Pittsburgh. With each year's service with the company, $100 is added to the amount of insurance.

Obituaries

THEODORE O. VILTER, president of the Vilter Mfg. Co., Milwaukee, died Sept. 18 at his summer home in Pine Lake, Wis., aged 62 years. He had been in failing health for several months. He was chairman of the general committee in charge of the meeting of the American Foundrymen's association at Milwaukee in 1918, and had served as president of the Milwaukee Metal Trades association and also of a Wisconsin association of ice machinery manufacturers. He was born Oct. 25, 1857, at Oldenburg, Germany, coming to America while a schoolboy. At 17 he began to earn his living as a blacksmith's helper, later serving an apprenticeship as a machinist and became foreman of the shop. He was able a few years later to buy an interest in the company, known as the Weisel & Vilter Mfg. Co. In 1887 Mr. Vilter and his brothers bought out Mr. Weisel, enlarging the business, and changed the name to the Vilter Mfg. Co. He was a director of he National Foundrymen's association and the National Metal Trades association in addition to his Milwaukee connections.

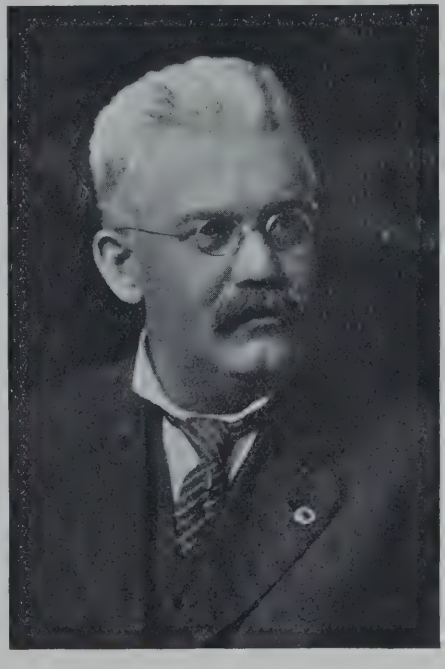
Charles Mathias Jacobs, widely known English engineer and the designer of the McAdoo and Pennsylvania railroad tunnels under the Hudson river at New York, is dead at his home in London. He was 69 years old.

John McCaffrey, aged 73 years, died Monday at his home in Philadelphia. He formerly was vice president of the McCaffrey File Co., of that city of which his brother Hugh is head. Of late years he dealt in horseshoers' supplies.

Oliver Harold Lane, South American representative of the Hopedale Mfg. Co., Milford, Mass., for the past two years, died recently in Buenos Aires, aged 50 years. When 18 he went to work for the Draper Co. and for many years was private secretary to the late Gen. William F. Draper.

Otto A. Ruemelin, second vice president and works manager of Pawling & Harnischfeger Co., Milwaukee, manufacturer of cranes, hoists, monorail systems, etc., died in that city Sept. 1. His association with the Pawling & Harnischfeger Co., extended over a period of 30 years, beginning as an aprentice. After several years as a journeyman machinist, Mr. Ruemelin was promoted successively to the foremanship of various departments. Later he became assistant superintendent and then superintendent. In 1912, he was made works manager, and later was elected second vice president.

A. L. Dunning, Ravenna, O., who was believed to be the first American manager of a bessemer steel plant, died recently in that city. He took charge of the Cleveland Mill Co., Newburg, in 1867 after it had been shut down because of inability to agree with the two Englishmen who had been running it.



THEODORE O. VILTER

Col. William W. Castle, former appraiser of machinery at the Boston custom house, died Sept. 15 at his home in Weymouth, Mass., aged 76 years. He was born in Cleveland, Sept. 21, 1843, the son of the president and principal owner of the Cuyahoga Works. He came to New England in 1872 and bought the Belfast Foundry & Machine Co., Belfast, Me., which was destroyed by fire in 1873.

James Robert Fletcher, factory manager of the P. & F. Corbin division of the American Hardware Corp., New Britain, Conn., died while undergoing an operation at his home in that city, Sept. 14, aged 52 years. He had been connected with the division 12 years, coming from the Yale & Towne Mfg. Co., Stamford, Conn., as assistant to the superintendent. On the resignation of William T. Hartman, he became superintendent, afterwards being promoted to be factory manager. He was a member of the American Society of Mechanical Engineers.

John Richard Kidston Law, chairman of William Jacks & Co., Ltd., 19 Saint Vincent place, Glasgow, Scotland, iron and steel merchants, aged 62 died Aug. 29, following a slight hemorrhage of the brain, suffered three weeks previously. Early in life, Mr. Law was a tea planter in Ceylon but in 1890, he became associated in business with the late William Jacks and his brother, Bonar Law, and upon the death of Mr. Jacks, Mr. Law became senior partner, Bonar Law having retired some time before. His chief interest was in scientific subjects of which he possessed a wide and accurate knowledge. He also was an inventor and a mechanical tea roller which he produced now is used widely in Ceylon and India. At the time of his seizure he was engaged on the invention of a new type of engine.

W. Cromwell Gurney, aged 46, president and general manager of the Gurney Foundry Co., Toronto, Ont., was overcome by an attack of heart trouble Sept. 17, and died within a few minutes. He was prominent in business circles and was the eldest son of the late Edward Gurney, founder of the Gurney Foundry Co. Since the death of his father he has managed the company. Mr. Gurney was born and educated in Toronto, and had been connected with the Gurney Foundry Co. since the time he entered upon commercial activities.

Sheet Wage Unchanged

The present rate of wages paid for rolling sheets will be continued for the next two months as a result of the bimonthly settlement made in Youngstown, O., Sept. 11, at a conference between James H. Nutt, secretary of the millowners' association, and representatives of the Amalgamated Association of Iron, Steel and Tin Workers. This settlement follows the lines of the settlement with the puddlers announced Aug. 28 at which time the rate was unchanged, being based on a 2.50c bar iron card in force the previous 60 days.

Many File Views In Basing Case

Producers and Consumers of Steel Present Variety of Arguments on Question of Single Price Base—South Presents Claims for Birmingham Base—Say Change Would Favor Steel Corporation

NUMEROUS written arguments both favorable and opposed to the Pittsburgh basing point on iron and steel prices which have been filed with the federal trade commission by producers and consumers in all parts of the country testify to the far-reaching importance that is attached to this question by industry in general. The names of those companies which had filed declarations in this matter were published in the Sept. 11 issue of THE IRON TRADE REVIEW. These documents and communications have advanced many interesting and original points bearing upon the general subject. Consumers of steel in the south especially have been active in bringing their viewpoint to the attention of the commission, and in furtherance of their claims of Birmingham as a proper basing point.

An important aspect of the question has been raised through the statements presented by independent steel producers who do not have mills in the Chicago district. One of the most prominent and comprehensive of these is that filed by the Bethlehem Steel Co., which is published in large part below, together with the statements of record made by various other producers and consumers of steel.

Says Chicago Prices Depend On Pittsburgh

BY E. G. GRACE, PRESIDENT,
Bethlehem Steel Co.

THE question presented by the petition herein affects the following three classes of manufacturers of iron and steel:

(a) Those whose only mills are in the Chicago district, such as Inland Steel Co., Interstate Iron & Steel Co. and Steel & Tube Company of America which are named as respondents in the petition;

(b) Those whose only mills are in the Pittsburgh district or in other districts east of the Chicago district, such as Jones & Laughlin Steel Co., Bethlehem Steel Co., Cambria Steel Co., Lackawanna Steel Co. and Republic Iron & Steel Co.; and

(c) Those which have mills in both the Pittsburgh district and the Chicago district or which have subsidiaries that have mills in the Pittsburgh district and other subsidiaries that have mills in the Chicago district. United States Steel Corp. seems to be the only company coming within this class.

This statement is prepared from the point of view of the manufacturers of class *(b)*, that is, those who do not have mills in the Chicago district.

I. The use of the so-called "Pittsburgh base" is simply a convenient method of quoting prices and the abolishing of that base or the establishing of other bases would not affect prices but would cause confusion and inconvenience in the steel industry.

There seems to be a great deal of confusion of thought with the petitioner herein about the purpose and effect of the use of the so-called "Pittsburgh base" in connection with the prices of steel and iron. As a matter of fact the use of the Pittsburgh base has nothing whatever to do with, and has no influence upon, the prices which manufacturers of steel charge for their products. It is simply a convenient method of quoting prices—convenient to both the manufacturer and the purchaser. Its use in no way affects the freedom of each manufacturer to make any price he chooses in any territory.

In using the Pittsburgh base in quoting prices the manufacturer simply states to a prospective customer in a given territory in effect that the price of the product offered is so many dollars per ton plus an amount equal to the freight between Pittsburgh and the point of delivery. The use of this base gives precisely the same result to customers as if each manufacturer were to quote prices f.o.b. the point of delivery or f.o.b. mill, because in any case the ultimate price would be computed on the basis of the price at the mill plus freight to the point of delivery. The objection to quoting prices f.o.b. the point of delivery is that manufacturers would have to make extended computations based on varying freight rates. The objection to quoting prices f.o.b. mill is that similar computations would have to be made by the customers before they would be able to compare quotations. With the use of the Pittsburgh base, however, manufacturers can readily make quotations, and customers can compare with equal ease the quotations of different manufacturers, since the freight from Pittsburgh to a given point is the same for each customer.

Manifestly, if a manufacturer in the Pittsburgh district wishes to make a low price for delivery in the Chicago district in order to take the business from the mills in that district, all he has to do is to make a low price f.o.b. Pittsburgh. His freedom to make a low price is just as great when the price consists of a price at Pittsburgh and the freight to the point of delivery has to be added as when it consists of a price at the point of delivery in which the freight is included although not shown as a separate item.

If the use of the Pittsburgh base in quoting prices were abolished, prices paid by the customers would, upon the last analysis, be made up in just the same manner as before; that is, in every case they would include two elements—the price which the manufacturer fixes for his product at his mill and the freight to the point of delivery.

The charge that the use of the Pittsburgh base in quoting prices is the result of a combination or understanding between steel manufacturers hardly calls for serious consideration. Bethlehem Steel Co. does not have any agreement or understanding amounting to an agreement with any one or more of the respondents named in the petition herein, or with any other producer of steel, for or covering discriminations in price between purchasers of rolled steel in the Pittsburgh district or elsewhere or for the maintenance of prices of rolled steel in and throughout the Chicago district to members of the petitioner herein or to other consumers in such district; nor does it believe that any such agreement or understanding between said respondents, or any of them, or between any of them and any other producer or producers of steel exists.

The Pittsburgh base has been used in quoting prices almost from the beginning of the steel trade in this country and is thoroughly understood by both manufacturers and purchasers. It is a matter of common knowledge that the custom of quoting prices f.o.b. Pittsburgh was established more than half a century ago when practically all the steel of the country was manufactured at Pittsburgh. It has been continued to the present time by force of habit and custom as well as because of its convenience to all concerned, notwithstanding the development of new centers for the manufacture of steel at Chicago and elsewhere. It fits present conditions because in normal times the Pittsburgh district is still the largest producer of iron and steel in the country.

It is, therefore, submitted that to forbid the use of the Pittsburgh base in quoting prices for steel and iron prod-

ucts would result merely in great inconvenience to the steel trade, not only to manufacturers but to purchasers, and would benefit no one.

II. The real question raised by the petition is whether it is unlawful for a manufacturer who has mills in both the Chicago district and the Pittsburgh district to sell the products of his Chicago mills in the Chicago district at prices higher than those at which he sells the products of his Pittsburgh mills in the Pittsburgh district, although the cost of the products in both districts is the same.

As we understand the petition and the matters complained of, the real question raised is not the propriety of using the Pittsburgh base in quoting prices for rolled steel products, but is found in the charge that the respondents discriminate in the price of such products in favor of competitors of members of the petitioner herein who are located in the Pittsburgh district or the territory east of the Chicago district and against such members and other consumers of rolled steel products located in the Chicago district, in violation of Section 2 of the Clayton act, it being asserted that the effect of such discrimination may be substantially to lessen competition or tend to create a monopoly in the particular line of commerce. We do not believe that respondents Inland Steel Co., Interstate Iron & Steel Co. and Steel & Tube Company of America, which have mills only in the Chicago district, quote different prices to different purchasers within any given district which come within the prohibition of such Section 2, although such prices may be the cost of the production of the product plus freight from Pittsburgh to the point of destination. If this be so, then the charge applies only to United States Steel Corp. (assuming, as charged, that its subsidiaries Illinois Steel Co. and Carnegie Steel Co. act under its direction and control) because its subsidiaries in the Chicago district sell the products of their mills to consumers in that district at prices higher than is charged for the products of its subsidiaries in the Pittsburgh district to consumers in the Pittsburgh district, although, as is alleged, the cost of production is no greater in the Chicago district than in the Pittsburgh district.

It is apparent that his charge against United States Steel Corp. in no way involves the propriety of the use of the Pittsburgh base in quoting prices, because the result would be the same whether the price charged in the Chicago district were *(a)* the price charged in the Pittsburgh district plus $5, as the freight from Pittsburgh to Chicago, or *(b)* a price $5 a ton higher than the price for the same product in the Pittsburgh district. The resulting price to the consumer would be the same in either case.

We are, therefore, brought face to face with the question whether the practice of United States Steel Corp. (treating the matter as if it owned and operated the mills of its subsidiaries) in charging higher prices for its products in the Chicago district than it charges in the Pittsburgh district is in violation of Section 2 of the Clayton act. For the reasons stated in Subdivision V hereof, the decision of this question will vitally affect the steel manufacturers whose mills are in other districts and the steel trade and business generally.

III. If the practice complained of be declared a violation of Section 2 of the Clayton act the effect would be to prevent a manufacturer from taking advantage of the favorable location of his mills with respect to his competitors and the operation of the law of supply and demand, to fix prices and to restrain rather than promote competition.

It seems too clear for argument that a manufacturer whose only mill is in the Chicago district is free to charge any price he can obtain under the competitive conditions prevailing in that district, even though his profit be larger than that of the manufacturer in the Pittsburgh district who sells his product in that district or in the Chicago district; provided, of course, that the effect of any discrimination in price (if it shall not be within the exceptions stated in Section 2 of the Clayton act) may not be substantially to lessen competition or tend to create a monopoly. Presumably the purpose of the manufacturer in locating his mill in the Chicago district was to gain an advantage over the manufacturer whose mills were located in the Pittsburgh district or elsewhere at a considerable distance from Chicago and who in making prices for the Chicago district has to consider the item of freight.

It is equally clear that the manufacturer whose mill is in the Pittsburgh district is free to make any price that may be necessary to effect the sale of his products in the Chicago district under the competitive conditions prevailing in that district, even though that price, less the freight from Pittsburgh to Chicago, be lower than his Pittsburgh price, because the effect of such sales can hardly be to lessen competition or to tend to create a monopoly. He is certainly free to make any reduction in price necessary to meet the competition of the manufacturers of the Chicago district; otherwise, there would be a restriction of competition and the manufacturers having mills in the Chicago district would have an unfair advantage.

The same results should follow in the case of a manufacturer who has plants in both the Pittsburgh district and the Chicago district. Such manufacturer should be free to secure for the products of his mill in the Chicago district the best prices obtainable under the competitive conditions in that district, even though the products of his mill in the Chicago district are sold at higher prices and at a better profit than the products of his Pittsburgh mills marketed in the Pittsburgh district.

If United States Steel Corp. can get a higher price in the Chicago district for the products of its mills in the Chicago district than for the products of its mills in the Pittsburgh district, it is not because of the Pittsburgh base, but because competitive conditions make the higher price possible. The fact is that the mills in the Chicago district do not supply even one-half of the steel consumed in that district. The remainder must come from the mills outside of that district, chiefly those in the Pittsburgh district, the cost of the products of which to consumers in the Chicago district must of necessity include the freight from the mills to the point of delivery in the Chicago district. Therefore, in normal times the prices charged by the manufacturers in the Pittsburgh district for their products delivered in the Chicago district will necessarily control prices in the Chicago district, even though the result may be that the manufacturers in the Chicago district make a larger profit upon their product than is made by those in the Pittsburgh district.

If the time shall ever come when the mills in the Chicago district have sufficient capacity to supply all the needs of that district and can continue to manufacture as cheaply as the mills of the Pittsburgh district, then the owners of the mills in the Chicago district, in normal times, will naturally have the trade of that district to themselves and the owners of the other mills will be excluded from competition.

It thus appears that the difficulty which the Chicago district fabricators experience in doing business outside of their own territory is due not to the effect of the use of the Pittsburgh base in quoting prices or to any discrimination in price on the part of the manufacturers against the Chicago district, but to the fact that their fabricating plants are located in the Chicago district, which does not produce enough steel to supply their demands, and the fact that steel shipped from Pittsburgh (from which a very large part of the steel consumed in the Chicago district must come) costs in the Chicago district several dollars more per ton to the manufacturers than steel produced at mills in the Chicago district. Such fabricators are able to compete in the Chicago district on somewhat better than equal terms with the eastern fabricators, because the freight rate paid by the eastern fabricators upon their finished product from their mills to points in the Chicago district is higher than the freight rate paid by the Chicago fabricators on the steel which enters into their finished product.

IV. What the members of the petitioner desire is a fixing of prices which will result in enlarging their field of competition and narrowing the field of competition of their competitors—this without reference to the effect upon competition generally.

In the last analysis what the Chicago fabricators are seeking is not to secure relief from a discrimination in price against them, but to secure a discrimination in price in their favor, so that they may be able to enlarge their territory and overcome the handicap now resulting from the fact that the price of steel is higher in Chicago than in Pittsburgh —a handicap which, as has been already pointed out, is due solely to competitive conditions and not to any arbitrary fixing of prices by the manufacturers or to discrimination. A fabricator in St. Louis, where there is no steel mill, might with equal justice complain of his inability to compete with the Chicago fabricator because the cost of his fabricated steel to the Chicago consumer would necessarily be increased by the freight from St. Louis to Chicago.

The members of the petitioner obviously desire to be able to buy at the Pittsburgh price all the steel produced in the Chicago district, and to buy from the Pittsburgh district at the Pittsburgh price, plus freight, enough additional steel to meet their demands. As the freight rate on rolled steel is less than that on fabricated steel, it would be impossible for Pittsburgh fabricators to compete in the Chicago district at all. The members of the petitioner, on the contrary, would then have, not only a

protective tariff amounting to the difference between the freight rate on rolled steel and that on fabricated steel, but also, to the extent that they could purchase rolled steel in the Chicago district at the Pittsburgh price, a protective tariff amounting to the entire freight rate on fabricated steel from Pittsburgh to Chicago. They would thus be able to establish a complete monopoly in their district, and it may well be questioned whether they would not resist any attempt to restrict their selling price to cost plus a reasonable profit.

If United States Steel Corp. were forbidden to sell in the Chicago district the output of its mills in that district at a price higher than that at which it sells in the Pittsburgh district the output of its mills in that district, or, to put it more positively and concretely, were required to sell in the Chicago district the products of its mills in that district at a price not to exceed cost plus a reasonable profit, the result to the members of the petitioner would not be what they seek. What the result would be would depend on where United States Steel Corp. sold the products of its mills in the Chicago district. If it chose to sell those products to consumers outside of the Chicago district the condition complained of would continue or would perhaps be made worse. If it chose to sell to consumers in the Chicago district the effect would be to lessen competition. The other manufacturers in the Chicago district would not find it necessary to lower their prices until the capacity of the mills of United States Steel Corp. in the Chicago district should be increased so that their products would be sufficiently substantially to meet the demand of that district, for they could continue with their existing prices to compete successfully with the manufacturers in the Pittsburgh district and other districts east of the Chicago district. Until such mills had so increased their capacity, competition between fabricators in the Chicago district would be very much disturbed and confused, if not substantially lessened: first, because only favored fabricators would get the lower priced steel, with the result that instead of all the fabricators being in competition for construction work in the Chicago district, they would be divided into two classes, the favored fabricators and the others, the second of which could not compete with the other; and secondly, because, with the price of steel in the Chicago district fixed lower than the law of supply and demand requires, the tendency would be to prevent the manufacturers (other than United States Steel Corp.) whose mills are outside of the Chicago district and who now compete with the manufacturers whose mills are located in the Chicago district from continuing to bid for the Chicago business. By reason of this shrinkage in their source of supply, the fabricators in the Chicago district would find that their field of competition was a correspondingly more restricted one and that such increased restriction would continue, at least until the supply of the mills of United States Steel Corp. in the Chicago district had been exhausted.

Even if all the manufacturers in the Chicago district could be required to sell at the lower price, it is apparent that in normal times the same unfavorable conditions would obtain. Although the confusion at such times might be somewhat less, it would still exist and not only the fabricators but the ultimate consumers, *i. e.*, the owners, would experience unnatural and unfair results. One owner putting up a building, whether for purposes of sale or rent, would necessarily have to pay more for his building than another because the one would have to pay more for his steel than the other. The latter will have been artificially favored.

It is submitted that the law of supply and demand should not be disturbed and that the incentive to invest money in steel mills in the Chicago district should not be diminished. The policy of our laws has been to allow the law of supply and demand the fullest play and to protect its operation from the interference of artificial influences. The petition herein seeks to disturb it and we believe that injury is bound to result.

V. Why steel producers generally are interested in the decision of the question involved.

The question may be asked why the steel manufacturer whose only mills are in the Pittsburgh district or elsewhere outside of the Chicago district is interested in the question involved herein, inasmuch as the granting of the relief sought would affect only United States Steel Corp., which through its subsidiaries, has mills in both the Pittsburgh and Chicago districts. The answer is simple. The mills of manufacturers of iron and steel have been located at the particular places because their owners have seen some advantage in locating them there. This advantage may be because of nearness to the ore or coal supply, or because of favorable transportation rates on raw material or finished products, or because the supply of finished products manufactured in a particular district was small compared with the demand therefor. Undoubtedly most of these reasons caused the owners of the mills in the Chicago district to locate them there. A prohibition against taking advantage of a favorable location could not be limited to United States Steel Corp. in respect of the mills of its subsidiaries in the Chicago district, and if it should be decided that none of the manufacturers in that district can be allowed to take advantage of their favorable location or, in other words, that the operation of the law of supply and demand must be restricted, then similar applications by consumers of steel in other districts would inevitably follow with similar decisions, and similar confusion and disturbance would result all over the country.

This precedent, once established, could not be limited in its application to manufacturers of iron and steel, but, on applications which would surely be made by consumers of other products, would necessarily have to be applied to other manufacturers, with the result that the natural laws upon which business has been founded since the beginning of civilization would be upset. The effect of such a decision would be far reaching. The advantages which induce investments in plants being negatived, loss of such investments to a considerable extent at least would follow and business chaos might well be expected.

The effect of the application of such a precedent upon the structure of the freight rates of the country should also be considered. That structure has been built up with a view to promoting competition by equalizing competitive conditions to the largest extent consistent with the interests of the carriers. If the principle upon which the granting of the relief sought by the petitioner herein must be based were logically applied to all the business of the country, a readjustment of freight rates would necessarily follow and the confusion mentioned above would be greatly increased.

We sincerely trust that this commission will not venture even a short way upon such a course, but will promptly decide that the business success of the country requires that the freest play be given to the law of supply and demand and will, therefore, dismiss the application herein.

Change Would Help Corporation

BY F. W. BEACH, GENERAL MANAGER OF SALES,
Mansfield Sheet & Tin Plate Co., Mansfield, O.

THE practice of using Pittsburgh as a basing point on all iron and steel shipments may possibly not be defended as a strictly logical principle, yet the custom dates back to the time when the industry really started in Pittsburgh. No doubt at all, that was the cheapest point of production and the cheapest point for the assembling of raw material, hence the cheapest place for production.

If the iron and steel industry should discontinue the use of Pittsburgh as a basing point, there is no logical reason why every community in the United States where iron and steel are produced should not be made a separate basing point.

If only the Chicago district were concerned, then a solution might be found. It requires no prescience to conclude that other regions such as Birmingham, Ala., Pueblo, Colo., Cleveland, Youngstown, O. (and the entire Mahoning valley), many other points in the state of Ohio, Philadelphia, Duluth, Minn., Wheeling, W. Va., Buffalo, N. Y., the New England section, and others will set forth claims for basing points. This would certainly bring about a very chaotic condition. Skilled labor on sheet and tin mills are compensated upon a sliding scale basis, as an example, when the price of sheet steel advances 5 cents per 100 pounds, the men's wages automatically advance 2½ per cent, and reductions accordingly. Therefore, the wages of the thousands of men employed by the industry are standardized, and if each locality should have a different basing point, you will readily see that it will be the means of bringing about a condition which will dissatisfy these men. The consuming trade have established their business to meet the existing conditions, and any radical changes would certainly disturb all relations with the mills, as well as with all of the buyers. The ultimate result would be that every producer and

consumer would be largely limited to their own particular zones, thus cut off largely from other centers by freight rates. In our own case, assuming Chicago as a basing point, we could not absorb the freight from Mansfield to Chicago district without loss. The establishment of Chicago as a basing point would certainly act as a hardship to every independent manufacturer of steel, and the only company who would have any advantages under such conditions would be the United States Steel Corp., with its many subsidiary companies scattered in practically all of the abovementioned centers. *This in itself is reason enough for not disturbing the present arrangement.* While theoretically every community should enjoy the advantages and suffer the disadvantages of its natural geographical location, other industries not having been established upon this basis, the question becomes one of weighing the advantages which would be derived from a change against the disturbance which would result, especially at a time when the industries are faced with a solution of many disturbing factors resulting from war conditions.

Your commission, no doubt, will find this to be a more complicated matter to determine, what you must avoid doing than to determine what you ought to do if the way were clear. Almost anything you might be disposed to do would be likely to involve you in something else. For instance, if you should order Chicago district mills to sell f.o.b. Chicago at f.o.b. Pittsburgh price, you will be ordering one mill to sell at another mill's price. It might be difficult to draw a line and avoid, in substance, ordering one Pittsburgh mill to sell at another Pittsburgh mill's price. Eventually your commission would be fixing prices for the entire iron and steel industry. If there were deviations, whom would the commission punish, those who sold below the set price, or those who exacted a higher price?

Should the decision merely be that a mill must not quote on a remote basis, but only f.o.b. the respective mill, there would be a change in form, but not in substance. The mills would take the Pittsburgh price, add the freight to destination point, deduct the freight from its mill, and quote the resulting price at the mill.

Summing up the entire situation, no one is now injured when buying on one common basing point, viz., f.o.b. Pittsburgh, why change? It seems advisable to leave well enough alone, making no attempt to destroy or change the present established market center of the country.

Southern Consumers Opposed

TOMLIN-HARRIS MACHINERY CO.,

Cordel, Ga.

THE application of the Western Association of Rolled Steel Consumers for a complaint against the United States Steel Corp., and others, should in our opinion be granted to the Chicago district, and territory tributary thereto, and not only should this be done, but the Birmingham district, and territory tributary thereto should be included, for as we understand it, Judge Gary and Mr. Schwab of the United States Steel Corp. have stated that steel could be produced as cheaply or cheaper in the Birmingham district than in any other place in the United States, and this being true, it is unduly prejudicial to the western and southern consumers of steel articles to pay a price for these articles based on the Pittsburgh price plus freight from Pittsburgh to destination, while the freight from Birmingham to destination might be and in all instances in the south, are considerably lower.

ATHENS FOUNDRY MACHINE WORKS,

Athens, Ga.

IN READING the application of the Western Association of Rolled Steel Consumers for complaint against the United States Steel Corp., and others, we feel that a great injustice is being done the manufacturers of the south in that we have to base our prices on Pittsburgh instead of some southern point. Wherein if the South could have a basing point say at Birmingham, Ala., and the West at Chicago we would save $6.20 per ton which would then allow us to compete with eastern manufacturers not only in our own city but would allow us to reach out into other fields.

As it now stands with Pittsburgh as a basing point we cannot compete with the eastern manufacturers in our own city due solely to the difference in base price which is based on Pittsburgh at a difference of freight rate of $6.20 per ton.

We are a small concern and would use only about 100 tons per year but the difference between prices being based on Birmingham, Ala., and based on Pittsburgh freight rates would be enough to pay 5 per cent on our capital.

We feel that your commission should grant the application and should establish at least three basing points for rolled steel, say one at Pittsburgh for the east and north, one at Chicago for the west and north and one at Birmingham for the south and west.

BRUNSWICK MARINE CONSTRUCTION CO.,

Brunswick, Ga.

WE HEARTILY endorse the complaint of the West Association of Rolled Steel Consumers. We use a large quantity of steel both for general manufacturing purposes and for steel shipbuilding. In competition with concerns located in eastern territory for the sale of manufactured articles, you can readily see that they can sell in our territory at a lower price than we can sell in theirs, because, while we receive our steel from Birmingham, from which point the freight rate to Brunswick is only 25 cents per 100 pounds, we pay the rate from Pittsburgh, which is 59 cents, whereas, the northern and eastern manufacturer, who actually receives his steel from the Pittsburgh district, pays only the actual freight rate from that point.

The same situation exists in connection with steel shipbuilding. Our steel plates come direct from Birmingham, from which point the freight rate of 25 cents to Brunswick is practically the same as the rate from Pittsburgh to shipbuilding points on the Delaware river. Yet instead of paying the actual rate, we are charged 59 cents per 100 pounds, on the theoretical Pittsburgh basis—or more than twice the freight rate that our northern competitors pay.

After looking into the situation, the federal trade commission will see that the present condition is unjust to the South as a whole, and we hope will have such measures adopted as will render it unnecessary for the southern rolled stock consumer to pay more than the actual freight rate from point of shipment.

SOUTHERN BRIDGE CO.,

Birmingham

AT present we obtain a certain proportion of our rolled steel shapes, say 60 per cent or greater, from local mills in this district, on which we pay at the rate of Pittsburgh base plus $3 per ton.

In competition with fabricators from the Pittsburgh territory to points north we are thus placed at a disadvantage, for, assuming that our costs of fabrication are the same as that of fabricators in the Pittsburgh district, we are handicapped in the sum of $3 per ton in bidding on fabricated steel work to points that carry an equal freight rate between this city and Pittsburgh.

Upholds Base

BY L. E. THOMAS, PRESIDENT,

Reading Iron Co., Reading, Pa.

IN reference to the complaint received by your honorable commission from the Western Association of Rolled Steel Consumers, regarding the discontinuance of Pittsburgh as a basing point, I beg to advise that the continuance of this practice is of vital importance to this company.

The raw material consumed by us in the manufacture of our product, which consists of wrought iron pipe and tubing, comes almost exclusively from the coal regions of western Pennsylvania, and the ore mines of the lake regions, placing us at a distinct disadvantage with our principal competitors, all of whom are located in the Pittsburgh district. Furthermore, 75 per cent and upwards of our finished product is shipped to the west and southwest, passing through Pittsburgh, placing us at a further disadvantage in the matter of freight in the distribution of our product, as compared with our competitors.

The machinists' union representing toolmakers and skilled hands in all of the greater Boston districts held a meeting recently and decided upon a new wage scale, providing for 90 cents an hour, together with a 44-hour week.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

HORTON PENROSE, general manager of Shimer & Co., Philadelphia, Pittsburgh, and San Francisco, has resigned and will give his entire attention to the Penmore Fuel & Iron Co., in which he has been interested for some time. Mr. Penrose was resident manager in the Pittsburgh district for Shimer & Co. for several years, relinquishing this position to become general manager a little more than a year ago. He has been connected with the iron and steel business for the past 15 years, having previously been connected with the traffic department of the Baltimore & Ohio railroad. Ferdinand G. Schultz has resigned as Pittsburgh district sales manager for Shimer & Co., effective Oct. 1. Mr. Schultz has no definite plans as to future activities after that date.

John Blume formerly with the Holt Mfg. Co., Peoria, Ill., has been made assistant foundry superintendent for the Avery Co., Peoria.

C. Sinclair Weeks and A. Stanley North have been elected assistant cashiers of the First National Bank of Boston.

Charles F. Pace has been made district sales manager of the Hutchins Car Roofing Co., Chicago, and has opened offices in the Railway Exchange building, St. Louis.

L. R. Custer, formerly development engineer for the Midvale Steel & Ordnance Co., recently was elected vice president of the Cambria Steel Co.

George W. Bender, district manager at the New York office of Mudge & Co., Chicago, has been made manager of sales and service with headquarters in Chicago.

L. E. Purnell recently has been made district manager at Cleveland for the Ajax Metal Co., Philadelphia. The new offices of the company are in the Schofield building, Cleveland.

V. L. Curran has resigned as purchasing agent of the Sparks-Withington Co., Jackson, Mich., to become general manager of the Jackson Screw Products Co., that city. He has been succeeded by James T. Beadle.

John C. Moran, for the past year purchasing agent for the Lord Construction Co., Providence, R. I., has been appointed naturalization examiner for the district of Rhode Island.

E. M. Champion, former factory manager of the Bay City, Mich., plant of the C. R. Wilson Body Co., has been appointed factory manager in charge of production of the main plant in Detroit.

John C. Craig, formerly assistant superintendent, recently became superintendent of the rolling mills of the Steelton, Pa., works of the Bethlehem Steel Co., succeeding W. W. Leck, resigned.

Frank B. Roth, formery president of the Philadelphia chapter of the American Association of Engineers has been made chief engineer of the Lehigh Structural Steel Co., Allentown, Pa.

Auguste Griffoul who for the past few years has been foreman of the brass foundry department of Babcock & Wilcox Co., Barberton, O., has accepted a position as superintendent of foundries for the Flour City Ornamental Iron Co., Minneapolis.

Herbert DuPuy, chairman of the board of directors of the Crucible Steel Co. of America, who recently underwent an operation at the French hospital in New York City, is reported to be making good progress toward recovery.

H. Earl Sweitzer has been made sales manager in charge of sales and advertising, of the Allsteelequip Co., Aurora, Ill. For about one year he has been assistant sales manager and prior to that time was advertising manager of the Appleton Mfg. Co., Batavia, Ill., for several years.

G. H. Dorr, Washington, assistant director of munitions, who, since the signing of the armistice has been in charge of the work of cancellation of contracts, has resigned and will resume the practice of law in New York. His successor has not been named.

Joel B. Ives, of the engineering and contracting departments of the American Steel Export Co., New York City, has sailed for Italy. He will confer with the export company's agent, M. Ferraris & Co., on matters referring to the Italian market for steel and metal products including machinery and equipment.

W. Edward Lindsay has been made engineer for the Lancaster Structural & Foundry Works, Lancaster, Pa., which company has purchased the property of the Lancaster Machine & Structural Works. Edgar G. Hess, formerly connected with the Lancaster Foundry Co., has been made works manager of the Lancaster Structural & Foundry Works.

Ray M. Cheney who has been with the Badger Co., Boston for the past two years, has resigned to take charge of a foundry near Calcutta, India, for the Bemis Brothers Bag Co., Boston. The Bemis Brothers company has a large jute textile mill in India for which they propose to construct all required machinery in that country, owing to the high importing costs.

E. Phelps Langworthy, formerly assistant works manager of the American Steel Foundry, Indiana Harbor, Ind., has been made manager of the steel castings plant of the American Radiator Co., Buffalo. G. W. Merrefield, formerly with the Clark Equipment Co., Buchanan, Mich., has been appointed assistant to Mr. Langworthy and will have charge of sales.

Donald H. C. Tulloch, former secretary of Boston branch, National Metal Trades association, has been elected secretary of the Manufacturers association of Jackson, Mich. He resigned his Boston position to enter the service and was commissioned a lieutenant in the C. A. C. Before going to Boston he was secretary of the Employers' association of Berkshire county, Mass., with headquarters in Pittsfield.

E. M. Mentzer has been promoted to be manager of the tin plate plant of the Weirton Steel Co., Weirton, W. Va., succeeding J. C. Griffin, who resigned recently to become affiliated with the Bethlehem Steel Co. Mr. Mentzer formerly was manager of the Weirton company's tin plate plant at Steubenville, O., in which capacity he is succeeded by W. F. Singer, formerly assistant to J. C. Williams, general manager of the Weirton Steel Co.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

G P. GOODMAN, who for several years has represented the Hisey-Wolf Machine Co., Cincinnati, in the east, will on Oct. 1, take charge of the portable tool department of F. H. Niles & Co., Inc., New York City. This company handles not only the Hisey-Wolf line of electric machine tools but the pneumatic hammers and drills manufactured by the Pittsburgh Pneumatic Co. Other changes in the Niles company are the appointment of F. H. Crawford as secretary and J. E. Haetten as sales manager.

Anthony Dobson has been placed in charge of a newly established Detroit branch office of the Carborundum Co., Niagara Falls, N. Y.

S. S. Newton recently resigned as president and director of the Luther Grinder Mfg. Co., Milwaukee, after 18 years of service. He is succeeded by W. T. Hardy.

Jay V. Hall, former general sales manager of the Olds Motor Works, Lansing, Mich., has joined the executive staff of the Willys Corp. at its Duesenberg plant.

David H. G. Penny, vice president, in charge of the foreign department of the National Bank of Commerce, New York, sailed for Europe, Sept. 18, to confer with the foreign representatives of the bank.

Carl F. Dietz, vice president and sales manager of the Norton Co., Worcester, Mass., is to sail the latter part of the month on a European trip that will keep him away until about the first of the year. He is to establish new sales agencies in several foreign countries.

Otto J. Lof, for several years representative in Germany of the Norton Co., Worcester, Mass., who returned a few months ago after having been interned during the war, has sailed for Europe, having been assigned a new district, comprising Norway, Sweden and Denmark.

Jesse G. Vincent, vice president of the Packard Motor Car Co., Detroit, has been commissioned a colonel in the United States officers' reserve corps aviation section of the signal corps in recognition of valuable services rendered the war department in perfection of the Liberty motor.

W. C. Irwin has been made district sales representative for St. Louis and the southwest, with headquarters in the Frisco building, St. Louis, for the Dunbar Mfg. Co., of Chicago.

M. W. Seeman, sales engineer of the Cleveland Osborn Mfg. Co., Cleveland, has been appointed director of European sales of this company with headquarters in London. Mr. Seeman will promote the sale of the extensive line of molding machines manufactured by the Cleveland Osborn Mfg. Co. throughout Europe.

Henry J. Gross, formerly vice president and general manager of the Norcross Bros. Co., Worcester, Mass., is now vice president and treasurer of the recently amalgamated building firm of Anglin-Norcross, Ltd., Montreal. It has taken over the Canadian interests of the Norcross Bros. Co., which is liquidating its affairs.

Dr. George C. Barlow resigned recently as president of the United States Tractor & Machinery Co., Menasha, Wis., due to poor health. Joseph G. Sailor, formerly president of the Sailor-Whitmore Machine Co., that city, who has been vice president of the United States company for some time succeeds him as president.

A. A. Gloetzner has been elected president and general manager of the Covert Gear Co., Inc., Detroit, succeeding P. A. Clum as president. Since early this year he has been vice president and prior to that he was chief engineer and manager of sales. He will make his headquarters in the Lockport, N. Y., office of the company, spending two days weekly in Detroit.

Henry Blanchard, sales representative at Chicago for the Baldwin Locomotive Works and the Standard Steel Works Co., has been made manager of a branch sales office in the Merchants National Bank building, St. Paul, Minn.

Walter E. Flanders, of Detroit, who recently resigned as head of the Maxwell Motor Co., has become identified with the L. D. Rockwell Co., manufacturers' agents for the Precision Die Casting Co., Dahlstrom Metallic Door Co., Delaware Seamless Steel Tube Co., American Tube & Stamping Co., Donner Steel Co., and other firms, with offices in the Book building, Detroit. Mr. Rockwell was formerly with the Standard Welding Co.

George W. Crane now is president of the Seneca Falls Mfg. Co., Inc., Seneca Falls, N. Y., builder of lathes, etc., succeeding Marshall J. Root, who recently became vice president of the Fairbanks Co., New York. Since 1900, Mr. Crane has been affiliated with Pierce, Butler & Pierce Corp., Syracuse, N. Y., manufacturer of boilers, radiators, etc. He commenced as timekeeper, later became salesman and finally assistant sales manager.

Charles Riddell, formerly manager of the Chicago office of the Baldwin Locomotive Works and the Standard Steel Works Co., has returned to his duties in Chicago after an absence of 18 months on special duty at the Philadelphia office. Arthur S. Goble, who has been in charge of the Chicago office, has been made manager of the St. Louis office.

Albert E. Newton, vice president and general manager of the Reed-Prentice Co., Worcester, Mass., president of the National Machine Tool Builders association, and vice president of the National Metal Trades association, has withheld the use of his name as president of the latter organization at its next annual meeting. It is expected he will be re-elected president of the National Machine Tool Builders association, at its annual meeting.

Henry W. Benkart has been appointed Buffalo representative for the Lakewood Engineering Co., Cleveland. His offices are located in the Ellicott Square building and he will devote his efforts to the general construction field. His experience in the construction business covers a period of about 10 years, the greater portion of which time he was superintendent of construction for the Dravo Construction Co. For about five years, he has been agent for various companies manufacturing contractors' equipment, including the Lakewood company. Other lines have been discontinued and he now represents the Lakewood company exclusively.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

CONSTRUCTION of the plant of the recently organized Wyckoff Drawn Steel Co., at Ambridge, Pa., rapidly is nearing completion and in anticipation of having it in full operation in December, the company now is booking orders for delivery in the first quarter of 1920. The company, which is headed by A. W. Wyckoff, for several years engaged in the steel business and later as distributor in the Pittsburgh district of the Chalmers and Reo automobiles and who recently returned from war service in France, includes in its directorate several men prominent in business and financial circles in Pittsburgh.

The vice president of the company is G. R. Nutty, vice president of the Gulf Refining Co., Pittsburgh, while the directors include A. L. Humphrey, president of the Westinghouse Air-brake Co., Pittsburgh; William McConway Jr., vice president of the McConway & Torley Co., Pittsburgh, and R. B. Keating, vice president of the West Penn Power Co., Pittsburgh. J. J. Komara, formerly with the Columbia Steel & Shafting Co., Pittsburgh, is works manager of the company, and Joseph T. Somers, who is general manager of sales formerly was eastern district sales manager, with headquarters at Philadelphia, for the Columbia Steel & Shafting Co.

The plant of the company will have an initial capacity of 5000 tons a month of cold drawn rounds, squares, hexagons, special shapes, screw stock and alloy steel, but provision has been made for plant enlargements and increased production. All equipment for the plant has been purchased and now is in process of installation.

* * *

THE New Britain Machine Co., New Britain, Conn., is about to begin making a moderate-priced farm tractor to be known as the New Britain. Edward Glass is in charge of production.

* * *

THE South Beloit, Wis., plant of the Stewart Speedometer Corp. will be doubled in size and the force of employes will be increased more than 600 within the next six months, according to G. J. Behrendt, general manager of the Beloit shop. Production will be greatly increased after new machinery is installed.

* * *

INSTALLATION of additional pulverizing and drying machinery recently was completed by the Franklin Soapstone Corp., Henry, Va.

* * *

AN ELECTRIC furnace has just been ordered from the Electric Furnace Construction Co., Philadelphia, by the Vancouver Engineering Works, Ltd., Vancouver, B. C.

* * *

THE Continental Axle Co., Edgerton, Wis., which has been incorporated with $200,000 capital to manufacture motor truck, trailer and tractor axles, has elected the following officers: President, Andrew McIntosh; vice president, James Higgins, Racine, Wis.; secretary, E. L. Menhall; treasurer, William McIntosh; general manager, James W. Menhall. Work is progressing on the new machine shop which the company is building at Edgerton and which will be ready about Nov. 1.

* * *

THE James Mfg. Co., Fort Atkinson, Wis., maker of steel stanchions, bubbler fountains and other dairy farm specialties, is reported to be undertaking a $150,000 works improvement program which includes provision for complete malleable and gray-iron foundries as well as additions to the machine shop, sheet metal department and other shops. Plans are being prepared for a brick and steel addition, 100 x 450 feet, work on which will begin shortly after Sept. 15. W. D. James is president and general manager.

* * *

ENGAGED in the manufacture of drills for boring square and hexagonal holes as well as chucks for the drills, the Detroit Hexagon Drill Co., Detroit, has had to lease a 4-story building with basement. This gives it 50,000 square feet of floor space at the corner of Woodward and Atwater avenues and equipment now is being installed. The company's old machinery is being removed to the new address but it soon will be necessary to install new screw machines and grinders, since at present two outside concerns are making its product. The company is incorporated for $300,000, $200,000 of which is paid in. J. W. Donaldson is president and treasurer; William T. Manning, vice president; Earle R. Trombly, secretary; W. A. Smith, general manager. These with W. E. Brown, chief mechanical and electrical engineer for the Great Lakes Engineering Co., complete the board of directors. Mr. Smith also is identified with the Russell Wheel & Foundry Co., Detroit.

* * *

WITH its head office at Jackson, Tenn., the Martin Tool Holder Co., has been incorporated at $100,000. The company was organized for the purpose of manufacturing and selling a tool holder invented by T. O. Martin. To meet the large demand several machine tool manufacturers have been asked to manufacture the holder under contract. The company contemplates the building and equipping of a plant in the near future. R. L. Beare is president; I. A. Rainey, secretary and treasurer; R. F. Spragins is director and attorney; T. O. Martin is general manager.

* * *

THE Oneida Electric Truck Co., Green Bay, Wis., is being organized with a capital stock of $300,000 by local business men and officers and stockholders in the Oneida Motor Truck Co., also a $300,000 corporation which for over two years has been manufacturing gasoline commercial cars in Green Bay. The new company has taken over basic patents on an electric truck design which has been employed in a fleet of 50 cars used for the past year by the American Railway Express. For the present the electric truck will be manufactured in the present plant of the Oneida Motor Truck Co., together with gasoline cars. Officers of the new corporation are: John T. Phillips, president; F. H. Bogart, vice president; William Hoberg, treasurer; S. H. Cady, secretary. Mr. Bogart is vice president and factory manager of the old Oneida company. LaFayette Markle, president and general manager of the existing concern, is a director in the new corporation.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE foundry department of the Globe Co., Sheboygan, Wis., formerly the Globe Foundry & Machine Co., has been organized as a separate corporation known as the Globe Foundry Co., with a capital stock of $100,000, and will start work about Oct. 1 on the erection of a new gray iron foundry. When this is ready, the present Globe foundry will be converted into an addition to the machine shop now a part of the works. The Globe Co. is the outgrowth of the Honold Mfg. Co., of Sheboygan, which two and a half years ago purchased the plant and business of the Globe Foundry & Machine Co., and changed the name to the Globe Co. It has outgrown the present works and to facilitate development a new corporation has been formed, having the effect of separating the foundry and machine shops. G. F. Honold and Fred Leicht of the Globe Co. appear as incorporators of the new company with Gus A. DeWilde Jr., of Sheboygan, who becomes a stockholder and officer. Plans are being prepared for a new brick and steel casting shop to cost about $75,000. Later purchases of considerable new tool equipment will be made.

* * *

THE Wilton Tool & Mfg. Co., Boston, has purchased a half acre with factory buildings in the Roxbury district in that city, of the Boston Belting Co., which it will occupy after extensive improvements have been made.

* * *

NEGOTIATIONS have just been concluded by which the Jordan Motor Car Co., Cleveland, has purchased the property of the Metal Parts Mfg. Co., adjoining the Jordan company's factory. Edward S. Jordan, president of the automobile company, said acquisition of the metal parts property will increase the ground area occupied by the Jordan company by one-third, which will permit an increase of more than 30,000 square feet in floor space.

* * *

THE Barr Co. of Pittsburgh recently purchased the plant of the Loucks Iron & Steel Co., Roanoke, Va., including all of the equipment of the plant. The Barr Co. has begun work on dismantling the plant and selling the machinery and scrap. Equipment for a finishing mill, puddle mill, machine shop and pump house is included in the purchase.

* * *

THE Robbins & Myers Co., Springfield, O., is adding to its capital $2,500,000 to give greater scope in operations, it is announced. The company manufactures electric motors. It was organized in 1878 as a foundry. Sales last year amounted to $6,901,076, and officials state that orders this year will place this item around $9,000,000.

* * *

THE sum of $115,000 has been raised by popular subscription in Attleboro, Mass., to help finance the Mossberg Pressed Steel Co., a new corporation which will be managed by Frank Mossberg, president of the Frank Mossberg Co., makers of wrenches, etc., in that city. The new company has leased the plant of the Attleboro Steam & Electric Co. and will start operations immediately.

* * *

THE plant and equipment formerly owned by the Delta Foundry & Machine Corp. has been taken over by J. F. Shea, the plant's former manager. A new partnership between Mr. Shea and his former foreman, Mr. Dixon, has been formed to operate the plant on nonferrous casting work under the name of the Marine Castings Co., 116 Fifty-seventh street, Brooklyn, N. Y.

* * *

FREYNE, BRASSERT & CO., Peoples Gas building, Chicago, engineers, have been retained by the Lavino Furnace Co., Philadelphia, in connection with improvements being made at its Sheridan, Pa., blast furnace.

These engineers likewise have been retained by the Algoma Steel Corp., Sault Ste. Marie, Ont., as consulting and supervising engineers in the remodeling of its No. 4 blast furnace.

* * *

WITH the reorganization of the James Ohlen & Sons Saw Mfg. Co., Columbus, O., the merger of the Ohlen company and the George M. Bishop & Co., Lawrenceburg, Ind., is carried out. The name of the new company is the Ohlen-Bishop Mfg. Co. The two plants will be operated from a central office located in Columbus. E. D. Rogers is president of the merged companies; H. J. Bradbury, vice president; and L. W. Seymour, is secretary and general manager. The officers with J. J. Chester, Frank Macklin and R. V. Mitchell comprise the board of directors.

* * *

THE Fitzgerald Mfg. Co., Torrington, Conn., has just received from the General Motors Co. an order for 500,000 automobile horns. This is one of the largest orders for automobile parts ever awarded a Connecticut company. The Fitzgerald company has just completed a 2-story addition to its plant, and a large 3-story addition is planned for construction in the near future.

* * *

EXTENSIONS are contemplated by the Lima Locomotive Works, Lima, O., which will increase the plant's capacity approximately 50 per cent and which will involve an expenditure of $1,250,000. Additions will include a new erecting shop with a capacity of about 70 locomotives per month; a superheater shop extension to the boiler and tank shops; and additional power plant equipment. New machinery amounting to approximately $300,000 will be purchased. Plans have been completed but their carrying out is delayed because of the general labor condition.

* * *

THE Milwaukee Electric Crane & Mfg. Co., Milwaukee, has taken contracts for installing a 10-ton standard Milwaukee crane in the structural fabricating and erecting shop of the Lakeside Bridge & Steel Co., and a similar unit for the Worden-Allen Co., Milwaukee. A 15-ton Milwaukee foundry crane has been purchased by the Pelton Steel Co., Milwaukee. The Haskell & Barker Car Co., Michigan City, Ind., has contracted for two special wheel-handling cranes. The Jaeschke Bros. Foundry Co., Milwaukee, which is doubling the size of its gray iron foundry, will equip with one 5-ton and one 2-ton Milwaukee cranes.

Bolshevism Bankrupt — Hoover

Lenine's Theories Wrecked on Rock of Underproduction — Radicals in America Would Plunge Nation Into Insane Experiments—Only Hope for World is Work and Increased Production — General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

THE one great outstanding fact of the world today is the overwhelming unsatisfied demand for commodities. From every section of the United States and from every quarter of the globe this cry for goods and more goods is being heard. For four years the energies of 30,000,000 men in the world were diverted from peaceful pursuits to war. The ravages of war and disease combined have removed 10,000,000 able bodied men from the field of production. Consequently the world is incomprehensibly short of goods, while at the same time it is facing the task of supplying the deficiency with a working force depleted by 10 per cent as compared with prewar days.

Moreover the toilers that do remain are clamoring for shorter hours and engaging in industrial disputes and strikes, of which there have been 3000 in this country since the armistice. The reduction from a 10 to an 8-hour day, being generally insisted upon means a further curtailment of production of 20 per cent, for the argument is rarely heard now that a man can do as much in eight hours as in 10.

Despite all this, high wages are stimulating the demand for current wants, consequently the upbidding of luxuries and necessities is an important factor in soaring living costs. Obviously the watch-words of the world today should be "work" and "increased production."

Herbert Hoover, back from Europe last week, says Bolshevism is bankrupt—wrecked on the rock of underproduction. Russia has had its fling of Utopia—and it has starved. It has found that there is no magic which will turn laziness and idleness into riches or five and six hours of labor into 10 hours of production. Bolshevism won for labor fabulous wages, but labor under bolshevism failed to produce enough goods to begin to go around and the high wages meant nothing.

Lenine early saw the approaching economic collapse and he began to lure back the old experienced managers, with salaries unheard of before the war. These managers rode in state to the factories in luxurious limousines by the order of the "commissary." Now, according to Mr. Hoover, a widespread reaction has begun. The fashion of private ownership of land and factories, camouflaged somewhat at present, is coming back. Bolshevism in Russia given full rein is strangling itself.

Common Sense is Preached

Enlightened socialists honest with themselves are not blind to the folly of impeding the process of production. John Spargo says that "every serious student of the problem has realized the first great task of any socialist society must be to increase the productivity of labor," and that "it is all very well for propaganda among the masses to promise a great reduction in the hours of labor and at the same time a great improvement in the standards of living." This writer further admits that even if the capitalists were expropriated and the working class should come into possession of the organization of production "there would not be enough in the fund now going to the capitalist class to satisfy the requirements of the workers, even if not a penny were paid to the former owners."

But these things are not for the ears of the ignorant upon whose continued unenlightenment, combined with a plastic discontent, the agitator feeds. Like the unconscionable profiteers in necessities, who do not create but take advantage of a shortage of goods, the agitator is seeking to profit at the expense of a weakened, prostrate world, bewildered by the giant impact of a great war and by the strange unadjusted economic aspects of peace.

He has sought to inflame the masses by jangling incessantly the high cost of living harpstring, thereby causing appalling curtailment of production through strikes, when he knows that stimulated production is the one and only means to bring about a substantial and lasting decline in the prices of things. He is striving to stir up class consciousness among the wage earners who actually are better off than ever before, with wages higher in proportion to the cost of living than they ever received. He would fan their resentment against imagined wrongs and lull them with false promises, impossible of fulfillment. Behind these feverish attempts to advantage from the existing unsettlement there lies an insidious actuating motive in the minds of the radicals who now apparently control the American Federation of Labor.

They are not thinking of the welfare of their dupes because responsible labor leaders admit that higher wages and shorter hours at this time will merely serve to aggravate the high price sore. The real goal of the radicals is the overthrow of the existing social order. What else could be the significance of the defiance by the steel union heads of the pleas of President Wilson and Mr. Gompers an indication emphasized by the Boston police strike and the disclosure that police in 37 cities have been organized.

With the sworn protectors of lives and property under the absolute dictation of labor leaders, labor would be ready to impose the rule of the minority upon the majority. The Boston strike revealed the thin veneer which separates civilization from anarchy and has aroused the American people to the danger. The organization of police was a fatal error of the unions and the collapse of the Boston strike was a staggering blow. Without public sentiment labor cannot win a great strike and unions which would jeopardize not only the country's promised tremendous prosperity, but its institutions as well, in order, not to improve the conditions of workmen, but to compel surrender to the organizations will find themselves riding to an inevitable fall. America is not Russia and there will be no rule of the minority here.

To Absorb Other Works

At a special meeting Sept. 17 the stockholders of the Clinton-Wright Wire Co. voted to increase the capital stock from $12,500,000 to $16,000,000 and deferred action on changing the name to the General Wire Co. until an adjourned meeting Nov. 3. Some of the stockholders oppose depriving individual companies of their

identities because of their value as an asset. The resignation of Charles F. Fairbanks, Lexington, Mass., president and treasurer of the former Clinton Wire Cloth Co., as a director was accepted, he having resigned to devote all his time to the Eastern Specialty Mfg. Co., Boston. The stockholders filled the directorate to its legal number of 11 by the election of Harry W. Goddard, president and treasurer; Frank Kilmer, Grafton, Mass., secretary and assistant treasurer; and George M. Thompson, manager, all of the Spencer Wire Co., Worcester and Spencer, Mass., which was recently taken over. The company is anticipating further consolidations notably with some large steel company so that it may be supplied with raw materials.

French Form Steel Group

In order to deal in commercial, industrial and financial transactions for the purchase and sale of steel, with the exception of molding steel, an important French steel group has been formed under the name of Le Groupement des Sinistres du Nord et de L'Est. The nominal capital of the group has been fixed at 1,000,000 francs, and offices have been opened at 52 rue Taitbout, France. The group is composed of a number of firms the names of which are Societe des Acieries de Longwy; la Societe Anonyme des Usines de l'Esperance; la Societe Anonyme des Acieries de Micheville; la Compagnie des Forges et Acieries de la Marine et d'Homecourt; la Societe Metallurgique de Senelle-Maubeuge; Doremieux Fils et Cie, a Saint-Amand-Les-Eaux; la Societe Anonyme des Boulonneries de Bogny-Braux; la Societe en commandite Lefort et Cie.

Buys Tool Plant

The Fastfeed Drill & Tool Corp., 30 Church street, New York City, recently incorporated under the laws of New York, with a capital stock of $500,000, has purchased the factory at Toledo, O., operated by the McCarthy Drill & Tool Corp. J. D. McGrath, formerly treasurer of the McCarthy corporation, now is managing director of the new corporation.

The Fastfeed corporation will continue to operate the Toledo plant and will specialize in the exclusive manufacture of high-speed steel tools. Important additions to and improvements in the present equipment are planned and it is probable that an enlarged organization will be necessary to handle the contemplated increased production. For the present there will be no change in the operating staff.

Reorganize Company

Reorganization of the Hobbs Mfg. Co., Worcester, Mass., maker of paper box machinery, vending machines, nut locks and spring washers, and the increase of its capitalization from $300,000 to $700,000 has been announced. New York interests purchased the business November, 1918. The board of directors has been increased to seven.

Purchases Forge Shop

The Moore Drop Forge Co. has just completed its negotiations for the purchase of the Page-Storms Drop Forge & Wrench Mfg. Co., Chicopee, Mass., and has now assumed control of the business. This marks the practical closing out of Westinghouse interests in New England, for all of the common stock in the Moore Drop Forge Co. previously owned by the Westinghouse Co. has been purchased. The combined plants will be operated under one manager and will employ together, about 1000 men. The new officers will be: President and general manager, F. D. Fuller; treasurer, Albert H. Chapin; secretary, John M. Williams.

Profits From Shells

Shareholders of the Universal Tool Steel Co., Toronto, Ont., have received the annual report of the company for the year ending Dec. 31, last. This shows gross profits on shellmaking of $540,876, and a loss on boltmaking of $30,146. The net income for the year was $278,382. A dividend of 2 per cent on the common stock absorbed $189,824, and a dividend on the preferred shares amounted to $6000. The common stock outstanding is $9,500,000 and preferred $100,000. The company was busy on munitions practically up to the end of last year.

Financial Crop Ends

THE Vulcan Detinning Co., reports for the quarter ending June 30 net income after taxes and other charges, of $62,444 as compared with $45,999 in the corresponding period of 1918.

* * *

Amendments to its articles of incorporation have been filed by the Chain Belt Co., Milwaukee, increasing its capitalization from $1,000,000 to $2,800,000.

Export Demand

For Ammonium Sulphate Improves—By-products Market Firm

New York, Sept. 22.—An improved export demand is in evidence for sulphate of ammonia. Foreign buyers, particularly in the Orient, are inquiring on good tonnages, and a fairly good amount of trading is resulting. A drawback, however, to actual sales is the scarcity of spot material. Sizable shipments for some time past have been made by the producers, with the result that supplies now are relatively low. Domestic demand is quiet. The market on sulphate of ammonia may be quoted at $3.40 to $3.65, f.o.b. producers' plant for spot and $3.25 to $3.40 on contract orders.

Sellers of naphthalin are becoming further sold ahead. One leading seller is now unable to make shipments under Nov. 1. This sold-up condition applies particularly to flakes, although balls cannot be easily had under three or four weeks, it is understood. A feature of this market at present is a revival in the interest of the drug trade. These interests along with the dye manufacturers are bringing about considerable activity. Naphthalin, in flakes, is holding a 6½ to 7½ cents, f.o.b. producers' plants on spot and contract business, and naphthalin, in balls, 8½ to 9½ cents. These prices are unchanged from last week.

Prices of benzol are holding steady. Pure benzol is quoted at 24 to 29 cents and 90 per cent at 22 to 24 cents. Toluol also is strong, the market being around 26 to 30 cents.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Tuluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

The capital stock of the Pettigrew Foundry Co., Harvey, Ill., has been increased from $15,000 to $100,000.

Heavy Equipment Sale Increases

Machine Tools Slacken in East But More Freely in Cleveland—Crane Awards Are Numerous in Pittsburgh and in New York Markets—Standard Oil Closes For 28 Jib Cranes For Bayway

CONTRASTING conditions are noted in the eastern and middle western machine tool markets. In the east tool trading last week was quieter than in several months, while in the middle west, sellers have been particularly active. Inquiries are fairly heavy and sizable orders are being placed. Some eastern buyers apparently are holding up their purchases until the air is cleared of strikes and while this condition is true in a small measure in Cleveland and surrounding territory, sellers generally believe the strike will be settled before it affects their business to an appreciable extent.

Crane activity abounds in practically every market. Sellers of this type of equipment claim they have all the business they can handle. In New York, crane awards on old inquiries are particularly heavy and considerable new inquiry is current. The largest closing is by the Standard Oil Co., for Bayway, N. J. on 28 jib cranes. It also bought a 25-ton overhead for Bayonne, N. J. Crane purchasers include the Phoenix Utilities Co., of Thousand Springs, Idaho; Lehigh Valley railroad, Ashmore, Pa.; Dilts Machine Works, Fulton, N. Y.; Honolulu Iron Works, New York City and the American Smelting & Refining Co. Electric cranes were purchased by the West Penn Power Co., and the United Gas & Electric Co., New York City, while locomotive crane purchasers include L. Brenner, Lebanon, Pa.; Peace Bros., Flushing, L. I., N. Y.; J. Lipsitz Co., Chelsea, Mass.; Beacon Oil Co., Boston, and Henry W. Peabody & Co., New York City. In Pittsburgh, four, five and six cranes were bought by the Kelly-Springfield Tire Co.; Interstate Iron & Steel Co., Chicago, and the Slick-Knox Co., Wheatland, Pa., respectively. The McKinney Steel Co., Cleveland, also was a recent purchaser of electric cranes.

Inquirers for cranes include the Carnegie Steel Co., which wants four 5-ton cranes but will probably take two each 5 and 10-ton; the American Metal Co., and the Phelps, Dodge Co., New York City, the latter wanting 12 overhead cranes; the Nazareth Foundry & Machine Co., Nazareth, Pa.; Hagameyer Trading Co., and American Trading Co., New York City.

Two fair sized inquiries for tools as well as many smaller ones are out in Cleveland, one for 28 tools from A. Bentley & Sons Co., Toledo, O., and one from the Canadian Fairbanks Co., Ltd., Montreal, Que., 15 tools, including some heavy equipment such as bulldozers, steam hammers, etc. The Baldwin Locomotive Works, Philadelphia, is supposed to have wound up its purchases for the present. Many automobile companies figure among the buyers in the middle west.

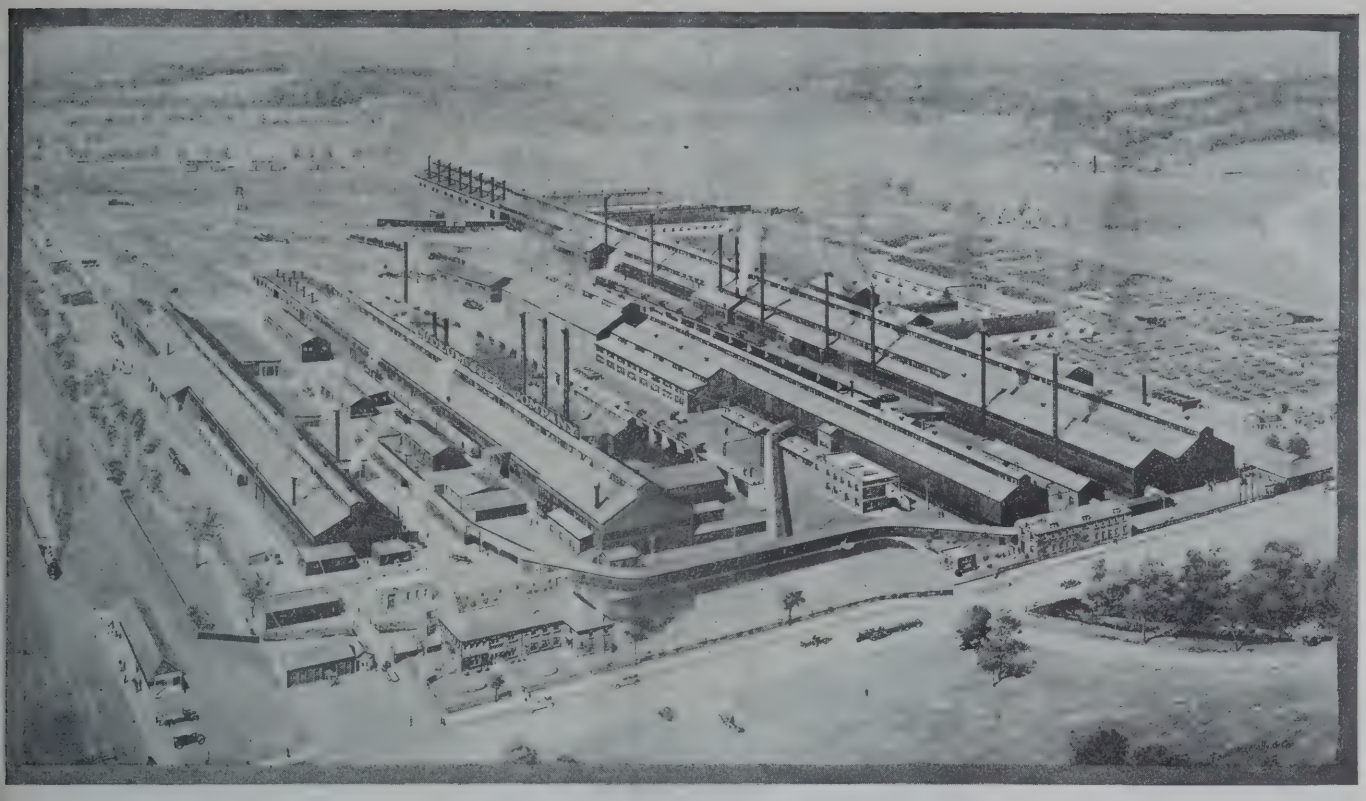
Prices have become stabilized and are near the wartime level. Deliveries on heavy machines are deferred about eight weeks; spot delivery being offered only on some types of lighter equipment.

Crane Awards Feature Eastern Equipment Mark

FEATURING the eastern equipment market is considerable activity in cranes. Numerous awards are being made, and several sizable new inquiries are out. The largest single award this week involved 28 jib cranes for the Bayway, N. J., plant of the Standard Oil Co. of New Jersey. Other orders include a 40-ton overhead crane for the Phoenix Utilities Co., for Thousand Springs, Idaho. This business was placed through the Electric Bond & Share Co., New York City, with the Toledo Bridge & Crane Co. The Whiting Foundry & Equipment Co. has been in receipt of considerable business. Orders booked by this company within the past few days include a 10-ton electric crane for the Lehigh Valley railroad, Ashmore, Pa.; a 5-ton electric crane for the Dilts Machine Works, Fulton, N. Y.; a 10-ton crane for the Honolulu Iron Works, with offices in New York City; a 10-ton electric crane for the American Smelting & Refining Co., for shipment to Mexico, and a 25-ton overhead crane for the Bayonne, N. J., plant of the Standard Oil Co.

New inquiries in the electric crane market include three cranes for the American Metal Co., New York City. One crane is to be of five tons capacity, and the remaining two of 10 tons capacity each. The Phelps-Dodge Corp., 99 John street, New York City, is in the market for 12 overhead cranes, ranging in capacity from five to 60 tons. The Nazareth Foundry & Machine Co., Nazareth, Pa., is inquiring for a 15-ton overhead crane. The Hagermeyer Trading Co., 17 Battery Place, New York City, is asking bids on a 7-ton traveling crane for export. The American Trading Co., 25 Broadstreet, New York City, is in the market for a small special crane for shipment to France.

Several sizable orders have been placed in the locomotive crane market. L. Brenner, scrap merchant, Lebanon, Pa., has bought a 15-ton Browning Crane. The American Car & Foundry Co., 165 Broadway, New York City, has purchased a 25-ton crane from the Orton & Steinbrenner Co. This latter company also has been awarded a 15-ton locomotive crane by J. Lipsitz, Chelsea, Mass. The Orton company also has been awarded a 15-ton crane by the Beacon Oil Co., Boston, Mass., and a 15-ton crane by Henry W. Peabody & Co., 17 Battery Place, New York City, for export. The Hugh Nawn Contracting Co., Fifth



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avenue and Forty-third street, New York City, is figuring on some conveying equipment. This company is contractor in charge with the construction of the $5,000,000 Gilboa dam in New York state. Peace Bros., Flushing, L. I., have bought a 15-ton used locomotive crane.

Additional awards in the electric crane market include a 5-ton bucket handling crane for the West Penn Power Co. This order was placed by Sanderson & Porter, 52 Williams street, New York City, with the Milwaukee Electric Crane & Mfg. Co. A similar crane was recently ordered from the Milwaukee company by the United Gas & Electric Co., 61 Broadway, New York City.

The past week in the machine tool market has been one of the most quiet periods in some time. Inquiries were small and scattered, and orders were relatively few. Pending settlement of the steel labor question and an improvement in foreign exchange rates, this situation is likely to continue, according to leading interests in the trade. The Baldwin Locomotive Works, Philadelphia, possibly the largest buyer of late, has completed its purchases, covering on approximately $100,000 worth of equipment.

While not so buoyant as they were last month, prices nevertheless, remain strong. The situation with regard to deliveries also is showing little change. Some of the heavier machines, such as large boring mills and planers, are holding around six to seven months; the lighter equipment, for the most part, is available for almost spot delivery.

On Oct. 2, bids will be opened at Washington on a quantity of miscellaneous machinery. This includes three chaser grinders; two power grindstone frames; 10 drill grinders; one heavy guide bar grinder; two nut-facing machines; 17 16-inch shapers; three cutting off machines; three hack saws; two millers; 11 drilling machines; one belt-lacing machine; five engine lathes; three pattern-makers' lathes; three turret lathes; one balancing machine; one steam hammer.

Crane Awards Heavy in Pittsburgh

SEVERAL crane inquiries which have been out in the Pittsburgh district for several weeks past recently, have been closed. The Pittsburgh Crucible Steel Co. has bought a 15-ton Morgan bucket crane while the four cranes inquired for in connection with the new plant of the Kelly-Springfield Tire Co. also have been placed, three small cranes going to the Shaw Electric Crane Co., Muskegon, Mich., and a large one to the Morgan Engineering Co., Alliance, O. The interstate Iron & Steel Co., Chicago, has ordered five Morgan cranes and the Slick-Knox Co. also has contracted for six Morgan cranes, four 15-ton and two wall cranes. The Erie Foundry Co., Erie, Pa., has closed for a 50-ton Champion crane with a 10-ton auxiliary. The Milwaukee Electric Crane Co. has taken a 4-motor, 34-foot span bucket crane from the West Penn Power Co.

The Carnegie Steel Co. has put out an inquiry for four 5-ton cranes with an alternative proposition for two 10-ton and two 5-ton cranes. Inquiry for a line of mill equipment is reported from a large French steel manufacturer making a substantial addition to his plant. Steady demand still is noted for machine tools and builders of a number of lines now are not promising deliveries short of eight weeks.

Cleveland Sellers Undisturbed by Strike

WHILE it is rather early for the sale of machine tools in Cleveland to be affected by the general iron and steel strike, dealers believe the trouble will be settled before this occurs. Business is in an extremely healthy condition; in fact sellers are at a loss to explain the reason for the sudden influx of inquiries and orders in view of the present unsettled labor situation. It is conceded, however, that considerably more business would be transacted if the labor trouble would subside. This recent activity is particularly true of heavy equipment, including cranes. Automobile plants, tractor manufacturers, oil well equipment builders, etc., are taking heavy planers, boring mills, etc. Sellers of cranes have all the business they can handle and inquiries are coming from all parts of the country. The McKinney Steel Co., Cleveland, recently purchased 20 and 40-ton electric cranes.

Two large machine tool inquiries are current in the Cleveland market, one from A. Bentley & Sons Co., Toledo, O., and the other from the Canadian Fairbanks Co., Ltd., Montreal. The former calls for 28 miscellaneous machines, including eight engine lathes, two each

American Exports of Machinery to Java Increase

AMERICAN trade in machine tools with the Netherland East Indies, beginning in 1902 with a valuation of but $20,000, increased in 1917 to more than $2,000,000, giving it leadership over all other countries.

The Netherland East Indies was a neutral territory during the war and the German name still carries a certain good will in engineering circles. The German firms in Java have not only kept their doors open and their organizations complete throughout the war, but they have been able to show a profit on the business done. British manufacturers are also well organized.

United States consular reports say:

The position now held by American manufacturers can be maintained if those interested will make a reasonable effort. As yet America has done very little work in the Java market, but Germany's record, in the accompanying table, shows what can be accomplished by good and persistent salesmanship. Active effort, with American methods, will show even better results, especially if started at once. American banks have opened branches in Java; American steamers now run direct and regularly. Conditions are right, and it seems probable that trade energy can be expended more profitably in the Netherlands East Indies than in many of the other markets of the world.

The table below gives the value of the total machinery imports and the share of this trade held by three principal exporting countries from 1900 to 1917, inclusive. Although these figures include the machinery imported into the whole archipelago, by far the greater part of this equipment went to Java:

Year	Great Britain	Germany	United States
1900.....	$ 901,686	$ 70,350	$ 20,100
1901.....	597,774	77,184	75,174
1902.....	309,138	147,534	29,346
1903.....	332,454	131,856	19,296
1904.....	387,528	147,131	38,592
1905.....	614,658	197,784	49,848
1906.....	509,334	438,582	45,828
1907.....	707,922	561,996	50,250
1908.....	1,033,542	526,620	46,632
1909.....	648,828	476,772	36,984
1910.....	817,668	736,062	85,224
1911.....	1,290,822	1,053,642	106,128
1912.....	2,191,704	1,511,520	122,610
1913.....	1,835,532	2,208,990	204,618
1914.....	1,973,418	1,349,916	295,068
1915.....	1,159,368	223,914	379,890
1916.....	1,568,604	26,934	1,165,800
1917.....	1,518,756	7,236	2,474,312

Handle It with a Crane

FOR handling heavy materials; for storing coal; for storing and rehandling anything, or switching cars, the Link-Belt Locomotive Crane is a useful and profitable machine around the yard. When not in use for the specific purposes for which it is purchased you will find there is always some other profitable work for such a machine to do. Write for Locomotive Crane Catalog No. 370.

And remember this, a Link-Belt Crane will be on the job every day—no layoffs, strikes, or demands for higher wages. Our Crane is "Built for Service", and you can always depend upon it.



TOP VIEW

Link-Belt Standard Steam Crane, 46-ft. Boom, 43-in. Magnet, 7½ K. W. Generating Outfit, handling scrap iron at the Alton Steel Co., Alton, Ill.

LOWER VIEW

Link-Belt 15-Ton, 42-foot Boom, Steam Locomotive Crane with Electric Magnet, handling billets, Dominion Foundries and Steel, Ltd., Hamilton, Ont., Can.

Let us send one of our Locomotive Crane engineers to help you with your handling problem.



LINK-BELT COMPANY

PHILADELPHIA	CHICAGO	INDIANAPOLIS

New York	299 Broadway
Boston	49 Federal St.
Pittsburgh	1501 Park Bldg.
St. Louis	Central Nat'l Bank Bldg.
Buffalo	547 Ellicott Square
Wilkes-Barre	2d Nat'l Bank Bldg.
Huntington, W. Va.	Robson-Prichard Bldg.
Cleveland	429 Rockefeller Bldg.
Detroit	932 Dime Bank Bldg.
Kansas City, Mo.	306 Elmhurst Bldg.
Seattle	576 First Ave, S.
Portland, Ore.	First and Stark Sts.
San Francisco	582 Market St.
Los Angeles	163 N. Los Angeles St.
Toronto, Can.	Canadian Link-Belt Co., Ltd.
Denver	Lindrooth, Shubart & Co., Boston Bldg.
Louisville, Ky.	Frederick Wehle, Starks Bldg.
New Orleans	C. O. Hinz, Hibernia Bank Bldg.
Birmingham, Ala.	S. L. Morrow, 730 Brown-Marx Bldg.

(305)

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- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Locomotive Cranes
- ☐ Wagon Loaders
- ☐ Coal and Ashes Systems

Write for Catalogs
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LINK-BELT
LOCOMOTIVE CRANES

turret lathes, radial drills, goose neck drills, sensitive drills, planers, shapers, horizontal boring mills; three vertical boring mills, a milling machine, etc. The inquiry from the Canadian Fairbanks Co. is for shipment to Vancouver and specifies, one double end punch and shear, shear to have 36-inch throat, punch to have 36-inch throat to punch 1¼-inch holes in 1-inch plate; one angle iron bending machine for bending 4 x 4-inch angles; one bull dozer to bend I-beams up to 15 inches; one 1500-pound steam hammer; one gear cutting machine capable of cutting 36-inch spur gears, 2-inch circular pitch, also to cut bevel gears up to 36 inches in diameter; one horizontal boring mill, capable of boring to the center of a 102-inch circle; one gear cutting machine, suitable for cutting 36-inch spur gears, 2-inch circular pitch, also for cutting 36-inch bevel gears, 2-inch circular pitch; one 42-inch open side planer, 12-foot bed; one angle iron bender for 4 x 4-inch angles or channel irons; one double end punch and shear, to shear 1-inch plate, shear to have 36-inch throat, punch to have 36-inch throat capable of punching 1½ or 1¼-inch hole in 1-inch plate; one 1500-pound crosshead type steam hammer; one 36-inch triple geared lathe, 14 feet between centers; one 4 or 5-foot radial drill, either full universal or with universal box type table; one 3-inch bolt threader; one bull dozer, suitable for bending and straightening I-beams up to 15 inches.

A heavy demand is noted from automobile manufacturers. Among the equipment wanted by the Holmes Automobile Co., Canton, O., is some tapping machines. The F. B. Stearns Co., Cleveland, desires to obtain some automatic screw machines. The Templar Motors Corp., Cleveland, and the Peerless Motor Car Co., that city, also are understood to be in the market for some equipment. The Dort Motor Car Co., Flint, Mich., is preparing for expansion and has issued some tentative inquiries for equipment. The Hudson Motor Car Co., Detroit, and other Michigan automobile companies are in the market. The Columbia Axle Co., Cleveland, is still in the market for Warner & Swasey screw machines, tapping machines, drills, etc.

Other smaller inquiries are received from various industries. The Broadfoot Iron Works Co., Wilmington, N. C., wants a lathe, a milling machine, a key-seating machine and some other equipment. The Apex Electrical Mfg. Co., Cleveland, wants two grinders, a bandsaw, etc. The Ohio Blower Co., Cleveland, wants a 48-inch power square shear. Wilcox, Lynn & Co., Ravenna, O., machinists, want a 20 to 24-inch lathe. The United States Tire Co. and the Cleveland Osborne Mfg. Co., Inc., both of Cleveland, are in the market for some miscellaneous equipment. The Electric Vacuum Cleaner Co., also of Cleveland, has purchased a semi-automatic Frazer grinder, increasing the hourly production on a small grinding job from 40 to 1500. The Kilby Mfg. Co., Cleveland, wants a 12-foot boring mill, taking 7 feet or more under crossrail. The Aetna Brass Mfg. Co. Cleveland, still is advertising for used polishing lathes, and the Manitowoc Shipbuilding Co., Manitowoc, Wis., is asking for a heavy gate shear or Bliss type, doubled geared, double crank, press ram pressure capacity 600,000 pounds, 84 inches between housings.

Prices remain firm at recent advances. In some cases they now are within 12½ per cent of the highest prices asked during the war.

Chicago Buyers Take Light Equipment

MOST buying of machine tool equipment in the Chicago market at present is of light machinery rather than heavier types. In the experience of some dealers there is a special demand for millers and it is now difficult to place orders for reasonable delivery for the No. 2 size. This demand indicates renewed activity in small machine shops, as millers usually are bought after lathes and other primary equipment has been installed and business enlarges. This also fits into the situation which has continued over several months, buying of single tools rather than complete equipment.

Considerable demand is noted for tools to be used by manufacturers of heavier types of tractors and by refrigerating machinery manufacturers especially.

Deliveries are becoming more delayed, and 60 to 90 days is about the average. All prices which had been reduced since the first of the year have gone back to their former level and any tendency toward a change seems to be upward rather than downward. The Moline Plow Co. has not yet made inquiry for equipment for its general machine shop recently burned, and, as indicated last week, it is understood this machinery will be bought from government stocks. Montgomery, Ward & Co., who are building an engine manufacturing plant at Springfield, Ill., complete from foundry to paint shop, continues to place orders for the necessary equipment.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

PORTLAND, ME.—The Arkin Fastener Co. has been incorporated with $60,000 capital by William Shepherd Linnell, B. L. Merryman and William M. Bradley.

PORTLAND, ME.—The Theatric Welding Co. of America, Inc., has been incorporated with $75,000 capital by James M. Graham, Charles M. Parker and Lewis G. Parker.

PORTLAND, ME.—The East Coast Fisheries Products Co. has been incorporated to build vessels and boats with $50,000,000 capital by Frank I. Cowan, H. W. Baston and Clement F. Robinson.

BOSTON.—The S. A. Woods Machine Co. plans a plant, 2-stories, 70 x 250 feet, to cost about $90,000.

BOSTON.—The S. M. S. Co. has been incorporated to manufacture machinery, motor vehicles, tires, etc., with $45,000 capital by Thomas J. Sullivan, Arthur M. Marston and Lewis W. Skillings.

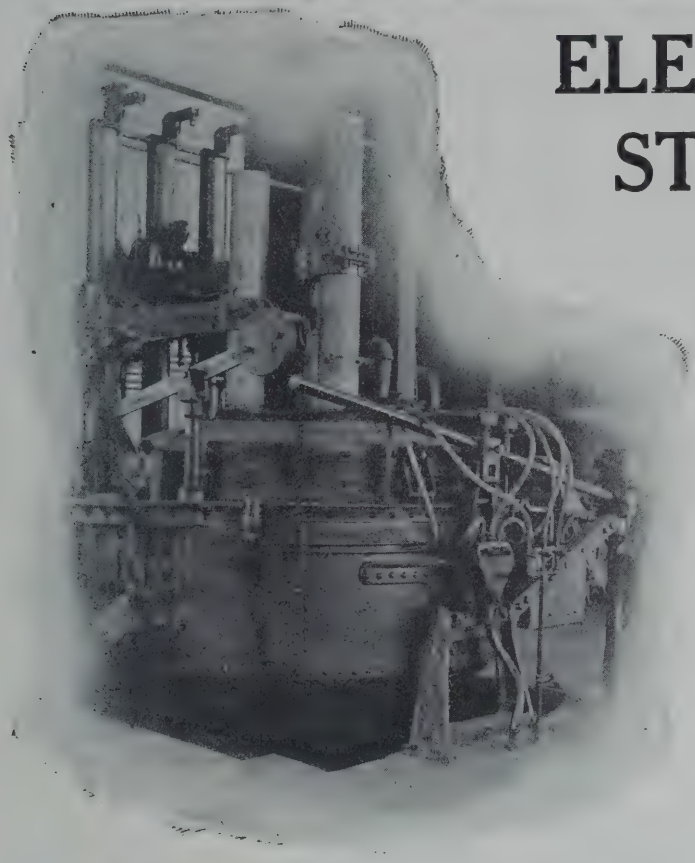
BOSTON.—The R. L. Harper Co. has been incorporated to manufacture engines, motors, machines, etc., with $50,000 capital by Robert Lee Harper, Robert C. McGowan, and Henry D. Nunn.

CAMBRIDGE, MASS.—The Cambridge Machine & Tool Co. has been incorporated with $35,000 capital by Antonio Marciano, Vinent Popoli and Huran H. Seron.

EVERETT, MASS.—The Beacon Oil Co. will build

FARRELL-CHEEK

ELECTRIC FURNACE STEEL CASTINGS



Every electric furnace steel casting made in our foundry is carefully nursed from the day it enters as an order until it is ready for the final, critical examination. The same master workmen, who made the enviable reputation of the Farrell-Cheek Foundry, are now turning out superior electric furnace steel castings.

MEMBER OF STEEL FOUNDERS' SOCIETY OF AMERICA QUALITY SERVICE PRICE LEADERS OF THE WORLD ASSOCIATED NEW YORK, U.S.A.

And so it is easy to understand why Farrell-Cheek electric furnace steel castings make good. They ***are*** better. The metal is right to start with, and every operation in the making is scrutinously watched to ensure the maintaining of the high standard which characterizes all Farrell-Cheek Castings.

Your work is completed and delivered quickly. Give this exceptional service your consideration, too.

Write!

FARRELL-CHEEK STEEL FOUNDRY CO.

"Makers of steel castings that are a little better than the next best."

Sandusky, Ohio

F·C

Say you saw it in THE IRON TRADE REVIEW

a 1-story, 36 x 90-foot machine shop, 53 x 108-foot boiler house and a 39 x 95-foot storehouse to cost $70,000.

FALL RIVER, MASS.—The New England Oil & Refining Co. has let the contract for a $500,000 plant to include seven steel tanks.

LOWELL, MASS.—Knowlton & Newton Co., Inc., has been incorporated to do a general sheet metal business with $20,000 capital by Harry W. Knowlton, Joseph N. Leonard, Lexington, Mass., and Wilmer A. Newton.

LYNN, MASS.—The Hancock Perfecting Lineup Machine Co. has let the contract for a 1-story, 48 x 128-foot factory.

NORTHAMPTON, MASS.—C. A. Maynard, Green street, manufacturer of garden tools, plans to rebuild his forging shop which was recently damaged by fire.

NORWOOD, MASS.—A Hershenson & Co., Inc., has been incorporated to deal in iron, metals, etc., with $3000 capital by Alek Hershenson, M. Hershenson and Jacob Miller.

SPRINGFIELD, MASS.—The Duckworth Chain & Mfg. Co. contemplates a plant, 1-story, 50 x 120 feet.

SPRINGFIELD, MASS.—The Forging Service Co. has been incorporated with $25,000 capital, by J. Howard Jones, N. C. French and Walter H. McCarthy.

SPRINGFIELD, MASS.—Bids have closed for a 4-story and basement, 50 x 101-foot addition to the factory of the Bemis & Call Hardware & Tool Co., maker of wrenches, to cost $45,000.

WATERTOWN, MASS.—Bids closed Sept. 22 for a machine shop, 42 x 362 feet, at the United States arsenal.

WALTHAM, MASS.—W. H. Nichols has let the contract for a 80 x 150-foot machine shop to cost $25,000.

WOLLASTON, MASS.—Bids closed Sept. 24 for the erection of a plant for the Tubular Rivet & Stud Co.

WORCESTER, MASS.—The Worcester Pressed Aluminum Co. has been incorporated with $150,000 capital by Cornelius A. Brosnan, Edwin W. Whitmore and A. E. McGrath.

PROVIDENCE, R. I.—The American Boiler Tube Thimble Co., 95 Orms street, has been organized to manufacture metal products, by John F. McKenna and others.

BRIDGEPORT, CONN.—The American Tube & Stamping Co. has plans for alterations and extensions to its plant.

BRIDGEPORT, CONN.—The Perfection Shear Co. has been incorporated with $5000 capital by E. F. Von Wettberg, G. P. Brett Jr. and A. Dunn.

DANBURY, CONN.—A $55,000 machine shop, 1-story, 90 x 200 feet, will be erected here by Doram Bros., hatters' machinery.

ELMWOOD, CONN.—The Whitlock Coil Pipe Co. has awarded a contract for a 1-story machine shop, 48 x 71 feet.

NEW BRITAIN, CONN.—The Trumbull Electric Co. contemplates a plant addition, 4-stories, 50 x 106 feet.

NEW HAVEN, CONN.—The American Radiator Co. has awarded a contract for a 2-story building, 100 x 135 feet, to cost about $85,000.

WATERBURY, CONN.—Plans have been completed for a $60,000 plant, 50 x 120 feet, for the Manufacturers Foundry Co.

WINSTED, CONN.—Plans are being prepared by the Fitzgerald Mfg. Co. for a plant to manufacture automobile accessories.

North Atlantic States

BROOKLYN, N. Y.—Barber & Co., 17 Battery place, is having plans drawn for a machine shop, 1-story, 100 x 100 feet, to cost $50,000.

BROOKLYN, N. Y.—The Columbia Tinware Co. has been incorporated with $20,000 capital, by J. Levitt, J. Menoff and S. Antoville, 351 East Forty-ninth street.

BROOKLYN, N. Y.—Laverne C. Brown, Inc., boats and cras, recently was incorporated with $50,000 capital, by J. P. Moran, L. C. and A. L. Brown, Hotel Commodore.

BROOKLYN, N. Y.—The Kenmore Sheet Metal Works, Inc., has been incorporated with $5000 capital, by M. and R. and M. L. Krissberg, 1079 Coney Island avenue.

BUFFALO.—The Federal Metal Hose Corp. has been incorporated with $78,750 active capital, by C. C. Baysar, I. W. Smith and C. Palmer.

BUFFALO.—The Buffalo Nipple & Machine Co. is arranging to build a factory in this city to cost $10,000.

BUFFALO.—The National Plyer Co., Inc., hardware specialties, has been incorporated with $25,000 capital, by K. B. MacDonald, 34 Penhurst Park, W. R. Daniels, 903 D. S. Morgan building, and others.

ELMIRA, N. Y.—This city is considering a bond issue of $5,000,000 for an extension to its waterworks plant.

JAMESTOWN, N. Y.—The Mobilex Accessory Co., auto accessories, has been incorporated with $25,000 capital, by A. Wedeborg, A. E. Tunberg and W. E. Tiffany.

JAMESTOWN, N. Y.—The Chautauqua Electric Power Co., capital $750,000, will remodel the plant of the Supreme Furniture Co. at Falconer, N. Y., to make electric cars. Address E. J. McGee, of this city.

LOCKPORT, N. Y.—The Lockport Auto Radiator Corp. has been incorporated with $30,000 capital, by J. L. Branch, C. D. Nye and F. M. Capell.

NEW BALTIMORE, N. Y.—The New Baltimore Shipbuilding & Repair Corp. has been incorporated with $45,000 capital by W. W. Stebbins, W. J. Wade and R. B. Drew, 597 Henry street, Brooklyn, N. Y.

NEW YORK.—The National Auto Accessories Co. has been incorporated with $25,000 capital, by H. and M. and L. Epstein, 127 West 112th street.

NEW YORK.—The Feridus Machinery Co. has been incorporated with $10,000 capital by S. E. and B. Aaron and B. Salinsky, 31 Essex street.

NEW YORK.—Charles Cory & Son, 290 Hudson street, nautical instruments, has plans for a 6-story plant, 76 x 150 feet, to cost $185,000.

NEW YORK.—The Adeco Industrial Co., engines, etc., has been organized by Albert West and Frederick Cardway, New Rochelle, N. Y.

NEW YORK.—The Wilson-Maeulen Co., 781 East 142nd street, pyrometers, etc., is having plans prepared for a 3-story addition, 50 x 100 feet.

NEW YORK.—The New York Wire Cloth Co., 233 Broadway, is taking bids for a 2-story addition, 45 x 80 feet, to cost about $30,000.

NEW YORK.—The Monofer Shipbuilding Co. has been incorporated with $30,000 active capital, by L. F. Sniffin, J. L. Druck and F. Kweton, 49 Wall street.

NEW YORK.—The Acme Furnace Equipment Co. has been incorporated with $21,000 capital, by E. W. Sturart, R. W. Owens and F. M. Clute, 100 Broadway.

NEW YORK.—The Raymond Mfg. Co., machine shop and foundry supplies, has been incorporated with $150,000 capital, by H. O. Zurich, 5 Wilson court, Ocean Parkway, M. Sonken, 178 DeKalb avenue, Brooklyn, N. Y., and M. Cohen, 1226 Boston road.

NEW YORK.—The Supreme Metal Products & Refining Works, Inc., welders, toolmakers, etc., has been incorporated with $30,000 capital, by M. Berinkow, 94 Wilson street, Brooklyn, N. Y., B. Bernstein, and R. Bernstein, 522 West 136th street, New York.

NIAGARA FALLS, N. Y.—The Carborundum Co., Buffalo avenue, has had plans prepared for a 3-story addition, 99 x 224 feet, to cost $150,000.

NORTH PELHAM, N. Y.—The American Tekstag Products Co., boiler metal preserving materials, has been incorporated with $35,000 capital, by J. Meyer, C. Adams and L. M. Moehler, 1 Madison avenue.

ROCHESTER, N. Y.—The Francis Metal Door & Window Corp. has been incorporated with $25,000 capital, by A. W. and I. M. and G. D. Francis.

ROCHESTER, N. Y.—The North East Electric Co. 348 Whitney street, has let the contract for an addition, 76 x 140 feet, to cost $60,000.

UTICA, N. Y.—The Utica Heater Co. has awarded contracts for three additions, to cost about $20,000.

BEAVER FALLS, PA.—The Keystone Driller Co. is having plans prepared for a 2-story plant 40 x 60 feet.

BOYERSTOWN, PA.—The Boyerstown Brass Foundry Co. has been incorporated with $50,000 capital, by W. M. Johnson, A. R. May and Garrett J. Henves.

CARBONDALE, PA.—The Carbondale Machine Co. has awarded a contract for a machine shop, 1-story, 20 x 220 feet, to cost about $60,000.

CONNELLSVILLE, PA.—The Sligo Iron & Steel Co. will build a warehouse 60 x 270 feet.

CORAOPOLIS, PA.—The Standard Steel Spring Co. is having plans prepared for two 1-story buildings.

ELLWOOD CITY, PA.—This city is considering the erection of a municipal garbage disposal plant.

ERIE, PA.—The Westcott Valve Co. has plans for a plant at Seneca Falls, N. Y., to cost $25,000.

ERIE, PA.—The board of water commissioners will build a 15,000,000-gallon reservoir.

ERIE, PA.—The Rickart-Shafer Co., machine tools, plans a new plant, 50 x 152 feet.

FLEETWOOD, PA.—The Cambria Car & Foundry Co. has been incorporated with $50,000 capital, by William J. Thiele, Herman J. Widmar and J. M. Gastmann.

LANCASTER, PA.—The E. T. Fraim Lock Co. is having plans drawn for a machine shop, 1-story, 44 x 82 feet.

MONACA, PA.—This city is considering plans by Elmer E. Sproul for a waterworks plant.

PHILADELPHIA.—Contracts for a machine shop addition, to cost $13,000, have been awarded by the Robert E. Lamb Co.

PHILADELPHIA.—Property has been purchased by the Wicaco Screw & Machine Works, Inc., for a $100,000 plant.

PHILADELPHIA.—Contract for a $35,000 machine shop and laboratory for the Sharpies Specialty Co. has been awarded. The building will be 1-story, 75 x 104 feet.

PHILADELPHIA.—The Atwater Kent Mfg. Co., mechanical and electrical equipment, has been incorporated with $5000 capital, by Atwater Kent, Ardmore, Pa., W. J. Little and Paxson Deiter.

PHILADELPHIA.—The Philadelphia Metal Lathing & Furring Co. has been incorporated to manufacture metal lathing with $5000 capital, by M. H. Jester, 102 North Dewet street, John J. Bauer, 2139 North Twelfth street, and others.

PITTSBURGH.—The Pittsburgh Valve Foundry & Construction Co., Twenty-sixth street and the Alle-

FOR ECONOMY OF SPACE AND POWER

—are you wasting either?

When you figure on big reductions with a train of spur gears be sure to take into consideration the wastage of space and power. Herringbone Gears make direct reductions as high as 20 to 1, thereby saving space and power losses.

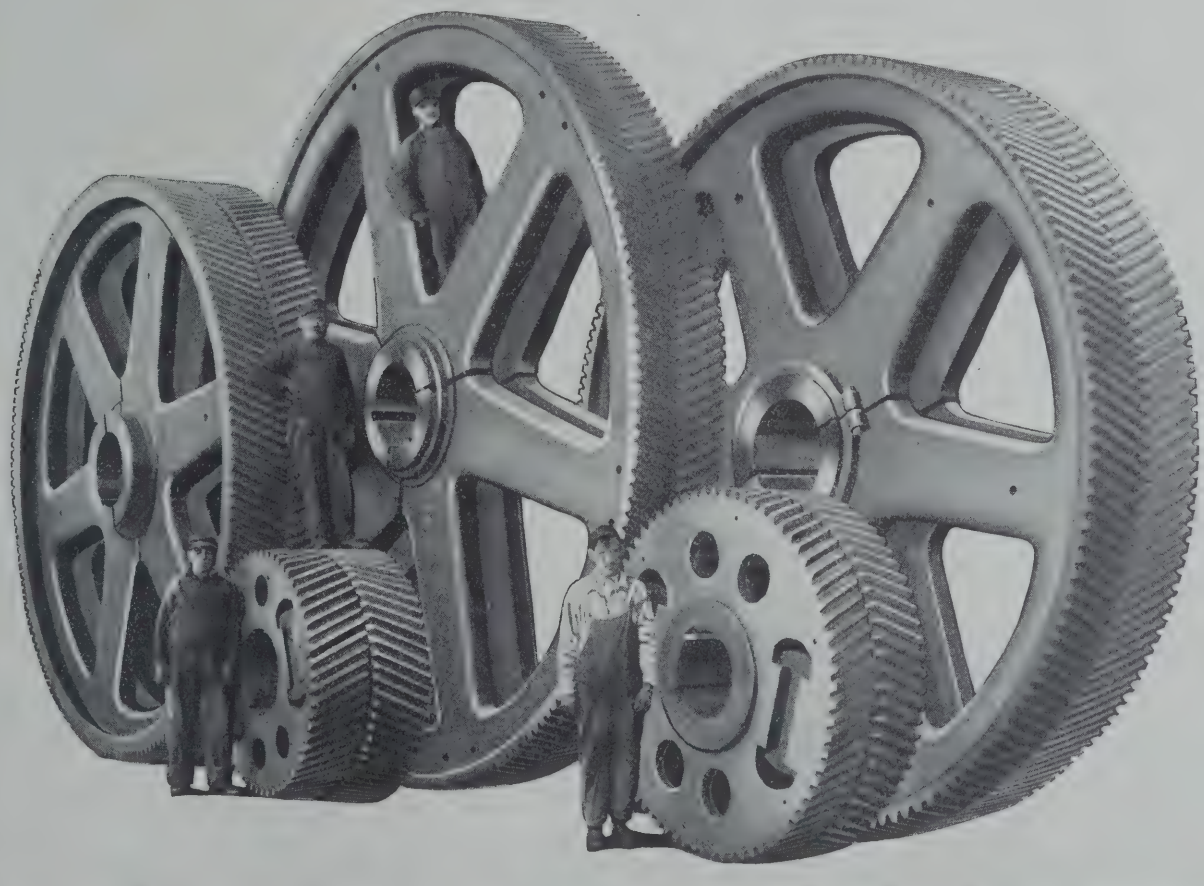
This type of gear has many other advantages: The action is continuous and smooth; there is no shock of transference from tooth to tooth; the teeth do not wear out of shape; the bending action of the load on the teeth is less than with straight gearing; "back-lash" is entirely absent; friction and mechanical losses are reduced to a minimum; herringbone gears can be used at greater velocities than any other kind.

Herringbone Gears are hobbed from the solid by means of special machinery to get precision heretofore not attained in gear cutting. They are far more efficient than belts, ropes, worm gears or compound trains of spur gears. They are particularly quiet in action and cause practically no vibration—two big advantages which are lacking in spur gears.

Our descriptive booklet contains much valuable information concerning gears and gearing problems. Send for it today.

The Falk Company, Milwaukee, Wis.

AGENTS: Pittsburgh—W. O. Beyer, 1024 Park Bldg. New York—M. P. Fillingham, 50 Church St. Wilkes-Barre—Vulcan Iron Works. Denver—Denver Engineering Works. San Francisco—F. W. Grimwood, Rialto Bldg.



FALK HERRINGBONE GEARS

gheny Valley railroad, has completed plans for a 1-story plant addition.

PITTSBURGH.—The Oliver & Snyder Steel Co. contemplates a boiler house, 1-story, 44 x 64 feet.

PITTSBURGH.—The Union Steel Casting Co. will build a plant shortly at 6100 Butler street to cost $27,000.

SHARON, PA.—Frank Taylor & Son, of this place, have the plans for the iron works for A. N. and Louis Rosenblum.

WILKES-BARRE, PA.—The Guarantee Silk Corp. is taking bids for a power plant here.

WILKES-BARRE, PA.—The Wilkes-Barre Iron & Wire Works Co. has been incorporated with $10,000 capital, by Hugh P. Watters, Scranton, Pa., and others.

RAHWAY, N. J.—The Superior Body Co. has been incorporated with $500,000 capital, by Joseph Axman, Thomas Armstrong and David Armstrong.

JERSEY CITY, N. J.—The Marion Mfg., iron and steel, has been incorporated with $100,000 capital. The company has an office at 665 Newark avenue.

NEWARK, N. J.—The Prest-O-Lite Co. has let a contract for two factory buildings.

NEWARK, N. J.—Plans are being prepared by the Irving Mfg. Co. for an extension, 3-stories, 50 x 50 feet.

NEWARK, N. J.—The Atlantic Smelting & Refining Co. has let a contract for a factory building to cost $100,000.

NEWARK, N. J.—The Newark Auto Body & Repair Co., Newark street, has been incorporated by Thomas J. Gorman and others.

NEWARK, N. J.—The American Transformer Co. has awarded a contract for a plant addition, 1-story, 11 x 67 feet.

NEWARK, N. J.—The American Platinum Co., Oliver street and New Jersey Railroad avenue, will erect a 3-story, 50 x 132-foot plant and a boiler hoose, 1-story, 25 x 42 feet.

NEWARK, N. J.—Work has been started on a $110,000 garage and sales building for the Franklin Motor Car Co. The building will be 3-stories and one of the floors will be devoted to repair and assembly work.

NEWARK, N. J.—The Witteman-Lewis Aircraft Co. has begun work on a plant. Three buildings are under construction. The main building, one of two stories is 165 x 200 feet, will be used for a construction and assembling room. Another building is be devoted to engine testing, and will also contain the boiler and engine equipment.

BALTIMORE.—The Baltimore Spring Works, 118 Dauphin street, will build a 3-story addition.

BALTIMORE.—The Baltimore Water & Electric Co. has let the contract for a pump house to cost $15,000.

BALTIMORE.—Hill & Ferguson, 112 East 19th street, New York, will prepare plans for a waterworks plant in this city.

BALTIMORE.—The Federal Mfg. Co., aluminum solder, has been incorporated by James T. Carter, 900 Maryland Trust building, and others.

BALTIMORE.—The Baltimore Tube Co. has awarded a contract for a milling shop, 1-story, 75 x 144 feet, to cost about $25,000.

BALTIMORE.—The Boyden Co-Ordinating Car Corp., Keyser building, has been organized by George Boyden and others. The company is reported planning to build plants in various parts of the country for the manufacture of car trucks.

NORFOLK, VA.—The Western Electric Co. is planning to erect a branch plant here.

NORFOLK, VA.—The Norfolk Metal Plating & Galvanizing Co. has been incorporated with $10,000 capital, by R. E. Pelot, A. G. Ellis and others.

RICHMOND, VA.—The American Can Co. is reported planning to improve its plant here at an estimated cost of $10,000.

Central States Activity

CHIPPEWA FALLS, WIS.—G. W. Johnson, former superintendent of the Chippewa Foundry & Machine Co., is organizing a new corporation for the manufacture of a pumping engine. A machine shop is now being erected.

FOND DU LAC, WIS.—The Vulcan Mfg. Co. is having plans prepared for a 1-story shop addition, 40 x 150 feet, to cost $20,000 and will buy new equipment costing $15,000.

HARTFORD, WIS.—The Ideal Mfg. Co., medical instruments, has purchased the Hahn building, and will move its plant after remodeling work is completed.

JANESVILLE, WIS.—Bids are being taken by the board of education, S. C. Burnham, secretary, for the erection of a new high school estimated to cost $250,000. A boiler house is included in the plans.

KENOSHA, WIS.—The Chicago & Northwestern railroad has approved plans for a $300,000 bridge.

KENOSHA, WIS.—The Winther Motor Truck Co. is planning plant additions and the purchase of some new equipment.

KEWASKUM, WIS.—The Kewaskum Aluminum Mfg. Co. has been organized with $150,000 capital and will erect a 3-story, plant at an estimated cost of $50,000.

MILWAUKEE.—The Western Machine Co., which recently increased its capital, will enlarge its facilities.

MILWAUKEE.—The Harley-Davidson Motor Co. will enlarge its main plant by a 5-story addition, 120 x 215 feet, to cost with machinery $350,000.

MILWAUKEE.—The Milwaukee Tank Works, 851 Kinnickinnic avenue, has let contracts for a 1-story warehouse, 80 x 100 feet.

MILWAUKEE.—Bliss Bros. Tool Co., 62 Mason street, has increased its capital stock from $15,000 to $40,000. The output of tools, dies, jigs and fixtures is being increased.

MILWAUKEE.—The Perfection Bottle Cap Co. has been organized with $100,000 capital, by Carl J. Shuster, August C. Barthmann and Louis E. Will, to manufacture metal caps for bottles, etc.

MILWAUKEE.—Articles of incorporation have been filed by the Machine Products Co., with $10,000 capital. The incorporators are Jay J. Van Vechten, Robert A. Radwick and Oliver W. Bow.

MILWAUKEE.—The Nash Motors Co., Kenosha, Wis., plans the first unit of its new plant. The building will be 200 x 600 feet. It is expected contracts will be let shortly for the power and boiler house.

MILWAUKEE.—The James Mfg. Co., Ft. Atkinson, Wis., will ask for bids shortly for an addition, 400 x 600 feet. Complete foundry equipment, including cranes, conveyors, etc., will be purchased. J. G. Shodron is superintendent.

MILWAUKEE.—The American Electric Motor Co., capitalized at $175,000, has been chartered to manufacture electric motors and other devices by Walter N. Sprinkmann, Harry B. Mortimer and Carl M. Daum.

MILWAUKEE.—The Koehring Machine Co., manufacturer of concrete mixers, will build an erecting shop and office building three stories, 73 x 327 feet, and an addition to its machine shop, 60 x 118 feet, costing $107,000.

MILWAUKEE.—The Lewis Steel Products Co., Toledo, O., has engaged Architect Alfred C. Clas, Colby & Abbot building, to prepare plans for a foundry and machine shop addition, 150 x 360 feet, estimated to cost about $350,000.

MILWAUKEE.—The American Electric Motors Co. of Milwaukee, has been incorporated with a capital stock of $175,000 by Walter N. Sprinkmann, Harry B. Mortimer and Carl L. Daum to manufacture electric motors, motor-driven appliances and devices, etc.

MILWAUKEE.—A training building for apprentices will be erected in connection with the Milwaukee harvester works of the International Harvester Co. at an estimated cost of $35,000. The building will be 120 x 125 feet, one story high.

OSHKOSH, WIS.—The Oshkosh Motor Truck Co. has acquired a tract for its proposed machine shop and assembling floor, to be 150 x 300 feet.

OSHKOSH, WIS.—The Bull Dog Tractor Co., A. H. Gruenwald, manager, 24 Washington street, will build a plant 200 x 200 feet, costing $750,000.

PORTAGE, WIS.—The Slinger Foundry & Machine Co. is contemplating a large addition and plans to build the foundations before winter, completing the structure early in the spring. H. W. Slinger is manager.

PORT WASHINGTON, WIS.—The Gilson Mfg. Co. has awarded contracts for a foundry and machine shop addition, 60 x 160 feet, to cost $45,000. Harry W. Bolens is president.

SCHLEISINGERVILLE, WIS.—The general contract for erecting a 1-story shop addition, 60 x 200 feet, for the Vim Tractor Co. has been awarded to Walter Tuckwell & Co., Milwaukee.

SHEBOYGAN, WIS.—The Wald Mfg. Co., will build an addition costing about $45,000 for the manufacture of automobile parts. The company recently increased its capital from $30,000 to $90,000.

SHEBOYGAN, WIS.—The foundry department of the Globe Co. has been organized as a separate corporation known as the Globe Foundry Co., with $100,000 capital, and will erect a gray iron foundry, and the present foundry utilized as a machine shop when it is completed.

TOMAH, WIS.—The board of education was authorized at a special election to spend $75,000 on a 3-story addition, 50 x 75 feet, to the high school, to contain manual training department, and a central heating plant.

TWO RIVERS, WIS.—The Suettinger Sheet Metal Works is arranging to take additional space and will purchase some new machinery.

TWO RIVERS, WIS.—A $25,000 factory addition is planned by the Wisconsin Textile Mfg. Co., which makes metal and wood supplies and appliances for textile mills. O. B. Alberts is secretary.

ALBION, MICH.—The Albion Bolt Co. has acquired the plant of the Albion Chemical Works.

ALMA, MICH.—The Northern Wheel Co., capitalized at $1,000,000, has been chartered to manufacture wheels by A. D. Smith president and Orville Allen secretary.

BAY CITY, MICH.—The Union Motor Truck Co. has awarded contracts for a plant, 100 x 500 feet, and a foundry, 60 x 120 feet.

DETROIT.—The Detroit Twist Drill Co. has awarded contracts for a plant addition.

DETROIT.—The Michigan Machine Co. has plans for a 3-story factory building.

DETROIT.—The Stroh Castings Co. is having plans prepared for a 3-story factory building.

DETROIT.—The Riverside Machinery Depot has let contracts for a factory addition.

DETROIT.—The Arthur Colton Co. has let contracts for a blacksmith shop and factory addition.

DETROIT.—The United Grinding Co. has been incorporated with $25,000 capital, to manufacture

automobile cylinders and crank shafts, by J. K. Lawrence, 1240 Jefferson avenue and others.

HAMMOND, IND.—Fire damaged the plant of the General American Tank Corp. at East Chicago, Ill. The damaged buildings include the brass foundry, car shop and insulating shop. The damage has been estimated at $300,000.

CHICAGO.—The American Insulated Wire & Cable Co. is taking bids for remodeling its plant.

CHICAGO.—The Hill Pump & Valve Co. has taken out a permit to erect a plant at an estimated cost of $150,000.

CHICAGO.—The Strandberg Bros. Co., 19 South La Salle street, will build a two and 3-story factory, 40 x 162 feet, costing $40,000.

CHICAGO.—The Cribbes & Sexton, 6680 North Sacramento avenue, has awarded contracts for an enameling plant, 1-story, 100 x 130 feet.

CHICAGO.—The Arthur Jones Electric Co., Arthur Jones, president, electrical equipment, 2837 South State street, will build a one and 2-story factory, 125 x 125 feet, costing $60,000.

CHICAGO.—Frank D. Chase, Inc., engineer, 645 North Michigan avenue, is drawing plans for a foundry addition, for the Ohio Steel Foundry, Lima, O.

CHICAGO.—The Maytag Co., 211 West Fourth street, Newton, Iowa, is having plans prepared by Architect Henry Raeder, this city, for a foundry, to cost $70,000.

CANTON, O.—The Interestate Aluminum Co. has been incorporated with $25,000 capital, by T. M. Dubbs, J. W. Fenstermaker and others.

CINCINNATI.—The Doran Bros. Electric Co. is taking bids for a plant, 2-stories, 40 x 100 feet, to cost $20,000.

CINCINNATI.—The E. H. Bardes Range & Foundry Co. is having plans drawn for a foundry addition, 100 x 100 feet, to cost $17,000.

CLEVELAND.—The F. P. Screw Co., 2279 East Seventy-seventh street, has awarded a contract for a plant, 1-story, 60 x 150 feet, to cost $40,000.

CLEVELAND.—The Lake Erie Steel & Wire Co., Bedford, O., has been incorporated, by George Keeley, Society for Savings building, and others.

CLEVELAND.—The Torbensen Axle Co. is having plans prepared for an addition to provide about 15,000 square feet of floor space.

CLEVELAND.—The K. & W. Iron Construction Co. has been incorporated with $10,000 capital, by Arnold L. Stern, L. H. Wilk and others.

CLEVELAND.—The Commercial Steel & Supply Co. has been incorporated with $100,000 capital, by A. A. Murfey, W. H. Dickey, Clinton DeWitt, Charles D. Simmons and C. B. Bayly.

CLEVELAND.—The Factory Tool & Supply Co. has been incorporated with $10,000 capital, by Arthur F. Schefft, Paul J. Weber, S. M. Schefft, P. R. Weber and Walter N. Hoppe.

CLEVELAND.—The Tool & Auto Products Co. has been incorporated with $75,000 capital, by J. D. Wiggins, Frank Chesky, L. S. Greenmun, F. W. Bachman and Fred Kramme.

CLEVELAND.—The Keystone Bolt & Nut Co. recently was incorporated with $10,000 capital, by M. E. Krejci, A. Krejci, Michael Trautman and others.

ELYRIA, O.—The plant of the Elyria Iron & Steel Co. recently was damaged by fire.

TOLEDO, O.—Erection of a foundry, 153 x 378 feet, boiler house, 40 x 50 feet, power house and engine room, 20 x 200 feet, and other buildings, are planned by the Toledo Machine & Tool Co. Contracts for the buildings have been let. Charles W. Greening is secretary of the company.

WARREN, O.—The Industrial Welding Process Co. has been chartered with $5000 capital, by Edwin J. Henke, Fred P. McBerty, Ebba V. Henke and others.

DAYTON, KY.—The Wadsworth Watch Case Co. plans an addition estimated to cost $20,000.

HARLAN, KY.—The Bowen Mfg. Co., rail clamps, has been organized with $12,000 capital, by M. I. Bowen, Arthur Thompson and others.

LOUISVILLE, KY.—The Dow Wire & Iron Co. has awarded a contract for a plant.

LOUISVILLE, KY.—Greathouse Bros. & Co. recently were incorporated with $4000 capital, to engage in the manufacture of sheet metal equipment.

LOUISVILLE, KY.—The Ovee Mfg. Co. has purchased a site on which it will build a plant addition for the manufacture of automobile supplies, at an estimated cost of $50,000.

LOUISVILLE, KY.—The Riddell Mfg. Co., sheet metalworking, has been purchased by J. W. and D. C. DeHart. The company specializes in galvanized iron equipment.

LOUISVILLE, KY.—The Byron Engineering Works, C. E. Byron, J. S. Johnson and others, is planning to install a plant for the manufacture of automobile trailers.

PADUCAH, KY.—The Alamo Machinery Co. has been incorporated with $10,000 capital by W. J. Pierce and others.

CHARLESTON, W. VA.—The Kanawha & Hocking Coal & Coke Co. will build a tipple and make other improvements.

CHARLESTON, W. VA.—The Kallmerten-Warner Electric Co. has been incorporated with $10,000 capital, by G. E. Warner and others.

CLARKSBURG, W. VA.—The West Virginia Metallic Railway Tie Co. has been incorporated with $25,000 capital, by Joseph Marra and others.

FAIRMONT, W. VA.—Mayor J. M. Boyle announces that bids will be taken for the erection of a brass mill here.

FAIRMONT, W. VA.—The West Virginia Metal Products Co., capital $2,500,000, will build a plant here to cost $1,500,000.

HUNTINGTON, W. VA.—The Ohio Valley Mine Car Mfg. Co. will build a plant 90 x 150 feet.

MOUNDSVILLE, W. VA.—The United States Stamping Co. has let the contract for an addition.

MOUNDSVILLE, W. VA.—The Cameron Tool Co. has let the contract for an addition.

NEW CUMBERLAND, W. VA.—The West Virginia-Pittsburgh Coal Co. will build a power plant here to cost $100,000.

PARKERSBURG, W. VA.—The Donovan Boiler Works has started work on a plant.

PARKERSBURG, W. VA.—The Baldwin Tool Works has let the contract for a factory, 40 x 139 feet.

WELLSBURG, W. VA.—The Wellsburg Light & Power Co. will rebuild its plant here to cost $100,000.

WHEELING, W. VA.—The J. E. Moss Iron Works will build a plant, 125 x 250 feet.

WHEELING, W. VA.—The Wheeling Stamping Co. is arranging to build a plant in this city to cost $30,000.

Business in Canada

WINNIPEG, MAN.—The Twin City Separator Co. has started work on a 3-story machine shop and warehouse to cost $75,000.

LOUISBURG, N. S.—The Louisburg Drydock & Shipbuilding Co. will start early in 1920 on a drydock here to cost about $5,000,000, according to J. W. Maddin one of the company incorporators.

SYDNEY MINES, N. S.—The Nova Scotia Steel & Coal Co., New Glasgow, N. S., will erect a by-products plant here.

COWANSVILLE, QUE.—The Colonial Machinery Co. has been incorporated to manufacture machinery, tools, iron, steel, etc., with $50,000 capital by Harry R. Fraser, Frederick S. Rugg, Charles de L. Mignault all of Sherbrooke, Que., and others.

LONGUE POINT, QUE.—The Montreal Locomotive Works, Ltd., 145 St. James street, Montreal, has awarded contracts for five factories here to cost $212,000.

BRIDGEBURG, ONT.—The King Separator Works, Ltd., has been incorporated to manufacture cream separators, etc., with $50,000 capital by Edward H. Neelon, George F. Peterson, Frank N. Ritherford and others.

CHATHAM, ONT.—The springs building of the Dowsley Spring & Axle Co. recently was damaged by fire, with a loss estimated at $50,000.

HAMILTON, ONT.—The Dominion Sheet Metal Co., 1322 Burlington street, has let the general contract to W. H. Cooper, Clyde building, for a $25,000 addition.

HAMILTON, ONT.—The Frost Steel & Wire Co., Sherman avenue north, has let the general contract to W. H. Cooper, Clyde building, for an addition to cost $28,000.

HAMILTON, ONT.—The Burlington Steel Co., Sherman avenue north, has awarded the general contract to the Canadian Engineering & Contracting Co., Bank of Hamilton building, for an addition to cost $12,000.

NIAGARA FALLS, ONT.—The Niagara Wire Weaving Co., Ltd., care of C. M. Borter, architect, 102 Main street, has let the general contract on a factory to cost $60,000.

TORONTO, ONT.—W. C. Shunk, 43 Bellevue place, is making preparations to start work on a machine shop and garage.

TORONTO, ONT.—The Northern Aluminum Co., 158 Sterling road, has let the general contract for a $250,000 plant addition.

TORONTO, ONT.—The plant of the Holden-Morgan Co., 579 Richmond street west, machinists supplies, etc., recently as damaged by fire.

TORONTO, ONT.—The Crompton Car Co., Ltd., has been incorporated with $25,000 capital, to manufacture automobiles, motors, machinery, etc., by Murray H. Gillam, 773 Indian road; Morley P. van de Voort and others.

TORONTO, ONT.—The Buchanan-Duncan Motors, Ltd., has been incorporated by John Jennings, 67 Yonge street; James Buchanan, George H. Lovatt and others with $40,000 capital, to manufacture motor cars, machinery, tools, engines, etc.

TORONTO, ONT.—The Belt Grip Pulley Co. of Canada, Ltd., has been incorporated by Daniel J. Coffey, 67 Yonge street; Hugh J. Harkins, John T. Coffey and others, with $200,000 capital to manufacture pulleys, castors, trucks, carriage wheels, etc.

WALKERVILLE, ONT.—The new plant of the Canadian Products, Ltd., the Canadian subsidiary of the General Motors Corp., is rapidly nearing completion.

WESTON, ONT.—The Canada Cycle & Motor Co., Weston road, has let the general contract to the John V. Gray Construction Co., Ltd., Confederation Life building, Toronto, for an addition.

WINDSOR, ONT.—The Charles A. Strelinger Co., of Canada, Ltd., has been incorporated to manufacture machinery, etc., with $100,000 capital by Charles A. Strelinger, Charles T. Bush, Charles E. Allinger all of Detroit, Mich., and others.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.57c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N Y	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25

Chicago to:

Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 0c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads. 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric GG Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building MILWAUKEE, WISCONSIN

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$20.00 to 20.50
Chicago	18.50 to 19.00
Eastern Pennsylvania	18.50 to 19.50
Cleveland	19.00 to 19.50
St. Louis	18.00 to 18.50
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.00 to 15.50
Cincinnati	17.00 to 17.50
Birmingham	20.00 to 21.00
Valleys	19.50 to 20.00
Boston (dealers)	15.50 to 16.00

BUNDLED SHEETS

Pittsburgh	$15.50 to 16.00
Eastern Pennsylvania	15.00 to 16.00
Cleveland	14.50 to 15.00
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	11.50 to 12.00

STEEL RAILS, SHORT

Chicago	$21.00 to 21.50
Boston (dealers)	15.50 to 16.00
Cleveland	18.00 to 18.50
St. Louis	21.50 to 22.00
Birmingham	19.00 to 20.00
Cincinnati	18.00 to 18.50

STOVE PLATE

Pittsburgh	$19.00 to 20.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	21.00 to 22.00
Cleveland	18.75 to 19.00
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	16.00 to 16.50
Birmingham	20.00 to 21.00
Boston	21.00 to 22.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	26.50 to 27.00
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$17.50 to 18.00
St. Louis	17.00 to 17.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.00 to 21.50
Chicago	20.50 to 21.00
St. Louis	20.50 to 21.00

BALED SHEETS

Pittsburgh	$18.00 to 18.50
Chicago	14.50 to 15.00

FROGS, SWITCHES, GUARDS

Chicago	$18.50 to 19.00
St. Louis	18.50 to 19.00
Eastern Pennsylvania	18.00 to 19.00

BOILER PLATE, CUT

Chicago, No. 1	$15.50 to 16.00
St. Louis, No. 1	15.00 to 15.50

ANGLE BARS—STEEL

Chicago	$20.00 to 21.00
St. Louis	17.50 to 18.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$23.00 to 24.00
Pittsburgh, No. 2	22.00 to 23.00
Chicago, No 1	21.00 to 21.50
Chicago, No. 2	19.25 to 19.50
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	23.25 to 23.75
St. Louis, No. 1	20.00 to 20.50
St. Louis, No. 2	19.00 to 19.50
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	17.00 to 18.00
New York, No. 1 (dealers)	23.00
Boston (dealers)	19.00 to 19.50

WROUGHT PIPE

Eastern Pennsylvania	$19.50 to 20.50
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	16.25 to 16.50
Boston (dealers)	15.50 to 16.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers)	19.00 to 19.50

BUSHELING

Chicago, No. 1	$18.00 to 18.50
Chicago, No. 2	12.50 to 13.00
Cleveland, No. 1	17.50 to 18.00
Cleveland, No. 2	14.50 to 15.00
St. Louis, No. 1	17.50 to 18.00
Buffalo, No. 1	16.50 to 17.50
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$12.50 to 13.00
Chicago	9.00 to 9.50
Eastern Pennsylvania	15.00 to 16.00
Eastern Pennsylvania (blast furn.)	13.00 to 14.00
Cleveland	10.75 to 11.00
Buffalo	12.00 to 12.50
New York (dealers' price)	11.00 to 11.50
St. Louis	11.00 to 11.50
Cincinnati	7.50 to 8.00
Birmingham	13.00 to 14.00
Valleys	12.00 to 12.75
Boston (dealers)	10.50 to 11.00
Boston (blast furnace) (dealers)	10.50 to 11.00

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	13.00 to 13.50
Eastern Pennsylvania	16.00 to 17.00
Cleveland	14.00 to 14.25
St. Louis	12.00 to 12.50
Buffalo	13.50 to 14.00
New York (dealers' price)	11.00 to 11.50
Cincinnati	9.00 to 9.50
Birmingham	13.00 to 14.00
Valleys	14.75 to 15.00
Boston (dealers)	11.50 to 12.00
Boston (blast furnace) (dealers)	11.00 to 11.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	31.00 to 32.00
Eastern Pennsylvania	35.00
Cleveland	27.00 to 28.00
St. Louis	32.00 to 32.50
Buffalo	28.00 to 29.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	22.50 to 23.00
Cleveland	27.00 to 28.00
St. Louis	22.50 to 23.00
Buffalo	24.00 to 25.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	16.50 to 17.00
Cleveland	17.00 to 17.50
St. Louis	16.50 to 17.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$20.00 to 20.50
Cleveland	19.00 to 19.25
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	18.50 to 19.50

FORGE FLASHINGS

Cleveland, large	$14.00 to 14.50
Cleveland, small	16.50 to 17.00
Chicago, small	14.75 to 15.25
Boston (dealers)	12.00 to 12.50

FORGE SCRAP

Chicago	$19.00 to 19.50
Eastern Pennsylvania, No. 1	14.50 to 15.50
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	23.00 to 23.50
St. Louis	23.00 to 23.50

ANGLE BARS—IRON

Chicago	$22.50 to 23.00
St. Louis	23.50 to 24.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
St. Louis	13.50 to 14.00
Cleveland	15.75 to 16.00
Buffalo	16.00 to 17.00
Chicago	14.50 to 15.00

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	30.00 to 30.50
Buffalo	28.00 to 29.00
Chicago	28.00 to 28.50
New York (dealers)	24.00 to 25.00
Birmingham	21.00 to 22.00
Boston (dealers)	25.00 to 26.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	21.00 to 22.00
Chicago	25.00 to 25.50

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$25.00 to 25.50
Pittsburgh, steel	21.50 to 22.00
Chicago, iron	23.50 to 24.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, iron	22.25 to 22.75
St. Louis, iron	22.50 to 23.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	20.00 to 21.00
Boston	23.00 to 24.00
Cincinnati	20.50 to 21.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$25.00 to 26.00
Chicago, cupola	26.50 to 27.00
Eastern Pennsylvania, cupola	24.50 to 25.50
Cleveland, cupola	22.75 to 23.00
New York, cupola (dealers' price)	21.50 to 22.50
Cincinnati, No. 1, cupola	21.50 to 22.00
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	26.00 to 26.50
Buffalo	24.50 to 25.00
Boston	28.00 to 29.00
Valleys	22.75 to 23.00

HEAVY CAST

New York (dealers)	21.00 to 22.00
Buffalo	21.00 to 22.00
Pittsburgh	22.00 to 23.00
Cleveland	17.25 to 17.50
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$21.00 to 22.00
Pittsburgh, agricultural	20.00 to 21.00
Chicago, railroad	19.50 to 20.00
Chicago, agricultural	20.00 to 20.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	20.00 to 21.50
Cleveland, agricultural	17.50 to 18.00
St. Louis, railroad	18.00 to 18.50
St. Louis, agricultural	17.50 to 18.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	25.00 to 25.50
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	25.00 to 26.50
Birmingham	22.00 to 23.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	$19.50 to 20.00
St. Louis	20.00 to 20.50

BOILER PUNCHINGS

Chicago	$21.50 to 22.50
Eastern Pennsylvania	23.00 to 24.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

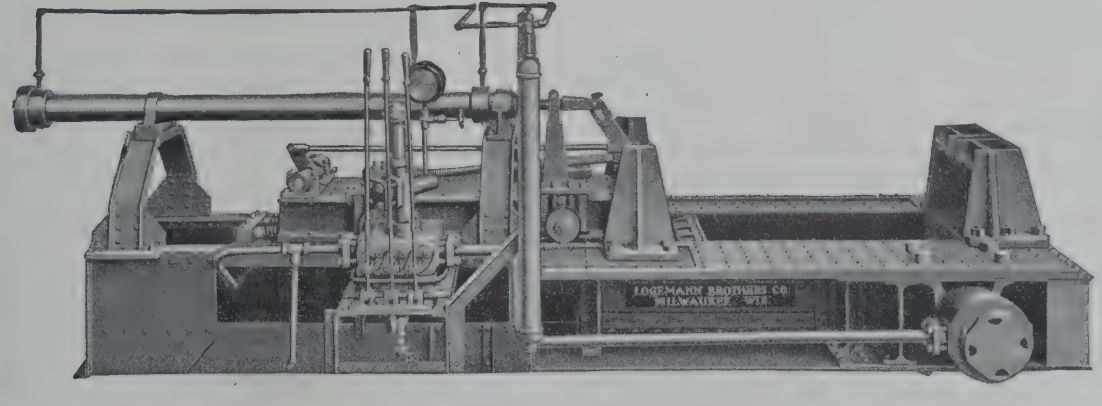
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LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

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A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

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Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

OIL ENGINES.—The various parts of Diesel type oil engines, manufactured by the Allis-Chalmers Mfg. Co., Milwaukee, are illustrated in a 32-page booklet which the company recently published. It should be of value in ordering repairs and spare parts for engines of this type.

REFRACTORY MATERIAL.—The Quigley Furnace Specialties Co., New York, has published an 8-page illustrated booklet in which a refractory plastic material for bonding fire brick and kindred uses, is described and illustrated. The booklet is replete with testimonials, illustrations, etc., pertaining to the use of this material in the foundry.

MACHINE TOOLS.—The Saint Louis Machine Tool Co., St. Louis, has issued catalog No. 16, in which grinding, polishing and tapping machinery, manufactured by the company is described and illustrated. Specifications of the various machines are given as well as the various accessories, which also are illustrated.

WIRE WORK.—A 36-page illustrated booklet is being distributed by the Fred J. Meyers Mfg. Co., Hamilton, O., in which wire, iron, brass and bronze work is described. Products on which detailed information is given include machinery guards, window guards, railings, enclosures, signs, iron stairs, iron doors, fire escapes, iron fencings and gates. Each product described is illustrated.

SINTERING.—An interesting booklet on sintering and desulphurizing iron ore materials, recently was published by the American Ore Reclamation Co., New York. The booklet tells of the work of the sintering plant in its relation to the iron and steel industry, gives a description of a modern sintering plant, which is profusely accompanied with illustrations. Four line drawings in the back of the book, give the reader a comprehensive idea of various sintering machine plant layouts.

SAND MIXER.—The National Engineering Co., Chicago, is circulating an 8-page booklet in which a sand mixer is described and illustrated. The mixer consists of a stationary circular pan, in the center of which is located a vertical shaft, to which is keyed a central supporting casting or cross head. This casting rests on a turret in which are the bearings for the central shaft, which is operated by bevel gearing located below the machine. The supporting casting carries the plows and mullers. By means of a door located in the bottom of the pan, which is operated by a lever, the discharging of the sand from the mixer is easily accomplished.

REFRACTORY SAND.—A small booklet just published by the Quigley Furnace Specialties Co., New York, is devoted to a refractory granular material for use in lining and repairing, annealing furnaces, forging furnaces, heating furnaces, open-flame melting furnaces, pit-crucible furnaces, tempering furnaces, furnace doors, ladle heaters, coke-oven floors, gas retorts, flues and chambers, glass lehrs, and to make standard and special shapes for furnace walls, arches, crucible blocks, gas carburetors, etc. The material, according to the booklet, is manufactured in the electric furnace by fusing at a high temperature, a mixture of natural silica and petroleum coke. The booklet contains a number of illustrations.

CENTRIFUGAL PUMPS.—Efficiency, accessibility, durability and ruggedness of construction have been given careful consideration in a bulletin devoted to centrifugal pumps and centrifugal pumping units, recently published by the Allis-Chalmers Mfg. Co., Milwaukee. These pumps have been developed to meet pumping requirements such as city water supply, sewage pumping, service in filtration plants, underwriters fire pumps, condenser pumps, paper mill stock pumps, and for a variety of uses in modern industrial plants. The booklet is profusely illustrated and contains speed tables and charts. One part of the booklet is devoted to instructions for installing and operating horizontal centrifugal pumps. Four types of pumps manufactured by the company are described in the booklet.

MARINE BOILER DATA.—An illustrated 69-page book entitled, "Marine Boiler Logic," recently was issued by the Heine Safety Boiler Co., St. Louis. The booklet is the work of Charles H. Stoddard, consulting marine engineer for the Heine company. The main part of the book relates to the design and construction of Scotch and watertube boilers for marine installations. Evaporative capacities are worked out for the two types using coal or oil as fuel with natural or forced draft. The booklet also contains a discussion of power and speed of cargo vessels, formulas being developed showing the relation between the boiler and prime mover capacity and the dimension of the hull. In making these computations, the method developed by Rear Admiral D. W. Taylor of the United States navy has been used, with certain modifications suggested by Mr. Stoddard's experience. The last part of the book is devoted to a description of the construction and operation of the cross-drum type of watertube boiler developed by the Heine company for marine service.

TWIST DRILLS.—"Putting Mettle into Metal" is the title of an unusually attractive booklet recently issued by the Clark Equipment Co., Buchanan, Mich. The publication is devoted chiefly to descriptions and illustrations of the industrial community in which the twist drills manufactured by this company are made. The plant of the company consists of modern, well lighted buildings situated in a beautiful park and surrounded by a number of institutions designed to promote the welfare of the employes. The theater, built "to provide a suitable place for all the recreational activities of the plant" accommodates 1000 persons and is used for dances, musicales, plays, etc. It is readily transformed into a basketball court. Homes for employes, ranging in cost from $2500 to $4500 have been built and sold to employes. A well equipped hospital has been provided and turned over to an association formed among employes. The latter part of the booklet is devoted to illustrations and descriptions of the various operations through which a twist drill passes before it reaches the shipping department. A list of the sales agents of the company in the United States and foreign countries is given.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A resident English commercial agent in Colombia desires to secure agencies for the sale of typewriters, low-priced motor cars, etc. Opportunity No. 30677.

A firm in Roumania desires to purchase technical articles, such as asbestos packings, hemp packings, rubber articles, transmission belts, cast iron water pipe and ventilators, blacksmiths' articles, pumps, agricultural and flour-mill machinery, oil well suplies, motor machinery, electrical apparatus, machinery and tools for woodworking, etc. Opportunity No. 30679.

Prices and illustrated catalogs are desired by a man in Czechoslovakia, of machinery for pressing and manufacturing lead pipes, etc. Opportunity No. 30684.

A company in Spain desires to secure an agency for the sale of iron and steel plates, tin plate and other articles. Correspondence should be in Spanish. Opportunity No. 30655.

A resident of the Philippine islands desires to establish a small plant for the manufacture of rope and wishes to secure available information as to cost of machinery, instructions as to its care, etc. Opportunity No. 30656.

A sales agent in Salvador desires to secure agencies for the sale of corrugated, stamped and plain iron sheeting, and expanded metal for building purposes. Opportunity No. 30661.

An agency is desired by a man in Switzerland for the sale of agricultural products, tools and machinery, etc. Correspondence should be in German. Opportunity No. 30587.

A party in India desires to purchase and secure agencies for the sale of bolts, nuts, screws, nails, both wire and cut, hinges, door handles, knobs, hooks and staples, paints, varnishes, locks, builders' hardware, carpenters' tools and galvanized buckets. Opportunity No. 30660.

A firm in Czechoslovakia desires to purchase and also secure an agency for the sale of agricultural implements. Correspondence should be in either Polish or Russian. Opportunity No. 30559.

The American office of a firm in Sweden desires to be placed in communication with manufacturers with a view to securing agencies for the sale of agricultural machinery, belting, cutlery, technical and industrial machinery, locomotives, textile machines, railway supplies, construction materials, motor trucks, engines, steel, iron, coal, etc. Opportunity No. 30590.

An American export corporation is soon to send a representative to Europe and invites offers of manufacturers of iron and steel articles, hardware, machinery, farming implements, etc. Opportunity No. 30592.

A firm in Italy desires to purchase mechanical toys, optical instruments, thermometers and scientific toys, such as steam engines and electric railways. Correspondence should be in Italian or French. Opportunity No. 30596.

A mechanical engineer in Italy desires to secure an agency for the sale of builders and general hardware, tools, metals, mechanical goods, etc. Correspondence should be in Italian. Opportunity No. 30560.

The electrical engineering department of a municipality in South Africa requires electrical supplies, boiler tubes, centrifugal pump and motor, ammeters, transformers, etc. Opportunity No. 30566.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, October 2, 1919 No. 14

Drift of Men is Back to Works

Developments Favor Employers and Slow But Certain Progress is Being Made in Breaking Backbone of Strike—Consumers of Steel Co-operate With Mills—No Serious Dislocation of General Industry Yet Evident

SLOWLY but with clearly marked progress, the vicious assault upon the iron and steel industry by radical agitators wielded mainly through the foreign workmen, is being repelled and broken. The week's developments taken as a whole have been definitely favorable to the employers. With some large companies having various plants the actual gain in the number of men at work has averaged from 20 to 25 per cent in that period. The Pittsburgh district, the pivotal ground in the present struggle, shows a record of sustained improvement in operations while efforts of the strikers to win over certain large plants which had been running practically full from the first, have been resisted successfully. In the East the strike has lost rather than gained ground despite the much-heralded attack upon the Bethlehem Steel Co. All evidence of it practically has disappeared in the South where it has ceased to be a factor. At Chicago no serious attempt yet has been made by the steel companies to enlarge their operations and production is only slightly better. The drift of the men back to the works has begun at Buffalo. Cleveland and the Mahoning valley remain the most affected points and virtually every plant in those territories is idle. It is significant that where police protection to the workers has been most uncertain or inadequate the suspension of the industry has been the most pronounced. In some districts the employers are initiating steps to win back the men but generally they continue to pursue a passive attitude and the belief apparently is entertained that the psychological moment for this has not arrived.

Buyers Back the Mills

Consumers of steel, realizing that the issues at stake vitally concern their own interests, almost without exception are throwing their support to the producers and are refraining from pressing for deliveries or otherwise embarrassing the mills. This co-operation has simplified greatly the problem of the producers in spreading about their reduced tonnage. At the same time a prolongation of present conditions is certain to bring dislocation and distress to various lines of industry though nothing of an acute character yet has appeared. Generally the mills are accepting no new business except for indefinite delivery.

Iron Brings Premiums

While merchant pig iron production has recovered considerably in the week, especially in the Shenango valley, prompt iron is being sought by many consumers whose shipments have been cut off. This is more noticeable in consuming territory drawing upon Cleveland and Buffalo furnaces. At Cleveland buyers have paid $3 to $3.50 premium for prompt iron. Higher prices also have been paid for Buffalo iron. The principal transaction of the week was the purchase from eastern furnaces of 45,000 tons of basic at about $27.50, delivered, by the American Bridge Co. for its Pencoyd plant. This was due to the fact that this consumer's regular source of supply in the Pittsburgh district has been interrupted.

Export Sales at Record

September established a new record in the volume of export iron and steel sales. With mill output on this side now curtailed and shipping facilities reduced by the British rail and dock strike, sellers are advising buyers to hold off from further purchases at this time. Japan is inquiring for car trucks requiring about 11,000 tons of steel. The Cuban Central railroad has closed for 400 freight cars. Belgium has asked prices on 11,000 tons of pig iron but European makers undoubtedly will take this business.

Inability of many mills to keep up with contract obligations has directed a flood of business upon warehouse stocks. In some districts these supplies rapidly are being cleaned out and it is predicted that several weeks of present conditions will leave the jobbers of the country practically bare of steel supplies. Warehouse price advances have been put in effect at Boston and New York.

OCTOBER 2, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
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BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Jail the Agitators

A CALM, dispassionate survey of the facts brought to light in connection with the iron and steel strike must convince any fair-minded, intelligent American that the strike is one of the greatest crimes ever perpetrated in the name of organized labor. It represents a stab in the back for an industry that is in the forefront of effort to advance the interests of the laboring man by improving human relations and insuring the man who toils just consideration and compensation.

Besides the means taken by employers to make their employes feel satisfied, other agencies were offered to employes insuring in the end impartial settlement of any grievances which they might have held. Yet swayed by influences wholly inimical to their welfare a minority of employes took a step that precluded the possibility of a settlement in their favor and attempted to put into practice a policy of rule or ruin.

A virtual mandate was issued on the President of the United States. Viewed from the standpoint of the interest of organized labor this was a most stupid blunder. The action taken by the leaders of the strike movement in the iron and steel industry has served to discredit the federation in the minds of all employers who were disposed to treat with it. Assuming those leaders will be defeated in their purpose, an assumption based on the conviction that the rights of Americans will be upheld, we may expect to hear at some future time that the federation again has become converted to sane principles and has cleaned house.

President Gompers and some of the leaders reputed to be conservative have not only condoned the strike, against which they advised, but the former publicly has set the seal of his approval on a dangerous enemy of the government. The play of politics in the federation has shown how much reliance may be placed on it in a more serious situation. The very men who have been extoled as the bulwarks of this country against bolshevism are the first to compromise with it. The spectacle of Gompers before the senate investigation committee vouching for Foster must raise doubts as to his sincerity or his judgment.

The testimony before the senate committee, revealing as it did the inner workings of the federation, proved what has long been known by employers, that the federation cannot be held to its most solemn obligations, and yet employers are criticized by the federation for refusing to compromise with it on a principle as deep-rooted as the constitution of the United States.

Arbitration as proposed by Fitzpatrick does not contemplate an agreement in regard to wages and hours for working which the federation of labor would be bound to respect, but a compromise on principle with the men of the I. W. W. type, with whom there can be no compromise. If any doubt remains in the minds of Americans as to type of men with whom the employers have been asked to compromise let them understand what is being said and done by organizers working for Fitzpatrick and Foster to undermine safe and sane government. In this issue The Iron Trade Review presents some of the statements made by these men in public meetings. It has developed that the department of justice has had agents at their private meetings, and it is significant that the latter last week raided a meeting of bolsheviks in the heart of the strike district in East Youngstown, confidentally expecting to catch certain leaders of the federation's strike movement.

It is apparent that some connection has been established between the rankest of the radicals, the syndicalists, the Independent Workers of the World and the bolsheviks, with the active heads of the steel strike. In view of what is being said in public it would not be too much to demand that if the department of justice does not see fit to proceed against the agitators it at least submit to some responsible body such as congress the evidence that its agents have collected at the private meetings. The public itself then may judge whether some of

the self-ordained leaders of the American workingman should not be put in jail.

Teach the Workman Business Truths

WRONG conceptions of business fundamentals, confusion of gross and net incomes, and acceptance of the doctrine fostered by the radicals and the wilful disturbers that the employer's profit from a workman's daily toil is many times the latter's wage, are elements of a distorted perspective of labor that is proving one of the underlying causes of the present unrest. This perspective is being created and molded by agitators whose only hope for success lies in stirring the emotions of the ignorant and unthinking.

Individual workmen are led to believe that they earn every day from $5 to $60 for their employers and in many instances the case is "proved" by holding up the figures of gross earnings. A study of the reports of four great steel companies reveals that the net profits of each for 1918 were equivalent to between $1 and $2 a day for each employe, while in the June quarter of 1919 they were equivalent to less than $1 for each employe.

The agitator too long has been the only advocate in court. The time has come for the employer to take his side of the case to his men, for, by his indifferent silence, he is permitting them to accept the deception and the insidious doctrines of the preachers of unrest.

Refutation of the preposterous contentions of industrial disturbers, and a frank, clear explanation of the simple fundamental truths of business finance would go far in purging the air of bolshevist poison. The ardor of gullible workmen for the communistic Utopia, which they now believe would bring them riches and leisure, would vanish in a twinkling were they made to see that equal division of the fund now going to capital would net them but a few cents a day additional income.

Groups of men will ever heed the call of leadership. It remains for employers to provide healthy, enlightened mutually helpful leadership from within, or see the allegiance of employes drift into the camp of radical, outside agitators. Where an honest desire to treat men fairly and squarely exists, nothing is to be lost by laying the cards upon the table before them; indeed everything is to be gained by such a course.

Questions Which Need Answers

ON AUG. 8, the government issued an inventory of 1036 tools with fixed prices based on their service value. The list included machines from three divisions; the aircraft service, the motor transport service and the general ordnance department. It is understood that the tools belonging to the three bureaus were to be pooled and that instructions were issued that the latter were to cooperate with each other in expediting the marketing of the federally-owned equipment. Each was to be able to offer and sell the others' machines.

How this very excellent plan, the result of weeks and months of study and consideration by the machine tool section of the war industries board at Washington, is working out, is a matter about which little is being heard. The inventory as issued embraced the necessary data in convenient form, giving the size, number, type, price and condition of each tool with its location. Notwithstanding this fact, efforts by dealers to buy various tools have resulted in practical failure. The way the proposition apparently is being handled but emphasizes the lack of business-like methods, described on page 337 of the Aug. 7 issue of this publication in an article which was inspired by the widespread indifference among tool buyers toward government-owned machines.

A few weeks ago a prominent new and used machinery dealer, in the Middle West endeavored to purchase some federally-owned equipment. He describes his experiences as follows, the type of machine mentioned being substituted:

> We found three 42-inch vertical boring mills listed in the government's inventory and immediately endeavored to purchase them from our local ordnance department for our customer, who needed them immediately. The ordance department ascertained by wire that but two of the tools were available. Our order with certified check was sent. A telegram stating that the tools were sold brought a further wire from the air service division stating that neither of them could be located. Notwithstanding all our efforts to obtain the tools, we were unsuccessful.

Is it to be taken for granted that certain army officers have been entrusted with the highly important duty of disposing of the government's equipment? Can it be that through fear of working themselves out of their jobs, these officers are unfair to the government and its people in general and its machine tool industry in particular? Can it be possible that one division refuses to sell through another, simply because the bureau which made the sale would receive the credit for it and the one holding the title to the equipment would not?

These are questions which are running through the minds of those who have made efforts to consummate deals with these governmental agencies. They are questions which should be met and answered by the several departments in question before they can hope to be successful in their effort to dispose of the government-owned machinery which now has been idle over 10 months.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 948 AND 950

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	27.50
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	30.00 to 32.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$31.35 to 32.85
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh.	28.15
No. 2 foundry, Buffalo	26.75 to 28.50
No. 2 Northern, Boston	32.40
No. 2 foundry, Cleveland furnace.	27.25
No. 2 foundry, Ironton furnace	28.00
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	31.35 to 32.35
No. X, eastern, N. J. tidewater	31.35 to 32.35
No. 2X, eastern, Boston	32.90
No. 2X foundry, Buffalo furnace	28.00 to 29.50
No. 2 foundry, del., Philadelphia	30.10 to 31.10
No. 2 foundry, N. J. tidewater	30.10 to 31.10
No. 2 southern, Birmingham	26.75 to 27.50
No. 2 southern, Cincinnati	31.35 to 31.60
No. 2 southern, Chicago	31.75 to 32.50
No. 2 southern, Phila.	33.25 to 34.00
No. 2 southern, Cleveland	31.75 to 32.50
No. 2 southern, Boston	35.50 to 36.00
No. 2 southern, St. Louis	31.00 to 31.75
Virginia, No. 2X, furnace	30.00
Virginia, No. 2X, Philadelphia	34.10
Virginia, No. 2X, Jersey City	34.40
Virginia, No. 2X, Boston	34.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	28.50 to 29.00
Silveries, 8%, furnace	40.25 to 43.00
Ohio Silveries, 8%, Chicago	44.05 to 46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	39.80 to 41.80
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	32.75
Charcoal, Superior, Chicago first quarter 1920	33.75

Coke

(At the ovens)

Connellsville furnace	$3.50 to 4.00
Connellsville foundry	5.50 to 6.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	8.50 to 9.50
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	7.50 to 8.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	nominal
Spiegel, 18 to 22 per cent furnace, spot	35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	85.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.20 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	28 to 30 cents
Ferrovanadium, 35 to 40 per cent, per pound contained, according to analysis	$6.00 to $7.50
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsburgh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.77c to 2.92c
Tank plates, Philadelphia	2.745c to 2.895c
Tank plates, New York	2.77c to 2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.595c to 2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.62c to 2.77c
Bar iron, common, Pittsburgh	2.75c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 45.00
Relaying rails, Pittsburgh	39.00 to 41.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c
Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 950.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 950.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$62.80
Six-inch and over, Chicago	59.80
Four-inch, New York	59.30
Six-inch and over, N. Y.	56.30
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.76½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.74½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets 7/8 in. and smaller Pitts.	60–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	2.70c to 3.10c off
Hot pressed, square tapped	2.45c to 2.85c off
Hot pressed, hexagon blank	2.70c to 3.10c off
Hot pressed, hexagon tapped	2.45c to 2.85c off
Cold pressed, square tapped	2.45c to 2.85c off
Cold pressed, square blank	2.70c to 3.10c off
Cold pressed, hexagon blank	2.70c to 3.10c off
Cold pressed, hexagon tapped	2.45c to 2.85c off

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Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Oct. 1, 1919	Average prices Sept. 1919	July 1919	Oct. 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	34.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	35.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	34.00
Lake Superior charcoal, Chicago	32.75	32.75	31.75	38.70
Malleable, valley	27.25	28.65	28.65	35.90
Malleable, Chicago	27.25	27.25	27.25	34.50
*Southern, No. 2, Birmingham	26.75	26.75	25.00	35.25
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	34.00
Basic, eastern del., eastern Pa.	27.50	27.00	26.50	36.60
**No. 2X, Virginia, furnace	30.00	29.25	26.50	37.50
*No. 2X, eastern del., Philadelphia	31.25	29.95	29.50	38.85
Gray forge, valley del., Pittsburgh	27.15	27.15	27.15	34.40
Ferromanganese, 80 per cent, delivered	110.00	105.00	112.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.50	37.30	47.50
Bessemer sheet bars, Pittsburgh	42.00	42.00	40.80	51.00
Open-hearth sheet bars, Pittsburgh	42.00	42.00	40.80	51.00
Open-hearth billets, Pittsburgh	38.50	38.50	37.30	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.595	2.595	2.595	3.73
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.62	2.62	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65c	2.55	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895c	2.845	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.31	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.51	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.70	5.66	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	3.85	4.65	4.00	6.00
Connellsville foundry coke	6.25	5.90	4.90	7.00
Heavy melting steel, Pittsburgh	20.50	20.50	19.90	29.00
Heavy melting steel, eastern Pa.	19.00	19.00	18.85	28.50
Heavy melting steel, Chicago	18.50	19.10	19.40	29.00
No. 1 wrought, eastern Pennsylvania	27.00	27.00	24.70	34.00
No. 1 wrought, Chicago	21.00	21.25	21.20	33.50
Rerolling rails, Chicago	25.00	25.50	24.70	31.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Corporation Buys Basic in East

American Bridge Co. Cut Off From Regular Pittsburgh Supply Closes For 45,000 Tons at About $27.50 Delivered—Spot Iron in Demand and Premiums up to $3.50 are Paid—Furnaces Resume

Philadelphia, Sept. 30.—A sweeping change has developed in the eastern basic market by reason of large purchases of the grade by American Bridge Co. Unable to get its usual shipments from the Pittsburgh district, this interest has purchased 45,000 tons all for spot and nearby delivery from eastern makers. Various prices paid for this iron establish the market at $27.50 delivered Pencoyd and other eastern Pennsylvania points. However these purchases thoroughly have cleaned up supplies so that it is doubtful whether the price could be duplicated. One maker who expects to have basic for market in month or two says he would not sell less than $28 furnace and another will not sell at less than $30 furnace. Foundry iron by reason of the fact that the furnaces all are well sold up also is much stronger. The minimum in eastern Pennsylvania now is $30.25 furnace No.for No. 2X (2.25 to 2.75 silicon) and $29 for No. 2 plain (1.75 to 2.25 silicon. The central Pennsylvania group is $29.50 furnace for No. 2X but as high as $31 and $32 eastern Pennsylvania furnace is being done on No. 2X. The strike situation in Buffalo is enabling some sellers having stock iron there to obtain from $29 to $30.25 Buffalo for No. 2X for spot shipment to New England. Fair amount business is being done in foundry iron. It includes some lots of 1000 tons or more but is made up mostly of smaller tonnages most of it is for this year as on next year, most furnaces yet are unwilling to quote. Some makers are asking as high as $33 eastern Pennsylvania furnace on No. 2X for first quarter and first half. Virginia iron being sold by one maker at $30 furnace for No. 2X. Western consumers are paying high prices for high silicon Virginia based on $26.75 furnace for No. 2 plain plus differentials. Virginia high silicon now is practically sold up. Low phosphorous sales include one lot of 100 tons of standard iron and two lots copper-bearing totaling 500 tons. Low phosphorus prices are unchanged.

Strike Cuts Off Orders

Boston, Sept. 29.—Steel strike conditions together with the withdrawal of most of the offers of 1920 pig iron from the New England market have caused a decided drop in sales during the past week. Several of the Buffalo furnaces are so seriously affected by strike conditions that no orders at all are being accepted. In the case of two furnaces all deliveries have stopped, due to the fact that railroads will not take cars which stand loaded in the yards. Eastern Pennsylvania furnaces however have not been affected, except indirectly, and iron for the last quarter has been sold in about the normal amount. Only a few small furnaces are offering any 1920 iron and the prices in these cases are from $1 to $1.50 above this year. An eastern Massachusetts machine tool manufacturer bought 200 tons of 2X eastern (2.25 to 2.75 silicon) at $31 eastern Pennsylvania furnace, for first quarter and other sales for 1920 have been made at practically the same delivered price. Greater activity has been reported from the Virginia district and many small sales for prompt shipment and last quarter have been made. The price in most cases has been $30 furnace for No. 2X (2.25 to 2.75 silicon). The Virginia Iron, Coal & Coke Co. is quoting $30 on both 1.75 to 2.25 silicon and 2.25 to 2.75 grades. Some Alabama iron has been sold to New England consumers during the week at the level established two weeks ago. No large tonnage orders have been reported from any section although the Draper Corp. has been known to have closed for part of its requirements at least and to have further inquiries out. One Massachusetts consumer bought 1000 tons of No. 2X eastern (2.25 to 2.75 silicon) for last quarter at $32.90 delivered. The Whitin Mfg. Co., Whitinsville, Mass., placed orders for part of its requirements of 4000 tons and the Walworth Mfg. Co., Boston, is understood to have bought 1000 tons of malleable. Prompt iron is becoming scarcer. Total sales of the week through New England representatives are estimated at 8000 tons.

Forward Demand is Active

New York, Sept. 30.—Although practically none of the eastern furnaces has opened books for delivery after Jan. 1, the inquiry for such shipment is growing steadily, and the makers in most cases have been requested to notify numerous customers as soon as they are ready to take such business. Sales for deliveries after this year still are exceptional. The furnaces do not desire to make contracts for forward delivery until the present strike has come to an end. The only effect of the strike on the eastern pig iron market so far has been the crippling of the Buffalo district, which is preventing certain furnaces there from making shipments. The furnaces also are still too much in the dark as to their future costs for them to sell large tonnages ahead. Only one eastern furnace has been a forward seller during the past week. This interest, a Lehigh valley maker, has sold several thousand

tons of foundry iron for first quarter at $30, furnace, for 1.75 to 2.25; $31, furnace, for 2.25 to 2.75, and $32, furnace, for 2.75 to 3.25 silicon. Most of the business involved foundry iron for spot and nearby shipment. Numerous sales were included, most of them ranging from a carload to a few hundred tons. Several lots of 1000 to 2000 tons also were included. The biggest transaction involved 5000 tons which the Crane Co., Bridgeport, Conn., bought for delivery over the rest of this year. A feature of the business in foundry iron during the past week has been the ability of sellers to obtain higher prices for the rest of this year. Several sales were made by eastern Pennsylvania furnaces at $31 and $32, furnace, for 2.25 to 2.75 silicon.

Little Doing Except in Foundry Iron

Pittsburgh, Sept. 30.—Practically the only activity that is noted in the pig iron market is in foundry grades, though there have been rumors that some of the steel manufacturers whose blast furnaces are banked as a result of the defection of common labor, have been looking around for bessemer and basic. The National Transit Co., Oil City, Pa., recently closed on 3800 tons of foundry, part of which was No. 2X (2.25 to 2.75) and part No. 3 (1.25 to 1.75), the business being placed at regular market prices or $28 for No. 2X and $25.75 furnace for No. 3. The Westinghouse Machine Co. also has closed on its last quarter requirements of foundry but details as to tonnages, grades and prices are not available. The Standard Sanitary Mfg. Co. which recently put out an inquiry for 1000 tons of foundry, equally divided between No. 2X and No. 2 grades for its Louisville, Ky., plant has not yet closed. Foundries not much disturbed by the steel plant strike are pressing furnace interests for deliveries against contracts and in addition a number of inquiries have come from melters in doubt about getting shipments against contracts. One seller reports inquiries aggregating more than 5000 tons. From an operating standpoint the situation is much improved. While the furnace of the Weirton Steel Co., for the present a merchant stack is down, practically all of the merchant producers in the Shenango valley again have their furnaces blowing. Two of the stacks of the Shenango Furnace Co., at Sharpsville, Pa., and the Sharpsville Furnace located in the same place, operated by Allen S. Davison & Co., Pittsburgh, are banked, these being the only inactive furnaces in that section.

Spot Iron Brings Premiums

Cleveland, Sept. 30.—Spot iron is in sharp demand from consumers in this district due to the shutting off of shipments from various furnaces banked because of the strike and premiums are being paid. Southern Ohio iron has been sold in this district at $29.75 furnace for 1.75 to 2.25 silicon, equivalent to $32.35 delivered. This represents a premium of $3 to $3.50 over the previous market. One maker has been disposing of misfit grades but has asked no premium and is selling at the usual differentials under the base price. No iron is being shipped from the four furnaces of the McKinney Steel Co. or the two stacks of the Cleveland Furnace Co. this city, all of which continue banked. Some of the furnaces report difficulty in getting out iron from the yards because of car shortages and the rush of ore shipments. Stocks of those furnaces which are able to ship are being cleaned up more rapidly under prevailing conditions. Various steel plants which have been closed or crippled by the strike continue to hold up shipments of basic. Notwithstanding this fact one of the largest interests with headquarters here reports that its shipments in September were the heaviest of the year. Some selling for 1920 continues but it is limited. One maker in addition to a 6000-ton lot of foundry iron reported previously took about 4000 tons in the week, for that delivery.

Prompt Iron in Demand

Chicago, Sept. 30.—With merchant stacks in Chicago completely out of service deliveries of pig iron have ceased and even iron on yards at furnaces is not being loaded and shipped. Melters generally have sufficient supply to care for immediate needs and are not worrying about the future in this respect. However, prompt iron on wheels from south and east is finding ready sale and moves as soon as offered, even at much higher price than local iron has commanded. A southern seller is offering last quarter iron for $28, Birmingham, for silicon 1.75 to 2.25 and $29.10, Birmingham, for silicon 2.25 to 2.75, though the latter grade is rather scarce. The same interest is offering first quarter delivery at $28.50, Birmingham, for silicon 1.25 to 1.75, $29 for the next silicon grade, $30.10 for 2.25 to 2.75 and $31.20 for silicon 2.75 to 3.25. A Tennessee producer of silveries is nearly sold out for 1919 delivery and has not opened books for 1920. The present schedule for silveries from this producer is $39.75 for 6 per cent, $41.25 for 7 per cent and $2 additional for the next two steps. Freight is $3.40 to Chicago.

Take 1920 Business at $28

Cincinnati, Sept. 29.—A considerable tonnage of foundry iron for nearby shipment is changing hands. Sales for delivery this year are being made in territory ordinarily supplied by some of the lake furnaces that are closed on account of the strike. A few southern furnaces have quietly taken on some first quarter business at $28, Birmingham, for 1.75 to 2.25 silicon, and at $29.10 for 2.25 to 2.75 silicon. However, most of the furnaces seem to have set $30 as minimum for next year's business, based on 1.75 to 2.25 silicon. Practically all of the spot iron offered in the Ironton district at $27.50 for 1.75 to 2.25 silicon has now been disposed of, so that $28 now seems to be minimum in that field.

Speeding Up Production in South

St. Louis, Sept. 27.—The local pig iron market has not felt the affects of the strike. Foundries and mills are operating as heretofore, and most of them are likely to continue doing so, for the reason that the greater part of supplies used in this district are drawn from southern furnaces. Selling agencies of southern makers report that their principals are preparing to speed up production. Northern shipments are slowing up, and the same is true of consignments from the East. Consumers are buying all the iron they can get, and demand for prompt shipment is the best it has been in a number of weeks. It is understood several leading foundry interests have offered liberal premiums. The opening of books by southern furnaces for 1920 business will be indefinitely delayed.

Southern Market Satisfactory

Birmingham, Ala., Sept. 30.—The pig iron market in the South is in a satisfactory condition. There is a steady demand, and inquiries are in hand for a large tonnage for 1920 delivery. The attempt at a strike of the iron and steel workers at plants of the Tennessee Coal, Iron & Railroad Co., and the American Steel & Wire Co., was a failure and did not in the least affect production of pig iron. The output of iron in Alabama in September will show an increase in comparison with August. Prices have been firm, on a basis of $28 for No. 2 foundry (1.75 to 2.25 silicon). General selling into 1920 will probably be noted within the next two to three weeks. Inquiries received indicate there would be no strong resistance by buyers to a price of $30 per ton. Furnace companies are convinced that there will be a demand for every ton of pig iron that can be manufactured.

Stocks Droop

Warehouses Undergo Heavy Demand —Prices Raised

Cleveland, Sept. 30.—Warehouse stocks in Cleveland are being cleaned out rapidly under the sharpened demand from consumers which has been caused by the strike. Some of the largest local interests now are without supplies to meet the requests coming in upon them and are refusing many orders. The Carnegie Steel Co. is limiting individual warehouse orders as a general rule to three tons. Some local consumers have been obliged to go to Chicago to fill their needs.

Boston Prices Up

Boston, Sept. 30.—Warehouse prices are rapidly stiffening owing to the slower delivery from the mills. Galvanized sheets No. 28 gage have been advanced to 7.50c from 7.10c, and No. 28 black to 6.15c from 5.90c.

Blue Annealed Advanced

New York, Sept. 30.—An advance of 25 cents in blue annealed sheets, effective today has been announced by a leading warehouse interest here. The new price is $4.82 per 100 pounds, New York. This increase follows a heavy demand, which, as a matter of fact, extends to bars. Structurals and plates also are moving in better volume than heretofore.

Fall Back on Stores

Chicago, Sept., 30.—With current delivery of finished steel considerably interfered with by the strike, much structural material is being sought

from the steel warehouses, the difference in price not being counted against the convenience of obtaining material promptly. This applies not only to routine lots for small construction needing only a few pieces, but to larger supplies which are being taken for structures which usually would be bought through the mill. As a result of the strike condition, warehouse business is noticeably heavy.

No Orders

Being Taken by Makers of Wire Products—Eastern Output Good

New York, Sept. 29.—Although considerable of the wiremaking capacity of the country has been rendered idle by the strike, the industry is by no means prostrated. This is particularly true in the east where all the wire mills are operating at the same rate as before the strike was called and have not been interfered with in filling their orders.

Makers Out of Market

Pittsburgh, Sept. 30.—Manufacturers of wire and wire products are out of the market as far as new business is concerned, curtailment of production resulting from the strike permitting of no other course as far as the leading interest is concerned. The Pittsburgh Steel Co. plant and those of the Cambria Steel Co. and the Youngstown Sheet & Tube Co. are down. The Jones & Laughlin Steel Co. thus far has been unaffected in most departments by the labor distubances and its wire mills are among that part of the works which is running regularly.

Reduced Output

In Semifinished Material Well Balanced by Lighter Consumption

Pittsburgh, Sept. 30.—Production of billets, sheet bars and other kinds of semifinished steel has suffered from the suspensions brought about by the strike, but probably no more so than finishing mill capacity and as a result few of the active rolling mills are suffering for want of supplies. Some demand is coming to makers of billets and sheet bars from finishing mills whose regular sources of supply are cut off, but such inquiries are not receiving much attention at the moment.. Inquiry for 1000 tons of standard bessemer billets is noted from a Pittsburgh maker of tool steel. Few wire rods are available on the open market at present.

Strip Makers Operating

Pittsburgh, Sept. 30.—Most of the makers of strip steel in this district have been unaffected by the strike as far as the loss of men is concerned and are running full. Little effort is being made to secure new business as current bookings probably will absorb production over the remainder of the year.

Coke Prices are Reduced

Large Tonnages Thrown Back on Producers by Suspension of Blast Furnaces — Standard 48-Hour Beehive Sold at $3.50

Pittsburgh, Sept. 30.—Anxiety on the part of beehive coke producers to find an outlet for tonnages thrown back on their hands as a result of the suspension of blast furnaces, due to the strike, has resulted in sharply lower prices than recently prevailed. While some merchant blast furnaces have resumed they appear to have had considerable supplies of coke both on hand and on wheels and have not been buying coke or ordering a resumption of shipments against contracts. The only outlets, therefore, have been to consumers who are in a position to stock some tonnage, or for export. Sales involving about 8000 tons are reported for export, and a fair amount of coke has been bought for stocking, but the combined business has made only a small dent in the accumulated supplies. The result is a dull and unsettled spot situation with prices largely in favor of buyers. As low as $3.50 has been done on loaded cars of standard 48-hour beehive coke and there is no basis in sales for a price on this grade of higher than $4, although a few of the larger producers continue to quote as high as $4.75. Two sales of 100 cars each were $3.85 ovens. Spot sales of by-product furnace coke are reported as $3.75. The Carnegie Steel Co. is managing to keep its Clairton by-product plant running about 75 per cent of capacity, and is producing enough coke to meet the requirements of the blast furnaces ordinarily served by these ovens. A number of the ovens of the H. C. Frick Coke Co., are inactive, because of the relatively full operations of the Clairton plant. No contract business is being done in furnace coke and quotations merely are nominal. A little foundry coke might be picked up at $5.50, ovens, but in general, the market on this grade has not been much affected by the strike and basis in sales still exists for a quotation as high as $6.50. The *Connellsville Courier* estimates coke production for the week ended Sept. 20, at 258,801 tons, against 259,900 tons in the previous week.

Foundry Coke Prices Firm

Cincinnati, Sept. 29.—The expected increase in production in the Connellsville district, as compared with consumption, is not up to estimates made a week ago. More foundry coke is being turned out because of the reduced consumption of furnace coke, but on account of the car shortage the fuel is not moving very fast. No effect on foundry prices is noticed and leading interests continue to quote from $6 to $6.50 per ton, ovens. New River and Pocanhontas are both scarce, although some spot foundry sales are made in the last named field. Wise county producers are making a little headway in catching up on shipments, and some spot foundry coke is also available in that district. New River foundry coke is still as high as $9 to $9.50. Wise County and Pocahontas foundry grades range from $7.50 to $8 at ovens.

Expect Prices to Drop

Boston, Sept. 29.—Foundry coke consumers in New England are looking for a drop in prices as a result of excess production of beehive fuel because of the steel strike. Most of the foundries however have contracts covering their requirements throughout this year, and Connellsville coke, however low it may go, is not expected to come into the New England market in quantity. A lower price on Connellsville coke throughout the present week will have the effect of bringing down the October schedule on sliding scale contracts for by-product coke. Much of the tonnage is, however, on a flat rate basis. Coke producers say that new contracts on a flat rate basis will not be lowered, and first half coke is being held at $11.90.

Demand at St. Louis is Good

St. Louis, Sept. 27.—One effect of the steel strike in this district has been to improve coke receipts from eastern ovens. For weeks consumers have complained of delayed deliveries, due to the car shortage. The suspension of blast furnaces in the East has released a large number of freight cars, which are being loaded with coke and sent to western destinations. One dealer received more coke in two days this week than in 10 days preceding. Demand is excellent, especially for foundry coke.

Heavy Demand

For Stock Tin Plate Caused by Strike —Operations Favorable

Pittsburgh, Sept. 30.—The effect of the strike on the tin plate market has been to sharply stimulate the demand for stock plate and some manufacturers report no difficulty in making sales of this grade at $7 per base box, Pittsburgh. Comparatively few plants have suffered much as a result of the strike, several of the independents having kept going owing to the fact that they were working under agreements with the Amalgamated association, whose members are not subject to the strike call. These agreemets, however, were not sufficient to enable some plants to keep in operation. The American Sheet & Tin Plate Co., having a number of its works in isolated places, did not suffer much. The Cambridge works of the American Sheet & Tin Plate Co., Cambridge, O., and the Chester works, Chester, W. Va., have been running full throughout the strike, and the interruptions at the Farrell works, at the New Castle works and the Shenango works were short-lived, all of these plants having had steady accession to working forces after the first day of the strike and today the Shenango works are running 90 per cent full.

Ford Awards Big Tonnage

Places 20,000 Tons With American Bridge Co. For Detroit Plant Extensions—Structural Lettings Keeping up in Good Tonnage

Pittsburgh, Sept. 30.—One of the largest structural contracts awarded in some time has been taken by the American Bridge Co. It involves 20,000 tons of material for a group of foundry buildings for the Ford Motor Co. at its new River Rouge plant near Detroit. There seems to be no let-up in the inquiries for fabricated material and in view of the unsettled labor situation lettings must be considered to be quite satisfactory.

Structural Lettings Undisturbed

Boston, Mass., Sept. 29.—The usual amount of structural work in New England throughout the week has continued to be let in the face of the industrial disturbance. Boston strikes, including the policemen's walkout, together with other strikes in New England have had the effect of cutting the construction down for some time, and thus the steel strike loses some of its effect. Plans for the Broadway theater and post office have been changed to permit the use of stock shapes. The new plans will require 275 tons of steel and the work has been let. The Boston & Maine bridge at Haverhill, Mass., requiring 1799 tons of steel has been awarded. The average amount of work ahead among New England fabricators is nearly one and one-half months and this has the effect of increasing competition and of lowering prices.

Sentiment Has Improved

New York, Sept. 29.—While the strike still is exerting a depressing influence upon the eastern structural market, sentiment is greatly improved. The failure of the unions to effect a serious rupture in operations in eastern Pennsylvania generally is regarded as indicative that the force of the strike throughout the industry is on the wane. With few exceptions, new structural inquiries are small relatively. Nevertheless, they represent a good tonnage in the aggregate. The largest individual job to appear involves 3300 tons for a building for the Fulton Street Refrigerating Co., New York City. Other lots in the east, for the most part, run around 200 to 350 tons. Awards are small individually. Fabricated work is ranging from $100 to $125 erected in the district.

Active in Cleveland District

Cleveland, Sept. 30.—The strike in the iron and steel industry has not affected the structural market in this district, and some fairly good tonnages have been placed. A report is current that union workmen in the fabricating shops are opposed to working up material made in the mills since Sept. 22, the date of the beginning of the steel strike, but no verification is obtainable. Fabricators believe that if any men went out on such grounds it would be a mere subterfuge as they claim there would be no way of determining the date of the manufacture of the material. A great deal of new work is developing in the Detroit district. The Ford Motor Co. placed an order for a good tonnage with the American Bridge Co., for a power plant at River Rouge, and both the Ford interests and the General Motors Co., are understood to be closing deals with the same company in connection with further development work.

Lettings More Numerous

Philadelphia, Sept. 30.—Structural conditions in this district are improving. Fabricators report a number of new orders the largest of which are 600 tons for a Rittenhouse apartment house, this city, and 800 tons for the extensions of the plant of the American Locomotive Co., at Chester, Pa. Numerous small jobs also have been let. The plain shape market reflects awaiting situation and eastern mills report that new demand is somewhat inactive. Included in recent orders are several hundred lots for England, China and other countries.

Construction is Active

Chicago, Sept. 30.—Made up entirely of moderate lots, a fairly large tonnage of structural shapes was contracted during the past week in Chicago territory. The largest tonnage is 617 tons for an engine plant at Springfield, Ill., for Montgomery Ward & Co. Other tonnages are considerably less.

CONTRACTS AWARDED

Hotel, Lima, O., 300 tons; to Bellefontaine Bridge & Steel Co.

Building for Fisher Body Co., Detroit, Mich., 125 tons; to Daigle Iron Works.

Building for Foote-Burte Co., Cleveland, 900 tons; to McClintic-Marshall Co.

Building for Goodyear Tire & Rubber Co., Akron, O., 2600 tons; to Massillon Bridge Co.

Additional construction of beater, machine and finishing rooms for Escanaba Paper Co., Escanaba, Mich., 125 tons to Worden-Allen Co.

Factory for Interstate Milk Products Co. at Sparta, Wis., 100 tons to Worden-Allen Co., Milwaukee.

Addition to malleable foundries of Chain Belt Co., Milwaukee, 500 tons to Milwaukee Structural Steel Co.

Extension to the plant of the Standard Tank Car Co., Sharon, Pa., 175 tons to the McClintic-Marshall Co.

Extension to the plant of the National Metal Molding Co., Economy, Pa., 150 tons to the Jones & Laughlin Steel Co.

Group of foundry buildings for the Ford Motor Co., River Rouge plant near Detroit, 20,000 tons to the American Bridge Co.

Shop buildings at Springfield, Ill., for Montgomery Ward & Co., 617 tons, to the Morava Construction Co.

Foundry building at Milwaukee, for Chain Belt Co., 572 tons to Milwaukee Bridge Co.

Foundation material for building for the Tribune Co., Chicago, 317 tons, to the American Bridge Co.

Alterations and additions to foundry building for the Ohio Steel Foundry Co., Lima, O., 315 tons, to the Toledo Bridge & Crane Co.

Addition to power plant for the Monsanto Chemical Works, East St. Louis, Ill., 190 tons, to American Bridge Co.

Power plant at Muskegon, Mich., for Brunswick-Balke-Collender Co., 270 tons, to Hansell-Elcock Co.

Theater building for William Hamm, St. Paul, 300 tons, to the American Bridge Co.

Two 180-foot riveted spans at Hoquiam, Wash., 130 tons, to independent shop.

New factory and power plant for Edmonds Shoe Co., Milwaukee, 300 tons to Worden-Allen Co.

Addition to pipe storage for Steel & Tube Co. of America, Mark works, Indiana Harbor, 150 tons to Worden-Allen Co.

New hotel for Chippewa Falls (Wis.) Hotel Co., 250 tons to Worden-Allen Co.

Laboratory for Newport Chemical Co., Carrollville, Wis., 200 tons to Worden-Allen Co.

Theater building, Richmond, Va., 235 tons, to independent shop.

Building for Brown Cork & Seal Co., Baltimore, 200 tons, to independent shop.

Addition to Bridgeport Brass Co., Bridgeport, Conn., to Levering & Garrigues.

Bridge for Merril Coal Mines Co., Henlawson, W. Va., 350 tons, to the American Bridge Co.

Extension of the plant of the American Can Co., Portland, Me., 170 tons, to New England Structural Co.

Bridge for Boston & Maine railroad at Haverhill, Mass., 1799 tons, to Bethlehem Steel Co.

Rittenhouse apartment house, Philadelphia, 600 tons to the Phoenix Bridge Co.

Addition to new armory, Philadelphia, 100 tons to the Phoenix Bridge Co.

Paper mill, York Haven, Pa., 100 tons to Phoenix Bridge Co.

Machine shop and foundry for the American Locomotive Co., Chester, Pa., 800 tons to Belmont Iron Works.

Machine shop for Newton Machine Tool Co., Philadelphia, 200 tons to the Belmont Iron Works.

Addition to the plant of the National Sponge Silk Co., New Bedford, Mass., requirements increased to 300 tons and contract placed.

Extension to the plant of the International Motor Co., Allentown, Pa., 1100 tons, reported to have gone to the Phoenix Bridge Co.

CONTRACTS PENDING

Mercantile building, Baltimore, 250 tons, bids being asked.

Addition to Rhode Island hospital, Providence, 200 tons, bids being asked.

Addition to plant of Aluminum Co. of America, Edgewater, N. J., 200 tons, pending.

Building for Oxford Paper Co., Rumford, Me., 200 tons, bids pending.

Dupont office building, Wilmington, Del., 1200 tons, bids pending.

Building for Troy Blanket Mills, Troy, N. H., 350 tons, bids being asked.

Building for Fulton Street Refrigerating Co., New York City, 3300 tons, bids being asked.

Building for West Virginia Metal Co., Fairmont, W. Va., 1000 tons, bids pending.

Power plant for state of New York, Marcy, N. Y., 350 tons, bids pending.

Additions to plant of A. O. Smith Corp., Milwaukee, 1500 to 2000 tons. Plans being prepared.

Plant for Omaha Cold Storage Co., Omaha, Nebr., 400 tons, bids asked.

Scottish Rite Temple, Bloomington, Ill., 300 tons, bids asked.

Bascule bridge, Main street, Kenosha, Wis., 600 tons, bids in.

Motion picture theater for Lubliner & Trintz, Chicago, 600 tons, bids asked.

Good Output

Continues in Sheets Except in Valley —Buyers Back Mills

Pittsburgh, Sept. 30.—Operations of the sheet mills, at no time as seriously hampered as some other kinds of fin-

ishing mills since the inception of the strike, are on a higher scale today than they were a week ago. At least a dozen of the independent plants are operating full while all of the isolated sheet mills of the American Sheet & Tin Plate Co. are running 100 per cent and marked improvement is noted at several of the plants which were crippled by the walk-out of Sept. 22. The Dover works, Canal Dover, O., the Guernsey works, Cambridge, O., the New Philadelphia works, New Philadelphia, O., the old Meadows works and Scottdale works, Scottdale, Pa., and the Wellsville works at Wellsville, O., all are running 100 per cent, while the return of the men at the Vandergrift plant, Vandergrift, Pa., and at the Mercer works, Farrell, Pa., has been sufficient to bring operations of these plants well up. Illustrative of the exaggerated estimates of a number of men out at some of the American Sheet & Tin Plate plants, it can be stated that while the organizers estimate the number of men on strike at Vandergrift at 4000, the maximum number of men ever employed there was 3000, and the organizers also claim to have 2000 men out at Leechburg where the maximum number employed has never been over 600.

Valley Production Stops

Youngstown, O., Sept. 20.—Every mill in this territory is idle. Some sheetmakers clamped on the lid last Monday as regards new business. District sales managers have been notified to defer taking orders until further notice. Certain sheetmakers here are accepting firm business only, the shipping date depending on the settlement of present conditions. Jobbers and dealers report considerable spot business in hand.

Eastern Mills Are Dull

Philadelphia, Sept. 30.—Sheet situation is strong in the East and particularly so since the strike has cut down shipments from the West. The leading eastern maker of blue annealed is sold up on practically all sizes for remainder of the year. A small Delaware maker is selling black and galvanized sheets at premiums.

Pipe Shortage

Seems Probable as Various Plants Are Idle—Cast Prices Higher

Pittsburgh, Sept. 30.—A serious shortage of tubular goods is probable over the remainder of the year in view of the fact that most of the independent companies in this and the valley districts are down as a result of the strike. Spang-Chalfant & Co., Pittsburgh, have been obliged to suspend temporarily because a strike of a few of its men made operation impossible, while the pipe mills of the Wheeling Steel & Iron Co., and La Belle Iron Works, are idle, and the Youngstown Sheet & Tube Co. and the Republic Iron & Steel Co., at Youngstown, have not yet resumed. The National Tube Co. meanwhile continues to keep most of its plants going practically full.

Scrap Market Drifting

Complete Absence of Buying by Mills Produces Lifeless Situation—Deliveries Held Up—Rerolling Material in Demand

FOR COMPLETE SCRAP PRICES SEE PAGE 950

Chicago, Sept. 30.—Although cessation of operation to considerable extent by steel mills has stopped shipments of those grades of scrap used in the open hearth furnace, it has stimulated to some extent demand for rolling mill grades and for rerolling rails, as plants producing bar iron and hard steel bars have not been affected. On the contrary, extra demand for these products has increased the operations of these mills and scrap is in demand. Foundries are also taking all the cast scrap it is possible to obtain because of interference with pig iron deliveries by the strike. Railroads are offering only fair tonnages, the Rock Island taking figures on 2250 tons, the Chicago, Milwaukee & St. Paul on 1000 tons and the Monon on 387 tons.

Boston Market Quiet

Boston, Sept. 27.—The market for scrap used by steelmakers is quiet. Dealers are not purchasing heavy melting, even at the low prices offered. Some scrap is still moving to blast furnaces on orders previously placed, but some orders have been canceled. Demand for No. 1 machinery is strong, although the price has dropped from the high point of a week ago. A Massachusetts foundry bought 200 tons at $29, delivered, and dealers are paying as high as $26, Boston yards.

Market Tone Firmer

New York, Sept. 29.—With early reports indicating failure of the strike at Bethlehem, Pa., the tone of the local scrap market is becoming firmer. Trading, however, remains of rather small proportions. Borings and turnings and cast scrap, although moving slowly, appear to be in best demand, and prices are slightly higher. Mixed borings and turnings are now being quoted at $10.50 to $11, f.o.b. New York, and clean cast borings at $12 to $12.50. No. 1 heavy cast and No. 1 machinery cast are also higher, holding at $21.50 to $22 and $22.50 to $23, respectively.

Foundry Scrap in Better Demand

Philadelphia, Sept. 30.—Demand for all grades of scrap is improving right along. A slight demand for railroad wrought has been coming from various rolling mills lately. Borings are also being called for. In heavy melting and allied grades little business is before dealers. Due to the strike situation the mills are postponing buying and dealers, in view of the lack of assurance that shipments can be made, are not anxious to have the stock leave their yards.

Prices Merely Nominal

Pittsburgh, Sept. 30.—Conditions in the scrap market here are much as they were a week ago, with steel manufacturers generally asking suspensions of shipments against contracts and doing no buying. Meanwhile shippers are not pressing material for sale, realizing the futility of trying to do business under present conditions. Foundry grades of scrap also are moving slowly although the effect of the strike on the foundries generally has been slight. Prices are nominal in the lack of important transactions. The Pennsylvania railroad October list of scrap involves offerings of 17,722 gross tons.

No Buying at Buffalo

Buffalo, Sept. 30.—With no mills in the market for scrap in this territory, conditions in this trade are very quiet. Only a few mills are operating and these apparently have sufficient stocks to take them along for a while without doing any purchasing. Scrap traders are not active and are resigned to the awaiting of the return of the steel trade to normal. Prices continue firm.

Trading Completely Absent

Cleveland, Sept. 30.—Scrap iron and steel is on the dead-center here. There is no trading even among dealers. Mills, of course, have completely cut off shipments because of the strike. Dealers' yards are crammed full, and while some bargains could be picked up at the plants of producers anxious to sell scrap to get the space, they are finding no outlet. Dealers claim not in years to have experienced such a dullness as prevailed in the past week. The market sentimentally is much weaker, but prices remain unchanged because of the total absence of trading.

Only Foundry is Active

Cincinnati, Sept. 30.—With the exception of a little activity in foundry scrap the market is lifeless. Shipments to the Pittsburgh district are being suspended, although it is predicted that the situation may clear up in a few days when a resumption of deliveries to consumers in that territory will be resumed. Heavy melting steel is very weak. Foundry cupola-size scrap is holding its own.

Consumers Holding Off

St. Louis, Sept. 27.—Trading in the scrap market is virtually at a standstill. The trend of prices on nearly all grades is sharply lower and the feeling is bearish, especially among small dealers and yard interests. The sharpest cuts have been made in miscellaneous railroad and country scrap. There is no buying by consumers, except in small lots for immediate use, and speculative activity has stopped. Mills and foundries in this district have not been affected directly by the strike, but uncertainty in the entire industry has influenced buyers, and they are disposed to await developments. Offerings from all sources are limited.

Buyers Aiding Bar Mills

Refrain From Bringing Pressure For Deliveries—Much Tonnage Being Offered Operating Plants—Bar Iron Improves

Chicago, Sept. 30.—Consumers of steel bars are standing behind the strike-bound mills and seem to realize that the present battle is being fought for the good of industry in general, expressing a willingness to undergo whatever inconvenience may result from lack of material in order to assist in settling the dispute correctly and once for all. Much voluntary encouragement is being expressed to the producers and no pressure is being brought to bear on the mills to bring about greater production by a surrender to labor demands. Most producers are refusing to book new business and are accepting specifications on existing contracts subject to such delay as may result from the present strike.

Demand for bar iron is greatly increased by the difficulties of obtaining soft steel bars, and mills producing this material have jumped at once into a position of heavy business after having been unusually slack for several months. Demand is coming from all sorts of users and the mill situation is decidedly in contrast to that of preceding weeks. In spite of the heavy demand, prices remain unchanged at 2.62c, Chicago mill.

Much the same condition is found in demand for hard steel bars. Many consumers are seeking to obtain tonnages of this material to replace soft steel bars held up by the strike. Consumers with contracts already on mill books are specifying freely and sufficient business for the remainder of the year is now in hand. With a scarcity of rerolling rails, the situation is decidedly strong from the viewpoint of producers. The quotation continues firm at 2.55c, Chicago mill.

Take Orders at Premiums

Philadelphia, Sept. 30.—Very few western makers in taking steel bar orders, except as specifications on contracts. One Pittsburgh interest is taking occasional small bar orders to be rolled on high cost mills at 2.50c to 3.00c Pittsburgh. An eastern Pennsylvania maker is taking some bar orders but mostly to be made of special steel at base price of 2.50c Pittsburgh. Some reinforcing bars are being placed but not in large volume.

Active Mills Are Deluged

Cleveland, Sept. 30.—Those makers of bars and other finished products who are generally known to be operating at a favorable rate are being deluged with specifications and requests for new tonnage. The Cleveland offices of some of these companies report the inquiry received the past week to have been the heaviest in their history. Because of the extensive demand, only a small portion of the offered tonnage is being accepted. This was the case of an attractive lot of 5000 tons of bars. Leading Pittsburgh mills are taking some new business subject to indefinite delivery. On a round lot of bars, Chicago mills offered to deliver partly in October and November.

Taking no New Orders

Pittsburgh, Sept. 30.—Makers of merchant steel bars here whose plants are down naturally are refusing to honor new inquiries or specifications and those whose works still are in operation are pursuing a like course in the matter of new orders as their contract obligations, especially in the smaller sizes will probably absorb all production this year. Manufacturers who have not suffered from the strike are flooded with inquiries from buyers whose regular sources temporarily are cut off and if the tonnage was available no doubt could get substantial premiums.

Little Interruption to Operations

Pittsburgh, Sept. 30.—Aside from some interruption in the supply of bars and rods, makers of nuts, bolts and rivets generally are unaffected by the steel strike and shipments are going forward in practically normal fashion with prices showing no change.

Business Does Not Suffer Much

Pittsburgh, Sept. 30.—The principal producers in this district of cold finished steel bars and shafting note practically no interruption to business as a result of the strike and while some of them are not getting full supplies of merchant steel bars, the fact that they all had fair sized stocks on hand before the labor disturbance again enabled them to keep up plant operations to the recent rate. While demands are coming from fairly widely scattered sources, the best call comes from the makers of automobiles and tractors. Prices are unchanged at 3.60c, base Pittsburgh, and deliveries fairly good.

Have Reserve Stocks

Pittsburgh, Sept. 30.—While the plants of some makers here of hoops, bands and cotton ties are down as a result of the strike, enough capacity is active to meet current specifications. Deliveries also are helped by the fact that most makers have fair sized reserve stocks of hoops and cotton ties.

Plates Firm Up to 2.65c

Shading Disappears as Production is Restricted—Eastern Mills Book Increased Tonnage and Run Better

Philadelphia, Sept. 30.—Eastern platemakers say the closing down of western mills is causing them to receive much business which otherwise would not come their way. Brisk buying is reported in all directions and numerous tonnages have been booked from 1000 to 3000 tons for bridge work, tanks and particularly for oil well boilers. One mill has given an option on 30,000 tons for 10 vessels. The Emergency Fleet corporation has specified for moderate tonnages during the week. The Lukens Steel Co. will put its 204-inch mill in operation tomorrow making all its mills active. This company reports business greatly improved and only the fact that all strikers are not back has prevented it from running 100 per cent in the past week. The market is stronger and shading is less frequent.

Price Stiffens Sharply

Pittsburgh, Sept. 30.—The effect of the strike in plates has been to bring about a demand upon the manufacturers whose mills are active, from consumers whose sources of supply are shut off and a considerable amount of business has been placed in this district in the past few days at the full March 21 base of 2.65c. Among the sales was one involving close to 2500 tons. Just before the outbreak of the strike the market was pretty generally quoted at 2.50c, Pittsburgh, for minimum lots of 1000 tons and it was said that that price also was being accepted on smaller tonnages. The demand continues almost entirely from the tankmakers, although some foreign inquiries for ship plates also are noted.

Small Orders

For Railroad Cars More Numerous—Export Lots Are Placed

Chicago, Sept. 30.—Occasional inquiries for railroad cars are being received, all being for small lots and some offering much business for builders. The former inquiry by Mitsui & Co., exporters to Japan, for 250 sets of freight car trucks, has been revived and increased to 500 sets. This will require about 10,500 tons of plates, shapes and bars and about 2000 axles, which will involve 500 tons additional of steel. The Cuban railway is inquiring for six sleeping cars, and the Atlantic Coast line for four diners. The latter is also in the market for 100 phosphate cars, the inquiry for which was made some months ago and allowed to lapse. The American Car & Foundry Co. has taken an order for 25 mine cars for the Forks Coal Co., Portage, Pa., 200 mine cars for the Pennsylvania Coal Co. of New York, and 300 tank cars for the Crown Oil & Refining Co. The Standard Steel Car Co. has taken an order for 200 flat cars for the Cuban Central railroad, and the Pressed Steel Car Co. for 200 box cars for the same company.

Export Record is Broken

September Banner Month of Year for Sales — Strike Checks Delivery of Seasonable Goods—Agents Holding Up New Inquiries

NEW YORK, Sept. 29.—Strike conditions have begun to show an effect in the export trade. The volume of inquiries is adequate to give to the American industry all the foreign business desired, but the problem of delivery is causing so much anxiety that agencies are hesitating about making quotations. All export inquiries were held up during the first part of last week in the hope that a better report from the mills would warrant the opening of negotiations. As the strike continues, however, the agents are beginning to advise their foreign customers that this is not the time to enter into new contracts. All of the agents are attempting to supply essentials to foreign customers. So far the question of price has not entered into the matter.

Despite the strike, however, the foreign sales made during September promise to exceed greatly the sales made during August and will create a new record for the year. If strike conditions continue to improve, there promises to be a rush of export business to the mills. The inquiries now in hand are adequate enough to give the mills more business than they could turn out. The labor trouble in the United States, so far as foreign trade is concerned, comes at a most opportune time, as England's rail traffic is tied up and British producers are finding it extremely difficult to fill their commitments.

German salesmen have made their appearance in South America. So far as could be learned the Germans are not as yet offering to sell iron and steel products, but the methods they are using to obtain orders for other products are such as will have a bearing on the situation in the future. It is said that the Germans are offering to sell upon a basis of delivery as soon as possible at a price subject to adjustment with discounts. The terms offered by the Germans would be at a price approximating 20 per cent below the market at the time of actual delivery.

The Consolidated Steel Corp. continues its effort to arrange with its constituent mills to increase its proportion of output for export. The Consolidated mills set aside 10 per cent of their output for foreign sales. In some products agreements are being signed to allocate as much as 20 per cent of the output for export. The increases are being made in sheets, bars and tin plate. This applies only to the 1920 business.

Actual sales made during the past week contain nothing of outstanding importance, although a number of contracts were mentioned by export houses as indicative of the nature of the business. Denmark, for instance, has purchased 1500 tons of rods, and a new inquiry for 1000 tons of rods has been received from Norway. England is inquiring for bars and sheets and a number of sales have recently been made.

Little business is done with France and inquiries are for small tonnages. One of the recent sales noted was 200 tons of plow shapes. An inquiry was received for five tons of billets. Belgium has inquired for 10,000 tons of pig iron, but it is believed that American makers will not be able to meet the price which either the French or the English furnaces will be able to quote.

Italy has purchased some machinery and a few hundred tons of pig iron. Greece is buying bars and wire. Holland has been buying actively of ship material in lots varying from 500 to 1000 tons. The Dutch have also been purchasing nails, but it is understood that these goods are intended for their East Indian colonies. Australia is purchasing wire, sheets and bars.

The Orient continues to be a good market for American iron and steel. One house reported the sale of 3000 tons of light rails to Japan.

American agents are trying to hold trade in South America. This and the Oriental markets are considered permanent acquisitions for our industry and an effort is being made to keep these customers supplied even during the strike in this country. Recent sales to South America represent an accumulation of inquiries. A large tonnage of sheets have been sold there in quantities varying from 30 to 300 tons.

Foreigners have been asking for large tonnage of American coal and coke but it has been impossible to ship. The steamship lines prefer to engage their tonnage in carrying commodities which pay higher rates and in response to foreign appeals the shipping board has refused to divert government vessels to this trade because, it is argued, the foreign nationals should so engage their own ships.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Sept. 24	23.50	53.00	6.25	7.00	33.00	8.50	41.00
Sept. 25	23.50	53.50	6.25	7.00	33.00	8.50	41.00
Sept. 26	23.50	53.50	6.25	7.00	33.00	8.50	41.00
Sept. 29	23.50	53.00	6.25	7.00	33.00	8.50	41.00
Sept. 30	23.50	53.00	6.25	7.00	33.00	8.50	41.00

* September shipment from Singapore, f.o.b. New York.
† American Smelting & Refining Co.'s price.
‡ Producer's price. Outside market, Sept. 24, 25, 26, 29 and 30, 21.75c; lake, 22.00c to 22.25c; casting, 21.00c to 21.25c.

NEW YORK, Sept. 30.—The steel strike, the English railroad strike and the violent fluctuations in the foreign exchange markets have been the dominating factors in the nonferrous metal markets, making for great uncertainty among both buyers and sellers, with consequent little business. Prices held their own but did not advance during the week.

The English railroad strike did not begin until Sept. 28 and so the trade has not yet had much opportunity to judge its effects on our markets, excepting the general effect on the tin situation. With British shipping tied up, shipments of tin will cease for the time, which, if prolonged, may affect spot tin here. The British tin market dropped over £5 the first business day after the strike was called, but reacted today. The Sterling exchange market, after a good gain based on reported arrangements whereby Great Britain will not be compelled to pay its interest annually, dropped sharply in conjunction with the strike.

Copper has showed little change, large producers maintaining their quotation of 23.50c for early shipment. Outside sellers early in the steel strike dropped their prices to 21.50c, but later were more confident, substantial sales being made last week at 21.75c, at which level the market has stood for several days. The market for casting copper has stood at about 21.00c and lake at 22.00c to 22.25c.

The steel strike has caused consumers of tin to hold back from purchasing this metal, but prices have held fairly well. The market has been strong at Singapore, while the rise in exchange added to the cost of importing tin. Quotations on Straits tin this week have averaged around 53.00c for September and October shipment from Singapore; 52.75c for November and December shipment. Spot Straits tin is quoted about 55.25c to 55.50c; spot electrolytic tin 54.75c to 55.00c; spot 99 per cent tin, 54.25c.

Several hundred tons of lead recently sold for September shipment at 6.27½c, New York; a later sale consisted of 500 tons for November shipment at 6.25c, New York.

Strikers Steadily Losing Ground

Increasing Number of Men Returning to Mills, While Leaders Fail in Attempts to Close Plants of Bethlehem Steel Co., and Jones & Laughlin Steel Co.,— Judge Gary Testifies Before Senate Committee

THE second week of the strike in the iron and steel industry shows definite improvement in the situation from the standpoint of the employers. In some districts the mill operations have been increased appreciably, with the Pittsburgh district standing forth most prominently in this respect, but the most significant feature of importance to the industry as a whole is a tendency on the part of many men in all districts to return to their jobs. With some important works the number of men on duty increased 20 to 25 per cent in the week. Organizers for the unions are finding it increasingly difficult to hold their men in line, and as time goes on the indications are they will find it impossible, as the majority of the employes are in favor of working. A deadlock may exist for a time, but employers express confidence that eventually the sane judgment of the men must assert itself.

In the Chicago district a sufficient number of men have returned to permit a slight increase in operations. In the southern, eastern and Massachusetts districts strike leaders have failed utterly in their attempts to create dissension. In the Cleveland district men have returned to work in one plant and partial operations resumed, otherwise production in that territory is completely suspended. In the Youngstown district hundreds have asked their employers to resume operations, and the number is now believed sufficient to warrant resumption, although this has not actually been undertaken. The district has been calm because the strikers have been allowed to have their own way, and it is feared that an attempt at operation may cause disturbances. In the Pittsburgh district the mills are making steady progress toward a return to normal.

Repeated attempts to interrupt the operations at the plants of the Jones & Laughlin Steel Co. have failed, while the supreme effort of the unions to close the plants of the Bethlehem Steel Co. resulted in a fizzle. In every district the tactical advantage appears with the employers.

Interest centers in the testimony of E. H. Gary, chairman of the United States Steel Corp., who appeared before the senate investigation committee, Wednesday. Having failed to score a point before the senate committee, strike leaders are now hoping to make their fight the dominant issue before the industrial conference in Washington, Oct. 6.

The Allegheny county court has upheld the mayor of Duquesne, Pa., in fining William Z. Foster and an organizer $100 each for violating the mayor's order against speaking in public. The court held that Foster and his workers have no right to make incendiary speeches.

Strike Fails in Pittsburgh District

PITTSBURGH, Sept. 30.—Just as the Belgian army five years ago held the German invading army in check long enough for the allied countries to gather their forces, so the Pittsburgh steel manufacturers have stemmed the tide of the discontented workmen in their plants and have spared not only the steel industry but all other industries from a condition where the hiring of workmen would be possible only through the offices of the labor union.

As far as the Pittsburgh district is concerned the strike has been a failure and while labor organizers are not yet ready to admit this, they can point to only a few plants either of the United States Steel Corp. or the independents, that are down as a result of the strike, while a number of them which suspended or curtailed during the first day or two of the trouble, have had sufficient men return to permit a resumption. Intimidation of workmen has been freely practiced by strikers, and this is preventing full operations.

The strikers shot their bolt on the first few days of the strike and the past four or five days have seen a steady decline in their fortunes. They have not been able to maintain their gains either at the plants of the Carnegie Steel Co., or at those in the lower Monongahela valley. Although the Pittsburgh works of the Jones & Laughlin Steel Co. were to have been shut down, according to the labor leaders, these works are running practically full, with only a slight defection even among foreign laborers. Failure to cripple either the corporation or the largest independent in the Pittsburgh district has been a body blow to the agitators.

The strike has taken several peculiar twists. While aimed directly at the Steel corporation it has affected the independents throughout the country to a greater extent. One of the important features of the situation is the fact that steel companies which have been operating under agreement with the Amalgamated Association of Iron, Steel and Tin Workers have been affected as much as those who had not signed the scale, despite the claims of the national officers that the charters of the delinquent lodges are being revoked and contracts will be faithfully carried out. The situation applies to the cases of the Lake Erie Nut & Iron Co., Cleveland; the A. M. Byers Co., Girard, O., the Trumbull

Steel Co., Warren, the Deforest plant of the Republic Iron & Steel Co., Niles, O., and others. The question is asked: Of what value is a contract with the Amalgamated association when it cannot keep its men at work under present conditions?

The Carnegie Steel Co. issued the following statement today:

"We are making steel and lots of it and that tells the story. We have lost no ground, but on the contrary we still are gaining."

The plant of the Weirton Steel Co., at Weirton, W. Va., has been shut down. The plant was the only one in the Steubenville district which continued in operation last week. Strikers planned to march across the Steubenville bridge in a body, but Governor Cornwell, of West Virginia, wired Governor Cox, of Ohio, stating that this would be considered an invasion of the state. Governor Cox ordered sheriffs to prevent the strikers from carrying out their threat, and in the meantime the plant was closed.

An indication of how steel manufacturers regard the strike is the placing of an order for 30 rolls by one of the Steel corporation's subsidiaries. This order, which has been held up for the past week or 10 days, it is said, would not have been placed now if there was any doubt about the outcome of the strike.

BUFFALO

Situation is Improving; More Men Return

Buffalo, Sept. 30.—The strike situation in the Buffalo district has taken a turn for the better. Between 500 and 600 men returned to work Monday at the plant of the Lackawanna Steel Co., Lackawanna, N. Y., and 100 more came back Tuesday. They went to work through lines of pickets who failed to dissuade them. Neither the furnaces nor mills have been put in operation, but officials expect increasing numbers will report at each new shift.

"We are ready to take the men back as soon as they want to return," said George F. Downs, vice president.

No attempts were made to operate the plants of the Donner Steel Co. or Rogers, Brown Iron Co. It was announced by the latter that work will be suspended until a full working force is available.

Attempts to force a strike of men employed at the Buffalo Union furnaces, the Wickwire Steel Co., and the Tonawanda furnaces of the Donner Steel Co. apparently have failed, for these plants, as well as all finished material mills, are working smoothly. The return of workers at the Lackawanna plant now brings the number of men still out in this district down to a figure slightly less than 10,000.

Bars the Agitators

BUSINESS men and citizens of West Middlesex, Pa., have been taking a vigorous interest in the present strike. "Strike agitators keep out" in effect has been adopted as the town slogan. A few nights ago a truckload of organizers and strikers from Sharon attempted to enter the town. The progress of the truck was blocked by a roped barrier stretched across the main street and upon being surrounded by a determined committee of the citizens, the occupants were forced to turn about and retrace their course, despite their loud protestations. Volunteers from among the townspeople nightly have been patrolling the two blast furnace plants of the vicinity. A delegation of the citizens early last week called upon the officials of the United Iron & Steel Co. and offered to "pitch in" and perform manual labor at the plant if the workmen struck. They presented a similar offer from the farmers of surrounding country. "We won't let foreigners close this plant," they said.

This is the reason why both the Fannie and the Ella furnaces at West Middlesex are in operation.

PHILADELPHIA

Bethlehem Busy Despite Attempt at Strike

Philadelphia, Sept. 30.—Sentiment in regard to the strike situation has improved greatly among eastern steelmakers due to recent developments, of which the most important was the failure of the Bethlehem Steel Co.'s employes to strike. The situation has not changed in any way, since the strikers number only a few hundred and include mostly machinists. It is considered assured that no more Bethlehem employes will go out at Coatesville. The mills in this district are operating practically the same as last week. Out of 1700 who obeyed the strike call only 900 are still out. The mills are being operated as full as orders will permit. At the plant of the Milton Iron Co., Milton, Pa., 200 men who struck a week ago returned to work in the east end puddling mills Monday.

The Bethlehem Steel Co. today issued the following statement:

"It was ascertained that reports had been received at the offices of the Bethlehem Steel Co., from their plants located at Sparrows Point, Steelton, Lebanon, Reading and Bethlehem. All of them substantially reported full operations. Exceptions to this were only in unimportant, isolated units, in no way affecting the larger and important operations. There is nothing to indicate that there will be any curtailment in production."

BOSTON

Steel Works Operating at Full Capacity

Boston, Sept. 29.—All steel works at Worcester, New Haven and Bridgeport are operating at capacity and report normal labor conditions. The Fore River and Squantum plants of the Bethlehem Steel Co. are operating at full capacity and report no intimation of labor trouble. The embargo on shipment of freight to steel mill centers which has just been announced will affect many New England plants. Practically all of the pig iron producers in the Buffalo district have notified the trade that deliveries will be held up indefinitely, and therefore they can enter no more orders at present.

Foundries in New England do not believe that steel strike will affect their supply of pig iron.

CLEVELAND

Situation is Unchanged; Ore Moving Slowly

Cleveland, Sept. 30.—Iron and steel production in the Cleveland district has been practically at a standstill since the third day of the strike and although the ranks of the strikers show evidence of weakening, active production is not expected to be resumed until the situation has cleared. Employers have made no effort to run their plants, but have let it be known they are ready to resume as soon as the men report. At present only one of the 20 plants in the district is working, and that is working at one-third of its capacity. Operation of blast furnaces came to an end last Wednesday when the fires at the two plants of the Otis Steel Co. were banked. The plant of the Empire Rolling Mill Co. also closed during the week, as well as the mill de-

partments of the Otis Steel Co. which had been kept going.

Officials of the American Steel & Wire Co. announced on Monday that they were operating the H-P nail works on a limited basis. They stated that about one-third of the men who walked out reported for work when the plant opened Monday, and on Tuesday 238 men out of a total of 635 employes had reported. All were re-employed.

Men employed in a metalworking plant in Cleveland refused to work up steel which was produced since Sept. 22, when the strike was called. The shipment of the steel was accordingly suspended by the mill on request.

Shipments of ore have not been interfered with seriously, although the officials of the lake seamen's union have given out several statements that the men have voted to strike. A number of vessels have been laid up because of the lack of storage space for ore, and the Pittsburgh Steamship Co. is reported to have laid up its smaller barges. Twenty laborers on the storage dock at Randall failed to show up for work on Monday after a celebration. Loading coal on three docks was suspended by a strike of coal dock workers. Officials of the International Longshoremen's association claimed that all coal and ore handlers at Cleveland will be on strike within a few days.

At Buffalo, union officials announced that the strike of lake seamen is deferred until the cooks vote. The firemen, coal passers, water tenders and seamen have voted.

Despite strenuous efforts of agitators to organize the National Tube Co., Lorain, O., the plant is working at approximately normal capacity. Out of a total of more than 10,000 iron and steel employes, less than 200 men are on strike. At a recent meeting of the local switchmen's union, the men employed in transporting materials to and from the plant, voted by an overwhelming majority not to strike.

DULUTH

No Headway is Made by Strike Organizers

Duluth, Sept. 30.—Little headway, if any, has been made by organizers for the steel workers in this district. Since the calling of the strike Sept. 22, operations at the local plants of the Minnesota Steel Co. have continued on a normal basis. No men on the iron ore ranges have gone on strike, and little strike talk is heard in the entire district. The only defection reported is at the Zenith mine near Ely, Minn., where a number of foreign workmen walked out.

BIRMINGHAM

Strike in South Proves Complete Failure

Birmingham, Ala., Sept. 30.—With no one in authority in this district to call it off, the "strike" of the iron and steel workers continues, with all plants of the Tennessee Coal, Iron & Railroad Co. and American Steel & Wire Co. in operation. Production is normal. Many of the foreign-born laborers applying for reinstatement are being refused work because of their inefficiency. Operations of all mills start on time, and the workmen remaining loyal have been given to understand that there is plenty of work ahead for many months. The Birmingham Southern railroad suffered the loss of a few machinists, but the night crew at the steel mills cared for the engines, and the service was not interrupted. The strike in the Birmingham district throughout was a dismal failure. Less than 250 men are out.

CHICAGO

Gary and South Chicago Mills Operate

Chicago, Sept. 30.—Little change is shown in the strike situation, despite expectations that a large number of men would return to work or that part of those who have been working would join the strikers. The plant of the Inland Steel Co., continues entirely idle, except that fires are being kept up in two banked blast furnaces.

At the Gary plant of the Illinois Steel Co. four blast furnaces are active. Two units of the open hearth, comprising 28 furnaces, are producing steel. The duplex plant, the slab mill, plate mill and two merchant mills are in service, and the rail mill is working part time. At the South Chicago plant four blast furnaces are active. The slab mill and universal plate mill also are turning out their products.

At Gary, 280 coke ovens of the 700 in the plant are producing coke. At Joliet one unit of 70 coke ovens is active and the blast furnace stacks are banked, while mills are idle.

Among the smaller concerns affected by the strike no change has occurred. The situation continues quiet, with occasional sporadic cases of violence of no particular significance. No effort is being made to use strike-breakers and men at work in the mills are employes on the payrolls before the strike.

Striking steel workers at the Bay View plant of the Illinois Steel Co., Milwaukee, commenced returning to their jobs last Friday. R. B. Charlton, general manager of the plant, stated Sunday that many employes have already returned to work, giving promise that operations may be resumed during the present week. The plant normally employs between 1350 and 1500. One of two blast furnaces at the Bay View plant was in operation when the strike was called.

YOUNGSTOWN

All Mills Idle; No Attempt to Operate

Youngstown, O., Sept. 30.—Every iron and steel plant in the Mahoning valley of importance is tied up completely. All blast furnaces are banked and not a wheel is turning in any of the rolling mills. The Trumbull Steel Co., Warren, O., operated for 36 hours during the first part of last week but closed down every department of its works until further notice. The electricians employed by the Trumbull company and affiliated with the electrical workers' union made demands for 90 cents per hour and changes in working conditions.

In various parts of the valley reports are current that a large number of members of the Amalgamated Association of Iron, Steel & Tin Workers would return to work immediately if enough laborers and cranemen were obtainable to operate the sheet rolling departments. On several ocasions last week, committees of this association tried to induce mill owners to start up their plants.

Indications are that the officials of the Carnegie Steel Co. will try to operate the Ohio works probably this week. Monday morning several small groups of mechanics, carpenters and machinists entered the plant.

Practically all of the 60 hot mills of the plants of the American Sheet & Tinplate Co., at Newcastle, Pa., began work Monday. The plant of the Carnegie Steel Co., at Newcastle, improved its schedule.

A large number of men returned to work at the plants of the United States Steel Corp., at Sharon and Farrell, Pa., according to officials. The

plant of the American Sheet & Tinplate Co., at Sharon was scheduled to begin operations Tuesday. Two blast furnaces of the South works at Farrell are now in operation. The blooming and bar mills of this plant are declared to have practically full complements of men. Many men have returned to work at the Sharon plant of the Sharon Steel Hoop Co. The plant of the Valley Mould & Iron Co., Sharpsville, Pa., have resumed.

Ore, coke and coal movements in the Youngstown district are entirely suspended. It is estimated that 1344 cars of ore and 776 cars of coal have accumulated in this territory since an embargo was declared and the cars are subject to a demurrage charge of $2 for the first four days and $5 for every day thereafter. The regional directors will meet in Chicago this week and decide how the demurrage charges will be assessed.

Pickets are Enjoined by Judge Landis

Chicago, Sept. 29.—Judge Kenesaw M. Landis, in federal court, has issued an injunction forbidding strikers to picket the plant of the Pollak Steel Co., in South Chicago. The injunction forbids any picketing, intimidation or threats or any effort to prevent in any way the employes of the company returning to work or interfering with their right to work if they choose. A hearing on the injunction was to have been held Sept. 30. The company claims 99 per cent of its men desire to work, but are kept away by intimidation.

Steel Wages Far Above "Pauper Line"

Pittsburgh, Sept. 29.—In refutation of the testimony given before the Kenyon investigating committee in Washington last Thursday by John Fitzpatrick, chairman of the national committee for organizing iron and steel workers, that wages for steel plant laborers were below the "pauper line," a table of wages has been prepared, based on the reports of several companies, which not only shows wages for the workmen to be well above that line, but to be greatly in excess of those paid common labor in other industries.

Common labor commands from 45 to 50 cents an hour, the standard workday being eight hours and carrying time and a half for overtime. Thus the workman, who puts in 10 hours is paid for 11 hours and for a 10-hour day received from $4.95 to $5.50. Semiskilled laborers earn from $8.20 to $9 a day, these wages being earned principally in wire and tube mills, where a few weeks' training makes a workman semiskilled. Average daily wages of skilled labor run as follows:

Sheet rollers	$28.16
Sheet heaters	21.12
Roughers	11.92
Catchers	11.92
Steel pourers	12.84
Vessel men	14.65
Engineers, manipulators, etc.	12.63
Blooming mill heaters	17.92
Skelp mill heaters	18.18
Skelp mill rollers	21.73
Lapwelders	16.08
Bowers	13.76
Bottom makers	12.91
Regulators	13.52

Employe Speaks Out For American Workmen

Chicago, Sept. 27.—A. K. Perkins, an employe of the Inland Steel Co., at Indiana Harbor, Ind., has sent a telegram to Senator Kenyon, chairman of the senate committee on education and labor, in which he speaks for employes of the Inland Steel Co., in contradiction of the testimony of John Fitzpatrick.

The assertion is made that 90 per cent of Inland employes desire to return to work and that the company desires to operate; that the men had nothing to strike for, as an 8-hour day has been in effect, a profit-sharing system is being put into effect and a collective bargaining plan has just been started.

He states the lowest wage paid common labor is 50 cents per hour and that Inland employes are paid higher wages than the Amalgamated scale. Continuing:

"This strike was called against the Inland Steel Co.'s plant without any demands having been made upon the company. A large majority of the men attempted to go to work last Monday, but were restrained by the threats of a mob of about 3000 men, mostly outsiders. We consider this strike a crime against the men that toil, and we believe it is a blow at the vitals of our government."

Motor Car Industry May be Forced to Suspend

Detroit, Sept. 30.—Michigan's extensive automotive industry may be almost suspended if the strike in the steel and iron industry continues two or three weeks. A week's suspension of some of the plants supplying the industry with materials has resulted in curtailment of production in some of the factories.

Most of the motor car and truck plants here are operating with but a week's supply of materials. A few of them are on a day-to-day basis, depending on shipments from Pittsburgh and Cleveland.

Directors of the Michigan Manufacturers' association representing 1500 plants in the state, 500 of which are in Detroit, have indorsed the stand taken by the United States Steel Corp., and have pledged their full support in "the fight for industrial liberty."

Automotive workers are among the highest paid in the country and there has been no movement as yet reported of their joining forces with the steel workers, morally, financially or otherwise.

Structural Steel Society Commends Gary

Chicago, Sept. 27.—The Structural Steel society, with offices in Chicago, has sent the following telegram to E. H. Gary, chairman of the board of directors of the United States Steel Corp., approving his stand on the proposal to arbitrate the present situation:

"The Structural Steel society, representing 32 fabricating plants in the Middle West, assembled today in Chicago, rejoices in your statement of last night refusing to arbitrate the principle of the open shop. We are glad to have such a leader as you in our crisis. You are right, it is our fight as part of the public as much as it is yours. You have an obligation to the nation beyond your immediate obligation to the Steel corporation. The principle involved is one in which the nation is vitally interested, and as you state cannot be arbitrated or compromised. We pledge ourselves to go home and in our several communities enlist the co-operation of all civic organizations to stand back of you and support you on the principles enunciated in your statement of last night. If there is any definite thing we can do please tell us. We are with you to the finish."

Support Steel Industry in Stand for Open Shop

Both the Bridge Builders and Structural society and the Steel Fabricators of the United States have adopted resolutions supporting the employers in the steel industry in their determination to stand firm for the open shop. The former organization, at a meeting in New York Sept. 12, adopted the following resolution offered by C. Edwin Michael, president of the Virginia Bridge & Iron Co., and former member of the war labor board:

"RESOLVED: That the members of the Bridge Builders and Structural society believe the proposed disturbance unwarranted and unpatriotic, and express confidence in the policy and management of the steel industry to maintain the principles of the open shop, and cordial and mutually satisfactory working conditions with its employes."

Foundrymen Meet in Convention

Registration of 800 at American Foundrymens' Association Annual Meeting Includes Representatives From Foreign Countries—First Session Given to President's Address and Welcome From Local Foundrymen—Many Papers Presented

PHILADELPHIA, Sept. 30.—With a total registration of about 800, including more than a score of manufacturers and foundrymen from England, France, Norway, Japan, India and other countries, the twenty-fourth annual convention of the American Foundrymen's association formally opened Tuesday morning under circumstances which forecast a week of eventful and valuable meetings.

In the annual address of the president, A. O. Backert, Cleveland, compared the problems now confronting foundrymen with those encountered during the war. He stated that as production was the one essential to overwhelm the enemy, so increased production is needed today to restore the equilibrium of trade and industry. Referring to his extended trip throughout the United Kingdom and France, he declared that mechanical appliances are not in such widespread use in the casting industry of those countries as in the United States. However, many plants are modernly equipped and their practice is equal to the best prevailing in this country. Repetition in England and France is not nearly so prevalent as in the United States and lack of standardization retards the output in the European countries. In England the converter process is used more than the open hearth which is just the opposite of the practice in this country where open hearth tonnage exceeds converter almost ten to one. After enumerating the courtesies extended to him during his visit, Mr. Backert extended a warm welcome to the large number of visitors from overseas attending the convention. "By their journey overseas they are helping to build a friendship which forever should tie together the allies of the great war," he said. In conclusion the president acknowledged the valuable work of the secretary-treasurer, directors of the association and members of committees and paid touching tribute to the late Maj. Joseph T. Speer, who died Jan. 5, 1919.

Following his address Mr. Backert read a letter from Thomas Firth, past president of the British Foundrymen's association. Mr. Firth acknowledged the value of the work of the American foundrymen including W. J. Keep, Richard Moldenke and Thomas West. He declared that increased production is the only solution for the present industrial problems.

In welcoming foundrymen to Philadelphia Thomas Devlin, who has been actively engaged in the foundry business continuously for 65 years, declared opportunities for success in the industry are far greater today than ever before. He recounted the early days of the Philadelphia and American Foundrymen's association. John A. Penton paid a tribute to Mr. Devlin's active interest in problems of the industry and referred to him as the premier foundryman of the world.

Edward J. Cattell, statistician of the city of Philadelphia, interestingly reviewed the achievements of that city in industry and science. Referring to the present labor situation, he spoke in an optimistic vein, stating that not more than 3 per cent of the workers of the country are touched by foreign heresy. J. P. Pero, past president of the association spoke on the growing importance of the literature contributed to the foundry industry through the technical papers of the association.

The nominating committee named by president is as follows: B. D. Fuller, Niagara Falls; R. A. Bull, Coraopolis, Pa.; J. P. Pero, East St. Louis, Ill.; A. E. Howell, Nashville, Tenn.; Stanley G. Flagg III, Philadelphia.

Following the address of the past president, Russell R. Clarke, Eagle Brass Foundry, Seattle, read a paper entitled "Considerations Affecting Brass Melting in Gray Iron Shops." The author presents in a simple manner a few of the considerations that should govern the occasional production of nonferrous castings in a gray iron shop. The importance of correct melting practice is emphasized, it being stated that molders make their own scrap; furnaces can make everybody's. In a paper by F. J. Ryan, American Metallurgical Corp., Philadelphia, it is pointed out that brass melting presents two vital problems, segregation and volatilization of zinc. Segregation can be prevented by stirring and volatilization can be avoided by holding the charge in a cold vessel. The author described a furnace invented by Charles A. Weeks which is designed to meet these conditions.

Harrison E. Howe, National Research council, Washington, spoke on the need for co-operative research in alloys. He mentioned in some detail the efforts being made by the national research council to conduct investigations of direct value to manufacturers. He pointed out that co-operation is especially needed in regard to research work on alloys and urged that manufacturers in the foundry industry give this matter their personal attention. J. Roy Tanner, Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, submitted the report of the American Foundrymen's association committee on foundry costs. The report recommends that the association publish the standard cost system. Franklin G. Smith, Cleveland Osborn Mfg. Co., Cleveland, as chairman of the publicity committee of the Foundry Equipment Manufacturers' association, spoke on publicity work of that association.

Gary at Washington

Washington, Oct. 1. (By wire.)—Judge E. H. Gary, chairman of the Steel corporation, appeared this morning before the senate committee on labor and education which is investigating the steel strike.

Judge Gary and party of Steel corporation officials arrived from New York last night and this morning were ready for Judge Gary's appearance before the senate committee. Accompanying Judge Gary from New York were Richard V. Lindabury, general counsel; John Reis, vice president; James B. Bonner, Washington representative; W. J. Filbert, comptroller; C. L. Close, manager of the bureau of safety, sanitation and welfare, and others.

Du Puy Resigns

Herbert Du Puy has resigned from the chairmanship of the Crucible Steel Co. of America, Pittsburgh, his resignation taking effect Oct. 1. Ill health was given as his reason for retiring. His action follows a number of recent changes in the directorate and stock ownership of the company.

Handling Foundry Jobs By Crane

Classification of Patterns Will Aid Materially in Checking the Cost of Castings and in Systematizing the Usual Foundry Operations — Hoisting Equipment is Indispensable for Producing Maximum Results

BY W. C. BRIGGS

LABOR costs are fast becoming a big problem with all foundrymen. They exist from the time the raw materials arrive until the finished castings are loaded. In order to reduce the number of common laborers to a minimum, designers give entirely too much consideration to the handling of raw materials, loading of castings, etc., where the total pro rata cost per ton is a much smaller factor than the skilled workman's time on the molding floor.

This, of course, is not true in all cases, but is apt to be true in the case of the jobbing foundry where the owner or engineer has in most cases failed to find a means for making a layout of the foundry with foundry floors, cranes, hoists and molding machines so combined that they are adapted to handle to advantage a predetermined class of work.

If, however, each pattern when received is placed in a definite classification as outlined in the accompanying table it will be possible to use hand molding and hand lift where it can be used with the highest efficiency, and hand molding and crane equipment where it will be more efficient, and likewise machine molding and hand lift where these factors can be combined to produce the largest tonnage.

Tag Patterns According to Classification

The writer has not intended to carry this classification into all the sizes of flasks or depths of cope and drag that some foundries no doubt find it advisable to classify, but sufficient to outline the general scheme. The plan proposed is to place this classification list in the hands of the patternmaker or the man who has charge of the flasks so that suitable tags or stencilled markings may be applied to the individual patterns.

Tonnage of casting is influenced largely by the ratio between the size of the flask and the weight of the casting and the cost of molding follows in much the same ratio. Therefore with a system of this kind, the matter of setting the price is simplified. For instance, if a casting weighing 50 pounds is produced in classification No. 1, the same casting produced in class No. 2 would cost more, and by keeping the cost of castings made by each classification, a table soon could be prepared that would be of great assistance in estimating the cost of making all kinds of castings.

Of course there are many other elements that enter into the cost, but most of these elements do not influence the price anything like the ratio between the size of flask, which governs the amount of labor to a large extent. It is realized that green sand and dry sand molding costs vary, and that the kind and size of cores are important elements.

These classifications also will help to solve the cost problem which has

A paper presented at the annual meeting of the American Foundrymen's association, Philadelphia, Sept. 29-Oct. 3. The author, W. C. Briggs, is associated with the Shepard Crane & Hoist Co., New York.



FIG. 1—THE WORK NOW HANDLED BY THIS CRANE FORMERLY WAS HANDLED BY A JIB CRANE. PRODUCTION WAS INCREASED 4 TIMES BY THE USE OF THE CRANE SHOWN

Method for Classifying Patterns

Class	Size of Flask	Hand Molding		Machine Molding	
		Hand Lift	Crane Lift	Hand Lift	Crane Lift
1	18 x 18 x 6	1—HMHL	1—HMCL	1—MMHL	1—MMCL
2	18 x 18 x 12	2—HMHL	2—HMCL	2—MMHL	2—MMCL
3	24 x 24 x 6	3—HMHL	3—HMCL	3—MMHL	3—MMCL
4	24 x 24 x 12	4—HMHL	4—HMCL	4—MMHL	4—MMCL
5	24 x 30 x 6	5—HMHL	5—HMCL	5—MMHL	5—MMCL
6	24 x 30 x 12	6—HMHL	6—HMCL	6—MMHL	6—MMCL
7	36 x 36 x 6	7—HMHL	7—HMCL	7—MMHL	7—MMCL
8	36 x 48 x 8	8—HMHL	8—HMCL	8—MMHL	8—MMCL
9	36 x 48 x 12	9—HMHL	9—HMCL	9—MMHL	9—MMCL
10	48 x 48 x 8	10—HMHL	10—HMCL	10—MMHL	10—MMCL
11	48 x 48 x 12	11—HMHL	11—HMCL	11—MMHL	11—MMCL
12	48 x 60 x 12	12—HMHL	12—HMCL	12—MMHL	12—MMCL
13	60 x 60 x 12	13—HMHL	13—HMCL	13—MMHL	13—MMCL
14	60 x 72 x 12	14—HMHL	14—HMCL	14—MMHL	14—MMCL

been found so difficult in foundries turning out a large variety of work. It is a well known fact that there is a limited amount of foot pounds of work for every man. It varies somewhat with the man, but just as sure as a man's energies are properly applied, just as sure will he produce more and better results. If it is necessary for a molder to go to the pattern loft or flask shop to get his pattern and then to select or fit up a flask or assist the patternmaker or flask man to do so, and then get his floor ready, cut up his sand, find the necessary rigging, gagers, etc., he is not going to get started to make his job with as much dispatch as he would if a system was used whereby these factors were taken care of in a systematic way. There may be some work that can be rammed by hand or by treading in with the feet at as low a cost as can be done by any other method, but such jobs are few and far between and a good skilled mechanic should never be used for that kind of work.

As many modern foundries are designed light is the main consideration. Those that make a large variety of work from castings weighing a few pounds to those weighing several tons frequently do not have facilities for handling the kind of work they are to make. Often no attempt has been made to establish even approximately the floor area required or handling facilities best adapted for the particular kind of work to be made because the designer did not have a clear conception of the size and weight and volume of each kind of casting to be made. If, however, the pattern is classified when received or made, into the size of flask which automatically establishes the approximate volume of sand and weights to be handled, the problem of designing the building, distributing the work, providing molding machine and crane equipment can readily be solved.

The work shown in the foundry, Fig. 1, was formerly made under a jib crane. Three men had to put in a long hard day to produce nine or 10 molds. This job was fitted up to be made on a molding machine and an electric traveler arranged with controllers operated by pendant cords designed so that any one of the men in the gang could handle the flask to the molding machine and mold to the floor was provided. After one man had placed the cores, another could operate the traveler and close the mold, two additional men were added to the gang making five men to serve the molding machine, set the cores and close the mold. The men produced 44 molds for a day's work and did not work as hard as with the old combination, producing less than one quarter of the number of castings.

Fig. 2 shows a foundry with a central bay served by travelers placed on two levels. On the lower level are three 3-motor electric cranes, arranged for control by pendant cords from the floor, each crane having a capacity suitable for handling the largest mold to be made, but not largely in excess of the capacity required. On the higher level the cage-operated machine is of higher speed

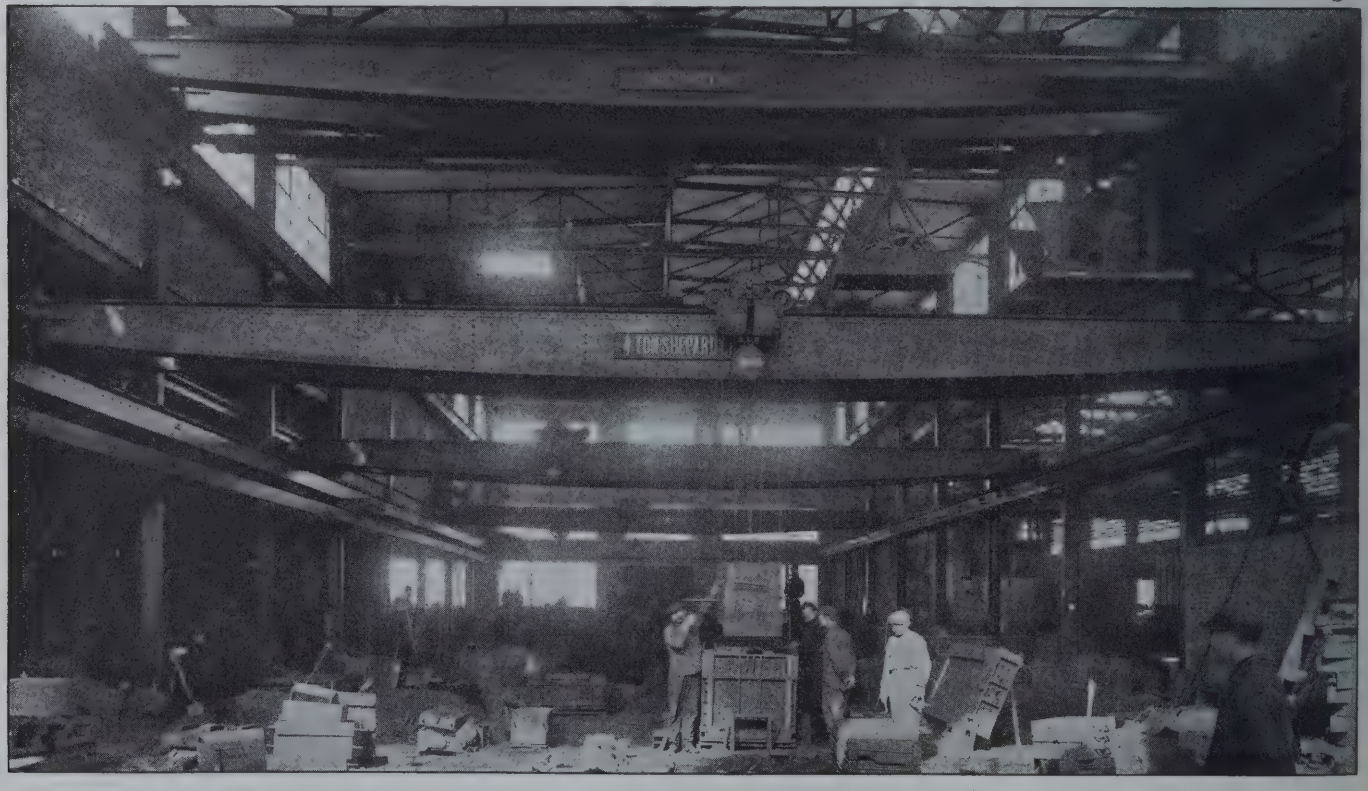


FIG. 2—CENTRAL BAY OF FOUNDRY SERVED BY CRANES ON HIGH AND LOW RUNWAYS. THE THREE CRANES OPERATING ON THE LOWER LEVEL ARE USED IN CONNECTION WITH MOLDING



FIG. 3—MATERIAL STORAGE YARD OF FOUNDRY WHOSE INTERIOR IS SHOWN IN FIG. 2. MATERIALS ARE HANDLED BY THE CRANE AND MONORAIL HOIST SHOWN

and is used largely for distributing flasks, taking out castings, and when necessary, carrying large ladles of iron over the top of the lower cranes without interfering with the molding operations. The side floor of this foundry is equipped with two 2-motor electric travelers, arranged for control by pendant cords. These machines are of light capacity, designed to perform the particular operations required of them. The core room, extending the whole length of one side of the foundry is served by a light capacity quick-acting overhead traveler.

The crane equipment in this foundry is nearly ideal, but by applying the system of classification of patterns and by making a study of the average number of castings made in definitely established flasks and by selecting the best molding machines for the work, a much larger tonnage could be produced with the same number of men. While the item of handling materials is low per ton of castings produced, many foundries are operating with high costs that can be lowered economically by the application of properly selected handling equipment.

Fig. 3 shows the material storage yard of the foundry shown in Fig. 2. Pig iron, coke, sand, etc., are moved mechanically throughout. Pig iron is unloaded from the cars by magnet to the yard and as required delivered to the charging platform by the crane and monorail hoist, clearly shown in the illustration. The only man labor is used in charging the cupola from the scales located on the platform.

Efficiency engineers have done much to lighten the burden of the manufacturer and the man who does the work but it is no easy task to get these parties thinking along the same lines. Many foundries, especially the jobbing foundries, can greatly increase their production and make the job easier for both owner and workmen by giving more careful study to the pattern before it goes to the foundry and by standardizing flasks and then allotting as far as possible, definite floor space, suitable handling facilities and molding machines for the work.

Electric Furnace an Adjunct to Cupola

BY GEORGE K. ELLIOTT

THE advantages of a duplex process using the electric furnace as an adjunct to the cupola for melting gray iron were outlined by George K. Elliott in a paper presented at the annual convention of the American Foundrymen's association held in Philadelphia, Sept. 29-Oct. 3. The author called attention to the fact that while the cupola is an efficient furnace for melting iron it has certain limitations which prevent it from furnishing an iron which entirely meets the requirements for certain classes of castings. But for the ordinary run of iron castings, comprising possibly 90 per cent of the total output of the country there was said to be no valid economical reason for either displacing or radically modifying the modern cupola.

The author goes on to say that whatever its faults may be, it must be acknowledged that for preheating iron up to the point of melting, and after that performing the fusion itself with a minimum waste of heat, the cupola stands supreme among the established foundry furnaces. Its melting efficiency approximately is 40 per cent although in the hands of the unskilled it may fall as low as 25 per cent, while the adept may drive it along at a rate of as high as 50 per cent efficiency.

Although the cupola is practically

without rival as a preheater and melter it does not attain the same high rank as a superheater of molten metal. The cupola operator's problem in obtaining superheated iron is largely one of circumventing terrestrial gravitation as it is manifested in the speedy dripping of the molten iron through and away from the hottest zone of the cupola.

In the two-step process that has been described, all responsibility for superheating is taken from the cupola and assigned to the electric furnace, where with the greatest ease it can be superheated to a degree that is not possible in any other kind of furnace. Superheating in the electric furnace enables the foundryman to make castings of low-phosphorus iron which otherwise it would be necessary to make of high-phosphorus iron, because he can safely shift the responsibility for fluidity from the material to the furnace.

Another advantage, and by no means a minor one, is that hot iron tends to increase solidity in castings. By solidity is meant not only closeness of grain but freedom from internal imperfections such as blowholes, shrink-holes, slag inclusions, graphite segregations, or like defects.

The process of treating iron in the cupola cannot be extended beyond the point of melting and a certain limited amount of superheating. Any additional operation such as refining, is entirely out of the question and can be performed only in some other kind of furnace. In considering the electric furnace in relation to refining it is preferable to consider separately the acid-lined and the basic-lined furnaces. The acid-lined furnace refines entirely through maintaining a constant reducing atmosphere in contact with the metal. The refining in an acid furnace is one of deoxidation coupled with a freeing of the bath from included gases and slag.

One must turn to the basic-bottom electric furnace to find potentiality in refining at its greatest. Almost any metallurgical reaction may be conducted in it, including oxidation, reduction, dephosphorization, desulphurization, decarburization, carburization, mixing with ferroalloys, superheating, and others. The duplex process for cast iron is chiefly concerned with reduction, desulphurization and mixing.

Standard pig iron containing a maximum of 0.05 per cent sulphur contains from 0.07 to 0.11 per cent after coming from the cupola, the degree of contamination depending upon the quality of coke, the condition of the cupola and its accessories, and the skill and knowledge of the cupola tender. The same iron from the cupola may subsequently have its sulphur reduced to about one-third or one-fourth by 30 or 40 minutes refining in a basic bottom electric furnace. The average of a great number of *duplexed* heats of gray iron was 0.088 per cent sulphur in the melt from the cupola, while in the final product from the electric furnace the average was 0.036 per cent. As low as 0.009 per cent sulphur in occasional heats has been produced in gray iron under everyday working conditions with little difficulty.

The electric furnace step of the duplex process is particularly good for mixing. It enables a perfect mixing of the original raw materials, assuring homogeneity in the single heat, and it facilitates the accurate duplication of results, assuring uniformity among several heats. It also simplifies and insures the perfect admixing of alloys such as ferrosilicon and ferromanganese. The electric furnace allows steel scrap to be mixed with the iron and by this means the amount of total carbon in the metal can be controlled, while when steel scrap is mixed with iron in the cupola an indefinite amount of carbon is taken up from the coke.

Educational Value of the Scrap Pile

BY HENRY TRAPHAGEN

DEFECTIVE castings—the tenants of the scrap pile—offer to the discerning and ambitious foundryman knowledge that is beyond price. The real value of the scrap pile depends upon whether the defective castings are intelligently examined or whether they are buried away under old barrels. Intelligently examined and constructively criticized, a defective casting will invariably point out the antidote.

The up-to-date foundry should have at least one competent, experimental molder, who is paid by the day, and not hurried; his business should be to investigate the proper method of gating and heading castings as they come into the shop. When the casting comes right, then it should be either sketched or photographed with the gates and heads attached, and a permanent record made. If the same job comes back a year or two later it is immaterial whether the experimental molder is in China or the superintendent in parts unknown; that casting can be made again, for the method of making it is on record.

Show Characteristic Defects

At first sight, it appears that experimental molding is an almost endless task; that the experimental molder has to start out on an entirely new task every time a casting comes into the shop, and that the number of records necessary is almost overwhelming. However, if foundrymen will carefully investigate this method of experimental work, they will find that after all, the number of real basic defects that are found in castings are comparatively few. They will discover that castings naturally group themselves into a few well defined classes, and that each class is subject to characteristic defects that are easily recognized, and in a short time they will learn to discount possible defects at the start.

Several fundamental difficulties that are met in foundries have been described in the literature on the subject; but unfortunately these descriptions seem to be lost in a maze of words dealing with the various peculiarities of chemical ingredients, new methods of chemical analysis, long discussions on grain aggregates, and in fact, almost everything except a frank, plain discussion of the foundryman's troubles.

If the foundryman will carefully study his defective castings the writer believes that he will ultimately find that all of the defectives can be traced to one of the following fundamental errors:

First—The personal equation, or in other words, the carelessness of the workman.

Second—Over-production, which puts a premium on careless, sloppy work.

Third—The attempt to make good material out of junk.

Fourth—False economy, which results from the use of too little fuel, too much scrap, cheap refractories and too

Abstract of paper presented at the annual convention of the American Foundrymen's association, Philadelphia, Sept. 29-Oct. 3. The author, Henry Traphagen, is metallurgist of the Toledo Steel Casting Co., Toledo, Ohio.

great a reliance in green sand molding practice.

Cold iron due in a false economy in the use of fuel is a common error. It is a simple matter to determine whether or not the bed is low. Leave the tap hole open, turn on the blast, and note the time that it takes for the first metal to run over the spout. If iron appears in less than 10 minutes, it is almost a certainty that the bed is too low. A low bed means dirty, porous, weak castings, owing to the metal melting directly in front of the tuyere blast and becoming unduly oxidized.

Another prolific source of cold metal lies in the attempt to conform to a prearranged melting ratio. In the dictionary of common sense there is no such term as melting ratio. The correct melting ratio is the amount of coke that will give hot, fluid metal; and this amount of coke will vary with the size of the cupola, the amount of scrap used, the kind of coke, the percentage of steel used in the mixtures, and the size and condition of the sprues. It is therefore evident that it is ridiculous for anyone to attempt to lay down a specific melting ratio for cupola practice.

Cold metal in the converter can generally be laid to one or two causes. The metal from the cupola may be cold for one of the reasons just enumerated; the percentage of silicon may be too low for successful blowing, or what is most common, the lining of the converter may be too wet, or there may be a leak in the wind chest or somewhere along the line. It is rarely found that cold metal can be traced to a variation in chemical content, and before the foundryman wastes any time fooling around the laboratory, it is far better for him to examine his cupola practice, his converter linings and his wind apparatus.

There is another great fundamental cause for cold iron, it is found not only in the cupola, but in the converter, the air furnace, the open-hearth furnace, the crucible furnace and even in the electric furnace. Reference is made to the effects of oxygen which causes oxidized metal. There is no disputing the fact that foundries very frequently receive shipments of pig iron that will not produce hot iron, no matter how careful the melting practice may be.

If, on breaking a shipment of iron it is found to be consistently unsound and full of gas cavities, reject that iron if it is possible to do so. But if the furnace absolutely refuses to take such iron back, which often is the case, then the only course left to the foundryman is to hold the shipment in the yard and use it very gradually, say one pig to a charge, until the pile is gone.

Another source of cold, sluggish iron and steel lies in the use of thin, dirty, rusty scrap. Such material is finely divided. During the melting process this rust or oxide enters the metal and becomes emulsified. No amount of fluxes, deoxidizers, or other cleansing agents will get it out. I believe suspended oxides in metal are causing more trouble today in the iron and steel industry than any other one thing. The use of such material is directly at variance with all the sound principles of metallurgy. Cold metal affects the molding department so strongly that the molder must take it into consideration. It is a well known fact that the moment molten metal strikes the sand a large volume of gas is generated. This gas is formed from the decomposition of binding materials, but most of it comes from the water in the sand.

If such gas is not allowed free exit, it is going to be trapped in the metal, the colder the metal is the more quickly it will set, and the more likely it is that the gas will be trapped under a frozen skin; this is a very common defect in green-sand molding; hence the necessity when attempting to make green-sand work, of having the metal very hot and fluid and venting not only the cope but the drag, and making sure that the vents in the cores are wide open.

The Sins of the Cover Core

An interesting sidelight in connection with this discussion is the question of using oil-sand cover cores. It is a very common occurrence to find a casting made under a thick, hard oil sand cover core, with absolutely no provision for the escape of gas. The foundryman struggles along and probably gets two out of ten castings, whereas if he would merely puncture the cover core with three or four pop heads and let the gas out, the probabilities are that all of the castings would come good.

The question of shrink heads or risers is one that is given too little consideration in the foundry. A head to be of any value, must be large enough in cross section to remain open until the casting has set. It is well to remember that probably not over 30 per cent of the cross section of a head is available for feeding and this statement applies with more than ordinary force to the neck of the feeder; it is folly to make a great big head and then neck it down so narrow that the neck freezes almost instantly, and it is equally futile to expect a head to feed if it is not placed squarely upon the casting. How often does one find a head with a neck say 2½ or 3 inches in diameter about one-fourth of which is attached to the casting and the rest wandering off in space.

A casting may look sound, but millions of tiny bubbles of exploding steam have made it porous so that it will not stand up under gas or water pressure. It is possible to make hydraulic castings in green sand molds, but it is not possible to make them day in and day out and be fairly certain that they are all sound. It is almost an impossibility to control the water in the green sand mold; and water suddenly converted into steam has a habit of exploding in the most unforseen places and in the most peculiar ways. As a general rule, a hydraulic or gas casting should be made in a thoroughly baked mold; if proper materials are used, the melting carefully done and the mold kept clean, there is no trick in turning out acceptable hydraulic castings.

There is one more item in the molding department that deserves attention and that is the proper method of pouring. The scrap pile receives a great many contributions because of the carelessness or incompetency of the man at the ladle. Every ladle of metal should be held for a minute or two to allow the slag and other impurities to come to the surface. Metal going into a sand mold should be poured evenly and carefully and under no consideration should hot metal be poured at high pressure directly over a large flat area of sand. Cuts and scabs and snakes are too often the result of fast, furious pouring. It is far better when dealing with a casting having a large flat surface, to cut back-up gates and break the force of the stream of metal rather than resort to a mass of finishing nails, a lot of swabbing to prevent the facing from cutting.

Another exceedingly common error is the practice of pouring metal at right angles directly up against a core. If it is possible to allow the metal to slide parallel to the core, there will be far less cutting and much less dirt.

The value of a scrap pile lies in the fact that it offers a real course of instruction in foundry practice, and this paper has been written in an attempt to induce the foundryman to commune with his defectives, to study their peculiarities, to grasp the principles of casting in their broadest sense, and to realize his responsibility to the community.

Audible Signals in the Foundry

Acoustic Devices Including Electric Horns, Steam and Air Whistles, Bells and Gongs Afford Economy, Efficiency and Safety of Operation—Description of a Code-Calling Instrument—How to Select Proper Signals

BY VLADIMIR KARAPETOFF

IN various foundries the following types of audible signals are actually in use: Electric horns similar to those used on automobiles; air or steam whistles, sometimes electrically operated from a distance; and bells and gongs, either single stroke or continuous. In an efficient up-to-date foundry such audible signals should be used for at least the following purposes:

1—For calling any important employe to the nearest telephone no matter where he may be; this presupposes a prearranged code and some simple device for sounding calls.

2—As extensions to telephone bells in noisy places; a foreman may not hear his telephone bell when away from his desk, but he would most likely hear one or more loud horns or shrill whistles mounted in the shop.

3—For purely local needs and signals, for example, to indicate the beginning and the ending of pouring, to call a craneman or an electrician to some prearranged place, etc.

4—As warning signals of danger on cranes, hoists, locomotives and trucks, especially when a ladle with molten metal is in motion.

5—For sounding fire-alarms.

Imagine yourself sitting as an observer in the molding and pouring department of a large foundry properly equipped with audible signals. You will soon hear one or more electric horns sounding a code number, for example, one, one and two (1-1-2). This may mean that the superintendent is wanted in his office, but that there is no particular hurry about it. Had the call been one, two, two (1-2-2), it would have meant a hurry call and you probably would have seen the superintendent running to the nearest telephone.

Soon afterward you may hear two long blasts of an air whistle, signifying that everything is ready for pouring in the north aisle. A few minutes later it might be followed by a continuous ringing of a bell to warn the workers that a big ladle full of molten metal is being carried by the crane.

To make the picture complete, let us imagine that after a time you hear a single-stroke gong sounding number four three (4-3). This may designate a fire in the pattern shop, or many simply be an agreed call for a fire-drill.

By Way of Contrast

For contrast, let us go to an out-of-date, shabby, primitive foundry, which is still running on the "chance and luck" principle, found to be satisfactory by our forefathers. In those days a molder received a dollar or two for a 12-hour day, and the output was measured in pounds where it is now stated in hundreds of tons. Two or three office boys are running all over the works trying in vain to locate the superintendent who is needed in the office to help on an important quotation. When he is finally located, it is too late to take care of this matter in the proper way. A millwright is needed in a hurry to take care of a hot bearing on a rush job, and nobody knows where he is. He happens to be attending to an unimportant job in a dark pit, and is blissfully ignorant of the fact that he is urgently needed elsewhere.

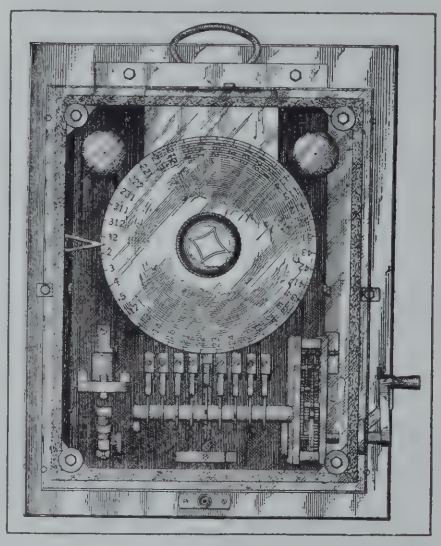


FIG. 1—A CODE CALLING MECHANISM

The operator sets a code number and pulls on a handle. This closes the electric circuit the required number of times, and sounds the signal.

Actual experience not only in foundries but in all kinds of industrial establishments has demonstrated the importance of audible signals in promoting both the efficiency and the safety of operations. Horns, bells and whistles are simple pieces of apparatus available on the market. Their cost is trifling in comparison with their useful service, and any far-sighted foundry manager can readily see the great advantage of equipping his works with acoustic signals, once the matter has been properly brought to his attention.

The following are the principal *sources of noise* in a fully equipped foundry:

Molding Department.—Vibrators for loosening sand from patterns, jar-ramming machines, cranes, trolleys, hissing of compressed air; noise of conveyors, trucks, wheelbarrows, etc.

Cleaning or Trimming Room.—Tumbling barrels, air chisels, pneumatic drills, grinding wheels, scrapers, band saws, conveyors, sand-blast machines, hissing of escaping air.

Sand Mixing Room.—Gears, chains, disintegrator hammers, magnetic separator for iron stays, and electric motors.

Melting Room.—Roar of blowers and of combustion (especially when burning oil); cranes and conveyors. Not very noisy.

Core Department.—Hammering, jar-ramming machines, escaping air, gas or oil furnaces, sand conveyor, a traveling crane and trucks.

Welding Department.—Roar of the oil-burning furnaces for preheating defective castings; hissing of the oxy-acetylene flames; handling, hammering and dragging of castings.

Fig. 1 shows a simple device for sounding simultaneously any desired number of horns, whistles and gongs scattered throughout the works, and for calling various persons according to a prearranged code. The electrical connections are shown in Fig. 2. The device consists essentially of a number of toothed wheels which close and open an electric circuit in a certain sequence. These wheels are mounted on a shaft operated by a clock spring. A drum is provided with a combination of 40 simple arrangements of contacts, such as 1-2, 1-3, 2-3, 1-1-2, etc. The horns are connected to an available 110 or 220-volt circuit either direct or alternating current while only a small current from a few dry cells is used in the central instrument. This current closes a relay which operates the power circuit between

From a paper presented at the annual meeting of the American Foundrymen's association, Philadelphia, Sept. 29-Oct. 3. The author, Vladimir Karapetoff, is professor in the electrical engineering department, Cornell university.

two contacts especially designed for frequent opening.

When it is desired to call some person, the code handle *A* is set on the number assigned to that person, and the operating handle *B* is turned by one-half a revolution. This is all the operator has to do. The contact shaft is set in motion by the spring and the circuit is closed a certain number of times in acordance with the position of the code drum. Every time the battery circuit is closed the relay closes the power circuit and operates all the horns, whistles, gongs or lamps connected to it. Having sounded the complete call three times the handle *B* returns to its original position and the mechanism is ready for the next call.

In most cases it is considered sufficient to sound the call number three times. The first time the person may not be sure whose call it is, the second time he counts the sounds and the third time he checks himself. For exceptional purposes, the call may be sounded more or less than three times or even continuously until stopped.

How the System Operates

The operation of the code-calling mechanism is usually entrusted to the telephone operator, where a private branch exchange is available. If the manager needs Mr. Jones and fails to reach him by telephone at his desk, he tells the telephone operator to sound his call number. Mr. Jones may be anywhere in the works, but as soon as he hears his number he comes to the nearest telephone and reports to the telephone operator who immediately connects him with the manager's telephone. Special cases have arisen in which the operation of the code-calling instrument had to be entrusted to a clerk in the superintendent's or production manager's office, in order to prevent office boys, clerks, etc., from disturbing important members of the staff on trifling occasions. The operator of the calling device is supposed to inquire about the nature of the business before starting the call.

When the number of persons to be called is not great, say 10 or 12, it is sometimes convenient to assign two or three different numbers to the same person. These three numbers may mean respectively: (1) "Call me on the phone immediately;" (2) "Call me when through with the present engagement;" (3) "Come to the manager's office."

The particular rules for the use of the code-calling equipment differ from factory to factory in accordance with the local conditions, and may be modified from time to time as actual experience indicates.

Some care must be exercised in the selection of the type of sound-producing signals and of the number of such devices in each department. A buzzer or a bell would not be heard near a tumbling barrel or a sand disintegrator; on the other hand, a powerful electric horn would be out of place in an office. Each signal must be distinctly heard under the most intense noise possible in that department by a person most unfavorably situated with respect to the signal. At the same time it would be a mistake to use unnecessarily strong signals, which are liable to get on the workers' nerves.

The pitch of the signal (high or low voice) is another factor to be considered, and while no accurate experiments are available, the selection should be governed by the principle of contrast. In a shop with a low-pitch rumbling and howling noise a shrill signal is more liable to be heard, and vice versa. Again, where the noise is of a discontinuous percussion type, like hammering or riveting, a horn with its steady sound would immediately attract attention. On the other hand, where the noise is continuous like that of a blower, a loud single-stroke bell might cut through the noise more readily.

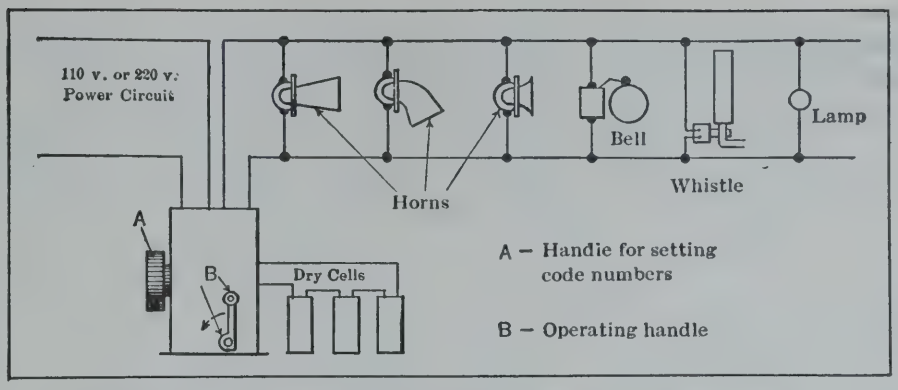


FIG. 2—THE ELECTRICAL CONNECTIONS FOR THE CALLING MECHANISM
A local battery closes a relay, which in turn closes the power circuit, to which the audible devices are connected in parallel.

Training Foremen to Lead Enlightened Labor

"The low educational caliber, in economic matters, of the foremen in most of our industries is remarkable, considering the effective part they might play in happily adjusting industrial differences at their inception," says John Calder, consulting engineer, New York, in a paper read before the American Foundrymen's association at its annual meeting in Philadelphia, Sept. 29-Oct. 3.

"This is not wholly the fault of the foremen," he continued. "They are usually selected largely for their technical proficiency in their own particular branch and then are forgotten by the management so far as the engineering of men is concerned. The generous treatment of foremen and the steady drawing-out of their capacities for leadership and for interpreting to workmen the policies and ideals of liberal-minded owners is the open secret of some of our most happy and contented businesses."

Favors Industrial Representation

Mr. Calder, who wrote on the subject, "Industrial Democracy and the Foreman," said that much good may be accomplished by means of the democratic form of representation in industry, but that its possibilities are limited unless foremen bring economic education into the meetings of shop committees. His views in this respect are opposed to those of some industrial concerns which, in extending representation to their workmen, have made it a point to exclude foremen from membership in committees, on the grounds that workmen consider them representatives of the management.

This is a point on which there is some difference of opinion, but as Mr. Calder goes on to say: "Certain it is that no ideas which we fail to sell to our foremen can be permanently conveyed to our workmen, and while a wealth of endeavor is being expended on the moving soil of labor at present we should not overlook the permanency of a liberal investment in the education of our numerous minor executives."

Mr. Calder, who has conferred with several thousand executives and foremen affiliated with industries in ten states on employe representation and the training of foremen, states that good results are obtained with intensive three-month courses for foremen, in which the principles of human engineering are presented in interesting form. He displays a sym-

(*Concluded on Page* 903)

Solving Problems of Personnel

Establishment of Definite Policy, Proper Interpretation of the Policy and Practical Application of Details, Three Most Important Factors in Securing Proper Industrial Relationship

BY C. D. DYER, JR.

THE consummation of satisfactory industrial relations requires hearty co-operation from all concerned. It is not enough that the employer should comprehend the viewpoint of the employed. The latter must with equal candor appreciate and accept the ideals and purposes of the former. No common interest can or will exist unless it is based upon mutual understanding and respect. Once a common purpose is established, misunderstandings, as a rule, can be quickly and amicably adjusted.

The three most important factors in securing and retaining a proper industrial relationship are the establishment of a definite policy, which is not easy; the proper interpretation of such policy, which is even more difficult, and the practical application of details in connection therewith, which is vital.

Too much consideration cannot be given to the problem of establishing a definite policy. To be of value, it must be formulated with the idea in mind of permanency, rather than expediency. It must provide sufficient elasticity to readily meet local or changing requirements. Any plan bordering on the paternalistic, philanthropic or welfare type of relationship, that has given rise to so much misunderstanding in the past, must be avoided.

Must Present Opportunities to All

Certain general provisions are necessary. Opportunity should be presented to every member of the industry, be he employer or employed, for advancement, financial remuneration, and development as a citizen and community member, according to his contribution to the industry and to society at large. Multifarious complications enter into the drafting of a just system of rewards. For this reason, an intensive study of every phase of the situation should be made. This may be termed the merit system, but whatever its terminology, it is essential to mutual understanding.

The fact that an adequate return on investment must be forthcoming and that sufficient capital resources are essential prerequisites to the development and extension of industry and the weathering of lean periods, must be mutually recognized. This principle may be termed the proprietary factor of safety. It is, of course, directly interlinked with a just system of rewards. Mutual recognition of these inseparable factors is essential to mutual confidence.

The policy should embrace the teaching of the principles of Americanism throughout the organization. There are in our midst those who either cannot or will not subscribe to anything constructive. We all must acknowledge that this condition is one of the most serious problems of both employer and employed. The first type will be taken care of by the employed, provided the right atmosphere is created. Disloyalty and unsound thinking will never flourish in American industry if the environment is right, even though they at times appear to be taking root.

Men of the second type, who, by reason of earlier lack of advantages and education, have not the mental capacity to grasp the essentials of and necessity for American citizenship, present a problem requiring constructive and persevering effort that cannot be sidetracked. Coercion is not the remedy. The creation of the desire through precept and example is the initial requirement and furnishes the basis for an actual solution through educational means of a more tangible nature later. It is essential that this important provision be given especial consideration. The fact that these types are in the minority permits an approach to a common interest goal to a certain extent, but much constructive work is needed before all types of employed, and in many cases employers, will have their vision so developed as to grasp the principles of the square deal as interpreted in this country, when they are at hand.

Proper representation of both employer and employed in the formulation of the policy is advisable. Such a procedure will assist in determining a basis of common interest founded on mutual appreciation of the problems of both, and will aid materially in furthering the aims of the policy.

Unless these four principles form the basis of a policy, interpretation and practical application become makeshifts. Strong personalities may triumph temporarily, but the structure created on a poor foundation cannot permanently withstand the storms that it must weather.

The size of departments handling industrial relations varies from one man in a small plant to large numbers in large industrial establishments. It is customary in the latter to have several highly specialized subdivisions, with a functional type of organization. The usual subdivisions are employment, service, and hospital; further functionized as follows:

EMPLOYMENT—This function usually embraces recruiting, hiring, adjustment of problems arising out of and in the course of employment, and discharging.

SERVICE—Under this function is usually included safety, compensation claims and adjustments, housing, washrooms and lockers, transportation, legal aid, loans, education, mutual benefit and other employes' insurance societies, employes' activities—religious, musical, social, athletic, etc.—Americanization training and assistance in securing citizenship papers, commissary, cooperative stores, publications and general service to employes.

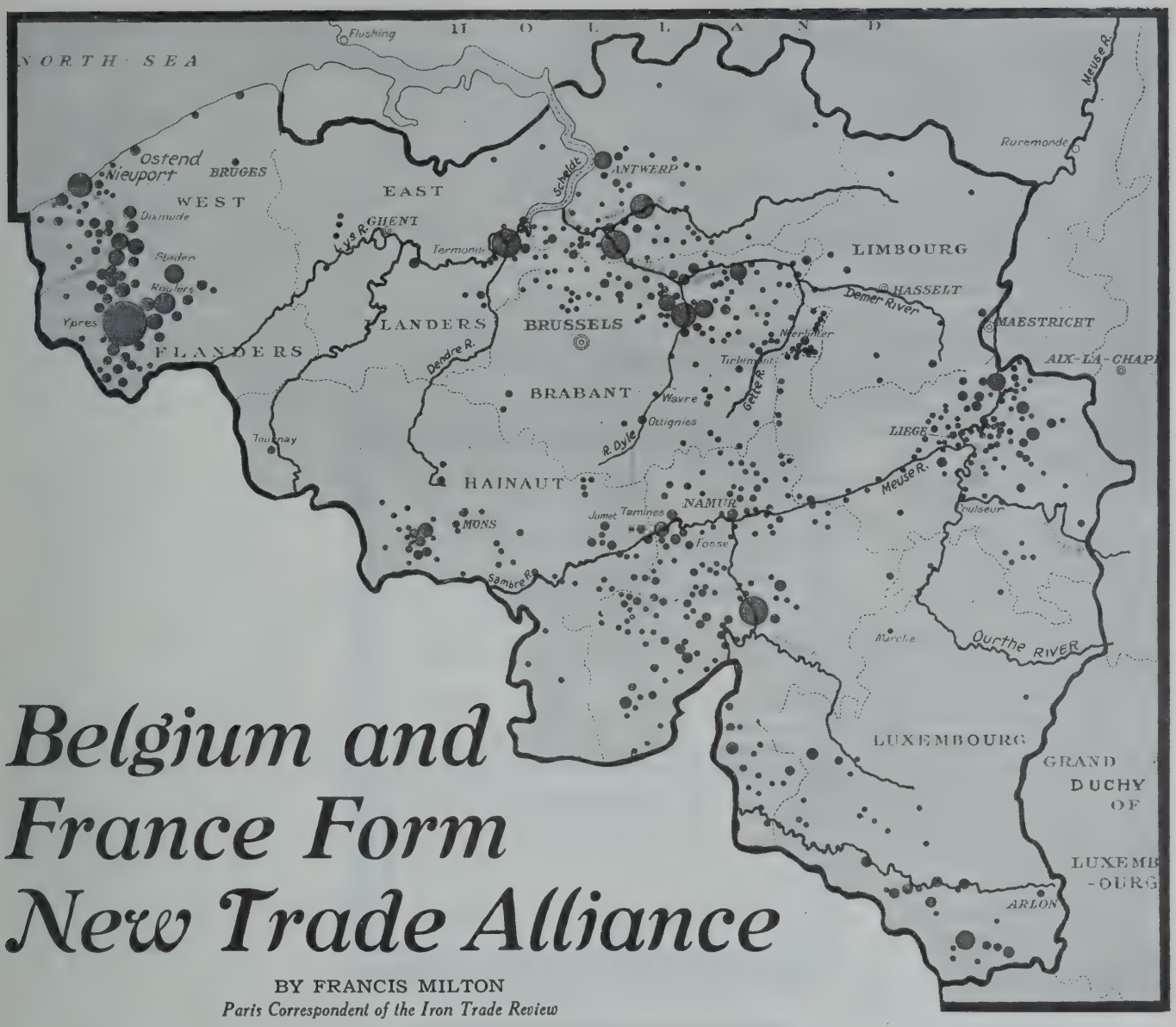
HOSPITAL—This function usually includes medical, surgical, dental and visiting nurse service and sanitation.

Duties of the Employment Department

An employment department is essentially a sales agency. It must have access to an available supply of its commodity for the prompt filling of requisitions of varying specifications. In its transactions it has two customers. One is the man to whom it must sell the job. At this stage careful selection is essential, because the second customer, the requisitioner, must be presented with a product which will satisfy his requirements. If both are satisfied, all is well.

However, the employment department must operate upon the principle that its customers are always right. Goods falling short of specifications are returnable. It must stand behind its sales and be prepared to make all necessary adjustments.

From a paper presented at the annual meeting of the American Foundrymen's association, Philadelphia, Sept. 29-Oct. 3. The author is a member of Hunt & Dyer, Philadelphia.



Belgium and France Form New Trade Alliance

BY FRANCIS MILTON

Paris Correspondent of the Iron Trade Review

DESPITE trade jealousies that existed before the war, France and Belgium have joined hands for their own economic welfare. The writer heard the speech of welcome made in Brussels to President Poincare of France, and also heard the reply. Politics apart, the speeches may be said to have argued for close economic and trade co-operation. King Albert said:

"Belgium more than ever counts on the support of France to assure the benefits of peace, and to aid in achieving happy and profitable commercial relations. This reconquering of economic life which has been so sadly ruptured is one of mutual interest."

The reply of President Poincare was in part as follows:

"France will never forget that it was Belgium that held back the first tidal wave of German imperialism. In the light of this inextinguishable remembrance the two countries should go hand in hand to the solving of their contiguous commercial and economic problems so indissoluably bound up, one to the other."

THIS is the second article of the series descriptive of Belgium industry written for THE IRON TRADE REVIEW *by its Paris correspondent, Francis Miltoun, who made an extensive trip through Belgium recently for the purpose of presenting an accurate word picture of the situation in the iron and steel trade. In this, as well as in the first article which appeared in* THE IRON TRADE REVIEW, *Aug.* 14, *Mr. Miltoun gives the results of a general survey of economic conditions affecting the industry. In subsequent articles he will deal specifically with the status of the leading iron and steel works, the problems with which they are contending and the extent of their success in attempting to re-establish themselves in the position they formerly occupied in the world's markets. The next article will describe the great Ougree-Marihaye Co.'s plants on the Meuse.*

This, in a nutshell, is the commercial aspect of the period of reconstruction of Belgium. "Contiguous commercial and economic problems" is something more than a phrase. Both French and Belgian iron and steel and coal and coke companies have their interests as often on one side of the frontier as on the other, and sometimes on both.

The great Ougree-Marihaye Co., with its plant on the Meuse has its mineral deposits on French territory, and if it was put to the necessity of paying an export tax on its own mineral brought from France there would indeed be a lack of "a happy commercial *entente*," to quote further the words of King Albert. This was just the point of view that was expressed to me by the director of the Ougree-Marihaye company

Another question which is potent with possibilities for the future prosperity of Belgium is the freedom of

the waterway of the Scheldt; otherwise, Belgium, being essentially a manufacturing country, will be tributary to contiguous ports rather than having its own. Antwerp bids fair to be the chief port of continental Europe while Zeebruge and Bruges, and a still more distant project at Ghent, will endow the country with deap-sea outlets such as no other country of a like area in all the world possesses. These are the grand lines of the renaissance of Belgium. Another suggestion is the possible conception of a triumvirate —France, Belgium and Luxemburg. The combination would have the heaviest possible weight in the metallurgical industry of the eastern hemisphere. It is doubtful if England, Germany and Spain combined could equal them, although in area and financial resources the latter would be triple that of the former. This union of three may have some argumentative justification, but France is not very keen for it, and neither is Belgium, although one or the other would be willing enough to incorporate Luxemburg separately. Doubtless the most that can be looked for here is a protective economic and commercial, rather than political, union. Free trade between Luxemburg and Belgium, with the attendant possibility of Luxemburg making use of Belgian ports as if they were her own, would prove of benefit to Belgium, and would in no way be detrimental to Franco-Belgian interests. It is evident that Belgium is bound to reconstruct its economic edifice on an entirely new base. Labor is the chief factor in industry, and labor in Belgium is today 25 per cent cheaper than it is in England, and perhaps proportionately cheaper than it is in France. Coal is the daily bread of industry. Belgium has both coal and labor in sufficient quantity and of excellent quality. If old methods have gone into bankruptcy because of new ideas evolved from the war this does not in the least affect the prime movers of industry—labor and combustibles. When we add to this, raw material in the shape of iron ore we have a formidable combination.

Belgium is well provided for. The surface of the whole fabric has crumpled like the rim of a volcano, but the mountain of energy is still there, and also, the will to do. This is the summing up of my impressions of 10 days spent among the shattered industries and institutions of Belgium, looking below the surface for a light unfogged by political issues.

Facts and figures are sometimes dull reading, but they at least give authenticity to one's observations, if they have been conscientiously compiled. The following figures summarize production as of May 30, 1913 and May 30, 1919. They are significant when one considers that as a result of hostilities coal extraction during the period of the fighting was reduced to less than one-half of what it was formerly, and that of the 60 blast furnaces in Belgium before the war but four were left intact by the invaders.

Tons	May, 1913	May, 1919
Coal	1,800,000	1,100,000
Coke	125,000	36,000
Cement	73,000	7,000
Pig iron	210,986	4,065
Steel	182,681	8
Semifinished material	127,975	3,431

Despite the wide differences in some instances, figures show an awakening of activities going back to primary sources, such as coal and coke. If pig iron makes a lamentable showing what else is to be expected with but four furnaces lighted?

Activity means prosperity, and if for Belgium this is only relative as yet, and it cannot be otherwise for many months, it is an incontrovertible sign of progress. This is shown by the following figures relating to trade between England and Belgium for February, March and April of the present year: 28,325,000, 70,265,000 and 109,450,000 francs respectively. Belgium is not likely to go backward, although as will be shown later, its situation at this moment does not appear brilliant. The *Monitor des Interets Materials,* a semi-official journal of Brussels, sets forth the following explanatory note cautioning against acceptation of figures which indicate that the Belgian metallurgical industry is already up to 25 per cent of its before-the-war production. It states that from 10 per cent to 12 per cent is a more accurate estimate. My own computations based on coke and pig iron as of May, 1913, and 1919 indicate 24 per cent for the former and 2 per cent for the latter, which gives an average of 13 per cent. The Belgian government is discussing the question of tariffs on ores which are brought into Belgium from Luxemburg. It is of prime importance that the free importation of raw material should continue. Work has been started on the reconstruction of the eight furnaces of the Halanby interests which were destroyed. The company has just acquired an ore mine sufficiently productive to keep the furnaces operating when rebuilt.

The Usines Metallurgiques du Hainault is actually producing the equivalent of that which left the plant at the latter end of 1913. Three blast furnaces are in operation, a Thomas furnace, a Martin furnace and a rolling mill for sheets at La Louvier. During the past month 12,000 tons of rails and profiles were produced, and 3500 tons of plates. The shops engaged in locomotive and rolling-stock



DURING THE WAR GERMANS ADVERTISED THEIR FACILITIES FOR SHIPPING PROPERTY STOLEN IN BELGIUM TO GERMANY

repairs for the Belgian railroads are operating at full capacity, and awaiting orders for a series of express locomotives from the government. The restitution by the Germans of pillaged and despoiled Belgian property will have not a little to do with the speed with which many Belgian manufacturers resume production. This process is slow, inasmuch as the Belgian restitution bureau at Wiesbaden is more or less dependent on the Germans making known the hiding places of the machinery stolen from Belgian factories. One hundred and twenty-two Belgian officials are traveling about Germany locating and arranging for the return of the machinery. In March, 1919, 108 tons were shipped back to Belgium and in June nearly 10,000 tons. Among other stolen articles recovered from Germany were two freight cars of Belgian postage stamps. They could hardly have been worth to Germany more than the value of old paper.

Arrête

1. L'exportation hors de Belgique de machines à travailler le métal est interdite. Tout essai d'exporter des machines de ce genre entraînera la confiscation de ces machines.

2. Exception est faite pour les machines qui sont exportees en Allemagne sur l'ordre du Gouvernement Général.

3. Cet arrêté entre aussitôt en vigueur.

Bruxelles, le 17 fevrier 1915.

Le Gouverneur Général en Belgique.
Baron von BISSING,
Colonel General.

Forbidden

1. The exporting from Belgium of metal working machines is prohibited. Any attempt to export machines of this kind will entail confiscation of these machines.

2. Exception is made of machines which are exported to Germany on the order of the governor general.

3. This prohibition will be rigorously enforced.

Brussells, Feb. 17, 1915.
The Governor General of Belgium,

BARON VON BISZING,
Colonel General.

EXPORTATION OF MACHINERY, EXCEPT TO GERMANY, WAS FORBIDDEN BY PROCLAMATION IN BELGIUM

Another sign of the progress which Belgium is making toward economic recovery is the increase in the figures relating to the operation of railroads. The accompanying map shows that the devastation of Belgium during the war was much more widespread than commonly supposed. After all transportation is the soul of modern industry, and it is a sure indication of the revival when it is considered that railroad passenger receipts were 9,504,000 francs in May, 1914, and 11,202,000 in May, 1919. Freight receipts decreased from 18,787,000 to 14,370,000, although the latter figure is quite a respectable showing, all circumstances considered.

The specific needs of Belgium may be enumerated as follows, the estimate being based upon figures and facts given me by the Office Central de Reconstruction. One can well judge of the importance of the destructions and requisitions made by the German authorities when they occupied the country from the figures representing restitutions already made, and also from the figures of the official Belgian archives showing requisition vouchers and evaluations, made by experts since the armistice, of damages to the value of 5,754,000,000 francs. These figures apply only to industry, and do not include personal property losses. The needs of Belgian industry in order that the wheels may again turn profitably are collated as follows:

Coal and Mining Industry: Has immediate need of all kinds of mining material, hemp, and especially steel, cables, which in most Belgian mines were lacking at the time of the German evacuation. Besides this, sorting machinery, motive power, trucks and hoisting machinery of all kinds are needed.

Coke Industry: Ovens operating by the recuperation process are in especial need of sulphuric acid for the manufacture of sulphate of ammonia for the recuperation of the valuable by-product, benzol, which otherwise would be lost.

Agglomerates and Briquettes: There is an immediate need for *braie,* bitumen and *goudron,* as binding materials for the making of compressed coal and coke dust, an important fuel in Belgium.

Iron Industry: The pig iron industry has been kept at the level in Belgium since the armistice by the destruction of 56 out of 60 furnaces during the war, but it is without question that many more would have been lighted had there been an ample supply of mineral which for the most part was received before the war from Lorraine and Briey. Economic and political relations with respect to the interchange of the iron of France and the coal of Belgium have not yet been worked out. It is this, as much as anything, which may be said to have held Belgian pig-iron production down to 4000 tons per month as compared with something over 200,000 tons before the war.

Steel Industry: The lack of production of blooms, billets and ingots for rolling into flats and shapes is due entirely to a lack of machinery in all departments, from converters to rolling mills and tube and wire drawers. It is the lack of machinery actually in place that counteracts other influences tending toward the general prosperity of the country.

Textile Industry: As with the metallurgical industry, both raw materials and shaping machinery are lacking.

Glass Industry: This might be revived immediately were it not for a lack of sulphate of soda, being awaited from abroad. The glass industry is one of Belgium's basic industries.

Leather Industry: There is a manifest shortage of hides and skins for current needs and for industrial leather goods, such as transmission belts which were largely produced before the war.

Paper Industry: This industry requires 45,000 tons of pulp wood for the year 1919, but above all, sulphate of soda, bleaching lime and other chemicals are needed.

Chemical Industry: In general, chemicals for industrial use are bound to be lacking for a long time. Belgium needs dyestuffs and the necessary machinery to produce them and other chemicals.

That Belgian industry is making as rapid headway as it is is due entirely to the characteristics and temperaments of the Belgians; that it is not making more rapid headway is due to various temporary conditions.

Some of the great iron and steel plants of Belgium, notably the Cockerill and the Ougree-Marihaye plants, are making progress slowly because the directors prefer to wait and sail under their own colors rather than be in the least tributary to German machine manufacturers who are already making offers to fit up these plants with German machinery, at a price. Even though the price be attractive, considering the low value of the mark, it is not the Belgian spirit to accept assistance from such a source. The metal workers of the Ougree-Marihaye and Cockerill plants which are located at Seraing have stopped work, demanding an 8-hour day and increase in their wages. These are the two large Belgian metal plants.



Defend Quality of American Steel

Members of Institute of Mining and Metallurgical Engineers Defend Quality of Domestic Product When it is Reported Americans Will Re-enter German Market— Nearly 1000 Attend Annual Convention

A MERE statement to the effect that a well-known American manufacturer intends to re-enter the German market for high-grade steel, presumably because a product of the desired quality cannot be obtained in this country, precipitated a lively discussion at the conclusion of the session on iron and steel held jointly by the American Institute of Mining and Metallurgical Engineers and the American Electrochemical society at the Congress hotel, Chicago, Tuesday, Sept. 23. A number of metallurgists immediately arose to the defense of domestic steel, stating that it is not necessary for American manufacturers to go into foreign markets to obtain a high quality product.

As stated in the last issue of THE IRON TRADE REVIEW, in which the opening sessions of the Chicago conventions were reviewed, the 120th annual meeting of the American Institute of Mining and Metallurgical Engineers opened Monday, Sept. 22, continuing through the week concurrently with the fifth national exposition of chemical industries and the annual meetings of four other societies. The exposition, briefly mentioned last week, proved to be one of the most comprehensive shows ever held and attracted unusual attention because of its intimate relation to the wartime growth of the chemical and allied industries, which, it is estimated, represent an investment of $1,000,000,000.

Many papers of interest to the manufacturers and consumers of iron and steel were presented in several sessions devoted exclusively to the production of these products. Throughout the technical sessions there was unmistakable evidence of the efforts constantly being made to improve the quality of steel.

Tuesday afternoon at the Congress hotel the institute jointly with the American Electrochemical society held the session on iron and steel which had been scheduled to take place on board the lake steamer returning from Gary. Joseph W. Richards, Lehigh university, South Bethlehem, Pa., presided as chairman. A paper entitled "Blast Furnace Refractories" was read by Raymond M. Howe, Mellon Institute of Industrial Research, Pittsburgh. Mr. Howe emphasized the need for closer study and better co-ordination of effort on the part of the manufacturers and consumers of refractories. He cited several instances where careful sampling of clay increased the refractoriness of the finished product to the extent of 100 degrees Fahr. Proportioning, he said, is a problem that each plant must solve for itself as certain plastic clays bind with flint clays more readily than others. The characteristics of a fire brick depends very largely on the amount of water used in its manufacture. The amount of water to be used in making dense or porous brick varies not only with each individual mix but also with each process of manufacture.

The paper entitled "Effervescing Steel" by Henry D. Hibbard, consulting engineer, Plainfield, N. J., and one entitled "Aircraft Steel," by Alfred Sauveur, Harvard university, Cambridge, Mass., were read by title but were not discussed. J. R. Cain, United States Bureau of Standards, Washington, presented a paper on "Determining Gases in Steel and the Deoxidation of Steel." He claims that despite previous researches, no analytical methods are in use today in steel works for determining the gaseous constituents of steel. He gave a complete resume of the work done on this subject in the past, stated the scope of the investigations now being carried on by the bureau of standards, outlined what is to be accomplished by these investigations and described the results already attained. Mr. Cain's paper provided the basis for a very interesting discussion in which many metallurgists participated. J. S. Unger, Central Research bureau, Pittsburgh, stated that he believes it is more important to study the effect gases have on steel than to identify the gases. When such effects have been found, then the best methods for analysis should be studied. T. D. Yensen, Westinghouse Research Laboratories, Pittsburgh, suggested that a higher degree of accuracy be obtained in gas analysis. He pointed out that an error of one thousand of one per cent makes a vast difference.

A paper entitled "Effect of Time and Low Temperature on Physical Properties of Medium-Carbon Steel," by G. A. Reinhardt and H. L. Cutler, Youngstown Sheet & Tube Co., Youngstown, was read by Walter N. Crafts, British Forgings, Ltd., Toronto, Ont. This paper, which was presented almost in full in the Aug. 7 issue of THE IRON TRADE REVIEW, was widely discussed. The author's statements relating to the seasoning of steel brought forth considerable confirming evidence from those who had had similar experiences.

At the conclusion of the Tuesday session on iron and steel a lively discussion ensued when it was suggested that American manufacturers will have to go to Germany again to obtain quality steel for tools, springs and fine machinery. The statement aroused considerable indignation among the members, who declared emphatically that quality steel now is being made in this country and that through the experimental work conducted at the Carnegie School of Technology in cooperation with the United States bureau of standards, American steel will lead the world.

Bradley Stoughton stated that he recalled the statement made by the chairman of the board of directors of an important manufacturing concern to the effect that his company before the war had bought all of its quality steel in Germany and that now the war is over, it will go to Germany again for that product. C. F. W. Rys, chief metallurgist of the Carnegie Steel Co.; J. A. Mathews, president of the Halcomb Steel Co.; and G. K. Burgess,

chief metallurgist, United States bureau of standards, opposed the statement.

"There is no necessity for this manufacturer or anyone else to go into the German market for steel to be used in any sort of manufacturing in this country," said Mr. Rys. "American steelmakers are putting out steel suitable for the finest instruments and machinery. It is due to the American market to patronize local manufacturers."

The charge that improvements in steel manufacture is not progressing in this country because the Carnegie School of Technology and the United States bureau of mines are working at cross purposes was denied vigorously by Mr. Burgess.

The joint session with the Electrochemical society convened again in the Congress hotel at 8 p. m., Tuesday. Robert W. Hunt, Robert W. Hunt & Co., Chicago, presented a paper entitled "The Manufacture of Steel Rails." Mr. Hunt gave a brief history of the early work pertaining to the manufacture of rails and very carefully outlined a system of inspection adopted by him in 1912 which thoroughly supervises the progressive steps of the manufacture of rails.

The remainder of Mr. Hunt's paper is devoted to the author's ideas regarding certain features of the manufacture of rails and is abstracted elsewhere on this page.

C. L. Huston described the 204-inch plate mill installed in the plant of the Lukens Iron & Steel Co., Coatesville, Pa. Mr. Huston's talk was accompanied by moving pictures, showing the plate mill in operation.

Theodore W. Robinson, Chicago, spoke on the industries of the Chicago district, pointing out that from an unknown fringe of pioneer humanity to the fifth city of the world, is Chicago's achievement in a little more than a generation. He urged the members of the institute to spread the gospel of hard-work, thrift and loyalty. Commenting upon the present unrest, he said: "How vitally necessary is such action is demonstrated by the wide and nationally momentous strike that has been inaugurated against the United States Steel corporation and other interests."

The last iron and steel session, with John A. Mathews, president of the Halcomb Steel Co. presiding, was held at 10 a. m. Wednesday. N. B. Pilling abstracted his paper entitled "Cooling Properties of Technical Quenching Liquids." He stated that the temperature of the liquid bath in which steel is quenched has a decided influence on the speed of cooling in the case of some liquids and very little in the case of others. Widely different physical results have been obtained by the use of water spray, water immersion and oil immersion and further experiment has shown that the quenching effect of water used as a spray or an immersion varies greatly with the temperature of the water. A discussion of the paper was entered into largely by Harrison E. Howe, Washington.

The papers entitled "Differential Crystallization in Cast-Steel Runner," by F. B. Foley, which was published in the July 3 issue of THE IRON TRADE REVIEW; "Oxygen in Cast Iron and its Application," by W. L. Stork; "Deep Etching of Rails and Forgings," by F. M. Waring and K. E. Hofammann; "Graphitization of White Cast Iron upon Annealing," by P. D. Merica and L. J. Gurevich; and "Experimental Data Obtained on Charpy Impact Machine," by F. C. Langenberg, were presented by title only.

The latter paper was discussed at length by Capt. A. G. Zimmermann. It was brought out by Mr. Zimmermann that a method has been developed at the Watertown arsenal whereby the results of an impact test are expressed in pounds per square inch instead of in foot-pounds. He is of the opinion that results expressed in pounds per square inch should be generally adopted.

H. J. French, United States bureau of standards, Washington, next presented an unusually comprehensive paper entitled "Manufacture and Properties of Light-Wall Structural Tubing." He stated that, as far as he knew, no entirely satisfactory method is now in use in America for heat treating long-length pipe. In the discussion which ensued it was stated that long-length pipe was being annealed in electric heat treating furnaces but with this method croppage at one end is necessary.

The final paper presented was entitled "Heat Treatment of Cast Steel," by John H. Hall, Arvid E. Nissen and Knox Taylor, Taylor-Wharton Iron & Steel Co., High Bridge, N. J. The paper was verbally abstracted by Mr. Hall and discussed at length by Henry M. Howe, Bedford Mills, N. Y.

Wednesday afternoon's session on pyrometry, which was held in cooperation with the national research council and the United States bureau of standards, referred especially to iron and steel metallurgy.

Notes on Manufacture of Steel Rails

BY ROBERT W. HUNT

AS EACH ingot is a separate and individual casting, I believe that, in addition to the tests representing the whole heat of metal, there should be some way of determining the physical character of the rails rolled from each and every ingot. As a destructive test seems to be the only way to actually ascertain that point, and as, of course, you cannot destroy all the rails, I installed in 1915, what is known as the nick-and-break test, under which a test piece is cut from the top end of the first, or *A*, rail rolled from each ingot. This is nicked and broken, thus enabling the inspector to examine the fractures and, in case of the presence of segregation, pipe, or some other mechanical defect, to reject the rail represented by the test piece. Following such rejection, a test piece shall be cut from the bottom end of the same rail and broken; if that piece has similar defects, the second, or *B*, rail is rejected, and a piece cut from its lower end, and tested. In case of failure, the procedure is continued for the succeeding rails until a sound one has been reached. This has proved an expeditious and cheap procedure.

As the chemical composition of the steel is a fundamental part of rail specifications, a very important point is the taking, for analysis, of the drilling representing the heats of steel from which the rails are rolled. The drillings must be taken from test ingots, and the time and manner of casting these ingots, as well as their shape, is receiving attention. In fact, the whole matter of ladle-test ingots is now receiving the attention and study of a committee of the American Society for Testing Materials in conjunction with the United States bureau of standards. Pending a full report on the subject by them, it would appear desirable to require the adoption of a standard sized and shaped ladle-test ingot and to insist that it be cast as sound as possible by the addition of aluminum to the

From a paper presented at the annual meeting of the American Institute of Mining and Metallurgical Engineers.

molten steel; further, that two or three should be cast at equal intervals in a heat during the pouring of the large ingots and drillings from them carefully mixed. Thus, greater protection would be afforded as against a single small test ingot not representing, thoroughly, say, a 100-ton heat of steel.

Another point of less importance, but still of prime necessity, is the milling of both ends of the rails. This has been the practice of English mills for years and some American makers mill one end of some of the rails made by them. Depending on chipping and filing for the finishing of the ends of the rails is very unsatisfactory. Milling would not only eliminate all fins resulting from the hot sawing, but positively assure squareness of ends and accuracy of lengths, all three of which are of great importance in relation to joints, a part of track maintenance that is receiving more and more attention.

Much thought and considerable experiment have been given to the betterment of the cold straightening of rails. From the time of that procedure being represented by the blows of a heavy sledge swung by a sturdy man, the practice has been a brutal one. To accomplish the semblance of the desired result, the steel has to be bent beyond its elastic limit, thus establishing strains with an ever present danger of causing actual or incipient ruptures in the metal, which may result in complete rail failures. In my judgment, it is practical to do away with cold straightening, by proper hot straightening of the rails. If, in case of uncontrollable conditions, a few rails should come from the hot beds unsuitable for use, they could, after some straightening, be classed as seconds and used for other than main track purposes.

In the present practice, a rail is put under the cold press and most carefully, but brutally, punched into seeming straight line and surface. Frequently, it is later put on the ties and with equal care spiked out of a straight line into curves of varying degrees. Rails can be hot straightened without any short kinks and with lines that will permit good loading for transportation and satisfactory track laying; thus can the expense and danger of the cold straightening be avoided. There are now at least a thousand tons of rails, finished as above advocated, giving satisfactory service in the lines of several railroads having heavy traffic, and they have had over three years of trial. The rail makers will welcome such a departure from present practice and, I am confident, make it successful.

To secure sound rails it is of supreme importance to make sound ingots. Sir Robert Hadfield, in October, 1912, presented a paper before the Iron and Steel institute which attracted wide attention and much discussion. The plan is broadly designated as using a "hot-top ingot," and many plans of obtaining such castings, other than directly following Sir Robert's, have been and are being successfully employed, notably, on ingots to be used in ordnance work. As yet hot-top ingots are not used in rail making; both encouraging and disappointing experiments have been made, but I am satisfied that it is practical and will be so proved. Based on the results obtained with other than rail ingots, its success with them is bound to come. Therefore, while I am not at this time prepared to incorporate hot-top ingots in rail specifications, the time is near when it will be entirely practical to do so. It may involve a somewhat greater first cost, to be at least partly offset by saving in scrap, but if the outlay is justified when making steel to be used in destroying life, should it not be even more so when producing metal on the soundness of which human safety will so largely depend?

Avoiding Brittleness

The most harmful physical characteristic of rail steel is, of course, brittleness. The low amount of phosphorus present in open-hearth steel renders protection against the dangers from that element and permits freer use of carbon as a hardening element. Experience has pretty well demonstrated that the safe upper limit for carbon in rail steel is approximately 0.75 per cent; and accepted practice has allowed a working range of 13 points, with the result that the lower limit of carbon has been most frequently specified as 0.59 per cent, but in some cases 0.62 or 0.63 per cent; speaking, of course, of the almost universally accepted practice of having the steel contain not over 0.04 per cent phosphorus. The problem of always making basic open-hearth steel within this range is difficult and frequently heats are cast slightly outside the limits specified. There is a much greater commercial opportunity for manufacturers to find other than rail uses for steel containing the lower amounts of carbon than when containing the higher amounts; therefore, they naturally aim to have the carbon content nearer the low side of the permitted range. Hence, the larger percentage of heats is on the low side of the allowed carbon. In repeated cases, "off heats" are produced which fail to be within the prescribed limits of the particular specification to which the rails are being rolled, but are entirely applicable to another rail specification for which the mill has orders. This leads to the ingots from such heats being temporarily discarded, later to be reheated and rolled on the other specification. This means reheating and rolling of cold ingots, which is invariably accompanied by an increased production of second-quality rails, largely augmented by the lack of proper control and treatment in the soaking pits.

The various railway systems of the country are now using as their standard practice about the same weight of rails. There are some variations of sections, but I do not see any serious objection to the adoption of a general or common chemical specification. We know that hundreths of percentages are very delicate variations and, especially in relation to carbon, errors may occur in the results obtained by two different chemists, particularly if working under modern manufacturing pressure. If a common carbon, silicon, manganese, and phosphorus specification prevailed, the work of the open-hearth steel melter would be simplified, the cold-ingot trouble eliminated, and, I think, better general results obtained.

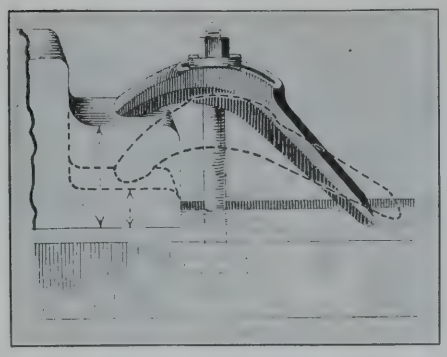
As a means of lessening the tendency on the part of the manufacturers to protect themselves by keeping the carbon content of the metal toward the lower range, it would be well to accept not over an agreed upon small per cent of heats slightly higher in carbon than the specifications. These rails could be specially marked and shipped, so that the roads would have them by themselves and use them in places for which they would be well adapted. I think that there would be but a very small percentage of such rails produced, but the very fact that the danger of rejection from over high carbon would be eliminated would cause the steel makers to feel less restricted in their procedure. In other words, it would allow a certain elasticity which would, undoubtedly, work to the advantage of both producers and consumers; of coure, for acceptance, the high-carbon steel must have successfully passed the prescribed physical tests.

Another development of great interest is the triplex processes, both on the bessemer open-hearth electric and the bessemer and double open-hearth plans. These are being worked out in practice and, I believe, will soon be adding much toward the production of more regular and, hence, better steel and better rails.

Machine Clamp Eliminates Tool Blocks

A clamp for firmly holding work on planers, boring mills, drill presses, face plates of lathes, milling machines and for holding down press bolsters and fixtures was brought out recently by Albert O. Mathison, New Britain, Conn. It may be used on the side of the work, leaving the top surface free for machining or it may be used as an inexpensive planer vise.

If the work is out of square or tapered, the clamp will adjust itself to all angles. When the clamp is used on the side of the work, as shown in the accompanying illustration, a cut equal to the capacity of the machine may be taken without the work slipping, it is said. The clamp is 8 inches long, 1½ inches thick and is equipped with a ¾-inch slot. The clamp, which is drop forged and hardened, weighs 3½ pounds.



THIS CLAMP MAY BE USED IN MANY DIFFERENT POSITIONS

New Grinding Machine is Semiautomatic

A new semiautomatic wide-wheel grinding machine recently was designed by the Woods Engineering Co., Alliance, O. The work has a straight in and a straight out movement with a slight movement lengthwise during the grinding period.

The machine, which weighs 6000 pounds and occupies a floor space of 6x6 feet, has a grinding wheel of 8 inches face and 20 inches maximum diameter. Work 15 inches long and 10 inches in diameter can be handled between the centers. The head and tail stocks are mounted on a square shaft having clamped to it an arm which carries the mechanism for making the diameter adjustments in grinding. This arm is shown at the right side of the machine in the accompanying illustration. A shaft running through the housing parallel to the square shaft carries on the right-hand end a cam that controls the movement of the work to the grinding wheel. This cam shaft has six speeds.

At the left-hand end of the cam shaft is a cam that controls the clutch pulley driving the work. These two cams are timed so that as the work moves up to the grinding wheel, the clutch pulley is engaged and the work starts rotating just before it makes contact with the grinding wheel. When the grinding cycle is completed, the work moves away from the wheel, and stops rotating to be reloaded. The grinding wheel head swivels on a stud for grinding taper work.

For truing the grinding wheel a frame is pivoted on the casting which forms the wheel guard. This frame carries a dovetail slide arranged to a swivel and a carriage with a cross feed movement carries the diamond holders. In operation the work centers are lowered by removing the hardened pin that bears on the cam, swinging the truing frame down to a positive stop and bringing the diamond on the same plane as the work contact. The machine is entirely self contained even to being equipped with a crane for handling the spindle when changing wheels.

Training Foremen to Lead

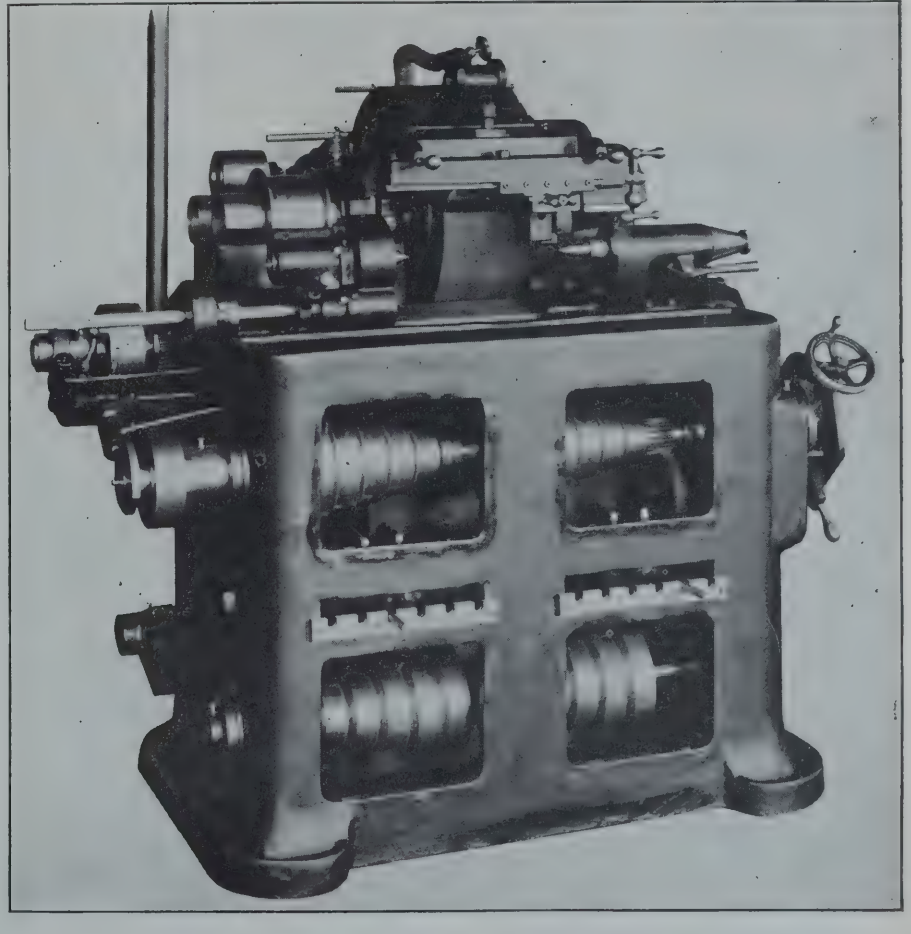
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pathetic attitude toward workmen, saying:

"The workman demands more liberty in industry, a share in the policies of management so far as they touch his interests. In so doing he rarely adopts any one of the schemes of social reconstruction which are pressed upon his attention today, nor does he mean to dispense with or overrule the superior ability, knowledge and experience admittedly necessary in the general conduct of a plant by its managers and owners. There are schemes which propose to lay violent hands on all capital with no adequate care for skilled direction, but the workman's desire is for a change in the spirit of industry, and that change is being welcomed by all thoughtful owners and executives."

He says the question of what labor wants was studied in all the classes of foremen with which he was identified, and it was concluded that a workman will be contented as a rule if he obtains:

Security of employment, a voice in fixing employment conditions, a fair share of the profits, working hours yielding reasonable leisure, prevention of profiteering, suitable housing and welfare provision, economic instruction and opportunity to rise. The



THIS MACHINE REQUIRES ONLY LOADING AND UNLOADING. GRINDING IS AUTOMATIC

contented workman will co-operate if there is: Elimination of all suspicion of his employer, creation of confidence between him and executives, recognition of mutual interests in industry, creation of machinery for facilitating acquaintance and an absence of all paternalism in industrial relations.

Bucket Has Working Parts Completely Enclosed

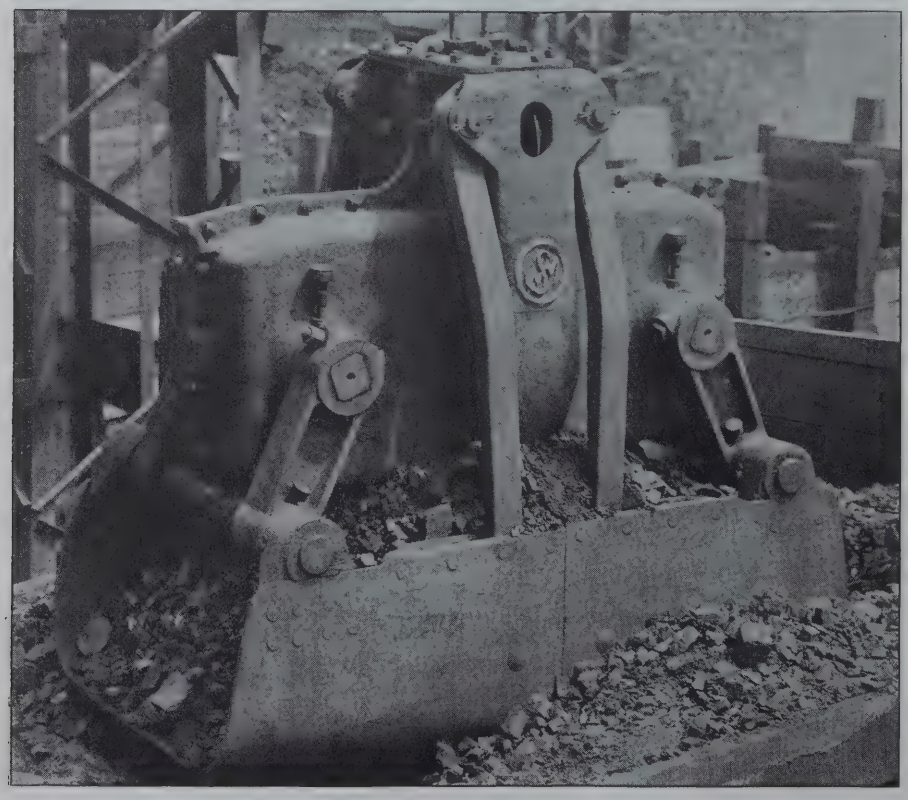
The Wellman-Seaver-Morgan Co., Cleveland, has developed a clam-shell bucket which has all the working parts completely enclosed in a tight casing where they are constantly lubricated and where they do not come in contact with the material the bucket is handling. The bucket is composed of a comparatively small number of parts, so arranged as to facilitate the removal of any part in case of necessary repairs. This bucket is especially designed for handling coal, sand, gravel and cinders. It is operated by two ropes and, consequently, can be handled by practically any type of two-drum hoist.

The bucket has enclosed gearing to produce the necessary digging power. The power casing, which forms the main frame of the bucket, and from which the shells are suspended, is divided in a vertical plane through its longitudinal center-line. These two sections are bolted together to form two tight compartments, which enclose the operating gears, and a third compartment in the center for the power wheel and the deflecting sheaves for the operating ropes.

The power-wheel center is integral with the two bevel pinions which extend into the gear compartments and mesh with the operating segments. These segments are keyed to the operating shafts which are supported in bearings cast in the casings. The outer end of the operating shafts are finished square and support the rear bucket arms which are connected to the shell shafts. The cutting edges of the shells are pin connected to the side bars. The latter are suspended from lugs cast in the top part of the casing.

The shells are open at the back to prevent compression of the material when the bucket is closing. The rigid connection of the rear arms to the operating shafts and to the shell shafts insures positive alignment of the shells; and side lash is further prevented by side-bar guides attached to the shells. As the operating gears are completely enclosed by the casing, it is impossible for them to come in contact with the material being handled.

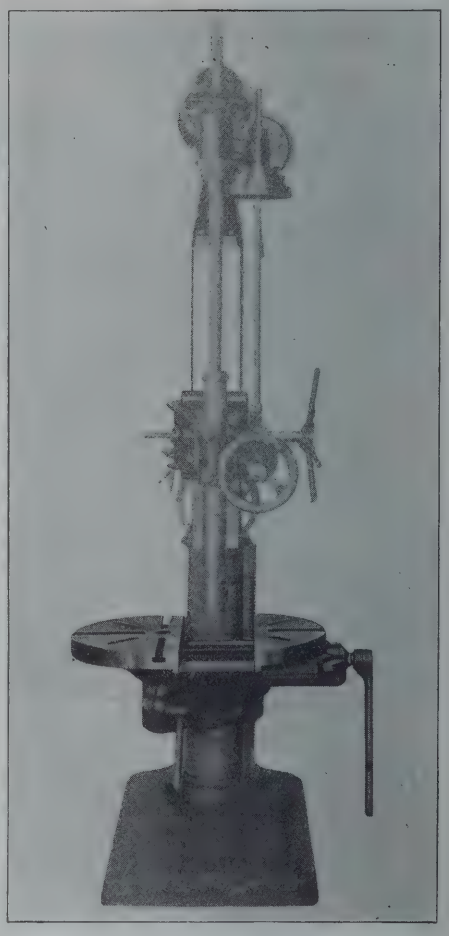
The opening of the bucket is effected by an opening rope attached to the small section of the power wheel, and wound in the opposite direction from the closing rope.



CLAM-SHELL BUCKET BUILT WITH ENCLOSED GEARING WHICH OPERATES IN OIL

Designs Platen Vise

In drilling and reaming a number of machine parts, means for clamping the work on the drill press platen must frequently be provided. This procedure involves hunting up bolts and straps to say nothing of the time consumed in locating the pieces in position for the machining operation. The device shown in the accompanying illustration recently was designed by the Sprague-Hayes Mfg. Co., Detroit, to furnish a ready means for holding work on the drill press for drilling and reaming.



THIS DRILL PRESS PLATEN IS EQUIPPED WITH JAWS FOR LOCATING THE WORK TO BE MACHINED

The device in general design resembles a milling machine vise with the difference that the top is circular and finished like a drill press platen. The back jaw is stationary while the front jaw is actuated by means of a substantial square-threaded screw. The jaws that hold the work are case hardened to protect them from undue wear and finished by grinding to insure accuracy. Special jaws for holding odd-shaped pieces can readily be substituted for the plain jaws as in ordinary milling machine practice.

As the device can be rotated on its center and swung in an arc under the drill press spindle, the work is readily centered after the method used in ordinary drill press practice. When the jaws are closed together the device forms an ordinary drill press platen and work can be clamped to it in the usual way if desired.

Exhibits Show Year's Progress

Foundry and Machine Exhibition Replete With Working Displays of New Devices Designed to Meet Labor Shortage and Reduce Costs—Foreign Equipment Exhibited — Molding-Machine Displays Complete

THAT the strain of high pressure production, felt by the manufacturers of the United States while making their unprecedented and successful attempt to meet the demands of war, did not retard to any appreciable extent their desire or ability to create new and better machine shop and foundry equipment was amply demonstrated at the fourteenth annual exhibition of the American Foundrymen's association, which opened Monday, Sept. 29 at the Philadelphia Commercial Museum. Proof that engineers have taken full advantage of the cessation of hostilities to engage in experimental work and to further develop labor-saving machines, was provided in many of the exhibits of molding machines, sand-blasting equipment, and metal and wood-working machinery.

The association was particularly fortunate this year in securing a hall in which all of the exhibits could be assembled in one room. This feature more than compensated for the slight inconvenience involved in reaching the exhibition from the hotel where the meetings were held.

One of the most noteworthy machines displayed by the manufacturers of molding equipment was a device for producing tractor transmission housings in green sand designed and patented by J. T. Stoney, foundry superintendent of the Ferro Foundry & Machine Co., Cleveland. A detailed account of the manner in which this equipment is operated appeared in the Sept. 18 issue of THE IRON TRADE REVIEW. Other new equipment included a combination split-pattern machine display by the Mumford Molding Machine Co., a jarring stripping-plate machine exhibited by the Tabor Mfg. Co., and a machine of the jar-ram type shown by the Cleveland-Osborn Mfg. Co., Cleveland.

The exhibit of Henry E. Pridmore, Chicago, included seven molding machines ranging in size from a 10 x 12-inch stand machine to a 36 x 48-inch electric jolt-stripping machine.

An unusually complete line of molding machines was displayed by the Tabor Mfg. Co., Philadelphia. Molds for a large tractor motor crank-case were made on a 9-inch jar roll-over pattern-drawing machine.

The exhibit of the Federal Foundry Supply Co., Cleveland, in addition to the machine made by the Ferro Foundry & Machine Co., previously mentioned, included portable and stationary combination jar and squeezing machines, plain squeezers, air and electrically operated vibrators, snap flasks, and an agricultural tractor driven by a 2½-horsepower engine.

The Champion Foundry & Machine

At Work Today

IN THE midst of today's upheavals, it is becoming constantly more patent that the crying need of the hour is increased production of commodities of every kind and the orderly and just distribution of those commodities so they may serve the convenience and comfort of mankind. From this imperative task the workers of the world are temporarily turning away. But one great body of men—the engineers, inventors, designers and constructors of labor-saving equipment—are bending more rigorously to their tasks than even during the war. Their efforts stand forth in refreshing contrast. This is evident from even a cursory survey of the great interallied foundry and machine exhibition in progress in Philadelphia this week. On every hand are new devices and equipment designed to lessen manual effort, speed-up production and cut costs. Who may say but that herein lies potent aid in our present distress?



TWO DAYS BEFORE THE HOUR SET FOR OPENING, THE 1919 FOUNDRY AND MACHINE EXHIBITION WAS NEARLY COMPLETE

Co., Chicago, demonstrated a 16-inch jolt roll-over machine fitted with a pattern and operated as a molding machine and a similar machine fitted with a core box and operated as a core-making machine. A new jolt-squeezer type machine in which an internal cylinder performs the jolt and a 12-inch cylinder causes the squeezing was demonstrated by the Berkshire Mfg. Co. Cleveland.

The E. J. Woodison Co., Detroit, had an extensive display of molding machines. The Mumford Molding Machine Co., Chicago, exhibited a new combination jolt split-pattern molding machine equipped with a automatic slow starting pattern-draft cylinder operated by oil and controlled by a knee valve. The Herman Pneumatic Machine Co., Pittsburgh, displayed a plain jarring machine with the table plate off of base to show the construction of the machine. A new jolt roll-over machine and a small hand roll-over machine were shown by the Grimes Molding Machine Co., Detroit. The Davenport Machine & Foundry Co., Davenport, Iowa, exhibited a combination jolt roll-over pattern-drawing machine, a 30 x 30-inch jolt stripper and a jolt squeezer.

The Arcade Mfg. Co., Freeport, Ill., exhibited a plain air operated squeezer, a combined jolt and squeezer, other molding machines of hand and air operated types, four core-making machines, and a pouring device. Various types of molding machines also were displayed and operated by the Buch Foundry Equipment Co., York, Pa.; the International Molding Machine Co., Chicago; and the United States Molding Machine Co., Cleveland.

The Foundry Appliance Co., Newark, N. J., demonstrated a cope handling device on a squeezer type molding machine. As the piston moves upward the cope is clamped against the head of the machine by flask hooks. On the down stroke of the piston, the pattern is drawn from the cope and drag. The plate is removed and the mold closed by lowering the cope on the drag. Taper snap molding flasks and automatic snap flasks were demonstrated on a power squeezer machine by the T. B. Wood's Sons Co., Chambersburg, Pa.

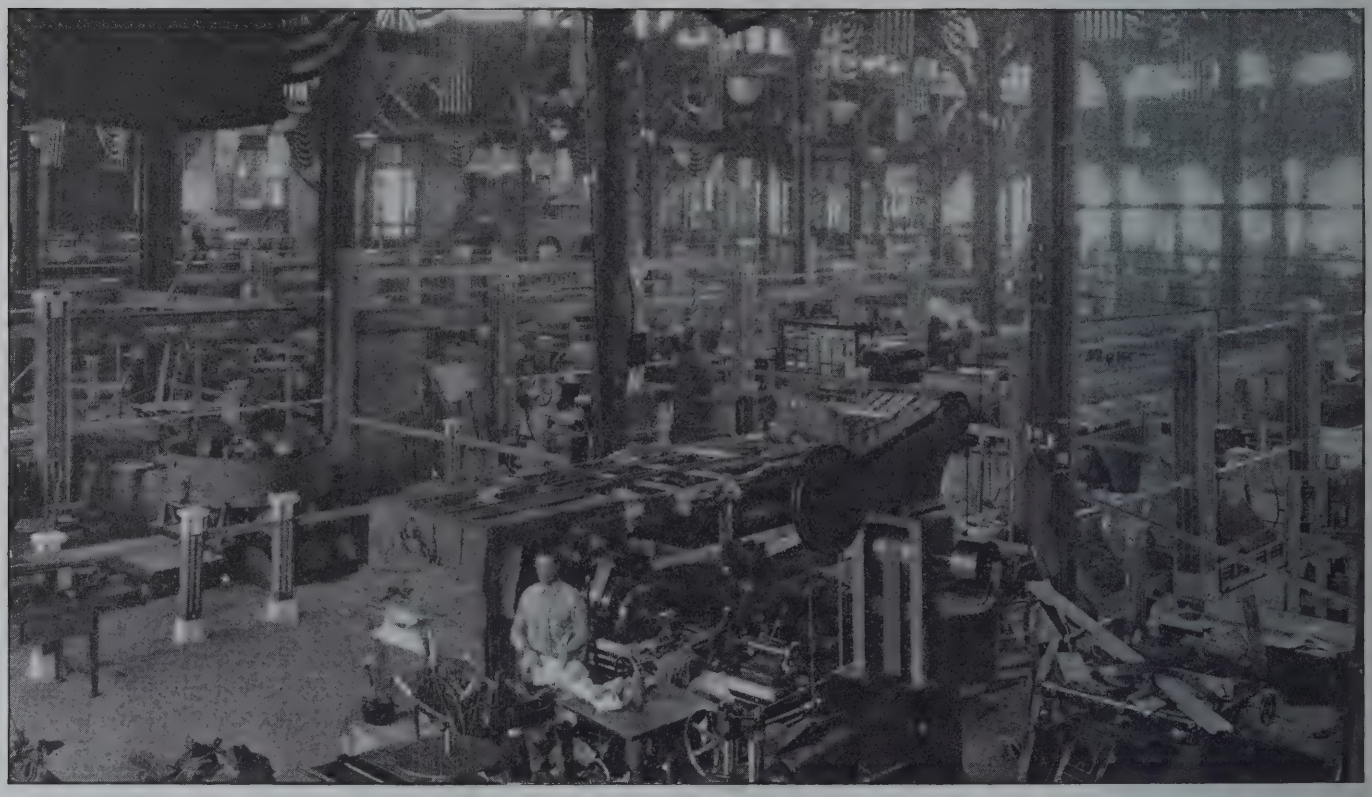
Machine Tool Exhibits Set Record

In number of tools displayed and in the diversity of work actually performed during the week, this year's exhibition of metal and woodworking machinery surpassed any previous foundry show and undoubtedly equaled any exposition of its kind ever held in this country. The effort of engineers to design equipment calculated to conserve manpower was reflected more noticeably in the display of machine tools than in the exhibits of any other branch of industry represented. The tendency to equip machines with direct or gear connected motor drive was never more strongly emphasized and the growing popularity of remote control for electric motors was apparent.

The products of seven machine tool manufacturers were displayed and demonstrated in the spacious booth of the Vandyck-Churchill Co., Philadelphia. Among the metalworking tools shown in this exhibit are those of the American Tool Works Co., Cincinnati. An 18-spindle multiple drill made by Edwin Harrington Son & Co., also was demonstrated in this booth and screw chains manufactured by the same company were displayed.

A milling machine manufactured by the Kempsmith Mfg. Co., Milwaukee, was demonstrated in the Vandyck-Churchill booth, two 8-inch stellite cutters with 1⅜-inch face working on a high carbon steel casting.

Machines representing seven different manufacturers were shown by the Monarch Machinery Co., Philadelphia. Among the tools exhibited were a heavy-duty 3-inch drill made by the Minster Machine Co., Minster, O.; a 26-inch drill press manufactured by the Weigel Machine Tool Co., Peru, Ind.; a plain milling machine built by the Rockford Milling Machine Co., Rockford, Ill.; a manufacturing miller, the product of Gooley & Edlund, Inc., Cortland, N. Y.; a 32-inch shaper made by the Cincinnati Shaper Co., Cincinnati; a 2-spindle sensitive drill manufactured by the Edlund Corp.,



THE SHOW THIS YEAR IS UNUSUALLY REPLETE WITH MACHINERY AND MACHINE-TOOL EXHIBITS DISPLAYED UNDER WORKING CONDITIONS



SOME OF THE EXHIBITS OF FOUNDRY SUPPLIES, METALS AND MACHINE TOOLS

Cortland, N. Y.; a geared-head lathe made by the Monarch Machinery Co., Sydney, O.; a 14-inch tool room lathe and a 10-inch manufacturing lathe, the products of the Rockford Tool Co., Rockford, Ill.; a 9-inch lathe made by the Dalton Machine Co., Inc., New York; and a cutter and reamer grinder, a surface grinder and a drill grinder made by the Wilmarth & Mormon Co., Grand Rapids, Mich. Machine tools made by four manufacturers comprised the exhibit of the Swind Machinery Co., Philadelphia.

Albert Herbert, Ltd., New York, and Coventry, Eng., demonstrated a British-made combination turret lathe working on 3-step cone pulley castings; a hexagon turret lathe operating on a 3-diameter bolt; a grinder working on high speed steel lathe, planer and shaper tools, finishing them from bar stock without forging; and concentric chucks.

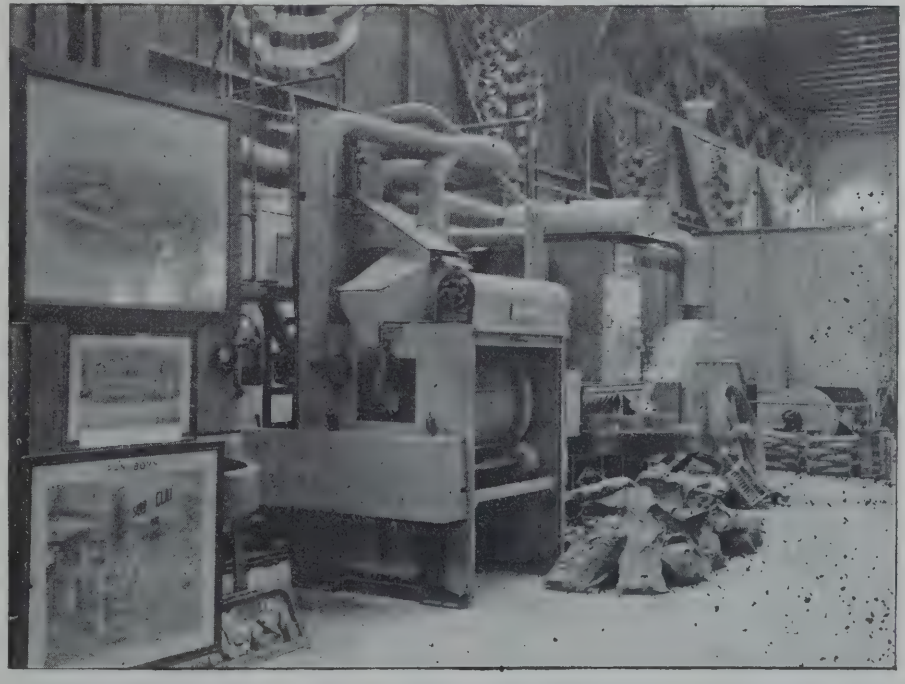
The Heald Machine Co., Worcester, Mass., exhibited two internal grinders, one of which has never been displayed before; an 8-inch rotary surface grinder; a cylinder grinder; and magnetic chucks. The Bullard Machine Tool Co., Bridgeport, Conn., showed a multiple milling machine with six heads operating on bevel gear blanks. The Cincinnati Pulley Machinery Co., Cincinnati, demonstrated sensitive drills and drills with built-in tapping attachments.

The exhibits of wood and pattern-making machinery were unusually complete. The American Wood Working Machinery Co., Rochester, N. Y., displayed a 16-inch motor driven jointer, a 36-inch band saw, and combination disk and spindle sanding machine, a motor driven 4-inch bench planer and a single surfacer. Charles H. Besley & Co., Chicago, exhibited two metal working grinders, a patternmakers combination grinder, a 30-inch ringed wheel grinder, two disk grinders and abrasive disks. The Gardner Machine Co., Beloit, Wis., and others, showed a variety of equipment.

Pointers on Plant Design

In times past any sort of structure has been deemed entirely suitable for a foundry, but the handicap of poorly designed buildings and equipment is now generally recognized. This change of viewpoint, marking as it does the passing of another phase of hit-or-miss manufacturing methods, is emphasized by the growing class of construction engineers who design buildings for exclusive foundry purposes. The Philadelphia show was featured by a number of interesting exhibits by this class of experts. Frank D. Chase, Inc., Chicago, showed a large number of photographs accompanied by descriptive matter covering foundry construction of a modern character. The Clement A. Hardy Co., Chicago, presented some exceedingly interesting photographs of foundries constructed or now being built in various parts of the country. The Austin Co., Cleveland, had a number of models, drawings and photographs accompanied by literature covering the class of service which this concern has given and offers in the special field of foundry erection. The H. M. Lane Co., Detroit, also offered examples of this class of work.

Construction problems immediately suggest a thousand details of arrangement and handling facilities, without which the most perfectly designed plant would be inefficient. Handling materials in casting plants is a specialized field and as such is recognized by a number of representative manufacturers who build to meet the needs of the times. Obviously it was impracticable to show full size cranes with craneways proportionate to modern foundry needs, but the crane and hoist manufacturers utilized novel expedients to exhibit their products



AN UNUSUALLY COMPLETE DISPLAY OF CLEANING-ROOM EQUIPMENT WAS SHOWN BY THE PANGBORN CORP.

to the best advantage. The **Shepard** Electric Crane & Hoist Co., Montour Falls, N. Y., showed a special abbreviated structure upon which was mounted a standard crane trolley operated by controllers placed on the floor nearby. The same frame served to support a cage-operated hoist with electric magnet, two standard types of floor operated hoists, and a new type of electric cargo winch. The latter consists of a case base upon which is mounted a back-geared motor with a special drum and winch head. The head is arranged so that a load may be held stationary while the boom is raised, lowered or swung around independently by motor power.

Exhibits a Full Sized Section

The Cheseapeake Iron Works, Baltimore, exhibited a section of a full sized craneway supported upon an exceptionally well built steel frame which demonstrates the character of other steel structures which this company constructs. Photographs served to set forth the variety of this latter class of work. The Whiting Foundry Equipment Co., Harvey, Ill., featured an operating model of a crane trolley in addition to a diversified list of foundry equipment which included a round steel plate tumbling barrel, a 2-ton charging car, a 2-ton worm geared crane ladle and photographs and drawings of the application of machinery which is in successful use.

The pneumatic hoist manufacturers were liberally represented. The Chicago Pneumatic Tool Co., Chicago, exhibited pneumatic geared and cylinder hoists in addition to its line of chipping and riveting hammers, drills, grinders, rammers, and a 14 x 9 x 14-inch air compressor. The Ingersoll-Rand Co., New York, had on exhibition motor hoists, grinders, rammers, and chipping and riveting hammers. The Curtis Pneumatic Machinery Co., St. Louis, had in operation an overhead pneumatic crane with an air-hoist, an electrically driven air-compressor, a bracketed jib crane and an I-beam trolley crane.

The Cleveland Pneumatic Tool Co., Cleveland, George Oldham & Sons Co., Frankford, Philadelphia, and the Keller Pneumatic Tool Co., Chicago, all had interesting displays of pneumatic tools which have come to be indispensable in the foundry. The Keller company showed an attractive novelty in a model of a large riveting hammer, mounted with cut-out sections and moving to indicate the operation of the tool.

Comfort was a minor consideration, often entirely ignored in the old-time foundry. Molders were expected to be warm only when pouring off, and daylight was admitted sparingly and mixed with the wintry blasts through haphazard windows. Times have changed. Foundry heating units are much in evidence, and manufacturers have successfully divorced light from cold by providing steel frame sashes which can withstand the rigors of foundry usage. Robert Gordon, Inc., Chicago, showed a mechanical hot-blast heater provided with a sectional case which through numerous sliding doors permitted an inspection of the interior. Skinner Brothers Mfg. Co., St. Louis, showed a heater in which a motor driven fan sucks air through an outside intake and blows it through heating coils and out into the foundry.

The Sterling Wheelbarrow Co. featured its exhibit of metal flasks and wheelbarrows by some especially large special forms of flasks with intricate bars.

The displacement of human labor was typified in the various displays of foundry hauling units. The Mercury Mfg. Co., Chicago, showed a 3-wheel and a 4-wheel unit of its storage battery type tractor and two Bateman trailers. The tractors gave practical demonstrations during the erection of the various exhibits by hauling the heavy machinery into place about the floor of the exhibition hall. The Liberty Steel Products Co., New York, had two types of gasoline-driven industrial tractors and two lift trucks on exhibition, while the Cleveland Tractor Co., Cleveland, had one of the crawl type gasoline motor units in its booth.

Producers of foundry raw materials were plentifully represented. A most attractive minature model of a blast furnace was displayed by the Thomas Iron Co., Hokendauqua, Pa. The Semet-Solvay Co., Syracuse, N. Y., with Pickands, Brown & Co., Chicago, constructed a model of Independence hall, using coke for the building material. Rogers, Brown & Co., Cincinnati, showed samples of coke, alloys, pig iron and fluor spar together with finished castings. The 12-cylinder Liberty motor which was constructed as a permanent exhibit at the Smithsonian institute, Washington, was also displayed by this company.

Manufacturers of miscellaneous foundry supplies were more in evidence at this than at any previous show. Core compounds and the work produced by their use were shown by the American Gum Products Co., New York; Corn Products Refining Co., New York; the Robeson Process Co., New York; Werner G. Smith, Co., Cleveland; the Barrett Co., Chicago; Swan & Finch, New York; American Oil & Supply Co., Newark, N. J.; the Mifflin Chemical Corp., Philadelphia; and Spencer Kellog & Sons, Inc., Buffalo.

Welding and cutting apparatus has shown great advance during the past year under stress of reconstruction demand. An oxyacetylene installation for cutting stock up to 12 inches thick and oxyhydrogen apparatus for cutting even 36 inches of metal were shown by prominent manufacturers. Electric welding apparatus also was displayed.

Wood block floor which has found favor in the past few years for castings plants was demonstrated by the Republic Creosoting Co., Indianapolis, and Jennison-Wright Co., Toledo, O.

Varied Furnace Displays

Manufacturers of furnaces displayed different kinds of melting equipment and a number of concerns which did not show products had representatives on hand to explain the design and operation of their equipment. An assortment of nonferrous melting furnaces were shown by the Monarch Engineering & Mfg. Co., Baltimore. Four types of noncrucible furnaces including a double-chamber furnace, a vertical furnace and a rotary furnace were shown besides a tilting coke-fired furnace with crucible, a tilting oil-fired furnace with crucible, three oil, gas and coke-fired core ovens, a stationary oil or gas-fired steel melting furnace and a ladle heater.

The Hausfeld Co., Harrison, O., also showed variety of furnaces, including both crucible and noncrucible types. Their exhibit included a noncrucible furnace of the tilting type, a tilting crucible furnace, a stationary crucible furnace, an aluminum melting furnace using a cast-iron melting pot, a ladle heater and other foundry equipment for nonferrous metal.

A 60-kilowatt Ajax-Wyatt electric furnace was among the exhibits of the Ajax Metal Co., Philadelphia. This furnace was not operated. This firm also had a display of yellow brass ingots which were made in the Ajax-Wyatt furnace. These ingots have depressions on each side which allow tongues to grip them firmly. A series of ingots made from different formulas and a variety of castings made from similar ingots were displayed. Among the castings were some water-back bearings and pump casings for motor-driven fire apparatus, both of which castings have thin wall sections. The Industrial Electric Furnace Co., Chicago, showed a recently developed process of preheating the charge before placing it in the electric furnace was displayed and details were fur-

nished covering the method of handling the charge before it is placed in the electric furnace.

Among the burners which attracted attention was an extra large one exhibited by the Hauck Mfg. Co., Brooklyn, N. Y. This burner, which has a nozzle 20 inches long, throws a flame 12 inches in diameter a distance of 20 feet. The length of the flame was illustrated by streamers blown by air, giving a slight idea of the size of the flame. This company also displayed burners for thawing frozen sand, coal or coke from cars or bins. These burners are new and have not been exhibited previously.

The Combustion Economy Corp., Chicago, exhibited a new design of pulverized coal feeding and burning equipment. This is provided with an air-tight rotary air gate, a variable speed direct connected gear case with speeds marked to conform to the operation of the air gate, and a powdered coal carburetor.

The Leeds & Northrup Co., and the Brown Instrument Co., both of Philadelphia, showed a number of recording and indicating pyrometers. The recently developed heatmeter using the Harrison-Foote method of compensation was shown by the Brown company. This instrument compensates for any variation in the line or thermocouple up to 15 ohms, which is ample to take care of any variation ordinarily met with.

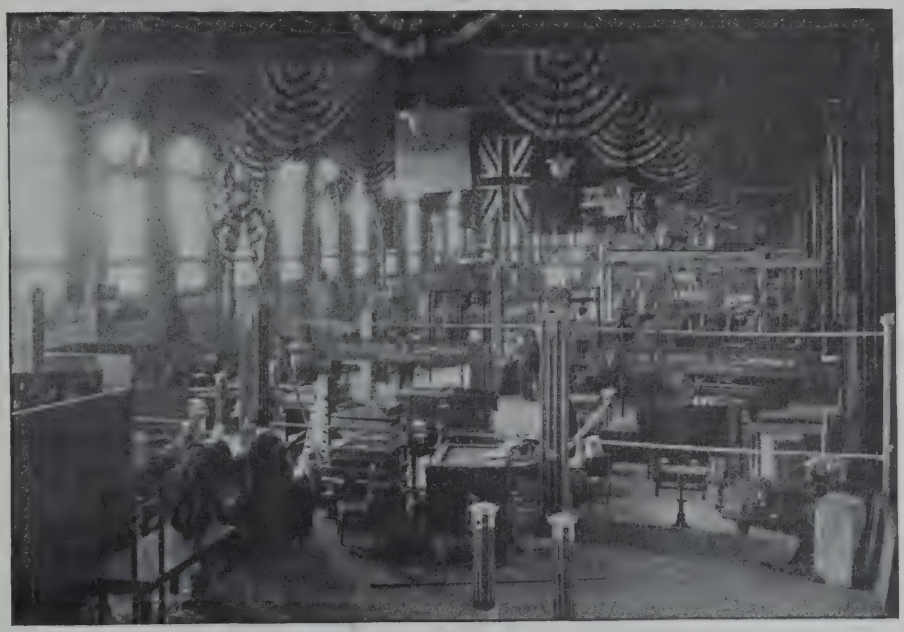
A large section of the exhibition space was taken up by the Pangborn Corp., Hagerstown, Md., with a comprehensive display of sand blast equipment. At one end was a 90-inch rotary table cabinet for cleaning large castings. With this machine the operator stands on the outside of the sand-blast room and avoids the dust while cleaning castings. A 20-inch revolving table for taking care of smaller castings was in operation. Cabinet sand-blast apparatus and an abrasive separator for cleaning sand or other abrasives were shown, together with several other devices.

The J. W. Paxson Co., Philadelphia, had an exhibit of sand-blast apparatus including three separators and dust collectors and two kinds of barrels. This company also had installed a 54-inch cupola and displayed many of the other products handled by it, including foundry facings, sands, gravels and clays. The W. W. Sly Mfg. Co., Cleveland, showed a sand-blast mill and a turntable cabinet complete with sand and dust separating system.

A late type of cloth-screen dust arrester was shown by the Mott Sand Blast Co., New York. The Macleod Co., Cincinnati, exhibited two sand-blast barrels, a sand-blast hose machine and a portable oil burner. A 32-inch diameter, revolving barrel sand-blast machine and a 66-inch diameter sand-blast table were in operation at the exhibit of the Hoevel Mfg. Corp., Jersey City, N. J.

The American Foundry Equipment Co., New York, displayed the auto sand cutter.

Wm. Sellers & Co., one of Philadelphia's oldest manufacturers, exhibited two tool grinders, a drill grinding machine and a sand mixer, all operated by direct current. This company also had a sand mixer arranged for alternating current. This arrangement gives a variable speed such as cannot usually be obtained from alternating current.



EXHIBITS OF SAWS AND MISCELLANEOUS METAL WORKING EQUIPMENT

The Link Belt Co., Chicago, displayed a silent chain drive also an operating electric hoist of 1-ton capacity. It also exhibited a conveyor belt idler and a Rapp sand revivifier.

Working models of tractor, crane and screen types of sand cutting machines built by Wadsworth & Co., Cleveland, were shown. A most complete display of sand mixing machines of the Simpson-Muller type, varying from 3 to 6 feet in diameter were exhibited by the National Engineering Co., Chicago. The 6-foot machine was operated during the show.

An electrically operated sand sifter and a gas unit for cutting iron and steel by the use of artificial or natural gas was shown by the Vibrating Machinery Co., Chicago. A motor driven sand mixer was shown by the Standard Sand & Machine Co., Cleveland.

Brass tumbling mills, power and hand sprue cutters, core ovens, both gas and coke fired and brass furnaces for both coke and coal, characterized the extensive exhibit of the S. Obermayer Co., Chicago. Cherry and oak snap flasks with iron jackets also were exhibited.

To Build Furnaces

Organized with a paid-up capital of $1,000,000, the Booth Electric Furnace Co., Chicago, recently was incorporated and has acquired the patents, assets and good will of the Booth-Hall Co., electric steel and brass melting furnace manufacturer. The scope of operations of the old company will be enlarged.

The Booth rotating furnace, designed for melting nonferrous metals has been standardized and in the future will be built in four units, 250, 500, 1000 and 2000-pound capacities. The 2-phase, 2-electrode Booth-Hall furnace for melting iron and steel, will be made in five sizes, namely, ¾-ton, 1½-ton, 3-ton, 6-ton and 12-ton. An improved type of furnace, oval in shape, has been developed.

Officers of the new corporation are: President, L. E. Myers, president of the L. E. Myers Co., Chicago; vice president, C. H. Booth, former president of the Booth-Hall Co., Chicago; secretary, W. K. Booth, former chief engineer of the Booth-Hall Co. and treasurer, L. J. Clark, of the L. E. Myers Co. In addition to these men the board of directors includes Martin J. Insull, vice president of the Middle West Utilities Co., and E. W. Lloyd, of the Commonwealth Edison Co., Chicago.

Modern Industry

Should Rule in Weighing Dissolution Suit, Says Steel Corporation

That the court's decision of the government's suit to dissolve the United States Steel Corp. be rendered under the Sherman act in the light of the facts concerning the steel industry growing out of the war and not on the condition of the industry 20 years ago, is asked in a supplemental brief filed several days ago in the United States Supreme Court by the corporation. The suit, which has lain dormant while the war was in progress as no steps were taken to bring it to an issue, now stands sixth on the court's docket and will probably be up for hearing the latter part of October. At that time a final determination of the case is expected.

In its brief the corporation points out that in 1901 it produced but 50.1 per cent of the steel output of the country and that in 1911 this figure had dropped to 45.7 per cent, showing that it does not have preponderance in sense of power to control the industry. It further deals with the fact that although the case had lain dormant during the war, the corporation expended enormous sums in enlarging its various plants, which enabled it to meet the requirements of the government during the war. It points out that when the war broke out, it pressed for a speedy determination of the government's appeal on the ground, that the government's probable steel requirements would necessitate the erection of these plant additions, and the employment of a vast amount of additional capital, which would result in great loss and embarrassment to the corporation and its stockholders if the suit was decided against it. At that time, the government successfully resisted the appeal upon the ground that it was not in the interest of the public to have the case decided during the period of the war.

The brief further asks if any one can doubt that the corporation's ability to meet the government demands during the war was due to its size and strength, regarding which the government complained of "concentrated economic power," and further inquires if this power should be ruthlessly destroyed on the mere theory that it may possibly be abused.

Vote For 10-Hour Day

Employes of the Carpenter Steel Co., Reading, Pa., on Sept. 26 voted for a 10-hour day as a substitute for the 8-hour day. Out of 1450 employes of the company entitled to vote, 1206 voted and 840 declared themselves in favor of the 10-hour day, 165 in favor of eight hours, while 85 voted both ways. The 10-hour day means extra pay, if adopted.

Electric Steel

Discussed at Meeting of Electric Furnace Association in Chicago

More than 60 of the foremost electric steel men of the United States and Canada, attended the meeting of the Electric Furnace association, held at the Congress hotel, Chicago, Sept. 22. At the meeting an interesting paper was read by H. G. Weidenthal, in which the great demand for better steel in the automotive industry and the increased demand for electric steel in that field was pointed out. Mr. Weidenthal recited the great need for greater factors of safety in the vital parts of automobiles, trucks and tractors, and showed that the electric furnace would be called upon to supply steel of the proper quality.

In response to a demand for data on electric furnace products, the association has issued a booklet, containing such information as had been gathered. This effort was commended by those who attended.

At the meeting a permanent organization was effected and the following officers elected: President, Acheson Smith; vice president, C. H. Booth; secretary, C. G. Schluederberg and treasurer, F. J. Ryan. The executive address of the association is Box 616, Niagara Falls, N. Y.

It is thought that the next meeting of the association will be held next spring in conjunction with some of the national technical societies, and a symposium on the subject of power for the electric furnace will feature the meeting. Although the recent meeting was largely devoted to electric steel it is the intention of the association to take up the subject of nonferrous metals and other materials made in the electric furnace.

Among those who attended the meeting were L. E. Howard, of the Simonds Mfg. Co.; L. M. Reed, Haynes Stellite Co.; A. C. Jones of the Electric Steel Co., Chicago, W. F. Graham, of the Spicer Mfg. Corp.; E. S. Gardner, Illinois Steel Co.; Edward T. Moore, Halcomb Steel Co.; F. W. Chapman, of the Standard Steel Castings Co.; J. M. Blake, American Manganese Steel Co.; A. Trevor Jones, American Steel Foundries; A. H. Miller, Midvale Steel & Ordnance Co., A. U. Tirbutt, Manitoba Steel Foundries, Ltd., and many others interested in the electric steel industry.

Orders Held Up

For Refractories by Blast Furnaces and Steel Works Due to Strike

Pittsburgh, Sept. 30.—Makers of refractories are getting numerous requests from the blast furnace and steel interests to hold up shipments for the present, due to the strike. This in no way reflects a lack of demand, which still is reported to be good, but as much common labor is involved in handling the brick at the plants and this class of help, more than any other, is out on strike, shipments at this time would mean the tieing up of many cars and possibly heavy demurrage charges. This is the time of year when both steel and iron producers build up reserve supplies of refractories and a number of demands are coming out for shipment when the labor situation clears up.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 41.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent	$ 40.00 base
76 per cent	100.00 base

Car shortages have been a factor in various producing interests for several weeks.

Decreased shipments have had no particular effect upon the operation of the brick plants, which are running between 60 and 70 per cent of capacity, or about the same rate as during the past month or six weeks. No special change has taken place in prices, but the market can be described as firm as not a few manufacturers are finding difficulty in getting back more than a new dollar for an old one on current bases. Labor is reported to be scarce and some companies have been obliged to increase wages to keep their organizations intact.

Agitators Sow Vicious Doctrines

Strike Talks by Organizers Reflect Radical Beliefs of Their Leaders — Foreign-born Workmen are Praised for Stopping Production and Forcing Americans Out of Work — Foster is Extoled

BY A. J. HAIN

WHEN the most radical leaders in the American Federation of Labor disregarded the advice of President Wilson and Samuel Gompers that the strike in the iron and steel industry be postponed until after the industrial conference they revealed a state of affairs in their own organization more menacing to the peace and welfare of the country than the conditions in the industry regarding which they complained.

If employers were to concede the truth of all the charges made by those radicals the people of the United States still would have more cause to fear the radicals than the employers. Questions pertaining to the open shop, the 8-hour day and rates of wages become of secondary importance when men of revolutionary tendencies ignore sane counsel and demonstrate that by appealing to the prejudices and passions of the foreign-born workmen they can force their will on a far superior number of Americans and interrupt a vital industry.

If the average American citizen could get in close contact with the campaign waged by the radicals; if he could hear the organizers, who take their cue from John Fitzpatrick and William Z. Foster, he would see the issue presented by the strike in its proper perspective. The average American citizen considers the strike as merely a controversy between the employers and employes in the iron and steel industry, something which does not concern him directly, if at all. But if he could attend the innumerable organization meetings and listen to organizers expound their doctrines, without moderation as on the witness stand before the senate investigation committee, he would realize that it is an issue of Americanism. If he could hear the little Fitzpatricks and Fosters tell thousands of applauding foreign-born common laborers that they deserve wealth, luxury and authority because they closed the mills while the American workmen did not have the courage to act he would know the deeper significance of it all. He would say that right or wrong, regardless of the merits of the case as stated by Samuel Gompers, they deserve to lose the strike. They deserve to lose it not only because of their precipitate action in paralyzing a great industry primarily to wrest power from the more conservative element in their own organization, but because they are inciting men against orderly form of government.

Studies The Strikers

RADICAL doctrines in their worst form are being preached by the agitators to the foreign workmen who constitute overwhelmingly the body of strikers in the present attack upon the steel industry. The ignorant, half-Americanized or unamericanized are being incited constantly to the pursuit of principles and the adoption of methods which are subersive of American institutions. To ascertain exactly what kind of vicious propaganda and deception the strike leaders are employing to keep the men in line, THE IRON TRADE REVIEW *had Mr. Hain of its regular staff spend several days in close contact with the workers in the Mahoning valley and in the Cleveland district. What Mr. Hain was able to develop and tells in the accompanying article, portrays accurately the dangerous character of the present strike and the evil, unscrupulous means used by the agitators to inflame the workmen. The fact that many of these rabid statements were made in meetings which were open to the public is suggestive of the violent and revolutionary utterances which it is reasonable to expect are made freely at the closed meetings.—Editor.*

"Don't Use Violence, But—"

Organizers at work in the centers of the industry stop short of the methods of the syndicalists as described by Foster only in this respect: They do not openly advocate the use of violence. They suggest that at some future time it may be necessary to do so, but they realize that the time is not opportune. Intimidation is a common practice; the wives and children of workers have been threatened and they have been warned that the men would be killed if they persisted in working; grocers, butchers and other tradesmen have been told that they would be killed, or that their stores would be burned if they sold provisions or gave credit to the workers, but in public meetings the organizers carefully refrain from advocating the use of force. An organizer will exaggerate conditions; he will play on the feelings of his audience, arousing hatred for employers and public officers and employes, and then as if to make his alibi secure he will tell the men not to carry firearms or resort to acts of violence.

The governor of Pennsylvania is the "Czar," the police are cossacks "who are riding into our homes and murdering innocent women and babes," because "they are ordered to do so by Kaiser Gary." If the mills are not opened when the strikers choose to return to work then the strikers must seize them, because they belong to the strikers; and if the government does not consent to operate them, then the laborers must operate them for their own account! The speeches of the organizers of the American Federation of Labor working under the direction of the committee in charge of the strike is tainted with revolutionary propaganda. Syndicalism has compromised on the question of force to win the support of the "peaceful radicals," but it is biding its day.

The agitators forced the stoppage of an industry in which they could claim but 20 per cent of the employes as their recruits. If they win the strike and gain complete control of the American federation it may be but a matter of a few months before they force suspension of other great industries. Resistance then may be fraught with serious consequences. It is that possibility which concerns every American.

* * *

GOMPERS testifying before the senate investigation committee said: "The disposition toward radicalism is so great now that democracy is sneered at by certain groups who say it is only a pretext which the employing classes hold up to cheat workers, and the workers can only secure justice by revolution."

While Gompers told the committee



THIS PICKET FOUND LIFE SO DULL HE TOOK ALONG HIS COCK-A-DOODLE-DO TO KEEP HIM COMPANY. WAGES HAVE BEEN SO GOOD, STEVE THOUGHT HE COULD AFFORD TO STRIKE FOR A WHILE

Foster has changed his views since writing "Syndicalism," the statements made by organizers indicate that they are in sympathy with the teachings in "Syndicalism," and Gompers' testimony shows that he knows it.

"There is not a squarer man in this country than that man Foster," said J. E. McCadden, an organizer for the federation, in addressing 1000 foreign-born laborers in Holy Name church, a stone's throw from the Ohio plant of the Carnegie Steel Co., Youngstown.

"Foster doesn't deny writing a book, but he's been all through that game and he says we're on the right track today. He has slung all the weight of his influence to you. He is a bright, honorable, upright man, and he doesn't leave a point unturned for you.

"They have been calling you a bunch of ignorant foreigners, but who makes the machines, the watches, the aeroplanes? You fellows," said McCadden. "If you fellows are a bunch of ignorant foreigners how are we going to class some of the employers? Some of them are not entitled to citizenship. They'll say, 'This Hunky, over here,' or 'that wop, over there,' only to get you to fight among yourselves. But, thank God, you know what you want, and how you're going to get it.

"I have been in labor organizations for 22 years, and it's the pride of my life the way you fellows have been sticking together and conducting yourselves. I would gladly die for you men! You are the most gentlemanly men of all the men that ever went out on a strike. I never in all my life saw anything like it and the history of the world never saw a squarer bunch than came out. The entire labor movement is back of you. The papers of the United States came out the other day and said Sam Gompers, president of the United States—I mean United federation—was against calling this strike. That was done only to discourage you.

"While I'm here I want to say a few kind words for Governor Cox. He's with the labor movement. That's why we haven't anything to contend with in Ohio as they have in Pennsylvania."

McCadden paused, gazed intently at his audience, and poised himself for dramatic effect. "In Pennsylvania," he said, "they are clubbing men, women and children—those infernal cossacks! They are driving right up on their steps and shooting right through ther houses! By order of the Steel corporation! Believe me, it's pretty near time you belonged to a labor organization.

"The corporations have their organizations to fix prices. How can they tell us we can't organize to fix the price at which we will sell our work? We are denied that right by Kaiser Gary! It's time you woke up and realized what you can get for your work. You are entitled to better homes, better clothing for yourselves and your children. The corporations don't believe in education if they can hold us down!

McCadden went on to explain the present demands of organized labor:

"Collective bargaining. That is a God-given right to organize and deal with the pirates of the earth. We want back pay for the time we have been out, or laid off. Mr. Boss gets his pay for the time he's sleeping. Let us get ours. Let us get ours so we won't have to work seven days a week to get it. We never want to be compelled to work 24 hours. We want sufficient wages to guarantee the American standard of living. Now what's the American standard of living? Wine and whisky and all the telephones they want—to order their steaks—that's their idea. But we want enough so we can feed our families. You hear a lot about a fair day's pay for a fair day's work, but we realize we are getting old; it won't be long before we can't work, and we want a little something extra to lay up for the rainy day. That's our idea of the standard of living! All we want! Clothes, food, theaters and automobile rides occasionally, for the laboring man, too! Not to sacrifice our children by letting the corporation tell us what we've got to work for.

"Then there's the double rate for Saturdays and Sundays and overtime. You want to get enough in eight hours so you won't have to work longer. Let 'em put the idle men to work if they need more men. If we've got to work overtime let us penalize them; if it costs more they'll put the other fellows to work. We've got to do it to beat these parasites of the earth!

"You men should be allowed to see your children in the daylight. Some of you haven't seen your children until this strike. My God! Is there anything more inhuman! Bringing up families without seeing them. I say this damnable corporation has got to stop this sort of thing!

"Gentlemen, you are going to lengthen your lives by joining this union, by getting better clothes, better food, and sanitary conditions throughout the country. It's absolutely the fairest clause that was ever put into an agreement.

"I'm no fire eater, but, by God, I'll tell you, you men are going to live!" he exclaimed. "Men who couldn't make a wheelbarrow are telling you they are going to close the mills. You men closed the mills and you will open the mills. If they don't open up the mills, the mills over in Europe will be only too glad to fill the orders and then you fellows can go back there for a little while and make good money. They are losing millions every day you stay out; you can't lose if you stick together and do just as you have been doing; they've got to give you what you want!

"They say the mills are going to stay down. That is the foolishest damn argument ever made. We must have iron, and if they don't open the mills the government will. Let us take the mills, and operate them; why should we make millions for the other fellows?

"All we've got for the boys who are bleaching over there is political democracy, not industrial democracy!

"You foreigners, as they call you, are putting the Americans to shame.

You're entitled to most of the benefits that may come of this strike. The Americans had to stop because you made 'em stop—now they're coming in. The so-called foreigners are entitled to all of the gains of this movement. You are the real leaders!"

In East Youngstown recently federal officers raided a hall, the headquarters of a group of syndicalists, who were working among the men of the Youngstown Sheet & Tube Co. That group advocated the taking up of arms to take the mills by force. The officers sought to catch "red handed" several leaders whose identity has not been revealed. They arrested 120 men, all but two of whom subsequently were released, but they did not find the men for whom they were looking. In East Youngstown there is a strong suspicion that the leaders whom they understood were to attend the meeting are included among the leaders of the strike movement.

* * *

AT A meeting of several hundred laborers in Cleveland, J. J. Keane, an organizer, told of an argument he had with a plant official.

"'Do you mean to tell me those common laborers are worth as much as the machinists?' he asked me," said Keane.

"'I certainly do,' I replied. 'Haven't they got stomachs? Haven't they got wives and children? Don't they deserve to eat the same as others?' And I told him they were going to eat a little cold turkey, too, I did.

"All we are demanding, men, is a living wage. You know you can't buy a suit of clothes that is fit to wear these days unless you pay $50. I went into a store the other day to buy an overcoat and the dealer showed me one for $100. Just think! One hundred dollars for an overcoat! Fifty dollars for a suit of clothes for you. Where are you going to get the money? How are you going to do it making $60, $70 a month?

"We have got to fight this out together. It's our chance, if we stick together. Sign up! Get your friends to sign up! If we win it means we are going to have some of those things the bosses are enjoying, but if we lose you might as well tie a shot around your neck and go to hell.

"The reason the men didn't go out in Lorain is because they are scared. They are working 10 and 12 hours a day down there, and yet Judge Gary is saying they are working because they are satisfied. We are going to show up that bird. He isn't sleeping well these nights. He has all the luxuries, more than he needs, while the poor devils who are working for him can't make a decent living.

"Mayor is With Us"

"Experience shows that the less hours you work the more you will get paid for what you do. But you have got to organize to do it. Look at the other fellows; the street car men, for instance; the railroad men; they've got enough sense to organize and stick together, and that's the reason they get what they want. Why, we have all the power on our side, if we only organize to use it. We've got to get together and talk our business over, like men.

"I heard of a case where a policeman standing outside of a plant saw some men. The policeman said: 'If you want to go in, go on in.' They looked like strike breakers. We went to the city hall and told them about that; they told us the next time we hear of a case like that to take the policeman's number and they would attend to him. So when you see a policeman telling those guys to go in, just take his number. We will get those kind of birds.

"I never knew of any city before where the mayor said he would run the strike breakers out of town. That shows he is with us. It shows we've got 'em going. We are winning the strike."

The *Plain Dealer*, the leading newspaper in the Cleveland district reported the meeting at which Keane made his statements as follows:

J. J. Keane, American Federation of Labor organizer, and John Luthringer, business agent of the machinists' union, addressed a meeting yesterday in Stoke's hall, St. Clair avenue, near St. Clair street, in which both cautioned the strikers to preserve order. "Stay completely away from the factories," they urged.

Luthringer, an organizer for the federation said at the meeting:

"The employers are up to their old forms of treachery. We had a lot of talk about propaganda during the war but it can't compare to the insidious propaganda of the employers. It shows that if you lose this fight you are going down to the bottomless pit.

"The war taught us the greater benefits of democracy. We sent our boys over there to die for humanity, and we were given to understand that



PAYING OFF WORKMEN AT THE YOUNGSTOWN SHEET & TUBE CO.'S PLANT. NO SIGN OF POVERTY OR STARVATION AMONG THESE MEN. MANY OWN HOMES, AUTOMOBILES AND HAVE BANK ACCOUNTS

this world would be a better place for us to live in; we were told that every man would get more of the good things of life, but you know you haven't. President Wilson gave you the right of collective bargaining, and don't you let anybody take it away from you. The way to bargain that way is to let your union bargain for you, by signing up."

The chairman of the meeting, a young man who spoke with a foreign accent, explained the situation to a group of men after the meeting.

"The mayor is with us," he said. "The mayor is seeing that no strike breakers are let in. The other day they took 60 off a train from Detroit and shot them back. Don't you fellows carry firearms—but if you can stop 'em without breaking their heads, why do so. We'll stand back of you."

He impressed on the men the importance of getting others to join the union.

"I'll tell you how this works," he said. "We had only 200 men at the Lakeside plant (of the Otis Steel Co.) in our union. They had 1300 men there, but we made 'em shut down. That's what we can do."

* * *

WHAT caused the strike? The professional labor agitator saw an opportunity to capitalize an impression created in the minds of foreign-born workmen during the war that employers are making fabulous profits, and that they are entitled to a greater share of it, in accordance with the principles of democracy.

Common laborers, for whom the agitators are shedding tears, are well dressed, well fed and well housed. A great number of the younger men now idling away their time near the mills and in the streets wear silk shirts. There is no evidence of starvation or poverty, but many indications that so far as physical comforts are concerned the laborers have every reason to be contented. Nowhere in the Mahoning valley or elsewhere are there indications that the men are oppressed, overworked, or as the agitators say "in the depths of despair."

The strike is considered by the men in the nature of a diversion, a holiday, a gamble against the loss of a few days' wages that their leaders will succeed in getting more money for them. It is a strike without the impetus and force that come from the determination of a great body of men to wipe out an injustice, it is a strike for the luxuries of life, based on wrong premises and fomented by agitators who have nothing in common with those whom they claim to represent, except as they might be able to use them to gratify their own personal ambitions.

Storekeepers in the strike centers will tell you that all classes of men who work in the mills have more money, and spend it more lavishly, regardless of high costs, than they ever did before. Bankers in those communities say many laborers have on deposit with them from $2000 to $5000. A storekeeper in East Youngstown, catering almost solely to the foreign laboring class, said that before the war he had silk shirts for sale at $2.50, but the laborers could not afford them. Today the shirts cost from $5 to $10, and the laborers are wearing them. They are wearing better clothes, and their wives and children are wearing better clothes than they ever did, and the laborers are paying more for them.

Workers' Conception of 8-Hour Day

"What of the demand of the 8-hour day?" I asked the employment manager of one of the largest independent corporations. He replied:

"I have had thousands of foreigners apply to me for jobs, and I can say that the great majority of them, as one of the conditions for going to work, have insisted that they be given an opportunity to work extra time, even on Sundays. They consider a 10-hour job better than an 8-hour one, and if they are given a 12-hour job they consider that better still. The reason is they want the opportunity to get time and one-half for overtime. So many of them have wanted this opportunity that there was no other thought about it until the labor agitators appeared.

"The agitators told the men they should receive the money they now earn in two hours for eight hours. If they win, and wages are raised, they will be right back demanding they be given a job so that they can work 10 or 12 hours to make more money. It is a time-serving proposition with them; if we had a 6-hour day, six days a week, and if wages were established on a fair basis, they would want to put in more time. Education and advancement along lines of American workmen do not figure in their calculations. The less work and the more time, the better they are satisfied.

"Uneducated, untrained and, often, unwilling workers have the notion that because they can wield a pick and shovel, or lift a heavy weight they are entitled to the fat of the land, fine homes and automobiles. The agitators have told them that they, the producers, are entitled to what they produce, and that it is the policy of this country to give it to them. There are thousands of them so firm in that belief that they would shoulder guns tomorrow, to fight it out, if their leaders told them, and the number is growing and will continue to grow until the government curbs the men who are preaching industrial unrest.

"We have laws opposed to restraint of trade, but no laws to prevent a few agitators and their followers from depriving thousands of others of work. We think we have solved the problem of wars and have made it impossible for them to recur, but we shy at the problem of prohibiting strikes, and we jeopardize the whole country for fear of treading on the toes of a few agitators."

Public sentiment in the steel producing centers was opposed to the strike. Newspapers, except in a few instances, have not publicly taken sides in the controversy as a matter of policy, but the newspapermen investigating and reporting the strike say the men did not have sufficient cause to tie up the mills. Go anywhere in the strike districts, question professional men, tradesmen, bankers, lawyers, clergymen and you will find a unaniminity of opinion—the men were not justified.

S. T. Hammersmark, in charge of the strike in the Youngstown district, went into a bank where he has funds on deposit. The president of the bank called him into his private office and asked him how the strike was going.

"Fine, fine," said Hammersmark. "The heads of the companies here are treating us fair. It is the first time in history when strikers have received so much consideration from the companies against whom they have struck. They are gentlemen; I will have to say that for them."

The writer asked scores of strikers why they quit work.

"To make Mr. Gary talk," said one.

"Union say 'go out' I go out," said another.

"One hundred fifty millionaire last year," declared another, meaning that he understood 150 millionaires were "made" in the United States. "Me want some."

Not one of all those questioned said he was striking for an 8-hour day.

In the meantime, the idle men are losing $14,700,000 a week in wages. The country is sustaining a tremendous economic loss, and if the "prestige" of President Wilson is upheld the men will go back to work before their claims are even considered.

"Prestige" is suggested by the fact that when Mr. Fitzgerald was asked by a member of the senate committee why the workers went out he said it was to uphold the prestige of the President. The President, he said, had asked Judge Gary to grant the union leaders a conference, so when Judge Gary refused there was nothing for the union to do but uphold the President's prestige.

The agitators are said to have seized on the point that Judge Gary would not confer with them, and to have made the most of it in talking with foreigners.

"I believe they are just as well satisfied now that Gary did not receive them," said a plant official.

Probe Bares Iniquity of Strike

Gompers and Fitzpatrick Before Senate Investigation Committee Display Ignorance of Actual Conditions in Steel Industry—President of the Federation Yields to the Radicals—Congressmen Demand Action Against Strike Agitators

WASHINGTON, Sept. 30.—Hearings begun last Wednesday morning before the senate committee on education and labor on the resolution of Senator Kenyon, chairman of the committee, to investigate the steel strike, have developed two especially significant facts.

First, Samuel Gompers, president of the American Federation of Labor, in his testimony on Friday morning committed himself to the side of the radical element of the federation, giving unqualified approval to William Z. Foster, secretary-treasurer of the steelworkers' organization committee.

Second, the failure of either Gompers or John Fitzpatrick, chairman of the committee, the first witness, to make a case against the employers.

Both witnesses showed an almost total absence of knowledge of working conditions and wages in the iron and steel industry.

It developed during the hearing that the sentiment of congress, and perhaps that of most of official Washington, is overwhelmingly against the strikers.

Agitators Condemned in Congress

The strike agitators have been condemned in both the house and senate. Representative John G. Cooper, Youngstown, O., a member of the Brotherhood of Locomotive Engineers, bitterly assailed Foster. He warned labor not to heed the radicals, who, he said, are trying to destroy the American Federation and stir up a country-wide revolution.

Senator Thomas, of Colorado, introduced a resolution, referred to the committee on judiciary declaring the closed shop unamerican and proposing to make labor combinations unlawful. Senator Pomerene, Ohio, severely criticized Foster and said that unless he and his kind are removed from power, organized labor will be ruined.

Representative Kahn, California, conferred with Attorney General Palmer and urged federal prosecution of Foster on the ground that he is inciting revolution in the United States by his writings. It was disclosed that the attorney general has secret service agents investigating the activities of the strikers.

Reports received in Washington indicate a favorable attitude taken by broad-minded men throughout the country on E. H. Gary's refusal to arbitrate the principle of the open shop.

Labor leaders declare Gompers has capitulated to the radicals as a matter of expediency to save himself from being dethroned as the head of organized labor. It is believed that the federation must soon come out openly in favor of the most radical views or oust Foster and his followers. Gompers is well aware of this fact, and it is said that he is preparing to jump to that faction which will predominate. Yet others claim Gompers, by reason of his approval of Foster is nearing the end of his connection with the federation, which they insist will not be destroyed or turned over to the radicals.

A few days before Gompers appeared before the senate committee on education and labor, he said to the senate committee on interstate commerce: "The strike is now on, much to my regret, because I wanted to see it delayed until after the President's industrial conference." The statement does not accord with one he made before the committee on education and labor. He told the latter that he could not escape the conclusion that the calling of the strike for Sept. 22 was justified. These statements are interpreted as an attempt by Gompers to "straddle."

Ignorant of Conditions

Fitzpatrick assailed the United States Steel Corp., employers generally, the Pennsylvania state constabulary, and mill town officials. Neither he nor Gompers were able to give specific facts leading up to the strike. They said they had no personal knowledge of conditions of workmen in the steel industry. Fitzpatrick proved amazingly ignorant of facts regarding hours of work, wages, and living conditions of steel mill employes, but frequently resorted to theatricals to impress the senators.

Gompers, shrewder than Fitzpatrick, made a clearer statement, but was unable to answer satisfactorily important questions put to him, and failed to produce the impression he evidently hoped to do.

Interest now centers in the testimony to be presented to the committee Wednesday by Judge Gary. The committee probably will go to Pittsburgh and perhaps take the testimony of workers, managers of steel mills and officials of mill towns.

Senator Kenyon announced that he desires to close the hearing at the earliest practicable date to determine whether any federal action is warranted.

Foster "Reformed" Praised by Gompers

WASHINGTON, Sept. 30.—During the course of his testimony last Friday before the senate committee on education and labor at the steel strike hearing, Samuel Gompers, president of the American Federation of Labor, presented only one illuminating, outstanding fact worthy of serious consideration. That fact is that he gave unstinted approval of William Z. Foster, the author of "Syndicalism." All the other statements of Mr. Gompers, accompanied by cultivated gestures, an autocratic cocksureness, and lordly demeanor, were relatively unimportant. His actual knowledge of the steel strike was negligible. All the information he could offer admittedly was based on hearsay.

The hearing of Mr. Gompers was nearing an end, when Senator Kenyon, chairman of the committee, asked him pointedly about Foster's writings, and the charge that radicals are trying to get control of the American Federation of Labor.

"I have heard the saying, 'O, that my enemy might write a book!'" began Mr. Gompers. "When it was reported Foster, the I. W. W. delegate, wanted Mr. Duncan, vice president of the American Federation of Labor, excluded from the labor conference in Zurich I classed Foster with Heywood.

"It was a year or so later, about 10 years ago, that Foster wrote his pamphlet on syndicalism. About one year after that pamphlet was written I was at a meeting of the Chicago Federation of Labor and was called upon to make an address. One delegate arose and expressed thorough approval of my address. I did not know who the delegate was. Much to my amazement after the meeting I found out that the delegate was Mr. Foster. I addressed a letter to him, expressing appreciation of his change of mind and telling him that by pursuing such a constructive policy as he had outlined in his approval of my address he could be of service to the American Federation of Labor and I encouraged him.

"I am willing to build a golden bridge for my enemy to pass over, and to help an erring brother. In view of what Mr. Foster has done to improve working conditions in the Chicago stockyards, and in view of what he is doing now, he is entitled to something better than to be held up to the contumely of the public."

"So there is no doubt that Mr. Foster has changed his views?" asked Senator Kenyon.

"I would not serve with him if he had not changed his views," replied Mr. Gompers.

But, despite the attempt of Gompers to give Foster a clean bill of health, the idea apparently persists among members of the committee that Foster still is a man of radical ideas. If he does not express them, it is contended, it is only because he thinks he lacks power to support them.

Gompers attempted to give the issues of the steel strike, what led up to it, and what followed. The issues, he said, are the right of employes to be heard through their representatives and to have something to say about their hours, wages and working conditions. These rights, he asserted, have been denied for the past 25 years with all the power, influence and determination of the corporations. More indirectly, he said, they were denied by illegal and unwarrantably brutal means.

He endeavored to show that the corporations through collusion with steamship lines, including the German-American, North Lloyd's and the Hamburg company, brought men from southern Europe, the Balkan states, etc., and said that if trouble now arises the responsibility lies with the corporations.

Mr. Gompers said employes work 365 days a year and 12 hours a day, operating in shifts of two weeks, and during the transition from night to day work work 24 hours straight. Recently the Steel corporation ordered into effect the 8-hour day, but, he said, his understanding was that "there was more in the order than in its ob-observance."

"You have said that the Steel corporation tries to operate the open shop," said Senator Phipps. "Will you tell the committee the attitude of the American Federation of Labor about the employment of nonunion men in shops which have been organized?"

"The American Federation of Labor has nothing to do with it," said Gompers. "That is up to the national trade unions, whose policy is to try to organize the workers 100 per cent."

Senator Phipps asked Gompers if he could give instances where superintendents of plants refused to meet workmen to hear grievances. Gompers said he could state "instances without number," but instead of doing this he merely had his secretary read a resolution adopted at the convention of the federation in St. Paul in June of 1918, demanding "the rights of citizenship" to confer with employers over grievances.

He told of attempts to secure a conference for the committee with Chairman E. H. Gary, of the United States Steel Corp., and the failure of President Wilson to bring about the conference, after the committee asked the President to help it.

Writings of Woodrow Wilson in 1907 and 1909 bitterly condemning labor unions were read by Senator Phipps, who asked Gompers if he thought the President had changed his views since then. Gompers told what Mr. Wilson as President had done for organized labor, and declared the President has changed his views.

"Why was not the strike postponed, as requested by the President, until after the industrial conference?" asked Senator Kenyon.

Gompers said he wrote to Fitzpatrick urging that the strike be postponed as requested by the President, a copy of the letter being given to all 24 presidents of the international unions. A few days later he received a letter from Fitzpatrick saying it would be impossible to hold the men, although some of the presidents of the union favored deferring the strike.

"Do you think their action was justified?" inquired Senator Kenyon.

"I cannot escape the conclusion that the favoring of the strike as originally planned was justified," replied Gompers.

Senator Sterling mentioned the high wages paid by steel companies to skilled workers. Gompers sneered.

"It is a favorite pastime of a few interests to pay big wages," he said. "They are like the man dangling the carrots on a pole before the horse to make him run faster. These men are really 'sweater' men. And they have to pay their helpers out of their own wages."

Senator Sterling then proceeded to show the average day wage paid to employes of the Steel corporation is $6.23. Gompers remarked in sarcastic tone about the misleading character of averages. He did not think much of the pension or bonus plan of the corporation, and its welfare work, he said, could be best explained by using the terms of the seamen, who, he said, call it "hell-fare" work.

Fitzpatrick Ignorant of Conditions

WASHINGTON, Sept. 29.—Groping and dealing in generalities, admitting that he does not know anything about the practical operations of the steel industry and never was inside a steel mill, John Fitzpatrick, chairman of the steel workers' organization committee, made a poor witness before the senate committee on education and labor last Thursday when it began its investigation of the steel strike.

Fitzpatrick was especially weak in his testimony when he attempted to reply to specific and searching questions by Senator Phipps, of Colorado, former treasurer of the Carnegie Steel Co., whose practical knowledge of the steel business discomfitted him. During his testimony Fitzpatrick said he was willing to submit the union's demands to arbitration.

Attorney W. B. Rubin, counsel for the steel workers' committee, sat at the left of Fitzpatrick, often aiding him when difficulties arose in answering questions.

Fitzpatrick read telegrams and told of efforts of the committee to have a personal conference with Chairman

E. H. Gary, of the United States Steel Corp. Then he began a tirade against the corporation and its alleged vicious treatment of employes. He told the committee union men considered all mills were Steel corporation mills, no matter what name they had over the door.

He declared the Steel corporation 18 or 20 years ago (it was incorporated in 1901) appropriated "from $2,000,000 to $20,000,000" to destroy unionism.

Replying to a question by Senator Jones, New Mexico, Fitzpatrick said the organization of the men was begun upon the initiative of the American Federation of Labor and not at the request of the men themselves. He told of the alleged spread of unionism among the men, and of opposition, which, it was asserted, was met at Homestead, Duquesne, Clairton, Pa., and other points in western Pennsylvania, "where conditions worse than the padrone system prevail."

By May, 1919, Fitzpatrick said, something like 80,000 men in the steel industry had been organized in the Calumet and Pittsburgh districts. Fitzpatrick threw some light on the conference between the committee and President Wilson when he said it was its purpose to lay the "horrible conditions" in the steel industry before the President and to ask the latter to try to arrange the conference with Judge Gary. The President, according to Fitzpatrick, promised to try to arrange the conference and did make the attempt, but failed.

"How many men voted to strike?" inquired Senator Wolcott.

"I do not know the number who voted," said Fitzpatrick, "as each union sent in a report instructing us of the percentage voting for the strike."

Fitzpatrick said that 98 per cent of the members of the union voted for the strike and that 50,000 men had joined the union between July and the time of voting, "making the total membership of organized workers in the steel industry at that time 150,000."

Senator Kenyon, Iowa, chairman of the committee, asked Fitzpatrick if there would have been a strike if Judge Gary would have granted a conference.

"No, sir," replied Fitzpatrick.

"If Mr. Gary were now to consent to a conference, would that end the strike?"

"I don't think so," replied Fitzpatrick. "The 350,000 men on strike will not return to the mills until they get decent consideration or until congress gives us justice."

The senator wanted to know why the strike could not wait, as suggested by President Wilson, and Fitzpatrick referred to the letter from the committee to President Wilson, in which it was said the men could not be restrained, etc.

Fitzpatrick volunteered the statement that had they waited "the 24 presidents of the international unions would have been shot to pieces by the steel company gunmen, and mill town officials." He added that he never went to western Pennsylvania without first kissing his wife and children goodbye, because he never expected to see them again.

Senator Kenyon asked Fitzpatrick if all the strikers are affiliated with the federation.

"Yes, sir," he replied.

"Can you produce records showing the actual number of men who voted for the strike?"

"I shall try to produce those records," said Fitzpatrick. Rubin quickly said that that could not be done "unless the steel workers' committee knew the subsidiaries of the Steel corporation."

Replying to a question by Senator Wolcott, Delaware, Fitzpatrick said all of the 150,000 union men had the right to vote and that a vote also was taken among nonunion men, "all of whom except two voted for the strike." Fitzpatrick scoffed at the idea that Americans did not want to strike.

"But Representative Cooper has made the very serious charge that the strike was declared by aliens," said Senator Kenyon. Fitzpatrick replied that he did not state the proportion of Americans and aliens who voted to strike, but said there were only a few who could not speak English.

After stating alleged sacrifices of steel workmen and their families during the war for the United States, Fitzpatrick said:

"If what is going on in Pennsylvania continues it will not be confined to the steel industry. Nobody can tell what the outcome will be. In Homestead the cossacks rode in a house, knocked a pot of food from a stove on a woman with a child in her arms and scalded her."

"What was your former occupation?" asked Senator Phipps.

"I am a horseshoer by trade," said Fitzpatrick.

"Have you had any actual experience in steel mills or foundries?"

"None. I have no knowledge of the steel business except that I get from the steel workers."

Asked as to wages paid in the steel industry, Fitzpatrick told Senator Phipps he could not say what they are. Mills, he said, operate on a 12-hour basis."

"Don't you know," asked Senator Phipps, "that Steel corporation mills for the past two years have operated on the 8-hour basis, except where continuous operations are necessary?"

Fitzpatrick evaded the question and admitted he could not say what percentage of employes work on a 12-hour basis. Phipps asked if he knew some skilled workers get $20, $40 and $60 a day. Fitzpatrick said those wages were only "pittances" when consideration is given to the "awful conditions" under which they work. Senator Phipps also challenged the statement of Fitzpatrick that the men worked seven days a week, saying they worked six days, except in some departments, such as blast furnaces, and that as a matter of fact the 10-hour day, six-days-a-week plan is generally followed.

Foster an I. W. W. Says Senator Pomerene

Washington, Sept. 30.—"God help labor when it gets into the clutches of men of that type!" exclaimed Senator Pomerene in the senate last Friday, in referring to William Z. Foster, secretary-treasurer of the steelworkers' organization committee..

Senator Pomerene read from a letter published in *Solidarity*, the official organ of the I. W. W., on Nov. 4, 1911, in which Foster urged the I. W. W. to "work within the American Federation of Labor to make it a revolutionary organization." The letter was commented on in an article appearing in *The Christian Science Monitor,* which said Foster at that time was a candidate for editor of another I. W. W. publication, *The Industrial Worker*, published at Seattle, Wash. The letter of Foster said in part:

"I am satisfied from my observation that the only way for the I. W. W. to have the workers adopt and practice the principles of revolutionary unionism—which I take is its mission—is to give up the attempt to create a new labor movement, turn itself into a propaganda league, get into the organized labor movement, and by building up better fighting machines within the old unions than those possessed by our reactionary enemies, revolutionize these unions, even as our French syndicalist fellow workers have so successfully done this."

This letter was signed, "Yours for revolution, William Z. Foster."

"And now this man, with that record, which he himself wrote in 1911, is parading himself before the public as one of the friends of labor!" declared Senator Pomerene.

The senator then read from the pamphlet which was issued by Earl C. Ford and William Z. Foster from

(*Concluded on page* 920)

Labor Gets Most of Mill Income

Study of Reports of Four Important Steel Companies Reveals Profits Equivalent to Less Than $2 Per Employe Per Day in 1918 — Under $1 in June Quarter — Men Misled by Uneconomic Teachings — General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

CONTENTIONS of loose-tongued prophets of discontent that labor is not receiving its fair division of the earnings of industry are shown to be utterly without basis of fact, at least insofar as the steel industry is concerned, by the results of a study made by THE IRON TRADE REVIEW covering the reports of four large representative iron and steel companies.

This survey lays bare the fallacy of the theory that companies are wont to gobble up in profits from 80 to 90 per cent of the value created by labor. Instead of profits being vastly greater than wages, they are shown to be invariably smaller and in some instances amounting to but a fraction of the share that goes to compensate labor.

As indicated by the accompanying tables the companies included in the study were the United States Steel Corp., the Republic Iron & Steel Co., the Bethlehem Steel Corp., and the Lackawanna Steel Co.

Had the net profits of these companies for 1918 been pro-rated among their respective employes each man on the payroll of the Steel corporation would have received a daily additional income of $1.48; Republic's employes would have received $1.69 each; Lackawanna's $2.21, and Bethlehem's $0.54.

Had the same process been applied to the profits of the June quarter of 1919 employes of the Steel corporation would have benefited to the extent of but 84 cents daily; Republic to the extent of 45 cents, while Lackawanna shows a deficit for the period equal to 25 cents for each employe.

The study further shows that instead of increasing since 1913, the proportion of net profits per man per day to the average daily wage per man actually has receded. In 1913 the net profits per day per employe for the Steel corporation were 39 per cent of the average daily wage; in 1918, the war period, they were 27 per cent; and for the June quarter, 13 per cent.

In 1913 the net profits of the Republic company expressed in terms per employe per day were 30 per cent of the average daily wage; in 1918 they were 32 per cent and in the June quarter they were 9 per cent. Bethlehem shows a similar record with net profits of 38 per cent of the average daily wage in 1913 against 9 per cent in 1918. No record of Lackawanna for 1913 is available.

The discrepancy is shown even greater when total wages are compared with the sums diverted in dividends to preferred and common stockholders. The corporation's employes received $452,663,524 in wages during 1918 while its stockholders were given but $96,382,020. Republic's stockholders drew $3,381,460 while labor got $23,747,260 from the earnings. Dividends of the Lackawanna company amounted to $2,983,287 as compared with $20,503,737 devoted to labor. The most amazing record in this respect was made by the Bethlehem company with $167,118,484 for labor's compensation and $9,386,160 for the compensation of stockholders.

The increase in wages since 1913 for all of the companies and particularly for the Steel corporation and Bethlehem have been far greater than the advance in dividends. For instance the annual payroll of the Steel corporation since 1913 to 1918 increased 113 per cent while dividends increased 92 per cent. The Bethlehem company discloses a remarkable increase in wages, over the period, of more than 1100 per cent while dividends advanced but 350 per cent.

The facts as brought out merely serve to emphasize the utter preposterousness of the arguments of radicals and false economic teachers whose aim is to discredit the wages system in the eyes of labor. Labor has been led into the error of confusing gross earnings and net profits. The agitators have pointed to the huge figures representing gross and their followers unschooled in the essentials of sound business finance have taken only this total into consideration, giving no heed to the tremendous legitimate charges that must be made against the gross before the total income of a business is sifted down to the basis of net profits. The tax factor alone is a tremendous burden on business. The Steel corporation in 1918 paid $274,277,834 in excess profits tax to the government, a sum exceeding the dividends, but less than the fund for wages.

With invidious comparison and fiery oratory agitators have elaborated upon the vague fabulous earnings of steel companies and the comparatively modest income of the individual workman and the result, in the case of the ignorant or unthinking, has been discontent. In a recent address Charles Piez, former director general of the

How Earnings and Wages Compared in 1913

	Total number of employes	Total wages	Net profit available for dividends	Total dividends	Average daily wage	Net profit per employe per man
U. S. Steel Corp.....	228,906	$207,206,176	$82,004,683	$50,634,802	$2.92	$1.14
Republic Iron & Steel Co.	12,633	9,999,263	3,101,300	1,750,000	2.53	.78
Bethlehem Steel Co....	15,052	13,366,399	5,122,702	2,273,470	2.83	1.08

How Earnings and Wages Compared in 1918

	Total number of employes	Total wages	Net profit available for dividends	Total dividends	Average daily wage	Net profit per employe per day	1919 June quarter net per man per day
U. S. Steel Corp....	268,710	$452,663,524	$125,317,377	$96,382,020	$5.33	$1.48	$0.84
Republic Iron & Steel	14,688	23,747,260	7,791,933	3,381,460	5.17	1.69	.45
Bethlehem Steel Co..	93,964	167,118,484	15,930,399	9,386,160	5.68	.54	**
Lackawanna Steel Co.	12,015	20,503,737	8,348,354	2,983,287	5.45	2.21	*.25

* Loss.
** No quarterly report.

Emergency Fleet corporation declared that the idea that labor is not receiving a just share of profits underlies the general unrest. He asserts that numerous sane-minded, intelligent though misguided American workmen cling to this view, many of them believing that their employers are earning 350 per cent or more of the wages. Men in this state of mind are more susceptible, than others, to bolshevist poison inciting them to assume control of industries and expropriate the owners.

They see beckoning visions of great wealth that would accrue to them under "the new order" and to these deluded dupes the cold fact that equal division among them of the total fund now going to capital, providing the efficiency of industry could be maintained, would add only little more than one dollar a day to each individual's income, would come as a rude shock. But the efficiency of industry could not be maintained; production would drop off enormously, and while money wages might increase there would be a disastrous decrease in the supply of comforts and necessities of life.

Intelligent socialists realize that production is the great need and that to hold up the glittering prospect of riches to labor if the capitalists' fund were appropriated is a vicious and misleading falsehood. Yet it is only by this means that the masses could ever be moved to embark upon the insane experiments of radicalism. It is important that the masses be enlightened as to the facts for their own good.

American Ship '19 Output Breaks Record

The American Shipbuilding Co. produced the greatest volume of ship tonnage in its history during the year ended June 30, 1919, and gross earnings were $20,857,057 as compared with $16,206,662 in 1918, yet net earnings after allowing for charges and $7,434,181 for taxes were only $3,784,434 against $6,626,265 in the preceding year. General expenses in 1919 increased to $6,545,895 from the $1,931,641 for 1918.

During the year the company paid 7 per cent on preferred and 23¾ per cent on common stock. The balance sheet shows an expansion of assets and of liabilities from $60,230,769 to $152,584,437, construction work in progress being the chief factor in the increase. This item grew from $16,790,045 in 1918 to $100,431,229 in 1919. Cash grew from $10,300,476 to $14,416,960 in 1919, while United States securities held increased from $4,989,710 to $9,221,545. Inventories decreased from $4,814,984 to $3,803,163 in 1919.

According to President M. E. Farr the total cargo tonnage completed and delivered in 1919 was more than two and one-half times that of 1918. During the year 109 ocean cargo ships of 422,800 gross tons carrying capacity were completed and delivered. On June 30 the company had yet to deliver 63 ships to the United States Shipping Board Emergency Fleet Corp. The company sold the Scott Steamship Co. stock amounting to $550,000 at par. The comparative income account follows:

	1919	1918
Gross earnings	$20,875,057	$16,206,662
Other income	11,218,615	860,529
Totals	$32,093,672	$17,067,191
General expenses	6,545,895	1,931,641
Depreciation	945,931	693,847
Repairs	2,949,511	1,723,453
Taxes	7,434,181	5,944,164
Transferred to surplus	3,784,434	6,626,265
Dividends	2,358,000	
	$ 1,426,434	
Surplus July 1, 1918	9,947,829	
Net credit	482,724	
Total	$10,430,553	
Surplus June 30, 1919	11,856,987	

Purchase Terms Given

Details of the acquisition of the Spencer Wire Co., Worcester and Spencer, Mass., by the Clinton-Wright Wire Co., just made public show that the purchaser obtained the Spencer branch plant outright and the Worcester plant on an installment plan of payment under lease. The latter is to be paid for in 24 semiannual installments of $100,000 each, a total of $2,400,000. The property was appraised at $2,700,000.

In addition to this the purchaser will pay the Spencer Wire Co. an annual rental of $142,375, making the total annual payment $342,375. The total received for the Worcester plant when the final cash payment is made will be $4,108,500. What was paid for the Spencer branch is not made public, though it was appraised at $620,000.

National Acme Gross Falls

Gross sales of the National Acme Co., Cleveland, for the eight months ending Aug. 31 were $7,677,856 as compared with $10,039,082 for the same period the previous year. Profits exclusive of excess profits and capital stock taxes were $2,097,103 as compared with $3,785,822. Although these figures show a decrease for the first eight months of this year as compared with 1918 it is possible that with the reduction of taxes, net earnings for the year will be as large as a year ago.

Production Cut

In Coal Tar Products by Strike—Supplies Are Allotted

New York, Sept. 29.—The steel strike has retarded the movement of benzol, toluol and solvent naphtha. Some sellers claim that production has been reduced to 25 per cent of normal, and these interests generally are using the utmost discretion in allotting tonnage. This condition, however, is expected to be only temporary. An improvement already is in evidence, and in some quarters normal operations are anticipated within a fortnight.

Quotations remain very firm at last week's levels. Pure benzol is quoted at 24 to 29 cents and 90 per cent at 24 to 28 cents. Toluol is holding at 25 to 30 cents and solvent naphtha at 22 to 27 cents. Naphthalin continues in heavy demand with virtually all sellers booked five to six weeks ahead. The dye manufacturers are possibly the largest buyers at this time, covering on large quantities of naphthalin flakes. Prices, however, are holding unchanged at 6½ to 7½ cents for naphthalin in flakes and 8½ to 9½ cents for naphthalin in balls.

Demand for sulphate of ammonia is still confined principally to exporters. The Japanese are said to be displaying quite a little interest at this time. However, no large tonnages are being bought, owing in a measure to the scarcity of spot material. No change is noted in quotations, contract ammonia holding at $3.25 to $3.40 and spot ammonia at $3.40 to $3.65. These prices are on a basis of f.o.b. producers' plants.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Tuluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

Obituaries

COL. HENRY A. MARTING, aged 69, pioneer iron manufacturer and philanthropist, of Ironton, O., died Sept. 27, following an illness of several months. Colonel Marting suffered for many years, an operation for bladder trouble becoming necessary in the fall of 1916. This gave him temporary relief; but he was compelled to give up active business a year ago. At that time he retired as general manager of the Marting Iron & Steel Co. He was succeeded by a nephew, E. O. Marting, in the active management of the business, although he still retained the presidency and acted as chairman of the board.

Colonel Marting's first venture of consequence on his own account in the iron business, which he had learned in his youth was the Marting Iron & Steel Co., which he organized in 1899 at Ironton, with two blast furnaces to manufacture bessemer, foundry, malleable and basic pig iron. In July, 1912, Col. Marting effected a merger of a number of furnace properties in the Hanging Rock district, by which his company absorbed the Ironton Iron Co., Ironton, and the Lawrence Iron Co., Culbertson, O. This acquisition gave the company a total of four furnaces. To the development of these properties he gave his active efforts up to the time of his enforced retirement, due to ill health, two years ago.

Colonel Marting was known as Ironton's "grand old man" for his many civic activities and his pride in his native city. A new up-to-date hotel, the Marting, completed a few months prior to his death, was one of his many achievements in the public interest in Ironton. Too ill to attend the formal dedication services, he was presented at this time a loving cup by a committee of citizens.

George L. Follansbee, formerly treasurer of the Follansbee Bros. Co., Pittsburgh, died Sept. 20, at Hendersonville, N. C., where he had been since March, 1918, on account of ill health. Before becoming identified with the Follansbee Bros. Co., Mr. Follansbee was in the printing business and also was Pittsburgh manager of the American Type Founders Co.

Harry Bonnell, aged 64, long identified with coal and iron interests in the Mahoning valley district, died Sept. 20, at Cambridge Springs, Pa. Mr. Bonnell was born in England and came to this country as a boy. He was identified with the Mahoning Valley Iron Co., Youngstown, O., in its office for many years and when the Republic Iron & Steel Co. took it over,



COL. H. A. MARTING

he became affiliated with the latter company. He retired several years ago.

Calls Foster an I. W. W.

(*Concluded from page* 917)

1000 South Paulina street, Chicago, wherein they advocated "direct action," and sabotage.

"Senators will please note," Senator Pomerene said, "that William Z. Foster, in his position as organizer of the steel men, seems to be following out the program so clearly set forth in his letter which I read. He is an I. W. W., as appears from the reading of his letter.

"With the feeling of unrest prevailing as it is today, for men of the type of Foster, who has no respect either for the law of God or the law of man, to be placed at the head of a labor organization, or a movement in the interest of labor, shocks one's reason. All that men of that kind can do or will do is to ruin the cause of labor."

Foster was also condemned by Representative Cooper, Youngstown, O., a member of the Brotherhood of Locomotive Engineers and a strong supporter of organized labor, whose remarks were loudly applauded. Foster was classed by Mr. Cooper with agitators who are attempting to push themselves to positions of prominence in the American Federation of Labor.

"Many of these men," he asserted, "have not done an honest day's work in their lives and if reports are true they are stirring up a class hatred which will widen the gap between employer and employe instead of bringing them closer together."

Kahn Demands Palmer Prosecute Foster

Washington, Sept. 30.—In a conference with Attorney General Palmer last Wednesday, Representative Julius Kahn, California, chairman of the house committee on military affairs, urged federal prosecution of William Z. Foster on the grounds that he is inciting revolution in the United States. This was while senators and representatives were denouncing Foster as an enemy of the government.

Mr. Kahn said he was assured the department of justice has complete records of Foster's activities in the past and that his work in the steel strike is under observation. He declined to say whether the attorney general contemplated any federal action against Foster.

The demand for prosecution, Representative Kahn said, was based on Foster's pamphlet of "Syndicalism," a copy of which Mr. Kahn placed before the attorney general.

"Mr. Foster's writings clearly show that he advocates murder, the destruction of property and a general strike, all for the purpose of enforcing his views on the country," Mr. Kahn said. "There is little doubt but that he favors the establishment of a soviet government in the United States, and advocates strike after strike until the workers have practically confiscated the properties where they are employed

"In my mind, Mr. Foster's radical writings are responsible for the recent killings in the steel district. I suggested to Mr. Palmer that Foster should be charged with being 'an accessory before the fact.' Mr. Palmer replied if such were the case it would be a matter for the state to prosecute and not the federal government."



Fig. 1—The ground upon which the blast furnace of the Weirton Steel Co. is located adjoins the Chester branch of the Pennsylvania railroad near the main line between Pittsburgh and Steubenville, O. The Ohio river forms the north boundary of the plant, the general yard level being 88 feet above the river

Wierton Steel Builds Modern Furnace

WEST VIRGINIA'S fifth blast furnace, the first to be erected outside of the Wheeling-Benwood district, recently was put in operation at Weirton by the Weirton Steel Co. Ground was broken July 22, 1918, and in 364 days or July 21, 1919, the furnace was lighted and the blast put on. The output at present is being marketed but when the company's new steel plant, which will include seven open-hearth furnaces and a 40-inch blooming mill, is completed, the product of the furnace will be used by the company.

The furnace was designed by Freyn, Brassert & Co., Chicago, in conjunction with the engineering department of the Weirton Steel Co. and was erected by J. J. Mohr & Son, Chicago. The stack, which is rated at 600 tons capacity, is 22½ x 92 feet. Ten cast-iron columns support the furnace proper. Hot blast is supplied through ten tuyeres which are so situated in the bosh that a tuyere is centered between every two columns. This arrangement affords plenty of freedom to the furnacemen when charging tuyeres, coolers or blowpipes and presents a neat appearance. The furnace at present is being blown with eight 12 x 6-inch and two 15 x 5-inch tuyeres, one of the latter size tuyeres being placed over the iron notch for the purpose of maintaining a long hole. The other 15 x 5-inch tuyere is placed 180 degrees from the iron notch in order to equalize the blast penetration of the same size tuyere in the front of the furnace.

All tuyeres and bosh plates are supplied with water from a manifold which encircles the furnace at a point about 2 feet above the bustle pipe. This manifold is supplied with water through two feed pipes each of which is equipped with an Elliott-type basket strainer. All valves for controlling the amount of water fed to the tuyeres and bosh plates are screwed into the manifold at the side opposite the furnace and are handy for the watertender to operate. The water after passing through the tuyeres and bosh plates is discharged into a cast-iron trough which also encircles the furnace just



FIG. 2—CINDER IS TRANSFERRED FROM THE GRANULATING PIT TO THE VARIOUS HOPPER CARS BY A CLAM-SHELL BUCKET SUSPENDED FROM A MONORAIL CRANE. THE LATTER IS ALSO USED FOR CONVEYING MATERIAL SUCH AS COKE DUST, CLAY, SAND, ETC., FROM OUTSIDE STORAGE BINS TO THE CAST-HOUSE FLOOR

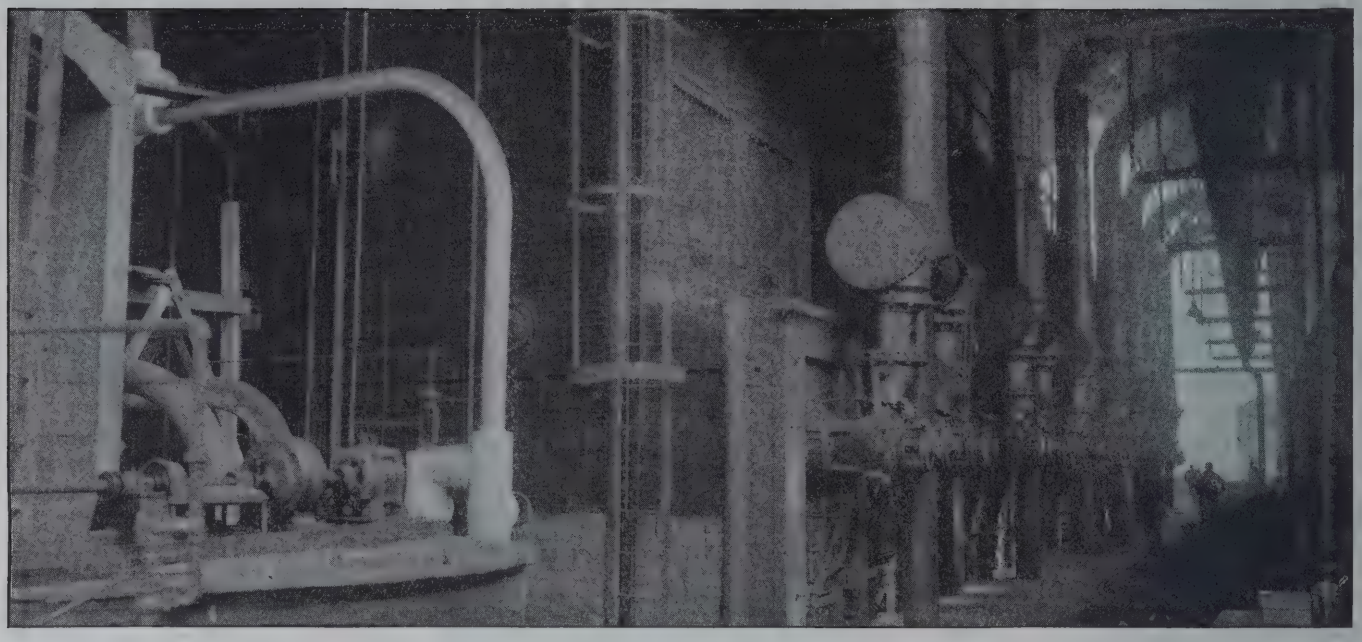


FIG. 3—4800 BOILER HORSEPOWER IS PROVIDED BY ONE COAL-FIRED AND SEVEN GAS-FIRED, THREE-PASS BOILERS WHICH ARE BUILT FOR 231 POUNDS PRESSURE AND 125 DEGREES SUPERHEAT

above the manifold. On all manifold valves and on all pipes discharging into the trough are attached perforated steel plates which indicate the number of the tuyeres, the coolers and the bosh plates respectively. By means of this arrangement there is no excuse for the watertender turning the wrong valve when it is necessary to shut off the water from any particular tuyere, cooler or bosh plate. A trough is provided around the furnace shell at the extreme top of the bosh so that if it becomes necessary to install sprays around the shell should a hot spot develop, the discharge water will be taken care of properly without dripping down on the furnace floor.

A Killeen-type skimmer separates the slag from the iron during the cast, the iron flowing into 75-ton ladles placed at the end of the cast house and the slag into a granulating pit. Two ladles are provided. These rest on standards with the pouring lips facing each other. The ladles are tilted separately by means of a 55-ton traveling crane, the metal flowing into a trough which discharges into the individual molds of a pig machine. The usual splashing of metal during the pouring process is absent at this plant owing to the fact that a distance of about 24 inches is maintained between the receiving trough and the pouring lip on the ladle. The pig machine is of the Uhling two-strand type and was built by the Pittsburgh Coal Washer Co., Pittsburgh.

The slag is granulated in a concrete pit which is built inside the cinder-yard runway. Provision, however, has been made for flushing the slag into ladles whenever it becomes necessary. The slag is transferred from the granulating pit to railroad hopper cars by means of a grab bucket suspended from a monorail crane. The loading equipment was built by the Pawling & Harnischfeger Co., Milwaukee. Adjoining the cin-

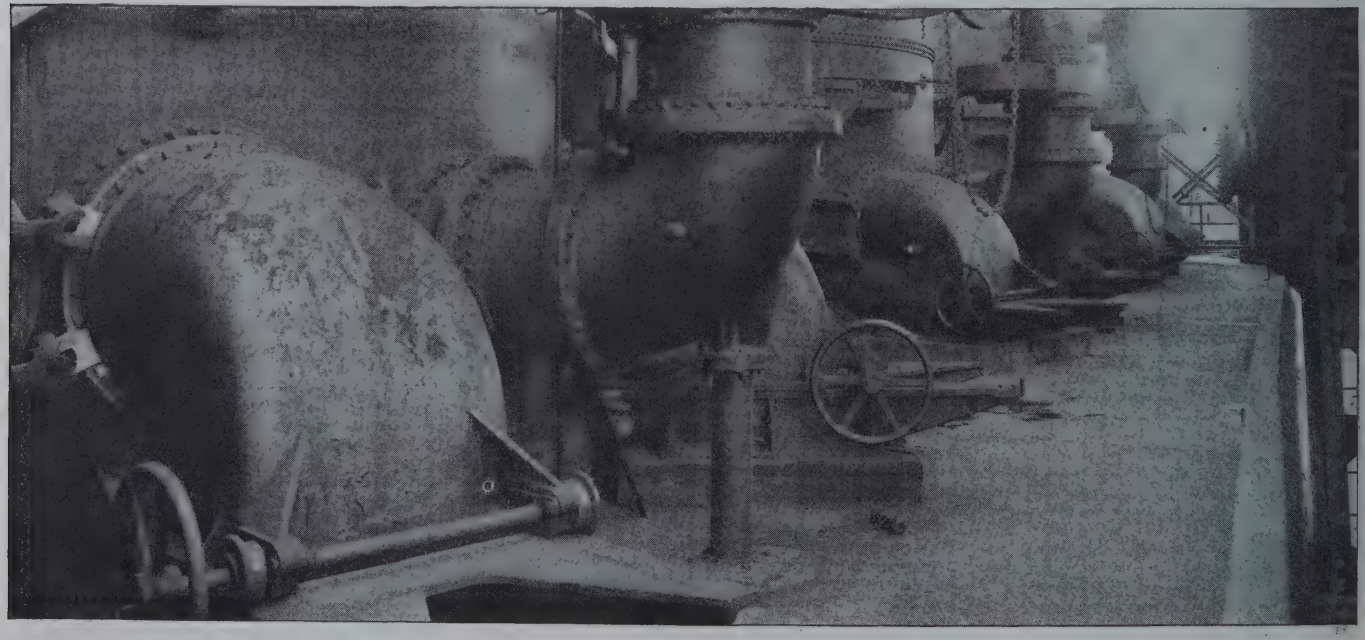


FIG. 4—EACH STOVE IS EQUIPPED WITH TWO CHIMNEY VALVES WHICH CONNECT WITH AN UNDERGROUND FLUE LEADING TO A 9½ x 225-FOOT CONCRETE CHIMNEY

der-yard runway is a yard equipped with several bins for storing sand, clay, coke dust, etc., for furnace use. These materials are transferred to the furnace floor by means of the cinder-yard crane which is switched onto a monorail built over the storage bins and extending into the cast house.

After the iron has been cast from the furnace the iron notch is plugged with clay by means of a Brosius-type steam gun, the operation of which is controlled by a single workman stationed to one side. The operator by manipulating four steam valves raises the splasher plate, swings the clay gun into the iron notch, brings the dogs down on the yokes of the clay gun and forces the gun load of clay into the hole. After additional clay is forced into the iron notch, the furnace foreman by means of electric signaling system notifies the blowing engineer to deliver the normal quantity of blast. The blowing engineer acknowledges this order by pressing a button which causes an electric horn, installed at the furnace, to blow. A telephone system is being installed between the engine room and the furnace for use in case the electric-signal system should fail at any time. The furnace may be rodded, that is, the height of the stock may be determined, either from the stockhouse or the furnace floor.

Handling of Raw Materials

At the northeastern end of the plant, the stove foundation, trestle and gas mains have been built so that whenever conditions warrant, additional furnaces can be built without disturbing the operation of the present one. Ore, coke and limestone are brought up over the trestle, which supports three railroad tracks. Coke and limestone are dumped directly into bins while the ore either is dumped directly into the various bins or is stocked in piles near the trestle. The stocking is done by means of two yard cranes each of which are equipped with a 40 cubic-foot grab bucket. The cranes were built by the Brown Hoisting Machinery Co., Cleveland. They are also used for charging ore from the stock piles into the bins directly or loading a 50-ton, electrically-operated, transfer car which distributes the ore to the respective bins.

Sixteen bins are provided. They are all built of concrete with the exception of the coke bin which is built of heavy boiler plates securely riveted together. Ten bins are set aside for storing ore, four for limestone, one for scrap and one for coke. The ore bins are lined with wood, the limestone bins with cast-iron plates and the scrap bin with steel rails. Ore and limestone are transferred from the bins to the skips by means of an electrically-driven scale car equipped with a dial recorder. Two cars are provided, one being set aside as a spare. They were built by the Atlas Car & Mfg. Co., Cleveland. Each is of 100 cubic-foot capacity.

The coke bin which is built over the skip pit, is provided with two chutes, one for each skip. The slide is discharged over chutes into railroad hopper cars for steel-plant or furnace use. The coke-breeze elevating and storing system was built by the De Pere Mfg. Co., De Pere, Wis.

Stock is elevated to the top of the furnace in skip cars which are operated by means of a hoisting engine built by the Lidgerwood Mfg. Co., New York. The drums, around which the skip cables wind, are connected through reduction gears to a single 200-horsepower Westinghouse motor. The skip-control equipment

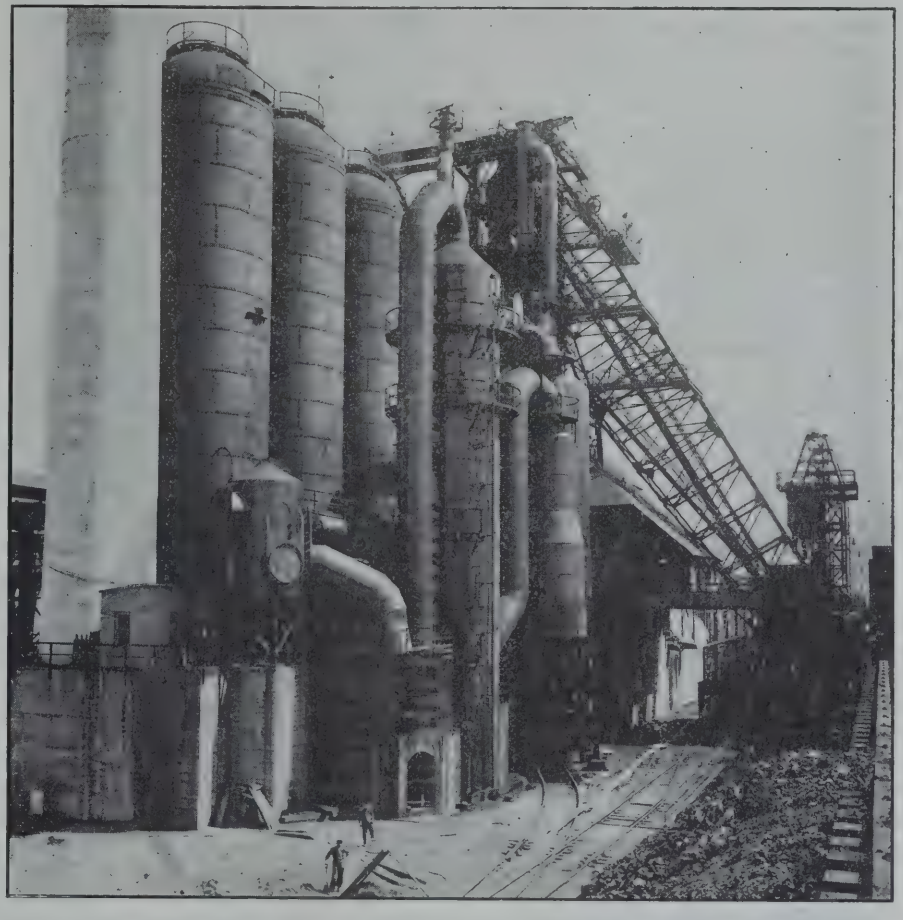


FIG. 5—VIEW FROM THE TRESTLE SHOWING THE GAS-CLEANING SYSTEM; SELF-SUPPORTING, CANTILEVER-TYPE, DOUBLE-TRACK SKIP BRIDGE; AND AUTOMATIC COKE-BREEZE SKIP STRUCTURE AND OVERHEAD HOPPERS

of each chute is arranged with four cascade-type screens, each having a series of 1¼-inch slots placed in a staggard position. The coke-bin doors are operated by means of compressed air. When coke is being charged into the skip, the breeze passing through the screen falls into a hopper underneath. This hopper discharges into a skip which elevates and discharges the breeze into a comman receiving hopper near the top of the trestle. The discharge door of the hopper underneath the coke-bin chutes is closed automatically by the skip when it begins its upward travel and is opened automatically when the skip returns for its load. The breeze from the common hopper was built by the Cutler-Hammer Mfg. Co., Milwaukee. The skip engine is housed in a building directly under the skip bridge. The furnace top is of the stationary type. The double-bell system is used for dropping the charge into the furnace. Both bells are kept closed by means of counterweights located in the skip-engine house and are opened by means of compressed air taken from the cold-blast main. If it is desired to open the bells while the blast is off the furnace, compressed air from another source cuts in automatically.

Outrigger beams have been built on top the furnace and are used for dismantling the top prior to relining the furnace. The gas passes out of

the furnace through four offtake pipes arranged 90 degrees apart. These offtake pipes combine into four uptake pipes, two of which are surmounted by Baer-type safety valves for the purpose of reducing the amount of stock thrown out of the furnace during a slip. Near the top of the offtake pipes are individual downcomer pipes, each two of which converge into one pipe.

The gas enters a secondary dust catcher tangentially where it is subjected to a whirling motion. This action relieves the gas of considerable more dust. After this stage of the cleaning process, part of the gas is passed through a large main to the boilers where it is used for generating steam. The remaining gas is passed into a Brassert-type washer where practically all of the dust is eliminated. It is then passed into a drier which extracts considerable moisture and entrained water. The gas mains connecting the dust catcher, whirler, gas washer and drier are equipped with goggle valves for shutting off the gas when necessary and with safety platforms near all elevated steam and water valves.

Three, 2-pass, side-combustion stoves serve the furnace. The checkers in each stove are 3½ inches square and together with the combustion chamber brick offer 95,000 square feet of heating surface. Each stove is 22 x 100 feet and is equipped with a Birkholtz-Terbeck gas burner and a Mathesius-type hot-blast valve. A 4-inch pipe is tapped into the head of the stove gas main near the furnace, and, by an arrangement of valves, is used either as a washout line or as an outlet for gas which is to be used for drying newly-lined ladles. The products of combustion leave the stove through two doors, pass through a tunnel to a 225-foot concrete chimney and are exhausted into the air. The snort valve and all stove blow-off valves are connected to the chimney. By means of this arrangement, the roar, which is noticeable at many furnaces when a stove is taken off the furnace to be put on gas or when the blast is emitted through the snort valve, is dispensed with. The cold-blast main is equipped with a relief valve which opens automatically when the pressure of the blast increases above 25 pounds per square inch.

Blast is supplied the furnace by means of a cross-compound, steam-blowing engine, a similar unit being held in reserve as a spare. The engines were built by the Mesta Machine Co., Pittsburgh. The average operating speed at present is from 75 to 80 revolutions per minute.

The power-house is built of buff brick and houses the pumping equipment and one 7500-kilowatt generator which was built by the General Electric Co., Schenectady, N. Y. The generator is driven by a Curtis-type steam turbine. The power house is served by a 20-ton crane built by the Champion Engineering Co., Kenton, O. Steam is supplied to the power house at 225 pounds pressure per square inch and 100 degrees superheat by eight 603-horsepower boilers, seven of which are gas-fired and one stoker-fired. The stoker-type unit is equipped with a burner built by the Combustion Engineering Corp., New York. All units are equipped with superheaters and soot blowers. The products of combustion are exhausted into the air through a concrete stack 225 feet high. Along the charging side of the boiler house are coal bunkers which are charged from outside the building by means of a yard crane and clam-shell bucket.

Serving the boilers is a water-softener plant which performs three functions, namely, softening, heating and filtering the water prior to its use in the boilers. This equipment was built by the William Graver Tank Works, East Chicago, Ind. All water used at the plant is taken from the Ohio river and is pumped through a 30-inch pipe into a Westinghouse barometric condenser built just outside the power-house building. This condenser operates in conjunction with the turbo generator and uses 8500 gallons of water per minute. The discharge water from this condenser flows into a cistern which has a holding capacity of 200,000 gallons of water. The reservoir is located in the basement of the power-house building. Water is pumped from here to the furnace for use in the cooling system and for cleaning purposes in the gas washer. Another pump supplies the blowing-engine condenser. The discharge water from this unit passes into a hot well and is pumped to the boilers department for steam generation and to the furnace for washup lines and the granulating pit. An 18-inch auxiliary supply pipe also connects the river with the cistern indirectly.

Officials of the Weirton Steel Co. include E. T. Weir, president; J. C. Williams, vice president and general manager, and D. M. Weir, vice president and secretary. C. H. Elliott is steel works manager, and H. E. McDonnell is blast furnace superintendent.



FIG. 6—PROVISION HAS BEEN MADE FOR INSTALLING AN ORE BRIDGE AND CAR DUMPER. AT PRESENT THE ORE IS STOCKED OR RECLAIMED BY TWO LOCOMOTIVE CRANES EQUIPPED WITH OUTRIGGER WHEELS AND 2-CUBIC YARD BUCKETS

Heat Treaters Hold First Meeting

Initial National Gathering and Exhibit at Chicago Brings Liberal Response From Metallurgists and Manufacturers—Many Papers Presented at Technical Sessions — General Officers Elected for One and Two Year Terms

FORMED one year ago in Chicago and in the interval having established nine chapters in the larger centers of the steel industry with more than 1000 members, the American Steel Treaters' society held its first convention and trade exhibition at Chicago, Sept. 23 to 27. The attendance reached practically 1000 daily at the exhibition and an average of 150 at the technical sessions.

Sixty-four exhibits were displayed in the Seventh Regiment armory by manufacturers of special steels, heating furnaces, alloys, supplies and apparatus essential to this branch of the steel industry. Among the exhibitors were the Crucible Steel Co. of America, the Chicago Flexible Shaft Co., maker of heating furnaces, the Interstate Iron & Steel Co., which recently entered the alloy field, the Ludlum Steel Co., P. H. & F. M. Roots Co., Joseph T. Ryerson & Son, the Vanadium Alloys Steel Co., Colonial Steel Co., Denver Fire Clay Co., Firth-Sterling Steel Co., Mahr Mfg. Co. and Swedish Crucible Steel Co.

Warns of Strike Dangers

H. H. Merrick, president of the Chicago Association of Commerce, gave the address of welcome and warned of the danger of the present era of strikes and the consequent loss of production. He said: "Somehow we must stop this talk of strike—the idea that a few men can tie up a great industry, that one man can justify himself in saying that the strike of the steel and iron workers is simply a warning that the American Federation of Labor may demonstrate that it has the power to strike. That sort of thing is absolutely wrong in this country. There may be evils in the trade, conditions among laboring men that require attention and adjustment. There may be such conditions in your own plant but all the world needs production today and we are the primary factor in production. In reality the trouble that brings about these strikes is occasioned by the agitator, the man who doesn't work, who hasn't worked for years and who doesn't intend to work in the future. Then, again, there is the weak-kneed sister who yields to every current of the wind, as in the case of the Adamson law, 'let's give up this and tomorrow give up that and next week let's surrender that.' Out of that comes disaster and chaos."

The election of officers resulted in choice of men from various sections of the country, half being chosen for one year and the remainder for two years, to give an alternation in elections in the future. T. E. Barker, production manager of the Miehle Printing Press & Mfg. Co., Chicago, was chosen president for one year. E. J. Janitzky, metallurgical engineer of the Illinois Steel Co., Chicago, was made first vice president for two years and D. K. Bullens, consulting metallurgist, Cann & Saul, Royersford, Pa., second vice president for one year. Arthur G. Henry, metallurgist for the Illinois Tool Works, Chicago, was re-elected secretary for two years. Directors for two years are H. G. Wiedenthal, vice president of James H. Herron Co., Cleveland, and A. F. McFarland, metallurgist for the Vanadium-Alloys Steel Co., Latrobe, Pa. Directors for one year are J. Fletcher Harper, Allis-Chalmers Mfg. Co., Milwaukee, and J. O. Pollak, secretary Pollak Steel Co., Cincinnati.

The technical sessions brought out a large number of papers on various phases of heat treating for various purposes, temperatures, design, selection of steels, failures, annealing, fuel economy and pyrometry.

Thursday evening the sessions closed with a banquet and entertainment at which addresses were made by John W. O'Leary, of Chicago, counsellor of the United States Chamber of Commerce; Dr. Henry Marion Howe, dean of American metallurgists, and Joseph W. Richards, professor of metallurgy of Lehigh university. Dr. Howe was present at all the sessions of the society and aided much by his discussions.

As an added feature, giving practical application of heat treating methods, a number of Chicago companies arranged for those in attendance at the meetings to visit their plants. This gave the opportunity to the various members of the society to observe different practice and the application of new principles as worked out by various institutions carrying on heat treating work in a commercial way.

During the meeting more than 100 additional members were enrolled and applications were made for instituting several additional chapters in centers of steel working industries.

Sheet Extensions Let

Contracts for the new extensions of the company's capacity for the production of highly finished specialty sheets have been awarded by the American Rolling Mill Co., Middletown, O., to the Westinghouse, Church, Kerr & Co., Inc., New York City. This contract covers the building and part of the equipment. The balance of the equipment also has been contracted for. It is expected that the output of the new mills will be ready for the market during the second quarter of 1920. The increase in the capital stock of the company by $20,000,000 par value of 7 per cent debenture preferred stock as recommended by the directors, which was approved by the stockholders at a recent meeting, is to cover the cost of the increased capacity and to provide additional working capital. This stock has been offered to the common stockholders at par and to the public through Cincinnati and New York bankers. The common stockholders of record Aug. 19 are offered 10,000 shares of the present common stock at $25 par value per share in the ratio of one new share for each four shares held on that date. It is expected that the rights to the common stock will be taken up by the stockholders and that a large proportion of the preferred stock will be disposed of in a similar manner.

Steel Suit Scheduled

Washington, Sept. 23.—The government dissolution suit against the United States Steel Corp. has been scheduled as the sixth case in the new docket to come before the October term of the Supreme court for argument and perhaps will be heard about the latter part of that month. No new brief is to be presented by the department of justice, it is said, whose chief argument will be made by Judge Ames, who succeeded G. Carroll Tod as assistant attorney general.

Engineers Convene at St. Louis

Association of Iron and Steel Electrical Engineers Holds Thirteenth Annual Convention—Electrical Problems of Vital Interest to the Iron and Steel Industry Discussed—Future Calls for Solution of These Problems

ALTHOUGH but 30 years have elapsed since the first electric installation was made in a steel mill, the importance of this form of motive power was evidenced at the thirteenth annual convention of the Association of Iron and Steel Electrical Engineers, held in St. Louis, Sept. 23 to 26. Interest was shown not only in the papers which were presented but also in the display of electrical apparatus, inaugurated at the St. Louis convention.

"The keynote of the Association of Iron and Steel Electrical Engineers," said D. M. Petty, retiring president at the annual banquet, "is co-operation. The object of this association is the advancement of the application of electricity to the iron, steel and allied industries by the co-operation of its members. The means that have been employed to attain this end are the presentation and discussion of technical papers in section meetings.

"Sections have been formed in Birmingham, Ala., Chicago, Cleveland, Philadelphia and Pittsburgh. One of the great advantages of these section meetings is that foremen and assistant superintendents, who cannot go to the annual conventions, can easily attend these meetings. The good ideas that these men carry back to their plants tell in their daily work. Another means of furthering the art of electrical engineering is referred to as committee work. First is the educational committee, which has rendered several reports covering the training of electricians and the men in the mills who handle electrically operated apparatus; second is the electrical development committee which is on the lookout for new methods and apparatus of interest to the industry; third is the safety committee, which in 1912 became of such importance that from it the National Safety council was inaugurated; fourth is the electric furnace committee and fifth is the standardization committee, which has during the past few years made a strenuous effort to simplify the problems of spare parts for motors, controllers and similar devices.

"The third means by which the association advances the art is the bringing together of the men who are striving with the problems of increasing production, lowering costs and improving the quality of the plant product. The association must help the electrical engineer of the industry to do his work better. That we have not failed is shown by the remarkable growth of our organization."

Philip Stremmel, superintendent of the National Enameling & Stamping Co., Granite City, Ill., who during the past year conducted a school for safety engineers in connection with the St. Louis safety council, spoke on safety and the great advance it had made in the steel industry. He pointed out that the safety first movement was first instituted in steel mills. He stated that loyalty on the part of steel mill employes was largely due to their appreciation of the efforts made by mill operators to institute and maintain safety first work. Other speakers at the banquet were Senator Selden P. Spencer, B. W. Wilson, newly elected president of the association, Professor Karapetoff, Cornell university, Clarence Howard, president of the Commonwealth Steel Co., who presided as toastmaster, and Edgar Gagenbach, industrial commissioner of the St. Louis chamber of commerce.

Discusses Safety Problems

Proceedings of the opening session when officers were elected and official and committee reports received, were outlined on page 816 of THE IRON TRADE REVIEW for Sept. 25.

Discussion of the report of the safety and educational committee brought out the suggestion that safety should be considered before tonnage in all cases and that it is more practicable to teach men what to do than what not to do. One plan is to have foremen meet at frequent intervals to discuss accidents and to formulate means for avoiding them in the future.

A joint paper on "Organization of the Electrical Department in the Iron and Steel Industry" embraced the following subjects: Inspection and operation of electrical apparatus, by J. A. Morgan and J. J. Booth; educational training for electrical employes, by B. A. Cornwell; Electrical repair shops, by C. A. Menk; storeroom and spares, by T. E. Tynes, and records and tests by R. B. Gerhardt.

In the discussion that followed, the point was brought out that periodic tests should be made to see that insulation on important installations is efficient enough not to break down in practice and that these tests are not always carried out as often or as thoroughly as they should be. Because a motor has run for 10 years, it was stated, is no sign that it is in condition to run another 10 years. An actual breakdown test was strongly recommended in testing insulation as resistance tests do not always show if the insulation is adequate to withstand a maximum load. A good test was said to be 1¾ times the normal voltage.

Interest was shown in the discussion of two important subjects: The settling of disputes among the mill employes and automatic devices for calling important department heads who were away from their offices.

A personnel foreman, it was stated, is an advantage in hiring men. He is in close touch with the men and thus is in a position to gain their confidence. When a workman has a dispute with his foreman he can go to the personnel foreman and if these two heads cannot settle the difficulty, it is then taken to the general superintendent.

Professor Karbpetoff spoke on acoustic signals for calling department heads who are away from their offices. He has made an exhaustive study of such systems and predicts that in the near future they will be more generally used. He emphasized the difficulty of estimating the cost and trouble involved in cases where important executives cannot be readily reached. He cited a case of one steel mill executive who stated that a code calling system made the whole plant become his office. The various kinds of calls, whistles, bells, gongs, etc., that were used were explained. It was stated that in cases where high pitch sounds are in evidence, a low pitch call should be used and vice versa.

Professor Karbpetoff pointed out that such systems involve study and research work to adapt the necessary apparatus to different plants. Mistakes were often made, he said, because the sounds used were too loud, for while they must be audible they must not be discordant.

W. S. Hall, electrical engineer, South works, Illinois Steel Co., Chicago, presented a paper on "Alternating vs. Direct Current Motors for Rolling Mill Table Drives." This

paper set for that the adoption of alternating current motors for this class of drives would, in all probability, receive more attention in the future than it had in the past. The paper contained many interesting examples of both types of drive, together with cost figures in percentage for each type of installation. The illustrations described were for front roughing table, back roughing table, sheet bar mill roughing table and front mill table for a 132-inch mill. In the discussion, J. J. Ash stated that recent English installations involving both types of motors were giving excellent results.

H. D. James, control engineer for the Westinghouse Electric & Mfg. Co. read a paper on "Recent Improvements in Industrial Control." This paper described electric controllers of the magnetic contact type. He set forth that the electric controller has passed through the experimental stage so that at the present time it is reliable and well understood. It was stated that an exhaustive study of the design of magnetic controllers has enabled the engineer to make improvements which reduce the wear and maintenance costs and decrease the liability to freezing or failure to operate.

It was stated that considerable work has been done toward standardizing this form of equipment and that if steel mill requirements for controllers of this type were more uniform, manufacturers could build them in large quantities. This would give the purchaser better prices and quicker deliveries. This paper was illustrated by stereopticon slides.

"Present Status of Electrical Furnaces in the Steel Industry," was outlined by the electric furnace committee of the association. It was pointed out that electric steel production is divided into two classes, steel for ingots and steel for castings. The discussion developed that there is little technical literature available on electric furnace reactions. On the subject of furnace lining thicknesses, it was stated that too thin a lining wasted heat while an abnormally thick lining limited the capacity of the furnace. It was pointed out that careful records of furnace performances should be kept so that definite rules could be formulated.

That much of the success of any electric furnace depends on the operator himself was another point developed. The operators, it was stated, should be carefully trained. The shape of the furnace also came in for discussion. It was stated that the furnace body should be of such shape as to give equal heat at every point. The subject of electric heat treatment was covered in a paper by C. A. Winder, industrial heating engineer, General Electric Co., Schenectady, N. Y. It was claimed that furnaces of this type are economical in operation and that their further adoption is bound to come. The paper described three kinds of furnaces: Horizontal semicylindrical, car type and rotary conveyor type.

"Overload Protection for Motors" was discussed by Paul M. Lincoln. He described a type of recording meter for giving a continuous indication and record of the value of the average current through, and its heating effects on, the motor. The author is a consulting engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The discussion brought out that the device should help in the future design of motors, due to the fact that overloads at peak points are readily shown as the device gives an accurate check on the actual work accomplished. The meter furnished reliable data to determine just how different operators, working on different shifts, handled the same motor.

Gives Historical Sketch

Calvert Townley, president of the American Institute of Electrical Engineers, gave an interesting talk on the growth and development of electrical power as applied to the iron and steel industry. He pointed out that co-operation between the various electrical societies was necessary in deriving the greatest benefits.

A. G. Place, electrical engineer, Youngstown Sheet & Tube Co., Youngstown, O., read a paper on "Overhead Protection for Cranes." The paper dealt with the subject of protecting crane equipment from overloads and drew some interesting conclusions. In the discussion, it was brought out that protection devices should be made as "fool proof" as possible and that operators should be educated to the fact that protection devices should not be tampered with.

A paper illustrated with stereopticon slides and giving general specifications for alternating current motors for main roll drives, was presented by the standardization committee. The object of the specifications was to bring about a more uniform standard for motors of this type. The specifications represented a year's research on the part of the committee in charge.

Papers also were presented on "Influence of Gear Ratio on Speed of Operation, Motor Heating and Contactor Wear in Auxiliary Steel Mill Drives," by J. E. Fries and a joint paper on "Present Status of Arc Welding in the Iron and Steel Industry," by A. Churchward, H. L. Unland, A. M. Bennett, R. A. Kinland, C. J. Holslag, R. M. Rush and A. M. Candy.

The exhibit was the first held by the electrical engineers and 34 manufacturers displayed electrical equipment. The displays were arranged in attractive booths adjacent to the convention hall. The following manufacturers took advantage of the opportunity to bring their products to the direct notice of the delegates: Edgar E. Brosius, Pittsburgh, single hoist charging machines; Keystone Lubricating Co., Philadelphia, greases; Benjamin Electric Mfg. Co., New York, lighting specialties; National Lamp Works of the General Electric Co., Schenectady, N. Y., light measuring devices; Reliance Electric & Engineering Co., Cleveland, generator sets; Thermoid Rubber Mfg. Co., Trenton, N. J., brake linings and friction disks; Marlin-Rockwell Corp., New Haven, Conn., asbestos insulated wire; Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., industrial control apparatus; Trumbull Electric Mfg. Co., Plainville, Conn., externally operated switches; Chicago Fuse Mfg. Co., Chicago, fuses; Economy Fuse Mfg. Co., Chicago, fuses; National Carbon Co., Cleveland, electrodes, carbon brushes and dry cells; Iron & Steel Equipment Co., Pittsburgh, steel plant equipment; Electric Products Co., Cleveland, battery charging motor generators; Electric Controller & Mfg. Co., Cleveland, controllers; Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., crane hoists; Cutler-Hammer Mfg. Co., Milwaukee, magnetically operated brakes for direct control service; Delta Star Electric Co., Chicago, substation equipment; Bussman Mfg. Co., St. Louis, fuses; Ludwig Homel & Co., Cleveland and Pittsburgh, meters; General Devices & Fittings Co., Chicago, electrical fittings; General Electric Co., Schenectady, N. Y., solenoid brake motors; Automatic Reclosing Circuit Breaker Co., Columbus, O., current breakers; V. V. Fittings Co., Philadelphia, insulators and fittings; R. D. Nuttall Co., Pittsburgh, flexible couplings for generator and motor connections; Lakewood Engineering Co., Cleveland, industrial tractors; Crouse-Hinds Co., Syracuse, N. Y., electrical specialties; Tool Steel Gear & Pinion Co., Cincinnati, gears; Pittsburgh Transformer Co., Pittsburgh, transformers; Moloney Electric Co., Windsor, Ont., transformers; Wilson Welder & Metals Co., New York, portable electric welding apparatus; Wood & Lane Co., St. Louis, fuses; Volk Mfg. Co., Westport, Conn., fuses.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Chain Belt Co., Milwaukee, has announced plans for an important plant enlargement and improvement program, for which purpose the capital stock has been increased from $1,000,000 to $2,800,000. About two years ago the company purchased a 23-acre site in West Milwaukee, the limit of expansion at the original location having been reached. Contracts have been awarded for the first unit, 160 x 316 feet, which temporarily will be used as a concrete mixer assembling shop but will be converted into a foundry after a third unit has been provided early in 1920. The structural steel, amounting to 500 tons will be fabricated and erected by the Milwaukee Structural Steel Co. One 15-ton and two 5-ton electric cranes will be purchased in addition to other equipment.

The business now known as the Chain Belt Co., was started by C. W. Levalley in 1891 with a capital of $11,100. Capital stock was increased to $50,000 in October, 1895; to $500,000 in 1907 and to $1,000,000 in 1916. It commenced operations in a small shop. Subsequently larger quarters were secured. The present site was first occupied in 1902 when what now is the office building was erected. Since then additional buildings have been added until the entire site has been covered. In 1906 Mr. Levalley organized the Levalley Mfg. Co., later absorbed by the Chain Belt Co., as its gray iron department. A malleable iron foundry, 80 x 506 feet, was acquired in 1912 by purchase from the Prescott Malleable Iron Co., and since has been considerably enlarged. Prior to his death in 1918, at the age of 84, Mr. Levalley was chairman of the board having served as the company's president until retiring in 1916. William C. Frye now is president; C. R. Messinger, vice president and general manager; W. C. Sargent, secretary, and C. L. Pfeiffer is treasurer. Donald Fraser, who was vice president for many years, now is consulting engineer.

* * *

ANNOUNCEMENT has been made that the American Car & Foundry Co. will build a plant in Chicago to cost between $1,000,000 and $2,000,000, to be devoted to the manufacture of steel cars. The building is to be completed within six months, according to present plans.

* * *

STEEL for the new 4-story factory addition of the Hoover Suction Sweeper Co., North Canton, O., has been awarded to the Canton Bridge Co., Canton.

* * *

THE Barnes & Kobert Mfg. Co., manufacturer of bolts, which removed from Milldale, Conn., to New Britain, Conn., four years ago, has purchased the factory building it occupies.

* * *

WITH a complete line of mill supplies, an office and warehouse has been established at 197 High street, Boston, by the Boston Pulley & Shafting Co., a newly organized company. It is in charge of T. E. Toomey.

* * *

CONTRACTS have been awarded to the McLain-Carter Furnace Co., Milwaukee, for the installation of a 10-ton open-hearth furnace in the plant of the Black Steel & Wire Co., Kansas City, Mo.

* * *

ANNOUNCEMENT is made by the Wald Mfg. Co., Sheboygan, Wis., automobile parts and accessories, that it has increased its capital stock from $30,000 to $90,000. It will erect an addition to its factory to double its output.

* * *

EARLY in October, the Interstate Aluminum Co., Canton, O., expects to operate in a plant, 60 x 100 feet. The company recently was incorporated by Theodore Dobs and Robert Efflinger, that city, and Paul Barnard, J. W. Fenstermaker and W. Doolittle, of Massillon, O.

* * *

PLANT and equipment of the Loucks Iron & Steel Co., Roanoke, Va., recently were purchased by the Barr Co., Pittsburgh. The latter has begun work on dismantling the plant and selling the machinery and scrap. Equipment for a finishing mill, puddle mill, machine shop and pump house is included in the purchase.

* * *

WORK on construction of a $300,000 addition to the plant of the Kansas City Structural Steel Co., Kansas City, has been started. The addition will increase the capacity of the plant 50 per cent and is expected to be in operation before the close of the year.

* * *

THE Giant Truck Corp. has bought the plant of the Chicago Pneumatic Tool Co., at Chicago Heights, Ill., and will utilize it in the manufacture of Giant trucks and motor cars. The former owners have removed its equipment to their Cleveland plant.

* * *

TO CARRY on a general business in iron, steel and metal scrap, the Commercial Steel & Supply Co. has been organized in Cleveland by A. A. Murfey and W. H. Dickey, formerly associated with the Ferrel-Dangler-Wilson Co., that city. The office of the new company is located in the Garfield building.

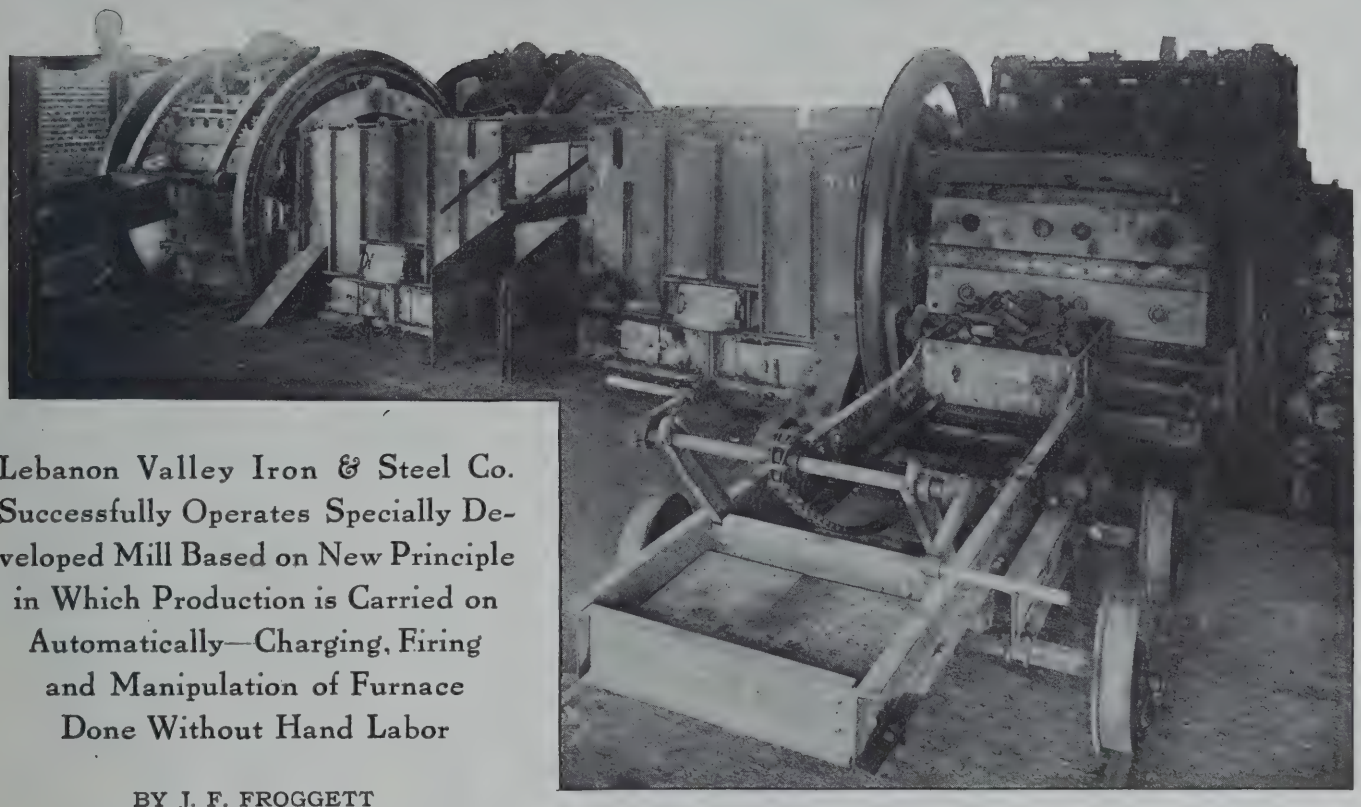
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AT A COST of $3500 the Mt. Vernon Foundry Co., Mt. Vernon, O., has purchased a site for a new building from the Mt. Vernon chamber of commerce. A $20,000 building is contemplated and the Mt. Vernon Foundry Co. is to be reimbursed for the purchase price in three payments.

* * *

THE Uniform Co., Boston, recently was merged with the Blaw-Knox Co., Pittsburgh. The former company was organized to develop the general use of the system of concrete floor and roof construction designed by Nils F. Ambursen, formerly engineer of the Ambursen Hydraulic Construction Co. Mr. Ambursen now is chief engineer of the building forms department of the combined companies and W. L. Church, formerly of Westinghouse, Church, Kerr & Co., who has been associated with Mr. Ambursen for several years, is consulting engineer.

Making Bar Iron Mechanically



Lebanon Valley Iron & Steel Co. Successfully Operates Specially Developed Mill Based on New Principle in Which Production is Carried on Automatically—Charging, Firing and Manipulation of Furnace Done Without Hand Labor

BY J. F. FROGGETT

FIG. 1—ROTATING FURNACE SHOWING DOOR AND CHARGING MACHINE IN POSITION

YEARS of patient study, exercise of considerable ingenuity and expenditure of much treasure have been devoted to the problem of automatic production and finishing of iron and steel. The attainment of this end has been reached by the Lebanon Valley Iron & Steel Co., Lebanon, Pa., in the new wrought iron mill which it placed in active operation on Sept. 11. The company itself would be the first to disclaim having solved all the problems connected with automatic production of bar iron, but the success that has attended its efforts so far augurs well for future developments. It now is actually producing automatically and rolling with the least employment of hand labor muck bar and billets for the trade. The new mill is working smoothly and is bound to be a most important factor in the eastern bar iron industry because of the economies effected in manufacture of this product.

By some the Lebanon mill is denominated an automatic puddling mill, but this is not strictly correct since no attempt has yet been made to puddle pig iron in it. This likely will be attempted at some future time. So far, the mill may be described broadly as an automatic busheling mill. Scrap is employed, even the charging of the rotating furnace, firing and manipulation being done by the latest machinery of which some was invented and built by the Lebanon company itself. While the rolls are manned by hand roughers, yet electrically-driven machinery is employed everywhere to facilitate and supplement roughing by hand with the least expenditure of muscle and utmost relief from physical strain upon the workmen.

On Horizontal Axis Principle

Heretofore, efforts of inventors had been directed toward producing a mechanical puddler based upon the principle of a vertical axis for the rotating furnace. But this Lebanon furnace, invented and patented by Walter C. Ely, treasurer and general manager of the Highland Iron & Steel Co., Terre Haute, Ind., is based upon the principle of a horizontal axis which permits continuous process of further manufacture by means of machinery without a stop or radical change in direction of the moving unfinished product.

The main feature of the Lebanon company's theory in building the mill was to insure automatic operation of the furnace which heats the charge to welding temperature. The application of the principle of rotation to the furnace was not new except in its method of rotation as pointed out above. But the invention of the door of the furnace and its principle of opening and closing by means of an individual 15 horsepower motor attached to and revolving with the furnace itself was the ingenious feature. For by merely shifting this door, the ball of wrought iron is dropped upon a conveyor belt which moves it rapidly to the squeezers whence it is conveyed by another belt to the muck mill and the end of the bloom inserted into the rolls for the first pass.

Each of the eight rotating furnaces installed in the Lebanon plant is 7 feet long, outside measurement, 6 feet 4 inches in diameter overall. In general appearance it gives one the impression of an octagonal tumbling barrel such as is employed in cleaning castings in a foundry. The exterior of the furnace is constructed of cast-iron chills and the lining is composed of 9-inch standard magnesite bricks which at first required some dexterity to lay so they would hug the interior of the furnace. The firebox which feeds the furnace is not at all unlike the firing end of an ordinary reverberatory furnace, the hot gases passing over through a bricked flue into the revolving chamber and thence through another bricked flue into the waste gas chamber to a 250-horsepower Wickes water tube boiler thence through a stack 48

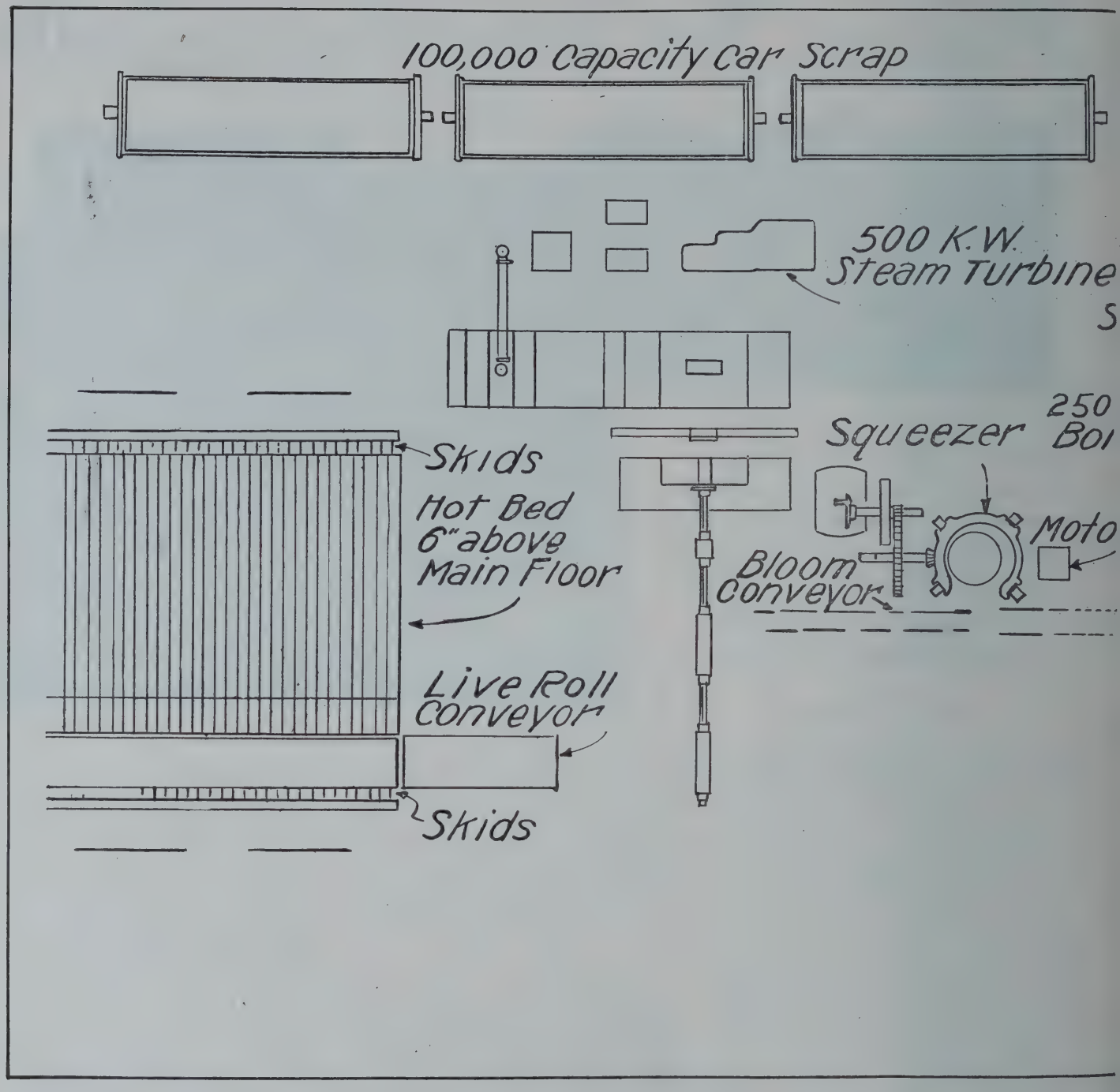
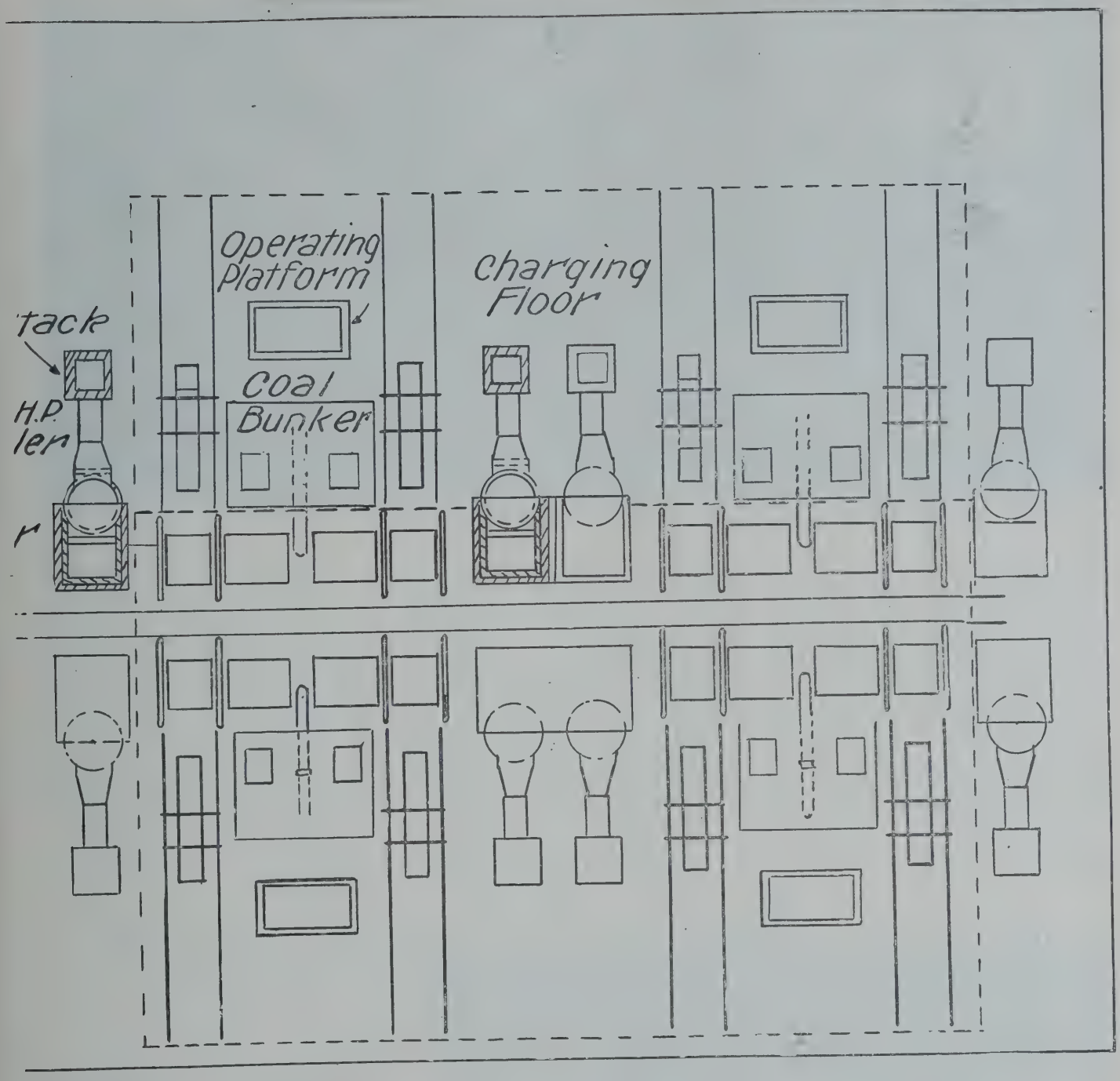


FIG. 2—LAYOUT OF NEW ROTATING FURNACES AND MUCK

inches in diameter and 110 feet high. Eight of these boilers attached to the eight furnaces furnish steam for the mill engines and turbine. The rotating furnace is mounted upon two 10-foot cast steel wheels or carrying rings propelled by two motor-driven 14-inch friction rolls. Two of these furnaces were in operation when the mill started, two others had been lighted while the other four had been completed and would be lighted within a few days. In one of them a crushed coal firing device had been installed after extensive and successful experiments conducted in the old heating mill of the company. It is proposed to install them at each of the eight firing boxes, thus doing away with hand firing. The firing device was invented, patented and built by Chief Engineer Charles S. Heffelfinger of the Lebanon company. It is shown at Fig. 6.

Each furnace produces five heats an hour and is designed to manufacture balls weighing from 600 to 1200 pounds each, depending upon the size of material ultimately required. It is figured that each furnace will consume 54 magnesite bricks monthly. When the heat has run its length, the furnace having revolved slowly in the meantime to round the charge into ball shape, the operator who controls the number of revolutions absolutely by means of an electric controller, halts the operation while the door of the furnace stands at the bottom and by means of another controller operating the 15-horsepower motor attached to the exterior of the furnace, he opens the door and the ball falls through upon a chute. By gravity it passes onto a belt conveyor which is 130 feet long and travels toward the squeezer at the rate of 400 feet per minute. This ball conveyor is a double-strand 4-inch pitch steel strap bushed chain to which are attached at intervals of 16 inches steel flat crossbars, 3 x 1 inches, traveling on T-rail tracks. When the ball has arrived opposite



MILLS OF LEBANON VALLEY IRON & STEEL CO.

the squeezer, it is discharged upon a pivoted stand resembling in general appearance a hod, which by gravity in turn dumps the ball into its proper position in the 72-inch all cast steel squeezer. This squeezer was designed by the Lebanon company but built by the Hunsicker Engineering Co., Lebanon, Pa., especially of larger size than ordinary to take in balls weighing up to 1200 pounds. It makes six revolutions per minute, and is driven by a 24 x 27 reversing vertical side crank steam engine with 8-inch steam pipe, also built by the Hunsicker company.

When the squeezer has discharged the bloom, the latter falls upon another belt conveyor which moves toward the rolls on a 5 degree incline, it being designed to take a bloom 9 inches in diameter 3 feet 6 inches long. This conveyor travels at the rate of 150 feet per minute. It consists of a series of steel pans ¾-inch thick with flared sides 1½-inch deep. Each pan is 5¾ inches long and 8⅛ inches wide at the top. The conveyor is shielded by a stationary protector of steel plates which is shown in Fig. 3.

The first pass in the rolls is initiated by the impetus received from the bloom conveyor and after that the bloom is roughed by hand labor as in the usual muck mill. The roughing mill consists of 22-inch, 3-high stands running 48 revolutions per minute and were turned by the Lebanon company from special designs for this mill. The bloom can be rolled down to a 2 x 2-inch billet if desired or an 8 x 1-inch flat for muck bar purposes. The material after rolling passes out by means of motor driven floor rolls onto the cooling bed which is built of 85-pound steel rails. The rolls are driven by a 30 x 60 right hand Allis steam engine with a 30-ton flywheel 22 feet in diameter. The roughing mill was built by the Lewis Foundry & Machine Co., Pittsburgh. The cooling bed which is 80 feet long and 33 feet wide is

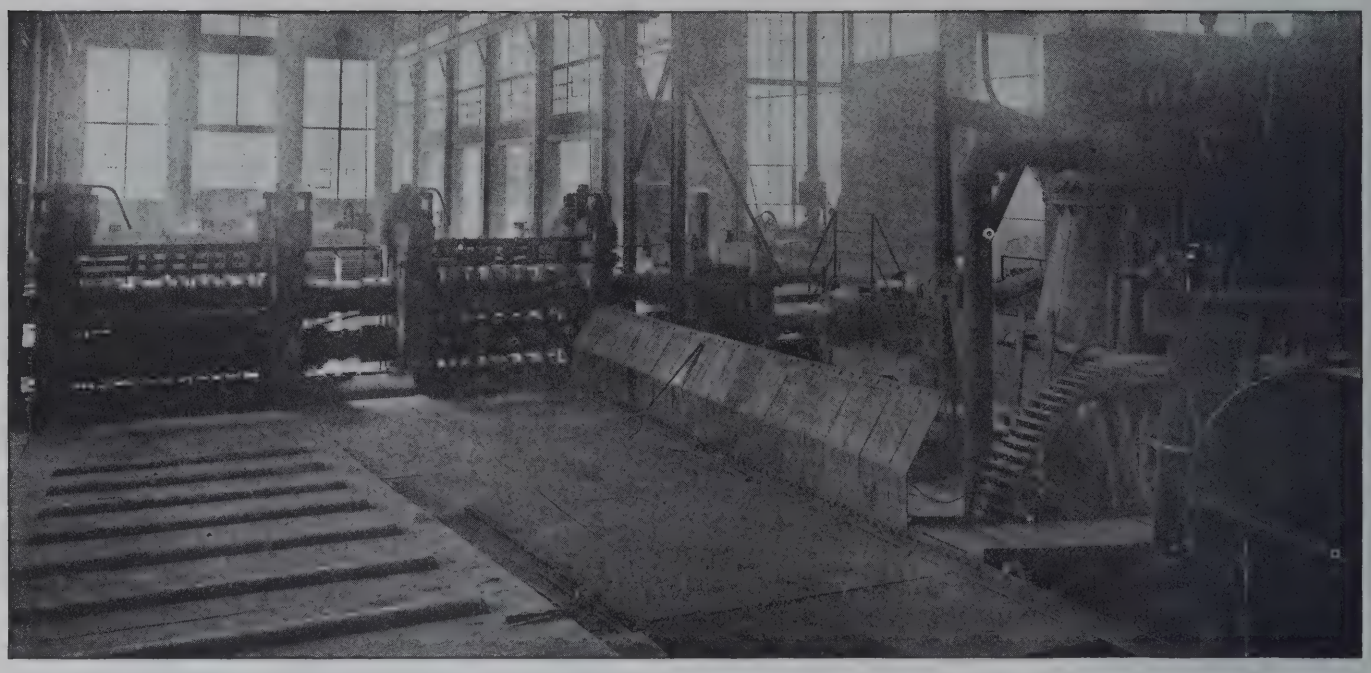
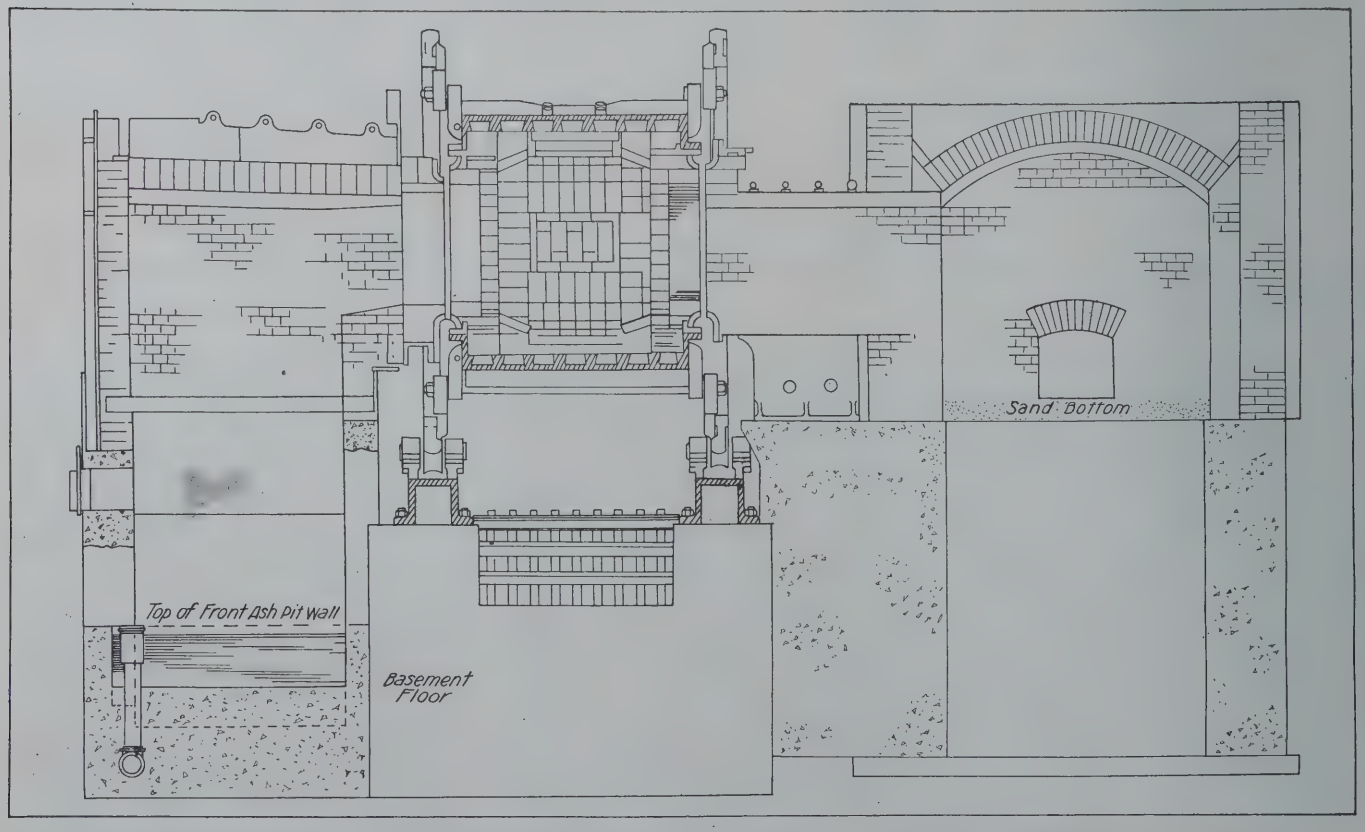


FIG. 3—ROLLING MILL SHOWING PROTECTION FOR BLOOM CONVEYOR

served on either side by a 5 x 5 billet or an 8 x 1 bar shear built by Hilles & Jones, Wilmington, Del., the material being conveyed on 12-horsepower, motor-driven, reversing rolls with push button control. Underneath the rolls is a 12-inch cast iron screw conveyor taking out the scale and built by the Lebanon company itself.

The furnaces, boilers and operating mills are all under one roof and are compactly put together, being built especially for the purpose. The main building consists of 19 bays each 20 feet long, or a total length of 380 feet. The width of this building is 147 feet 8 inches. On either side are railroad switch tracks under roof which serve the charging floors with coal and scrap. The coal is slack of usual grade. The scrap includes three grades, No. 1 wrought, turnings and light material. The scrap is lifted from the cars and deposited upon the charging floors on either side of the mill by 5-ton Electric Controller & Mfg. Co. cranes with 40-foot spans equipped with 45¼-inch magnets. The third 5-ton crane with 50-foot span serves the cooling bed. The entire center of the main mill building is served by a 20-ton electric crane with 50-foot span which is employed in changing rolls, assembling furnaces and all heavy-duty work.

The forced draft for the firing boxes



4—PLAN SHOWING FIRE BOX AT THE LEFT, ROTATING FURNACE IN THE CENTER AND WASTE HEAT CHAMBER AT THE EXTREME RIGHT

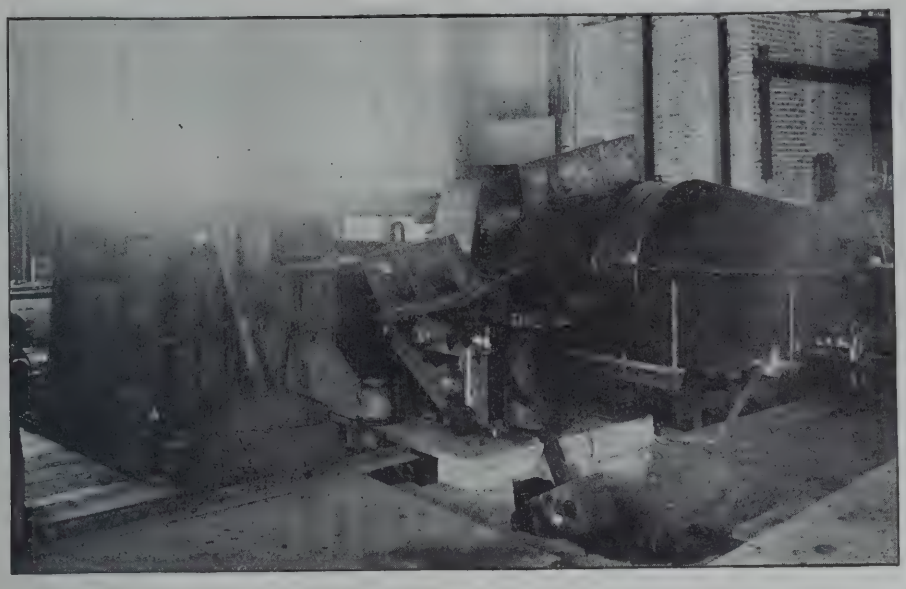


FIG. 5—THE GIGANTIC SQUEEZER AND BALL DUMPING DEVICE

is furnished by four No. 9 blowers built by the B. F. Sturtevant Co., Hyde Park, Mass., driven by 30-horsepower motors. They are mounted underneath the charging floors, which serve each side of the heating portion of the mill and are 100 feet long and 43 feet 6 inches wide.

The charging floors are so well arranged that two men serve with shovels one firing box each, operate the ingeniously constructed hand operated charging machine, etc., while the two electric controls on each of a pair of rotating heating furnaces are operated by one man, thus making each furnace served by 1½ man, a minimum of labor. Yet when the crushed coal system now being built is placed in operation at each furnace, even this minimum will be reduced probably to two men on a charging platform, one of these being a day laborer.

The main mill building is constructed upon massive concrete foundations as are also the foundations for the furnaces, roll stands and engines. The walls of the building are largely brick up to about 10 feet, and thence upward to the roof are of Fenestra steel sash and glass, thus affording splendid light in every portion of the building. The framework of the building is of structural steel, 500 tons being used by the Bethlehem Fabricators, Bethlehem, Pa., in its erection. The Belmont Iron Works put 70 tons of steel into the charging floor foundations. The building is roofed with interlocking cement tile made by the American Cement Tile Co., each tile being 52 x 26 inches and weighing 130 pounds.

The crushed coal firing device, which was invented, designed and patented by Chief Engineer Heffelfinger of the Lebanon company, consists of a hopper-feed with blower, coal crushed to 200-mesh screen being employed. The device first was tried out on the company's 10-inch reheating mill in the old plant, attaining such efficiency as to get heats ready in 15 minutes and putting the furnace in shape to charge in 40 minutes.

The Lebanon Valley Iron & Steel Co. began clearing the ground for the proposed mill on Oct. 26, 1918. The works, therefore, were less than nine months in being built and undoubtedly would have been in operation some weeks sooner except that the orders for material, equipment, etc., were placed under war conditions. When the Amalgamated Association of Iron Steel and Tin Workers went east of the Allegheny mountains something like two years ago and began to organize the puddlers, bar mill rollers, etc., in a number of plants, the Lebanon company prepared for what it believed would be an inevitable struggle to keep its mills in operation. A satisfactory site was selected just alongside the old puddle mill of the Lebanon company and active construction was begun last autumn. Therefore, when last April a strike was called in the hand mills of the company by the Amalgamated association, the company merely transferred its activities to the new mill and rushed work so that it now is virtually independent of any of its old plants and is not hampered by any union mill organization of its employes.

The president of the Lebanon Valley Iron & Steel Co. is Hon. W. C. Sproul, governor of Pennsylvania. The vice president, who has been actively identified with the new venture, is Felton Bent; while the secretary and treasurer is Howard Longstreth. The general manager, to whom is due much of the credit for conceiving and executing the splendid piece of work is Jno. C. Brown who has worked untiringly to bring the splendid success with which the project even this early has met. The chief engineer of the company, who designed much of the equipment as well as considerable of the plant layout is Charles S. Heffelfinger, who had served as crushed coal expert with the Philadelphia & Reading railroad. The master mechanic is Harry Moyer who has won well deserved encomiums for the masterly way in which the actual construction and installation were executed.



FIG. 6—AUTOMATIC CRUSHED COAL FIRING DEVICE

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ALFRED LAMAR, assistant director of sales, has returned to Washington from Europe and resumed his duties in the office of the director of sales, war department. Mr. LaMar will have the immediate supervision of sales of surplus war materials made for export, and direct the activities of the machine tools section of the office of the director of sales. Mr. LaMar went to Europe early in April to survey European markets. He arranged the details of the visit recently made to the United States by a commission from the construction metallique which came to this country under the auspices of the Belgian government to inspect, with a view to purchasing, government-owned machine tools. Mr. LaMar organized the machine tool section of the office of the director of sales shortly after the establishment of that office by the secretary of war.

Marion F. Crawmer, former manager of the Chicago branch of the Detroit Twist Drill Co., has resigned to become associated with the Tool Salvage Co., Detroit.

Richard Goedecke, vice president of the Cleveland Duplex Machinery Co., Cleveland, has been appointed to have exclusive charge of the used machinery department of that company.

J. A. McGee of the sales department of the Graton & Knight Mfg. Co., Worcester, Mass., is on his way to Japan to investigate market conditions in that country.

E. T. Boland, for 15 years affiliated with the Kissel Motor Car Co., Hartford, Wis., has become associated with the Topp-Stewart Tractor Co., Clintonville, Wis., in the capacity of works manager.

Richard H. Long, head of the Richard H. Long Machinery Co., Framingham, Mass., has been nominated for governor of Massachusets by Democrats for the second successive year.

Gen. Guy E. Tripp, chairman of the board of directors of the Westinghouse Electric & Mfg. Co., sailed Sept. 20 for Europe for the purpose of completing arrangements for the extension of the foreign trade. General Tripp will be in Europe for the next six weeks.

T. E. Toomey has been made manager of the Boston Pulley & Shafting Co., 197 High street, Boston. For 15 years he was sales manager for the Dodge Sales & Engineering Co., that city.

William H. Chappell, for several years connected with the Page-Storms Drop Forge Co., Chicopee, Mass., has taken the superintendency of the drop forge department of the General Railway Signal Co., Rochester, N. Y.

Malachi G. Brennan, advertising manager for the Sanford Riley Stoker Co., Ltd., Worcester, Mass., has been transferred to the sales department of the Chicago office of the company. He will be succeeded by Otis C. Sheldon.

William E. Kelly has retired from active management of the Kelly Reamer Co.'s affairs at Cleveland. He was the company's president and general manager and his duties now are discharged by J. M. Davie, formerly assistant general manager.

E. V. Wenzill has been made manager of the grinding machine division in Chicago and vicinity for the Modern Tool Co., Erie, Pa. He formerly was affiliated with the Norton Grinding Co., Worcester, Mass., but for some time has been doing grinding work in France.

Otto Koch, Sheboygan, Wis., has resigned as assistant cashier of the Security National bank to become associated with the Wald Mfg. Co., Sheboygan, automobile parts and accessories, as a stockholder and sales manger.

H. J. Porter, who has been connected with the sales department of the Timken Roller Bearing Co., Canton, O., for the past eight years, has been advanced to the position of sales manager with headquarters at the general offices of the Timken company at Canton.

C. S. Crane has resigned from government service as supervisor of production and inspection in the motors and vehicles division of the quartermaster's corps and now is affiliated with the Wilton Tool & Mfg. Co., Boston, as mechanical and sales engineer.

Harry J. Lindsley and William F. Jennings have been promoted to be vice presidents of the Bound Brook Oil-less Bearing Co., Bound Brook, N. J. Mr. Lindsley has been western sales manager for seven years and Mr. Jennings has been eastern sales manager for about five years.

Lowell Pickup, who was a sergeant in the army and served overseas, has gone to Georgia to take charge of that territory for the Stanley Works, New Britain, Conn. Gerald Coholan, until recently a lieutenant in the army, has gone to California, in the interests of this same company.

Marshall C. Edmunds has been placed in charge as district sales manager of the sales offices established recently at 208 South La Salle street, Chicago, by the Sizer Forge Co., 244 Larkin street, Buffalo. His territory will comprise Wisconsin, Minnesota, Illinois, Iowa, Missouri and upper Michigan.

Herbert Duckworth has been promoted from assistant sales manager of the Norton Co., Worcester, Mass., to be chief sales manager. Capt. Robert E. Nugent, formerly in charge of the Groton Shipyard Housing Corp., has been placed in charge of the tile department to succeed F. A. Emery, who now becomes assistant to W. L. Neilson.

Wesley M. Beatty has been appointed to succeed Craig Geddis who recently resigned from the publicity department of the Mesta Machine Co., Pittsburgh. Mr. Geddis has filled that position since he was discharged from military service and now takes up new duties in the sales department of the Reading Iron Co., Reading, Pa.

J. R. Comber, who has been with the Timken Roller Bearing Co., Canton, O., for the past seven years, has been moved from the position at the head of the sales-order division to field work in connection with the tractor and farm implement division. George C. McMullen, Pacific coast representative of the Timken company, has opened an office at 450 Monadnock building, San Francisco.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JESSE K. BARKER has been named as district sales manager in Seattle, Wash., for the Jones & Laughlin Steel Co., Pittsburgh. He recently was tendered a farewell dinner and presented a beautiful gold watch and chain by a number of his associates at the main office of the company. Mr. Barker, who has been identified with the Jones & Laughlin company for the past 29 years, is a native of Pittsburgh and has lived there all his life. His first connection with the company was in the freight traffic bureau and during the past 12 years he has been assistant to Robert Geddes, manager of the hot-rolled department of the company. The Seattle offices of the company are located in the L. C. Smith building.

R. S. Hunter has been made manager at Chicago of the Warren Oil Co. of Pennsylvania, Warren, Pa.

I. L. Houghton, vice president and general manager of the Maumee Malleable Iron Co., Toledo, O., has resigned. No announcement is made as to his further plans.

D. R. Scholes, resigned recently as second vice president of the Illinois Malleable Iron Co., Chicago, to become affiliated with the Aeromotor Co.

L. R. Custer, who was development engineer for the Midvale Steel & Ordnance Co., has been elected vice president of the Cambria Steel Co., Johnstown, Pa.

A. R. Gilham has been appointed managing director of Canadian Vickers, Ltd., Montreal. He formerly was associated with the St. John Dry Dock & Shipbuilding Co., Ltd., with headquarters at St. John, N. B.

W. J. Haddaway has been appointed sales agent for the Pioneer Coal & Coke Co., Syndicate Trust building, St. Louis. He will have charge of the distribution of Illinois coals, both steam and domestic.

Charles Riddell, formerly manager of the Chicago office of the Baldwin Locomotive Works and the Standard Steel Works Co., has returned to his duties in Chicago after an absence of 18 months on special duty at the Philadelphia office. Arthur S. Goble, who has been in charge of the Chicago office, has been made manager of the St. Louis office. Henry Blanchard, sales representative at Chicago for the Baldwin and Standard companies, has been made manager of a branch sales office in the Merchants National Bank building, St. Paul, Minn.

Samuel Siddall has retired from active participation in the business of the Warren Iron & Steel Co., Warren, O., having resigned as vice president and treasurer, a position held by him for about seven years.



JESSE K. BARKER

Paul D. Goodman resigned his connection with the Epping-Carpenter Pump Co., Pittsburgh, and on Oct. 1. became sales manager of Chas. F. Ames & Co., Ltd., 90 West street, New York City, which conducts the sales department of the Platt Iron Works, Dayton, O.

A. Brauer, Detroit, who has been associated with the Mansfield Steel Corp. for six months as body designer, has been promoted to the position of assistant general manager, in charge of production, quantity surveys and production engineering. Mr. Brauer formerly was in the government's service.

James N. Mackin, who represented E. C. Atkins & Co., Indianapolis, and Hamilton, Ont., manufacturers of silver steel saws, in Washington, during the war, has been appointed representative of the company in Australia with headquarters at 5 Australasia Chambers, Martin Place, Sydney, N. S. W.

Melville J. Collins succeeds William Lynch who resigned recently as general superintendent of the Mahoning Valley Steel Co., Niles, O. He has been identified with the Mahoning company since its formation and formerly was in the operating department of the Empire mills of the Brier Hill Steel Co.

R. S. Richards resigned as advertising manager and purchasing agent of the Atlas Car & Mfg. Co., Cleveland, on Oct. 1, to become president and general manager of the United Roll & Foundry Co., Ravenna, O., which has just been recapitalized and reorganized to manufacture rubber machinery and to conduct a jobbing foundry. Mr. Richards was connected with the Atlas company for 16 years.

C. A. Pennock has resigned as superintendent of the sheet and tin plate plant of the Bethlehem Steel Co., at Sparrows Point, Md., having filled that position since the plant was built. On Oct. 1, he accepted a position with the Eastern Rolling Mill Co., Baltimore, as general superintendent. Prior to going to Sparrows Point, Mr. Pennock was superintendent of the Massillon Rolling Mill Co., Massillon, O.

Lieut. Col. Julian S. Hatcher, of the ordnance department of the army, Washington, has been appointed commanding officer of the United States armory, Springfield, Mass., to succeed Col. Lindley D. Hubbell, who has been commandant since July, 1918. Col. Hatcher is 31 years old and the youngest man ever in charge of the Springfield plant. He has perfected numerous inventions in ordnance of all kinds and is an authority on machine guns.

Protest Ruling

Of Freight Rates on Returned Defective Castings and Forgings

Washington, Sept. 30.—An emphatic protest has been filed by foundrymen throughout the country with the railroad administration against a recent ruling of the official classification committee which in effect increases freight rates on returned defective castings and forgings. Malleable foundrymen especially have taken the lead in this movement. The order in question makes the freight rate on rejected material the same as that on perfect castings and forgings. Heretofore this material was classed as scrap and therefore shipped under the lower scrap freight rates.

The order follows:

"This committee has just given careful consideration to the question of rating properly applicable on return defective castings or forgings. A common practice among manufacturers, which seems to be spreading, is for the manufacturer of machinery or iron or steel articles, to contract with the foundry or steel mill for supply of rough castings or rough forgings, the contract providing that the castings or forgings in which imperfections are discovered during the machining process, shall be returned to the maker, who upon examination and finding of the defects will credit the purchases with the purchase price. It is generally impracticable for the manufacturer who has discovered defects in such articles, to break them in order to reduce them to a condition in which they would unquestionably be rated as scrap iron or steel, such breaking interfering with the examination to be made by the maker on return. Such articles, however, have in fact generally a value only as scrap iron or steel and are of no use whatever except for remelting. Owing to the peculiar conditions under which they are returned, however, they retain a value as castings or forgings until the maker has verified the defects found by the purchaser.

"This condition throws upon the carriers the responsibility which they would have in transportation of the original article and we, therefore, decline to view such articles as being entitled to the scrap iron or steel rating. On the other hand any work which the purchaser may have expended upon the article is absolutely lost. Owing to the defect discovered the work has added nothing watever to the value and we feel that it has not really advanced the article beyond the casting or forging state. We have therefore, ruled that such articles handled under the circumstances described, are ratable on their return journey as castings or forgings and have advised shippers to describe them on their bills of lading as defective castings or defective forgings. This ruling has been given directly with respect to castings returned by the Ellicot Machine Corp., Baltimore, to the York Foundry & Machine Co., York, Pa.; defective castings returned to manufacturers by the Hudson Motor Car Co., Detroit, and defective forgings returned by the New Process Gear Co., Syracuse, N. Y., to the Richmond Forgings Corp., Richmond, Va.

"We have also held that articles of iron or steel which have been originally shipped as finished articles, such as piston rods, and are found to be imperfect, are upon their return journey to the manufacturers, ratable the same as the new articles in a supposedly perfect condition."

Slick-Knox Co. Plant is Getting Under Way

The Slick-Knox Co., organized by Pittsburgh and Sharon, Pa., interests a few months ago, and which took over the buildings and equipment which formerly constituted the Wheatland, Pa., plant of the Blaw-Knox Co., as well as the Hydraulic Drawn Forging Co. and the Pressed Steel Truck Co., both of Ellwood City, Pa., will begin shipments of automobile and truck frames in about a week. While frames for automobiles and trucks will be the principal product of the company, it also will produce 3 to 6-inch balls, antirail creepers, under a patent of E. E. Slick, chairman of the company, and rings for gears and ball bearings. Later, the company will start the manufacture of tuyeres and bosh plates for blast furnaces at the Wheatland plant, while at its Ellwood City plant, it will make pressed steel industrial trucks of different types and designs and at some future date will also turn out other steel specialties at this plant.

The company acquired from the Blaw-Knox Co. at Wheatland a steel building, 115 x 500 feet, with all piping, wiring and equipment, together with a hotel, located on a site of 30 acres. Since this purchase, the company has bought 63½ acres of adjoining land and has taken an option of 27 more acres, which it probably will buy. Thus the company will have altogether more than 120 acres and is providing for future plant extensions. Foundations have been laid in the factory building for the installation of new machinery, which includes four 15-ton and two wall cranes of 3 tons each, furnished by the Morgan Engineering Co., Alliance, O., one 1800-ton press, one 1000-ton press, one 500-ton press, one 125-ton press and two 80-ton presses, all steam hydraulic.

The Mesta Machine Co., Pittsburgh, is building a 4000-ton steam hydraulic press, which will be completed and installed shortly. Installations since the property was turned over to the Slick-Knox Co. early this month include a 250-ton steam press, a 300-ton power press, a 125-ton power press, and a No. 5 upsetter, beside a number of smaller hydraulic and power presses. A number of steam hammers also have been installed and the company has expended in the open market more than $500,000 for other equipment. A new machine shop, 75 x 250 feet, and a new assembly shop, 150 x 300 feet, and under construction. These buildings will be fireproof throughout, being of brick construction with window frames and sashes of steel and having composition roofing.

The daily capacity of the Wheatland plant will be 900 automobile and truck frames, 10,000 gear and ball bearing rings, from 12,000 to 15,000 antirail creepers, about 2000 forged return ells and approximately 50 tons of 3 to 6-inch balls. The company expects to turn out about 200 industrial trucks per day at its Ellwood City plant.

General offices of the company, now located in the Farmers Bank building, Pittsburgh, will be removed, Oct. 1, to the Chamber of Commerce building. Officers of the company are: Chairman, E. E. Slick; president, L. L. Knox; treasurer and assistant secretary, A. M. Moreland; secretary retary, A. M. Moreland; secretary and assistant treasurer, A. R. McGill; vice president and sales manager, William McIntyre; vice president in charge of operations, C. K. Strausbaugh; auditor, C. L. Dumbauldt; general superintendent, F. J. Curtis; chief engineer and assistant manager, W. L. Schultz. L. C. Blackwell is general superintendent of the Ellwood City plant, while E. L. Peterson is sales manager of the truck department.

Adopts Thermit Welding

Recent approval of the thermit process of welding stern frames, rudder frames and other heavy sections of ships by the American bureau of shipping is expected to introduce the thermit method more generally in the shipyards. It is said that no marine welds made by this process have ever turned out as failures. Any number of these welds have been made in the past but they have been made without the official approval of the shipping bureau. The thermit process is a patent process controlled by the Metal & Thermit Corp., New York. Approval of the method is qualified in that the bureau must be notified sufficiently in advance to have a surveyor in attendance during the welding operation who will inspect and test the weld when completed.

September's Tool Trade Buoyant

Equipment Sellers Active Despite Labor Disturbances—Manufacturers Busy and Giving Deferred Deliveries—Allied Automotive Industries Continue to Lead in Buying—Several Fair Sized Lists Still Pending—Cranes Move Freely

BUOYANCY marked the past month's activity in the sale of machine tools and equipment. This was true despite the admitted fact that labor disturbances served as an effective brake upon buying and caused numerous purchasers to withhold action on issued lists. The buying movement continued right up to and even into the period following the calling of the general iron and steel strike and many dealers remain confident that before the strike has had time seriously to affect their business, it will be past history. It is believed that if labor could be appeased an era of great industrial activity would be ushered in and it is believed that tool selling then would resemble the busiest days of the wartime period. The labor troubles which really did affect the tool industry, were the strikes among machinists in Akron and elsewhere. Similar troubles are threatening in Cincinnati, Bridgeport, Conn., and other manufacturing centers. However, consideration of the delivery dates which are deferred anywhere from 8 to 12 weeks and in some cases 16, can only bring the conclusion that the machine tool industry is in a healthy condition both from a manufacturing and a selling standpoint. Prices which have been tending upward for some time now are within 10 or 12½ per cent of the highest levels which prevailed during the war and in several instances have reached the former basis.

Automotive Industries Buy Heavy Equipment

HEAVY equipment such as boring mills, planers, etc., has occupied a prominent place in the requests for prices as well as orders from the automotive industries. Orders for miscellaneous equipment were placed by the Cadillac Motor Car Co., Detroit, and the Studebaker Corp., South Bend, Ind. The Packard Motor Car Co., and the Hudson Motor Car Co., of the former city, indicated their intention to spend $1,750,000 and $2.250,000 respectively on buildings and equipment and placed some minor orders.

Manufacturers of automobile parts were factors in the month's buying. The Columbia Axle Co., and the Parish & Bingham Co., Cleveland, manufacturers of auto frames, bought miscellaneous equipment. The Electric Auto Lite Corp., Poughkeepsie, N. Y., inquired for several small machines and bought some for its Toledo, O., plant.

Tractor manufacturers again are active. The General Motors Corp. bought about $350,000 worth of equipment for its Janesville, Wis., plant. The Holt Mfg. Co., Peoria, Ill., closed on some of its requirements. The Cleveland Tractor Co., Cleveland, bought considerable land for early expansion. The Moline Plow Co., Moline, Ill., is understood to have supplied its requirements from government-owned stocks. Engineers of the Wellman-Seaver-Morgan Co., Cleveland, are consulting with dealers' representatives regarding equipment for a tractor plant at Akron.

Exporters Activity Somewhat Curtailed

FIGURES published during the month of September, indicated that exports of machinery in July were 48.4 per cent lower than in June. While some slight improvement is expected to show up for subsequent months, continuing low exchange rates have militated against the closing of a large number of export inquiries current in the eastern and other districts. Doubtless the largest single inquiry to appear, came from a Swedish automobile firm, which requires about 400 machines. China bought 12 drills through one New York exporter and Japan, which has been a large buyer in recent months, took many metal-working tools. Several trading companies in New York bought tools for export; these include the American Trading Co., and the Hagermeyer Trading Co. France, Belgium, England, Poland, Finland are some of the other countries to send inquiries for equipment to America.

Varied Manufacturers Indicate Tool Needs

SIZABLE lists of miscellaneous equipment were few and far between in the east during the month although fairly numerous in the Middle West. Two of the largest were issued by the Baldwin Locomotive Works, Philadelphia, and the Standard Oil Co., New York. The former closed on approximately $100,000 worth of equipment and the latter bought 50 machines for shipment to Roumania. R. Hoe & Co., Poughkeepsie, N. Y., bought a fair amount of miscellaneous equipment while the Duquesne Light Co. closed on a number of tools for its new plant at Cheswick, Pa. Armstrong, Blum & Co., Chicago, manufacturers of hacksaws, circulated a fair sized list as did the Economy Baler Co., Ann Arbor, Mich., and A. Bentley & Sons, Toledo; the latter asked for 28 machines. The Canadian Fairbanks Co., Ltd., Montreal, issued a list of 15 large machines for shipment to Vancouver. The American Borvist Co., silk manufacturer, and the Electric Vacuum Cleaner Co., Inc., both of Cleveland, closed on some machines, but the biggest lists current among Cleveland dealers came from rubber companies in Akron.

Many Crane Orders Placed in September

CRANE manufacturers have had all the business they could attend to properly during September. While steel plants took the lead in buying, locomotive manufacturers as well as the Standard Oil Co., made heavy awards; the latter bought 28 jib cranes for Bayway, N. J. The Baldwin Locomotive Works, Philadelphia, and the American Locomotive Co., New York, took 16 and 15 overhead cranes respectively, while the Phelps-Dodge Corp., New York, closed on 12 of the same type. The American Metal Co., New York and the Kelly-Springfield Tire Co., each bought three cranes and the American Shell Co., Paterson, N. J., and the United States Cast Iron Pipe & Foundry Co., Pittsburgh, each took one. Steel companies who closed on anywhere from one to five cranes of different types of cranes include the Carnegie Steel Co., for its Edgar Thomson works; the Donner Steel Co., Buffalo; the Bethlehem Steel Co., for Sparrows Point, Md.; the Witherow Steel Co., Corapolis, Pa.; the Worcester Pressed Steel Co., Worcester, Mass.; the Slick-Knox Steel Co., Wheatland, Pa.; the Pittsburgh Crucible Steel Co., Pittsburgh; the Interstate Iron & Steel Co., Chicago; Weirton Steel Co., Weirton, W. Va.; and the McKinney Steel Co., Cleveland. Inquiries still pending include one from the Carnegie Steel Co., for four cranes and one from the Cambria Steel Co., Johnstown, Pa., for five. The Midvale Steel & Ordnance Co., also is in the market for cranes for its different plants as is the Bethlehem Steel Co. Single crane purchases of overhead, locomotive and other types of cranes were numerous.

Machine Tool Buying Continues

Eastern Inquiries Outnumbered by Orders—Attractive Requests For Prices Current in West—Miscellaneous Inquiries Widely Scattered—Heavy Equipment Awards Postponed in Pittsburgh—Cleveland-Osborn and Stearns Companies Buy

LABOR dissension in iron and steel has not been reflected to any great extent in the machine tool industry up to the present time. The belief is freely expressed that the struggle will not be a long-drawn-out affair and its end may come quickly. In the East, orders are more numerous than inquiries and in Cleveland and vicinity, some extremely satisfactory business is being done, individual sales running all the way from $4000 to $20,000. The inquiry rate keeps up at a splendid rate in the West and in Chicago, machinery merchants claim to be entirely unaffected by the strike. Pittsburgh, where many steel plants have been negotiating for equipment, is hardest hit and many prospective purchasers have postponed action on their requirements of cranes and other heavy equipment. It is believed, however, that were the labor question settled a huge amount of business would come out, since a vast number of projects either are at or are nearing the breaking point. What little unrest in the machinery industry that does exist at present is found among machinists in the tool manufacturing centers such as Brooklyn, N. Y., Paterson, N. J., Bridgeport, Conn., and Cincinnati, O.

Two companies to fill their machine tool and equipment requirements from government-owned stocks recently are the Moline Plow Co., Moline, Ill., and the Remington Typewriter Co., Ilion, N. Y. The latter bought about 50 new or slightly used machines. Others have made efforts to buy but ensuing delays have discouraged them.

A strong tendency is noted in the West for companies who formerly sent machine repair work out, to establish their own machine shops and this has contributed greatly to the current demand.

The largest inquiry current in Cleveland, comes from A. Bentley & Sons, Toledo, O., and the specifications cover many tools. The F. B. Stearns Co., and the Cleveland-Osborn Mfg. Co., Inc., both of Cleveland, made sizable purchases recently. Others in the market include the Uncle Sam Tire Co., Cleveland, and the Corrugated Roofing Co., Minneapolis. The General Motors Corp., Detroit, is reported to be continuing its expansion program and recently purchased three plants in Dayton, O.; the Dayton-Wright Airplane Co., the Dayton Metal Products Co., and the Domestic Engineering Co.

Several new inquiries are out for cranes in the East including one from the American Car & Foundry Co., New York City; one from Claiborne, Johnston & Co., Baltimore, and one from the Midvale-Cambria Co., Boston. The Trans-Continental Merchants, Inc., New York City, wants 59 chain hoists from ½ to 20-ton capacity, for shipment to Japan. Single recent crane purchasers include the Framingham Foundries, Inc., Framingham, Mass.; the Gregg Co., Ltd., Hackensack, N. J.; the Nazareth Foundry & Machine Co., Nazareth, Pa.; and the Carbondale Machine Co., Carbondale, Pa. Dwight P. Robinson & Co., New York City, and J. Lipsitz, Lebanon, Pa., purchased locomotive cranes. Deliveries on this type are improving, one week to 10 days now being all the limit required.

Machine Tool Orders Exceed Inquiries in East

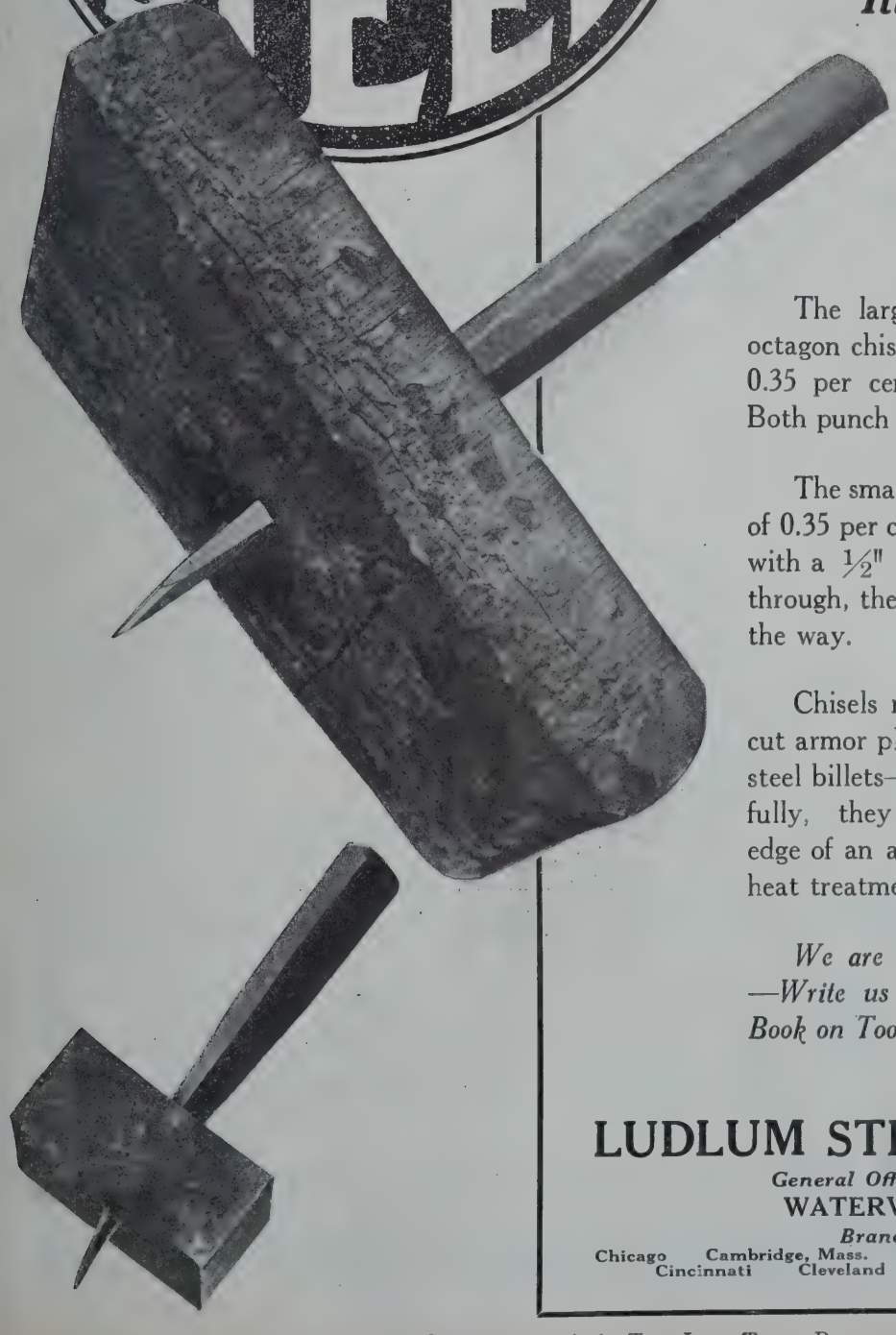
WHILE no large orders are being placed, the total volume of business being awarded in the eastern machine tool market is said to be fairly good. Some sellers report a rather odd situation. They state that despite the unsettlement caused by the steel strike, more orders are being received than inquiries. This development, they assert, is difficult to account for, but nevertheless, they take it as indicating considerable confidence in the trend of events.

At present, the labor situation in the machine tool industry is being little affected by the trouble in the iron and steel industry. A large strike has been threatened by machinists in Brooklyn and trouble may also develop in the Cincinnati district; however, with the improvement in the steel situation, many are hopeful that all trouble may be averted. There has been considerable unrest in Paterson, N. J., and in Bridgeport, Conn., with plants either closed down or partly so, but as a general proposition, the builders of machine tools have not been seriously affected of late by dissension in their own ranks.

The offering of new and used machines by the government and various companies formerly engaged heavily in war work, is being felt, although not to the extent that was expected earlier in the year. This is accounted for in measure by the delay that accompanies practically all transactions where government equipment is involved. However, a recent sizable order to be placed with the government in the East is that of the Remington Typewriter Co., Illion, N. Y., involving about 50 machine tools, either new or slightly used. Sellers, however, are taking an optimistic viewpoint of the situation, stating that the sooner this equipment is sold, the more healthy the market will become.

During the past few days an advance of 15 per cent has been noted in a leading line of shapers. Other

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The smaller illustration shows a block of 0.35 per cent carbon steel 1½" square, with a ½" curved prick punch driven through, the punch remaining curved all the way.

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advances have been noted, but they have been confined almost entirely to special tools.

One of the largest building projects to come up in the East of late is a $1,000,000 plant addition for the International Motors Co., at Allentown, Pa. Another sizable project is a 1-story machine shop, 80 x 220 feet, for the Carbondale Machine Co., Carbondale, Pa. The company now is buying equipment, having already purchased a 5-ton gantry crane.

While there have been no large lists during the past few days, the eastern crane market continues fairly active. Several new inquiries calling for one and two cranes, are out, and orders are being placed steadily. Included in new business is a 10-ton overhead crane for the American Car & Foundry Co., 165 Broadway, New York City. Claiborne, Johnston & Co., Baltimore, are in the market for two 5-ton cranes, with 50 and 75-foot spans respectively. The Midvale-Cambria Co., Boston, is inquiring for a 10-ton crane, with a 65-foot span. The American Metal Co., New York City, has withdrawn its inquiry for one 5-ton and two 10-ton electric cranes, and now is asking for bids on a 25-ton handpower crane. This crane is for Monterey, Mexico.

A feature of the demand is an inquiry for 59 chain hoists, ranging in capacity from ½ to 20 tons. This inquiry has been issued by Trans-Continental Merchants, Inc., 80 Maiden Lane, New York City. The equipment is for Japan, and is as follows: Five ½-ton, 10 1-ton, five 1½-ton, five 2-ton, 10 3-ton, three 4-ton, 10 5-ton, two 8-ton, five 10-ton, one 20-ton and three 15-ton hoists.

Orders of the past week include a 10-ton electric, placed with the Chesapeake Iron Works by the Framingham Foundries, Inc., Framingham, Mass. The Gregg Co., Ltd., Hackensack, N. J., awarded two 7½-ton cranes with spans approximating 58 feet, to the Champion Engineering Co. The Nazareth Foundry Co. & Machine Co., Nazareth, Pa., has placed a 15-ton overhead crane with the Shaw Electric Crane Co. The 28 jib cranes for the Bayway, N. J., plant of the Standard Oil Co. of New Jersey, referred to last week as having been placed, went to the New Jersey Foundry & Machine Co. The Carbondale Machine Co., Carbondale, Pa., has placed a 5-ton gantry crane, with 76-foot span, with the Shepard Electric Crane & Hoist Co.

Deliveries on locomotive cranes are improving steadily. Whereas a few weeks ago several of the builders were booked up a month or six weeks in advance, shipments can now be made most generally within a week or 10 days. Included in awards of the past week is a 20-ton crane for Dwight P. Robinson & Co., 6 Broadway, New York. This business went to the McMyler-Interstate Co., Bedford, O. In addition to the 15-ton crane noted last week, for Chelsea, Mass., J. Lipsitz has also placed a similar sized crane with the Orton & Steinbrenner Co., for Lebanon, Pa.

Strike Brings Postponements in Pittsburgh

WITH no small proportion of the recent inquiries for cranes and other heavy equipment coming from steel manufacturers or industries in close relation with the steel business, the intervention of the strike and the consequent closing down of a number of plants, has brought an indefinite postponement of the placing of orders. Agents of manufacturers of heavy machinery generally in the Pittsburgh district report business to have been quieter in the past week than for several months. Demand for machine tools also has suffered some contraction and the tendency is to ascribe the decline to the unsettled labor situation. Few, if any, of the machinery or tool manufacturers are affected by the strike.

Much Tool Business Current in Cleveland

NOTICEABLE effects of the general iron and steel strike upon the manufacture and sale of machine tools in the Cleveland district are as yet lacking. Sellers report the receipt of numerous inquiries contributed by a widely scattered trade. Orders too are frequent, although sizable business is not being placed at present. However, several orders aggregating from $4000 to $20,000 were placed among Cleveland dealers during the past week. The trade is sanguine as to the early settlement of the difficulty but at the same time realizes that should the strike last another week, the automotive industry will be hard hit, since stocks of raw materials are not carried for long periods. If the automobile manufacturers and allied interests are obliged to shut down, then the machine tool market will experience a set back, because most of the present business is coming from those industries.

The largest inquiry current among Cleveland distributors is the one from A. Bentley & Sons, Toledo, O., mentioned last week. The value of this business is estimated to be in excess of $1,500,000; the company has issued blueprint specifications which cover all types of machine tools as well as other equipment, and so far

Plow Company Obtains Federally-Owned Tools Quickly

WASHINGTON, Sept. 29.—Approximately 80 per per cent of the machinery required by the Moline Plow Co., Moline, Ill., to re-equip its tractor plant which was damaged by fire on Aug. 26, has been purchased from the ordnance department and air service, war department, in co-operation with the machine tool section of the office of the director of sales. This equipment has since been delivered. Brief reference was made to this in recent issues of THE IRON TRADE REVIEW.

On the day of the fire, Vice President R. W. Lea, of the Moline company, under the direction of its president, George N. Peek, formerly vice chairman of the war industries board at Washington, telegraphed to the director of purchase, storage and traffic of the war department, advising him that the complete machine equipment of the company's Universal tractor plant, consisting of engine lathes, turret lathes, automatic screw machines, milling machines, gear hobbers, grinding machines, upright boring mills, single and multiple spindle drills and radials, had been burned and that the company was in the market at once for this equipment, and asking if the war department could supply it with the necessary replacement machinery from the government surplus stocks without delay.

On Aug. 27 a representative of the director of sales left Washington for Moline and on Sept. 9, the war department had sold and put in transit the milling machines, planers and grinders required from the Chicago and Cincinnati districts of the ordnance department and the Chicago district of the air service. Prices were arrived at by the price-fixing chart adopted some time ago by the war department.

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This is particularly noticeable where the material handled is of a rough abrasive nature, such as Cement Clinker, Crushed Stone, Phosphate, Ashes, etc.

The reason for this great success is that the ≻FLINT-RIM≺ wheels have smooth, hard bearing surfaces for contact with the links, and are carefully fitted for the chains, thus giving an ideal condition to start with, and maintaining it so persistently that both the wheels and chain are practically insured against undue wear.

The material increase in the efficient life of the installation, eliminates the expense of frequent renewals, and greatly reduces the ultimate cost.

Specify ≻FLINT-RIM≺ Wheels

LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

New York 299 Broadway
Boston 49 Federal St.
Pittsburgh 1501 Park Bldg.
St. Louis Cent. Nat'l Bank Bldg.
Buffalo 547 Ellicott Square
Wilkes-Barre 2d Nat'l Bank Bldg.
Huntington, W. Va. Robson & Prichard Bldg.
Cleveland 429 Rockefeller Bldg.
Detroit 932 Dime Bank Bldg.
Kansas City, Mo. 306 Elmhurst Bldg.
Seattle 576 First Avenue, S.
Portland, Ore. First and Stark Sts.
San Francisco 582 Market St.
Los Angeles 163 N. Los Angeles St.
Toronto, Can. Canadian Link-Belt Co., Ltd.
Denver Lindrooth, Shubart & Co., Boston Bldg.
Louisville, Ky. Fred'k Wehle, Starks Bldg.
New Orleans, C. O. Hinz, Hibernia Bank Bldg.
Birmingham, Ala. S. L. Morrow 720 Brown-Marx Bldg.

270

LINK-BELT
Elevators and Conveyors

We Also Make

- ☐ Elevators and Conveyors
- ☐ Link-Belt and Sprockets
- ☐ Silent Chain Drives
- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Locomotive Cranes
- ☐ Portable Loaders
- ☐ Coal and Ashes Systems
- ☐ Coal Pockets

Write for Catalogs
Place X in Square

as can be learned little or none of it has been awarded. A smaller inquiry is issued by the Uncle Sam Tire Co., 1908 Euclid avenue, Cleveland; it calls for one each 60-inch boring mill, 20-foot lathe and hack saw with 6-inch capacity. The Bonnot Co., Canton, O., wants a large boring mill and a 6-foot radial drill. The Auer Register Co., Cleveland, wants a squaring shear and the Cuyahoga Tool Co., that city, is in the market for some equipment, including milling machines. The Corrugated Culvert Co., Minneapolis, is in the market for a riveting hammer, an air compressor, a forging furnace, an automatic screw machine and a threading machine. The Kull Machine Co., 2350 East Fifty-fifth street, Cleveland, is advertising for a ⅝ or ⅜-inch Cleveland automatic model B screw machine and a punch press. The Enterprise Aluminum Co., Massillon, O., desires to obtain a 24-inch lathe while the National Safe & Lock Co., Cleveland, is in the market for a cold saw. Among the machine tools wanted by the Molle Typewriter Co., Oshkosh, Wis., is some automatic screw machines, and Frank D. Fuller, president of Fuller & Sons Mfg. Co., Kalamazoo, Mich., maker of truck transmissions, advises his company soon will be in the market for machinery for a 40,000 square foot addition to his plant.

Two of the larger purchasers in Cleveland recently are the F. B. Stearns Co. and the Cleveland Osborn Mfg. Co., Inc., both of Cleveland. The former purchased four No. 2A Warner & Swasey turret lathes, complete with bar and chucking equipment. The Cleveland-Osborn company bought three No. 35 Landis horizontal, boring, milling and drilling machines. The Lewis Steel Products Co., Toledo, O., is understood to have placed its order for 10 or 12 grinders and wants two by express. The best delivery offered by the Brown & Sharpe Mfg. Co. on the type of equipment wanted is April 25 and on some of the machines it produces, delivery cannot be made before October, 1920. Other delivery dates run into May, June, July, etc., of next year, very few of its machines being available for 1919 delivery. Work has started on its 80 x 300-foot machine shop. The Western Gears & Parts Co., Dallas, Tex., is understood to have closed upon most of its requirements.

Manufacturers who are expected to enter the market for equipment soon for additions, new buildings, etc., represent different lines of activity. The C. & G. Cooper Co., Mt. Vernon, O., maker of engines, etc., is to spend $500,000 on new buildings, including an extension to its machine shop. The Hoover-Suction Sweeper Co., North Canton, O., is to erect a 4-story addition, 80 x 170 feet. The National Spring Products Co., Gary, Ind., is reported to be ready to erect a 4-story plant, 500 x 890 feet. The Fulton Foundry & Machine Co., Cleveland, has awarded a 100 x 111-foot addition. The Thompson Grinder Co., Springfield, O., will erect a 1-story factory, 62 x 200 feet. Other companies in the automotive trades who are arranging for expansions include the Automobile Equipment Co., Blackstone building, Cleveland; the Champion Ignition Co., Flint, Mich; the Hupp Motor Car Co.; the Maxwell Motor Co., and the Page-Detroit Motor Car Co., Detroit; the Apex Motor Co., the Michigan Machine Co., and the J. W. Murray Mfg. Co., that city. Action of some sort in Cleveland is expected to be taken by the National Supply Co., Toledo, O.

Chicago Market Unaffected by Strike

BUYING of machine tool equipment in the Chicago market has not been affected by the strike in the steel industry, as far as merchants are able to determine. The large volume of inquiry and sales in single tools or small lots continue, although buying in larger lots still is absent.

One factor which brings considerable business as noted by several sellers, is the establishment of small machine shop plants to do repair work which formerly was sent out to general shops. Apparently this practice has proven unsatisfactory and many companies are preparing to do their own repair work. As an instance of the unusual sources from which this demand comes, a Chicago seller recently took an order for several light tools from a concern which operates a mill to grind cattle feed, the equipment being designed to make repairs on the mills and conveying machinery.

Strong demand for additional equipment is being received from manufacturers of road building machinery, gasoline engines, truck and automobile engines, concrete mixers and heavy duty tractors. The only recent change in prices is an advance of 10 per cent on radial drills which is general. Deliveries are becoming more advanced, and 60 to 90 days or more is now the rule.

The St. Louis Brass Mfg. Co., St. Louis, will build a 6-story factory building. The Michigan Machine Co., Detroit, will build a 3-story factory building. The Maytag Co., Newton, Iowa, is building a foundry. Ponca City, Okla., has voted $200,000 for a waterworks system and electric light plant.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

PORTLAND, ME.—The American Zinc Co. of Ohio has been incorporated with $1,000,000 capital by C. A. Hight and H. P. Sweetser.

WESTMINSTER, VT.—A $200,000 shop, one story, 150 x 500 feet, will be erected by the Abenaquet Machine Works.

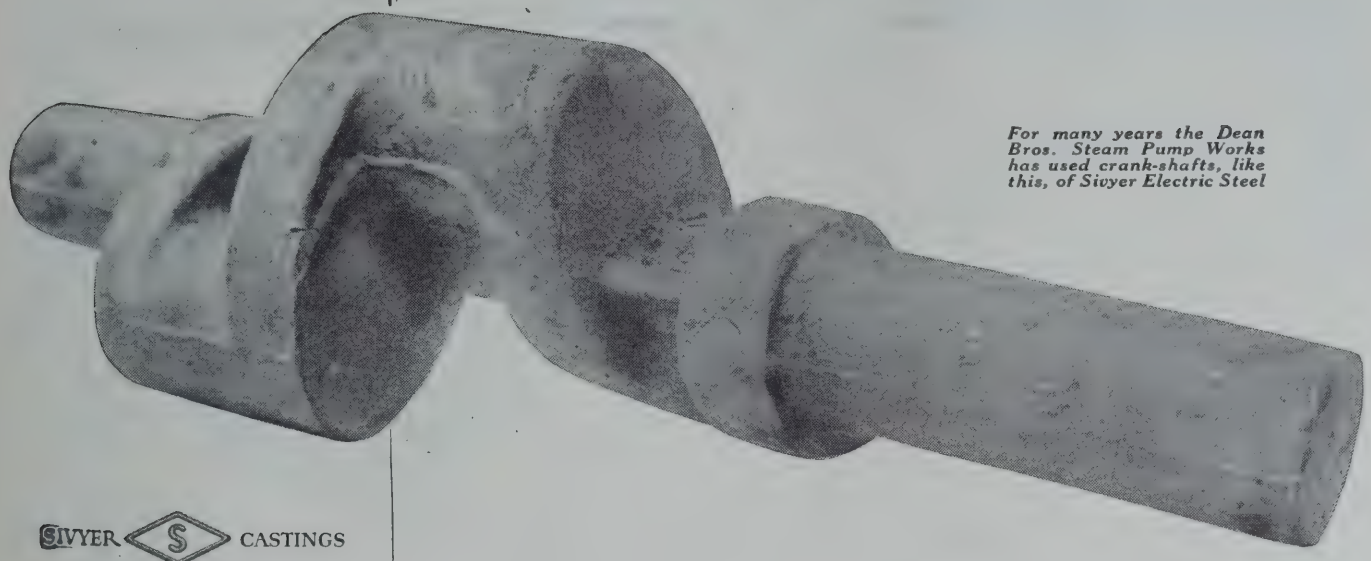
BEVERLY, MASS.—The United Shoe Machinery Co. has let a contract for a storage building to cost $500,000.

BOSTON.—The Landis Machine Co. is having plans drawn for a machine shop, 1-story, 20 x 120 feet, to cost $65,000.

BOSTON.—The United States Steel Toy Co. has been incorporated with $75,000 capital by K. A. Juthe, John C. Juthe, Alliston, Mass., and John R. Riggleman.

BOSTON.—The Barnstead Mfg. Co. has been incorporated to make sterilizers, stills, etc., with $40,000 capital by Hiram Barron, J. Hiram Smith and A. P. French.

BOSTON.—The Lithuanian Mechanics & Machinists



For many years the Dean Bros. Steam Pump Works has used crank-shafts, like this, of Sivyer Electric Steel

SIVYER CASTINGS

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly: Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly: Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly: Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

THIS crank-shaft casting is one of many interesting illustrations of the merits of Sivyer methods and metal that have won for Sivyer Castings their national market. Crank-shaft castings must be absolutely sound, entirely free from shrink-holes and other defects. Cast crank-shafts must be made of superior steel so thoroughly annealed that they will have to the utmost that superior strength and resistance to crystallization so vitally essential to their function. For years Sivyer methods and metal have produced for Dean Bros. cast crank-shafts so free from flaws, so thoroughly proof against crystallization, that the record thus made has influenced a number of manufacturers in different sections of the country to come to Sivyer for similar castings.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Corp. has been incorporated to manufacture machinery, autos and accessories with $100,000 capital by Jonas L. Girdvianis, Peter Dangveckis, South Boston, Mass., and A. Valantiejus.

CAMBRIDGE, MASS.—Bids closed Sept. 27 for a 2-story, 85 x 80-foot warehouse for the Riverside Boiler Works.

CHELSEA, MASS.—The Richard T. Green Co. will take figures for a dry dock.

EASTHAMPTON, MASS.—Plans have been drawn for a 2-story addition to the plant of the West Boylston Mfg. Co., to cost $325,000.

FAIRHAVEN, MASS.—The Atlas Storage Warehouse, Inc., will build a 1-story refrigerating plant, a 3-story, 75 x 200-foot warehouse and a 1-story, 30 x 40-foot boiler house.

HOLYOKE, MASS.—The Wells Hardware Co., Inc., plans a 4-story building, to cost $50,000.

WEST SPRINGFIELD, MASS.—The Gilbert & Barker Mfg. Co. will begin work shortly on a 1-story, 30 x 140-foot building.

WHITINSVILLE, MASS.—The Whitin Machine Co. is planning the construction of 31 cottages for its employes.

WINTHROP, MASS.—The Universal Metal Products Co. has been incorporated with $25,000 capital, by Daniel B. Riley, Wilfred E. Tait and William Milnes.

WOLLASTON, MASS.—The Tubular Rivet & Stud Co. is taking bids for a building.

WORCESTER, MASS.—The Norton Co. has let the contract for a 1-story, 40 x 400-foot kiln building.

WORCESTER, MASS.—The Worcester Auto Lock Co. has geen incorporated with $20,000 capital by William C. Bemis, Patrick F. O'Hara and Isidor Freed.

WORCESTER, MASS.—The Standard Specialty Co. has been incorporated to manufacture machines and machinery with $10,000 capital by Claire W. Deardorff, Wallace A. Hutchinson and R. H. Montague, Millbury, Mass.

WORCESTER, MASS.—Contracts have been awarded by the Coppus Engineering & Equipment Co. for an $80,000 foundry.

WORCESTER, MASS.—The Worcester Brass & Electro Plating Co. has purchased the factory of Oliver M. Dean & Sons, 316 Shrewsbury street, for $27,000 and will move there.

CENTRAL FALLS, R. I.—The Rhode Island division of the National Lamp works of the General Electric Co. has let the contract for a 3-story, 50 x 96-foot warehouse to cost $50,000.

WOONSOCKET, R. I.—The Electric Maintenance & Engineering Works, 143 Railroad street, has been organized to manufacture electrical specialties, by Arthur Dauray, 186 Harrison street, and others.

WOONSOCKET, R. I.—The Rhode Island Machine & Tool Co. has been incorporated with $100,000 capital by Wilfrid Jacques, H. Eugene Getchell, Raymond P. Jacques and Arthur A. Jacques.

BRISTOL, CONN.—The Sessions Clock Co. has let the contract for a 1-story, 40 x 110-foot factory addition.

BRISTOL, CONN.—The J. H. Sessions & Son Co., hardware, has let a contract for an addition, four stories, 72 feet long.

HARTFORD, CONN.—The Electric Parts & Service Co., 1271 Main street, has been incorporated to manufacture electrical equipment, by C. H. Schrag, Ashford street, and others.

NEW HAVEN, CONN.—A $25,000 machine shop, two stories, 44 x 100 feet, will be erected by the New Haven Machine Co.

NEW HAVEN, CONN.—The Texas Oil Co., 17 Battery place, New York, will build a garage and machine shop and office building here at the cost of $35,000.

WEST HARTFORD, CONN.—The Whitlock Coil Pipe Co. is about to start work on a plant addition, 1-story, 45 x 114 feet, to ocst $15,000.

North Atlantic States

ALBANY, N. Y.—Hunt, Helm & Ferris is having plans drawn for a factory and storage building.

ALBANY, N. Y.—The Kelly-Dennin Co. has plans for a 1-story machine shop, 150 x 150 feet, to cost $50,000.

ALBANY, N. Y.—The Thatcher Foundry & Propeller Corp., has plans for a cupola house and machine shop.

ALBANY, N. Y.—S. Wander & Sons, 135 Church street, will creet a plant addition, 3-stories, 70 x 128 feet, at a cost of $50,000.

BROOKLYN, N. Y.—The Jensen Oil Engine & Machine Co. recently was incorporated with $20,000 capital, by C. P. and B. Jensen, 220 Wakeman place.

BROOKLYN, N. Y.—The A. Schader's Sons, Inc., 783 Atlantic avenue, brass and metal products, is building a plant, 90 x 196 feet, at an estimated cost of $450,000.

BUFFALO.—The Harrison Radiator Corp. has awarded a contract for a plant addition, 1-story, 160 x 289 feet.

ELMIRA, N. Y.—The Chemung Foundry & Supply Co. has been incorporated with $50,000 capital, by H. N. Rubin, J. P. and J. D. Ward.

ESOPUS, N. Y.—The Franco-Engine & Fuel Corp. recently was incorporated with $20,000 capital, by F. Bien and J. L. Frieder, 353 West 118th street.

LARCHMONT, N. Y.—The Standard Steel & Bearings, Inc., recently was incorporated with $20,000,000 capital, by Harold C. Pryer, Ralph A. Gamble, Larchmont, N. Y., and Edwin D. Robbins, New Haven, Conn.

LOCKPORT, N. Y.—The Lockport Auto Radiator Corp. has been incorporated with $30,000 capital, by J. L. Branch, C. D. Nye and F. M. Capell.

LOG ISLAND CITY, N. Y.—A $300,000 factory building will be erected by the Gehnrich Indirect Heat Oven Co., 60 Franklin avenue, Brooklyn.

LONG ISLAND CITY, N. Y.—The Nichols Copper Co. has plans for a 1-story addition, 157 x 182 feet, to cost $75,000.

NEW BALTIMORE, N. Y.—The New Baltimore Shipbuilding & Repair Co. has been incorporated with $45,000 capital, by W. J. Wade and others.

NEW YORK.—The Aluminum Co. of America, 120 Broadway, has awarded contracts for a plant addition, 3-stories, 125 x 300 feet.

NEW YORK.—Lockwood, Greene & Co., engineers, has prepared plans for a power plant extension for the C. H. Nasland & Sons Co.

NEW YORK.—The Empire Polishing, Metal Plating Co. has been incorporated with $10,000 capital, by E. C. Kelly, 55 Liberty street.

NEW YORK.—The Dry Dock Sheet Metal Works, 140 West Forty-second street, has acquired a site on which it will erect a plant.

NEW YORK.—The Donoghue Machine Co. has been chartered with $50,000 capital, by J. and J. C. Donoghue and H. Koch, 1790 Walton avenue.

NEW YORK.—The Utility Heater Co. recently was chartered with $10,000 capital, by A. A. Berman, A. Sykes and L. Siegel, 10 East Fifteenth street.

NEW YORK.—The Philip P. Smith Co., metal products, recently was incorporated with $10,000 capital, by P. G. and S. L. Simon and P. P. Smith, 11 Broadway.

NEW YORK.—The Empire Repair & Electric Welding Co. has been incorporated with $1,000,000 capital, by R. C. Thackhara, E. F. Luckenback and C. Kuhne, 41 Whitehall street.

NEW YORK.—The Ess De Ess Machine Corp. recently was incorporated with $5000 capital, by T. Smirnoff, H. Dashmna and J. Stiriss, 11 West 126th street.

NEW YORK.—The Acme Furnace Equipment Co., capitalized at $21,000, recently was incorporated by R. W. Owncs, E. W. Stuart and F. M. Clute, 100 Broadway.

NEW YORK.—The McPhilben Lighting Fixture Co. recently was incorporated with $43,000 capital, by M. Malk, H. Schneider and B. Schaefer, Queens, N. Y.

NEW YORK.—The Garment Trade Machinery & Equipment Corp. has been incorporated with $30,000 capital, by M. Schwartz, L. and M. Rosenbaum, 1084 Forest avenue.

NEW YORK.—The Midland Accessories & Supply Co. has been incorporated with $25,000 capital, by J. J. Rafferty, E. W. Fox and W. G. Gooldy, 536 West 145th street.

NEW YORK.—The Russian Electric & Engineering Corp. of America has been incorporated with $5000 active capital, by W. Paul, C. Eakin and J. J. Hayden, 258 Broadway.

NEW YORK.—The Furnace Engineering Co. recently was incorporated with $10,000 capital, by H. S. Sleicher, E. B. Priebe and W. C. Drake, Inwood, N. Y.

NEW YORK.—The Klingtite Mfg. Co., machinery and chemical apparatus, chartered with $125,000 capital, recently was incorporated by O. Turner, R. S. Allen and W. G. Conpaughton, 672 St. Nicholas avenue.

NEW YORK.—Horace G. Cooke, Inc., blowers, exhausters, pumps, etc., recently was incorporated with $100,000 capital, by B. N. Bishop, G. P. Breckenridge and H. G. Cooke, 300 West 109th street.

NEW YORK.—The Stephen Decatur Hausler Co., hardware, tools and metal specialties, has been incorporated with $20,000 capital, by J. Lebowich, I. Bernstein and S. D. Hausler, 233 West 107th street.

NIAGARA FALLS, N. Y.—The Niagara Machine & Tool Co. has awarded a contract for a plant addition.

NIAGARA FALLS, N. Y.—The Carborundum Co. will build an addition to its plant on Buffalo avenue to cost $92,000. George R. Rayner is general manager.

RENSELAER, N. Y.—L. J. Tibbitts, 312 Broadway, contemplates a machine shop and garage estimated to cost $30,000.

ROCHESTER, N. Y.—The Co-Operative Foundry Co. has had plans drawn for a plant addition.

ROCHESTER, N. Y.—The Northwestern Aeroplane Co. has been incorporated with $50,000 capital, by C. and W. F. Smith and F. A. B. Jonklund.

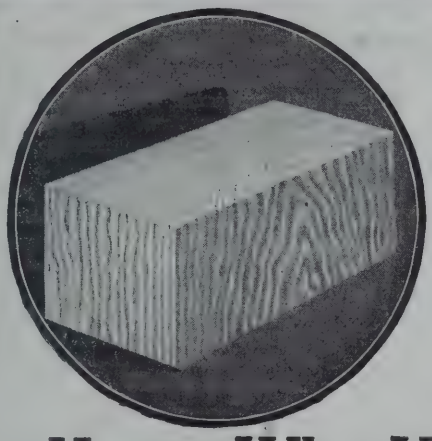
ROCHESTER, N. Y.—The Davenport Machine Tool Co. recently was incorporated with $625,000 capital, by W. S. Davenport, C. R. Burt and C. W. McKay.

SYRACUSE, N. Y.—The Spring Nut Lock Co. has been incorporated with $25,000 capital, by L. O. Keith, W. R. Hollywood and A. E. Culver.

SYRACUSE, N. Y.—The Inland Marine Corp. has been incorporated with $100,000 capital, by D. E. Alvord, B. E. Shore and M. S. Melvin to manufacture marine equipment.

ALLENTOWN, PA.—A $1,000,000 plant addition, two stories, 300 x 600 feet, will be erected by the International Motors Co.

CARBONDALE, PA.—The Carbondale Machine Shop



Kreodone
EVERLASTING
WOOD BLOCK FLOORS

Know Why You Are Buying What You Are Buying

THE engineers of the Big Four Railroad studied every available flooring material when selecting the floor to go in the Wheel Shop at Indianapolis. And they finally chose Kreodone Wood Blocks as being best suited to meet the tremendously hard service to which their floor must be subjected.

When you place *your* contract for floor blocks, be certain to specify treatment with *pure, unadulterated creosote oil—free from even a trace of tar.*

Kreodone is not only a pure unadulterated creosote oil. It is a refined, condensed, creosote oil, permanent and non-volatile.

BEAR in mind that the kind of oil used in treating the blocks is the most important factor in successful service—to insure permanency.

A KREODONE floor, laid according to our specifications, will give longer and better service than any other known type of industrial floor and never requires repair or replacement.

Time has proved the fact. Let us give you the proof—our references.

Write for our illustrated, free booklet giving our reasons WHY you should use KREODONE—*the pure creosote oil block.*

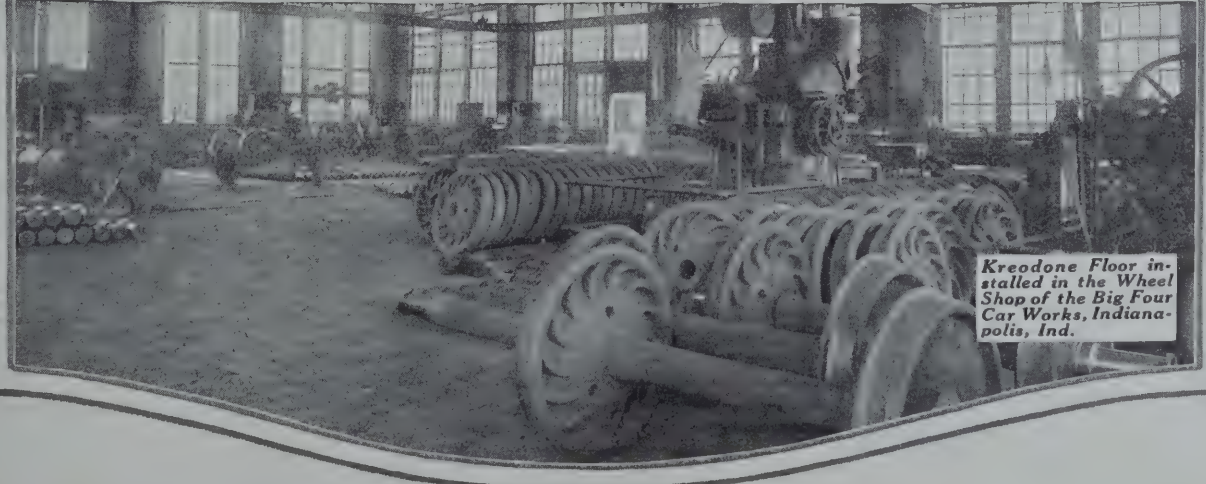
Get the *Genuine KREODONE* Blocks
Watch that Spelling—it means Service

REPUBLIC CREOSOTING COMPANY, Indianapolis, Ind.

Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

BRANCH OFFICES:

315 Peoples Gas Bldg., Chicago
206 Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland
31 Transportation Bldg., Philadelphia
828 Plymouth Bldg., Minneapolis
445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hammond Bldg., Detroit



Kreodone Floor installed in the Wheel Shop of the Big Four Car Works, Indianapolis, Ind.

has let a contract for a 1-story machine shop, 80 x 220 feet.

CARNEGIE, PA.—The S. Keighley Co. will remodel the plant of the Adler Stove Works for its own use.

CHESTER, PA.—The American Locomotive Co. is reporttd planning to expend $1,000,000 in doubling the capacity of its steel castings plant here.

CONNELLSVILLE, PA.—The Connellsville Foundry, Machine & Steel Castings Co. plans to increase its capital from $150,000 to $250,000, and will enlarge its plant.

CONNELLSVILLE, PA.—The Pittsburgh-Connellsville Coal & Coke Co. recently was incorporated with $10,000 capital, by R. H. Soisson, M. Burns and H. F. Bonnals Jr.

ERIE, PA.—The Erie Motor Truck Mfg. Co. will build a plant. L. H. Heiman is director.

GREENSBURG, PA.—The Penn Aluminum Co., Pittsburgh, will build a plant here.

JOHNSTOWN, PA.—The Blum Safety Razor Co. has been incorporated with $50,000 capital, by T. J. Callete, Harry Silverstone and Harry Blum.

McKEESPORT, PA.—The Amper Iron & Metal Co. has been incorporated with $5000 capital, by Robert Amper, Thomas Amper and A. M. Amper.

PHILADEDPHIA.—A $65,000 factory, two stories, 75 x 180 feet, will be erected by the Sharples Specialty Co., manufacturer of separators.

PHILADELPHIA.—Approximately $3,000,000 will be expended here by Sears Roebuck & Co., Chicago, on three warehouses.

PHILADELPHIA.—The Wicaco Screw & Machine Works, Seventh and Wood streets, has acquired a site on which it plans to erect a plant to cost $100,000.

PHILADELPHIA.—The Hale & Kilburn Corp., Eighteenth and Lehigh streets, automobile bodies, has awarded a contract for a 5-story, 196 x 260-foot plant, to cost $100,000.

PITTSBURGH.—The A. Garrison Foundry Co. has awarded contracts for a foundry, 120 x 190 feet.

PITTSBURGH.—The Union Steel Casting Co. has plans for extensions and improvements to its foundry, to cost $27,400.

PITTSBURGH.—The Allegheny Gear Works has taken an option on a plot of land, 129 x 284 feet, and has awarded a contract for a building, 80 x 135 feet.

PITTSBURGH.—The Pittsburgh Gage & Supply Co., Liberty avenue, manufacturer of mechanical specialties, etc., has plans for a 6-story plant addition, 149 x 174 feet, to cost $150,000.

PITTSBURGH.—Four storage buildings, a pattern shop and several tank cars, were damaged recently by a fire which broke out in the plant of the Pittsburgh Model Engine Co. The loss was estimated at $200,000.

STRUDSBURG, PA.—The Pocomo Metal Mfg. Co. has started work on the erection of a new plant here.

EAST ORANGE, N. J.—Bonner & Hof, Inc., has been incorporated with $100,000 capital to manufacture automobiles, by E. N. Bonner, Jamaica, N. Y., and H. J. Hof, Newark, N. J.

HILTON, N. J.—Work will start shortly on the first unit of the proposed cutlery plant of the H. Boker Co., of New York. As one of the three units of the main factory there will be a 3-story building, 135 x 155 feet. There will also be a 1-story forge and hammer shop, 57 x 137 feet and a power house, 58 x 80 feet.

NEWARK, N. J.—The Die Casting Co. has awarded a contract for a plant addition.

NEWARK, N. J.—Leonard M. Randolph will erect a 1-story machine shop, 27 x 109 feet.

NEWARK, N. J.—A machine shop will be erected here by Leonard M. Randolph.

NEWARK, N. J.—Herman Pedulaky is having plans drawn for an automobile body plant.

NEWARK, N. J.—A $66,000 factory, 4-stories, 60 x 80 feet, will be erected here by the General Electric Co.

NEWARK, N. J.—I. M. Griffiths, 41 Hamilton street, will erect a 2-story garage and machine shop, 57 x 107 feet, at an estimated cost of $20,000.

NEWARK, N. J.—The General Electric Co. will erect a 4-story plant, 60 x 80 feet at an estimated cost of $66,000.

NEWARK, N. J.—The Rose Mfg. & Machine Co., 111 Hamilton street, has been organized by Herman Rose and others.

NEWARK, N. J.—The Terminal Pattern & Model Works is having plans drawn for alterations to its plant.

NEWARK, N. J.—The L. Lawrence & Co., 292 Halsey street, copper-smithing works, has plans for a 1-story plant, 48 x 150 feet, to cost about $20,000.

NEWARK, N. J.—The Die Castings Co. of New Jersey has broken ground for a $25,000 plant addition. The building will be two stories, 50 x 90 feet.

NEWARK, N. J.—The Nick Electric Mfg. Co., electrical manufacturer, recently was incorporated with $50,000 capital, by Albert Nick, A. B. Gutman and J. R. McClear.

NEWARK, N. J.—The Tanners Machine Co. has been incorporated with a capital of $100,000 to manufacture machinery. The incorporators are Ralph G. and Lawrence J. Steinhardt, James Brown and Charles Hanko.

PERTH AMBOY, N. J.—The Perth Amboy Dry Dock Co. contemplates a plant addition.

NORFOLK, VA.—The Norfolk Electric Mfg. Co. will build a plant. P. O. Sutton, 215 Cumberland street, is general manager.

RICHMOND, VA.—The Southern Stove Works, Hermitage and Leigh streets, has plans for a plant for the manufacture of stoves. The company is capitalized at $500,000.

Central States Activity

CRANDON, WIS.—The Vulcan Last Co., Portsmouth, O., will erect a 1-story addition, 30 x 200 feet and a shipping building, 100 x 100 feet.

CHILTON, WIS.—The Aluminum Specialty Co. has awarded contracts for a factory and power house, 2-stories, 60 x 200 feet, to cost $40,000.

CHIPPEWA FALLS, WIS.—The Yates & Johnson Co. plans a foundry, 125 x 200 feet, at an estimated cost of $75,000.

CHIPPEWA FALLS, WIS.—E. G. Pannier & Sons, farm machinery and agricultural implements, plans a shop addition, 125 x 200 feet, costing about $100,000 with additional equipment.

EAU CLAIRE, WIS.—The Rosholt Machine Co. will spend $20,000 to $25,000 in erecting a machine shop addition and installing additional machinery for manufacturing gas engines, railroad service cars and similar machines. K. Rosholt is president.

BAY CITY, MICH.—Construction of a new plant for the Union Truck Co. has been started.

DETROIT.—The Paige-Detroit Motor Car Co. is taking bids for a machine shop, 275 x 528 feet.

DETROIT.—The Parish Mfg. Co. has awarded a contract to the Austin Co. for an addition, 98 x 260 feet, to cost $55,000.

DETROIT.—The Austin Co. has a contract to erect an addition, 60 x 100 feet, to the plant of the Standard Screw Products Co.

CHICAGO.—The American Car & Foundry Co. will build an addition.

CHICAGO.—The Standard Oil Co. plans a machine shop, 1-story, 50 x 160 feet, to cost $50,000.

CHICAGO.—The Hurley Machine Co. has increased its capital and is reported planning to enlarge its plant.

CHICAGO.—The Whitman & Barnes Co. has a permit to erect a power house at an estimated cost of $100,000.

CHICAGO.—Architect John D. Chubb, 109 North Dearborn street, is drawing plans for a power house for the City National Bank, Battle Creek, Mich.

INDIANAPOLIS.—The Lockhart Mfg. Co. has been incorporated with $20,000 capital to manufacture tank heaters, by Howard Lockhart, L. I. Cornell, M. Cornell and M. Lockhart.

INDIANAPOLIS.—A new automobile company headed by McCall White and E. O. Howard, Detroit, formerly of the Cadillac Motor Car Co., will within a few days, according to a report, take over the plant of the Stenotype Co., Kentucky avenue, which it will utilize for the manufacture of automobiles.

MICHIGAN CITY, IND.—The Perfective Machine Co. is having plans prepared for a foundry, 60 x 100 feet, to cost $50,000.

MICHIGAN CITY, IND.—A. V. Caprano, architect, 923 Blue Island avenue, is preparing plans for a manufacturing plant and boiler house, 1-story, 72 x 127 feet, to cost $22,000. The name of the owner is withheld.

MUNCIE, IND.—The General Motors Corp. is reported planning to erect new factory buildings here.

NEW ALBANY, IND.—The Gohmann Bros. & Kahler, operating a stove foundry here, are building an addition, 60 x 174 feet.

SHERIDAN, IND.—The Sheridan Cutlery Co., capitalized at $50,000, has been chartered to manufacture cutlery by Theodore Pettijohn, president, and Maurice Mendenhall, secretary.

UNION CITY, IND.—The Union City Wheel Works plans a 2-story plant addition, 50 x 72 feet, to cost about $25,000.

VALPARAISO, IND.—The McGill Mfg. Co., electrical supplies, contemplates a plant, 3-stories, 65 x 260 feet, to cost $150,000.

AMHERST, O.—A foundry company, capitalized at $75,000, and backed by Elyria, O., interests, is reported to have taken an option on a plant site here. No details have been given out.

CINCINNATI.—The Modern Foundry Co. has awarded contracts for a pattern storage building, 4-stories, 60 x 160 feet, to cost $55,000.

CINCINNATI.—The Cincinnati Milling Machine Co. has had plans prepared for an addition, 5-stories, 70 x 175 feet.

CLEVELAND.—The Ohio Machine & Boiler Co. contemplates a power plant, 55 x 58 feet.

CLEVELAND.—The Auto Carriage Co. plans a plant, 3-stories, 60 x 400 feet, to cost $300,000.

CLEVELAND.—The Champion Machine & Forging Co. has awarded contracts for enlargements to its plant.

CLEVELAND.—The Metals Plating Co. has awarded a contract for a plant, 1-story, 34 x 90 feet, to cost $15,000.

CLEVELAND.—The F. H. Bultman Co. has awarded a contract for a machine shop, 1-story, 84 x 112 feet, to cost about $35,000.

CLEVELAND.—The Lang Body Co. has taken out a permit to erect an automobile body manufacturing plant, to cost $200,000.

CLEVELAND.—The Fulton Foundry & Machine Co.,

1209 Marquette road, has awarded a contract for a plant addition, 100 x 111 feet, to cost $70,000.

CLEVELAND.—The International Steel Tube & Rolling Mills, Inc., Leader-News building, has selected a site and will erect a plant soon.

CLEVELAND.—The Enamel Products Co., 341 Eddy road, has awarded a contract for a 2-story, 40 x 180-foot plant addition to cost $10,000.

CLEVELAND.—The Cleveland Metal Products Co has awarded a contract for a warehouse, to the Austin Co. The building will be 60 x 142 feet.

CLEVELAND.—The Osborn Engineering Co. is drawing plans for a machine shop, 1-story, 135 x 200 feet, for the Ball Engine Co., Erie, Pa., to cost about $75,000.

CLEVELAND.—The Standard Equipment Co., Lorain avenue and West 106th street, automobile specialties, is reported planning a plant addition, 2-stories, 75 x 100 feet, to cost $25,000.

CLEVELAND.—The J. W. Murray Mfg. Co., Detroit, J. W. Murray, president, is reported planning a branch plant in this city for the manufacture of sheet metal products and specialties.

CLEVELAND.—The Lake Erie Steel & Wire Co., which recently increased its capital from $75,000 to $225,000, plans to enlarge its plant by an addition,

Business Changes

INCREASED business has caused the Fairbanks Co. to move its Boston branch house from Pearl and Franklin streets to 374 Congress street, South Boston, Mass.

* * *

The J. E. F. Spark Plug Co., 1826 Brown street, Milwaukee, has completed a new machine shop and in moving into its new quarters. The company has changed its name to Viktry Mfg. Co., and the name of the J. E. F. Sales Corp. to Viktry Sales Co.

* * *

Bethlehem Fabricators, Inc., Bethlehem, Pa., formerly the Guerber Engineering Co., has opened a New York office at room 1106 at 505 Fifth avenue.

* * *

The Carborundum Co., Niagara Falls, N. Y., has opened a new sales office and warerooms in the Burkhardt building, Second and Larned streets, Detroit, in charge of A. Dobson, formerly manager of the Montreal office of the company.

* * *

The Emerman Co. and the Erie Iron & Metal Co., dealers in iron and steel scrap, have opened joint offices in the American Trust bldg., Cleveland, in charge of Harvey Emerman, president, and Lewis B. Emerman, vice president. The main offices of these companies will continue at Erie, Pa., in charge of Leo A. Weil and Albert Emerman.

50 x 180 feet, and to install additional equipment for the manufacture of cold drawn steel.

CLEVELAND.—The Automobile Equipment Co., Blackstone building, has awarded contracts for a 2-story, 65 x 100-foot plant, estimated to cost $60,000.

CLEVELAND.—The Collinwood Foundry & Mfg. Co. has been incorporated with $150,000 capital, by D. J. Zinner, F. F. Spurney, E. M. Chaloupke and C. J. Zinner, 312 Society for Savings building.

DAYTON, O.—The Dayton Pipe Coupling Co. is erecting an addition, 1-story, 90 x 120 feet.

DAYTON, O.—The Efficiency Tool Co., capitalized at $10,000, recently was incorporated by William H. Carroll, Edward B. Glaser, Harry P. Roennecke, John B. Rettich and William H. Collins.

DAYTON, O.—Part of the plant of the Dayton Malleable Iron Works recently was damaged by fire. The loss has been estimated at $50,000.

DELPHOS, O.—Contracts have been awarded to the the H. K. Ferguson Co., Cleveland, for an addition to the plant of the American Road Machinery Co.

ELYRIA, O.—The Northington Ball Co. will take bids soon for a plant addition to cost about $70,000.

ELYRIA, O.—The American Crucible Products Co. recently was incorporated with $50,000 capital, by L. B. Fauver, B. L. Farmer, F. L. Hamel, J. W. Schmauch and H. A. Daniels.

HAMILTON, O.—The H. P. Deuscher Co. has plans for a foundry addition to include a core room, 1-story, 45 x 60 feet, to cost $30,000.

LORAIN, O.—The Steel Stamping Co. plans a plant, 1-story, 50 x 130 feet, to cost $30,000.

LORAIN, O.—The old plant formerly operated by the Brown-Cochran Co. has been sold to the Aetna Steel Casting Co., Cleveland, which plans to install two furnaces for the production of large and small castings.

MANSFIELD, O.—The Westinghouse Products Co. has awarded a contract for a plant addition, 3-stories, 100 x 150 feet, to cost $15,000.

MASSILLON, O.—Work on a plant for the Beans Spring & Mfg. Co., which was recently organized, has been started. The plant will consist of two buildings, 80 x 360 feet and 80 x 250 feet. Automobile springs will be manufactured. J. F. Beans is president.

MINERAL RIDGE, O.—The Ohio Steel Products Co. has started work on a plant, to cost $65,000.

NORTH CANTON, O.—The Hoover Suction Sweeper Co. is having plans drawn for a plant addition, 4-stories, 80 x 170 feet, to cost $125,000.

SANDUSKY, O.—The Ohio State Rubber Tire Co. is taking bids for a power plant and machine shop.

SPRINGFIELD, O.—The Thompson Grinder Co. has plans for a factory and office building, 1-story, 62 x 200 feet, to cost $60,000.

TOLEDO, O.—The Automobile Cylinder Regrinding Co. recently was incorporated with $5000 capital, by L. A. Foley, M. A. Foley and others.

TOLEDO, O.—Work has started on a $100,000 plant for the Lewis Steel Products Co., valve manufacturer. The main buildings will consist of a foundry, 80 x 300 feet, a machine shop of the same dimensions and a 2-story office building. A. R. Clas is president.

COVINGTON, KY.—This city proposes to put in a new pump at the Fort Thomas waterworks plant.

HARRODSBURG, KY.—The Bohon Buggy Co. proposes to build an addition to cost $65,000.

MOUNDSVILLE, W. VA.—Work is progressing on a plant for the Cameron Tool Co.

WHEELING, W. VA.—The J. E. Moss Iron Works is reported planning a plant addition, 120 x 240 feet, and an office building addition, three stories, 25 x 100 feet.

ANDERSON, IND.—The Anderson Foundry & Machine Works contemplates a plant addition, 2-stories, 80 x 200 feet, to cost $75,000.

ANDERSON, IND.—The plant of the Spring-Steel Fence & Wire Co. will be moved to Mason City, Iowa, according to a current report.

BRAZIL, IND.—J. M. Cutshall & Sons have the contract to erect a heating plant for the city.

Business in Canada

WINNIPEG, MAN.—The Tavani Electric Steel Co., Ltd., Belleville, Ont., contemplates a steel foundry here at an estimated cost of $5,000,000.

SYDNEY, N. S.—The Dominion Iron & Steel Corp. contemplates enlarging the capacity of its open hearth plant.

TRURO, N. S.—The city will build an addition to its electric lighting plant.

MONTREAL, QUE.—The Anglo Canadian Wire Works, Ltd., has awarded contracts for a plant here. Hutchison & Wood, 2 Place D'Armes, are architects.

MONTREAL, QUE.—The Dominion Appliances, Ltd., have been incorporated with $10,000 capital, to manufacture gears, equipment for railway cars, locomotives, etc.

MONTREAL, QUE.—Leger, Lavoie, Ltd., have been incorporated to manufacture automobiles, motor vehicles, engines, etc., with $100,000 capital, by Edouard E. Leger, Louis Dupuis, Napoleon F. Lavoie and others.

QUEBEC, QUE.—The International Paper Co., Ltd., Three Rivers, Que., is erecting a manufacturing plant here. The power plant will cost $15,000.

BELLEVILLE, ONT.—The Tivani Steel Co. plans a steel plant here. A. P. Gillies, room 1950, 50 Church street, New York, is interested.

BRANTFORD, ONT.—John Bishop & Son, Ltd., have been incorporated to manufacture hardware, tools, iron, steel and metal products, with $100,000 capital, by Francis J. Bishop, George D. Heyd and others.

CHATHAM, ONT.—Plans are being prepared for the construction of a filtration plant here to cost $200,000.

CHATHAM, ONT.—The Dowsley Spring & Axle Works has awarded a contract for a plant, to cost $80,000.

FT. FRANCES, ONT.—The International Insulating Co. plans a plant.

GUELPH, ONT.—The International Malleable Iron Co., Beverley street, has awarded a contract for an addition.

LONDON, ONT.—The London Concrete Machinery Co., is building an addition.

LONDON, ONT.—The utilities commission is having plans prepared for a hydro substation to cost $14,000.

OSHAWA, ONT.—Plans and specifications are with B. H. Prack, Lumsden building, Toronto, Ont., who is receiving tenders for five buildings to be erected here for the Pedlar People, Ltd., manufacturers of sheet metal products, etc. The building will be two stories, 80 x 360 feet, two stories, 80 x 365 feet, two stories, 70 x 285 feet, one story, 60 x 285 feet, and one story, 70 x 250 feet.

SARNIA, ONT.—The International Bushings, Ltd., which was recently incorporated, contemplates a manufacturing plant. C. E. Calvert is president.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.38c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	5.90c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.10c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 0c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

	Black	Galv.
STANDARD WEIGHT		
Butt Weld		
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..
PLUGGED AND REAMED		
Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28
DOUBLE EXTRA STRONG PLAIN		
Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

	Black.	Galv.
THREADS AND COUPLINGS		
Butt Weld		
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½
DOUBLE EXTRA STRONG PLAIN ENDS		
Butt Weld		
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel	
1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½
Iron	
1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$20.00 to 20.50
Chicago	18.50 to 19.00
Eastern Pennsylvania	18.50 to 19.50
Cleveland	19.00 to 19.50
St. Louis	18.00 to 18.50
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.00 to 15.50
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Valleys	19.50 to 20.00
Boston (dealers)	15.00 to 15.50

BUNDLED SHEETS

Pittsburgh	$15.50 to 16.00
Eastern Pennsylvania	15.00 to 16.00
Cleveland	14.50 to 15.00
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	11.50 to 12.00

STEEL RAILS, SHORT

Chicago	$19.50 to 20.00
Boston (dealers)	15.50 to 16.00
Cleveland	18.00 to 18.50
St. Louis	21.50 to 22.00
Birmingham	19.00 to 20.00
Cincinnati	18.50 to 19.00

STOVE PLATE

Pittsburgh	$19.00 to 20.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	20.50 to 21.50
Cleveland	18.75 to 19.00
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Boston	21.00 to 22.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	26.50 to 27.00
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$17.50 to 18.00
St. Louis	16.50 to 17.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.00 to 21.50
Chicago	20.50 to 21.00
St. Louis	20.50 to 21.00

BALED SHEETS

Pittsburgh	$18.00 to 18.50
Chicago	14.50 to 15.00

FROGS, SWITCHES, GUARDS

Chicago	$18.50 to 19.00
St. Louis	18.50 to 19.00
Eastern Pennsylvania	18.00 to 19.00

BOILER PLATE, CUT

Chicago, No. 1	$15.50 to 16.00
St. Louis	14.00 to 14.50

ANGLE BARS—STEEL

Chicago	$20.00 to 21.00
St. Louis	17.50 to 18.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$23.00 to 24.00
Pittsburgh, No. 2	22.00 to 23.00
Chicago, No 1	21.00 to 21.50
Chicago, No. 2	18.75 to 19.00
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	23.25 to 23.75
St. Louis, No. 1	20.00 to 20.50
St. Louis, No. 2	19.00 to 19.50
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	17.00 to 18.00
New York, No. 1 (dealers)	23.00
Boston (dealers)	18.50 to 19.00

WROUGHT PIPE

Eastern Pennsylvania	$19.50 to 20.50
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	15.50 to 16.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers)	19.00 to 19.50

BUSHELING

Chicago, No. 1	$17.50 to 18.00
Chicago, No. 2	12.00 to 12.50
Cleveland, No. 1	17.50 to 18.00
Cleveland, No. 2	14.50 to 15.00
St. Louis, No. 1	17.50 to 18.00
Buffalo, No. 1	16.50 to 17.50
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$12.50 to 13.00
Chicago	9.00 to 9.50
Eastern Pennsylvania	15.00 to 16.00
Eastern Pennsylvania (blast furn.)	13.00 to 14.00
Cleveland	10.75 to 11.00
Buffalo	12.00 to 12.50
New York (dealers' price)	11.00 to 11.50
St. Louis	9.50 to 10.00
Cincinnati	7.50 to 8.00
Birmingham	13.00 to 14.00
Valleys	12.00 to 12.75
Boston (dealers)	10.00 to 10.50
Boston (blast furnace) (dealers)	10.50 to 11.00

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	12.50 to 13.00
Eastern Pennsylvania	16.00 to 17.00
Cleveland	14.00 to 14.25
St. Louis	11.50 to 12.00
Buffalo	13.50 to 14.00
New York (dealers' price)	12.00 to 12.50
Cincinnati	9.00 to 9.50
Birmingham	13.00 to 14.00
Valleys	14.75 to 15.00
Boston (dealers)	11.50 to 12.00
Boston (blast furnace) (dealers)	11.00 to 11.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	31.00 to 32.00
Eastern Pennsylvania	35.00
Cleveland	27.00 to 28.00
St. Louis	31.00 to 31.50
Buffalo	28.00 to 29.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	22.50 to 23.00
Cleveland	27.00 to 28.00
St. Louis	22.50 to 23.00
Buffalo	24.00 to 25.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	16.50 to 17.00
Cleveland	17.00 to 17.50
St. Louis	15.50 to 16.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$20.00 to 20.50
Cleveland	19.00 to 19.25
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	18.50 to 19.50

FORGE FLASHINGS

Cleveland, large	$14.00 to 14.50
Cleveland, small	16.50 to 17.00
Chicago, small	14.00 to 14.50
Boston (dealers)	12.00 to 12.50

FORGE SCRAP

Chicago	$18.50 to 19.00
Eastern Pennsylvania, No. 1	14.50 to 15.50
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	23.00 to 23.50
St. Louis	21.50 to 22.00

ANGLE BARS—IRON

Chicago	$22.50 to 23.00
St. Louis	23.50 to 24.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
St. Louis	12.50 to 13.00
Cleveland	15.75 to 16.00
Buffalo	16.00 to 17.00
Chicago	14.00 to 14.50

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania	32.00
Cleveland	34 00 to 35.00
St. Louis	29.00 to 29.50
Buffalo	28.00 to 29.00
Chicago	28.00 to 28.50
New York (dealers)	24.00 to 25.00
Birmingham	21.00 to 22.00
Boston (dealers)	24.50 to 25.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	21.00 to 22.00
Chicago	25.00 to 25.50

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$25.00 to 25.50
Pittsburgh, steel	21.50 to 22.00
Chicago, iron	22.50 to 23.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, iron	22.25 to 22.75
St. Louis, iron	22.50 to 23.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	19.00 to 20.00
Boston	23.00 to 24.00
Cincinnati	21.00 to 21.50

NO. 1 CAST SCRAP

Pittsburgh, cupola	$25.00 to 26.00
Chicago, cupola	25.50 to 26.00
Eastern Pennsylvania, cupola	24.50 to 25.50
Cleveland, cupola	22.75 to 23.00
New York, cupola (dealers' price)	22.50 to 23.00
Cincinnati, No. 1, cupola	21.50 to 22.00
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	26.00 to 26.50
Buffalo	24.50 to 25.00
Boston	28.00 to 29.00
Valleys	22.75 to 23.00

HEAVY CAST

New York (dealers)	21.50 to 22.00
Buffalo	21.00 to 22.00
Pittsburgh	22.00 to 23.00
Cleveland	17.25 to 17.50
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$21.00 to 22.00
Pittsburgh, agricultural	20.00 to 21.00
Chicago, railroad	19.50 to 20.00
Chicago, agricultural	20.00 to 20.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	20.00 to 21.50
Cleveland, agricultural	17.50 to 18.00
St. Louis, railroad	17.00 to 17.50
St. Louis, agricultural	16.50 to 17.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	25.00 to 25.50
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	25.00 to 26.50
Birmingham	22.00 to 23.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	19.00 to 19.50
St. Louis	20.00 to 20.50

BOILER PUNCHINGS

Chicago	$21.50 to 22.50
Eastern Pennsylvania	23.00 to 24.00

Shipments from Stock

Government material at prices ~~lower~~ under present card quotations.

1500	tons	Billets $7\frac{29}{32}$
2000	"	Shell 3" - 4½" - 6" - 9"
1000	"	Tie Bars $\frac{5}{8}$ x 3"
800	"	Ingots for 9" Shell
100	"	C.R. Bessemer Rounds $1\frac{9}{32}$

Ask for prices on these, also let us know what other grades you need, or have for sale.

The James D. Miller Co.
McCormick Bldg
Chicago.

New Trade Publications

FIRE DOORS.—The Merchant & Evans Co., Philadelphia, is circulating a catalog in which fire doors, shutters and ventilators are described and illustrated. Specifications are given as well as a list of users of the company's various products.

METALS.—Descriptions and analyses of the various grades of slab zinc are given in a 12-page booklet recently published by the New Jersey Zinc Co., New York. Mention is also made in the booklet of spiegeleisen and bullion.

BUILDING CONSTRUCTION.—A 40-page booklet designed to illustrate and explain the equipment used and the methods employed in the construction of modern buildings under a system developed by the Blaw-Knox Co., Pittsburgh, is being circulated by that company. The booklet is profusely illustrated.

PIGMENTS.—A 12-page booklet devoted to a description of the various pigments manufactured by the New Jersey Zinc Co., New York, has been issued to the trade. The different brands are described in detail and the different uses to which they are put are given.

FURNACE INSULATION.—The Celite Products Co., New York, recently issued an interesting bulletin describing in detail, standard engineering practices in insulating, annealing, heating, forging, malleable, gun, glass, and other type of furnaces. Several illustrations are presented.

CHEMICALS.—Under this title the New Jersey Zinc Co., New York, has published a booklet describing the various grades of sulphuric acid produced by the company, as well as muriatic acid, zinc chloride, salt cake, etc. The booklet contains an illustration of the company's general offices.

ROLLED ZINC.—The uses and characteristics of rolled zinc are featured in an 8-page booklet being circulated by the New Jersey Zinc Co., New York. The uses to which this material is put are given and include its use for boiler plates, building hardware, screens, shingle nails, machine plates, etc. Several illustrations are given.

ZINC DUST.—This material is described in an 8-page booklet recently published by the New Jersey Zinc Co., New York. Two grades are described in detail, one being said to contain 95 per cent metallic zinc, while the metallic zinc content of the other averages between 92 and 94 per cent. The uses to which this material can be put are given.

POWDERED COAL.—The Combustion Economy Corp., Chicago, is circulating a bulletin in which the history and the possibilities of using powdered coal as a fuel are described. Types of furnaces, draft, preparation of powdered coal for burning, storage, separation of scrap iron from coal, crushing, drying, distributing to furnaces, air supply, control, carburization and adaption to furnaces, are some of the points in the use of this fuel, which are enumerated. A line drawing of a powdered coal burning system is also given.

LOCOMOTIVE CRANES.—The Edward F. Terry Mfg. Co., New York, recently issued a catalog describing its locomotive crane for contractor's use. The catalog is illustrated and the crane is fully described. It is pointed out that the crane is built to withstand the severe duty imposed on a locomotive crane by contractors and material handlers. The frame and platform are built of heavy section steel and all working parts are proportioned to withstand hard usage. The catalog gives information on the mounting of cranes and several of the illustrations show the cranes in actual use.

TOOL GRINDER.—In a 4-page leaflet circulated by Alfred Herbert, Ltd., Coventry, England, and New York, an oscillating tool grinder is described and illustrated. In this grinder the grinding wheel oscillates rapidly past the tool, which is always in full view. Grinding may be performed with or without water. A fan connected to a streamline duct in the base of the toolholder, draws all dust and chips away. The wheel spindle, self-contained countershaft, loose pulley and all shafts in the gear box with the exception of the eccentric shaft, run on ball bearings. The eccentric shaft runs in plain bearings. Other parts of the tool are described.

SUBSTATIONS.—Railway converter substations are extensively treated in an attractive 36-page illustrated booklet recently published by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The booklet contains a compilation of ideas for operating engineers' experience in substation work. The illustrations which accompany the various descriptions are clear and the descriptions are concise and comprehensively written. Many of the illustrations are of actual installations. The booklet is especially intended for electric railway engineers, but should be of interest to others interested in electrical equipment, etc.

ROCK CRUSHER.—Bulletin 1456, recently published by the Allis-Chalmers Mfg. Co. of Milwaukee, contains descriptions and illustrations of a rock crusher which the company manufactures. According to the booklet, the crusher contains a fixed and moving crushing element. The stationary element consists of a curved anvil, the crushing surface of which is lined with chilled iron wearing plates. The anvil is held in postion in relation to the frame by steel tie-rods co-acting against springs, which take up or equalize excessive shocks and pressure. Acting against this anvil is a roll with removable teeth, which is mounted on a heavy shaft running in massive journals. This roll is so located with relation to the anvil that preliminary fracturing of pieces of rock is effected by the sledging action of the teeth of the rotating roll on the pieces as they rest by gravity upon the roll. The descriptions of the various types are thorough and the illustrations give the reader a comprehensive idea of the equipment.

STANDARDIZED BUILDINGS.—The Milliken Bros. Mfg. Co., New York, has published a descriptive catalog in which structures designed by the company under the standardized truss unit system are described and illustrated. These building are all-steel and are furnished complete with doors, skylights, etc. They are suitable for all classes of industrial and manufacturing structures. The booklet contains illustrations of buildings of this type erected for the United States government and large manufacturers. One section is devoted to transmission towers, radio towers and special poles, which the company also builds. A companion booklet also has been issued by the company. This booklet forms a guide to the construction of buildings from foundation to roof.

DRUM CONTROLLERS.—A 4-page two-color folder has been prepared by the Cutler-Hammer Mfg. Co., Milwaukee, in which the outstanding features of drum controllers manufactured by the company are described and illustrated. The accessibility, interchangeability of parts and interchangeability of methods of manipulation are among the features given prominence. Other points described include how the contact fingers and the cylinders may be removed, metal construction and the straight nonstubbing fingers with which the controller is equipped. Dimensions, ratings and other data are given. The bulletin was prepared especially for the St. Louis convention of the Association of Iron and Steel Electrical Engineers, but is also being circulated to those interested in this line of electrical equipment.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A firm in China desires to purchase and secure an agency for the sale of canned goods, wire nails, metals, new and scrap piece goods, etc. Opportunity No. 30538.

A merchant in Czechoslovakia desires to purchase and secure an agency for the sale of chemicals, sewing machines, typewriters, safety razors, etc. Opportunity No. 30580.

The purchase of enameled wire is desired by a firm in Switzerland. Opportunity No. 30680.

A firm in Belgium desires to purchase castors and fittings for wheelbarrows, car movers, trucks with lifting gear and portable lifting appliances. Opportunity No. 30584.

A commercial agent in Czechoslovakia desires to purchase and secure an agency for the sale of electrical measuring instruments, electric meters, installation material, telephone equipment, bells, etc. Correspondence may be in English. Opportunity No. 30633.

An American firm with an established branch in Australia desires an agency for the sale of hardware, tools, novelties, cutlery, enamelware, etc. Opportunity No. 30688.

A firm in China desires to purchase a paper mill plant and requires 15 and 20-ton capacity machines. Quotations should be forwarded as soon as possible. Opportunity No. 30691.

The purchase of a machine for perforating rolls for mechanical pianos is desired by a party in Spain. Correspondence should be in Spanish. Opportunity No. 30707.

Catalogs, price lists, instructions, etc., of machinery for knitted goods, are desired by a party in New Zealand. Opportunitw No. 30708.

A party in Peru desires to obtain catalogs of all kinds of office furniture, fixtures and supplies, adding machines, typewriters, safes, etc. Opportunity No. 30709.

A commission agent in England desires to represent manufacturers in Russia, Finland, Poland, Siberia, Scandinavia, France and Great Britain, in the sale of machinery, typewriters and tobacco-making machinery.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, October 9, 1919 *No. 15*

Breaking Point of Strike Nears

Resumption of Plants and Increase of Production Continue—Chicago Situation Improved by Military Control—New Buying Goes Ahead Briskly—Pig Iron Statistics Show Many Furnaces Banked But Small Loss of Output

INCREASED outbursts of violence by the steel strikers as their cause more plainly has become hopeless, have brought the usual exercise of more rigorous civil and military measures and this fact promises to speed up the disintegration of the movement against the mills. The strike apparently fast is reaching its final and decisive stage. Adequate protection of the steadily growing number of workmen who are returning or are desirous of returning to their jobs has become a determining factor as to the duration of the strike and the restoration of normal production. The developments of the past few days in the Chicago district are regarded as marking the definite breaking point of the struggle in that territory. The agitators have fared badly in the east where production now is almost normal. At Buffalo the leading producer again is getting under way. Conditions in the Pittsburgh district, apart from Johnstown, have improved steadily during the week. Operations have been restored at Monessen, Donora, New Kensington, West Leechburg, and other mill points. Failure of the authorities at Youngstown and Cleveland to guarantee proper protection is holding back any efforts to reopen the plants in that district, but the indications are some steps in this direction are about to be taken.

New Buying is Active

A liberal amount of new buying is going along and this is being accepted by the mills without definite delivery promises. Eastern plate and shape mills have had the biggest week since the armistice, this being due in part to the crippled condition of plants in other districts. Structural steel awards and inquiries are surprisingly well maintained. Work bid upon by independent shops in the first week of the strike totaled 38,000 tons which was exceeded by only two weeks since the armistice. Awards reported the past week aggregated over 22,000 tons. The Pennsylvania railroad has purchased 25,000 tons of material for car repairs. The navy is taking bids on 28,800 tons of plates and shapes for various yards and 15,000 tons of battleship steel.

Evidence of any extensive derangement of industrial operations as the result of the reduction of steel supplies is yet to be seen although in various products the mills have been falling back on their delivery schedules. Buyers continue to pursue a policy of co-operation and patience and are exerting as little pressure as possible upon producers.

Many Stacks Banked

The extent of the curtailment of blast furnace operations due to the strike is shown by the statistics for September just compiled. The number of furnaces blowing at the end of the month was 101 less than on the corresponding period in August. These with but few exceptions were banked awaiting a favorable opportunity to resume. Some of them since have gone into action. Of the interrupted stacks 42 were in Ohio, 18 in Pennsylvania, 15 in Illinois, 12 in Indiana and 10 in New York. Since the banking of these furnaces occurred late in the month, the loss of production was comparatively small. The September total was 2,488,583 tons compared with 2,742,081 tons in August and 2,424,212 tons in July. Because of the concentrated drive against steel works furnaces, the loss wholly was with plants of this character. In fact merchant output was increased by 25,143 tons.

Further purchases of steelmaking iron in the open market have been made in the Pittsburgh district by Steel corporation subsidiaries which closed for 15,000 to 20,000 tons of basic and bessemer. Buying of prompt foundry and malleable iron by foundries which are not getting deliveries under their regular contracts, continues and in various instances at virtual premiums of $2 to $3 per ton.

Export Sales Are Heavy

Export sales continue heavy and October starts off with great promise despite the uncertainty of deliveries by the mills. Japan has been figuring actively in the pig iron market, seeking 15,000 tons of basic and a considerable amount of foundry iron. One purchase of 5000 tons is reported.

OCTOBER 9, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Clamp the Law on Radicalism

HONORABLE dealing, born of a spirit of conciliation and kindliness toward his fellow man, and directed by a mind of keenly judicial and statesmanlike qualities has marked the outstanding events of the life of Judge Gary. When he testified last week before the senate committee on education and labor he carried with him an atmosphere of sincerity which gave dignity and authority to what he said. His words must have gone far toward convincing the members of the committee of the fact, which already they had suspected, that the steel strike is not a typical case of dispute between employers and wage earners, but is an assault upon the free institutions of the nation. The senators, cognizant of recent developments, and recollecting the circumstances under which congress passed the Adamson law at the dictation of the railroad brotherhoods, apparently have been made to see clearly that the steel strike is but one phase of a clearly defined movement on the part of radical leaders to overthrow constitutional government and substitute therefor a hateful, autocratic and malevolent rule of class—their class.

Judge Gary's testimony was couched in language which was exceedingly mild, and he left unsaid a good many things which properly are factors for consideration in an investigation of the present strike. He hesitated to deny that he would have talked with the union leaders had they come to him with the statement that they represented only a small part, rather than the majority, of the steel employes of the country. Had he seen them in any status whatever, the visit could have resulted only in harm to the cause of the open shop. From the performances of labor leaders in the past it is certain they would have capitalized the visit by recruiting new members of their unions with the claim that the spokesman of the Steel corporation had recognized them.

It is to be hoped that Judge Gary's testimony, especially in the light of that of Messrs. Foster and Fitzpatrick before the committee, will help to remove any disposition to seek the easiest way to bridge the gap between radical labor and the employers of the country. Any resorting to temporary expedients to compose labor conditions of this kind would result only in deferring action as ultimately must be taken.

To prevent the realization of the aims which actuate radical labor leaders, it is necessary primarily, to enforce the law. Property must be protected, law and order must be enforced, and the right of the worker to go to and from his task without the molestation of himself or his family must be upheld. Such action will eliminate the danger which now menaces industrial America, for the overwhelming majority of the citizens of the country in all walks of life, are opposed to the views of the radicals. To completely remove the menace, however, it undoubtedly will be found essential at some no very distant time to pass a law which for all time will make it impossible for radical leaders to enforce demands, such as the passage of Adamson law, under threats to tie up national transportation, England now is reaping the fruit of a misguided policy with respect to her labor radicals and it is very easy, in view of that country's present experiences, to visualize the growth of a similar tyranny here which would make life burdensome and rob the nation of that spirit of individual enterprise and freedom which has made it great. A law which would not interfere with the rights of the laboring class, but would curb any tendency to bring about such a tyranny, is a defensive measure imperatively needed by the country to protect its liberties against the outbursts of the radical element.

Public Sentiment Finding Itself

FAILURE of the strike of the steel plant laborers, which now is an apparent if not an actual fact, has served to clearly demonstrate that the people of the country are not yet ready to accept, much less espouse, the doctrines of the radical labor agitators. Proof of this is to be found in the utter lack of public sympathy with the strike of the steel plant work-

men, without which success was unattainable. Nothing has been presented other than the hearsay evidence of the overpaid organizers that the men were working for pauper wages and that their families were living under intolerable conditions.

The public, as personified by the salaried man, no longer is mislead by the biased and highly colored views of the agitator, for it does not forget that wage increases have been pretty frequent in the steel industry; that working hours and conditions of labor have been constantly growing better; that not a few workmen holding what formerly were regarded as humble positions are going to and from their work in their own automobiles and that the foreigners who have left the country have generally carried away with them a tidy sum in savings. The parallel of these conditions with the claims of the labor leaders is deadly to the assertions of the latter.

Another reason why this and other labor disturbances have found little favor with the great bulk of the people of the country, those who are neither wage earners nor capitalists, is to be found in the growing consciousness of the effect which labor agitation and strikes have upon the cost of living. Increases to labor in a plant too infrequently have been accompanied by increases to the salaried employes, but the effect upon living costs resulting from the wage increase has to be borne by the latter.

Radical labor leaders accompany their demands for higher wages with demands for shorter working hours. This means decreased production and soaring prices and that great class which is caught between these divergent forces, at last is beginning to discriminate between the wheat and the chaff; between the justified and unjustified strike of labor and to govern its sympathy accordingly. It is to be hoped that the time is not distant when those who work with their hands will be less susceptible to the seductive arguments of the parasitical disturbers, masquerading as friends of the working man.

Labor Shortage Helps Cranes

THE more optimistic predictions in the crane market of a year ago now appear in a fair way to be fulfilled. The apprehension felt in some quarters relative to the industry's increased capacity in peace times is rapidly being dispelled. For the past three months reports from virtually every industrial center in the country reflect a large volume of crane buying. This activity, contrary to expectations in some sources, has not resulted from pressure of an extraordinary foreign demand, but rather from a combination of circumstances arising from within. One large contributing factor is thought to be scarcity and increasing costs of common labor. Holders of this contention point to the fact that the present demand for cranes did not set in until it became pretty definitely assured that the cost of labor would not decline to any material degree and that a shortage, with all men returned from the other side, would continue a reality.

There may be some quesion as to the extent of the business now being placed. The buying has not been of the volume that prevailed during the war. That was hardly to be expected. At the same time, competition continues strong. The low prices in some instances, resulting, might be interpreted as indicating a none too active market. However, when the dull months of the first half of this year and the heavy cancellations following the end of the war are considered, the extent of the present demand is in accordance with full expectations.

Cutting England Out of Tin

ALWAYS highly speculative and sensitive, the tin market is in an unusually peculiar position at present. The interference with various tin plate mills by the steel strike has led many consumers to defer tin purchases temporarily. About 40 per cent of the tin consumed in the United States is in the manufacture of tin plate, while about 35 per cent is used in the making of white metals, also closely allied with steel. The bulk of the pig tin imported comes from the Federated Malay States and from England. Consequently the American tin trade always watches closely the London and Singapore tin markets.

Lately, however, the movement of sterling exchange has been watched with just as close interest, for the variation of one point in sterling exchange is equivalent to a corresponding change of about ⅛ cent a pound in the cost of importing tin. On several days recently daily fluctuations have covered more than four points. A change of £5 in the London market is equal to about 1 cent a pound in our currency. Complicating this involved situation came the great railroad strike in Great Britain. On Sept. 29, the first business day after the railroad strike was declared, the London tin market dropped over £5, while exchange also broke sharply. The London market undoubtedly was discounting the decreased consumption of the metal in England, as well as the interference with exports to this country. On the other hand, the Singapore market advanced Sept. 29 by £3, probably discounting the improvement in steel strike conditions here, also the stimulus to Americans to do business direct with Singapore rather than to buy Straits tin for reshipment from England.

Americans have found shipments of tin from England unsatisfactory in recent months, as a result of labor difficulties on the other side and prospects are that a greater proportion of our Straits tin will be imported directly in the future.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1020 AND 1021

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	28.00
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	30.00 to 32.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$31.35 to 33.35
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 28.50
No. 2 Northern, Boston	32.40
No. 2 foundry, Cleveland furnace	27.25
No. 2 foundry, Ironton furnace	29.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	31.35 to 32.35
No. X, eastern, N. J. tidewater	31.35 to 32.35
No. 2X, eastern, Boston	32.90
No. 2X foundry, Buffalo furnace	28.00 to 29.50
No. 2 foundry, del., Philadelphia	30.10 to 31.10
No. 2 foundry, N. J. tidewater	30.10 to 31.10
No. 2 southern, Birmingham	26.75 to 27.50
No. 2 southern, Cincinnati	31.35 to 31.60
No. 2 southern, Chicago	31.75 to 32.50
No. 2 southern, Phila.	33.25 to 34.00
No. 2 southern, Cleveland	31.75 to 32.50
No. 2 southern, Boston	35.50 to 36.00
No. 2 southern, St. Louis	31.00 to 31.75
Virginia, No. 2X, furnace	30.00
Virginia, No. 2X, Philadelphia	34.10
Virginia, No. 2X, Jersey City	34.40
Virginia, No. 2X, Boston	34.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	28.60 to 29.40
Silveries, 8%, furnace	40.25 to 43.00
Ohio Silveries, 8%, Chicago	44.05 to 46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	39.80
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	32.75
Charcoal, Superior, Chicago first quarter 1920	33.75

Coke

(At the ovens)

Connellsville furnace	$3.75 to 4.00
Connellsville foundry	5.50 to 6.00
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	8.50 to 9.50
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	7.50 to 8.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	100.00 to 105.00
Spiegel, 18 to 22 per cent furnace, spot	34.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	85.00 to 90.00
Ferrotungsten, standard, per pound contained, furnace	1.20 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	28 to 30 cents
Ferrovanadium, 35 to 40 per cent, per pound contained, according to analysis	$6.00 to $7.50
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.745c
Bar iron, common, Chicago	2.62c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.77c
Bar iron, common, Pittsburgh	2.75c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 45.00
Relaying rails, Pittsburgh	39.00 to 41.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 950.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

	Black	Galv.
Base, Pittsburgh		Per cent off
¾ to 3 in., butt, steel	57½	44
¼ to 3 in., butt, iron	39½	23½

Full pipe schedule page 950.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$62.80
Six-inch and over, Chicago	59.80
Four-inch, New York	59.30
Six-inch and over, N. Y.	56.30
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c
Cotton ties, lots of 1000 to 3000 bundles, $1.78½ per bundle, mill.	
Cotton ties, 3000 bundles and over, $1.76½ per bundle.	

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	2.70c to 3.10c off
Hot pressed, square tapped	2.45c to 2.85c off
Hot pressed, hexagon blank	2.70c to 3.10c off
Hot pressed, hexagon tapped	2.45c to 2.85c off
Cold pressed, square tapped	2.45c to 2.85c off
Cold pressed, square blank	2.70c to 3.10c off
Cold pressed, hexagon blank	2.70c to 3.10c off
Cold pressed, hexagon tapped	2.45c to 2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Oct. 1, 1919	Average prices Sept. 1919	July 1919	Oct. 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	34.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	35.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	34.00
Lake Superior charcoal, Chicago	32.75	32.75	31.75	38.70
Malleable, valley	27.25	28.65	28.65	35.90
Malleable, Chicago	27.25	27.25	27.25	34.50
*Southern, No. 2, Birmingham	26.75	26.75	25.00	35.25
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	34.00
Basic, eastern del., eastern Pa.	28.00	27.00	26.50	36.60
**No. 2X, Virginia, furnace	30.00	29.25	26.50	37.50
**No. 2X, eastern del., Philadelphia	31.25	29.95	29.50	38.85
Gray forge, valley del., Pittsburgh	27.15	27.15	27.15	34.40
Ferromanganese, 80 per cent, delivered	110.00	105.00	112.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.50	37.30	47.50
Bessemer sheet bars, Pittsburgh	42.00	42.00	40.80	51.00
Open-hearth sheet bars, Pittsburgh	42.00	42.00	40.80	51.00
Open-hearth billets, Pittsburgh	38.50	38.50	37.30	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.745	2.595	2.595	3.73

	Prices Oct. 1, 1919	Average prices Sept. 1919	July 1919	Oct. 1918
Iron bars,* Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.62	2.62	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65c	2.55	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.845	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.31	5.00
Sheets, blue annld., No. 10, Pittsburgh	3.55	3.55	3.51	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.70	5.66	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	3.85	4.65	4.00	6.00
Connellsville foundry coke	6.00	5.90	4.90	7.00
Heavy melting steel, Pittsburgh	20.00	20.50	19.90	29.00
Heavy melting steel, eastern Pa.	19.50	19.00	18.85	28.50
Heavy melting steel, Chicago	18.50	19.10	19.40	29.00
No. 1 wrought, eastern Pennsylvania	27.00	27.00	24.70	34.00
No. 1 wrought, Chicago	21.00	21.25	21.20	33.50
Rerolling rails, Chicago	25.00	25.50	24.70	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Corporation Buys More Pig Iron

Leading Interest Closes for 15,000 to 20,000 Tons Additional of Steelmaking Iron at Pittsburgh—Prompt Foundry in Demand and Brings Premiums—Southern Ohio Raised to $29.75—1920 Alabama Sales at $29

Pittsburgh, Oct. 7.—Some sizable purchases of yard stocks of the steelmaking grades of pig iron by the steel companies whose iron production at present is somewhat curtailed by the strike of common labor, has been a feature of the past week in this market. The bulk of these tonnages which aggregate about 15,000 tons of basic and a smaller quantity of bessemer have gone to subsidiary companies of the United States Steel Corp. Such sales of bessemer as have been made have been at the regular market base of $27.95 furnace and on most of the basic the full market quotation has been obtained. It is understood, however, that concessions of as much as 25 cents per ton were made on some of the sales of basic and it is stated that other tonnages are available at a price of $25.50 furnace. On the other hand there are reports that premiums above $25.75 have been paid. A sale of 2000 tons of forge iron is noted for delivery over the remainder of the year to a Pittsburgh district consumer at $26.25 furnace while 1000 tons of malleable for October and November shipment has been placed with a valley interest by a western consumer at $27.25 furnace. The demand for foundry iron still is brisk and one interest recently marked up its quotation on No. 2 grades, now quoting $29 to $31 for early delivery. Some of the foundries situated near steel plants that have been affected by the strike have lost men and are asking that shipments against contracts be deferred or restricted for a time. On the other hand foundries unaffected by the labor disturbance, constituting the majority, are pressing for deliveries against their purchases. The Standard Sanitary Mfg. Co. has not yet closed upon 1000 tons of No. 2 and No. 2X southern foundry for its Louisville, Ky., plant for which it put out its inquiry about two weeks. An active demand still is noted for silveries with the Bessie furnace at New Straitsville, O., now pretty well booked over the remainder of the year. This company has a basis of $40.25, furnace, for 8 per cent and is holding at that quotation. The Carnegie Steel Co. has made some gain in the number of active stacks while the Shenango valley merchant furnaces which blew in after a temporary suspension, still are blowing.

New England Sales Continue

Boston, Mass., Oct. 6.—With the closing down of several of the Buffalo district foundry iron furnaces a scramble to buy iron in other districts was looked for. The market here however has continued on an even course and no feature at present can be sighted as due to the steel strike situation. Iron for 1920 delivery is being offered from eastern Pennsylvania furnaces with out reservation. One order for 400 tons for first quarter was placed at $32 furnace for No. 2X (2.25 to 2.75 silicon) and many other small sales from this district have been made at the same price. Textile machinery manufacturers have been completing their last quarter requirements and two sales of over 1000 tons each have been reported for this year. The spread on prompt shipment has widened and small tonnage sales have been reported at prices ranging from $31.90 to $33.90 eastern furnace for No. 2X (2.25 to 2.75 silicon). Southern iron has continued to reach New England consumers though the prices remain firm and its use largely is for mixture purposes. The inquiry for 1920 iron is becoming more active. A Rhode Island consumer is asking for 1500 tons, western Connecticut manufacturers want several sizable lots and the foundries at Worcester, Mass., are nearly all contemplating first quarter purchases. Many of the larger furnaces however still have their books closed for next year. September proved to be a good month for nearly all New England dealers and the total sales of approximately 50,000 tons are larger than for any other month this year except June. The estimated sales through Boston dealers for the past week total 7000 tons of which 3000 was for 1920 delivery.

Heavy Japanese Inquiry Appears

New York, Oct. 6.—Japanese shipyards and other Japanese interests are inquiring actively for pig iron for early shipment. Included are about 15,000 tons of basic and a considerable tonnage of foundry iron. One Japanese interest which took bids on 5000 tons reports it has bought but gives no details. Another Japanese interest has closed for 1000 tons of foundry at $28, Birmingham, for 1.75 to 2.25 silicon. Alabama furnaces in all cases are well sold ahead and one maker gave notice in effect that he did not want to sell by quoting $32.50, Birmingham, on a round tonnage of 1.75 to 2.25 silicon for export.

While the domestic demand in this district is moderate, a fair amount of prompt tonnage is being closed. Prices are showing an upward tendency. Additional eastern Pennsylvania foundry has been sold at $32, furnace, for 2.25 to 2.75 silicon, and some Buffalo iron has been sold at $32, Buffalo, for the same grade.

While these figures are exceptional, the eastern market generally is stronger. Although $29, furnace, is minimum on Buffalo 2.25 to 2.75 silicon, and at least one round tonnage was accepted at this level during the week, one active furnace reports its regular price now is $29.50, Buffalo, for this grade for this year, with $1 lower for 1.75 to 2.25 silicon. On eastern Pennsylvania iron the minimum is $30.25, furnace, for 2.25 to 2.75 silicon, but in most cases the asking price is $30.50 or higher. One Lehigh valley interest which recently has been selling small tonnages at $31, furnace, for 2.25 to 2.75 silicon, for this year, now is sold up and has withdrawn. It continues to quote $32, furnace, on 2.25 to 2.75 silicon, for first quarter. On foundry iron for first quarter and first half, as high as $33, eastern Pennsylvania furnace, is being asked. However, furnaces willing to sell for next year are the exception. Blast furnace operators are worried as to whether or not there will be a strike of coal miners on Nov. 1. New inquiries from consumers in the metropolitan district involve only a few thousand tons. One of the Warwick furnaces of the Eastern Steel Co. is being put in blast. Witherbee, Sherman & Co.'s furnace at Port Henry, N. Y., is expected to go in shortly.

Buffalo Makers Refuse Business

Buffalo, Oct. 7.—Little of any iron is being sold in the Buffalo district. All furnaces are refusing to accept new business, although inquiry is brisk. Export inquiry for 12,000 to 15,000 tons of basic has been before one Buffalo maker, but it is not being considered. Domestic inquiry is good for No. 1 and No. 2 grades of foundry iron. This inquiry is in lots of 1000 to 2000 tons. The delivery specified is first quarter, but none is being taken. The price on some of these grades of iron, contracted for previous to the strike, was $29 and $30. The East, particularly, is furnishing considerable inquiry. Almost all the furnaces in this territory are sold up, and even if a strike were not in force, it is doubtful whether there would be a great deal of business just at this time.

Prompt Iron Snapped Up

Cleveland, Oct. 7.—Prompt iron continues in demand among consumers in this district as various consumers are running short on supplies or are casting about to fortify themselves against their needs. This situation has been produced by the continued shutting off of shipments from local furnaces now banked, and despite the fact that a large tonnage of iron is on the yards of these producers. Southern makers continue to sell various lots of prompt iron to Cleveland district consumers at $29.75, furnace, for 1.75 to 2.25 silicon, or $32.15, delivered. These sales have amounted to several thousand tons in total. Some iron also is being shipped into this district from western Pennsylvania. Off grades on the banks of northern Ohio furnaces continue to be purchased by buyers at the regular differentials under the $26.75 base. One maker in the week sold about 1200 tons of such grades. The same producer also sold 6000 to 7000 tons additional of foundry and malleable grades, more than half of which was for first quarter and first half, and all of this was accepted on the $26.75 basis. A small sale of prompt malleable at $30, Buffalo, is noted. Requests to hold up shipments of steelmaking iron to various plants which have been closed or crippled by the strike continue in effect. Shipments of iron continue to make inroads into stocks on furnace banks and the latter steadily are being reduced.

Southern Ohio Iron Up

Cincinnati, Oct. 6.—Southern Ohio furnaces have established a price of $29.75, Ironton, for silicon, 1.75 to 2.25, for shipment during the remainder of the year. It is reported that a fair sized tonnage has been disposed of lately at this figure and that it could have been increased if the furnaces were able to make deliveries. In the South operators are also inclined to make higher prices and today $28, Birmingham basis is the minimum quotation, with not much of the metal for nearby shipment to be had at this figure. It is currently reported that southern producers are not now willing to take on any more first quarter business at $29, Birmingham, but doubtless some desirable orders might still be put through at this figure. Northern furnaces still are unwilling to open their books for next year, and will probably follow the same course until they have more definite information as to what future costs will be. An advance in freight rates is said to be inevitable, while coke costs also are expected to be higher. The inquiry for next year is falling off.

Sales in South Increase

Birmingham, Ala., Oct. 7.—Sales of pig iron in the South are increasing owing to curtailment of production in the North and Middle West. A number of orders for from 300 to 1000 tons of iron have been booked. After a little selling, furnace companies in this section have withdrawn from the market for 1920. The small tonnage sold went on a basis of $29, for No. 2 foundry (1.75 to 2.25 silicon). The aggregate business for the last quarter will approach the probable make. Production is steady. The six blast furnaces of the Tennessee Coal, Iron & Railroad Co., at Ensley, Ala., produced around 70,000 tons of iron during September.

A Tennessee maker of standard low phosphorus iron has made sales during the past week or two at $38 to $40 furnace.

St. Louis Running Short of Basic

St. Louis, Oct. 7.—Buying of pig iron in small lots for prompt delivery continues active. Except for a curtailment of deliveries from the North and East, the strike has failed to affect this locality. All industries which were in operation prior to the strike are at work as usual, but it is a fact that several important steel plants were closed, and have not resumed. Several steel plants which are producing large orders are running short of basic iron because of the closing down of eastern and northern foundries. Only two weeks' supply can be figured on, and efforts are being made to induce southern furnaces to manufacture basic to supply this want. The needs will run from 12,000 to 15,000 tons. In the foundry iron line the inquiries range from 300 to 500 tons, an exception being one inquiry from a user in the district for 1500 tons of assorted foundry grades, for shipment in October and November.

Foundry Inquiry Heavy

Chicago, Oct. 7.—While there is comparatively little interest in malleable or bessemer grades, melters of foundry iron seem anxious to place further tonnages and this grade and silveries are comparatively active. Among inquiries for foundry iron for 1920 delivery is one lot of 4000 to 5000 tons, another for 2500 tons and one for 900 tons. In addition to these are many others, most of them for small tonnages. Much interest is being manifested in silvery iron, and a recent sale was made of 1000 tons from an Ohio maker to a nearby consumer, for first half delivery in 1920. The Tennessee stack which has been selling silveries freely in this market for this year's delivery has not yet opened its books for next year. Southern iron is entering the Chicago market more freely now than during recent weeks as the car situation at Birmingham seems to have improved. All iron coming to this market for account of brokers is disposed of promptly on arrival as consumers are anxious to take on whatever presents itself for certain delivery, inasmuch as the date of resumption by local stacks still is uncertain.

Make Sales at Higher Prices

Philadelphia, Oct. 7.—Although lacking in spectacular single orders, business in the pig iron market in this district the past week aggregated more than 15,000 tons of all grades. Several thousand tons of basic iron sold at close to $28 delivered and on some new business which now is under inquiry about 50 cents higher is being quoted. Several thousand tons of standard low phosphorus were sold at $36 furnace equivalent to slightly under $40 delivered Philadelphia. Several hundred tons of copper-bearing low phosphorus were sold at $35 furnace. The Standish, N. Y., furnace is expected to blow in next week on standard low phosphorus. The foundry market has been characteried by many sales generally involving under 1000 tons and practically all for this year. Iron is scarce as furnaces generally are sold up although the market still is $30.25 to $31.25 delivered, eastern Pennsylvania for No. 2X (2.25 to 2.75 silicon). Higher prices are being done as for instance several hundred tons of Buffalo No. 2X sold at $33, Buffalo for spot shipment and several lots No. 2X were sold $32, eastern Pennsylvania furnace. No. 2 plain (1.75 to 2.25 silicon) was sold at $30.50, eastern Pennsylvania furnace. The minimum of central Pennsylvania foundry iron is $29.75 furnace for No. 2X which is an advance of 25 cents. Although Virginia No. 2X still is selling at $30 furnace for early delivery, these makers are asking a premium of

$1 plus the usual differentials for higher silicons. The later now are well sold up. The minimum on malleable now is $29, eastern Pennsylvania furnace. Gray forge was sold the past week at nearly $29.50 delivered eastern Pennsylvania.

Tin Plate Output

Still Comparatively Light, Although Operations Are Improving

Pittsburgh, Oct. 7.—Comparatively few manufacturers of tin plate are unaffected by the strike, and while there has been a notable improvement in the past week, mill operations still are comparatively light. The Jones & Laughlin Steel Co., tin plate mills at its Aliquippa works, are running practically 100 per cent and the Bethlehem Steel Co, aside from a short-lived strike of its tin plate mill employes, has not suffered materially. The American Sheet & Tin Plate Co. has been making steady gains in the past week or so and now has its New Castle works running 100 per cent. This company also has started in a small way at both of its New Kensington, Pa., plants. Active demands are coming out from container manufacturers for tin plate for prompt delivery and stock lists of all manufacturers are being scanned closely for possible relief. Lots suitable for the can companies readily are moved at the full market price of $7 per base box, Pittsburgh. Several export inquiries are noted, among them one for 9000 boxes, while export sales include one lot of 2000 boxes, and another of 1600 boxes.

Ore Market

Experiences Some Renewed Demands For Foundry Grades

Cleveland, Oct. 7.—Although furnace requirements for ore were supposed to have been fairly well provided for, inquiries have come out for approximately 200,000 tons of foundry grades. The interest receiving these inquiries is unable to meet the demand, as practically all of its production of foundry ore for the season has been contracted for, although it still has a little basic ore available. Most of the ore companies have contracted for the sale of all the ore they will produce this year, and are not seeking orders, although one of the largest interests still has plenty of ore for sale.

Storage facilities at lower lake ports have been taxed to the utmost, causing a slowing up of shipments, as many vessels are waiting to be unloaded, although comparatively little labor trouble has been experienced on the unloading docks.

Following is the September statement of ore shipments and totals for the season up to Oct. 1, together with comparisons:

Port	Sept., 1919	To Oct. 1, 1919
Escanaba	939,099	3,696,996
Marquette	431,995	1,601,564
Ashland	1,190,086	4,510,176
Superior	2,033,804	8,453,318
Duluth	2,591,750	14,058,674
Two Harbors	991,749	5,455,803
Total	8,178,483	37,776,531
1919 decrease	816,531	10,552,747

Coke Still in Buyers' Favor

General Maximum on 48-Hour Fuel is $4, Ovens—Spot Situation Improves Somewhat, But Furnaces are Not Ordering

Pittsburgh, Oct. 7.—While the spot situation in beehive furnace coke has been helped to some extent by the sale of a large number of loaded cars in the North and East and the fact that a great many of the operators have been drawing their ovens at 96-hour intervals, few blast furnaces have ordered a resumption of shipments against contracts, and the curtailed production is ample for all wants. Most of the furnace interests whose stacks again are in blast had a number of cars enroute and also fair stocks. These supplies have sufficed to keep them going and new demands have been light. At present, $4, ovens, appears to be the general maximum on standard 48-hour fuel, although brokerage interests claim to have made sales in the past day or two at $4.15. On the other hand, sales have been made at $3.75 on standard coke, although it is doubtful if really good coke can be bought any lower. Some of the emergency coke sold in the lake and eastern districts went as low as $3.50. On that basis the market is 25 cents a ton higher than it was a week ago. But while the market has been getting a little stronger on furnace fuel, it has softened to the extent of about 50 cents a ton on foundry coke. Few sales of the latter have lately been made at higher than $6, ovens, except in single cars, while choice brands have been sold at $5.50 to $5.75. A week ago, $6, ovens, was the minimum on strictly standard 72-hour selected foundry coke. Some talk has been heard about contracts for first half of 1920 furnace coke, but with operators mentioning $6 or more, nothing has been done. It is said that the Clairton by-product plant of the Carnegie Steel Co., is running 80 per cent of capacity, with the ovens being drawn at intervals of 24 and 30 hours. This plant consists of 12 batteries of 64 ovens each, and 80 per cent operation means that 627 ovens are in. Before the strike, the entire 784 ovens were operating and were being drawn at 18-hour intervals. Connellsville production of coke for the week ended Sept. 27, is estimated by *The Connellsville Courier* to have been 186,120 tons, against 258,801 tons in the previous week.

Coke Needed in Alabama

Birmingham, Ala., Oct. 7.—The need for coke in Alabama has become so urgent that further attention is being given to getting beehive ovens in operation. The Woodward Iron Co. resumed work at a number of ovens this week. Foundry coke is not being offered freely by independent manufacturers. Furnace coke is gaining strength, and a little apprehension as to a strike of coal miners next month is causing producers to make an effort to accumulate supplies.

Foundry Fuel Declines

New York, Oct. 6.—The weakness in furnace coke as a result of the strike situation, which was reported last week, now has extended to foundry coke. Beehive foundry coke during the past week has been sold in this district by western Pennsylvania operators at $5.75, Connellsville, which is a decline of 25 to 50 cents. The northern New Jersey by-product coke maker continues to quote $6.50 Connellsville, equivalent to $9.60, delivered at Newark and other northern New Jersey points, on by-product foundry coke.

There are inquiries in the market for thousands of tons of foundry coke for export.

Spot Foundry Fuel Moving

Cincinnati, Oct. 6.—Spot foundry coke is in good demand, but contract business is rather light. Producers are only willing to sell ahead on a sliding scale basis. One trouble about moving spot coke is the car shortage which seems to improve one week and get worse the next. In the Connellsville field spot furnace coke is firmer. Prompt 48-hour coke from that district is now bringing from $4 to $4.25, ovens. Foundry coke for filling in purposes is being sold in the Wise county district around $7 to $7.50. What little New River coke that can be had brings readily from $9 to $9.50. Very little Pocahontas coke is being sold in this district.

Good Demand at St. Louis

St. Louis, Oct. 4.—Numerous inquiries have come out for coke, chiefly from foundries for prompt delivery. They range from 300 to 500 tons, with one for 1000 tons from an Iowa melter for delivery through the last quarter. Prices are firm, and range from $5.75 to $6.50 for 72-hour foundry coke, f.o.b. ovens. A little additional tonnage has been shipped as a result of furnaces closing down in the east. Demand is quite general, except for the steel plants. Foundries are handling all the coke received. Production by by-product ovens continues at a fair rate and makers are experiencing no difficulty in disposing of all they can produce.

Sales Made at $3.90

Philadelphia, Oct. 7.—Several thousand tons of furnace coke were sold in this district during the past week at $3.90 Connellsville ovens.

Ask Battleship Steel

Washington, Oct. 7.—The bureau of supplies and accounts, navy department, has requested tenders on 10,500 tons of plates, 3400 tons of shapes and 15 tons of bars for the construction of battleship No. 52 which is being built at the Norfolk navy yard. Bids are to be opened Oct. 17 with deliveries of 500 tons monthly to commence not later than Nov. 1, 1919.

Steel Scrap Is Up in East

Buying of Round Tonnages by Various Steel Works Stiffen Market —Conditions Lag in Other Districts

FOR COMPLETE SCRAP PRICES SEE PAGE 1022

Philadelphia, Oct. 7.—Great activity in heavy melting steel has changed completely the complexion of this grade in this district the past week. The American Bridge Co. at Pencoyd bought at least 5000 tons and probably more. The Alan Wood Iron & Steel Co. bought 10,000 tons and the Worth Steel Co. 5000 tons. This business went mainly at $19 to $20 delivered. The steel scrap market is exceedingly strong now and the grade probably could not be bought under $20 delivered. Steel mills have bought considerable forge scrap and borings and turnings for open hearth use but have been unable to get all they wanted of these grades. Cast scrap and chemical borings also are actively in demand and stronger. In fact the only grade which does not share in the betterment is wrought pipe which has weakened due to the fact most mills have dropped out of market as buyers.

Boston Market at Standstill

Boston, Oct. 4.—The bottom has dropped out of the scrap iron and steel market and few sales are reported. Delivery of several hundred tons of heavy melting steel was made to the plant of the American Steel & Wire Co., Worcester, Mass., during the week on an order previously placed, but the desire to await events is evident throughout New England. The feature of the week's activity was a fairly large inquiry from one of the eastern Pennsylvania steel mills. The Boston ordnance office sold a small tonnage of bar steel to the Arthur C. Harvey Co., at prices averaging about 2.00c a pound at place of storage. On a lot of 100 tons of steel armor plate which has been advertised for two weeks, no offer was received. The office has for sale by negotiation over 11,000 net tons of steel blooms and is taking bids on 140 tons of bessemer screw stock, 23 tons of steel forging, 30 tons of steel shells and 185 tons of round steel.

Market is More Settled

Pittsburgh, Oct. 7.—No change of note has taken place in scrap iron and steel prices here in the past week, but the market has shaken off much of the nervousness it recently showed. While a number of the steel plants are embargoed, due to freight congestions or because of the lack of sufficient common labor to unload shipments, steel manufacturers not thus situated are taking in shipments on contracts and some of them actually are making purchases. Small sales of heavy melting steel are noted at $20, delivered, and attempts on the part of some steel manufacturers to buy for less have failed. It is apparent that supplies of this grade are not particularly heavy in view of the fact that several Pittsburgh dealers made bids running anywhere from $19 to $19.65, delivered, on the Pennsylvania railroad, lines east, October scrap list and failed to receive allotments. A growing belief that the strike is practically over encourages a more optimistic feeling among dealers and they are disinclined to press for sale any tonnages that are on their hands. Foundry grades are attracting some demand.

Metropolitan Market Dull

New York, Oct. 6.—Local scrap dealers assert that the market is exceedingly dull. New inquiries are decidedly few. Material against old contracts appears to be virtually the only scrap now moving. Little scrap, it is said, is being consumed at Coatesville and Lebanon, Pa. A feature of the situation in the East is a heavy number of rejections, this being particularly true at Bethlehem. It is said that a shortage of labor in unloading the cars is a factor in these rejections. Although the market is dull, prices are showing no tendency to weaken. Bids were taken today on a large tonnage of miscellaneous scrap at the plant of the International Fuse & Arms Co., Bloomfield, N. J. More than 2000 tons of shell steel were included.

Buffalo Market Quiet

Buffalo, Oct. 7.—Trading in scrap is quiet, most of the mills remaining out of the market. There is no real inducement for them to buy, as prices, though nominal, remain firm. Shipments are being made by dealers against old contracts.

Will Scrap Equipment

New Castle, Pa., Oct. 7.—Bids are being taken by the Pittsburgh & Lake Erie railroad for salvaging 6000 cars which now are on sidings between Edinburg, Pa., and New Castle junction. The railroad, it is understood, will supply the equipment necessary for completing the salvage work while the highest bidder for scrap materials will be required to supply the labor.

Chicago Market One-Sided

Chicago, Oct. 7.—As a result of the strike among steel producers, the scrap iron and steel market is decidedly lop-sided, the strike having stopped all deliveries of open-hearth grades, while it has stimulated the demand for rolling mill material and rerolling rails. The latter comes about by the greater demand for iron bars and hard steel bars to replace soft steel, which is unobtainable. Foundries continue to take considerable cast scrap, which continues at a high level. Quotations remain much the same as they have been for a month past, with a few upward changes because of slightly increased demand. The market is considered strong and resumption of buying after the strike is settled is expected to send quotations up sharply. The Chicago, St. Paul, Minneapolis & Omaha offers 627 tons, the Wabash 1260 tons and the Michigan Central an open list.

Embargoes Bring Softer Prices

Cleveland, Oct. 7.—With Cleveland and northern Ohio continuing to be a storm spot of the strike, scrap iron and steel has become much weaker. Melters still are embargoed, and even dealers are not anxious to trade among themselves. Yards are full, with more material coming in than going out. Prices on most grades are softer. Heavy melting steel has been marked down to $18 to $18.25, while No. 1 busheling now is $17 to $17.50, axle turnings are $15 to $15.50, machine shop turnings $8.25 to $8.50, and borings $12.25 to $13.50. Dealers look for a marked revival and higher prices once melters begin buying again.

Foundries Are Buying

Cincinnati, Oct. 6.—Local and nearby foundries have lately been quietly buying additional scrap to carry them through the year. The heavy melt of foundry scrap recently has somewhat upset calculations. As a rule neither buyer nor seller is very anxious to do business for shipment next year, and for this reason transactions are light. Encouraging rumors are circulated as to the chances for an early lifting of difficulties in shipments to the Pittsburgh district. Steel scrap is unchanged and is a trifle firmer.

Buying Slowing Down

St. Louis, Oct. 4.—Conditions in the scrap iron and steel market are confused and list prices are largely nominal. On the whole the market is steady, and scrap dealers say they will sell only at their own figures, although they have large stocks. The strike has halted consumptive buying though thus far it has not reduced consumption. Melters are using up what they have heaped and are asking for contract deliveries. The Baltimore & Ohio and Louisville & Nashville railroads, which were to have put out lists this week, announced they will be withheld indefinitely. The rolling mills are taking all the material being shipped to them, and their business is good. The leading interest has some large orders, and will be obliged to enter the market before long to fill them. The St. Louis Screw Co. closed down two weeks ago for repairs and overhauling, but has resumed operations. Foundries throughout the district continue extremely busy. The Cotton Belt railroad had a list of approximately 500 tons this week, and the St. Louis Terminal Railroad association 400 tons.

Prospects Brighter in South

Birmingham, Ala., Oct. 7.—Demand for scrap iron and steel in the South is improving. The lull caused by the strike is passing and consumers are inquiring for more material. There is a good assortment of scrap in the southern yards. Quotations show no change. The railroad car situation is improving, but little demand is coming from other districts.

Rising Tonnage

Is Shown in Sheets—Largest Producer Now at 80 Per Cent

Pittsburgh, Oct. 7.—While a few of the independent sheet manufacturers have been forced to curtail through lack of sufficient supplies of sheet bars, the more common report is that mill operations are expanding as a result of the return to work of a number of men who have been out. The American Sheet & Tin Plate Co. now is operating 80 per cent of its sheet mills. Its Mercer works at Farrell, Pa., which were started on Sept. 30, now are running 75 per cent, while 91 per cent of its mills at its works at Vandergrift, Pa., are operating. Independent sheet mill operations are averaging about 50 per cent of capacity. Production of sheets is considerably behind orders and a number of consumers are seeking supplies for prompt shipment.

No Effort to Start Mills

Youngstown, O., Oct. 7.—Mahoning valley sheet mills still are inactive due to strike conditions. Practically all the mills here were operated largely by members of the Amalgamated association who were compelled to quit work on account of the laborers, electricians and cranemen striking. No effort is being made to operate the sheet mills. Sheetmakers are not taking on any new business. However, regular customers are being looked after. Activity continues in the spot market according to dealers here. Considerable tonnages of various grades of sheets have been sold recently at prices from $5 to $10 above market quotations. New buyers are coming into this district frequently for all grades of sheets and, from their inquiries, are willing to pay attractive premiums on material for early delivery. On the other hand considerable tonnages of open-hearth blue annealed from 6 to 11 gages are available at considerably lower than market prices.

Buying Odd Stocks

Chicago, Oct. 7.—Heavy demand exists for steel sheets. However with the leading independent out of the market on account of strike conditions and with sufficient tonnage on his books to run into next year, the supply in this district is much curtailed. The leading interest is producing to some extent but is much hampered by the strike and is falling behind constantly on orders. As a result the market is being combed for odd lots and some brokers are advertising for such stock.

Old Orders

Receive Attention in Tubular Goods as Output Grows Slowly

Pittsburgh, Oct. 7.—Aside from the fact that the Steel & Tube Co. of America again is operating at Indiana Harbor, Ind., and that Spang-Chalfant & Co., Pittsburgh, have resumed in part, no especial change has taken place in the past week in pipe mill operations. The Youngstown, O., manufacturers have not yet resumed, but the Jones & Laughlin Steel Co. continues to operate its pipe mills full and the National Tube Co. which suffered the loss of only one of its plants, the Riverside works at Benwood, W. Va., is doing better this week than it did last week. The National works of the latter company at McKeesport, Pa., is operating practically full and it has been able to maintain substantially 100 per cent operations at its Lorain, O., works, while at Ellwood City, Pa., operations were only slightly affected and it is now reported that the plant is running just as if the strike had never been called. The National Tube Co. has made no effort to open up its works at Syracuse, N. Y., which is a spare plant. Plenty of new demands are coming out for both lapweld and buttweld pipe, but filling old orders is receiving the chief attention of producers.

Private Demand Maintained

New York, Oct. 6.—Private demand continues to be the mainstay of the eastern cast iron pipe market. A couple of sizable tonnages reported recently for Hartford, Conn., and Harrisburg, Pa., are pending, but little new is coming out in the way of public work. Prices are holding firm at the advance of $2 noted recently.

Western Inquiry Slack

Chicago, Oct. 7.—Although a number of contracts for cast iron pipe are under consideration by municipalities, new inquiry is slack and for small tonnages. Detroit, which has been the best customer the present season, has under consideration one lot of 5000 tons and another of 2000 tons, on neither of which has a decision been reached. The United States Cast Iron Pipe & Foundry Co. has taken 100 tons at Milwaukee.

Some Shortage

Appearing in Sheet Bars as Finishing Operations Increase

Pittsburgh, Oct. 7.—Some of the sheet and tin plate manufacturers whose regular sources of supply of sheet bars temporarily are shut off by the labor disturbance lately have been in the market for supplies and have found the offerings rather scant. Finishing mill operations seemingly are increasing a little more rapidly than the production of sheet bars and a number of mills appear to have exhausted their stocks of steel. The leading interest reports no difficulty in this direction, although it is now operating 80 per cent of its sheet mills as against about 60 per cent around the day of the walkout. A northern Ohio steel company which had a fair sized stock of sheet bars on its yards when the strike broke out, reports the sale of 500 tons in this district at the regular market base. Inquiry for 5000 tons of sheet bars is reported by a Pittsburgh steel company. Shortage of billets also is rather marked although not quite so acute as that in sheet bars. Few wire rods are available at present.

Strip Operators Gain

Pittsburgh, Oct. 7.—With the resumption in part of the plant of the West Leetchburg Steel Co., Leetchburg, Pa., production of strip steel in this district again is approaching normal. The Superior Steel Corp., the plant of which is at Carnegie, Pa., has not been affected by the strike, and the strip steel mill of the Weirton Steel Co., Weirton, W. Va., now is reported to be back at 100 per cent after a short, light curtailment.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Oct. 1	23.50	53.75	6.25	7.00	33.00	8.50	41.00
Oct. 2	23.50	54.25	6.25	7.00	33.00	8.50	41.00
Oct. 3	23.50	54.25	6.25	7.15	33.00	8.50	41.00
Oct. 6	23.50	54.25	6.25	7.30	33.00	8.50	41.00
Oct. 7	23.50	54.50	6.25	7.35	33.00	8.50	41.00

* October shipment from Singapore.
† American Smelting & Refining Co.'s price.
‡ Producers' price. Outside market, Oct. 1, 21.35c; Oct. 2, 21.25c; Oct. 3, 21.25c; Oct. 4, 21.25c. Lake, 22.00c; casting 20.00c to 20.25c.

NEW YORK, Oct. 7.—The effects of the steel strike continue to be reflected in the nonferrous metal markets, which remain extremely quiet. However, the favorable news from the strike centers has kept sentiment cheerful and prices have been holding steady. In fact, a few inquiries for prime western zinc came in the market last Friday from galvanizers, which put new heart in the market for prime western zinc. Prices advanced from 7c, East St. Louis, on Thursday, to 7.15c, on Friday, and to 7.35c and 7.40c on Tuesday.

A fairly large tonnage of electrolytic copper was sold through the Copper Export association to Germany recently, satisfactory credit arrangements having been made. A large domestic consumer bought about 500 tons of electrolytic. Domestic business generally continued extremely slow. The leading producers continued to ask 23.50c for early delivery copper. Second hand sellers asked 21.25c for spot and October delivery, 21.50c for November and December.

The truce in the English railroad strike brought about a good recovery in the British tin market also at Singapore, which was reflected in a stronger market here. Inquiry from consumers has been so light that few transactions have been closed and consequently the market has been hard to establish, but inquiry from plate mills and alloy makers is in. Straits tin prices for October shipment from Singapore ranged from 53.50c to 54.50c, f.o.b. New York, while November-December shipment prices were about the same level. Spot Straits tin is quoted 55.25c and spot electrolytic 54.75c to 54.87½c. Spot 99 per cent tin is quoted 54.25c to 54.37½c.

Bar Users Still Are Patient

Refrain From Pressing Mills Though Demand is Heavy—Automobile Plants Not Yet Feeling the Pinch

Chicago, Oct. 7.—Inquiry for soft steel bars is heavy, but seekers after tonnage are not insistent, and, realizing the situation because of the strike, they are awaiting deliveries with patience. The leading interest is willing to accept whatever business is offered, with the proviso that deliveries depend upon circumstances and cannot be definitely promised. On this basis considerable business has been booked. The leading independent had sold its production for the remainder of the year before the strike stopped operations and therefore is entirely out of the market, as it has not yet opened its books for next year. Some tonnage of practically all finished steel has been placed for 1920 delivery with the leading interest.

Bar iron mills are running at top speed because of the flood of business placed by steel bar users, who are forced to substitute iron bars wherever possible. This is in marked contrast to the former position of these mlils. Hard steel bars rerolled from rails are also in strong demand as substitutes for soft steel bars, and all producers in this line are busy. Some are quoting up to 3.00c mill on rerolled bars.

Hard to Place Orders

New York, Oct. 6.—The leading producer of steel bars has not permitted the strike to make any change in its selling policy. It continues to take orders the same as before, but is taking them only from its regular trade, and for minimum requirements. As far as can be learned, the strike at the steel mills has not affected operations at consuming plants in this territory. This condition is attributed to the fact that consumers have stocks which will maintain their operations for sometime. In the meantime they continue to receive shipments from the mills in operation. Some bar tonnage now is being sold at 2.50c, Pittsburgh, to which figure several of the mills advanced some weeks ago. Business continues also to be placed at 2.35c, Pittsburgh.

The old price of 2.35c, Pittsburgh, on iron bars, at which some business was being booked, despite the advance to 2.50c, Pittsburgh, seems to have disappeared. The bottom of the market now is 2.50c.

Difficult to Get Delivery

Philadelphia, Oct. 7.—Bars continue hard to get due to the fact western production is hampered by the strike. Hence many users are not getting deliveries on their contracts. Reports are heard there is some likelihood that after strike is ended some makers who advanced bars to 2.50c Pittsburgh may go back to 2.35c.

Consumers Help Manufacturers

Pittsburgh, Oct. 7.—Although the requirements of merchant steel bars are heavy, consumers are not pressing the mills for deliveries against contracts and because of this condition the curtailment of production has not resulted in anything like an acute shortage. Fair demand exists for iron bars with most makers unaffected by the iron strike, due to the agreement of Amalgamated Association of Iron, Steel & Tin Workers. The base on common bar iron is 2.75c Pittsburgh but some makers claim to have made carload lot sales on a basis of 2.80c and 2.90c Pittsburgh.

Strong Demand at Buffalo

Buffalo, Oct. 7.—Barmakers in this district report strong inquiry with the demand for tonnages from 500 to 1500. Some shipping from stock is being done in limited quantity. There have been no cancellations.

Manufacturing Stocks Disappear

Cleveland, Oct. 7.—No signs of distress among consumers of steel bars and other finished material in this district yet are manifest. It is evident, however, that unless shipments by the mills are appreciably increased and what is more important, unless a better assortment of sizes is finished, operations of various consumers are likely to be considerably affected in the near future. Large automobile builders in this district are well supplied for two to four weeks but unless there is some improvement in the volume of deliveries with that period, it is probable that a considerable curtailment of their operations will be forced. Efforts of consumers to buy steel have not been so vigorous the past week as in the period preceding. A lively demand, however, continues and this is especially true from the warehouses, since the mills are taking new business either for indefinite delivery or not at all. Reinforcing bars are stronger. Rerolling mills are quoting 2.75c mill and one western producer is understood to have raised his price to 3.00c mill. Producers rolling from new steel who have been waiving the 7½ cents for 100 pounds twisting charge, now are strictly enforcing this extra.

Better Deliveries Expected

Pittsburgh, Oct. 7.—With the decline in the force of the strike and better operations of the hoop and band mills, deliveries against contracts, which recently were somewhat restricted, are expected soon to be better. Some makers of band steel are heavily committed and were not able to accumulate much reserve stock for shipments against contracts. This is not the case, however, with hoops and cotton ties.

Strike Not a Factor

Pittsburgh, Oct. 7.—The walkout of steel plant laborers has neither affected the demand for, nor the production, of cold-finished steel bars and shafting. The leading makers in this district report full complements of workmen and while there has been some interruption here and there in the supply of merchant steel bars, it has not been sufficient to materially affect production. Meanwhile the demand continues good, especially from the automobile and tractor builders.

Bolt Buying Heavy

Chicago, Oct. 7.—Demand for bolts and nuts continues strong, and plants are being operated at the highest pitch with more business offering than can be accommodated.

English Ferro

Again Being Quoted With Price $110 Seaboard—Spiegel Defined

New York, Oct. 6.—One importer of English merromanganese has been authorized by its English principals during the past week to sell English ferromanganese here at $100, c.i.f. Atlantic ports. This price, considering exchange, etc., is said to be equivalent to the figure quoted by the British producers in their home market. This is considerably under the price at which another importer has sold English metal during the past week. The latter sold about 200 tons at $110, freight allowed to destination. No sales yet have been made at the $100 price. Consumers are not anxious as a rule to buy, due to the strike situation. Domestic makers continue to quote $110, delivered, on 78 to 82 per cent. The English metal offered is not guaranteed to contain more than 76 per cent manganese.

A real test of the spiegeleisen market was afforded during the past week when a large western consumer came into the market for 500 tons for the rest of this year. The metal was obtained at a price which shows the market is $34 to $35, furnace, for 18 to 22 per cent.

The ferrochrome market continues irregular. Makers' quotations nominally are 28.00c per pound contained, for large lots, 4 to 6 per cent carbon, but there are reports this price is being shaded.

Some inquiries for 50 per cent ferrosilicon from France have been in the market. In view of the large stocks of this alloy in France and England, however, it is believed these merely are for the purpose of sounding the market. American makers continue to quote $95 to $100 a ton, delivered, while actual business is being done in carload lots at $82 to $83, delivered.

Business on a Moderate Scale

Pittsburgh, Oct. 7.—Few demands are coming out in this district for ferromanganese and sales are so limited and small that prices are indefinite. Some domestic producers are quoting 78 to 82 per cent at $110, delivered, but it is known some English makers are quoting $100 c.i.f. Atlantic seaboard, which, they claim is the same price that is being quoted in England, equivalent to about $105 delivered, Pittsburgh district. One agent here of an English producer a few days ago received official notice that a price of $95 c.i.f. Atlantic ports, had been withdrawn. This producer

at the same time withdrew from the market.

The recent inquiry for 400 tons of spiegeleisen, it turns out was from the Griffin Car Wheel Co. which covered this tonnage, for its Boston and Detroit plants, below $34, furnace, for 18 to 22 per cent.

Only carloads of 50 per cent ferrosilicon are wanted or are being sold and the price is right around $80 furnace, freight allowed, for bulk shipments. A Canadian manufacturer is quoting $85, delivered Pittsburgh, for packed shipments, and allowing a charge of $6.50 a ton for packing and package which would mean less than $80 in bulk. A few small sales of 20 to 25 per cent ferrosilicon are noted by electric furnace interests at $55, delivered Pittsburgh district. This price is less than is being asked for 11 to 12 per cent bessemer ferrosilicon and the demands for the latter consequently are small.

Wire Delivery

Falls Behind Schedule—New Orders Declined—Nail Shortage Likely

New York, Oct. 6.—Owing to the large percentage of the country's wire industry tied up by the strike, the makers affected are unable to make deliveries on contracts in accordance with schedules. Hence, many consumers are not getting the usual flow of material. However, the stocks on hand at consuming plants, combined with the fact that eastern mills continue to operate and ship, counteract the effects of the strike in the east, and no consuming plants have been forced to shut down, or, as far as known, curtail their operations. The mills are exceedingly careful about booking new business.

Not Taking Any New Business

Pittsburgh, Oct. 7.—Manufacturers of wire and wire products whose mill operations are undisturbed by the steel plant strike and who have had some tonnage available for prompt delivery, find it extremely easy to make sales at the higher quotations established by most of the independent companies several weeks ago. As a general proposition, however, no new business is being accepted by manufacturers, for while some of those plants recently down now are in operation, production is well taken up for some time to come. Makers are disinclined to enter orders for distant delivery. A shortage of nails is expected over the remainder of the year as building operations are on a much heavier scale than is generally reported. The curtailment of production recently has thrown heavy demands upon the jobbers and their stocks are understood to be badly depleted. The Cambria Steel Co., Johnstown, Pa., and the Youngstown Sheet & Tube Co, still are idle, but the American Steel & Wire Co. notes a steady increase in production at several of its plants which were down and the Pittsburgh Steel Co. and the Page Steel & Wire Co., both of Monessen, Pa., resumed operations Monday following a two-weeks suspension. The Jones & Laughlin Steel Co. is running its wire mills practically full.

Plate Orders Are Large

Pennsylvania Railroad Places 25,000 Tons for Car Repairs—Navy Wants Big Tonnage—Many Boats Are Being Let

New York, Oct. 6.—The number of boats which are involved in pending inquiries is increasing. One eastern yard is figuring on 10 vessels which in some quarters are said to be practically closed, and four yards are figuring on two boats each. In addition many inquiries for boats which came out some time ago have been dragging along.

The most important plate business for sometime is the placing, by the Pennsylvania lines east of 25,000 tons of plates for car repairs. In addition, this road now is negotiating for 2000 tons.

According to plate makers, the 2.50c, Pittsburgh, price which recently figured to a considerable extent in some large transactions, now is practically a thing of the past. All makers declare they are firm at 2.65c, Pittsburgh. Export business continues to develop in plates. A Japanese interest just has placed an order for 1000 tons.

Boats Are Being Placed

Philadelphia, Oct. 7.—Eastern plate mills report the biggest bookings since the armistice were entered during the past week. Not only has shutdown of some of the western mills increased the demands upon eastern makers but many projects which had been held up, now are being closed. The past week's bookings included not only boat, locomotive and car plates but steel for many other uses, not the least of which is for general fabrication work. All signs now point to considerable activity in shipbuilding. Pusey & Jones have taken two ferryboats for the Reading railroad. A Baltimore yard has taken two large vessels and several yards expect to close contracts for vessels shortly. The navy department will open bids Oct. 17 on 22,000 tons of plates and 6800 tons of shapes, half for Mare Island and half for Norfolk. Export plate business is good and mills in Consolidated Steel Corp. are getting more than usual. Production at Coatesville now is the same as before the strike or greater because of the increase in orders. More men applied for work at the Lukens Steel Co. plant yesterday than could be used.

Not Shading March 21 Prices

Pittsburgh, Oct. 7.—Demands upon the plate manufacturers whose plants are in operation still are extremely heavy from buyers who are not getting shipments against contracts placed with regular sources of supply. Makers having any tonnage for sale not only are getting 2.65c, Pittsburgh, on all new business, but also are showing an inclination to decline anything that appears to be an unattractive tonnage.

Japanese Order Plates

Chicago, Oct. 7.—In spite of the strike of steel workers, some tonnage of steel plates is being turned out and shipped by the leading interest in this district although the production is only a fraction of the usual amount. While the tonnage is not large, it helps out on the needs of those who have small stocks and it is believed within a week larger quantities will be possible. Japan is in the market for considerable tonnage of plates and recently placed an order in this market for 1500 tons. Most domestic users are holding off on account of labor conditions and a number who would place considerable tonnages are not now actively in the market.

Warehouse Stocks

Being Depleted Under Active Demand —Bars and Sheets Active

New York, Oct. 6—The strike is working at conflicting angles in the local warehouse market. While the warehouses are confronted with a steadily increasing demand from consumers, jobbers also are having difficulty in replenishing their stocks. Consequently some lines of warehouse materials are getting low. This situation is causing some anxiety among jobbers. Prices are unchanged. Steel bars perhaps are the most eagerly sought of all warehouse materials, although demand for sheets continues heavy.

Competition's Scope Widens

Philadelphia, Oct. 7.—Philadelphia jobbers are meeting with considerable competition from New York jobbers, especially with buyers located near Philadelphia in the general direction of New York. Occasionally the New York jobbers are taking business in Philadelphia proper. This they are able to do because Philadelphia warehouse prices are based on differential of $1 per 100 pounds over mill figures, whereas the New York jobbers still are adding 75 cents.

The Pittsburgh basing system, in shipments to out-of-town points, is being observed by local warehouses when the business is in competition with Baltimore jobbers, since the latter also are using Pittsburgh as a basing point in such cases. In selling to consumers who are in New York-Philadelphia competitive territory, however, the old equalizing system of quoting is used, since this system continues to be maintained by the New York interests. By this system the difference in the freight rates, respectively, from New York and Philadelphia to the point of shipment is added to or subtracted from the warehouse price in New York or Philadelphia.

Demand for iron and steel out of stock in this district has increased greatly because of the strike and consumers are calling upon the warehouses for much of material which they otherwise would get from the mills. The most active product is steel bars. Sheets also are active.

Shape Inquiry Holds Up

Tonnage Offered for Bids Close to High Record Since Armistice —Good Awards at New York and Chicago

Pittsburgh, Oct. 7.—While makers of structural shapes are not heavily provided with orders, and some of them have tonnages available for export, the effect of the strike upon the situation has been almost negligible. Inquiries for fabricated steel still are heavy. Reports to the Bridge Builders and Structural society for the week ended Sept. 27, show that the fabricating interests reporting to this society bid on inquiries aggregating about 38,000 tons. This total has been exceeding only in two weeks since the signing of the armistice last November. Actual lettings in that week amounted to about 8000 tons or about 56 2-3 per cent of the theoretical capacity of the independent fabricating shops. Prices quoted against new structural projects still take a wide range. On the 400 tons required for the new car shops of the Pennsylvania railroad lines west, at Stark, O., bids are reported to have ranged from 3.975c to 5.40c.

No Deliveries Are Promised

Boston, Oct. 7.—Deliveries of structural steel have practically stopped, and although the mills are taking orders for future delivery no promises as to dates will be given. This has had the general effect of holding up projected work. The total tonnage let during the past week shows a marked decrease. On many of the smaller jobs where construction had started, warehouse stocks have been used for completing the work. Plans are being prepared for the Federal Reserve bank which will take 4500 tons. The First National bank is planning one of the finest bank buildings in New England.

Round Tonnage is Placed

New York, Oct. 6.—Three orders, involving more than 13,000 tons, have just been placed in the eastern structural market with the American Bridge Co. These contracts comprised 5600 tons for the Duquesne Light & Power Co., Pittsburgh; 5500 tons for the Baltimore & Ohio railroad bridge over the Allegheny river; and 2300 tons for the Southern railroad bridge at Chattanooga, Tenn. Some smaller awards also have been made. Although new inquiries have not been numerous, some of these have been fairly sizable. One of the largest is 1000 tons for the Consolidated Candy Co., Jersey City. Another calls for 1200 tons for an ice plant at Norfolk.

Good Demand in East

Philadelphia, Oct. 7.—Demand for shapes upon eastern mills in the past week was better than any time previous since the armistice. One mill reports it booked enough tonnage to occupy it a month. Most of it was for fabricated work, but some was for shipbuilding. There is considerable export business including round tonnages for Argentina, East Indies and Japan. Included in export orders was one for 200 tons for repairing windmills in France and Belgium.

New Projects Held Up

Cleveland, Oct. 7.—Demand for structural shapes in large tonnage for new building enterprises has fallen off to an appreciable extent, although orders for small lots continue to come out in fair volume. Fabricators attribute the hesitancy in regard to new projects to the general unrest in the labor situation, fully a score of large jobs in the Cleveland district being held back on this account. A similar condition prevails in the Detroit district where many large jobs have been figured. It is understood however that the general contract for the Cleveland Trust Co. building, about 10,000 tons, has gone to a local contractor on a percentage basis. An apartment hotel at Detroit, 1200 tons, has been placed. The Templar Motor Co., Cleveland, and the Ohio Blower Co., Cleveland, have let general contracts to the Hunkin, Conkey Construction Co., for new buildings, which will require a fair amount of structural shapes. Eastern Pennsylvania mills are making some sales of plain material into this district for prompt shipment at 2.75c Cleveland and 2.58c Pittsburgh representing in effect a premium of $2.60 per ton.

West More Active

Chicago, Oct. 7.—Building operations in the west continue to show much activity and each day sees further inquiry for structural material while numerous contracts are being placed with fabricators. The largest tonnage placed recently involves 1232 tons for the Bank of Italy, at San Francisco.

CONTRACTS PENDING

Manufacturing addition for A. O. Smith Corp., Milwaukee, 600 tons to Worden-Allen Co.

Garage and service building for American Automobile Co., Milwaukee, 100 tons to Worden-Allen Co.

Power house for United States Glue Co., Carrollville, Wis., 100 tons to Northwestern Bridge & Iron Co.

Hotel building for Eau Claire Hotel Co., Eau Claire, Wis., 250 tons to Worden-Allen Co.

Manufacturing buildings for Diebold Safe & Lock Co., Canton, O., 500 tons to Northwestern Bridge & Iron Co., Milwaukee.

Factory building for Fowler Nail Co., Buffalo, 250 tons to John W. Cowper Construction Co., Buffalo.

Bank of Italy at San Francisco, 1232 tons, to Golden Gate Iron Works.

Grain elevator for the Southwestern Milling Co., Kansas City, Kans., 461 tons, to Kansas City Structural Steel Co.

Building for the Meadows Mfg. Co., Bloomington, Ill., 240 tons, to independent shop.

Roof covering present crane runway for the Nash Motors Co., Kenosha, Wis., 197 tons, to Milwaukee Bridge Co.

Office building for A. W. Shaw Co., Chicago, 187 tons, to Hansell-Elcock Co.

Roof over yard crane runway for the National Malleable Castings Co., Chicago, 172 tons, to Morava Construction Co.

Manufacturing building for Gormeley & Jeffery Tire Co., Indianapolis, 186 tons, to Stone & Webster.

Two oil tanks for Sinclair Refining Co., at Tremeley Point, N. J., 500 tons, to American Bridge Co.

Apartment hotel, Detroit, 1200 tons; to Russell Wheel & Foundry Co.

Bridge at Columbus, O., for the Pennsylvania railroad, 400 tons to the Mt. Vernon Bridge Co.

Five buildings for Pennsylvania highway department, 300 tons; to Belmont Iron Works.

Armory, Troy, N. Y., 1000 tons; to Phoenix Bridge Co.

Building at Allentown, Pa., for International Truck Co., 1000 tons; to Phoenix Bridge Co.

Building for Shipley Supply Co., Brooklyn, 300 tons, to Aerican Bridge Co.

Power plant for Duquesne Light & Power Co., Pittsburgh, 5600 tons, to American Bridge Co.

Bridge for Baltimore & Ohio railroad, Alleghany river, 5500 tons, to American Bridge Co.

Bridge for Southern railroad, Chattanooga, Tenn., 2300 tons, to American Bridge Co.

Fertilizer works for war department, Chrome, N. J., 250 tons, to independent shop.

CONTRACTS PENDING

Building for John Crerar library, Chicago, 1450 tons, bids in.

Hotel for Blackhawk Hotel Co., Chicago, 1900 tons, bids in.

Theater building, Des Moines, Iowa, 119 tons, bids being taken by the Sugarman Construction Co.

Bridge at Homedale, Idaho, 290 tons, bids in.

Plant for William R. Johnston Mfg. Co., Chicago, 250 tons, bids in.

F. D. Chase, Inc., Chicago, engineer.

Factory for Consolidated Candy Co., Jersey City, 1000 tons, bids pending.

Ice plant at Norfolk, Va., 1200 tons, figures being taken.

Federal Reserve bank, Boston, 4500 tons; plans being prepared.

Beach telephone exchange building, Boston, 700 tons; plans being prepared.

Rail Buying

Is Approaching as Chicago Mills Negotiate for 100,000 Tons

Chicago, Oct. 7.—Interest in steel rails for delivery in 1920 is being manifested by numerous railroads, but so far no contracts have been made covering this delivery. Several lots required by western railroads are now being negotiated to an aggregate of at least 100,000 tons. Car inquiry is small and the active business now being considered consists principally of passenger cars and special equipment. The Manila railroad is inquiring for 25 coaches, the Atlantic Seaboard Dispatch line for 50 refrigerator cars, the Nickel Plate for 11 passenger cars and the Arms Palace Horse Car Co. for 25 cars. The inquiry of the Union Tank line for 1000 tank cars is being delayed because of strike conditions but will be reinstated when the situation clears.

Track Materials Doing Little

Pittsburgh, Oct. 7.—New demands upon the makers of standard rails are few and small and in the past week or so a considerable falling off in the inquiries for light rails has been observed. Nothing lately has been heard relative to a possible order for 200,000 tons of standard rails by the railroad administration rumored several weeks ago. Railroads are buying standard spikes merely as they are wanted but demand for small spikes still is active with most makers out of the market for the year.

Prices for Exports Advancing

Higher Quotation on Bars—Holland and Japan Sending Large Inquiries for Ship Plates—Orient Has Great Pig Iron Need—South American Business Flourishing—Prospective Railroad Requirements Extensive

NEW YORK, Oct. 6.—Although the strike has delayed shipment of material purchased on old contracts exporters report a great increase in inquiries from abroad and in a number of cases quotations are being made. If the mills were willing to take on the business offered, it is declared the export sales during the first week of October would exceed that of any week during September. There have been a number of inquiries from England and nearly all countries of Europe have shown some interest. Sales of shapes and plates have been unusually brisk, these going to China, England, Japan, and even France. One eastern plate maker has about sufficient foreign business to keep his plant busy the remainder of the year. The business from South America has continued to grow and the indications are that the foreign sales during October will establish another record for this country.

Domestic mills, however, are not quoting on new business, due to the strike, and the exporters are inclined to take chances on the market. Foreign inquiries are being answered, but the exporter has felt constrained to add a little to the domestic price in order to protect himself against a possible rise. In some instances, it is understood, the exporters' quotations are 10 per cent higher than the last prevailing domestic price.

Deliveries Are Difficult

Deliveries of wire products and nails are extremely difficult, but export sales contracts are protecting the sellers of these commodities. Deliveries of rods are somewhat easier, and in but few cases have shipments of tin plate been held up on account of the strike. In other lines the export trade has experienced little dislocation. Exporters feel confident that the strike cannot last much longer. It was pointed out that due to the railway strike in England, now settled, and other industrial disturbances there foreign buyers were compelled to turn to the United States. Individual exporters are anticipating a recurrence of these conditions when they hope to be able to reap a rich harvest in locating goods for prospective customers. It is the expectation which has prompted some of the houses to speculate on the future market, add a protective commission and send a quotation to foreign inquirers.

While it is pointed out that mills generally are not putting any new business on their books, it is true that regular customers abroad are not being disappointed. New business has been placed since the beginning of the strike. Some small shipments of galvanized sheets and steel plates have been made to Italy at the prevailing prices. Some small shipments of pig iron have been made to northern Europe.

English business has fallen off, but this is due, it is felt, more to the labor troubles in England. It was noted that a recent London inquiry requested a quotation on a small tonnage of steel bars. The bars, it is understood, are for delivery in South Africa. Another new British inquiry was for boiler tubes. Export houses having commitments to deliver to English purchasers today directed their agents to forward the goods to port, believing that steamships will be ready to accept and transport the material by the time it arrives.

Holland has been sending in an unusual inquiry for ship plates. One small house alone has in hand a Dutch inquiry for 12,000 tons of plates and it is reported that similar inquiries are scattered throughout the market. American firms are hurrying their quotations on these inquiries for it is feared that German mills will be competing in Holland before long and when that comes the market probably will be cut off. France has purchased a few hundred tons of wire rods and Spain has been buying tin plate, bars and structurals in small quantities.

There has also been shown an increased interest on the part of the Near East. From the nature of the inquiries it is believed these are based upon agricultural needs. Greece is said to have purchased $25,000,000 worth of Canadian goods and is planning to buy more. The Canadians have also been given orders from Belgium and Roumania. Representatives of these countries have been in the American market for some time past but were unable to arrange credits. They are back again and beginning negotiations with American iron and steel producers.

The Belgian government is said to be negotiating with an American company on an order for 400 locomotives, the cost of which will be approximately $20,000,000. The deal involves locomotives of the heavy freight type to be used in the rehabilitation of the transportation lines of the country. Many foreign powers are said to be planning to let orders here for railway equipment but are awaiting the completion of financial arrangements.

Strike Investigators Urge Americanization

Washington, Oct. 7.—Americanization of all industrial workers immediately will be one of the recommendations of the senate committee on education and labor as the result of its investigation of the steel strike.

Senator Kenyon of Iowa, chairman of the committee, is planning to urge congress to take steps at once to provide for a plan of Americanization. There is a bill before the committee which provides for federal action.

"The question of Americanization is most important," said Senator Kenyon, "and I have paid very close attention to the evidence which has borne upon this subject, and I believe we have received some valuable information."

Evidence submitted to the committee by both parties in the steel strike has shown that a large percentage of the workers engaged in the steel industry have little knowledge of the English language and consequently can not understand American methods.

Senator Kenyon refuses to allow the Americanization question to be confused with charges that foreigners are leading the steel strike, but he takes the position that in order for citizens of the United States to have a proper conception of the form of government, and to understand the steps they are taking, they must have a knowledge of the English language.

No attempt has been made as yet by Senator Kenyon or other members of the committee to draft a formal report on the investigation of the steel strike and none will be made until the investigation is officially closed.

Strike is Steadily Breaking Up

Workers Returning Wherever They Are Given Protection—Martial Law Prevails in Chicago District, While 4000 of 6000 Inland Steel Co.'s Employes Go to Work—Mills in Pittsburgh District Resume

STRIKE conditions in all districts affected in the iron and steel industry show considerable improvement, and wherever protection is being afforded to workmen they are returning to the furnaces and mills in increasing numbers. The most notable improvement is reported in the Pittsburgh district, a number of large plants having resumed operations without any difficulty. In the Chicago district the Inland Steel Co. is resuming operations at its plant in Indiana Harbor, 4000 of its 6000 employes having returned.

The strike in the Chicago district is reported to have reached the breaking point, Gary, Indiana Harbor and East Chicago now being under martial law, a condition which will insure the safety of the thousands of men who have indicated a desire to return to work. General Leonard Wood is in charge of 4000 United States troops at Gary, where a riot occurred last Sunday, and state and federal authorities declare order will be maintained

Mills in the Youngstown district are preparing to resume operations, as are those in the Cleveland district. In both of these districts men are returning to the mills in sufficient numbers to warrant operations. Employers say they would experience little trouble in operating their plants with their loyal employes if the local authorities were to take the necessary measures to safeguard the rights of American workers against the threats of the lawless element. The fact that the strikers are steadily losing ground, it is feared, may cause outbursts of violence, and for that reason many companies are not risking the danger to life and property in operating before sufficient protection is given.

More units are operating in the Buffalo district, and in eastern Pennsylvania conditions are reported to be normal. In the southern district, the St. Louis district, and in New England no vestige of the strike remains, despite efforts of trade union leaders.

Rapid Progress in Pittsburgh District

PITTSBURGH, Oct. 7.—Failure of the steel plant strike in the Pittsburgh district is indicated more strongly by the resumption of operations at plants located in districts which have been looked upon as hotbeds of radical labor activity. The plants of the Pittsburgh Steel Co., and the Page Steel & Wire Co., both at Monessen, Pa., which shut down even before the strike became effective, resumed operations Monday, while the Donora, Pa., steel, wire and zinc works of the American Steel & Wire Co., which suspended on Sept. 22 started up Monday, and on Tuesday had more men back at work.

The fact that resumption at these plants was unattended by disorder supports the belief of plant officials that more men mill soon return.

In the Allegheny valley and other districts where radicalism is rampant, a definite break in the strike has occurred. At New Kensington, the American Sheet & Tin Plate Co., on Monday started up both of its plants while the West Leechburg Steel Co., the plant of which is at Leechburg, Pa., and has been down since the first day of the strike, resumed operations Tuesday morning.

Meanwhile the steel plants in and near Pittsburgh which strikers failed to close continue to make steady gains both in the number of men at work and in their plant operations. One of the blast furnaces at the Clairton, Pa., plant of the Carnegie Steel Co., went into blast last Saturday night, while an additional stack at the Edgar Thomson works of the company is going, bringing the number of active furnaces to six. Of the 11 stacks at this works two are down for relining and another furnace is expected to be operating before the end of the week.

Agitators Making No Headway

Organizers are making no headway at the Homestead plant of the Carnegie company or at the south side works of the Jones & Laughlin Steel Co. At Rankin and Braddock the American Steel & Wire Co., has its plants operating, making rods and drawing wire. The Pittsburgh district plants of the National Tube Co., at no time much disturbed by the strike, are running even fuller than they were a week ago.

At no plant in the entire district has there been a loss. On the contrary, gains have been general and while labor leaders still are making extravagant claims as to the number of men out, their estimates are stated to be for the organization and the strikers and not for publication.

Outside the Pittsburgh district proper reports generally are favorable. The Cambria Steel Co.'s plant at Johnstown, Pa., still is shut down with no effort being made by the management to resume. Apparently none will be made until the strikers ask for a resumption. Reports from the Shenango valley are to the effect that operating forces are increasing. On the whole, western Pennsylvania has proven too impregnable for the strike organizers.

Considerable uneasiness exists in coal trade circles over the possibility of a strike in the bituminous fields in which the operators have an agreement with the United Mine Workers of America. It seems that little progress has been made, according to reports reaching here, at the conference now in progress in Buffalo between the operators and representatives of the miners in getting the latter to modify their demands, framed at the annual convention of the United Mine Workers at Cleveland last month.

The operators rejected the demands of the miners at Buffalo, on the ground that the agreement entered into in 1917 does not expire on Nov. 1, as claimed by the miners and also because the operators consider the demands of the miners in regard to wages and working hours grossly extravagant. Acceptance of the new wage and working scale, the operators say would add $1,000,000,000, a year to the coal bill of the American people; would cut down the actual working time of the miners to not more than 25 hours a week and

would reduce the production of the country to one-half present volume.

Danger of a tieup of the mines on Nov. 1, operators here say, is more serious than is generally supposed, for as the miners already have voted for a strike in the event that their demands are refused, and since the result of the Buffalo conference must be submitted to them for approval it is thought probable they will affirm the action of their convention. Only through a marked modification of the demands of the miners can the strike be avoided, the operators say.

On Tuesday the American Sheet & Tin Plate Co.'s sheet mill operations were increased to 80 per cent, and the Dover, New Philadelphia, old Meadows, Scottdale, Wellsville and Wood plants were operating 100 per cent. At Gary eight mills were active, at Guernsey six, at Hyde Park four, at Leechburg eight, Mercer seven, and Vandergrift 30. Tin plate production had been raised to 50 per cent. The Cambridge, Chester and Sabraton plants were running fully. At the Farrell plant 21 mills were running, at Gary four double mills, at New Castle 19, at Pittsburgh two, at Pennsylvania one, and at Shenango 38 out of 40.

Martial Law in Chicago District; Men Return

Chicago, Oct. 7.—Four thousand United States troops under Gen. eral Leonard Wood are at Gary, Ind., following the action of 500 discharged soldiers Monday night in donning army uniforms and joining strike pickets. More men returned to the mills when afforded protection. The Inland Steel Co.'s plant at Indiana Harbor is resuming operations with 4000 men. Martial law has been declared at East Chicago and Indiana Harbor. This is regarded as the breaking point of the strike.

A riot devoid of shooting took place in Gary Sunday and resulted in the Indiana militia being put on guard throughout the city to keep order and prevent unlawful gatherings. Previously the governor had been asked to send militia to Indiana Harbor and East Chicago and 11 companies were sent, four afterward being ordered to Gary from these places.

Monday morning almost the entire crew of the rail mill at the South Chicago plant of the Illinois Steel Co., reported for work and the mill was started after two weeks' idleness. At other mills of the United States Steel Corp., the situation is not markedly changed.

With troops in charge of the situation it is expected the men will return in large numbers, as intimidation will be ended.

Youngstown Plants Are Preparing to Start

Youngstown, O., Oct. 7.—No attempt has been made to operate plants here since the strike began, although indications are that efforts in this direction will be made soon. According to reports, several open-hearth furnaces at the steel plant of the Sharon Steel Hoop Co., Lowellville, O., will be charged probably this week. The number of workmen entering the Youngstown Sheet & Tube Co.'s plant at East Youngstown, according to authentic reports, shows a slight gain today. Approximately 700 men are at work in this plant as against 15,000 normally. Out of 6000 men employed by the Carnegie Steel Co. here, 1100 are reported at work. No disorder has taken place in the valley. Demurrage charges on all railroad cars in mill yards are extremely large. These charges at one plant average approximately $7000 per day. Further incoming shipments of materials have been stopped wherever possible. Rumors to the effect that the Republic Iron & Steel Co.'s bar mills at Moline, Ill., are closed down are denied by the officials of that company. The mills are rolling at 100 per cent capacity.

Mill operations in the Shenango valley are much better than in the Mahoning valley. At Sharon, Pa., several hundred men reported for work today, according to the officials of the Carnegie Steel Co. At the works of the American Sheet & Tin Plate Co., Farrell, Pa., 18 hot mills and 16 tin pots are said to be in operation. The National Malleable Castings Co., reopened its open-hearth and electric furnace departments Monday. The 14-inch mill of the Sharon Steel Hoop Co., is rolling at capacity. At New Castle, Pa., the steel works of the Carnegie Steel Co. and the tin mills of the American Sheet & Tin Plate Co., are maintaining 100 per cent output. The No. 1 furnace of the Carnegie Steel Co., which has been banked since the strike began, has been put in blast.

Operations Extended in Buffalo District

Buffalo, Oct. 7.—Conditions in the steel strike situation in this district indicate that the strike may soon be broken. Although the smaller two of the three plants which were tied up by the strike Sept. 22 are still idle, the Lackawanna Steel Co., the largest plant affected, is beginning to resume operations. One blast furnace was lighted Monday and preparations are being made today to light another. Between 200 and 300 steelworkers have deserted the strike cause and returned to work, and about 500 to 600 laborers and plant helpers have been working at the company's plant for the past week. It is expected that by the end of the week the Lackawanna plant will have still more units in operation.

No attempts have been made by the Donner Steel Co. to operate its Buffalo furnaces and mills, or by the Rogers, Brown Iron Co. to man its furnaces. Work at the Wickwire Steel Co.'s plant or the Donner Steel Co.'s Tonawanda furnaces has not been interfered with to any great extent. It has been necessary to replace men here and there, but no concerted walkout has occurred. The same applies also to the Buffalo Union furnace, where every blast furnace is working 100 per cent. The Lackawanna company has utilized some of its spare time to make needed repairs to blast. bessemer and open-hearth furnaces. Early Wednesday there was serious rioting, when a mob of 1200 attempted to hold up three street carloads of workmen going to the Lackawanna plant from Buffalo, but the riot was broken up by city police and state troops.

Ask for Re-Employment in Cleveland District

Cleveland, Oct. 7.—General conditions in the steel strike situation in the Cleveland district have not changed much during the past week. Production of pig iron is at a standstill, and the strike fever appears to have spread slightly to consumers' shops. The employers, however, still regard the situation optimistically, and state that many men are asking for re-employment.

The H-P nail works of the American Steel & Wire Co., the onlyl subsidiary in this district of the Steel corporation, which started operations last week, after being closed a week, is working at about one-third of its capacity, and more men are applying for employment daily. At the plant of the Lake Erie Bolt & Nut Co., which has been closed since Sept. 22, a small number of the men have returned to work. Other plants in the district make favorable reports, stating that practically all of the American employes are desirous of returning.

Last week 700 employes at the plant of the National Screw & Tack Co., went out, but on Monday 100

applied for re-employment, and the number is expected to increase.

A strike was declared at the two plants of the Cleveland Hardware Co. Two hundred drop forge operators walked out, and so crippled the plants that 1300 other employes were forced into idleness. The situation was somewhat improved Tuesday, the second day of the strike, when a large number of the strikers applied for re-employment.

According to officials of the Cleveland Hardware Co., and the National Screw & Tack Co., scarcely a single American joined in the strike. Steel strike organizers in this district deny the strike at these plants is connected with the general steel strike, but plant officials feel that it is part of it.

Little headway has been made by union organizers toward crippling the plant of the National Tube Co., at Lorain, O. Of the 10,000 employes only a few are out.

No Workers Are Out in St. Louis District

St. Louis, Oct. 4.—The second week of the strike failed in any notable manner to affect conditions in this district. Aside from a slowing down of deliveries of pig iron and other products from the North and East, nothing has occurred to interrupt the even tenor of the situation. Activities at foundries are intensive, and all steel plants in operation prior to the strike order are working as usual. Southern furnaces are supplying all the pig iron needed, but should the strike continue two weeks longer certain basic users here may find it difficult to obtain tonnages to keep running. Not a single worker in any steel or iron plant in the district has quit his job because of the strike.

Report Bethlehem Plants Operating at Normal

Philadelphia, Oct. 7.—The strike situation in the East improved further during the past week. At Coatesville mills are operating the same as before the strike or better due to increased demand. Union leaders are reported to have advised the men who are still out to look for other jobs. The men number only a few hundred. The Bethlehem Steel Co.'s plants are reported operating at normal, and the company's spokesman says: "We are operating so close to capacity that there is nothing to talk about."

Strike leaders, while admitting their early estimates of the number of men out are too large to cover the present situation, still are working hard to close down the Bethlehem's plants, and each day are making claims about what they expect to do the next. The Alan Wood Iron & Steel Co., has had a little difficulty with a small number of men, but operations have not been affected. The situation in East is satisfactory.

Railroad men employed by the Bethlehem Steel Co. Tuesday night voted unanimously not to strike. Strike leaders had great hopes of getting out the yard crews.

Conditions Are Normal in New England

Boston, Oct. 6.—Steel plants in New England report a continuance of normal operations. The fact that plants in other parts of the country are shut down was expected to lead to an increase in the business of the local concerns, but this has not been the case. Deliveries of raw material have slowed down to some extent but this is not affecting operations at present. Labor conditions throughout New England have not been affected by the steel strike. Small strikes continue to break out in some industrial centers but there are fewer men on strike now among machine manufacturers and foundries than at any time in many months. At Fitchburg and Worcester the striking molders have returned to work after several weeks of idleness, without receiving concession from the foundries. Warehousemen report a rush of orders during the last few days and this is attributed to the tie-up of steel mills. Steel plant representatives, however, say that all orders for spot shipment are being entered and that deliveries are being made.

Alabama Strikers Leave Union; Go to Work

Birmingham, Ala., Oct. 7.—There is absolutely no indication here that a strike is on in the Birmingham district, and all plants of the Tennessee Coal, Iron & Railroad Co. and the American Steel & Wire Co. are in full operation. Many men who were reinstated tore up their union membership cards.

The strike was one of the greatest fizzles organized labor ever staged in this district. Production is not only normal but in some instances records are being broken. Reports are current that the loyalty of employes of the Tennessee Coal, Iron & Railroad Co. and the American Steel & Wire Co. will be recognized and some developments of special interest to labor are expected soon.

Labor Conference

Now in Session May Discuss Principles in Steel Strike

Washington, Oct. 7.—If the steel strike is to receive attention of the national industrial conference which began Monday, developments so far do not indicate it. The first two days of the conference were devoted to organization work. Secretary Lane was made permanent chairman. So far no business has been before the conference, which is expected to get under way Wednesday.

Indications are that the conference will last two or three weeks, and perhaps longer. It has been reported that labor delegates may raise the steel strike question, but it is not known whether this will be directly or indirectly through principles labor claims are involved in the strike. The public group, of which E. H. Gary is a member, may raise the question of principles, or this may come from the employers' group.

Reorganize Company

Announcement is made of the reorganization of the Cromwell Steel Co., Lorain, O., with leading New York and Cleveland steel interests, who will assume their duties Oct. 15. Veryl Preston, formerly president of the Eastern Steel Co., Pottsville, Pa., is to be president; George H. Baumont of Pickands, Mather & Co., Cleveland, first vice president; H. A. Raymond of the Cleveland-Cliffs Iron Co., Cleveland, second vice president; Harold F. Clark of the law firm of Squire, Sanders & Dempsey, Cleveland, secretary, and George P. Steele of the First National bank, Cleveland, treasurer. J. C. Cromwell, who organized the company some time ago and who is leading shareholder, surrenders his 99-year option on the plant and remains as a director of the company.

To Erect Body Plant

Plans for the erection of a great automobile body plant in Cleveland by the Fisher Body Corp., Detroit, were announced Tuesday. Brief reference was made to this undertaking on page 662 of the Sept. 4 issue of THE IRON TRADE REVIEW, although details at that time were not available. In his announcement, President Frederick J. Fisher, of the Fisher Body Corp., states: "The plant will be the largest, most modern single complete up-to-date manufacturing unit of its kind in the world, employing about 7000 operatives, whose annual payroll will aggregate $10,000,000."

Belgian Plants in Hard Struggle

Cockerill and Ougree-Marihaye Furnaces and Mills at Liege and Seraing Handicapped by Insufficient Equipment and Lack of Coal and Coke — Thousands of Tons of Material and Machinery Stolen — Works are Still in Ruins

BY FRANCIS MILTOUN
Paris Correspondent of The Iron Trade Review

GOING back up the trail of the German invasion of Belgium, from Antwerp and Brussels to the valley of the Meuse, in a Belgian government staff car recently, I inspected the industrial districts damaged in the first few weeks of the war.

The opinion is general that Belgium by no means suffered to the extent of France, but I think the point of view is wrong. The devastation of the mining town of Lens in northern France, now a mere heap of stones some square miles in area, is no greater in its effect than that of the Cockerill or Ougree-Marihaye plants of Liege and Seraing.

In that beautiful valley through which we rode on one of the finest roadways of Europe, 50 miles from the citadel of Namur to the wooded heights above Liege, the most "Latin" city of Belgium, there was not a kilometer but what bore the battle scars of war. The history of the massacres of Andenne, Huy, Verviers and Vise will not be forgotten. The victims were the men, women and children who made up the laboring population of this section of industrial Belgium. Eight months after the armistice scarcely a wheel was turning in all that battery of great plants suggested by the names of Cockerill, Ougree, Angeleur or Esperance-Longdoz, scarce a tongue of flame or a feather of smoke was seen in the air.

I had been furnished the following general facts by Monsieur Ledouble, the civil engineer of the district, before leaving Brussels, so that when I actually trod the still smoky ruins of the great plants my observation was merely one of corroboration. By talking with Monsieur Armand Desoer, the director of Ougree-Marihaye, I got a good impression of what really happened and what is happening. Incidentally, Monsieur Desoer was in captivity in Germany during the war. He did not mind telling me this, or of some of the incidents of his sufferings during the period.

In general, the situation in this intensively industrial district resulting from the war is as follows: The extraction of coal is still on a limited basis, as it had been kept by the Germans during the period of their occupation. The coke ovens of the Cockerill plant have been shut down since

Tracing the Revival of Belgian Industry

THIS is the third article of a series on the iron and steel industry of Belgium written by Francis Miltoun, Paris correspondent of The Iron Trade Review. *Mr. Miltoun visited the plants and interviewed the officials of the companies concerning which he is now writing, so that his articles are authoritative as well as timely. The damage done by the Germans to the Cockerill and Ougree-Marihaye plants at Liege and Seraing, two of the greatest iron and steel establishments in Belgium, is described in this article. The extent to which the two companies have succeeded in overcoming obstacles and getting their plants in operation also is set forth in detail. Their efforts in this direction are no less interesting and important to Americans than the story of how Germany sought to exterminate them. The initial article of this series appeared in* The Iron Trade Review *Aug. 14, while the second appeared Sept. 25.*



ELECTRICAL POWER HOUSE OF THE OUGREE-MARIHAYE CO., NEAR LIEGE. DYNAMOS IN THIS PLANT WERE STOLEN BY THE GERMANS



THE FOUR UPPER PHOTOGRAPHS SHOW THE INTERIOR OF ROLLING MILLS OF THE OLGREE-MARIHAVE CO. BEFORE AND AFTER THE WAR. THE TWO LOWER PHOTOGRAPHS SHOW THE PROGRESS OF DESTRUCTION IN THE COMPANY'S STEEL PLANT. COMPARISON REVEALS HOW THE GERMANS SYSTEMATICALLY REMOVED EVERYTHING OF WORTH

June, 1917. Ougree has two batteries of 60 ovens, one of which was in operation before the war and the other was built during the occupation. The two are virtually intact except that all the piping, charging equipment and recuperating appliances were stolen or destroyed during the few months just before the armistice.

The Cockerill blast furnaces were practically destroyed, only two out of the former seven being in condition susceptible of immediate repair. One of the Ougree company's two groups of four furnaces suffered complete demolition, while the second, although their foundations are intact, were stripped of their accessories. All were practically out of business at the time of the armistice, and but two are in process of reconstruction, so as to meet the need when a sufficient supply of ore can be brought from the company's mines in France. The central electrical station of the company, with a capacity of 1500 horsepower, was entirely destroyed and its canalizations and cables were all stripped and carried off.

The Cockerill steel plants continued to remain in partial operation up to the end of 1918, but not more than a single Martin furnace is expected to be in operation for some months. At Ougree four Martin furnaces were utilized by the Germans and these are practically intact, one producing, with a capacity of 40 tons a day. Three others are awaiting the necessary material and equipment for rebuilding. Rolling and wire mills were kept in operation to some extent by the invaders, and the one rolling mill now in operation is working up the product of the Martin furnace.

A curious observation was made by Monsieur Desoer to the effect that a Morgan wire mill was the only piece of machinery actually in working condition when the company regained possession of its plant. At the same time American companies were laying down, on the quays of Antwerp, a product similar to that which the Cockerill plant was capable of turning out, but at a price lower than at which the Cockerill company could produce it. And yet labor of all kinds is supposed to be 25 per cent lower here than elsewhere in the industrial world. The incident demonstrates America's supremacy in iron and steel.

The Esperance-Longdoz plant at Seraing is in a similar state. The Monceau rolling mills at Tilff remained in operation under their owners' direction until November, 1918, when the Germans brought their own workmen and proceeded with the demolition of the equipment.

The Colonster works at Embourg has but one rolling mill, and nothing much remains but its foundations. It foresees no immediate prospect of getting into production. The Ourthe rolling mills at Embourg worked intermittently for German account until some time after the latter part of 1918 when it stopped completely.

The Defflandre works at Embourg have not turned a wheel since 1918 in the fashioning of the iron and steel which it drew from the big plants of the neighborhood. La Rochette at Chaudfontaine has been inactive since 1917; not a roll has turned in its mills, not a hammer has fallen in its forges. Everything was either demolished or "lifted" by the Germans. The Nagelmackers plant at Vauxsous-Chevremont is completely destroyed. Asnay at Chenee was shut down in 1914, and its rolling mill equipment, boilers and machine tools were all demolished. Two small blast furnaces only remain as being possible of building up anew.

The zinc industry was largely in the hands of the Prayon Metallurgical society at Trooz. Eight hundred workmen were employed before the war. Work continued until November, 1916, when work ceased from a lack of ore. The German authorities "lifted" all its rails, castings, molds and gas generators, three-fourths of all its electrical equipment, its freight cars and its locomotives.

Furnaces Entirely Destroyed

The Biache Saint Vaast zinc foundry and rolling mills at Ougree worked only until September, 1916, and but a score of workmen are now engaged in clearing up the crumbled walls and battered material left by the Germans. The furnaces were entirely destroyed, and also all nonferrous metals, which might otherwise have served the German war establishment. A supreme effort has enabled the company to make plans for immediate resumption, and one furnace at least will soon be in operation. All other rolling mills and smaller establishments engaged in the shaping and fashioning of sheets and articles of zinc are out of business as a result of the damages of war.

Monsieur Desoer says this is what the Germans "lifted" or destroyed at the Ougree-Marihaye plant:

	Tons
Raw material	39,734
Finished products ready for shipping	13,244
Copper, bronze and belting	310
Machine tools and various tools broken up on the spot and shipped away as scrap	48,324
Machines, boilers, motors, rolling stock, cranes, shipped to Germany	4,119
Total	105,731

The list of plants and equipments damaged or destroyed is as follows:

Four blast furnaces and accessories completely destroyed.

Four blast furnaces seriously damaged.

One mixer "lifted," and one destroyed.

One Thomas furnace of six retorts, of which there remain two retorts, greatly damaged.

One machine for the crushing of slag of which seven crushers and five tubes and accessory boilers and power plants were completely destroyed.

Twelve rolling mills with boilers, power plants, shearers, etc.

Various machine shops completely robbed of their equipment. More than 40 machines used for the production and finishing of rails and plates destroyed.

Repair shops for the plant equipment destroyed; in all 110 machines in this category alone.

Eighteen turn tables.

Eighteen electric cranes.

Two steam cranes.

One hundred and seventy-eight motors of 4550 horsepower.

Eighteen gas motors of 9400 horsepower.

Nineteen thousand square meters of hangars and shops.

Three locomotives.

Forty freight cars.

According to 1914 prices the damage is estimated at 40,000,000 francs.

At the time of my visit one blooming mill was being put into operation. A Martin furnace was put into operation in January, 1919, and a Thomas furnace was all ready for firing. A train of 500 plate and rail rollers was in operation at a reduced rate of production and it was hoped to put two others in operation within a month. Two blast furnaces were in operation, another planned for operation in October, 1919, and a fourth in January, 1920. A battery of coke furnaces had been put into condition for operation in August. It is planned to operate a second battery in February.

A general meeting of the Ougree-Marihaye company was held the latter part of July and the following balance sheet was made public. Losses of the period of the war were set forth as follows:

	Francs
1914-15	2,690,970
1915-16	2,449,752
1916-17	2,593,611
1917-18	3,047,082
1918-19	4,133,614

The company gave its personnel as part payment of damages they may have received, and in recognition of its obligations toward its workers, the sum of 9,213,002 francs, in cash or in kind. The director general, Monsieur Trasenster, will shortly abandon his post, though remaining on the governing board as an administrator. Monsieur Trasenster was chiefly responsible for the organizing of the great



CONVERTER AT THE PLANT OF THE OUGREE-MARIHAYE CO., DESTROYED BY THE GERMANS

300,000,000-franc Belgian iron and steel combination of which I recently gave particulars in THE IRON TRADE REVIEW.

The Ougree-Marihaye establishment as a result of its last meeting has made arrangements to acquire a part of the celebrated Saintignon mining properties in the Longwy basin of France, these being contiguous to one of Ougree's subsidiary company's at Chiers. In payment for these rights the Saintignon interests are to receive 5,000,000 francs in cash, and 10,000 shares of the capital of the Ougree-Marihaye establishment. The Dugree-Marihaye company also possesses its own coal mines, production in which in the season of 1918-19 reached 55 per cent of normal and which is today at 70 per cent. All further development is dependent on labor and wages.

Powdered Coal As Fuel For Annealing

IN the malleable iron foundry there are two processes which require for their fulfillment the generation of a large quantity of heat. These are the melting of the pig iron and scrap and the annealing of the castings. The furnace efficiency in both cases is low, and there is thus afforded an opportunity to effect a considerable reduction in the fuel consumption.

Approximately 15 to 20 malleable foundries are burning powdered coal in annealing furnaces with satisfactory results. This fuel was first applied at the plant of the Erie Malleable Co., Erie, Pa. The credit for the success of this installation belongs to B. J. Walker, who in 1896 operated annealing furnaces in which the source of heat was powdered coal. Other companies whose installations closely followed that of the Erie Malleable Co. were the International Harvester Co. and the Symington company. A recent installation is that at the Pressed Steel Car Co., formerly the Pennsylvania Malleable Co.

This company made its initial applications of powdered coal to annealing furnaces in the fall of 1917, and since then these furnaces have been in continuous operation. In this plant the furnace is practically all below floor level with the roof formed by bungs. There are 10 large and 18 small furnaces, some of which are used for annealing steel castings. The larger ones have a capacity of 50 tons, while the smaller hold 25 tons. The requisites in an annealing furnace from a thermal standpoint are a uniform temperature (and consequently heat) throughout the heating chamber and the maintenance of a constant degree of heat for the proper length of time. To secure these conditions, it was necessary to install four burners in each furnace and maintain a steady flow of coal to these burners. A pyrometer is inserted in each end of each furnace. Each one is connected to a central recording instrument. It is the duty of the furnace attendant to read the temperature of each furnace at frequent intervals on this instrument, so that there is little chance for any wide fluctuation in temperature. One attendant supervises all the furnaces.

With powdered coal it requires from 14 to 18 hours to bring the furnace to 1600 degrees, with fuel oil the time is 22 to 24 hours, and with natural gas about 26 hours. From the foregoing it seems apparent that powdered coal gives results which are thermally satisfactory. There is an accumulation of fine ash which must be removed from these furnaces at intervals. The length of these intervals will depend on the percentage

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Abstract of a paper presented at the annual meeting of the American Foundrymen's association, Philadelphia, Sept. 29-Oct. 3. The author, Charles Longenecker, is associated with the Bonnot Co., Pittsburgh.

of ash in the coal. When the coal has a low ash content the accumulation is removed once a month. In the standard type of furnace, where the heating chamber floor level is at general floor level, the disposal of the ash is of small moment, due to greater accessibility of both heating chamber and flues.

In annealing malleable castings a fluctuating temperature must be avoided and at no time is it permissible to allow the temperature to fall below the critical range. To secure this control of the heat requires close regulation of both the fuel and the air to burn it. No trouble has been encountered in holding these conditions constant.

In another malleable iron foundry where powdered coal is now burned in the annealing furnaces, a saving of 48 per cent has been effected in the quantity of fuel consumed. In this case the amount of powdered coal burned per ton of output is 450 pounds. The time to bring the furnace to temperature has been reduced from 24 to 36 hours required for hand firing, to 11 to 14 hours. When hand fired, there was always a difference in temperature in these furnaces of from 200 to 300 degrees between the front and rear. Today, when fired with powdered coal, this temperature is uniform. This is accounted for by the fact that the pressure in the furnace is equalized as it is impossible to obtain a uniform temperature throughout the chamber unless the furnace is under a slight pressure. With stack draft and hand firing it is exceedingly difficult to avoid pulling in some cold air, especially at the door. This makes a cold streak and naturally it is impossible to secure a uniform temperature under such conditions.

The advantages of powdered coal for annealing may be summarized as follows: First, a reduction in fuel cost is obtained in comparison with other fuels; second, it is easy to control the feed of coal which corresponds in this respect to gas or oil; third, there is a considerable saving in labor over hand-fired furnaces; and fourth, the supply of coal is more abundant than oil or natural gas.

Besides malleable castings, the Pressed Steel Car Co. also manufactures steel castings. They are annealed in the same furnace as the malleable castings. The temperature carried when annealing steel is 1660 degrees Fahr. One of these furnaces was lighted at 3 p. m., July 15, and firing discontinued at 11 a. m., July 16, so that the total time required for the annealing was 20 hours. The coal consumption was 140 pounds per hour.

The coal and air are delivered to the burners through pipes. A large spiral-riveted pipe on top carries the coal, while the secondary air flows through a pipe placed at a lower level. From both these branch 2-inch wrought-iron pipes. The latter are connected at their upper ends to the control valves which regulate the flow of coal and air to the burners. Their lower ends terminate at the burner.

Principle of Distribution

The coal which passes through the upper pipe is fine, as it must be held in suspension throughout the length of the pipe. The principle of distribution is as follows: The coal is received in cars and after being dried is pulverized and then conveyed pneumatically to a substation at the foundry building. Here it is separated from the high-pressure air and falls into a 25-ton bin. Two spiral screws feed the coal from this bin into a pipe connected to the suction side of fan. This fan has a capacity of 6000 cubic feet of air per minute. In the fan the fine coal is mixed with air in the proportion of 1 pound of coal to 60 cubic feet of air. This mixture is then forced through the pipes and delivered to the burners as desired by the furnace attendant. As is well known, it requires at least 200 cubic feet of air to form a combustible mixture with one pound of coal.

There is, therefore, no danger of combustion until the necessary additional 140 cubic feet has been added at the burner. The ratio of 1 pound of coal to 60 cubic feet of air is maintained automatically by a simple electrical contrivance. If desired, the ratio can be changed and the machinery set to hold it constant.

Chrome Output Decreases

Reports to the United States geological survey show that chrome mining in this country has practically ceased. Figures compiled by the survey for the first six months of 1919, show that from Jan. 1 to July 1, but 1400 tons of chrome ore was mined and shipped from three mines. In addition about 300 tons mined in 1918 was marketed during that period.

These statistics show a remarkable contrast to those which prevailed during 1918, when there were nearly 600 active owners of chrome properties and the total amount of chrome ore shipped was 82,350 tons of all grades.

The imports of chrome ore during the first half of 1919 amounted to 19,658 tons ,about half of which came from Oceania.

According to a bulletin issued by the survey, the decline in the domestic production is general and overwhelming, sparing only localities favored by cheapness of transportation, high grade of ore, or cheapness of production. It is evident, from the figures for the first six months, that the demand for chrome ore required for consumption in the United States is supplied by imports.

Westinghouse Observes Anniversary

A jubilee dinner at the William Penn hotel, Pittsburgh, attended by more than 871 veteran employes of the Westinghouse Air Brake Co., Wilmerding, Pa., and its subsidiary companies, was held Saturday, Sept. 27, to observe the fiftieth anniversary of the organization of the company. At the same time that the Westinghouse Air Brake Co. employes were celebrating in this country, their fellow workers in Europe, were also commemorating the occasion at London, Paris and Turin, by a jubilee dinner.

Thomas Kerr, general patent solicitor for the company, at the Pittsburgh celebration spoke on "The Fundamental Patent, No. 88929." A coincidence, is that the speaker, on April 13, 1860, then an office boy in the employ of a Pittsburgh patent attorney, witnessed by his signature the application of George Westinghouse for the first patent rights on the original Westinghouse airbrake.

Metals are Recovered

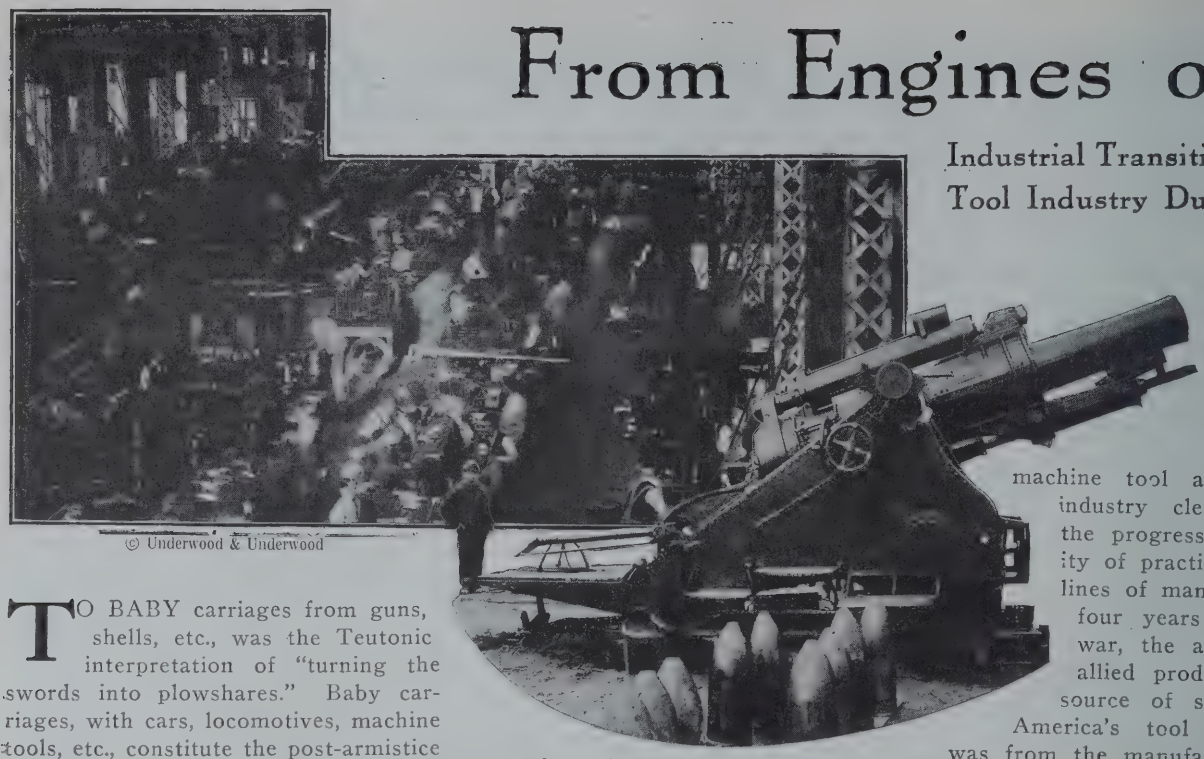
During the war the production of tin in sufficient quantities to supply the demands was a problem which faced all belligerent governments. Consequently conservation of this metal was urged. According to a bulletin recently issued by the United States geological survey, during 1918 there were 7142 tons of tin recovered as pig tin and 16,695 tons of tin recovered in alloys and chemical compounds, totaling 23,837 tons.

Conservation of other nonferrous metals was urged and statistics show that during 1918, the total copper produced from secondary sources was 352,670 tons. The recovery of zinc was 120,590 tons, while 97,100 tons of secondary lead, 15,050 tons of aluminum and 5226 tons of antimony were recovered.

A new form of hardware price list of double pointed tacks and staples has been adopted by the American Staple Manufacturers' association, with headquarters at 120 Broadway, New York. The list is made up of net differentials which are to be added to the base price, the latter being quoted by individual manufacturers.

From Engines of War

Industrial Transition Period Prove Tool Industry Due to Tremendo



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TO BABY carriages from guns, shells, etc., was the Teutonic interpretation of "turning the swords into plowshares." Baby carriages, with cars, locomotives, machine tools, etc., constitute the post-armistice output of the great Krupp works, Essen, Germany, which was once the powerful arsenal of German militarism. This change, has effected a sharp shrinkage of profits and the manufacture of these essentially peace products have proved far less profitable than the forging of weapons for the kaiser's cohorts.

Transition from a war to a peacetime basis has been less disastrous for other nations, particularly the United States. In England, France and America, the automotive and allied industries have prospered and are prospering in their after-war business as they did on war work during the hostilities.

In England, the manufacture of automobiles is being taken up on a scale never imagined possible prior to the war. Makers are going in for quantity production, having absorbed many ideas of American practice. This effort aims to utilize increased plant capacity brought about by the war. The Austin Motor Co., Ltd., London, made shells, forgings and fuse parts in addition to armored cars during the war. It is endeavoring to produce this year, 30,000 automobiles which are selling around $2400. This is a comparatively large output for an English plant. Cubitts, Ltd., London, which before the war, erected steel and concrete buildings and during the conflict, produced great quantities of fuses, before hostilities ceased decided to take up the extensive manufacture of automobiles. It sold much of its war equipment which could not be adapted and purchased a number of additional tools, presses for radiator production, etc. Many such cases could be noted but an exception to the rule is found in the activity of the steel manufacturers, Cammell, Laird & Co., Ltd., Sheffield, which purchased the British ordnance factory at Nottingham. This company is adapting it to the manufacture of steel freight and passenger cars.

Practically the same condition applies in France. There, the automobile is gaining a new lease on life. The 1919 production is expected to exceed 100,000 cars, which is large for France. Berliet is making a car which sells for $2500 as a substitute for his war work, while Louis Renault, Paris, of tank manufacturing fame, is producing one which sells for $1500. Andre Citroen, who originated the herringbone gear and who made vast quantities of forgings, fuses and shells, averaging 50,000 of the latter daily, now is manufacturing a 4-cylinder car, selling at $1600. Schedule of production calls for 100 cars a day and to make this possible, it was necessary to add much equipment, including gear cutters, etc., to the Citroen plant.

If the automobile and allied industries abroad have come into their own since the war ended, this is true in increased measure in the United States.

Machine Tool Industry Barometric

The machine tool industry, while not basic is barometric. Itself dependent upon the great foundation industry of the world, iron and steel, virtually all other industrial activity depends upon it. As a barometer, the machine tool and equipment industry clearly indicates the progress and prosperity of practically all other lines of manufacture. For four years prior to the war, the automobile and allied products were the source of strength of America's tool industry. It was from the manufacture of automobiles, trucks, tractors, accessories and parts that the toolmakers drew the greater portion of their business. Demands made by these industries stimulated greatly the development of machine tool design. From 1914-15 onward, war work served as a profitable substitute and facilities of the machinery manufacturers were taxed to and beyond capacity. Tool-builders consecrated themselves and their plants to the winning of the war. Huge numbers of tools were produced at high speed at the call of the army and navy. This was particularly true after the United States entered the conflict. The versatility of the tool-builders as a class was demonstrated fully and they entered the reconstruction period following the signing of the armistice better fitted to meet industry's peaceful demands because of their war experience. The war had presented requirements which developed new ideas, improvements, amplifications, etc. Quantity production reached during the war has pointed the way for expanded efforts along that line in peace. The demand for tools today never was greater and the predominating portion of this is coming from the automobile industry. Thus the industry is reverting to a condition which obtained from 1910 to 1914.

Closely following the signing of the armistice much discussion and conjecture as to the vast number of machine tools, owned by the government and the effect upon the market, appeared in manufacturing circles. One report stated the government

to Instruments of Peace

Comparatively Easy for Machine Spurt in Automotive Production

BY W. H. LLOYD



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owned in excess of $300,000,000 worth of tools. Great apprehension was expressed lest these should be thrown upon the market to the injury of the machine tool industry. How this $300,000,000 bill of machine tools has dwindled is one of the interesting stories of the reconstruction period. This estimate apparently was made by those uninformed regarding machine tool values. According to those who are in a better position to judge the facts, $100,000,000 much more closely would approximate the real figure. Furthermore many of these tools have been retained by the government for its arsenals. The latest expansion along this line occurred a few weeks ago when the large shell plant of the American Brake Shoe & Foundry Co., Erie, Pa., with a great layout of machine tools was purchased by the government for an arsenal. Earlier in the year the shellmaking equipment purchased for the Cribben & Sexton Co., Chicago, stove manufacturer, was taken into the Rock Island arsenal. The large number of tools used formerly on shell production by the Symington Machine Corp., Rochester, N. Y., also have been reserved for government establishments. Many other tools supplied by the government to war plants have been absorbed in this way. A large number of this government war equipment, also, has represented special tools which have been or eventually will be scrapped. A few weeks ago, a list of 1036 government-owned tools available as of Aug. 8, was inventoried at approximately $2,500,000.

Many Tools Sold From War Plants

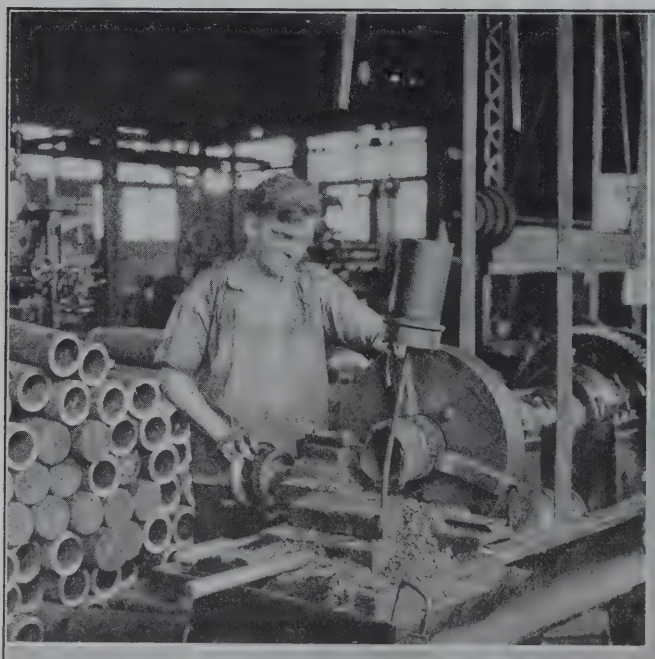
Nevertheless, large numbers of machine tools from war plants are being sold at private sale. In these transactions the used machinery dealer has figured prominently. During the war, the function of these dealers was limited, owing to the large demand for new tools, although when munition plants could not obtain new machines, their requirements were supplied with used machinery since speed was the prime requisite. Thousands of these second-hand machines have been sold and contrary to expectations have not proved an obstacle to the sale of new tools. On the contrary toolbuilders have welcomed these sales and the fact that the tools are finding places in industry. This is because in hundreds of cases the use of the old tools has created a desire for new. It has been found that a used machinery user is a prospective new machinery buyer. In fact deliveries today from toolbuilders' plants are deferred from 60 to 90 days and in some cases for even longer periods. Since a tool is considered second-hand when once it is put under belt, many practically new machines have gone to buyers who formerly remained consistently out of the used machinery market. In some cases machines sold as "second-hand" never have been uncrated and some attractive purchases have been made.

Increased shipbuilding has created an enlarged demand for punches and shears and that in turn has caused the punch and shear manufacturers to add to their machine tool equipment. Increased tire manufacturer also has created a larger demand for presses. All the tire companies of Akron have been large inquirers for tool room equipment during the last several weeks. From makers of stamped parts, there has come an enlarged market for presses. Stamping was developed as never before during the war. Now many automobile parts are stamped or drawn whereas before the war they were cast.

Automobile Manufacturers Expand

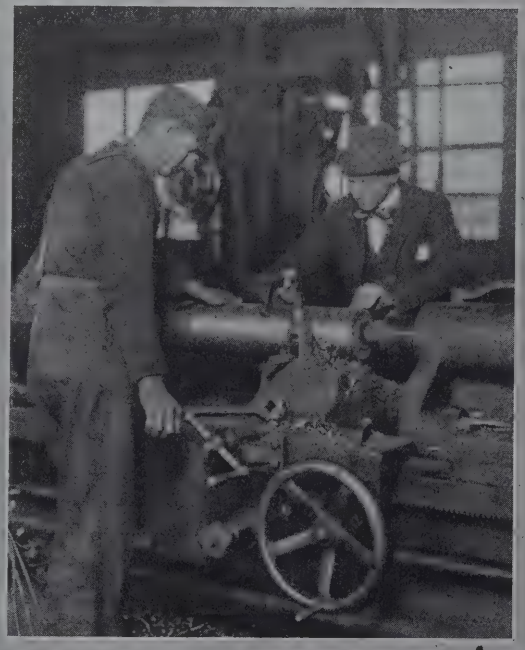
Whatever stimulated development in automobile production is going on abroad, it is meager compared to that under way in this country. The American automobile industry was first to respond to the peace conditions and the turnabout was comparatively easy. Practically every manufacturer of pleasure cars has had to build additions or new plants; several have commenced the manufacture of lighter lines. Among these are the Chandler Motor Car Co., Cleveland, the Hudson Motor Car Co., Detroit, and the Willys Corp., Toledo, O. The latter will manufacture its new car at the plant of the Duesenberg Motors Corp., Elizabeth, N. J. This plant was essentially a war works, since it produced gasoline motors for automobiles, tractors, ships and airplanes. This equipment is to be devoted to the new line of production. Recently the General Motors Corp., Detroit, increased its capital to $1,000,000,000 and expects to produce 500,000 cars annually. These are but a few of the leading new activities in the automobile world all of which denote increased machine tool business, both new and used. The result of the swift recovery and expansion of the automobile and affiliated lines of production has been a tremendous demand for machine shop equipment. Dealers throughout the country and especially those serving the great automobile producing centers of the Middle West have drawn the largest fraction of their business

Many Shellmaking Tools Have Been

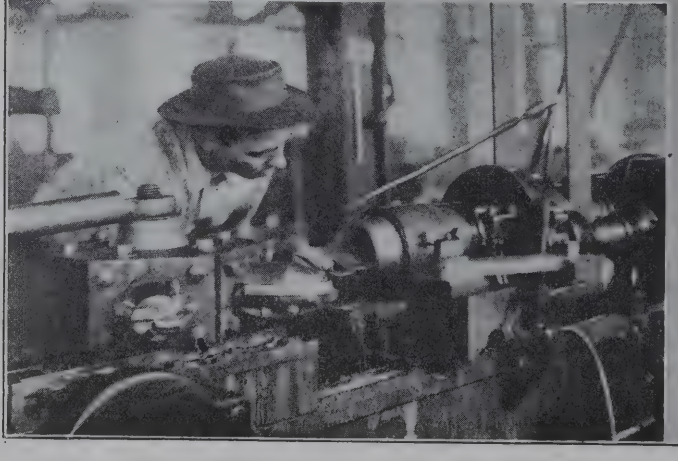


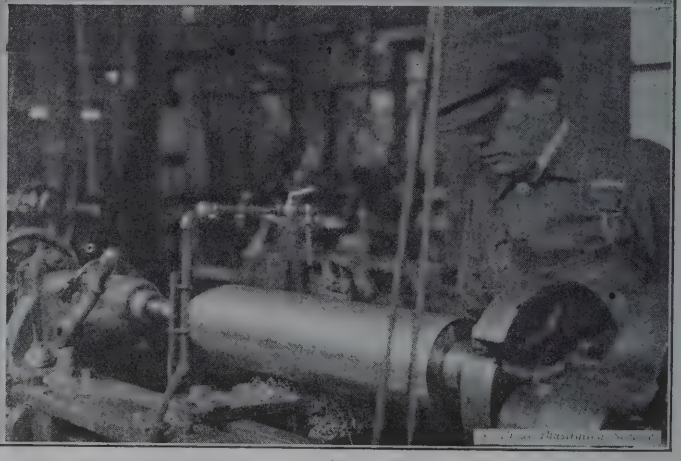


WITHOUT doubt much if not most of the shell and other munitions of war used by the allied nations in the late world conflict came from former automobile shops. While it is true that a great deal of the shellmaking equipment was special or of the single purpose type which cannot be adapted to the peace-time activity of those same automobile plants, it likewise is true that many of the machines have had and are having the special fixtures removed and others are being substituted which permit of their adaptation for machining automobile parts.

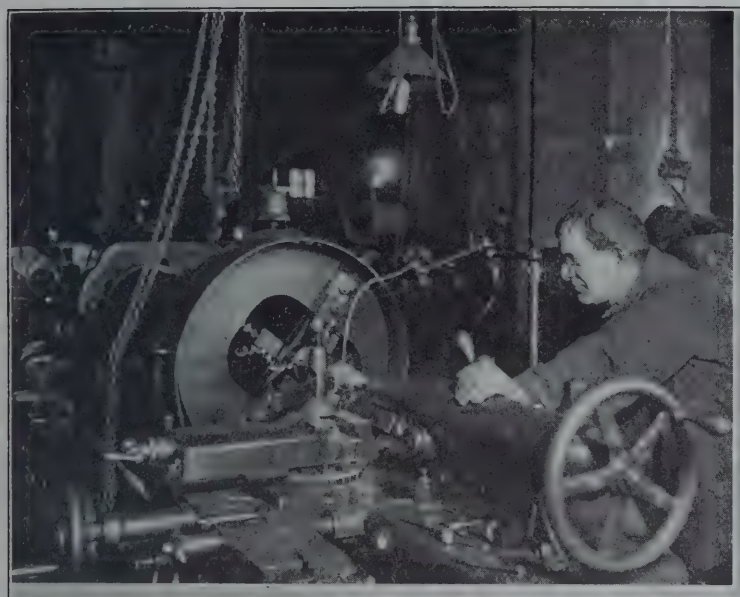


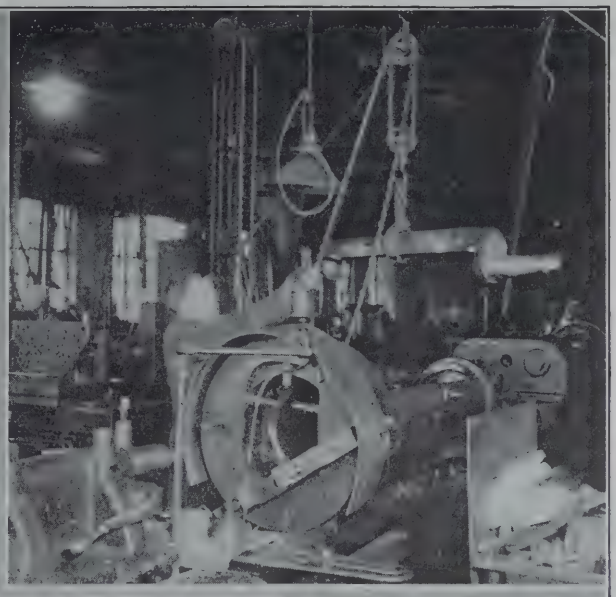
FIVE operations conducted on lathes are shown in the accompanying illustrations. At the right above, a cutting-off operation is shown, trimming off the rough end of the forging. At the right, the shell nose piece is being faced to fit the finished forging. In the center, the shell is being rough turned to general dimensions. The turret lathe operation shown in the lower left hand illustration is the boring of the shell's interior while finished turning is being done in the lower right hand picture. Shells must be as nearly perfect as possible to within 0.001 inch.



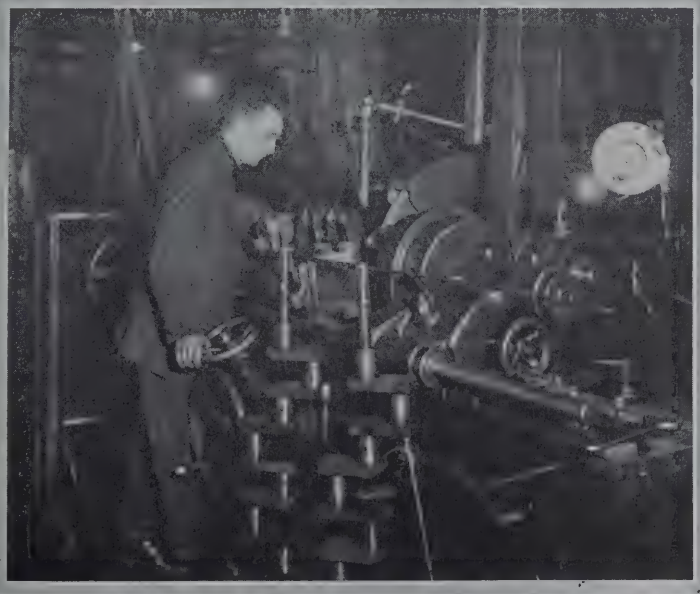


Rebuilt for Automotive Operations





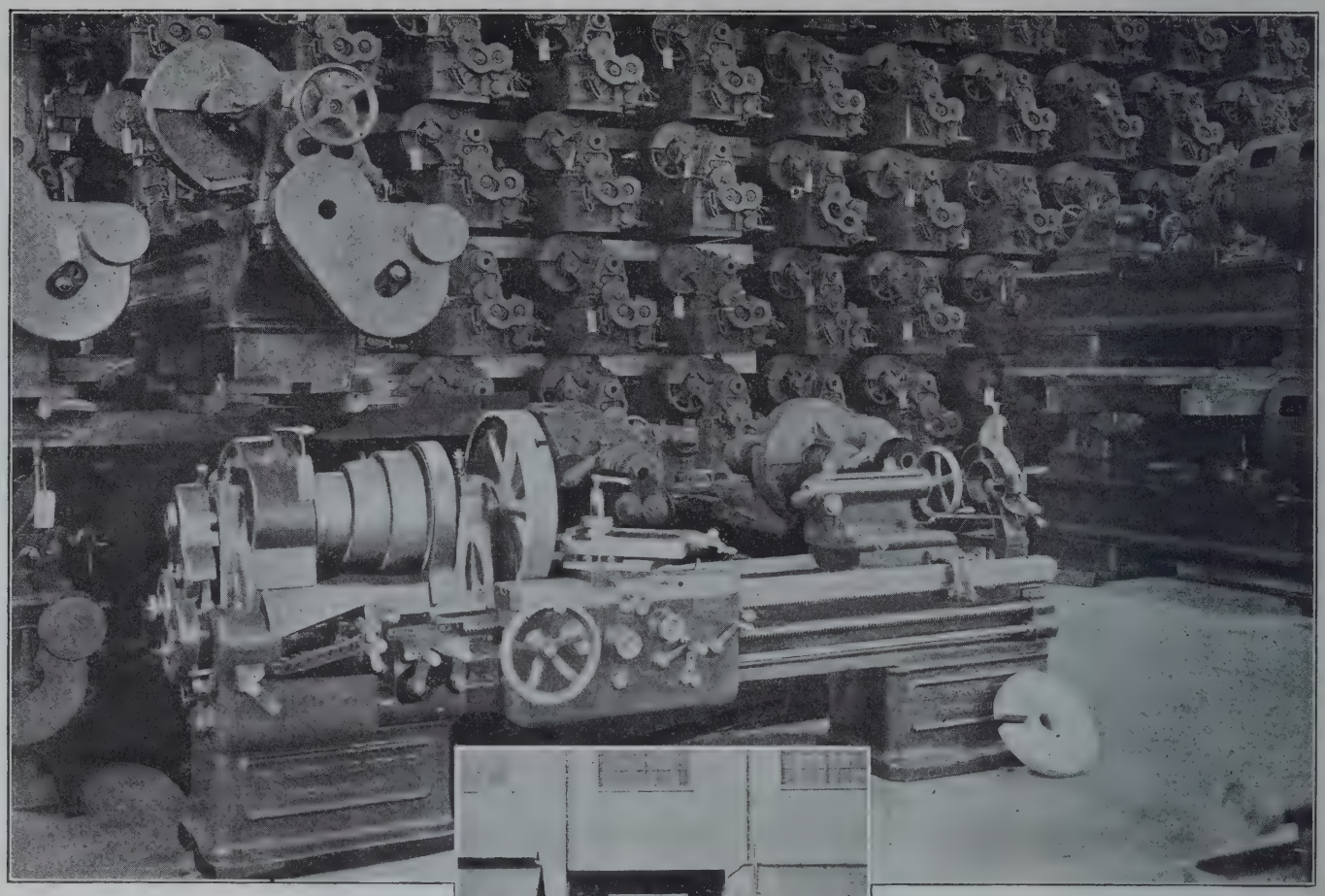
AUTOMOBILE plants were the first of all to answer the call to peace work. Because they had for the most part become well equipped for war production, they were able quickly to turn their attention to the long pent-up demand for their regular products, pleasure cars. Even so, the turnover required in some known cases about twelve weeks.



IN THE top illustration at the left an automobile axle is being turned. At the right, it is being lifted from the lathe. Crankshafts are being ground on the Landis grinder in the center. Three automatic gear-cutting machines, as shown below at left, can be operated by one boy. Pistons after coming from the lathe, are shown below at the right.







TRAINLOAD OF FORMER WAR WORK LATHES OUTSIDE PLANT OF HILL, CLARKE & CO., CHICAGO. ABOVE, HOW THE LATHES TO BE REBUILT ARE PILED INSIDE THE PLANT

from these quarters as the names of their customers clearly show. Various industries have supplied their machine tool requirements from the large layout of the Dayton Metal Products Co. inventoried at about $2,000,000 which was used during the war for the making of detonators and airplane parts. Most of this equipment was marketed through a Cleveland dealer. The Burroughs Adding Machine Co., Detroit, bought approximately $10,000 worth of these machines. With this principal exception, the larger lots of this equipment went to the automotive industries.

Carload Sale is Made

One of the largest sales made out of this Dayton stock, through another Cleveland dealer, was a carload of assorted machinery to the Automobile Screw Products Co., Cleveland, essentially an automotive plant. This same dealer sold around $75,000 worth of machinery from the plant of the Toledo Screw Products Co., Toledo, O., which produced 1⅞-inch shell during the war, as well as a large number of machines from the time fuse and detonator plant of the American Multigraph Co., Cleveland. The Toledo Screw Products Co. has utilized as much as possible of its shell-making machinery in the manufacture of electric vacuum cleaners.

This dealer's experience duplicates that of others in that the automotive and allied industries have taken most of the used machinery it has offered for sale in recent months, much of which has come out of former war work plants.

Various lines of manufacture, classed as "nonessential" during the war which because of that reason were restricted on equipment purchases also have been important buyers. These requirements largely have been filled from used offerings. Among these are: The Electric Vacuum Cleaner Co. and the Cleveland Burial Case Co., Cleveland; the Advance Machinery Co., Van Wert, O.; and the Garford Mfg. Co., Elyria, O. An Albany dealer has been offering 5000 machine tools, 95 per cent of which are new, from the plants of the Colt Patent Firearms Mfg. Co., Hartford and Meriden, Conn. A New York house is acting as special agent in the disposition of about 1000 tools from the plants of the Savage Arms Corp. These include 250 lathes, 200 milling machines, 28 shapers and various other tools. Various dealers have disposed of the equipment of the Thurlow Steel Works, Chester, Pa., used formerly to machine shells for the United States government. A considerable quantity of all these lists of equipment was sold direct to users.

Eastern Firms Active Sellers

Several companies in Massachusetts which were active in war work have sold their equipment. The Standard Mfg. Co., Malden, Mass., however, has retained all of its war machinery and has added considerable new. It produced shoe and size stretchers for the army and its equipment could easily be adapted to its regular work. The Westfield Mfg. Co., Westfield, Mass., manufacturer of bicycles and motorcycles, made 75-milimeter shells during the war. Few of its machines were special single purpose tools, hence the standard

Why Automotive Industry Absorbs Many Tools

SOME of the reasons why the automotive and allied industries are furnishing a market not only for great numbers of new machines, but for large quantities of equipment formerly used on war work as well:

Approximately 6,146,000 automobiles were registered in the United States in 1918, as compared with 4,950,000 in 1917 and 1,700,000 in 1914. Registration at the end of 1919 is expected to exceed 7,500,000.

Production of automobiles in 1919 is expected to aggregate more than 2,000,000 cars. About half that number will come from the plant of the Ford Motor Co., which from July, 1903 to July, 1919, produced 3,200,000 cars. The output for the fiscal year, ended July 31, 1918, was 500,000.

The value of motor car factory output increased 323 per cent in the last eight years; and the revenue from automotive vehicles increased 244 per cent.

Passenger cars or trucks or both are made in 32 states; about 500 different passenger cars, trucks and tractors now are being built. The building of passenger cars and trucks engages about 1,125,000 people. This does not include accessory manufacturing establishments, garages, repair shops or sales establishments.

Ohio and Michigan, the two great automobile manufacturing states, produce on an average, between 7500 and 8000 cars each 24 hours.

Daily production at present for the Ford plant is 3000; Chevrolet, 700; Overland, 600; Studebaker, 500; Buick, 500; Dodge, 500; Maxwell and Chalmers, 260.

The Hudson Motor Car Co., Detroit, expects to produce 70,000 cars this year, while the Willys-Overland Co., Toledo, will put out about 150,000.

Over 7000 companies in the United States are making automobile parts.

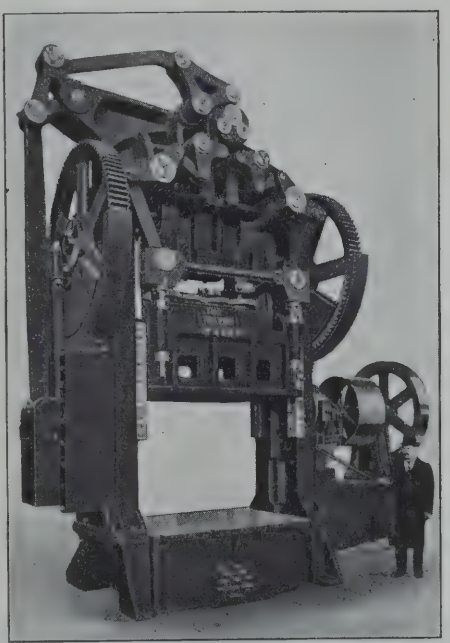
According to Edward S. Jordan, president of the Jordan Motor Car Co., Cleveland, the American motor car industry now is 1,000,000 cars short of filling the demand.

equipment, including lathes, grinders, upright drills, etc., has found a ready sale among manufacturers in various lines. The Nelson Blower & Furnace Co., South Boston, Mass., which produced large quantities of munitions, is reported to be specializing now in farm tractors.

Giant Press Changes Hands

A few months ago, three carloads making up a single press left the plant of the Wehrle Co., Newark, O., manufacturer of stoves, for Detroit where this machine was to be devoted to commercial work. At the present time it is stamping out steel panels used on the Ford coupe bodies at the plant of the Michigan Stamping Co., Detroit. This special Toledo double crank toggle drawing press is shown in the accompanying illustration. It weighs approximately 230,000 pounds with 108 inches between housings. It was purchased originally for work on rolling kitchens for the United States army. An identical press for similar war work was sold to the Fox Furnace Co., Elyria, manufacturer of stoves, and it is understood that this machine is being retained for the company's regular work.

Many presses and drills which formerly operated upon war work have been sold by a Cleveland house. These include several Bliss presses from the plant of the Bartlett-Hayward Co., Baltimore, which were used for drawing cartridge casings during the war. This company recently was reported to be installing equipment for the production of piston rings and is understood to have retained some



GIANT PRESS WHICH OPERATED UPON ROLLING KITCHENS DURING THE WAR AND WHICH NOW PRESSES AUTOMOBILE BODY PANELS

of its war work equipment for that purpose. Two of the presses were absorbed by the Parish & Bingham Co., Cleveland, one of the largest automobile frame manufacturers in the United States. One was sold to the Canton Drop Forging & Mfg. Co., Canton, O. Several drills were sold to the Hydraulic Pressed Steel Co.

Cylinder grinders from the plant of the F. B. Stearns Co., Cleveland, which produced Rolls-Royce airplane motors during the war, have been sold by this same dealer to automobile repair men as far east as Massachusetts, as far south as Florida and Atlanta, Ga., and as far northwest as Fargo, N. Dak. A Cincinnati vertical grinder from the Stearns plant was sold to an automobile parts manufacturing company in Muskegon, Mich. One Bliss press was sold to the Garford Mfg. Co., Elyria, O. This press formerly drew cartridge casings for Bartlett-Hayward Co., Baltimore. It now is drawing turntables for phonographs.

Various automobile plants are devoting much needed space to the storing of machine tools owned by the government. They are awaiting disposition orders from the various government bureaus together with claim settlements. In some cases the more desirable tools have been transferred by the government to its warehouses, ostensibly for use in its arsenals.

The case of the Templar Motors Corp., Cleveland, is more or less typical. Its shell contract called for 450,000 155-milimeter shells for howitzers and guns. It did not receive cancellation until the latter part of January, 1919, and the process of turning over from war to peace production of pleasure cars required over two months.

Templar Adopts War Lathes

Equipment for the Templar corporation's shell output was bought for it by the government. While many of the more desirable machines have been removed by the government to its Chicago warehouse, two or three sheds on the Templar property are filled with shell tools, such as special Libby and LeBlond lathes, etc., which could not be adapted to any of the opera-

tions on automobiles. The toolroom equipment, comprising about 25 machines, including lathes, milling, grinding and boring and turning machines, planers, shapers, drills, etc., were bid upon by the Templar company, as were about a dozen Bullard turret lathes. When the government notified it that the bid had been accepted, the Templar company immediately put them into operation on automobile work. The Bullard lathes had to be adapted; the turrets were taken off and other fixtures incorporated and these now are machining crank cases for the Templar car.

Manufacturers who produced trucks for war purposes have been particularly well favored in returning to peacetime operations. Their work practically was uninterrupted. The White Motor Co., Cleveland, and other manufacturers elsewhere not only retained their war equipment but purchased additional. Practically all the machinery purchased by the White company, however, was new with the exception of one screw machine which was purchased from the equipment of the American Multigraph Co. Much of the machinery used by the Chandler Motor Car Co., Cleveland, on its war work constructing trailers for artillery tractors, has been utilized by it in the production of pleasure cars and by its subsidiary the Cleveland Automobile Co. Considerable new equipment has likewise been purchased by both companies.

Aircraft plant tools have been disposed of in various directions. Large quantities of equipment from the plant of The Engel Aircraft Corp., Niles, O., were sold by a Cleveland dealer. One 6-inch molder, a woodworking machine, together with 48 factory trucks went to the Cleveland Window Glass & Door Co., Cleveland. The Grabler Mfg. Co., that city, took a 17-inch LeBlond engine lathe for its tool room. It manufactures plumbers' supplies and steel specialties. Baker, R. & L. Co., Cleveland, was one of the automobile companies to take some equipment from this aircraft plant. Another aircraft plant to be sold was that of the Standard Aircraft Corp., Elizabeth, N. J. It was sold to the Simmons Co., Kenosha, Wis., maker of beds. Much of the woodworking, machine shop and tool room equipment, however, already had been disposed of at public auction.

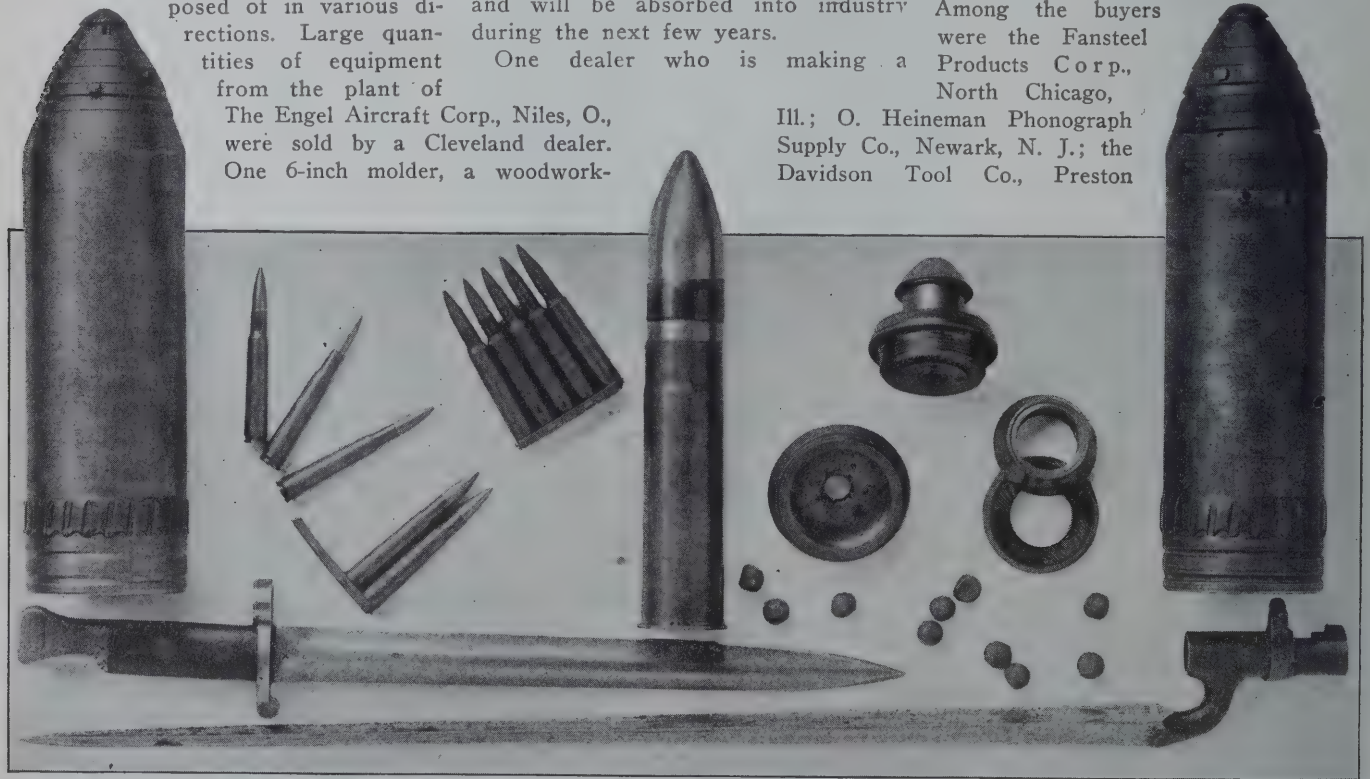
Many other former war plants have disposed of their equipment at public sale, auction or otherwise. Some plants have been sold outright. The munitions factory at Bridgeport, Conn., belonging to the American British Co., is understood to have been remodeled for the extensive manufacture of a new 4-cylinder 16-valve automobile.

The Eddystone Munition Co., Eddystone, Pa., recently disposed of about 300 machine tools from its 6-inch shell plant. Much of the equipment was special or of single purpose character but approximately one-third of the equipment went direct to users and the remainder to dealers. This machinery was standard in design having had special attachments added for shell production. These now are being removed and other attachments added; the machines are being rebuilt and will be absorbed into industry during the next few years.

One dealer who is making a specialty of rebuilding such tools, is Hill, Clarke & Co., Chicago. The illustration on page 978 shows 113 20-inch x 8-foot American lathes, stacked six high, like cordwood, after the legs have been removed. The inset shows seven of 15 carloads of 26-inch x 12-foot Bridgeford lathes on the company's siding which extends through the plant, ready to be unloaded. These machines gradually will be absorbed into industry during the next few years.

The names of several companies affiliated with the automotive industry will be noted.

The American Shell Co., Paterson, N. J., is reported to have taken up the production of motors and while much of its former war equipment could be adapted, it had to purchase drills, lathes, presses, milling machines, etc. It bought 10 Warner & Swasey turret lathes and a number of Cleveland and National automatic screw machines from the plant of the International Arms & Fuse Co., Inc., Bloomfield, N. J., maker of special ordance. Approximately 90 per cent of the equipment of the International shops went direct to users of machine tools, the majority being closely identified with the automotive industry. Most of its automatic screw machine equipment went to allied automotive industries, mainly to ball bearing manufacturers and screw machine products companies. A large quantity of hand screw machines were sold to concerns for different lines of manufacture. Among the buyers were the Fansteel Products Corp., North Chicago, Ill.; O. Heineman Phonograph Supply Co., Newark, N. J.; the Davidson Tool Co., Preston



IT WAS FOR THE PRODUCTION OF EQUIPMENT TO MACHINE MUNITIONS OF WAR SUCH AS THESE TO WHICH THE AMERICAN MACHINE TOOL INDUSTRY DEVOTED ITSELF FOR PRACTICALLY FIVE YEARS

Machine Co., and John Turner, all of Brooklyn. Some of the drill press and milling machine equipment went to such companies as the Singer Mfg. Co., Elizabethport, N. J., sewing machines; Simms Magneto Co., East Orange, N. J.; Spicer Mfg. Co., Plainfield, N. J. Two large shipments were made abroad. One went into a cream separator plant in Sweden and the other into an automobile plant in Japan. One interesting feature of the sale was the furnishing of complete equipment for several new buttonmaking shops in Newark, N. J.

Equipment bought for the account of the Russian Remington Rifle Contract Trustees, 711 Flatiron building, New York City, has met with a ready sale. The disposal of this equipment was in the hands of R. Poliakoff, managing trustee, who reports that a large demand for drop hammers has been supplied from this stock as well as huge numbers of other tools. Buyers include automobile manufacturers, drop forging makers, car and shipbuilders, file, chain, sewing machine and cutlery manufacturers as well as jobbers from all over the country.

A partial list of the purchasers of machine tools and equipment from the stock of the Russian Remington Rifle Contract Trustees, and what they bought, follows:

Taft-Pierce Mfg. Co., Woonsocket, R. I., lathes and riveter.
Bridgeport Hardware Co., Bridgeport, Conn., tote boxes, drop hammers and oil furnaces.
New Jersey Brass Corp., Garfield, N. J., forging machine and press.
Ostby & Barton Co., Providence, R. I., presses, hammers and oil furnaces.
Bemis & Call Hardware Co., Springfield, Mass., drop hammer and furnaces.
Berkeley Boulevard Garage, Toms River, N. J., milling machine.
Baldt Anchor Co., Chester, Pa., drop hammer.
Faultless Caster Co., Evansville, Ind., die cold header.
Ohio Business Bureau, Cleveland, drop hammer.
The Bassick Co., Bridgeport, Conn., header.
S. K. F. Mfg. Co., Hartford, Conn., milling machine.
Kraeuter & Co., Newark, N. J., milling machines.
Belden Machine Co., New Haven, Conn., furnaces.
Sutton Tool Co., Wilkinsonville, Mass., drop hammer.
Sprang & Co., Butler, Pa., No. 74½ press.
Harley Co., Springfield, Mass., Bliss No. 4 press and gear press.
Vulcan Iron Works, Wilkes-Barre, Pa., forging machine.
Donner Co., Newark, N. J., drop hammer.
Wilcox Crittenden Co., Middletown, Conn., hammers.
International Silver Co., Meriden, Conn., hammer.
Superior Mfg. Co., Toronto, Canada, miller.
Studebaker Corp., South Bend, Ind., tote boxes.
Union Cutlery Hardware Co., Unionville, Conn., hammers.
Philadelphia Retinning Co., North Philadelphia, Pa., tote boxes.
Singer Mfg. Co., Elizabethport, N. J., hammers.
The Stanley Works, Hartford, Conn., tote boxes.

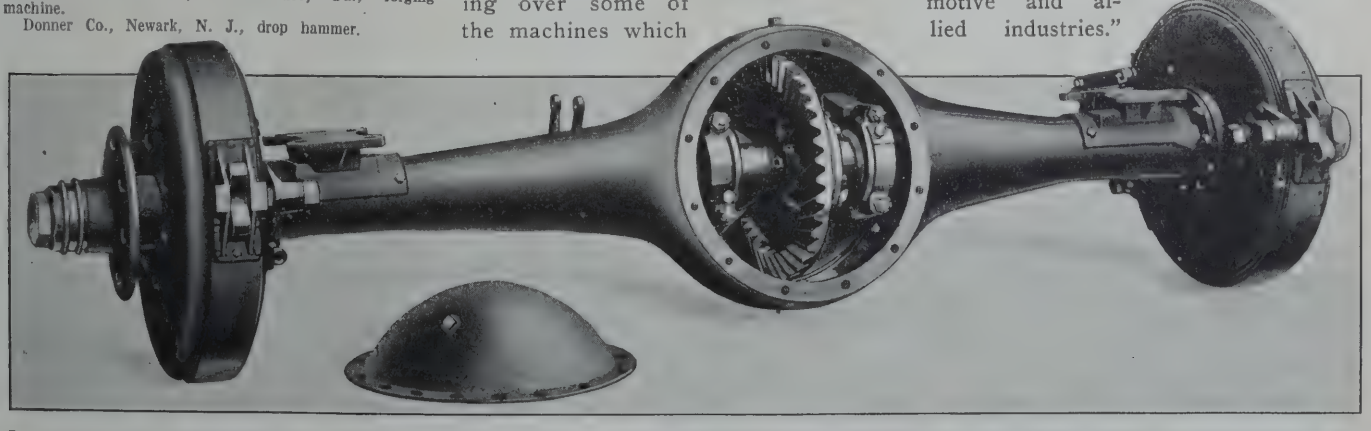
Advantage has been taken in numerous instances of the opportunity to use war equipment along new lines. A proprietor in Cincinnati, who had a little shop on the third floor of an obscure building for assembling washing machines from purchased parts, bought a second-hand turret lathe and now is understood to be producing a certain automobile part. Many of the turret lathes, formerly used by the Westinghouse Electric & Mfg. Co., East Pittsburgh, have been purchased by oil well operators and drillers in Oklahoma and Texas oil fields. They discovered that it was more economical for them to return and rethread the ends of tool bits themselves than to send the tools long distances to machine shops, which was their former practice.

Intensely interesting phases of the sale of war work machinery other than those already noted are constantly showing themselves. Most of these are entirely apart from the automotive industries however. One of these is noted at the plant of the United States Cartridge Co., Lowell, Mass. Presses on which cartridge cases formerly were drawn now are used for the manufacture of cases for safety razors. In fact all razor parts, except the blades are made on machinery which formerly operated upon cartridge casings.

The Winchester Co., Haven, Conn., ammunition maker, is arranging part of its plant for the manufacture of fishing tackle and another company which formerly made fuses has reorganized and now is producing electric washing and ironing machines. Much of the machinery employed was formerly used in its war work. The Mechanical Equipment Corp., is taking over some of the machines which formerly were used in the manufacture of ammunition for the purpose of making by the exclusion process, tubes for tooth paste and for other light purposes.

The Grover File Co., Nashua, N. H., dealer in machinery, tools, and supplies, has disposed of much former war equipment. It reports that some special Riehle presses, manufactured for the compression of explosives into fuses have been slightly changed and placed on the market for the purpose for which they originally were intended, namely the testing of materials. Other presses used for this same war operation now are used with some slight changes for the impression of chemical tablets.

A Boston dealer tells how he discovered a use for an air compressor sold by him to the Motor Specialty Co., Waltham, Mass. Shortly after the war broke out, this company adapted its plant for the manufacture of primers for large shells and other military products. One of the many requirements of the reorganized plant was an air compressor for working automatic air-operated chucks. When the signing of the armistice made the war work no longer necessary, the Motor Specialty Co. asked the dealer to buy back the air compressor. An investigation of the operations of the company's plant, revealed the fact that drill operators doing small drilling on accurate centers would blow away the chips and shavings in order to line up each new operation. At the suggestion of the tool seller, the plant manager ran small pipes from the air compressor to several of the drill presses and foot valves were arranged for controlling the blast of air. Now the operators use this method to clean off the shavings. Notwithstanding these various interesting exceptions that have been shown, a thorough study of the subject indicates that the only general answer to the question: "Where has the war machinery gone?" is: "To the automotive and allied industries."



IT WAS TO THE PRODUCTION OF AUTOMOBILE PARTS, SUCH AS AXLES, TRANSMISSIONS, ENGINES, ETC., TO WHICH MUCH MUNITION-MAKING MACHINERY HAS BEEN ADAPTED SINCE THE ARMISTICE

Forming Light-Wall Tubing

Methods of Manufacturing Various Classes of Small Tubes Together With the Properties That May be Obtained by Such Methods are Described—Suggestions for Improving the Cold-Drawing Methods

BY H. J. FRENCH

WITHIN the past few years, particularly because of the rapid growth of the airplane industry during the war, considerable attention has been paid to the manufacture of light-wall cold-drawn seamless and welded steel tubing for structural purposes. While the manufacture of such tubing is not, in itself, a difficult matter, some difficulties have been encountered in producing the same under specifications requiring definite physical properties. In general, tubing may be divided into four classes: Specialty tubing, such as riveted-sheet or plate, lock jointed, etc.; brazed tubing; welded tubing, and seamless tubing. Welded tubing may be divided into hot product, such as lap welded and butt welded, and cold product, such as acetylene and electric welded. Seamless tubing may be hot rolled or cold drawn.

The first two classes present mainly mechanical or structural engineering problems. Specialty tubing is made by riveting together the overlapping edges of rolled sheets or plates formed into a cylinder. Lock jointed tubing is produced by passing low-carbon strip through a forming machine having suitable rolls and dies. Its manufacture is almost entirely a question of design of the forming machine and its satisfactory operation. The chief application of such tubing is in the manufacture of bedsteads. The production of brazed tubing presents no special difficulties, though the application of metallurgical principles is involved in the application of a correct brazing mixture and proper heating.

Making Seamless Tubing

The manufacture of seamless steel tubing, the most important type for structural purposes, is of comparatively recent origin, beginning little more than 25 years ago. Its development has been accelerated by the bicycle, automobile, and airplane, the latter creating a demand for a most refined and closely controlled product.

Abstract of a paper presented at the 121st meeting of the American Institute of Mining and Metallurgical Engineers, Chicago, Sept. 22-26. The author, H. J. French, is associate physicist, bureau of standards, Washington.

The conversion of a solid piece of steel into a seamless tube may be accomplished by boring a hole in the center of a round steel bar, by forming sheet or plate between a series of suitable dies, and by piercing by the Mannesmann process or one of its modifications.

Early Methods of Manufacture

The first and oldest method consisted in merely boring a hole through the center of a long round bar. Besides being a laborious operation and very difficult to perform, this was expensive. Various modifications to simplify this method of production may be used. A hole may be bored through the center of a short bar, which may then be drawn out cold; or the hollow bar may be placed in a hydraulic press and the hole enlarged by forcing into it successively larger rams after which the tube may be rolled out over a mandrel in a manner similar to that by which lap-welded pipe is rolled. These modifications are easier to carry out than the original method.

The second method is used for the manufacture of gas containers and consists in pressing a heated flat circular plate between a series of dies. In this process the depression successively becomes deeper until finally the sides of the cup formed are parallel. For light-gage sheet, this cupping may be performed cold in three of four stages and the tube thus formed, with one closed end, may be finally drawn out.

The most important method of producing seamless tubes is the Mannesmann process or modifications of the principles involved. The underlying principles of this process were first applied by Mannesmann Bros., German tool-steel manufacturers, and today practically all light-wall, cold-drawn, seamless steel tubes used in the aircraft industry in America are made from hot-rolled billets pierced in this way.

Hot-rolled rounds of suitable composition, usually from 3 to 6 inches in diameter, commonly called billets, are hot sawed into proper lengths depending on the length of tube desired. These lengths are then heated in ordinary heating furnaces and fed to a pair of conical rolls set at an angle to each other, as shown graphically in Fig. 1. The bar, which is at a bright red heat, is rapidly rotated as it enters the small diameter end of these rolls, which exert a pressure on two constantly changing points, but which are always on opposite sides of the center, or axis, of the bar. During the first few inches of longitudinal travel imparted to the bar, a flaw, or point of weakness, at or near the center is formed. The action of this part of the rolls may be likened to the effect of pressure exerted by flat dies in a hammer when applied to a round bar heated to normal working temperatures. Under such conditions, there is a tendency for the metal to spread outward from the center instead of being compressed by the blow. As the bar is pulled forward between the rolls, it reaches the section of larger diameter, where the linear speed is greater than at the small end of the rolls. There is, therefore, a tendency to twist the outer surface of the bar, which is also pulled forward. This intensifies the weakening effect at the center of the bar, and as the bar is lengthened more rapidly than it decreases in diameter, metal must be drawn from somewhere—which will naturally be the weakest point or the center of the bar. As the bar is leaving the rolls, it is forced over a piercing head at the end of a strong heavy rod which completes the formation of the tube. The tube is removed from this rod and a new head is placed on the same preparatory to piercing the next bar. Because of the shape of the rolls, this equipment is often called a barrel-type mill.

Steifel's Process

The disk-type mill, or Steifel process, graphically represented in Fig. 2, is also used in forming tubes by the application of external pressure. The pierced billet, or tube formed, is rough and has heavy irregular walls. Further reduction is therefore necessary, so the tube is again heated and fed to a pair of rolls which are grooved as for rolling round bars. In back of each opening is a mandrel, which has a loose nose and is carried

by a strong cross-bar attached to the housings at the back of the stand. As the tube is passed through the rolls and forced over the mandrel, it is reduced in outside diameter and wall thickness, the latter being determined by the size of the mandrel. This first stand is usually referred to as the breaking-down rolls. The tubes are then usually reheated and passed to the finishing rolls; if further reduction is desired, they may be passed directly to a reducing mill, consisting of a series of rolls alternately rotating about horizontal and vertical axes. The size of hole from the first to the last set of rolls decreases so that the tube is decreased in outside diameter.

The hot-rolled pierced billets are reduced to varying sizes and wall thicknesses down to about 1¾ inches outside diameter and ⅛-inch wall. They are next passed to the cold-drawing mill, where they are pickled, washed and dried, drawn, annealed, and again pickled, the cycle of operations being repeated as often as necessary to produce the desired size and gage in the cold-drawn tube.

For pickling, a dilute hot acid is used. In place of the more generally used sulphuric acid, some plants use solution of niter cake, which is a by-product from the manufacture of nitric acid. When hot, this solution does not give off the obnoxious fumes obtained from the use of sulphuric acid and the relatively weak concentration of the acid radically decreases the danger of over-pickling. In either case, some of the scale is dissolved and the remainder loosened so that it readily comes off in washing. After removal from the pickling bath, the tubes are washed, dipped into lime water, and dried. Before being cold-drawn, they are pointed at one end by means of a drop hammer or other device.

The draw-bench consists, primarily, of a long heavy frame on which is mounted, by suitable means, an endless chain, which extends from one end to about the center and which slowly travels toward that end. The tube is threaded over a mandrel or bar and the pointed end is passed through the die, which is attached to the frame near the center of the bench. The pliers of the draw box are attached to the pointed end of the tube, the box is attached by a hook to the slowly moving endless chain, and the tube is drawn out as shown in Fig. 3. Grease or tallow is used as a lubricant.

In cold drawing a tube, one of three methods may be used: Drawing through a die without the use of mandrel or rod, called "sinking;" drawing over a mandrel and through a die, referred to as the "back-bench method;" and drawing on a rod through the die. The first method obviously reduces only the diameter of the tube. The second and third methods accomplish the reduction of the outside diameter and the wall thickness.

How Tube is Drawn

In the back-bench method, the tube is pulled over a mandrel at the end of a long bar attached to that end of the draw bench from which the tube is pulled. As the mandrel is fixed, both the inner and outer surfaces of the tube become friction surfaces in the drawing, and the tube takes the entire pull, which is limited to that force which would break the thin wall of the tube.

In the third method the tube is threaded on a rod that has been cold-rolled, drawn, or machined to a uniform diameter, and the two are drawn

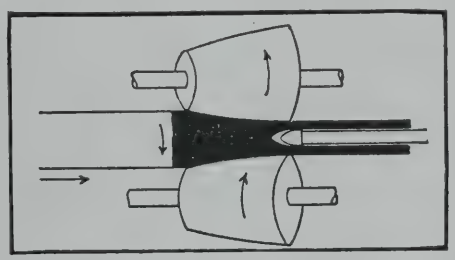


FIG. 1—POSITION OF MANDREL AND CONICAL-SHAPED ROLLS FOR PRODUCING SEAMLESS TUBES

together through the die. In this case the tube has but one friction surface, and the pull is taken by the bar of very much greater cross-sectional area than the thin-wall tube, which sustains the force applied by the second method. As would be expected, greater reduction per pass can be used when drawing on a rod, and it is possible to reduce a tube a given amount in outside diameter and wall in fewer passes than by the use of the back-bench method.

After drawing, the tube is tightly attached to the rod, so special means must be taken to remove it. This may be done by passing the rod and attached tube a large number of times through a pair of rolls having a groove of larger radius than the outside diameter of the tube. With each pass through the rolls the tube is rotated slightly so that the line of contact is changed. The pressure applied reduces the wall thickness of the tube, which is accompanied by expansion, so that it is possible to remove the parallel mandrel with ease. Another method of releasing is to pass the tube through a "reeling" machine, which consists primarily of a pair of conical rolls revolving in the same direction, the axes of the rolls being inclined to the horizontal in opposite directions. The details of this machine will not be given, its action being to slightly reduce the wall thickness, which is accompanied by expansion in the diameter. After one pass the mandrel may readily be removed.

After the final pass, which brings the tubes to the desired size and gage, they are annealed at a comparatively low temperature, depending on the analysis, amount of cold work, and desired properties. They are then straightened and the ends cut off; if special lengths are desired, they are cut to these lengths and inspected. The inspection made varies considerably, depending on the specifications, which, in turn, are based on requirements for the particular purposes for which the tubes are desired. For the type of tubing under consideration the inspection may be considered to consist of a thorough visual examination of the tubes, including a check on the size and gage and the determination of the chemical and physical properties.

For physical test, a number of tubes from a batch are chosen and a sample about 14 inches long is cut from each tube. Usually one sample tube is chosen for each 400 feet of tubing presented, though this number is greatly increased when a question regarding the uniformity of the lot arises. Marks 1 inch apart are scribed over practically the entire length of the sample along two lines approximately 60 degrees around the circumference of the tube, which is placed in the testing machine after the insertion of slightly tapered solid plugs in each end. The pulling head of the testing machine is brought to such a position that the jaws take hold of the tube with the contained plugs at a distance of about 8 inches from each other and the load is applied at a uniform and slow rate, not exceeding 0.50 inch per minute. The yield point is obtained by calipers scribing a line of about 5-inch radius and noting the load causing a permanent set. This method requires the release of the load and its reapplication; but when experienced the operator can usually make this determination without releasing the load more than once. Having determined the yield point, the rate of application of load is increased to about 0.80 to 1 inch per minute to break the tube. The elongation is measured in the usual manner, except that the maximum readings of the two original

2-inch and several possible 8-inch gage lengths, including the break, are the values taken.

While the elongation in the tensile test is measured, two other tests are largely used as a measure of the ductility. The compression test consists in the application of pressure parallel to the axis of the tube on a sample whose length is 1½ times the outside diameter. Specifications usually require that the tube, in such a test, shall not show cracks when the diameter has been increased to a given per cent, or when one complete fold has formed. However, the test is often carried beyond this specified expansion to the point of failure, which is measured in per cent increase of the original diameter. The second test for ductility is the flattening test, in which pressure is applied to the tubes perpendicularly to the axis of the tube until the walls are at no greater distance from each other than twice the thickness of the wall of the tube; under such conditions the tube must show no cracks. The compression test is more a measure of the ductility of the tube at right angles to the direction of cold work while the flattening test is a measure of the ductility with the grain of the metal.

This type product is largely used in stressed parts in airplane construction and in all probability will be more extensively employed in the future. The three main variables by which the properties of the tube of given size may be controlled are: Chemical composition, cold work, and thermal treatment.

Chemical Compositions

Three type compositions are generally produced and most widely used: (1) Low-carbon steel, usually 0.10 to 0.20 per cent carbon or 0.15 to 0.25 per cent carbon open-hearth; (2) medium low-carbon steel, 0.30 to 0.40 per cent carbon open-hearth; (3) medium low-carbon, 3.5 per cent nickel steel, 0.25 to 0.35 per cent carbon, 3 to 3.50 per cent nickel open-hearth. As the second and third type compositions are generally used in the heat-treated condition, they will be referred to later. The increase in properties obtained by the heat treatment of low-carbon steel is not commensurate with the cost of the operation, particularly when two such controlling factors as cold work and simple annealing can be used for regulation of these properties. This type composition is, therefore, generally used in the unheat-treated condition, or as drawn.

For tubing of uniform and predetermined chemical properties, there are two variables, the cold work and the thermal treatment, that may be varied so as to regulate the final properties. Cold work increases the yield point and tensile strength but decreases the ductility, as measured by the elongation, reduction in area, compression and flattening tests. Reduction of the wall of the tube, whether by the back-bench method or by the method of parallel mandrels, is more effective in increasing the yield and tensile strength and inducing brittleness than the reduction of the diameter by sinking.

Annealing lowers the yield point and tensile strength but greatly increases the ductility, as measured by the various factors mentioned in the preceding paragraph. It is therefore, evident that with these two factors having opposite effects on the physical properties, it is possible to vary these properties within certain limits

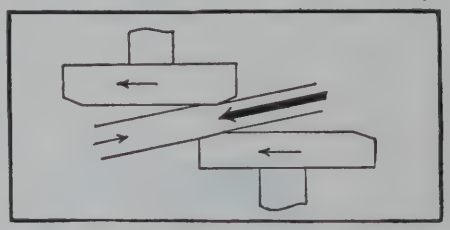


FIG. 2—GRAPHICAL REPRESENTATION OF DISK-TYPE MILL FOR FORMING SEAMLESS TUBES

by regulation or control of the variables.

It is at once evident that for uniformity in physical properties, tubes of varying degrees of cold work on the last pass should not be included in the same lot. A different annealing temperature would be required, as an example, for a tube finished by sinking 1/16-inch to a given size and a tube finished with a reduction of ⅛-inch and 0.010-inch to the same size in order to bring out similar properties. It is noted that the greater the cold reduction applied, the greater are the increase in strength factors and decrease in ductility, which is as expected.

When comparatively low temperature is used for annealing low-carbon steel tubes, the yield point and tensile strength are only slightly affected, though the ductility, as measured by elongation and compression tests, is immediately increased. Often the increased yield point and tensile strength due to cold work are raised slightly; in some cases the increase in ductility has been accompanied by practically no change in the yield point and tensile strength while at other times they have been lowered but slightly, certainly not in proportion to the increase in ductility effected. As the temperature is further increased, the yield point and tensile values fall with corresponding increase in ductility, the degree depending on the temperature, etc.

Objections to Cold-Drawn Tubing

With the foregoing in mind, it will be well to consider what may happen in actual mill operations in the production of thin wall tubing. The writer has several times heard the statement made that it is impossible to produce such tubing having very uniform properties because of the marked effect of small variations in mechanical reduction bound to occur due to wear in dies and mandrels and because small variations in the wall of a tube having a very small cross-sectional area represent a high percentage change in this area, which may greatly effect the results obtained in actual pounds yield point and tensile strength and, therefore, also the values in pounds per square inch. With careful measurements in testing and properly designed specifications covering tensile properties, the writer does not believe the second objection holds good for 20 gage and heavier walls. Certainly a real problem is presented for finer sizes. If specifications are properly drawn up it is believed satisfactory tubing can be produced even in these very thin gages.

Regarding the first objection let it be assumed that ¾-inch by 20 Birmingham wire gage tubing is being produced from ⅞-inch by 18 Birmingham wire gage in two passes, as follows: ⅞-inch x 18 Birmingham wire gage, 13/16-inch x 19 Birmingham wire gage, ¾-inch x 20 Birmingham wire gage.

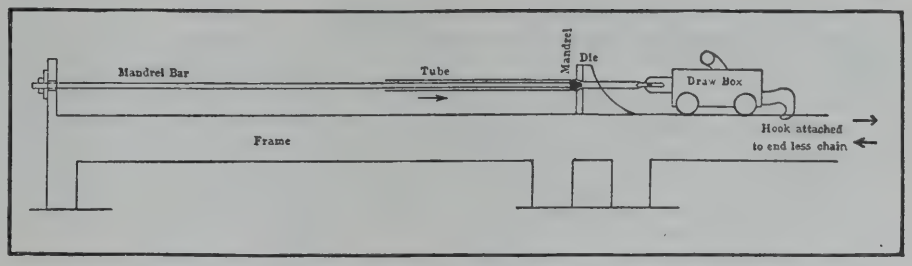
The first tube *A* drawn with a new mandrel 0.002-inch over-size and a new die 0.002-inch undersize receives a reduction of 0.0625-inch in its outside diameter and 0.009-inch in the thickness of the wall. As the drawing proceeds the die wears and becomes 0.003-inch oversize and the mandrel becomes 0.002-inch under-size. The last tube of the lot drawn *B* has then only received a reduction in diameter of 0.0595-inch and in wall thickness of 0.0045-inch. The tubes are uniformly annealed and then redrawn from approximately 13/16-inch x 19 Birmingham wire gage to the final size ¾-inch x 20 Birmingham wire gage. This time tube *B* is the first to be drawn and *A* is the last. The latter receives a reduction of only 0.0605-inch in diameter and 0.005-inch in wall while the former *B* receives the heavier reduction of 0.0655-inch in diameter and 0.0095-inch. The physical properties, as expected, will vary considerably after each of these passes. If in addition the intermediate annealing lacked uniformity

and tube *A* was heated to a higher temperature than tube *B* even wider variation would be expected and obtained. The tubes are then finally annealed at a low temperature, which tends to equalize to some extent the differences created by the cold drawing, but the desired uniformity is still lacking. With this method of finishing tubes, considerable variations in physical properties may be obtained.

If in the case cited tube *B* had been drawn in a new die, several thousandths of an inch below 0.750-inch and over a new mandrel several thousands of an inch over-size and tube *A* had been drawn after wear in both die and mandrel, the variations in reduction and, therefore, variations in physical properties would become more marked.

Disadvantages of Cold Drawing

Obviously the method of finishing outlined is one that requires that minimum wear be allowed on dies and mandrels used on the last two passes if results of satisfactory uniformity are to be obtained. With a maximum variation of about 15,000 pounds per square inch, with a tensile strength from 55,000 to 70,000 pounds per square inch, satisfactory ductility can be obtained with 0.10 to 0.20 per cent carbon tubing. These limits are sufficiently wide for all gages under consideration, though for the heavier walls from 10 to 14 Birmingham wire gage the tensile values may be held within closer limits. However, there are certain disadvantages to this method of finishing by mandrel drawing or sinking followed by a final partial anneal, which are worth consideration.



BENCH WHICH IS USED FOR DRAWING A TUBE IN THE COLD STATE

Suggestions for Improving Drawing Methods

While with careful control in the mill, tubing of satisfactory uniformity in physical properties can be produced, the question naturally arises as to how the procedure may be bettered. The writer believes that the analysis should be so chosen that the cold work is only depended on for close sizing instead of being used to very much increase what would normally be the tensile values in the hot-rolled or annealed state. On next to the last pass, the tubes may receive approximately the reductions now being used, checking closely the wear on the dies and mandrels, but should be brought in this pass to a size and gage close enough to that desired so that after a full anneal the final pass will be more in the nature of sizing with only a slight increase in the tensile strength and yield point due to cold work. This may then be followed by a low-temperature anneal that will not oxidize the surface to any greater extent than to color the same, not lowering the strength but increasing the ductility.

Having a batch of tubes of uniform size and gage just prior to the last pass, close to the desired size and having removed the stresses imparted in previous cold work by a suitable anneal, the relatively small increase in properties will be due to the work performed in the last pass. The interpass anneal should be at a high enough temperature and for a sufficient length of time to obliterate the cold-working stresses and to get rid of the elongated structure thus imparted. Possibly the best method of finishing is to bring to desired gage just before the last pass and finish with a light sink in the final drawing operation. Closer adherence to size would be possible and the finished tube would have a much cleaner and smoother surface.

Arc Welding Makes Good in the Foundry

BY ROBERT E. KINKEAD

CONSIDERABLE savings may be effected by welding defective castings, in the opinion of Robert E. Kinkead, in a paper presented at the annual meeting of the American Foundrymen's association in Philadelphia, Sept. 29-Oct. 3. In describing methods of welding castings, the author calls attention to the fact that electric arc-welding has been used in steel foundries for about 10 years and during that period the sentiment toward salvaging defective castings has changed in a most remarkable manner. The repairing of defective castings by arc welding is said now to be standard foundry practice. The paper continues, in part, as follows:

The field in which the metal electrode process is best applied is in dealing with small steel castings where the defect is of minor importance and in larger castings where the defect occurs in a section which in thin, and on which the heat must be extremely localized.

Good foundry practice indicates that steel castings which have been welded by the carbon electrode process should subsequently be annealed to relieve any local internal strains which may have been introduced by the application of the heat of the arc. There are occasions, however, when it is extremely inconvenient and expensive to reanneal a casting which shows a slight defect. On such occasions the application of the metal electrode process, owing to the very great localization of the heat, will permit the correction of the defect without the necessity of reannealing.

Until recently $\frac{5}{32}$-inch diameter metal electrode was as large as was ordinarily used in this work. Investigations have recently shown that $\frac{1}{4}$-inch electrode, and even $\frac{3}{8}$-inch diameter rod, may be used in the metal electrode process to good advantage on steel castings.

The welding of malleable iron castings is difficult. The most important application of the metal electrode welding process in malleable castings is in the plugging of sand holes in castings which are to hold oil. A large number of the castings encountered in automobile work are of this nature. The welding on malleable iron is always done after the casting has been annealed. If the casting is to be machined at the point at which the weld is made it should be reannealed.

There are two classes of work which can be done in the gray iron foundry with the metal electrode process. In the first class are large castings which come from the sand with shrinkage cracks or low spots in parts of the casting which are not to be machined. In the case of a crack, it may be opened up with a chipping tool, and

steel filled in to give a measure of strength and complete pressure tightness.

The welding can be handled with a low current, and should not be done continuously. The operator should weld for possibly 20 per cent of the time; the remainder of the time being divided up into intervals to permit the heat to be distributed throughout the locality of the weld. This practice will not harden the cast iron in the vicinity of the weld with the exception of the iron which is within $\frac{1}{16}$-inch of the line of fusion. The steel added will not be hardened by the absorption of carbon from the cast iron for a distance greater than $\frac{1}{16}$-inch from the line of fusion. If the welder works intermittently he will avoid having the steel shrink away from the gray iron. The difficulty in machining such a weld arises from the hard area $\frac{1}{16}$-inch on either side of the weld.

The second class of work which can be done with the electric arc on gray iron is in the correction of small sand holes and sand spots on surfaces which are to be machined. In work of this nature the sand hole is opened up and a nickel electrode fused into the hole by the heat of the arc. The nickel is not welded to the cast iron, but at the high temperature produced by the arc makes an intimate contact with the gray iron, which resembles an amalgamation. The nickel is then peened and the excess metal filed away. The job may be made pressure tight, and the application is entirely successful in the correction of sand spots in the bore of engine or pump cylinders. This process is not used for the repair of breaks in a casting, but is merely a method of plugging a crack or sand hole.

Seamen's Strike Cripples Australian Works

Necastle, N. S. W., Sept. 1.—Suspension of operations at the Broken Hill Proprietory Co.'s steelworks recently caused unemployment of 3000 men at Newcastle. The stoppage was due to the shortage of iron ore, stocks having reached such a state of depletion that blast furnaces can no longer be kept going.

Owing to the seamen's strike, the Australian iron and steel trade has been badly affected and supplies of ore from Hummocky Hill, South Australia have been interrupted. The influenza epidemic and seamen's strike seriously affected operations at the Broken Hill company's plant during June. The coke ovens produced 13,600 tons of coke, 145,032 gallons of tar and 210 tons of sulphate of ammonia. The blast furnaces produced 12,457 tons of pig iron, and 482 tons of ferromanganese also were made. The open hearth produced 16,698 tons of steel; blooming mill, 12,908 tons; rolling and finishing mills, 8063 tons, and the merchant mills, 4648 tons.

The federal government is enacting a tariff law to protect the iron and steel industries. Australian manufacturers say they can supply all of this country's requirements. About £9,000,000 ($43,200,000) worth of raw and finished material, more or less related to iron and steel, are imported annually. The tariff law is being enacted not only to combat the rumored American dumping, but the importing of Japanese iron and steel products made with cheap labor.

Too Much Emphasis on Sulphur in Steel

REASONS why the limits for sulphur in cast steel usually found in specifications are too low were given by Prof. A. E. White in a paper presented at the annual convention of the American Foundrymen's association which was held in Philadelphia, Sept. 29-Oct. 3. The author does not add any new evidence of the effect of sulphur on cast steel, his paper being confined to a plea for a thorough survey of the items which affect the quality of steel castings.

Attention is called to the fact that a good deal has been written concerning the effect of sulphur on steel and the paper goes on to say that numerous writers have pointed out that sulphur in percentages much above 0.04 or 0.05 gives material showing undesirable qualities.

Portions of the paper follow:

Now and then some one suggests that sulphur in percentages greater than 0.04 or 0.05, possibly as high as twice the values given, in no way affects the quality of the steel. Much that has been written is in the way of exposition and is not supported with evidence. Furthermore, a considerable amount of the evidence submitted is so beclouded by other factors that the data is valueless. Practically all of the literature discussing sulphur deals with its influence in rolled or forged steel and not in cast steel. Between cast steel on the one hand and rolled or forged steel on the other, there is, in the writer's opinion, a vast deal of difference. Therefore the observations on the influence of sulphur in rolled or forged steel, relatively speaking, may have little bearing if applied to cast steel.

It was the writer's privilege in the fall of 1916 and the winter of 1916-1917 to visit nearly all of the important steel casting plants in the eastern half of the United States. It was also his privilege to have under his supervision the inspection of all of the steel casting plants producing ordnance material for the United States army from January, 1918, until he left the service in March, 1919. As a result of this experience, he has come to feel to a greater and greater extent that the acceptance of steel castings should be placed on a broad basis and that the minute scrutiny of castings for a few hundredths of a per cent of sulphur is both irrational and unwise.

To talk about the effect of an increase of 0.01 or 0.02 per cent of sulphur when by improper annealing, improper steelmaking or by improper foundry practice, properties many times worse than those produced by sulphur are acquired by the steel, is, in the writer's judgment, placing undue emphasis on the wrong factor.

Sulphur in steel may increase blow holes—it is granted that this is a disputed point—but assuming that it does, it will not do so to nearly the same extent as an improper temper to the mold; improper venting of the mold or core, especially the core; or an improper pouring temperature. It may increase shrinkage, but it will not do it nearly as much as an improper casting design, an improper pouring temperature, or too rapid a heating or cooling during the annealing. It may decrease the metal's resistance to shock but not to the degree that a poorly designed casting will, or one in which the metal has been overheated, burned or underannealed with the dendritic structure still in evidence.

It was because of the feelings expressed in the preceding paragraph that the writer championed, while connected with the ordnance department, a more liberal specification as applied to sulphur, though accompanied at the same time with such a method of inspection at the casting plant consisting of an examination of test bars, annealing lugs, visual examination, etc., that the real quality of the castings, or as near real as could be obtained, might be ascertained.

Safety Work Given New Impetus

More Than 3000 Delegates Attend Eighth Annual Congress of National Safety Council—Much Interest Shown in Metals Section—Manufacturers Have Large Exhibit — Employe Problems Discussed

ORGANIZED safety work which had its inception in industrial pursuits and which has been promoted extensively in the iron and steel industry has spread into practically every field of human endeavor, as indicated by the various interests represented at the eighth annual congress of the National Safety council in Cleveland, Oct. 1-4.

More than 3000 delegates, all of whom are engaged in some form of safety work, attended the congress, which was the largest and most important in the history of the council. One hundred and sixty speakers summarized progress, and suggested new means for promoting safety. More interest than ever was shown by the higher officials of the large industrial corporations. The attendance of plant officials in the iron and steel industry was notable, the strike and the idleness of the mills permitting many of them to attend the sessions of the metals section where the welfare of employes was discussed.

The chief result of the congress was the program adopted for the extension of public safety work. It is proposed to make safety considerations a habit of life in America. It will be taught by object lessons in schools, safety being suggested in connection with arithmetic, grammar and other studies; it will be emphasized in the press and pulpit and in public meetings, and constantly encouraged by safety engineers.

More emphasis was placed this year on Americanization and industrial management, while in connection with the latter subject employe representation received attention for the first time. One of the important features of the congress was an exhibit of safety and sanitation appliances and accessories.

Cyrus McCormick Jr., works manager, International Harvester Co., opened the first general session with an address on "Co-operation and Industrial Progress." Mr. McCormick summarized the general industrial situation and then outlined the plan of employe representation in operation in his company's plants.

"So far as trades unionism is concerned our friends of the American Federation of Labor have mistaken the trend of employe representation," said Mr. McCormick. "Employe representation has not been set up in opposition to organized labor. It is a sincere effort on the part of capital and labor together for the benefit of each, and to develop between them a family feeling of mutual interest which cannot but be helpful to the development of industry today and tomorrow."

E. B. Tolsted, Independence Bureau, Philadelphia, said there are 150 plans of employe representation in operation in the United States, and



RALPH C. RICHARDS
President, National Safety Council

he gave some practical suggestions for the installation of a plan.

"Install it under peaceful conditions," he said. "One large company inaugurated a plan as a result of a strike and the plan ended in another strike. To propose a plan to the men on the verge of a strike is almost certain to result in failure.

"To attain its highest success, a plan should be developed gradually, each step insofar as possible resulting from suggestions or requests of employes. See that it is simple in form. The best results have been obtained with joint committees, but employes committee should have opportunity to discuss their affairs without the presence of the management. It is especially important to make it plain that the plan in no way interferes with membership in unions."

Fred Schultz, vice president of the Cleveland Federation of Labor, read a paper prepared by Matthew Woll, of the American Federation of Labor, on "Employes' Representation from the Standpoint of Organized Labor," in which he defended trade unions, as affording the best means for collective bargaining.

William M. Leiserson, impartial chairman of the labor adjustment board for the clothing industry of Rochester, N. Y., in speaking on "Labor Management and Collective Bargaining," referred to the steel strike.

"Officials of the Steel corporation are quoted as saying the real issue in the steel strike is the question of control," he said. "Is the management to decide conditions of employment? The steel worker sees the miners meeting with the owners, and Director General Hines negotiating with the railroad employes, and he sees the same thing in other trades. But the steel corporation says 'No.' The steel worker scratches his head. 'Isn't that all power to the employer?' he asks. Isn't the bolshevists' motto the same thing 'All power?'"

Thomas Stanion, Aluminum Castings Co., Cleveland, presided at the general round-table discussion Oct. 2 at which L. A. DeBlois, E. I. du Pont de Nemours & Co., Wilmington, Del., urged more extensive supervision as a safeguard against accidents in industrial plants. John A. Oartel, director of safety, Carnegie Steel Co., Pittsburgh, outlined the duties of workmen's inspection committees at the A, B, C session, so-called because most of the addresses related to the rudiments of safety work.

H. L. Church, Rockford Malleable Iron Works, Rockford, Ill., read a paper on "Accident Prevention in a Malleable Iron Foundry" at the meeting of the metals section. Mr. Church said men are leaving the foundries because of the number of accidents and that the work must be made more attractive if labor is to be held. He pointed out that a large number of foreign-born workers are without education as regards safety and sanitation and that ignorance and lack of training are responsible for most of

the accidents. The use of leggings, goggles and shoes is advisable, but to go to the root of the problem foundrymen must educate employes.

"We explain the hazards of the work to every new man we employ," said Mr. Church. "We have men, who speak several languages, devote considerable time among them, training and educating them, with a view to minimizing danger."

M. F. Gartland, Marion Gray Iron Foundry Co., Marion, Ind., was unable to attend the session, but a paper prepared by him was read. Mr. Gartland emphasized the personal element, stating that while safety devices have been developed to the utmost, it now remains for the safety engineer to develop men's minds so that mechanical means shall not lack intelligent co-operation.

Hans Rieg, chief, foreign language division, war loan organization of the United States treasury; H. C. Waller, formerly educational director, B. F. Goodrich Co., Akron, O.; George C. Fout, supervisor of night schools, Youngstown Sheet & Tube Co., and Allen T. Burns, director of the Study of Methods of Americanization, New York, spoke at the general session on Americanization. Mr. Burns outlined principles and methods of Americanization, while Mr. Waller and Mr. Fout suggested steps which industrial establishments may take to aid the movement. Mr. Rieg warned against trying to compel the alien to become an American citizen.

At the meeting of the metals sections Oct. 3, C. C. Rausch, assistant director, Safety Institute of America, gave a practical talk on the safe operation of cranes, supplemented by a discussion by O. J. Lewis, McKinney Steel Co., Cleveland. In speaking on "New Ways to Put Safety Across in a Steel Plant," H. P. Heyne, United Alloy Steel Corp., Canton, O., said:

"The new way to put safety across in any plant is to meet the problems with a better understanding of affairs, and an assurance of fairness between the foremen and employes which should furnish the material for erecting the foundation for the co-operative spirit. The two factors which bind men together are fellowship and good will based on mutual confidence. These are indispensable in attaining unity of purpose on the part of all for the welfare of all."

H. J. Weeks, with the assistance of a group of employes of the American Steel & Wire Co., gave a practical demonstration of methods used in investigating accidents.

Philip Stremmel, superintendent of hot mills, National Enameling & Stamping Co., Granite City, Ill., read a paper on "Humanizing a Steel Plant" at the session of the metals section Oct. 4.

"If a steel plant is to be humanized confidence must be restored between employer and employe," said Mr. Stremmel. "The whole history of the steel industry has been one of struggle. The employes have believed that their rights could only be secured and maintained by organization. On the other hand the employer fought organization because he was convinced that it was an invasion of his rights. The truth is both were partly right and both were partly wrong. The employer must not limit his interest in his employe merely to his power to produce. He must also see his family; their educational, social and spiritual needs must express themselves in the pay roll. Not merely an employe must be dealt with, but his family also."

This paper was discussed by Raymond G. Adair, safety engineer, American Rolling Mills Co., while E. E. Judd, American Smelting & Refining Co., discussed a paper presented by James F. Belford, acting secretary of labor, safety and welfare, of the same company, on how foremen may reduce accidents. J. Schleicher, Alexander Milburn Co., Baltimore, gave a practical demonstration of welding, etc.

Ralph C. Richards, Chicago, member of the central safety committee of the Chicago & Northwestern railroad, was elected president of the council; C. W. Price, Chicago, general manager, and Sidney J. Williams, Chicago, was re-elected secretary and chief engineer.



GENERAL VIEW OF EIGHTH ANNUAL SAFETY AND SANITATION EXHIBIT

Foundry Meeting is Eventful

American Foundrymen's Association in Record Breaking Convention in Philadelphia Denounces Radicalism—Technical Sessions Reflect Progress in Casting Practice—Launch Steel Ship Named in Honor of Association

UNPRECEDENTED progress, both in the design, development and manufacture of metal working and foundry equipment and in the solution of problems affecting casting practice and plant administration, was reflected in the meetings and exhibition of the twenty-fourth annual convention of the American Foundrymen's association held in Philadelphia last week concurrently with the annual meeting of the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers. Called the "Interallied Foundrymen's Congress and Exhibition," this year's event lived up to all that the name implies, more than a score of foreign guests from England, France, Norway, Japan, India and Australia being in attendance. The total registration exceeded 3500.

The interest manifested at the various technical sessions held in the Bellevue-Stratford hotel surpassed even that which marked the meetings at Milwaukee last year, when the intense resolve to help win the war keyed enthusiasm to a high pitch. In the general sessions and in those devoted to gray iron, steel and malleable foundry practice, the discussions of papers indicated that the restraint of war no longer is retarding the American instinct for research calculated to improve foundry practice.

A most promising indication of intelligent effort to solve the problem of industrial relations was seen in the special session held Thursday morning when the authors of four papers advocated systematic training for foundry apprentices, journeymen and foremen along lines which will familiarize them with the economic conditions which play an important part in determining the administrative policies of employers. "Multiply yourself through your foremen," the slogan introduced by one speaker, impressed manufacturers as being an important remedy for existing conditions. Interest in the immediate problem of today reached its highest point Thursday evening at the most brilliant banquet ever held by the association when Hon. James M. Beck, former United States assistant attorney general, declared that a law should be passed providing that the act of any combination, either of employes or employers, which aims to subvert the government be considered the equivalent of sedition. The sentiment of the members of the association later was expressed in a communication addressed to Senator Kenyon of the senate's committee investigating the steel strike in which the alien origin and sinister motives of the strike were pointed out as a serious menace to all branches of industry.

Aside from the exhibition and meetings, the outstanding feature of the convention was the boat ride on the Delaware river terminating with a visit to the Hog island shipyard where Mrs. A. O. Backert, wife of the president of the association, christened the steel cargo carrier, the Afoundria, named in honor of the foundrymen's organization and the great industry which it represents.

Mechanical Apparatus Boosts Output

WITH a total registration of members and guests of over 2500 shown on the secretary's cards, the second day's technical sessions were greeted by a large attendance. The general meeting was held in the ball room of the Bellevue-Stratford with Mr. Backert as chairman, while the steel session was held in an adjoining room with R. A. Bull, Duquesne Steel Co., Coraopolis, Pa., presiding.

The first paper on the general program was "Audible Signals in Foundries," by Professor Vladimir Karapetoff, Cornell university, Ithica, N. Y. This paper was published in the Oct. 2 issue of THE IRON TRADE REVIEW. In the discussion following this paper, W. T. Perry, Bay City, Mich., pointed out the probable value of a loud speaking telephone which in addition to calling the person sought, delivers the desired message at the same time. In rebuttal Professor Karapetoff called attention to the difficulty of obtaining distinct enunciation with the loud speaking telephone.

"The Care of Foundry Equipment," by G. L. Grimes was the next paper presented. W. C. Brigg's paper on combining hoisting apparatus with molding machines to secure the most efficient results was accompanied by a series of interesting slides on actual installations. The handling problem further was amplified by H. L. McKinnon, C. O. Bartlett & Snow Co., Cleveland, who dwelt on the modern application of power to sand handling and conveying. Mr. Brigg's paper was published in last week's issue.

H. H. Haley, American Foundry Equipment Co., New York, discussed the application of concrete to foundry molding floors and recommended certain practice to follow. In the discussion Lambert T. Ericson, chief engineer, Jennison-Wright Co., Toledo, O., suggested wood blocks for foundry flooring. He pointed out the cleanliness and ease of construction which made it possible to lay a wood block floor with a minimum of interruption to normal plant operations.

The report of the committee on costs was read by the chairman and a resolution was proposed and passed authorizing the publication of the



THE AFOUNDRIA, NAMED IN HONOR OF THE FOUNDRYMEN'S ASSOCIATION, AND MRS. A. O. BACKERT, SPONSOR

principles of the American Foundrymen's association cost system in the proceedings and in pamphlet form for distribution among the members. C. E. Knoeppel's paper, "Uniform Methods of Cost Accounting" was read in abstract.

Maj. Frank B. Gilbreth, Providence, R. I., delivered an address on "The One Best Way to Do Work," which was illustrated by motion pictures. He criticized the existing emphasis which is placed on judgment, characterizing judgment as the result of many contacts with the wrong way of doing things. The investigation of methods by the application of motion picture time studies was strongly recommended. The speaker recounted the mode of applying motion picture study to foundry operations. He told how the best workman is chosen for each operation studied, and how by the application of the cross-sectioned background and the split-second clock, each movement is precisely recorded. This system has been found to induce a greater effort on the part of the workman, and it is stated his work is so improved that output in many cases is increased in the ratio of two to one and in many cases five to one. In closing, the speaker said that this country, to compete with manufacturers abroad, and particularly with the Orient, must send to the four corners of the earth in search of the one best way, just as now our agricultural investigators go all over the world seeking better grades of grain, fruit and vegetables.

Dscuss Problms of Gray Iron Shop

More than 250 foundrymen attended the gray iron session which was held Thursday morning. W. A. Janssen, American Steel Foundries, Chicago, presided as chairman. George P. Fisher, Whiting Foundry Equipment Co., Harvey, Ill., read a paper on the application and use of the side blow converter in iron foundries. He referred to the low initial cost of the melting unit and furnished statistics showing the amount of steel produced in the United States covering a period of three years.

A paper entitled "Cerium in Cast Iron," was read by Dr. Richard Moldenke, Watchung, N. J. This rare metal is one of a group which Doctor Moldenke has been investigating with a view of developing a practical deoxidizing agent.

Mr. Janssen asked if cerium is added to the molten iron in the form of a ferroalloy or in its natural state. Dr. Moldenke replied that it is added as a ferroalloy and that the best method of adding it to the molten iron is to break it into small pieces and drop them in the spout when the metal is tapped.

Homer F. Staley, United States bureau of standards, Washington, read a paper on testing clays for foundry use. He referred to the work which the bureau is doing along these lines and stated the conclusions which have been derived from the work already done.



R. F. Harrington, Hunt-Spiller Mfg. Corp., Boston, remarked that Mr. Staley entirely ignored the merits of the die test in determining the plasticity of clay, which Dr. Moldenke has advocated. Mr. Staley replied that in his opinion the die test is not reliable, inasmuch as a definite amount of penetration does not always indicate a definite bonding power. Dr. Moldenke, while agreeing that the die test is not perfect, maintained that it is still good enough for all practical purposes and is within the means of even the most modest foundryman. He declared that a simple practical method of determination is needed. He stated that he believes too much emphasis is placed on the theoretical phase of the

work and urged a more practical application, so that the man who is accustomed to dig clay in his own back yard can satisfy himself that it is suitable for the purpose intended. In reply to a question regarding German fire clay, which has been used so extensively for crucibles, and the native American clays, Mr. Staley said that there is no single American clay similar to the German material, but that it is possible to combine some of the native clays and obtain a mixture just as satisfactory as the best German clay.

Henry Traphagen, Toledo steel Casting Co., presented a paper on the educational value of the scrap pile.

Although many availed themselves of the final opportunity to visit and inspect the show at the Commercial Museum, a full attendance heard the Friday morning program. Reversing the usual order of procedure, President Backert at once installed the newly elected officers introducing Carlton S. Koch, Fort Pitt Steel Castings Co., Pittsburgh, president, W. R. Bean, Eastern Malleable Iron Co., Naugatuck, Conn., vice president and C. E. Hoyt, Chicago, secretary. By unanimous assent, the retiring president, A. O. Backert was elected to honorary membership in the association, and Thomas Devlin, Thomas Devlin & Co., Philadelphia, a patriarch in the industry was given the same tribute.

The scheduled program contained much of practical interest to the foundryman as was shown by the full discussion which followed each paper. Robert E. Kinkead, Lincoln Electric Co., Cleveland, explained the progress and application of electric welding to the work of steel.

Describes New Gas

Professor Kinsey followed with a discussion of his paper "A New Cutting Gas," in which he described the physical properties, operation and economical qualities of a gas for use with oxygen in welding and cutting.

George B. Malone's paper on welding castings of different metals and different sections was read by the chairman, Mr. Bean, and was followed by "Refractory Cements," by W. S. Quigley, Quigley Furnace Specialties Co., New York.

Alfred E. Howell, Phillips & Buttorff Mfg. Co., Nashville, Tenn., presented the report of the resolutions committee expressing the gratitude of the association to the Philadelphia association, its committees and to the American International Shipbuilding Corp. for the courtesies and hospitality extended during the week. This was unanimously adopted.

A most significant feature of the closing session was a resolution passed on motion of R. A. Bull, Duquesne Steel Foundry co,. Coropolis, Pa., calling upon Senator Kenyon's committee investigating the steel strike to note the foreign influence in the disturbance. This communication appears in full elsewhere on this page.

Two salient features marked the annual banquet held in the ball room of the Bellvue-Stratford, Oct. 2, as a memorable occasion for those present. The first was the spirit of comradeship between the allied nations born of a common peril voiced by Sir Ellis W. Hume-Williams, M. P., official representative of the British government, Dr. Marcel Knecht, professor of literature of the University of Nancy, speaking for the French government, and Hon. James M. Beck, formerly assistant attorney general of the United States. The second, the determination expressed by Mr. Beck, and attested by the enthusiasm of those assembled, to protect American institutions and ideals against the sinister threat of anarchistic attack. President A. O. Backert, who acted as toastmaster expressed gratitude to the foreign guests who

A. F. A. Announces Stand Against Radicalism

A Communication to the Senate Committee on Labor and Education

THE American Foundrymen's association is holding its annual meeting in Philadelphia.

This convention is the greatest in our history of 24 years' advancement of the purely technical and industrial phases of the foundry industry. More than 3000 foundrymen are in attendance. Our exhibit of foundry equipment and supplies occupies the entire space of 90,000 square feet in the Commercial Museum. Unquestionably this meeting of foundry owners, managers, superintendents, chemists, foremen and of manufacturers of equipment required for foundry operation, embraces the most intelligent and broadminded personnel in the basic industry of casting of metals.

Never in the history of this organization have discussions been permitted in our meetings relating to the unionization of labor, or to advisable rates of wages. We contemplate no change in this policy and will continue to serve our industry in the future along the same scientific lines as in the past.

The operations of many industries have been affected by the present strike of steel workers instituted primarily against the United States Steel Corp. We recognize, as your investigating committee does, the tremendous importance of this strike. We believe the very bulwark of our nation is seriously menaced. We respectfully call to the attention of your committee the significant and incontrovertible fact that the vast majority of those who are attempting to paralyze the foundry industry coincident with the attacks upon the steel mills, are of foreign birth, and that whatever success in those endeavors is being achieved in our foundries results in very large degree from intimidation and violence.

You and your committee are charged with a solemn duty. We believe you will not shirk it, but will make your investigation rigorously searching, as to existing conditions of employment, and the present and past activities of the men who organized and are conducting the strike and of those opposed to them, to the end that in all branches of industry connected with the manufacture of iron and steel, those who work in them with their hands and brains may do so under conditions fair to both classes, in lasting security against improper coercion and in conformity with the principles of liberty drafted by our fathers in this city where our membership is now assembled.

This communication is without precedent in our organization. After mature deliberation we believe the circumstances justify it and that the essentially scientific nature of this the greatest organization of foundrymen in the world will give weight to our statements. We beg to inform you that a vast number of our members toiled with their hands for a daily wage in the earlier stages of their foundry careers. Hence our sympathies for the honest working man are genuine.

by their presence testified to the excellent feeling existing in the foundry industry. Major R. A. Bull, past president of the association expressed the thanks of the visitors for the hospitality of Philadelphia and the local foundry organization and its committees who made the great convention end a success.

Entertainment Features

The plan of holding all sessions of the convention in the morning and closing the exhibition at 5 p. m., except on Tuesday, gave the visiting foundrymen and their guests ample opportunity to participate in the unusually attractive entertainment program provided by the Philadelphia local committee under the direction of Frank Krug, White & Brother, Philadelphia. The outstanding entertainment feature of the week was the ride on the CITY OF CAMDEN, which took a capacity load of 1600 persons up the river as far as the shipyards of William Cramp & Sons Shipbuilding & Engine Co., and then down the river to Hog Island and return. This trip enabled the visitors to see the yards of the New York Shipbuilding Co. and the Pusey & Jones Co., Camden; and the government navy yard at League island. After inspecting the steamship NOBLES and several departments of the great shipyard of the American International Shipbuilding Corp. at Hog Island, the foundrymen and their guests witnessed the launching of the steel cargo ship AFOUNDRIA. This vessel, which is the fifty-seventh launched at this yard, takes its name from the first letters of the name of the foundrymen's association, "A. F. A." and the word "foundry."

During the week many foundrymen visited the large industrial plants in Philadelphia and vicinity, a particularly large number taking advantage of the specially conducted inspection trip to the works of the Westinghouse Electric & Mfg. Co. and Baldwin Locomotive Works. On Wednesday the ladies were taken in automobiles through Fairmount park to Valley Forge, where luncheon was served. On Thursday they were given an opportunity to visit Independence hall, Wanamaker's store, the plant of the Curtis Publishing Co., and other points of interest. Other entertainment features included a theater party at Keith's and a golf tournament at the Whitemarsh Valley Golf club.

New Officers

American Foundrymen's Association

President:
C. S. KOCH,
Fort Pitt Steel Castings Co., McKeesport, Pa.

Vice President:
W. R. BEAN,
Eastern Malleable Iron Co., Naugatuck, Conn.

Secretary-Treasurer:
C. E. HOYT,
Chicago.

Directors

(In addition to the above)

H. R. Atwater, Cleveland-Osborn Mfg. Co., Cleveland.
A. O. Backert, The Penton Publishing Co., Cleveland.
R. A. Bull, Duquesne Steel Foundry Co., Coraopolis, Pa.
H. A. Carpenter, General Fire Extinguisher Co., Providence, R. I.
S. B. Chadsey, Massey-Harris Co., Ltd., Toronto, Ont.
A. E. Howell, Phillips & Buttorff Mfg. Co., Nashville, Tenn.
W. A. Janssen, American Steel Foundries, Chicago.
S. T. Johnston, S. Obermayer Co., Chicago.
C. R. Messinger, Sivyer Steel Casting Co., Milwaukee.
V. E. Minich, American Foundry Equipment Co., New York.
J. P. Pero, Missouri Malleable Iron Co., East St. Louis, Ill.
A. B. Root, Jr., Hunt-Spiller Mfg. Corp., Boston.
J. Roy Tanner, Pittsburgh Valve Foundry & Construction Co., Pittsburgh.

Discuss Effects of Sulphur in Steel

MORE than ordinary interest was shown in the steel session, held Wednesday morning, Oct. 1, and practically all of the 200 foundrymen in attendance remained until the last discussion was finished. The subjects which engaged the attention of the meeting were the relative importance of the sulphur contents to the properties of steel; comparisons of the electric furnace with the open-hearth and converter, both as to cost of melting and quality of product; and a discussion of the different methods of measuring temperatures. R. A. Bull, Duquesne Steel Foundry Co., Pittsburgh, who presided at the meeting advocated that a committee be appointed to work with the committee of the American Society for Testing Materials in determining the effect of sulphur on steel. These committees will work in cooperation with the bureau of standards in securing data and making tests to find out just what limits of sulphur are detrimental to steel.

The subject of the effects of sulphur in steel was introduced by A. E. White, University of Michigan, Ann Arbor, Mich., in a paper which is published elsewhere in this issue.

Discussion brought out by this paper tended to show that the effect of sulphur is not as great as usually claimed. On the other hand, to prove the serious nature of high sulphur it was stated that fourteen 16-inch gun stands, which broke in service, all contained high sulphur contents, while no stand which had less than 0.04 per cent sulphur broke in service. One of the speakers stated that this might have been due to segregation and improper annealing. J. H. Locke, Commonwealth Steel Co., Granite City, Ill., said that a curve plotted from data covering 1600 consecutive heats of basic open-hearth steel which ranged from 0.02 to 0.03 per cent sulphur was almost a straight line and showed that the percentage of cracked castings was three times as great as when the sulphur was 0.03 per cent. A curve plotted from the phosphorus contents was a horizontal line, showing that a small variation in phosphorus did not have any effect on the cracking of the steel.

Compares Electric and Converter Steel

G. R. Hanks, Taylor-Wharton Iron & Steel Co., High Bridge, N. J., read a paper entitled, "Electric Versus Converter Steel." This paper was prepared by Mr. Hanks in conjunction with John H. Hall, chief metallurgist of the Taylor-Wharton company. The data given showed that castings made from converter steel cracked while the same casting made of electric furnace steel did not crack even though containing as large a percentage of sulphur as the ones from the converter. Discussion of this paper brought out the fact that while it is possible to determine the temperature of electric furnace steel before pouring to insure that the metal is never poured too cold, this is not possible with converter steel. In fact, such steel is sometimes poured too cold, which accounts for the cracking. Another phase of electric furnace steel was taken up in a paper on the comparison of costs of electric and open-hearth furnace practice by E. H. Ballard, General Electric Co., West Lynn, Mass. Mr. Ballard compared the costs of operating a 6-ton basic electric furnace and a 20-ton acid open-hearth furnace as follows:

	Electric furnace	Open Hearth
Total metal cost	9.52 net ton	14.28 net ton
Special metals	1.79 net ton	3.52 net ton
Expense items	21.58 net ton	6.60 net ton
Molten metal cost in ladle	36.57 net ton	32.55 net ton

F. W. Brooks, Electric Furnace Construction Co., Philadelphia, read an interesting paper regarding the present methods of measuring the temperature of molten steel. He divides the methods into two classes, the pyrometer and the practical shop methods. Of the pyrometer methods the thermocouple method

is said to be impractical because the high temperatures to be measured require an expensive platinum-base thermocouple and there has not been found a satisfactory protection tube for the couple. The operation of the optical and the radiation pyrometers is handicapped by the smoky atmosphere and hot gases of the furnace. The practical shop methods have so far proved the most satisfactory. These consist of the film test, the rod test and the pouring test. The film test is made by taking some metal from the furnace on a spoon and measuring the length of time required for a film to form. If the film forms in less than a certain time, which is 60 seconds for the usual run of castings, the metal is too cold for pouring.

A short report was given by W. A. Janssen, American Steel Foundries, Chicago, chairman of the committee on steel foundry standards. Other papers presented were "Repairing Castings on Transport NORTHERN PACIFIC," by Arthur F. Braid, Metal Thermit Corp., New York, and "The Acid Electric Furnace Process," by L. B. Lindermuth, Carney & Lindermuth, New York. Mr. Braid's paper was accompanied by moving pictures showing the welding of the sternpost of the NORTHERN PACIFIC.

Malleable Men Discuss Big Problems

A LONG and interesting program of papers was presented at the malleable session Thursday morning presided over by W. R. Bean, Eastern Malleable Iron Co., Naugatuct, Conn. The first four papers dealt with melting methods. Although the figures in the paper presented by J. P. Pero, Missouri Malleable Iron Co., East St. Louis, Ill., on burning fuel oil in the air furnace, showed that under price conditions obtaining in East St. Louis, the melting costs are higher for oil than when coal is used as a fuel, Mr. Pero stated that he favors the use of oil for melting malleable. He has found, he said that there are advantages in oil melting which can not measured in dollars and cents. As an example of how different conditions might make oil fuel cheaper than coal for melting, the case of the Jewell Steel & Malleable Iron Co., San Francisco, was cited. It was stated that this company found that oil with a consumption of 65 to 66 gallons per ton of iron melted in a cold furnace, is cheaper than coal for melting, due to the fact that coal is abnormally high priced on the Pacific coast. During the discussion of melting ratios P. J. Davis, Moline Malleable Iron Co., Fairfield, Iowa, said that the one foundry he is familiar with melted with 65.6 gallons of oil to the ton of metal, and the Globe Malleable Co., Syracuse, N. Y., consumed 80 gallons per ton of metal melted. Even with the advantage secured by regeneration, the Fort Pitt Malleable Co., Pittsburgh, has not made a better average than 46 gallons of oil to a ton of metal melted.

The application of powdered coal to the malleable foundry, both for melting and annealing was broadly covered in three papers by Charles Longenecker, the Bonnot Co., Pittsburgh, Milton W. Arrowood, Ground Coal Engineering Co., Chicago, and H. A. Grindle, Combustion Economy Corp., Chicago. Mr. Longenecker's paper appears elsewhere in this issue. W. H. Firch, Lehigh Pulverizer Co., in discussing these papers said that powdered coal for melting had been proved beyond doubt to be practical.

Figures showing results of melting malleable with powdered coal were given by H. A. Grindle, Combustion Economy Corp., Chicago. These figures were obtained from the operation of an air furnace at the National Malleable Castings Co., Chicago. So far 19 heats have been taken off and the metal in every one of them was satisfactory, pouring clean and showing good physical properties. Sulphur was found to run about 0.01 per cent lower than when the metal was melted by hand firing. The second heat taken off Sept. 25 was melted in 4 hours and 25 minutes. It was all out of the furnace in 5 hours and 30 minutes. There were slightly more than eight tons of metal in the heat which was melted with 595 pounds of coal per ton of metal at the rate of 1,48 tons per hour. The composition of the metal tapped was: silicon, 0.92 per cent; sulphur, 0.054 per cent; manganese, 0.28 per cent, and carbon, 2 per cent. The coal ratio of 595 pounds per ton of metal compares 800 to 900 pounds of hand fired coal to a ton of metal melted.

Enrique Touceda deplored the fact that foundrymen are urged to try to secure more rapid annealing, as he does not think that a proper grade of metal can be secured when the anneal is rushed. He said that he did not believe a heat could be thoroughly and satisfactorily annealed if held at temperature for less than 48 hours. If brought up to temperature too quickly the effect would be to expand the ring of the packing boxes faster than the castings inside which would loosen them and allow the packing around the top castings to fall to the lower portions of the stack causing distorted castings. It was also brought out in the discussion that powdered coal is being used for drying molds and the following comparative figures were given: Drying with oil required 18 hours, with coal, 12 hours; 300 to 350 gallons of oil were required for drying an oven charged while the same work is done by 2600 pounds of powdered coal.

The report of the committee on

Visitors From Oversea

FROM the standpoint of nationalities represented this year's convention surpassed all previous annual meetings. The cosmopolitan aspect of the event was not only noticeable on the registration bulletins where the names and addresses of many foreign guests appeared, but also at the exhibition where a number of European products were displayed and at the annual banquet where official representatives of England and France participated in the program. England, Scotland, Norway, France, India, Java, Japan, and Australia were represented. Among the guests from overseas were:

John R. Hyde and W. H. I. Bailey, Robert Hyde & Son, Ltd., Sheffield, Eng.; N. M. Brown and William Hudson, Lion Foundry Co., Ltd., Kirkintilloch, Scotland; H. Roe, Adaptable Molding Machine Co., Birmingham, Eng.; James Teason, Ruston & Hobston, Lincoln Eng.; R. V. Patterson, Smith-Patterson Co., Ltd., Blaydon-on-Tyne, Eng.; James Potts, I. Taylor & Sons, Ltd., London, Eng.; Frank Somers, Walter Somers & Co., Ltd., Halesowen, Eng.; R. M. Chemez, Angus Co., Ltd., Calcutta, India; S. Frivik, E. Sunde & Co., Christiana, Norway; R. W. Williams, Sidney Williams & Co., Rockhampton, Australia; and J. J. Bratt, Java, T. Sakaqushi, T. Sakaqushi, Otaru, Japan; Abdon Corquoda, A. Corquoda, Barcelona, Spain; T. Murayanna, Tobatta Foundry Co., Tobatta, Japan; J. Vigne, Tropenas Converter Co., Sao Paulo, Brazil, and George Komorowski, Gizod Electric Steel Works, Ugine, France.

specifications for malleable castings was presented by Enrique Touceda, chairman. The committee recommended that the specifications for malleable iron castings recently made standard by the American Society for Testing Materials, be adopted by the American Foundrymen's association. A paper by G. Ernest Wells, Edgar Allen & Co., Sheffield, England, was read by Mr. Bean in the absence of the author. This paper gives information about Great Britain's Experimental foundry and the chairman said it was a subject which should be of interest to the meeting as it showed the possibility of such a foundry in this country.

Education is Cure for Industrial Ills

FOR the first time in the history of the association, papers devoted to problems of vocational training, personnel and industrial relations were presented in a special session. In the course of this meeting a number of speakers shed important sidelights on the present industrial situation and suggested improvements which in the aggregate constitute a contribution of constructive criticism bound to prove of benefit to foundrymen and plant executives in many branches of industry. C. C. Schoen, United States department of labor, training service, Stamford, Conn., presented a paper on training men for foundry work in which he revealed the results of an investigation of the status of foundry training in 646 foundries. He declared that in these foundries, where 14,462 skilled workmen are employed, only 1096 apprentices, or less than one-third of the 3538 authorized under an agreement with the International Molders' union, are employed. The causes of the reluctance of young men to engage in foundry work include low wages, unsanitary conditions, laborious work, monotonous routine, the influence of public schools, the lack of sound practical or definite training program and the lack of proper incentives.

C. D. Dyer Jr., Hunt & Dyer, Philadelphia, read a paper entitled "Personal Problems in Modern Industry," an abstract of which appeared in the Oct. 2 issue of THE IRON TRADE REVIEW. John Calder, consulting engineer, New York, whose paper, "Industrial Democracy and the Foreman," also appeared in the Oct. 2 issue, characterized the foremen as the noncommissioned officers of industry and strongly emphasized his belief that the hope for satisfactory relations lies in the education of these men. He stated that as a rule foremen know little of human nature and care less. "Multiply yourself through your foremen" was the keynote of his urgent appeal to employers. Mr. Calder claimed that at present manufacturers and executives are expecting their foremen to interpret policies of administration for the workmen, and declared that in many cases the foremen are not intelligent enough and are not sufficiently trained to properly transmit this information to the men in their departments. He advocated a course of intensive training designed to teach foremen the fundamentals of economics and to make them more familiar with the intelligent handling and understanding of men.

J. C. Wright, federal board for vocational education, Washington, presented a paper on vocational training for foundry occupations. He discussed the value of part-time and evening schools and explained the functions of the federal board for vocational education. C. B. Connelly, commissioner of labor, state of Pennsylvania, Harrisburg, Pa., who presided at the session, spoke of the desirability of publishing the course for the training of foundry apprentices recommended by the association's committee on that problem and urged that employers launch a campaign to place reliable literature pertaining to industrial matters in the hands of workers, who at present are flooded with propaganda which does not treat such subjects fairly.

A.I.M.M.E. Discuss Nonferrous Alloys

THE regular meeting of the Institute of Metals division of the American Institute of Mining and Metallurgical Engineers opened with an evening session on Tuesday, Sept. 30. A paper by John F. Thompson and David H. Brown on the properties of nickel occupied a large part of the session; the discussion bringing out the fact that carbon free anodes are much less soluble in ordinary plating solutions than those containing carbon, and that in the production of malleable nickel it is imperative to deoxidize with magnesium in the proportion of one-tenth of one per cent. A new alloy of excellent physical properties was described by C. P. Karr at a subsequent session. This alloy consists of copper 90 per cent; tin 6.5 per cent; zinc 3 per cent, and lead 0.5 per cent. It has a tensile strength of 40,700 pounds per square inch with an elongation of 37.6 per cent. The discussion divulged that a slightly different alloy, desirable for castings subject to water pressures has been found. This alloy consists of copper 89 per cent; nickel 1 per cent; tin 6.5 per cent; zinc 2 per cent, and lead 1.5 per cent.

Two interesting papers were devoted to outlining the difficulties encountered in manufacturing two electric resistance alloys in this country, which previous to the war were obtained entirely from foreign sources. These alloys are manganin and constantan; the former consisting of 83 parts copper; 2.5 parts nickel; 14 parts manganese and 1.5 parts pure iron, and the latter 46 per cent nickel and 54 per cent copper. Complete success attended the efforts to make both alloys, and in the case of manganan an alloy superior to the foreign product was obtained.

The concluding session of the convention dealt largely with alloys of aluminum known as duralumin. These alloys are improved in physical properties by heat treatment as much as 40 per cent. Heat treating consists in heating the alloy to 500 degrees Cent., then quenching in water or oil. The full effects of the heat treatment are not obtained until the fourth day, the action being a retarded one. The causes underlying this change of structure formed the subject of one paper, and a reasonable explanation appears to have been arrived at, but is necessarily highly technical in character. These light alloys of aluminum are of great interest to all governments in connection with aircraft.

Gary Disproves Union's Charges

Tells Senate Committee He Believes in Collective Bargaining and is Willing to Let Workers Decide 8-Hour Day Question for Themselves, But Refuses to Compromise With Agitators—Urges Government Not to Interfere

WASHINGTON, Oct. 7.—Judge Elbert H. Gary's testimony last week before the senate committee on education and labor, which is investigating the causes of the steel strike, was exactly what might have been expected under the circumstances from the chairman of the United States Steel Corp., whose labor policy is so well defined and so well known.

Assailed on every hand by the charges of strike leaders and labor unionists, some of whom had preceded him on the witness stand, Judge Gary attempted to, and it is believed he did, prove the falsity of their claims by stating facts which the strike element, even in rebuttal was unable to overthrow. The steel executive's frankness and willingness to help the committee apparently impressed the senators who heard him.

Judge Gary minced no words, after he got warmed up to the subject, in declaring the issue of the strike is whether the open or the closed shop is to prevail. He declared it is immoral for a small minority of men to attempt to force a large majority of their fellow workers as well as their employers to bow to their will. He unequivocally declined to listen to any offer of arbitration or compromise. He repeated this several times to let it be thoroughly understood that he believes the solution of the present strike is for the government not to interfere, and to let the strike wear itself out. He said no one is better acquainted with the affairs of the corporation than the corporation officials and its employes and that as the attempt to organize the workers came solely from the outside he could not concede the right of outsiders to speak for the steel workers. Observance of law and maintenance of order is all he asks of the government.

Naturally, in such a discussion as the head of the Steel corporation was engaged in for more than seven hours, the topic of conversation had a wide range. During the digressions Judge Gary surprised his hearers by declaring he personally is in favor of some form of federal license for the supervision of business. This created as much astonishment as the admission by Chairman Kenyon, of the committee, that he personally favors the open shop. These two features of the hearing, aside from the unwavering declarations of the Steel corporation's policy in dealing with its employes and their right of collective bargaining, were of as much general interest as a sharp debate, which broke out at different times, between Judge Gary and Senator Walsh of Massachusetts, in the senator's attempt to get the steel executive to admit he had been wrong in refusing to meet the trade unions' committee.

Judge Gary said he refused to meet the union men for two reasons: First, that they represented only a very small minority of the corporation's employes, 15 per cent at the most; and second, that neither he nor the corporation deals with unions or their officers. He said a conference with union officials would in effect be a recognition of the unions. This, he said, would give the impression among the workers that the corporation itself was negotiating with the union. This, explained Judge Gary, might have a bad effect upon them when, as a matter of fact, the corporation will not enter into negotiations of any kind with trade unionists.

He made it very plain that the Steel corporation is not opposed to collective bargaining. He said the men have every right to speak for themselves individually or through committees. He denied that it is necessary for



GARY TESTIFYING BEFORE SENATE COMMITTEE

At the extreme left of the picture is John Reis, vice president of the Steel Corporation, next to him is Comptroller W. J. Filbert and at his left George K. Leet, secretary to Judge Gary. At the extreme right, is James B. Booner, Washington sales representative of the Steel Corporation.

nonenglish speaking workers to have a union to represent them, declaring they can speak through interpreters. He said neither he nor the corporation has nor will prevent the workers from joining unions.

Charges of cruelty and mistreatment, of murder and rioting, under approval of the corporation or its subsidiaries, were emphatically denied. Judge Gary declared false the statements to the effect that the corporation forced unbearable living conditions on its workers. He read into the record figures showing the millions spent in erecting modern homes, hospitals, schools, churches, playgrounds, etc., of the millions spent in health, safety, sanitation, welfare, etc., and of other millions going to employes through special compensation, pensions, industrial insurance, etc. He told of the opportunity given and accepted by the men to own stock in the corporation.

When asked if the strike was caused by his refusal to meet the union executives, Judge Gary said he doubted that. He believed the last attempt to confer with him was made only for effect. He told the senators, in the presence of the labor leaders, that their effort, including that of Samuel Gompers, to meet him was nothing new, that time and time again they had sought an audience with him. He said they knew the corporation's policy when they made their latest overtures and knew perfectly well they would not be received. He declared that while he has refused to meet men claiming to represent his employes, he has never refused and never will refuse to meet their real spokesmen. He cited instance after instance where grievances of the men, real or fancied, were brought before the corporation and the matter settled.

He pointed out how the corporation had time and again increased the wages of its men. How it had always shortened hours and added new labor-saving machinery when the necessity for it was shown. He said not once had the corporation or its officials refused to take any action, regardless of the cost, which was of practical benefit to the workmen. Wage increases, he said, were not made because profits of the corporation warranted them but because the cost of living required them. Not once, he declared, had any of the men asked for higher wages, and never had the corporation lowered the scale, going out of its way in times of depression, when there was not enough work for all the men, to see that their families did not want.

He pointed out that the corporation's employes did not belong to unions and did not want to because they were able to get all and more than the unions themselves asked for. He said men belonging to unions left them because their fellow workers were getting the same treatment without belonging to them, whereas the union members had to pay dues.

Judge Gary declared the strike unwarranted, typical of union tactics, full of attempts at coercion, threats, assaults. He said he did not blame the heads of the American Federation of Labor, but said he believed the federation is composed of two elements and that the radicals seem to be running the strike. He pointed out the evil to the country of the corporation being forced to recognize the unions, citing England's plight today, and declared the corporation would not compromise. He said he asked nothing in this strike except observance of law, maintenance of order and the right of employers to hire and the right of workmen to work regardless of whether the men belonged to unions or not.

Testimony of William Z. Foster, secretary of the strike committee, given before the senate committee after Judge Gary had testified, served but to strengthen the position taken by corporation's chairman. Excerpts from Foster's book "Syndicalism" were read to him and he was asked repeatedly to answer "yes" or "no" to the question of whether he still subscribes to the doctrines expressed in the book. Foster refused to answer point blank and finally stated the reason he refused was because he feared the correspondents might garble his statements. He declared that he would define his position if he could do so in privacy with the committee, but the committee did not desire to hold a secret session with him. The impression the committee obtained was that Foster has not changed the radical nature of his views, and this was intensified when Chairman Kenyon said to Foster:

"It has been charged that this strike is an attempt to overthrow our institutions; that revolutionaries are leading it."

"I'm willing to stand or fall on what I've done, not on what I think," replied Foster.

Michael F. Tighe, president, Amalgamated Association of Iron, Steel and Tin Workers, preceded Foster on the stand. In answer to a question as to why the strike was not postponed as President Wilson requested Tighe stated that there were a number of I. W. W. organizations among the men and if the trade unions had delayed the I. W. W. would have succeeded in strengthening their position.

"Then, in the last analysis the I. W. W. caused this strike?" said Senator Sterling.

"Oh, don't take that view," responded Tighe.

The committee virtually has decided to go to Pittsburgh to hear further evidence. Its present plans call for hearing from seven to ten union strikers to be named by Tighe, although it may hear from company officials and employes who did not go on strike.

No Reason For Strike, Says Gary

I WISH to state," said Judge Gary in testifying before the committee, "that there is no basic industry in this country, nor in the world in my opinion, which has paid larger wages to its employes than the United States Steel Corp.—and perhaps not as large—nor treated its employes with greater respect and consideration than the United States Steel Corp. and its subsidiaries, if as great.

"It has been charged that during the impending strike the subsidiary companies have been guilty of attacking and mistreating the strikers. There is not a vestige of truth in that statement. Three instances have been mentioned by a former witness and a photograph was displayed, I think, before this committee. It was said a woman was killed by representatives of the subsidiary companies. I have here a copy of that photograph. This photograph, I will say, is made like a postage stamp so that it can be stuck to another object, and it has been posted all over the country where the men would be likely to see it. At the top of the photograph it reads:

" 'Shall fiendish cruelty rule America? Mrs. Fannie Snellings shot, brains beaten out, body jumped on, danced on, and ghoulishly mutiliated by the steel trust's hellish crew. Read the New Majority.'

"Mrs. Fannie Snellings was shot at a place called Breckenridge, in Pennsylvania. We have no works there—no men there. If she was killed at that place, concerning which I have no contradiction to make, it was by people other than any one connected with any subsidiary of the United States Steel Corp. or with the corporation itself or with the knowledge of any of them."

At this point Senator Phipps introduced a certified copy of the finding of the jury in the coroner's inquest into the death of the woman. The finding was to the effect that she was a participant in a coal strike and not an innocent bystander as the labor leaders had told the committee.

An affidavit signed by Jefferson Davis Pierce also was introduced, declaring that the Steel corporation was in no way responsible for the death of Pierce's father, an organizer, in Monessen, Pa. It had been charged by union officials that the elder Pierce died as a result of injuries inflicted by men in the employ of the corporation. The son declared he was with his father at the time he was injured and he knew the injury was inflicted by an I. W. W.

"A witness testified to a number of deaths and injuries at Hammond, Ind.," said Judge Gary. "We had nothing whatever to do with the trouble or the strike at that place. The strike was by the employes of the Standard Steel Co., with which we never had the slightest connection or interest in."

Unskilled labor, the witness said, working 10 hours a day on the basic 8-hour day rate, gets time and one-half for time put in over 8 hours, or at a rate of 63 cents an hour, which makes $4.62 for 10 hours. This represents the cheapest wages, except for that paid to boys for light work, such as opening doors, etc., who are paid $3 a day. The highest wages, he said are paid to rollers, the greatest wage for this class of skilled employment being $32.56 a day. Rollers, as a usual thing, said Judge Gary, in contradicting a statement of Gompers', do not pay helpers. This wage, he later said, is paid to one roller but he explained that the average wage of rollers will run between $28 and $29 a day, he thought. The general average of wages paid to employes of manufacturing companies, exclusive of the executive, general and administrative officers, is $6.27 for ten hours, but the men are allowed to work only eight hours if they choose.

The average day wage for unskilled labor, he said, is $5 a day and for skilled labor $6.70 a day. He submitted a report made to him by an official of the corporation relating to wages and promotion of employes, showing this is done according to the merits of the workmen, allowing them to obtain advances in position and wages. In other words, said Judge Gary, in an open shop, men are advanced and given increased pay according to their merits. With reference to the 12-hour workday, he said 36 per cent of the employes of the corporation work on that basis, and 102,902 work 10 hours a day, the remainder working eight hours a day. In 1914, the average daily wage of employes of manufacturing companies, he said was $2.93 and in July, 1919, it was $6.23; employes of coal and coke units of the corporation were paid an average day wage of $2.74 in 1914, and $5.29 in 1919; employes at ore mines were paid an average daily wage of $2.75 in 1914 and $5.79 in 1919. The average daily wage of unskilled labor in 1914 was $2 as compared with $4.62 in 1919 for those working 10 hours. The average daily wages of the same kind of labor in 1914 was $2.40 for those working 12 hours as compared with $5.88 paid in 1919.

"This strike was inaugurated by union leaders, not by the men. The union leaders have been attempting all these years to organize the men. The men have not been seeking the assistance of some one to organize them."

Questions and answers in the examination of Judge Gary then proceeded as follows:

Senator Walsh—What union leaders? What are the names of the union leaders you refer to?

Mr. Gary—Well, the American Federation of Labor, I will say, generally speaking. Now, strikes were threatened from time to time. There have been a great many threats by union leaders, going back over quite a long period. They say that we obstructed their movements, we interfered with their program, and if we did, it was because we treated our men in such a way that they preferred to remain outside of the union.

Well, the strike was called. The threats had been made—we do not know how many. We have a great deal of hearsay testimony on that subject—statements made by families—of threats to burn their houses, to pull down their houses, to kidnap their children, to kill the work men, and so forth and so forth, and when the strike was called large numbers of men, if we believe them in their statements made at the time and that have been made since, remained away from their working places because they were afraid to go there, because they did not believe the protection fnrnished by the state or the cities or the sheriffs was adequate. After the protection had been furnished in many places the men have commenced to return to their shop. Now if you include all the men who remained away from their shops after the strike was called, I think it is a fair statement to say that not over 28 per cent of the employes of the subsidiary companies of the United States Steel Corp. were out and remained away, but if you limit that to the manufacturing companies where the strikes have actually been pending, it might have been as high as 40 per cent at one time.

Senator Sterling—Now, Mr. Gary, this figure of 28 per cent which you have stated, does that include those men who actually struck and those who remained at home because of fear for their safety?

Mr. Gary—Yes, it would.

Senator McKellar—Have you any figures of how many of the men have returned to work since the strike was called?

Mr. Gary—I have not got those figures exactly, but they are coming back every day. From the time the strike started up to the present time there has been a steady and progressive improvement.

"Union Control Means National Decay"

I SAW a statement that you could not arbitrate this question," Senator Borah, Idaho, said to Judge Gary, "because there was a moral issue involved. The whole country is interested in knowing what you consider that issue, so fundamental, to be."

"Senator, the open shop is the question," Judge Gary responded. "The right of a man to work whether he belongs to a union or not—the right of an employer to employ a man whether he belongs to a union or not.

"I think it's immoral for a small minority of organized men to force a large majority to yield to their wishes. If unions control industries in this country it means decay, the dropping of production. It means this country cannot keep up in the race with the world. It means the condition I fear England is in today."

Open Shop Essential to Prosperity

SENATOR WALSH—Do I correctly understand your position to be this: First, that you admit you declined to see these men; second, that you did not decline because of their official capacity, but because from your investigations, and inquiries, and your sources of information, you believed your workmen were content and satisfied?

Mr. Gary—You have given part of the reason, but not all.

Senator Walsh—Did you decline because they were officials of organized labor or because you did not believe they represented the true sentiments of your employes?

Mr. Gary—That is right—that they did not represent our employes. They were not authorized to speak for them, and we were absolutely certain they did not represent the sentiment of the large majority of our people, if any of them. Otherwise, we would have heard them, and, of course, if anything had been wrong, corrected it; as we always did. And, notwithstanding what has been said here, I want to say with emphasis here, Senator, we have made it our business to treat our men right.

Senator Walsh.—Did you know when you declined to see these men that it might lead to a strike?

Mr. Gary.—I didn't think that at all; it didn't occur to me; it was not suggested; although I knew these union labor leaders were trying to organize our company. But the question of a strike did not.

Senator Walsh.—Have you not learned since that some of these men did represent some of your employes, because some of your employes did go out on strike at their command?

Mr. Gary.—I have learned that a small percentage of our men at that time had joined the unions, and, in fact, I supposed that before. I have supposed all the time that there was a percentage of our men that belonged to unions. I believe that is true; and, of course, they had a right to belong to unions, and we make no objection to that; notwithstanding what has been said, we make no objection to it whatever; but—

Senator Walsh.—Was there any other reason for your refusal to see these men, to see whether they did represent your men or not, except that your personal investigation satisfied you that they could not enlighten you any about the condition of your workmen and their relationship to the company?

Mr. Gary.—Well, I want to be frank enough to say that it has been my policy, and the policy of our corporation, not to deal with union labor leaders.

Senator Walsh.—At any time?

Mr. Gary.—At any time. And for the reason we do not believe in contracting with unions. When an employer contracts with the union labor leaders, he immediately drives all of his employes into the unions. Otherwise, they cannot get employment. That is a part of the reason for trying to organize the men, and that is why we have been such an obstruction. I am not antagonizing unions; I am not saying that they have not a perfect right to form unions; of course, they have. But we are not obliged to contract with them if we do not choose to do so; and we think, because of many things that have happened—and some of them are happening today—that unionism is not a good thing for the employer or employe either one, any more than the man who does belong to a union should be prohibited from work in our shop.

Senator Walsh.—Is it not practically setting up an opposition to unions to refuse to meet and talk over labor conditions with their representatives?

Mr. Gary.—Well, I don't think so, senator.

Senator Walsh—Is it not a practical notice to every employe that the officials of the company do not recognize and do not want unions in their establishments?

Mr. Gary.—Well, I cannot concede that, senator, although I will concede that it is notice to the men that we do not contract with them.

Senator Walsh.—Yet you say that they have a right to unionize.

Mr. Gary.—Of course they have.

Senator Walsh.—What good is there in unionizing if their leaders or representatives cannot talk with their employers?

Mr. Gary.—I do not think the leader should undertake to talk with the employers of a few of the men in a shop when they know in advance that no contracts are made with the union labor leaders, and especially when the men themselves are not requesting it.

Senator Walsh—It is evident, Judge Gary, that 40 per cent of your men were interested, when they obeyed these men and went out on a strike afterwards, or some part of the 40 per cent that did go on strike.

Mr. Gary—In that way, yes.

Senator Wolcott—You recognize the wisdom and the reasonableness of affording recognition to the spokesmen of the men who are themselves working in the mill?

Mr. Gary—Yes, if a committee from any particular department, any one of them, desired to confer with any of our people in regard to any matters in the mills, they are welcome, regardless of the question as to whether they belong to the unions or not; but in this case, these union leaders were entirely outside men who were trying to organize the mills which were not organized when they had not been requested by the men to do so. They had nothing whatever to do with our business or our affairs, any more than a man would have to interfere with the—

Senator Walsh (interrupting)—But, Judge Gary, if they had nothing to do with your business or with your affairs, how could they have gotten the men to follow them?

Mr. Gary—I think about 10 per cent, possibly 15 per cent, have joined the union after a long campaign, and very many influences were resorted to in order to get them to sign up, and they called out all of the employes. That was a part of the plan to organize the mills, which they had not been able to do otherwise. They would not wait at the President's request because they were afraid if they did that they would all go out—I believe that has been stated and I believe that is true. When they were called out, of course, the 10 per cent or 15 per cent, if there was more than 10 per cent, would go out senator; of course, they would go out or else they would have to leave the union. When they went out and began their intimidation and all that sort of thing, a large number of other men stayed away and remained at home. That was a part of the plan. They expected that.

The Chairman—If this committee that came to see you had been composed of men who were actually working in your mills, even though they had been union men, would you have received them and talked with them, Mr. Gary?

Mr. Gary—Yes, unless they came specifically as union leaders and I do not know whether I would then or not. But they did not come that way and therefore I do not have to decide that question. It has not come up. However, let me say this, senator, if you will allow me, that if a committee had come to me and stated that they were dissatisfied with the subsidiary company's treatment and asked permission to see me and to present any matters whatsoever, I would not have inquired whether they belonged to any union or not. That would have been immaterial, entirely immaterial, if they would come as workmen from the mills.

Senator Borah—I saw a statement published in a paper in which you stated that you could not arbitrate this matter because of moral questions involved.

Mr. Gary—Well, Senator, the fundamental issue, as I conceive it, is the question of an open shop or a closed shop, the question of allowing a man to work where he pleases, whether he belongs to a union or not, and the right of the employer to employ a man in his shop, whether the man is a union man or not.

I believe that it is well known all over the world and is the opinion of a large majority of the people of the world that the open shop is essential to progress and prosperity,

Head of Senate Body Agrees with Gary

DURING the examination of Judge Gary, Senator Kenyon, chairman of senate committee on education and labor, conducting the senate's inquiry into the steel strike, agreed with the chairman of the United States Steel Corp., that the closed shop is undesirable from the standpoint of the country's welfare.

Judge Gary preferred not to answer a question as to whether President Wilson had asked him to confer with the trade union leaders, suggesting that he considered what transpired between him and the President a private matter unless the President should be willing to disclose the information. The following conversation then ensued:

The Chairman—Do you think that a question of strike in industries that affect two or three hundred thousand men is entirely a private question?

Mr. Gary—Certainly not.

The Chairman—Then why—

Mr. Gary—(interrupting)—I do not believe your question is germane to the inquiry that you have previously made, as I view it. I may be wrong, Senator. Certainly strike matters are of public interest, of the highest public interest.

I believe the sentiment of the country is largely in favor of the open shop as against the closed shop. I certainly believe that, and if I did not—if you could convince me to the contrary, Senator—

The Chairman—I agree with you.

Mr. Gary (continuing)—It would have a very great influence on our action, I assure you.

The Chairman—I agree with you as to the closed shop and the open shop. There is no quarrel about that.

Mr. Gary—You say you do agree with me?

The Chairman—I do. You are going to defeat the closed shop.

Mr. Gary—I am mighty glad to hear that, Senator.

and that the closed shop means less production, less work, higher costs.

I think, when you are discussing the question of the high cost of living, there is nothing more important to consider with it than that manufacturing establishments shall be allowed to operate unrestricted by labor unions or anybody else, depending upon the good will of the laborers, the workmen themselves, who of course are controlled by the treatment they receive, including wage rates and working and living conditions.

Now, as to the moral issue, I think it is immoral for a small minority of men organized, if you please, to compel by force a large majority to yield to their desires and to submit to their control, because if the industries of this country or any other were controlled by union labor, as it would be if these gentlemen are successful—and I am not dealing in personalities—it would mean decay, less production, higher cost, and this country could not succeed in its contest with other countries for the world's business. They would be in the condition that I fear England is in today, but which I hope it will come out of.

Now, I think when a few men, comparatively speaking, seek to impose their will to forcibly secure control of a business against the wishes of a large majority, that is immoral. That is my opinion of that. And here were outsiders, bear in mind, rank outsiders, who stated publicly away back at the St. Paul meeting, and it was testified here before this committee, that they were starting out to organize the steel industry, which they had failed to accomplish in the past. That was their view, not for the purpose of securing better pay, better conditions; none of the 12 points which have ben made since this strike was called, I think, none of those were mentioned. We have never heard anything about those 12 points. None of our men have made any complaint, but these men were forcing themselves into the steel business, to unionize it all and to control it, and what would happen if they got control of it? Is there any man here who has had any experience with organized labor who does not know? I can give you a good many instances—if you wish.

Believes in Collective Bargaining

SENATOR BORAH—If I understand your position is this: That even if these men had represented the unionized men in your employ, even if they had, beyond question, had credentials from the unionized men, yet, because they were unionized, and because they represented a union, you could not have dealt with them?

Mr. Gary.—You are wrong. I have not answered that. I have not intended to answer that. If they had come to me and said, what I believe to be the facts, 15 per cent, even if it had been 15 per cent—I do not think it was over 10 per cent from my information—but if they said "We represent 15 per cent of your men, and because we represent 15 per cent of your men, we should like to talk with you about that 15 per cent," I am not prepared to say that I would say "no" to that. I think I would have seen them.

We are not willing to do anything which we believe, after consideration, amounts to the establishment of a closed shop as against an open shop or that tends to do that. We stand firmly on the proposition, that industry must be allowed to proceed, untrammelled by the dictates of labor unions, or anyone else, except the employer and employes and the government. That is where we stand.

The Chairman—You concede the public have some interest in that, do you not?

Mr. Gary—The highest, senator. They are to be first considered. All private interests must yield to the public necessity and the public good.

Senator McKellar—When you spoke of the government you meant the people?

Mr. Gary—I meant the people by the government, of course.

Senator Borah—Without assuming to argue the question one way or the other, if labor can not deal with the great industries of the country collectively do you think that it will be practical or practicable or possible for labor to maintain itself and its rights, its wages and so forth, as against combined capitalism? Can labor deal with it without dealing with it in the same way, combined and collectively?

Mr. Gary—I think labor can deal collectively and it ought to be encouraged to deal collectively, and it ought not to be prohibited at any time from dealing collectively; but dealing collectively, in the form of committees, or however they themselves may decide, is one thing, and dealing collectively as insisted upon by the labor unions, which means that the union labor leaders shall decide all these questions, and shall represent the men, whether they are asked to or not, and will establish a basis for the closed shop, which would push out the individual voices of these men practically, is quite a different thing.

Senator Jones (of New Mexico)—It has been claimed there is such intimidation that the men in your employ will not form their own committees to present their grievances. Have you anything to say about that?

Mr. Gary—I have this to say: that there is no foundation for the assertion, Senator. In September, 1916, I wrote to the presidents of the subsidiary companies, and, as I have said previously, I announce the policies of our corporation always, and in my own way at various times.

Judge Gary then read a letter addressed to the presidents of the subsidiary companies in which he had said:

"Everyone, without exception, must be treated by all others, justly and according to merit, in accordance with out established custom. One of our workmen, or a number of our workmen, from any department, will continue to be received by the management to consider for adjustment any question presented.

"That is not a theory. That is a practice. That is a principle," said Judge Gary.

"We were not asked during the last few years to increase the wages of our men at any time, so far as I know—not a single time. We increased them over and over again. Why? Because we thought they were entitled to it, on the merits. We have always done that. We have stood for the highest wages, invariably. We have been the leaders in raising wages, and the last to decrease wages. In fact, I think we have decreased our wages but once since our company was organized in 1901, and we have increased them 10 or a dozen or 15 times, and as I have shown, they have trebled—and

Corporation Considers Representation Plan

IN TESTIFYING before the senate committee, Judge Gary referred to the employe representation plans adopted by various companies in the iron and steel industry and the demand of the labor unions that they be abolished. He said the corporation is studying the plans.

"If the plans prove to be successful, a benefit to the men, and satisfactory to the men, and they want them, we will probably adopt something of the kind," he said.

"We are consulting our men. We are not getting up a plan and putting it to our men and saying, 'This is the plan you must adopt.' We are not getting up a program and forcing it on our men. We try to find out what our men really want and then if it is practicable just put it into effect. We were not asked during the last few years to increase the wages of our men at any time, so far as I know—not a single time. We increased them over and over again. Why? Because we thought they were entitled to it, on the merits. We have always done that. We have stood for the highest wages, invariably. We have been the leaders in raising wages, and the last to decrease wages."

Judge Gary also said that if the majority of the men of their own volition expressed preference for the 8-hour day the corporation will endeavor to arrange for it.

on the merits. Consequently we have not had much if any complaint from our men."

Senator Phipps—It has been claimed by witnesses that the opposition of the Steel corporation to organized labor extended to that point where the corporation several years ago had made a large appropriation for the purpose of destroying the union. Have you anything to say on that?

Mr. Gary—I have. A witness stated that we had established a fund of from one million to twenty million dollars to drive out unions. We never established any fund or appropriated a penny for such a purpose.

Senator Walsh—Well, do you or do you not believe in the labor organizations?

Mr. Gary—If you mean whether I believe they are beneficial to the community—

Senator Walsh (interrupting)—To the workmen themselves.

Mr. Gary—Well, no—

Senator Walsh (interrupting)—No. That answers it. You do not.

Mr. Gary—No. that is your answer, not mine. Excuse me. I will not deny that labor unions may be a good thing in places and at times and to a certain extent as tending to protect labor, the interests of labor. I will not deny that, but I do deny that the universal practices of labor unions, labor unions carried to the extent which permits outsiders, agitators or anybody else to universally establish the closed shop, is inimical to the best interests of the employes and to the general public. Now, then, you draw your own conclusions as to whether that means I do not believe in it.

Considering Straight 8-Hour Day

SENATOR WALSH—Now, I suppose you will agree that there has been no force in America that has done more to shorten the hours of labor—

Mr. Gary—To do what?

Senator Walsh—To increase wages, to better living conditions of the workman, than organizations of labor.

Mr. Gary—I deny it positively and emphatically. I want to say that the United States Steel Corp. has been in the van all the time—

Senator Phipps—One important element there is whether or not the 8 hour day had been generally instituted where that was practicable, or not, or whether you were in 1914 adhering to the 12 hour day.

Mr. Gary—You mean whether we had adopted that? I do not remember exactly when we adopted the 8 hour basic day. The employes do not want 8 hours; that is, generally.

Now then I want to say, because this question has been up several times with reference to hours, I think there is a large portion of the public that believes in the eight hours, and on the ground that that is long enough for a man to work out of the twenty-four. I believe that, and I believe there are a good many employes—I do not say a majority or anything like a majority, but there are a good many employes—who believe the same thing. We are very carefully considering that question. Of course, if we should immediately limit the hours to eight and pay for the eight hours the same that these men are getting for ten or twelve, every employe would favor it, naturally, and an employe is always entitled to insist upon whatever he thinks he ought to have, and we might not always grant his request if it seemed to be unreasonable, but I want to say this, that, as a matter of policy and principal, if we can make it practicable to adopt eight hours throughout our works universally, and the men themselves are willing to accept that basis, we would be very glad to adopt it, for the reason, if for no other, that we think there is a strong public sentiment in favor of it, and I would not be put on record here or any other place as opposing the 8 hour basis if the men themselves want it and will accept it.

Gives Figures on Welfare Work

MR. GARY—Mr. Chairman, may I take the opportunity to put in just a few figures? I want to say that we have expended for residences to rent to our workmen, or in some cases, to sell to our workmen, if they desire to buy, $32,000,000, and have appropriated $7,000,000 more, not yet expended, but in process of expenditure.

Senator McKellar—On what terms do you sell to your workmen?

Mr. Gary—Any terms, almost, that they ask for. The rent which we are receiving on the houses we have provided has not been increased in amount since 1914. We have paid out for welfare work, from 1912 to the first six months of 1919, inclusive, $65,868,707.09.

Senator McKellar—Do you have a retiring scheme for old age?

Mr. Gary—Yes; a pension, we have. If a man has been in the service 20 years, I think it is, and is 70 years old, he retires on a certain percentage of his salary.

It is very liberal. Welfare, ten million, seven hundred and twenty-one odd thousand dollars; sanitation, ten million and some odd thousand; accident prevention, five million, nine hundred and sixty-one odd thousand dollars; relief for injured men and the families of men killed, twenty million, nine hundred and fifteen odd thousand; and the employes' stock subscription plan—that is, the 25 points for the stock in five years.

Mr. Lindabury—The Steel corporation's contribution?

Mr. Gary—Yes. The Steel corporation contributes 25 points on that stock to the employes, five points a year. The amount is $8,460,000. For pension fund payments, in excess of income provided by the permanent fund, which is $12,000,000, $4,000,000 of which Mr. Carnegie contributed, and $8,000,000 of which we contributed—that amount is one million, seven hundred and forty-eight odd thousand dollars.

Senator McKellar—Do you require any of your employes to pay anything on the retirement fund?

Mr. Gary—Nothing; no, sir, we do not.

Senator McKellar—The corporation pays it all?

Mr. Gary—Pays it all. Up to date it is large and increasing. That makes a total of $65,000,000; that is, from 1912 to the first six months of 1919, inclusive.

Senator Walsh—And you have your own workmen's compensation department?

Mr. Gary—Yes; and we inaugurated or adopted that before the state laws came into force.

The natural way to settle all industrial questions is to leave everyone open and free to act on the basis of natural laws and regulations, so long as every one carefully observes the requirements of the law. I believe if the attitude of the public is to insist, first, upon observing the requirements of the law, of maintaining absolute peace, of preventing breaches of law and unlawful disturbances, so that every man and every interest is protected, that this whole difficulty will work out. I think people ought to be allowed to make their own agreements, their own contracts with their men. If one side or the other is transcending the rules of propriety and decency, public sentiment will correct that evil. I believed that when at the beginning of our organization we started out to give the public information of our operations and our management—when we permitted government representatives to examine our books and our accounts from time to time, sometimes costing a good deal of money, and occupying a good deal of our time, I think the strongest force we have in securing and maintaining peace and contentment is an enlightened public sentiment.

Now, if it is desired and found necessary by such as you to furnish additional protection to one interest or another, to the foreigners or to Americans, of course, you can pass general laws for governing them. Speaking now only for myself, and not for the corporation—because while I have a good deal of authority and power, I use the same very sparingly, I am in the habit of consultation—speaking for myself, I would not object to a law for federal incorporation or license, which would result in the appointment of a disinterested commission, appointed by reason of their fitness, their qualifications,

who should determine when and how and under what conditions a corporation should receive its charter or its license, and should have supervision over the management of the corporation, including even the labor question; provided, however, that at all times the question of principles, the fundamentals having application as determined by the law, might be reviewed by a legal tribunal, by a court, a federal court with ample jurisdiction and authority.

I think the final decision of all these questions, industrial or otherwise, must be left to the courts of the country, those who are disinterested, who are impartial, who are selected because of their fitness to represent and carry into effect the principles of the constitution and the laws. I have no sympathy whatever with the statements which have been made by labor leaders in regard to the courts, where the courts have been condemned and criticized for their action, and I think it is as false as false could be—the claim that the action or the decisions of courts as a rule have been partial and influenced by one industry or one interest or another.

Testimony was given before the committee by a number of steel workers in the employ of the corporation. Threats, violence and methods of intimidation characterized the bolshevistic spirit of strikers when the steel strike began on Sept. 22 at New Castle, Pa., according to T. J. Davies, tin plate roller, who said he represented 5000 tin mill workers.

The witness said he makes $17 a day, eight hours a day, and five days a week. He said workmen either individually or as committees can take up their grievances with the management of the plant. Senator Kenyon asked if there were any evidence of bolshevism among the strikers.

"I think there is," he replied, "because the men said they would not need bosses any longer but that the mills would be run by committees."

A large, robust man, ruddy of cheek, high forehead, with a face that expressed intelligence, and a good natured and rather youthful appearance, Rufus Smith, of Welsh ancestry, born in England, gave evidence belying tales of horrible working conditions in steel mills. Mr. Smith is a stripper at the Homestead works of the Carnegie Steel Co., earning $23 a day, and working 12 hours, six days a week.

"You do not look as though you had lost your health," suggested Senator Kenyon.

Mr. Smith said that when he was "a young man" he had belonged to the union.

"Would you like to be affiliated with the union again?" asked Senator Phipps.

"No, sir," replied Mr. Smith.

"Would the men who are working with you?"

"I think not. As it is they can take up their grievances."

Foster Hedges; Tighe Also Testifies

IF WILLIAM Z. FOSTER, secretary of the national committee for organizing iron and steel workers, has changed his views and repudiated those expressed in his book on syndicalism, as he and other trade unionists have declared, his manner and his testimony before the senate committee investigating the steel strike did not leave that impression upon many of his hearers, including some of the committee. His first statements and his apparent ease when he took the witness stand led many to believe that perhaps he had renounced his early teachings and doctrine, but the minute he was questioned as to his writings, he hedged, charging that he had been grossly misrepresented in the press, and evaded "yes" or "no" answers to queries which were made in order to get his position accurately defined.

Foster went on the witness stand last Friday afternoon after the recess which followed the concluding testimony of M. F. Tighe, president of the Amalgamated Association of Iron, Steel and Tin Workers. Flanked by Tighe and President Samuel Gompers of the American Federation of Labor on one side and W. B. Rubin, counsel for the steel workers' committee on the other, the self-styled reformed member of the I. W. W. began his testimony. He admitted he personally knows little of conditions in the steel industry.

Foster's first evasion was an attempt to get Senator McKellar, who asked him for his views on syndicalism to let him answer a question he said Chairman Kenyon has asked him. Mr. McKellar, however, refused to be put off and demanded of Foster an answer as to whether he still believed what he had written about revolutions. Foster declined to make a positive answer, saying he would go into the full subject of the book providing the press would be excluded from the room.

That was recognized by the press and apparently by some of the committee, as Foster's first error in trying to maintain that he is no longer an I. W. W. So continuous was his refusal to answer because of his alleged fear of misconstruction in the press, that the senators tried to show him he needed to be set right before the country and that the more frank he was the better for his cause. Foster declined, however until Gompers, whose expression showed his displeasure with the witness, finally burst out with:

"They cannot say anything worse about you than they have said."

Of course, the press was not excluded, and Foster's answers became more evasive. At one time, asked if he still believed one of the passages he had written, he made the damaging admission that some parts of it he did, some parts he did not. Pressed by Senator McKellar he evaded an admission or a denial by simply saying what he had written could not be defended. Further on in his testimony he was questioned concerning his early belief that "the syndicalist should allow no consideration of 'legality,' 'religion,' 'patriotism,' 'honor,' 'duty,' etc., stand in the way of his effective tactics" in struggling "with capitalism."

When he was asked about his writings on "Labor Fakirs," written at the time he was an admitted I. W. W., Foster said he had acted under an unfortunate misunderstanding due to his narrow views. Since then, he said, he had changed his mind although he admitted the labor federation, like all institutions, had some crooks in it. While he was being questioned on this point, Samuel Gompers sat rigid, with his eyes fixed on the table. When Foster admitted he had no one particularly in mind as a "Labor Fakir," Gompers sat back, smiled, and wiped his face and forehead with his handkerchief. Senator Walsh, who has given indications of sympathizing with the labor side of the strike, leaned across the table and, as if to disarm those who might make capital of Mr. Gompers' action ,asked him if he felt relieved.

Tighe, in testifying before the committee, declared that the United States Steel Corp., instead of leading in advancing wages, as Judge Gary claimed, has lagged behind other corporations. He insisted that unions had never sought closed shops but "union shops."

"When the management signs a contract as to scales and working conditions, it is a union shop," he explained.

"The effect is the same as a closed shop, isn't it?" asked Senator Sterling, Republican, South Dakota.

"No," said Tighe. "We are not asking for closed shops and never have."

Tighe read an advertisement of 1909, credited to the United States Steel Corporation, which said:

"Men wanted—Syrians, Poles and Roumanians preferred."

"The gentleman's (Judge Gary) remarks about foreigners now," Tighe remarked, "are not well taken in view of that."

"Do you charge that from 1909 on there was a steady increase of foreign workmen in the steel company's mills?" asked Senator Walsh, Democrat, Massachusetts.

"Yes, I do," Tighe answered.

On Oct. 1, he said, 363,600 men were on strike.

"How many of those strikers cannot speak English?" asked Chairman Kenyon.

Tighe had no exact information, but said:

"To be frank about the matter, I think the largest percentage of them are foreign born.

"I wouldn't be doing justice to my organization," Tighe concluded, "if I failed to contradict Judge Gary's statements. The corporations have used the vicious element they complain of; I want to protest that neither our organization nor the American Federation of Labor has any vicious element in it.

"This strike was called because Judge Gary would not grant the request for a conference with the 24 unions. If he had done that there would have been no strike."

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

CARLETON S. KOCH, who succeeds A. O. Backert as president of the American Foundrymen's association, specialized in chemistry and metallurgy while obtaining a technical education in an engineering school and upon graduation entered the foundry industry as an employe of William Sellers & Co., Philadelphia. From this company he went to the Titusville plant of the American Radiator Co., as assistant manager. Later he became manager of the Franklin works and subsequently of the Sharon works of the American Steel Foundries. In 1906 he formed and became president and general manager of the Fort Pitt Steel Castings Co., McKeesport, Pa. Mr. Koch has been active in the affairs of the foundrymen's association, and is a member of the standing committee on specifications for steel castings to co-operate with the American Society for Testing Materials.

George J. Webster, general manager of the Charcoal Iron Co. of America, Detroit, has resigned, effective immediately. He has been made a member of the board of directors.

John F. Schurch, operating vice president of the T. H. Symington Co., Rochester, N. Y., has been elected vice president in charge of all western sales, with headquarters in Chicago.

Harry T. Calkins recently became affiliated with the sales force of the Tacony Steel Co., Tacony, Pa., Philadelphia. Mr. Calkins will be attached to the New York office but will sell in Connecticut exclusively.

C. E. Duncan, formerly department manager in the Bethlehem Steel Co., South Bethlehem, Pa., will superintend the erection of Kansas City's first steel rolling mill to be erected by the Kansas City Bolt & Nut Co.

D. F. Edwards has resigned as secretary and treasurer of the Gier Pressed Steel Co., Lansing, Mich., to become affiliated with the Willys Corp., at the Dusenberg plant, Elizabeth, N. J. He will be one of the active executives of the new Willys organization.

H. E. Townsend, formerly with the Carnegie Steel Co., at Clairton, Pa., and the Wickwire Steel Co. at Buffalo, N. Y., has been appointed general superintendent of the Franklin open-hearth department and mills of the Cambria Steel Co., Johnstown, Pa.

Capt. Henry A. Butler, who recently returned from Red Cross service in France, has resigned as manager of the order department of the Youngstown Sheet & Tube Co., Youngstown, O., to become president and manager



C. S. KOCH

of the Valley Investment Co., that city.

J. H. Siebert, who has been affiliated with the Liberty Steel Products Co., New York City, now is connected with the National Trading Co., Cleveland. Mr. Siebert is a son of William P. Siebert, assistant general manager of sales for the Carnegie Steel Co., Pittsburgh.

Charles E. Childs, secretary and treasurer of the Hampton Co., Easthampton, Mass., since its organization in 1900, has resigned and will retire from active business life. He formerly was vice president and assistant treasurer of the West Boylston Mfg. Co.

Howard R. Reese, formerly with the Standard Parts Co., Cleveland, and at one time attached to the sales department of the Carnegie Steel Co., Pittsburgh, now is sales manager of the Universal Steel Co., Bridgeville, Pa., manufacturer of tool and alloy steels.

Walter B. Lashar, president of the American Chain Co., Bridgeport, Conn., is chairman of the executive committee for Connecticut which will raise the state's quota of the Pilgrim Memorial fund. He also is a member of the national commission.

Charles R. Gabriel, consulting engineer of the E. W. Bliss Co., Brooklyn, N. Y., delivered a paper on power presses before a meeting of the pressed metal manufacturers in Cleveland, Sept. 22. Mr. Gabriel's paper was accompanied by lantern slides showing presses made by the Bliss company in actual operation in various plants.

Stephen A. Douglas, vice president and general manager of the Wilson Welder & Metals Co., New York, has been transferred to the New York office to take the position formerly filled by R. S. Drummond, who recently resigned. Mr. Douglas will continue his Cleveland and Detroit offices and will spend part of his time in Detroit.

Frank J. Lanahan, president of the Fort Pitt Malleable Iron Co., Pittsburgh, has been nominated by the nominating committee of the Railway Club of Pittsburgh, to serve as first vice president for 1919-20. The rest of the officers to be voted upon by mail ballot are as follows: President, Col. H. H. Maxfield, works manager, Pennsylvania railroad car shops, Altoona, Pa.; second vice president, Samuel Linn, master car builder, Pittsburgh & Lake Erie railroad, McKees Rocks, Pa.; secretary, J. D. Conway, Pittsburgh; treasurer, F. H. Stark, superintendent, freight car repairs, Pittsburgh & Lake Erie railroad, Pittsburgh; committee chairmen, executive, L. H. Turner, superintendent of motive power, Pittsburgh & Lake Erie railroad, Pittsburgh; finance, E. C. Sattley, general manager, Page Steel & Wire Co., Pittsburgh; membership, A. Stucki; entertainment, D. H. Amsbary.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

HORACE S. WILKINSON, who last week was elected chairman of the board of directors of the Crucible Steel Co. of America, Pittsburgh, to succeed Herbert DuPuy, was for a number of years president of the Halcomb Steel Co., Syracuse, N. Y., now part of the Crucible Steel Co. He has been a director and member of the executive committee of the Crucible Steel Co. for some time past. He also is president of the Toledo Shipbuilding Co., and of the Great Lakes Steamship Co., and serves on the directorates of the Barrett Co., New York, and several other companies. The directors also chose new directors classed as Wilkinson men to replace three of the DuPuy organization. The vacancy caused by the death of T. Hartlet Given was filled by Hamilton Stewart of the Harbison-Walker Refractories Co., Pittsburgh. It is expected that the annual meeting, Nov. 21, at Jersey City, N. J., will see other changes made. Headquarters are to remain in Pittsburgh.



HORACE S. WILKINSON

After his election Mr. Wilkinson issued a statement setting forth the policy he will pursue. He said that it would be the purpose of his administration to seek a closer relationship with the trade and with the company's employes and that the shareholders would receive their full share of the profits in periodical disbursements. There will be no change in the personnel of the officers and the main operating office will remain at Pittsburgh, with the eastern office at New York.

Herbert DuPuy, who has retired from the Crucible Steel Co. of America, Pittsburgh, which he had served as chairman of the board for the past 10 years, had been identified with that company since its formation July 21, 1909. As one of the owners of the Anderson-DuPuy Spring Works, with a plant at McKees Rocks, Pa., one of the constituent companies of the Crucible Steel Co., he became a director of the latter at organization, and served in this capacity until the death of David Park, to whose place as chairman of the board he was elected. Mr. DuPuy has extensive coal and coke interests and is the dominant factor in the Pennsylvania Rubber Co. with a large plant at Jeannette, Pa. He is a Lehigh university man.

H. C. Malsness, who for the past 14 years has been southwestern representative of the mill machinery department of Nordyke & Marmon Co., Inc., Indianapolis, has been placed in charge of the new office established at Kansas City by Sprout, Waldron & Co., Muncy, Pa., mill builders and furnishers.

A. G. Gibbons, formerly superintendent of tools and supplies for the Winslow Bros. Co., Chicago, has become affiliated with the Wetmore Reamer Co., Milwaukee, in the capacity of production engineer. Mr. Gibbons at one time was connected with the Cadillac Motor Car Co., Detroit and with the Brown & Sharpe Mfg. Co., Providence, R. I.

Charles T. Treadway, who for the past 19 years has been treasurer of the New Departure Mfg. Co., Bristol, Conn., has resigned effective Nov. 1, and will be succeeded by W. E. Wightman who has been assistant treasurer. Mr. Treadway is president of the Bristol National bank and holds the same position in the recently incorporated American Trust Co., as well as that of vice president in the Horton Mfg. Co., and these outside interests demand his entire time and attention. He also is president of the Bristol Realty Co., president of the manufacturers' division of the chamber of commerce and is largely interested in the Bristol Mfg. Co., and the American Silver Co.

Charles Eugene Schneider, head of Schneider & Co., Creuzot, France, is a member of the French economic mission which with similar missions from Great Britain, Belgium and Italy sailed from Brest for New York on Oct. 6. The purpose of the visit is to inform the American public of the economic situation of Europe and advocate financial co-operation between the powers during the period of reconstruction.



CHARLES EUGENE SCHNEIDER

W. G. Ziegler succeeds Mr. Coleman as plant engineer for the Pratt & Whitney Co., Hartford, Conn. Mr. Ziegler served as captain in the ordnance department at Washington during the war and prior to that was affiliated with the Columbia Graphaphone Co., Bridgeport, Conn. At one time he was plant engineer for the Marlin-Rockwell Corp., New Haven, Conn.

103 Stacks Banked in September

Last Month's Pig Iron Production Greater Than in July—Merchant Output Gains in Spite of Strike Handicap While Nonmerchant Tonnage Falls—163 Stacks Active

IN SPITE of the fact that the output of coke and anthracite pig iron was rather seriously affected by the iron and steel strike for over one-fourth of the month of September, production registered an increase over that of July. Many stacks were banked during the latter part of the month, but production in the first three weeks of September was at a higher rate than during the previous month.

MONTHLY PRODUCTION

	1919	1918	1917
January	3,306,279	2,403,227	3,159,839
February	2,947,555	2,318,242	2,649,935
March	3,088,023	3,209,996	3,255,813
April	2,474,374	3,273,355	3,328,061
May	2,107,729	3,451,884	3,413,677
June	2,114,028	3,316,148	3,260,234
Total 1st half.	16,037,988	17,972,852	19,067,559
July	2,424,212	3,408,584	3,337,442
August	2,742,081	3,378,479	3,238,970
September	2,402,011	3,413,223	3,140,742
Total 9 months	23,606,292	28,173,138	28,784,713
October		3,482,392	3,296,286
November		3,347,844	3,198,597
December		3,434,114	2,885,380
Total 2d half..		20,464,636	19,097,417
Grand total..	23,606,292	38,437,488	38,164,976

Production for the month shows a decrease of 9.5 per cent over August while August showed an increase of 12.5 per cent over July. The September total was 2,402,011 gross tons, a decrease of 340,070 tons from the August total of 2,742,081 tons. Daily production fell from 88,453 tons in August to 80,067 tons in September, a decrease of 8386 tons.

As might be expected from the nature of the present strike, the greatest effect has been on the nonmerchant or steel works blast furnaces. Merchant furnaces have been able to increase production in spite of the fact that some few were banked. Blast furnaces in the southern states, southern Ohio and eastern Pennsylvania were practically undisturbed by strike trouble and many of the furnaces in these districts are merchant producers.

Nonmerchant production fell from 2,175,517 tons in August to 1,806,679 tons in September, a decrease of 368,838 tons. On a daily basis, steel works output amounted to 60,222 tons, 9956 tons less than the 70,178-ton average of the previous month. Total merchant production for the month was 573,568 tons, a gain of 25,143 tons over the 548,425 tons of the previous month. On a daily basis, the September figure of 19,119 tons is a gain of 1428 tons over the August figure. This increase in average daily merchant production amounts to 8.09 per cent while the decrease in nonmerchant daily average amounts to 14.2 per cent.

Active stacks on Sept. 30 numbered 163 compared to 266 in blast on the last day of the previous month. This is a decrease of 103 stacks and the smallest number of furnaces in blast since December, 1914, when 154 furnaces were in operation. Of the 103 stacks put out of blast during the month, practically all were banked. Again significant of the effect of the strike on the steel works and nonmerchant producing furnaces, 94 steel works stacks were banked or blown out and 3 lighted compared to 17 merchant stacks banked or blown out and 5 lighted.

Total pig iron made during the first nine months of the year is 23,606,292 tons compared to 28,173,138 tons during the corresponding period of 1918 and 28,784,713 tons for the same period of 1917.

AVERAGE DAILY PRODUCTION

	1919	1918	1917	1916	1915
Jan.	106,654	77,523	101,930	102,319	51,323
Feb.	105,270	82,794	94,641	106,157	59,521
March	99,614	103,548	105,026	107,343	66,009
April	82,479	109,112	110,936	107,517	70,484
May	67,991	111,351	110,119	108,535	72,747
June	70,467	110,538	108,675	107,127	78,998
July	78,200	109,954	107,659	103,907	82,687
Aug.	88,453	108,983	104,483	103,156	89,510
Sept.	80,067	113,774	104,691	106,935	94,478
Oct.	.....	112,335	106,332	113,167	100,656
Nov.	.....	111,595	106,620	110,593	101,174
Dec.	.....	110,602	93,077	102,715	103,278
Av.	86,577	105,293	104,562	106,610	81,022

Spiegeleisen production dropped from 8179 tons in August to 4656 tons in September, a decrease of 3523 tons. Ferro production, however, increased from 9960 tons in August to 17,108 tons during last month, a gain of 7148 tons.

The Jones & Laughlin Steel Co. lighted its fifth Aliquippa stack on Sept. 8. This furnace was recently completed.

SEPTEMBER PIG IRON

States	No. of stacks	No. in blast last day of month: Sept.	Aug.	Total tonnage made: Merchant	Nonmerchant	Totals: Sept.	Aug.
Pennsylvania	160	79	99	171,092	813,329	984,421	1,091,802
Ohio	80	19	61	96,946	466,985	563,931	685,923
Alabama	45	27	25	120,249	75,003	195,252	174,080
Virginia	19	6	6	19,611	.....	19,611	22,159
New York	28	7	17	71,892	77,372	149,264	193,985
New Jersey	5	1	1	4,893	.....	4,893	5,575
Illinois	25	4	19	22,246	154,977	177,223	237,856
Colorado	6	0	3				
Indiana	16	4	16	25,749	164,478	190,227	231,267
Maryland	4	2	2				
Wisconsin	6	3	3				
Kentucky	7	3	2				
Tennessee	16	3	3	20,367	38,795	59,162	46,973
West Virginia	5	1	4				
Washington	1	0	0				
Georgia	2	0	0				
Texas	1	1	1				
Minnesota	3	2	3	20,523	15,740	36,263	34,322
Michigan	3	1	1				
Missouri	1	0	0				
Spiegel—All states	..	..	..	.....	.....	4,656	8,179
Ferro—All states	..	..	..	.....	.....	17,108	9,960
Totals	433	172	266	573,568	1,806,679	2,402,011	2,742,081

To Begin Seattle Mill

Erection of a new steel rolling mill in Seattle will begin within the next 60 days, according to announcement of the officers of the Western Rolling Mill Corp. The first building will be 73 x 300 feet and it is expected the first two units will be in operation in five to six months. The company has acquired a site at the southern limits of the city, comprising approximately 65 acres. The 9-inch and 22-inch mills will be the first units in operation. Bars, both rounds and flats and angles, will be the initial output of the new mill.

The Western Rolling Mill Corp. is headed by J. Johnson, who is a practical steel man from the East, as president; J. M. Price, vice president, and Frederick Bruhn, secretary-treasurer. Offices are maintained at 401-403, Pacific building, Seattle.

The Morgan Engineering Co., Alliance, O., has been awarded six cranes by the Aluminum Co. of America, for its new works at Marysville, Tenn.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

MACHINERY for paper making is to be manufactured in a plant to be established by the Dominion Bridge Co., Toronto, Ont. For some time the company has been devoting considerable attention to the production of special engines and machinery and sees in the present heavy demand for pulp and paper machinery an excellent opportunity to enter a new field. According to a statement recently issued, the company already has closed contracts with several Canadian paper manufacturers for machinery, built from designs worked out by the company's engineers to meet their requirements.

* * *

FREYN, BRASSERT & CO., engineers, Chicago, have been retained by the Koninklyke Nederlandsche Hoogovens en Staalfabrieken, The Hague, as consulting engineers, in connection with the blast furnace plant to be erected at Ymuiden, Holland.

* * *

THE Atlas Machine Co., Providence, R. I., is planning to open a branch plant in Springfield, Mass., for the building of the Shanklin rapid transfer machine, the invention of Ben. M. Shanklin, Springfield. The machine, was exhibited at the annual electric railway association convention in Atlantic City, Oct. 6 to 10.

* * *

ARNOLD J. HOLLING, steel manufacturer of Sheffield, Eng., is making a trip through Canada for the purpose of establishing a steel manufacturing enterprise. He has indicated Winnipeg as the point likely to be selected owing to the favorable location of that city for large operations. He will visit the Pacific coast before returning to England.

* * *

THE Allegheny Gear Works, Pittsburgh, which bought a portion of the vacant property at the northwest corner of Page and Chateau streets N. S., Pittsburgh, from the National Casket Co., also has obtained a purchase option for the entire plot, which is 129 x 284 feet. The contract for a fireproof building, 80 x 135 feet, of concrete, brick and steel sash construction, has been awarded to Toupel, Beil & Co.

* * *

STOCKHOLDERS of the Ohio Trailer Co., Cleveland, have voted to ratify recommendations of the directors for increased capital and a change of name. The company is to be known as the Ohio Motor Vehicle Co., and will expand its production to include pleasure cars. The capital increase authorized was from $300,000 to $1,000,000.

* * *

THE Westfield works of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., is working on steel fabrication for 10 ships to be constructed at the yards of the Chickasaw Shipbuilding Co., subsidiary of the Tennessee company. This material is receiving preference, in the transportation facilities being offered this district.

* * *

NEW agencies will be established in Norway and Sweden and possibly Denmark by the Norton Co., Worcester, Mass., for the sale of its products in 1920. A complete reorganization of the foreign sales department is under way at present, following recent extensive changes brought about through the consolidation of the Norton Co. and the Norton Grinding Co.

* * *

OPTION on about 1000 acres of land on the west side of the Cacapo mountains, Warren county, West Virginia, have been taken by the Harbison-Walker Refractories Co., Pittsburgh. The land has deposits of hard gannister rock. Engineers of the company now are conducting a survey and in the event of a favorable report the option will be exercised and operations started at the new site.

* * *

INCORPORATED for $250,000 in Ohio, a branch of the Lumen Bearing Co., Buffalo, is preparing to build a brass casting plant in Youngstown, O. It will manufacture bronze bearings. The plant will include the following departments: smelting, refining, brass, bronze and aluminum foundries, brass machine shop, tool room and grinding room. H. P. Narrock, formerly of Youngstown, is general manager and W. H. Barr is president.

* * *

CONTRACT recently closed by the Bath Iron Works, Bath, Me., calls for a steel cargo carrier for Crowell & Thurlow, Boston. The vessel will be 410 feet long, 55 feet beam, 34 feet 6 inches deep, and will have a deadweight capacity of 9500 tons. It will be the largest ship ever built at the Bath yards, except for the navy, net displacement being between 13,000 and 14,000 tons. The 10,000-ton steel cargo steamer ARYAN will be launched early in October from the yard of the Texas Co., Bath, Me.

* * *

TWO 25,000-kilowatt steam-driven turbine units have been ordered from the Westinghouse Electric & Manu- Co., East Pittsburgh, Pa., for shipment to Japan. When installed, they will complete the largest steam-driven electrical installation in the Far East, now being erected at Osaka, Japan, for the Osaka Electric Light Co. This company furnishes light and power to street railways, steel plants, shipyards, copper refining plants, paper mills, electro-chemical installations, etc. These two new units will bring the capacity of this plant up to 100,000 horsepower.

* * *

ONE of the largest foundry and machine shops in Ohio is being erected for the Toledo Machine & Tool Co., Toledo, O., on a 22-acre site. Four buildings, including a foundry, boiler and engine houses, and sand storage building now are being constructed. Elevated railway tracks, coal pits for storing several thousand tons and a large crane are being installed. Approximately $400,000 is being expended for the first units but eventually much more will be spent. The new plant is to be used for the manufacture of heavy tools and machinery while the old plant will be utilized for smaller tools and machines.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

WILLIAMS & CO., INC., sole distributors in the Pittsburgh district of Shelby seamless steel tubing and of monel metal, as well as large purveyors of nickel rods, castings, and wire and brass rods, tubing and pipe, now are located in their new quarters, which comprise a general office and warehouse building, fronting on Pennsylvania avenue, that city, and running almost an entire block. This building, purchased several months ago by the company, has been entirely rehabilitated and enlarged and houses the company's large stock and a number of motor trucks and automobiles.

The Williams company, in 12 years has grown to one of the largest distributing companies in Pittsburgh. It was incorporated June 15, 1907. It has specialized in Shelby seamless steel tubing, a product of the National Tube Co., and carries in stock about 50 carloads of this material. The company's stock of steel tubing, though chiefly of rounds, includes hexagons and squares. Monel metal, another of the company's specialties, is carried in rods, bolts, nuts, washers, castings, wire, nails, etc. The company also handles brass rods in rounds, hexagons and squares in various sizes. Two booklets, entitled "Shelby Seamless Steel Tubing," and "Monel Metal," are being distributed by the company.

* * *

INCORPORATED at $75,000, the Algyre-Gilmore Machine Tool Co., will operate a blacksmithing and machine shop at Biggs, Okla. Joe T. King, C. L. McMahon, W. C. Wangerine, George A. Gifford, R. G. Rapp, Charles Gilmore and H. D. Algyre made up the board of directors. Mr. Algyre was elected president and Charles Gilmore, secretary and treasurer. Ground for the plant has been broken and machinery and equipment is on the way. It is expected that operation will commence about Nov. 1. The company will make a specialty of repair work pertaining to the oil industry.

* * *

THE Fabricated Ship Corp., Milwaukee, which laid its first keel on Nov. 5, 1918, launched its first vessel on Sept. 12. It is a mine-sweeper type and one of 13 steel ships being constructed for the Emergency Fleet corporation. The first vessel was christened the MAJ. GEN. JOHN P. STORY. Three more hulls are ready for launching and the keel of the sixth was laid when the STORY vacated the berth. The Milwaukee yard will do the complete work on the vessels, including the installation of engines and machinery. The STORY will be ready to turn over to the government to go into commission about Oct. 15.

* * *

A NEW company has been formed to conduct the construction business for the Minneapolis Steel & Machinery Co., Minneapolis, which formerly was handled by the Twin City Co. It is known as the Minneapolis Steel Construction Co., and its officers are A. M. Burch, president and Guy P. Johnson, secretary. It will handle all steel erection, the construction of buildings, bridges, water towers and tanks, barges, boats, elevators, etc., while the Twin City Co. will act as a sales company for all the products of the Minneapolis Steel & Machinery Co. In the reorganization of the Twin City Co. and the establishment of the construction company, it was necessary to change the personnel of the management. The new officers are: President, George L. Gillette; vice president, N. B. Nelson; secretary, E. A. Merrill; and treasurer, Cal. Sivright.

* * *

A CHARTER authorizing $1,000,000 capital has been granted the Shafer Bearing Corp., Chicago, which has just been organized to manufacture a full line of roller bearings for passenger cars, trucks, tractors, etc., on an entirely new principle, a bearing automatically self-aligning. At the meeting just held Julius E. Shafer, formerly secretary of the Makutchen Bearing Co., was elected president; George D. Bailey, of the George D. Bailey Co., Chicago, was made vice president; C. F. Ferguson, at one time sales manager of the Imperial Wheel Co. and more recently vice president and general manager of the George D. Bailey Co., was elected secretary and treasurer. These officers will serve for a year.

Otto Cullman, president of the Cullman Wheel & Gear Co., Chicago, was elected chairman. The new corporation is really an enlargement of the George D. Bailey Co. and has been organized to take care of the heavily increased business of the older institution. Its main offices will remain in Chicago, but branches are being opened in New York, Minneapolis, Kansas City and other distributing centers.

* * *

DETROIT Hexagon Drill Co., manufacturers of drills, has moved its offices from the Free Press building to the large structure at Woodward and Atwater streets where the plant is located, upon which a lease recently was taken. The building is four stories and basement with a space of 10,000 feet to each floor. The occupancy of the larger quarters has ben necessitated by the large increase in volume of business.

* * *

FRANK MOSSBERG CO., Attleboro, Mass., advises that Frank Mossberg no longer is connected with the company. This is to correct a statement in the Sept. 25 issue of THE IRON TRADE REVIEW to the effect that the Mossberg Pressed Steel Corp., of Attleboro, now being financed would be managed by Mr. Mossberg. Walter I. Tuttle at present is president of the Frank Mossberg Co., Silas Tuttle, vice president, Everett L. Ford, secretary, and Frank T. Chase, treasurer.

* * *

THE first steel barge to be built by the United States government at the head of navigation for the upper Mississippi traffic was launched into the waters of the St. Croiz river at Stillwater, Minn., Sept. 27. This barge is one of six being manufactured by the Minneapolis Steel & Machinery Co., at its fabricating plant in Minneapolis. The barges are being leased by the government for the purpose of carrying iron ore from Minneapolis and St. Paul and St. Louis for bringing back coal. Each barge is 300 feet long by 48 feet wide and contains 500 tons of steel. The unloaded draft is 18 inches.

Wall Street Sees Strike Failure

Steel Shares Active in Face of Crisis—Judge Gary's Estimate of the Valuation of Steel Corporation's Assets Excites Interest—Exports' Gain Complicates Exchange Problem—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

WALL street's display of strength in the face of the present industrial crisis is one of the most cheerful signs of the existing situation. The stock market in the past has proved its powers of prognostication and the marked activity and substantial advances of steel shares is accepted as the judgment of the financial community that the courageous fight for the open shop and against radical union domination of industry is as good as won.

Judge Gary's interesting statement last week before the senate committee that the property valuation of the corporation reaches the immense sum of $2,250,000,000 has attracted much interest in financial circles. The corporation has preferred stock outstanding to the extent of $350,000,000; common stock of $505,000,000 and bonds of about $650,000,000, making $1,500,000,000 in all.

"Our properties are actually worth $2,250,000,000," Judge Gary told the committee. "That is susceptible of demonstration. There is no question about that. The properties could not be replaced for any sum, and on that basis the amount of net profits that we are realizing is very moderate; on the basis of our capital stock it seems perhaps somewhat large, but our properties are worth very much more than our capital stock."

This estimate evidently does not include the corporation's several hundred millions of working capital. On the basis of the property investment the net profits of $167,562,280 in 1918 represented an earning of but 7 per cent. A conservative estimate of the book value of the common shares would place it at not less than $400 a share. The annual report of last year placed property account at $1,871,261,897.

Attention again has been drawn to the foreign trade situation involving the problems of international exchange and adequate export credits, by the extraordinary record of exports from the United States for August and for the year ending with August. The month shows a gain in exports over July of $75,579,000, while imports declined $22,000,000. The August exports were higher than any other month of the entire 12 with the single exception of the record-breaking month of June when the total was $343,999,609.

For the year the country's trade with foreign nations reached $10,648,000,000 with a favorable balance of $4,182,249,436 against an excess of exports of $3,126,024,089 for the corresponding period last year. Exports for the year were $7,415,098,901 as compared with $6,092,779,045 in 1918. Although June was the largest export month, the high level of imports was reached in July with a total of $434,999,609.

The continued tremendous outward flow of goods from the United States speaks eloquently of the need for goods in Europe and other parts of the world—a need so overwhelming that no barrier of prices or of exchange premiums appears sufficient materially to reduce the demand. It has been freely predicted that the nation's export trade is doomed if the exchange situation is not mended by a broad-scoped plan for advancing credits abroad. But month after month slips by, each one leaving astounding records of foreign shipments, notwithstanding the lack of such a plan. Credit arrangements now are confined to individual initiative.

The slump of exports in July was generally believed to reflect the influence of the exchanges but the recovery in August indicates that the July reduction was largely the result of shipping difficulties growing out of the harbor strike. A decrease in the September volume of exports is probable in view of the tie up of boats bound for British ports due to the railroad strike in Great Brtain.

Bankers are continuing to urge the necessity of advancing ample credits to Europe to permit industrial rehabilitation in the war-ridden nations, but a note of caution is creeping into the discussions of the situation. There is a feeling that some of the European countries are too dilatory about instituting the fiscal reforms which must be put into force if Europe is really to become a good banking "risk." These reforms have mainly to do with the provision of adequate taxation which will take care of internal debts and some arrangements for the deflation of paper currencies. There seems to be prevalent in Europe, with the possible exception of Germany, an unwillingness to face the cold facts of the situation left by the war. The people are living in an anesthesia of an immense paper money inflation which is inducing idleness and extravagance and the governments are reluctant about awakening them to the necessity of getting down to work, practicing economy and beginning the task of paying the great debt of the war.

The exchanges are in a state of nervous fluctuation and will continue so until the situation becomes settled, a situation encouraging speculation.

Last week the announcement that Secretary Glass was considering the question of adding the interest on the nearly $10,000,000,000 of European credits to the debt, strengthened the exchanges. It is announced also that he is discussing with the European governments the problem of conversion of the debt now in the form of demand obligations into more permanent form. From the signing of the armistice to Sept. 22 the government has advanced $2,229,502,000, advances averaging $280,000,000 a month during the first seven months.

British Sheet Producer Changes Ownership

One of the largest deals in the British iron and steel trade in recent years has been carried through by the acquisition of the firm of John Lysaght, Ltd., iron and steel manufacturers by H. Seymour Berry, of Merthyr Tydvil, D. R. Llewellyn and Lady Rhondda. The amount involved is between £4,000,000 and £5,000,000. Lady Rhondda is the widow of the late Lord Rhondda, of food control fame, and the owner of enormous collieries in South Wales, while her associates, already, have large iron and steel interests in South Wales.

The Lysaght firm was established in Wolverhampton, the heart of the Black country in 1857 and many years ago migrated to Newport. The firm, in the meantime, had built up an enormous business in galvanized

sheets, and for years has been a large producer for oversea customers, particularly Australia, New Zealand and Canada. Since its establishment in Newport, the firm has made great progress and has greatly extended its mills. In addition to Newport there are works at Scunthorpe, Bristol, and Broken Hill, Australia, while shipping interests are represented by subsidiary companies operating between Great Britain and Australia. Under the new control, Seymour Berry becomes chairman and Mr. Llewellyn deputy chairman. W. R. S. R. Lysaght and D. C. Lysaght remain directors. The board will also include Viscountess Rhondda.

Auto Activity Shown

Conclusive proof of the tremendous activity of the automobile industry is to be found in the report of the General Motors Corp., for the first six months of 1919, showing for that period a surplus, after charges, of $29,125,942—a gain of $17,408,462 for the same item in the corresponding period of 1918. The balance sheet of the company shows current assets of $233,468,273 and a net working capital of $161,860,417 an increase of $37,822,212 over the working capital as it stood at the end of 1918. This fact is largely due to new financing operations. Another conspicuous feature of the balance sheet is the fact that the cash on hand amounting to $74,799,443 is more than equal the current liabilities of $71,607,856. Net profits for the six months were $48,900,800 against $26,078,120 in the first six months of 1918. Federal taxes are estimated at $17,706,000 against $13,409,000. Preferred dividends were $522,392 and debenture dividends were $943,653.

Plans New Stock

A proposal to issue an additional $1,000,000 of preferred stock will be considered by the stockholders of the Truscon Steel Co., Youngstown, O., at a meeting held Oct. 7. In his letter to stockholders President Julius Kahn says the additional capital is required by the exceptional increase in the company's business. The Truscon Steel Co. is a producer of fabricated building products.

Vanadium Corp. Elects

At a meeting of organization of the Vanadium Corp. of America, the following officers have been elected: President, J. Leonard Replogle; vice president, Merrill G. Baker; treasurer, Lawrence K. Diffenderfer; secretary, Edward F. Nickerson. The directors were elected as follows: Charles M. Schwab, Mr. Replogle, E. R. Tinker, Allan A. Ryan, Ledyard Cogswell, T. Coleman du Pont, Harry Payne Whitney, and Joseph De Wyckoff. Hereafter the home office of the company will be in New York. It is understood that four more directors will be elected in the near future. Mr. Baker is to sail shortly for the company's mine in Peru, where he will supervise the installation of new machinery. This is expected to increase the output of ore.

Financial Crop Ends

AMALGAMATION with the General Motors Corp. of the Dayton-Wright Airplane Co., and the Dayton Metal Products Co. and the Domestic Engineering Co., large concerns of Dayton, O., has been announced. The deal is said to involve $25,000,000.

* * *

The Allied Steel Products Co., Aurora, Ill., has increased its capitalization from $2500 to $20,000.

* * *

Judge Maltbie has denied the application for the removal of the receivers of the Groton Iron Works, Groton, Conn.

* * *

The Hawthorne Mfg. Co., Inc., Bridgeport, Conn., maker of metal goods, has increased its capital stock from $200,000 to $297,000.

* * *

The Spicer Mfg. Co., Plainfield, N. J., has purchased the Parich Mfg. Co., Reading, Pa., and its big branch in Detroit. Charles A. Dana is president of Spicer Co., which makes automobile frames.

* * *

The Glasser & Quinn Mfg. Co., 1018 West Randolph street, Chicago, manufacturer of sheet metal working machinery, has bought the business of I. Blumberg & Co., which will be enlarged and continued.

* * *

The Worthington Pump & Machinery Corp. has taken over the Epping-Carpenter Pump Co., Pittsburgh, the plant of which hereafter will be known as the Epping-Carpenter works of the Worthington Pump & Machinery Corp.

* * *

Chandler Motor Car Co. directors have declared a 6 per cent quarterly dividend placing the stock upon a 24 per cent annual basis. They have also passed a resolution authorizing stockholders to be given three shares of new no par value stock for every share of the old issue held. It was also recommended unanimously that the existing authorized capital of 100,000 shares be exchanged for an authorized capital of 300,000 shares without nominal or par value.

Reduced Supply

Continues in Coal By-Product with Deliveries Carefully Regulated

New York, Oct. 6.—With improvement in the steel strike stiuation, deliveries of benzol are becoming somewhat better. Nevertheless, production still is well under normal, and dealers are exercising the utmost care in doling out their supplies. Despite the present tight situation, prices are unchanged. This may be accounted for in part by the fact that the consensus of opinion is that the present curtailment of production will be of short duration. The market on pure benzol is quoted at 24 to 29 cents, producers' plant, for spot and contract orders, and 90 per cent at 22 to 24 cents. Toluol and solvent naphtha, also affected by the strike, are scarce, with prices very firm at 25 to 30 cents and 22 to 27 cents, respectively.

Naphthaline continues active. The dye industry is a good buyer and drug trade is buying more heavily on its next year's requirements. At present there is little spot material available. Virtually all of the larger sellers, are sold up five and six weeks in advance, this being especially true of flakes. Contracting for next year is being done at the existing levels of 6½ to 7½ cents for flakes, and 8½ to 9½ cents on balls. The spot market is the same.

Although the foreign movement of sulphate of ammonia continues good, actual buying for export is not large. This fact is accounted for in part by the scarcity of spot supplies. Several sizable inquiries are going begging for this reason. The market on what little spot material there now is available is around $3.40 to $3.65. Contract material is held at $3.25 to $3.40.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Tuluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

Obituaries

PHILIP HAMILTON McMILLAN, president of the Detroit & Cleveland Steam Navigation Co., Detroit, who died at his home at Grosse Point, that city, Oct. 5, from heart disease, was at one time president of the Detroit Seamless Steel Tubes Co., and vice president of the Michigan Malleable Iron Co., Detroit. At the time of his death he was vice president of the Detroit Free Press Co., and vice president and treasurer of the Packard Motor Car Co. He was one of the most prominent financial and industrial figures in Detroit, where he was born in 1872. Mr. McMillan obtained his education at Phillips academy, Andover, Mass., and later received the degree of A. B., at Yale. He also studied law at the Harvard law school. He first practiced law in New York City from 1897 to 1898 and the following year removed to Detroit. For about six years he was engaged in the general practice of his profession but in recent years his many corporate connections have demanded most if not all of his time.

Arthur J. Storm, New York representative of the Dayton Foundry Co., Dayton, O., died of heart disease on Sept. 23 at his home in Flatbush, Brooklyn. Mr. Storm was 46 years of age.

Charles Joseph McMyler, who for many years has been a director of the McMyler-Interstate Co., Bedford, O., crane and heavy equipment manufacturer, died Sept. 23 at his home in Cleveland Heights, Cleveland, of heart disease. Mr. McMyler was a son of John McMyler, founder of the McMyler company and retired from active participation in its business about three years ago.

Capt. Wesley C. Richardson, perhaps the oldest manager of lake vessels and one of the best known men connected with the trade, died at his home in Cleveland, on Oct. 2, at the age of 80. For over 50 years he had been closely identified with Great Lakes activities. For 15 years from 1880, he traveled for Briggs, Hathaway & Garretson, Cleveland, wholesale grocers, and in 1895 became a member of the firm of H. J. Webb & Co., vessel brokers and managers. Upon the death of Mr. Webb, the company's name was changed to W. C. Richardson & Co. Capt. Richardson also was head of a number of companies which operated about 15 vessels on the lakes and he also was a manager of a number of other bulk freighters.

Col. H. A. Marting

an Appreciation by

James A. Green, President
The Matthew Addy Co., Cincinnati, O.

COL. H. A. MARTING, president of the Marting Iron & Steel Co., who died Sept. 27, was born Sept. 17, 1850, being a native of Greenup county, Kentucky. His parents, however, removed to Scioto county Ohio, when he was a babe, and Colonel Marting's entire life and business activities were spent in southern Ohio. He grew up a boy on a farm, receiving the education which Ohio farmers' sons received in the fifties and early sixties of the last century. He had remarkable enterprise and imagination; he was not born to be circumscribed by the limits of the farm. He saw the commercial possibilities that lay about him, and his initial business enterprise was cutting ties for the railroad which ran up the Scioto valley. This proved a success, and almost as a boy opened a general store at Gepharts station. His active and restless spirit demanded a larger sphere of activity, and in 1873 he moved his store to Ironton, O. At that time a rolling mill was operated in Ironton which had had a checkered career. Colonel Marting retired from his mercantile business and purchased this rolling mill, forming the Eagle Iron & Steel Co., which later on was absorbed by the Republic Iron & Steel Co. The Eagle venture was remarkably successful. It demonstrated beyond any question Colonel Marting's remarkable ability and his genius for management. The period in which he operated the plant was not better or worse than the period in which the plant had lost money hand over fist for its owners, but with Colonel Marting at its head it proved to be a veritable gold mine.

The large return from the Eagle Iron & Steel Co., placed him in a position to purchase what was locally known as the "Big Aetna" property. This was a furnace which had been built on the bank of the river, and which inaugurated some new ideas. At the time it was constructed it was the largest stack in America, but it had never been operated successfully. This was the beginning of the Marting Iron & Steel Co., which since has absorbed the Lawrence Furnace Co. and the Ironton Iron Co., with a daily output when all stacks are blowing of 1000 tons. The Marting Iron & Steel Co. today is one of the soundest and most progressive independent furnace companies in America.

Colonel Marting was not a believer in placing all his eggs in one basket. He was interested in practically every industry in Ironton, and at his death he was director and a large stockholder in more than 25 business enterprises in his home city. He took an immense pride in putting Ironton, as it were, "on the map." His last public service was to build the Hotel Marting. Ironton for a long time had lacked proper hotel accommodations. Colonel Marting was the main spirit in forming a company which has just completed a hotel which is thoroughly modern and which would be an ornament to any city five times the size of Ironton.

He was a devoted member of the Methodist church, and was a liberal donor to the charities of that denomination. But he was not narrow-minded in his philanthropy, as his gifts to causes needing assistance were not bounded by any mere church lines. Colonel Marting was the soul of generosity, and one of his friends told the writer that he was the only man he ever knew who would borrow money in order to make a contribution for some deserving cause.

Success did not in any way spoil him; he was always the same humble, unassuming, approachable man that he was at the beginning of his career. He was easily the first citizen not only of Ironton, but of that part of southeastern Ohio. He had achieved a most conspicuous business success, and more than that, by his goodness and openhanded generosity he had endeared himself to his fellow citizens. In losing him Ironton particularly has suffered an immense loss, and the iron trade has lost one of its leading figures.

His career reads like a romance, and it is a modern romance for a farmer's boy to rise from the farm, without any advantage except the advantages of the opportunity which America offers, and to attain to the truly great and remarkable heights of success at which Colonel Marting arrived.

Some Tool Buyers Defer Action

Business of Equipment Sellers in West is Not Seriously Affected by Steel Strike—From Pittsburgh East, However, More Orders Are Held up—Newark, O., Stove Manufacturer Issues Large List

ADMITTING of some interruption of their business by the steel strike, machine tool dealers still find the current demand sufficiently heavy to keep them busy. The flow of inquiries in the Middle West is practically unhindered and sellers take courage as they view much evidence of big business under the surface ready to come forth when the air has been cleared of labor disturbances. As a deterrent the strike has been more effective in the east than anywhere else, however, although inquiries and orders for single tools or small lots are placed from time to time. In Pittsburgh many of the steel companies had entered or had given notice they would enter the market for equipment and action in these connections has been deferred. In the Cleveland, Dayton and Detroit territories much business continues to come from the automotive industries, although one of the largest lists of the week is issued by a stove manufacturer, the Wehrle Co., Newark, O. It calls for 26 machines. Another fair sized list comes from the Ohio Colleries Co., Toledo, O. The American Steel & Wire Co., Cleveland, and several Akron companies have postponed action on tool requirements until the strike is settled. Several inquiries for tools and cranes are being received from Canadian companies.

With inquiries and orders being received on a restricted scale in the east, tool manufacturers in the vicinity of Boston, report a larger inquiry from textile machinery manufacturers. Dealers in New York are working upon several tentative export inquiries. The largest is from C. H. Coulier, New York City, for about 125 machine tools as well as eight cranes. Other inquiries for shipment abroad are current.

Companies who purchased cranes recently, include the Cerro de Pasco Copper Co., New York, which bought four and is inquiring for two more; the National Silk Mills, New Bedford, Mass., the Duquesne Light Co., Pittsburgh; the Standard Oil Co., Providence, R. I.; the Sligo Iron & Steel Co., Connellsville, Pa., the Niles Forge & Mfg. Co., Niles, O.; the Youngstown Boiler & Tank Co., Youngstown, O., and the McKinney Steel Co., Cleveland.

The largest locomotive crane inquiry current in the east is one for five cranes from the Hugh Nawn Contracting Co., New York City. The E. W. Bliss Co., Brooklyn, N. Y., has not as yet bought the two cranes it requires for Hastings, Mich., and in Pittsburgh, inquiries on which no action has been taken come from the Cambria Steel Co., Johnstown, Pa., and the Carnegie Steel Co., for its Homestead and Edgar Thomson plants.

Business from diversified sources is rolling up a heavy total in Chicago, where the railroads are making up their lists, against the time when they shall be returned to private owners.

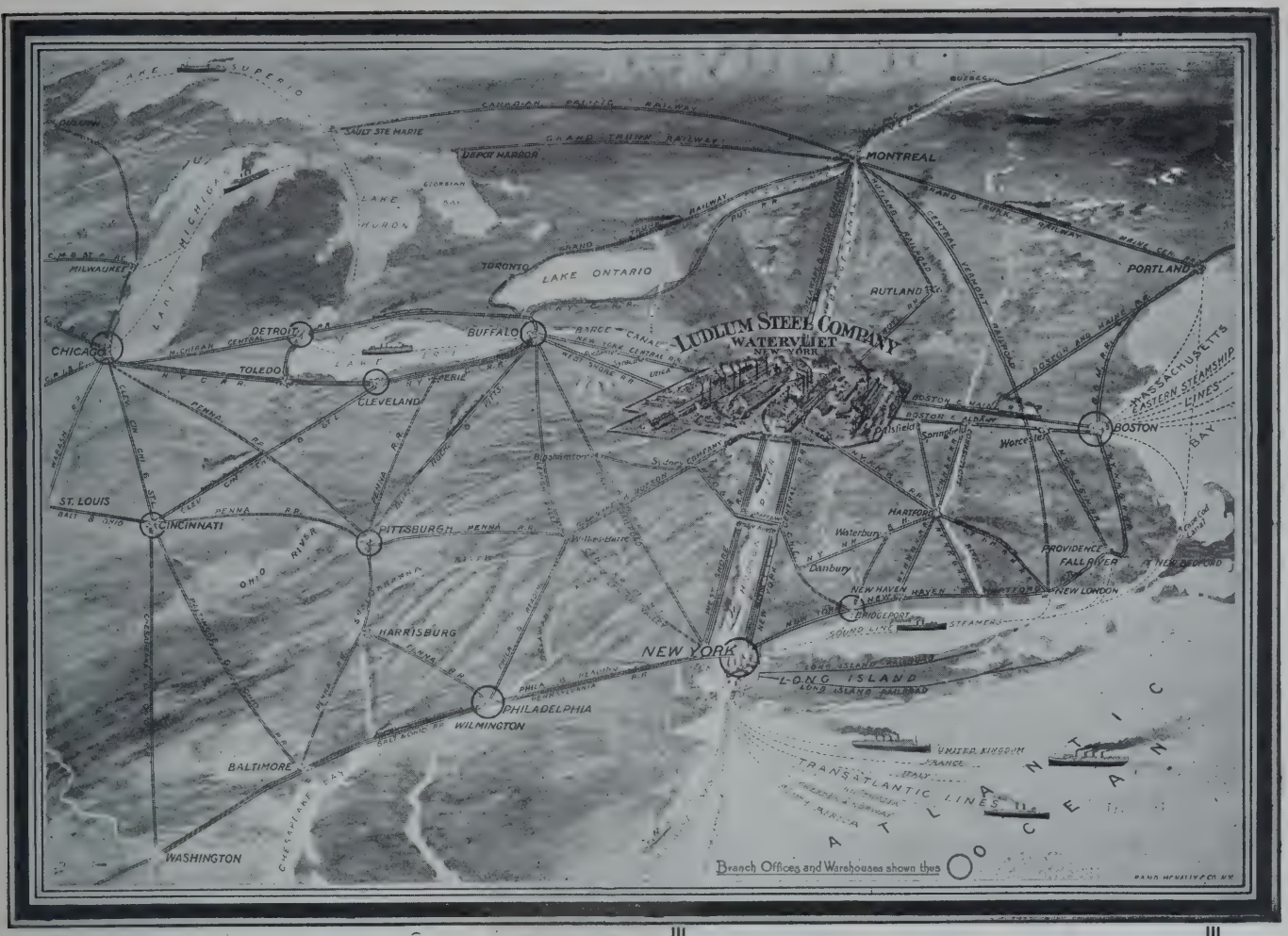
Strike Restricts Machine Tool Inquiry in East

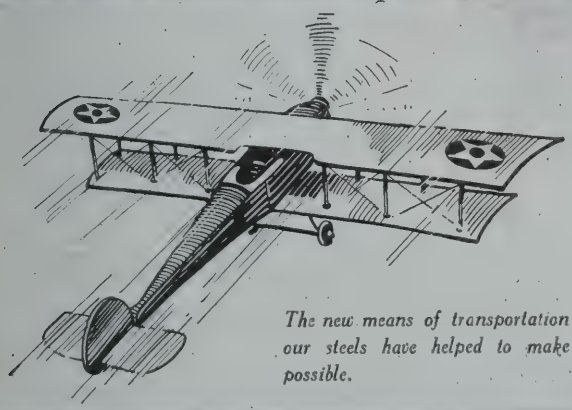
MACHINE tool inquiry in the east continues restricted. Orders for one and two tools are being taken in fair volume, but new inquiry is light. Demand is expected to improve as the steel strike situation grows better. In Boston, some of the larger manufacturers already report a larger volume of inquiry, especially from the textile machinery manufacturers. There is also some export inquiry, but this is slow in materializing into actual business. One of the larger export inquiries now out is that of C. H. Coulier, 25 Church street, New York, calling for about 125 machine tools. It is understood, however, this inquiry is of a tentative character.

Steadiness characterizes the eastern crane market. Inquiries are fairly numerous, and orders are being placed with regularity. Included in recent contracts are two cranes, of 30 and 50 tons capacity, respectively, for McIntosch & Seymour, Auburn, N. Y., and a 5-ton overhead crane for power plant for the National Silk Mills, New Bedford, Mass. Both of these orders were placed with the Northern Engineering Works, the latter by J. G. White Engineering Co., 43 Exchange place, New York City. Dwight E. Robinson & Co., 61 Broadway, New York City, placed a 75-ton overhead crane for the Duquesne Light Co., Pittsburgh. It is reported that this business went to the Morgan Engineering Co. The Cleveland Crane & Engineering Co. was awarded a 40-ton overhead crane by the Standard Oil Co. of New York for Providence, R. I. Pawling & Harnischfeger have been awarded four cranes by the Cerro de Pasco Copper Co. Specifications of these cranes follow: Two 15-ton cranes, 48-foot span; one 10-ton, 58-foot span; and one 10-ton, of 38-foot span. The copper company now is inquiring for two 15-ton overhead cranes.

Other inquiries current include a list for export by C. H. Coulier, 25 Church street, New York. The list comprises one 10-ton crane, with 30-foot span; one 5-ton, with 30-foot span; one 5-ton, with 25-foot span; one 10-ton crane, with 40-foot span; two 30-ton cranes, with 60-foot span; and two jib cranes, of two and three tons capacity, respectively. James Leffel & Co., 39 Cortlandt, New York, is inquiring for one 5-ton, one 10-ton, and one 20-ton overhead crane. These are also for export. Another export inquiry is that of the Rogers Keller Co., 39 Cortlandt street, New York, calling for a special overhead crane for Brazil.

Among the larger locomotive crane inquiries current





The new means of transportation our steels have helped to make possible.

LUDLUM STEEL
CONSISTENTLY UNIFORM

MOHAWK EXTRA High Speed Steel	FOMPTON Carbon Tool Steel
ALBANY Alloy Tool Steel	ONEIDA Oil Hardening Tool Steel
HURON Alloy Die Steel	TETON Ball Bearing Steel
SEMINOLE "Foolproof" Chisel Steel	YUMA Chrome Magnet Steel

Our Ideal Location

Our ideal location means uninterrupted deliveries. We are not at the mercy of embargoes—all systems are available; our steels have helped to make the new one possible.

Prompt shipments from warehouse stock at Watervliet, N.Y., Detroit, Mich., Chicago, Ill., or Cambridge, Mass. — handled through our District Offices.

Ludlum Steel Company

General Offices and Works:

WATERVLIET, N. Y.

Branch Offices:

Chicago Cambridge, Mass. Detroit Buffalo New York City
Cincinnati Cleveland Philadelphia Pittsburgh

is that of the Hugh Nawn Contracting Co., Forty-third street and Fifth avenue, New York. The list involves five cranes, of 15 and 20 tons capacity. The Atlantic Gulf & Pacific Co., Brooklyn, has purchased a used 5-ton Brown hoist crane.

Pittsburgh Trade Marks Time

IN Pittsburgh, the market for machinery and tools continues to mark time as far as new business is concerned. A large amount of business is in prospect, but since a large part of it is with steel and allied manufacturing interests, the tendency is general to withhold the orders pending the termination of the present labor disturbance. The Cambria Steel Co., Johnstown, Pa., some time ago put out inquiries for a number of cranes and other equipment in connection with the rehabilitation and extensions of its plant, but with operations suspended by the strike, new equipment orders have been deferred. Inquiries for cranes put out some time ago by the Carnegie Steel Co., for its Homestead and Edgar Thomson works have yet to be closed. The Pittsburgh Crane & Equipment Co., Pittsburgh, recently took orders for cranes from the Sligo Iron & Steel Co., Connellsville, Pa., the Youngstown Boiler & Tank Co., Youngstown, O., and the Niles Forge & Mfg. Co., Niles, O. New demands for machine tools have been rather few lately, but builders have a fair amount of orders on their books.

Dealers Busy; Admit Business is Held Up

EQUIPMENT sellers in the Cleveland district report no let up in the number of inquiries being received, although there is some withholding of orders. It is universally believed that were the labor and peace treaty situations cleared up, considerable business would be placed. The American Steel & Wire Co., one of the Cleveland concerns to be hard hit by the steel strike, will not place its orders for a sizable list of machine shop equipment until labor conditions become more stabilized. Some of the Akron companies which recently entered this market, have postponed their purchases, although no reason is given. These include the Firestone Steel Products Co., and one or two garage companies. It is understood that the Goodyear Tire & Rubber Co. has closed on practically all of its requirements, however, and the B. F. Goodrich Co. has made several purchases, including a No. 27 universal slotting shear, punch and bar cutter with 30-inch throat, with capacity for 1-inch plates. The Goodrich company now is looking for a 5-horsepower electric grinding machine.

Other recent purchasers include the White Motor Co., Cleveland, which continues to buy from time to time; the F. B. Stearns Co., that city, which has not yet closed on all of its requirements; and the Columbia Axle Co., also of Cleveland, which still is looking for some equipment. The McKinney Steel Co., Cleveland, has bought two electric cranes for Ironton, Mich.

One of the largest lists being acted upon by Cleveland dealers, comes from the Wehrle Co., Newark, O., stove manufatcurer. The list calls for two 14 or 16-inch x 8-foot engine lathes; one each No. 3 universal and one No. 2 plain milling machine; two 10-inch swing universal tool grinders; one 16-inch swing plain drill press; one 20 or 22-inch shaper; one 24 or 26-inch engine lathe with hollow spindle; one 54-inch diameter, horizontal surface grinder; one back-geared No. 94-D Toledo press with 6-inch stroke; one 4-foot radial drill; one 222-volt direct current electric polishing lathe, 7 to 8 horsepower; one 10-wheel polishing machine; one 30 or 32-inch band saw, band wheel to take 16 or 18 2-3-foot saws; two 2-ton Yale & Towne triplex chain blocks, 10-foot lift; one each 300, 600 and 2000 cubic foot air compressors on 100-pound pressure direct connected to gas engine; four 24 or 30-inch x 36 or 48-inch round exhaust tumbling barrels; one centrifugal oil separator; and one electric steel industrial truck. A fair sized list is issued by the Ohio Collieries Co., 721 Ohio building, Toledo, O. It calls for one 500 to 750-pound steam hammer; one No. 2-A Milwaukee or No. 3 Cincinnati milling machine; one 20 or 22-inch engine lathe with 12 or 14-foot bed; one 36 or 40-inch triple-geared engine lathe with 16-foot bed; one 36 x 36-inch x 10-foot planer. The Lockport Auto Radiator Corp., 291 Market street, Lockport, N. Y., wants stamping presses, spot welders, and other small tools.

Smaller inquiries for one or two tools are frequent and come from diversified industries. The American Chain Co., Bridgeport, Conn., wants a 14-inch lathe and a 60-ton toggle press, new or used. The Babcock & Wilcox Co., Barberton, O., is looking for one 1100-pound single frame hammer, through the Chambersburg Engineering Co., Chambersburg, Pa. The Auto Specialty Mfg. Co., St. Joseph, Mich., which is building a machine shop 80 x 140 feet, is seeking some miscellaneous equipment. The Eberhard Mfg. Co., Canton, O., wants a small lathe and the Winston-Dear Co., Hibbing, Minn., is endeavoring to locate a lathe for turning down 43 to 55-inch locomotive tires and for hoisting and intermediate shafts. The H. P. Deuscher Co., Hamilton, O., wants core room and foundry cranes.

Several Canadian companies are endeavoring to buy equipment in Cleveland. These include the Canadian Fairbanks Morse Co., Montreal, Que., which is taking quotations on shears with 36-inch throat and 1¼-inch capacity; William & J. G. Greey, 6 Church street, Toronto, who desire a new or second hand vertical boring mill, 72 or 84-inch diameter with double heads and five feet under cross head; C. P. Wilson, 509 Lumsden building, Toronto, is in the market for a 10-ton traveling and a 10-ton locomotive crane; G. W. Allan of Allan & McKelvie Engineering Co., Ltd., Vancouver, B. C., is looking for an open side planer and a milling machine. This company intends to manufacture saw mill machinery and equipment. The Chase Tractors Corp., Ltd., Toronto, will issue a sizable list a little later.

Building permits issued in September, 1919, aggregated $6,285,625 and numbered 1217, as compared with 843 permits issued in September, 1918, with a value of $1,565,995. Many of these were industrial establishments which brought increased equipment business to sellers. The Cleveland Twist Drill Co., Cleveland, has plans for a 67 x 114-foot forge shop. The White Co., East Seventy-ninth street, that city, will erect a 2-story machine shop, 210 x 884 feet, and an addition to its main plant, 200 x 600 feet. The Chandler Motor Car Co. and its subsidiary announce they will spend $1,000,000 on additional buildings. The Fink Body & Fender Co., 2075 East Sixty-fifth street, Cleveland, has plans for a 2-story plant to cost $60,000.

Other prospective purchasers of equipment in other territories include many companies in the automotive industry. The Cole Motor Car Co., Indianapolis, is to spend $1,000,000 on two 5-story buildings. The Indianapolis Body Corp., Indianapolis, will require equipment for a plant to make automobile bodies and accessories. The Elyria Steel Products Co., Elyria, O., will erect a plant 80 x 160 feet. The Hugo Mfg. Co., Warsaw, Ind., is capitalized at $1,500,000 and will require equipment to manufacture vacuum cleaners while the J. F. Rose Mfg. Co., Indianapolis, is to manufacture hand pumps. The Auto Equipment Co., Ft. Worth, Tex., is incorporated at $350,000 to make automobile parts and equipment.

Heavy Railroad Buying Foreseen

CURRENT business from miscellaneous sources is bringing a heavy aggregate trade to all dealers in machine tool equipment in the Chicago district. As for the future, it holds promise of heavy business from railroads in 1920. With return of the roads to private ownership, slated for the end of this year, purchasing agents are

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JUST as Link-Belt Locomotive Cranes have served our country speedily unloading cargoes from the transports on the docks at France, so can they serve you.

For handling heavy materials; for storing coal; for storing and rehandling clinker, handling iron and steel, or switching cars, the Link-Belt Locomotive Crane is a useful and profitable machine around the yard. When not in use for the specific purposes for which it is purchased you will find there is always some other profitable work for such a machine to do.

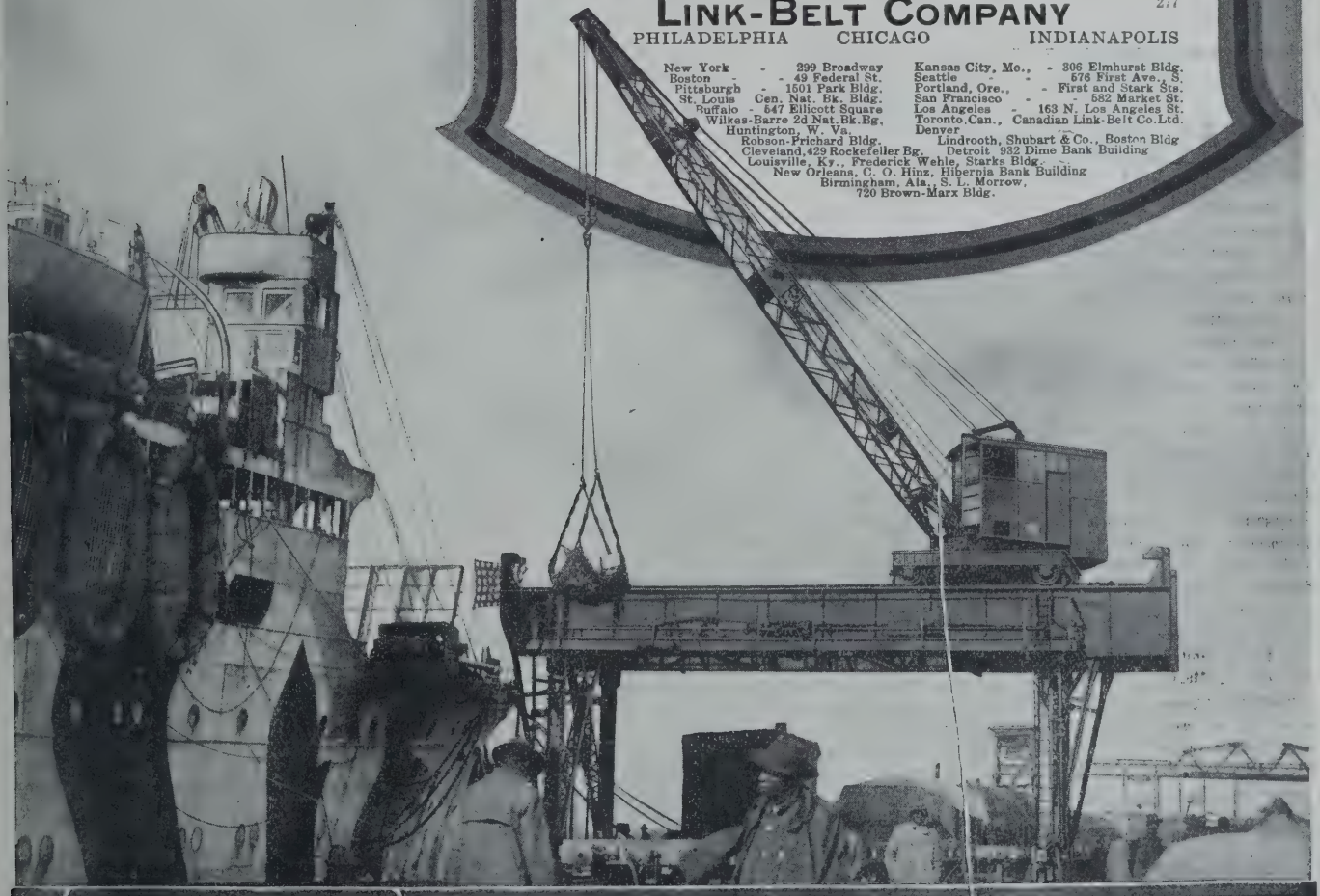
We have developed out of years of experience a vast fund of knowledge about the handling of materials, which we shall be pleased to place at your disposal.

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going over their requirements and outlining their lists with a view to placing them as early as possible to obtain the best delivery. These buyers have been out of the market for many months, although needs of railroad shops have been recognized and the further the situation has gone, the greater necessity there has been for adding to equipment. The Chicago & Northwestern railroad is inquiring for a few miscellaneous tools of no particular importance.

The Samson Tractor Co., at Janesville, Wis., continues to place orders for additional equipment for its new plant. This is a subsidiary of the General Motors Corp., and it is understood plans are now under way for building another plant in connection with the tractor interest for the manufacture of a 9-passenger automobile. This project has not become sufficiently definite to bring out its machine tool requirements. The Nash Motor Co. has started construction of its new plant in Milwaukee, but has not yet issued its list, although the inquiry is expected to be current within a short time. The Cary Equipment Co. of Milwaukee, has its new plant for the manufacture of concrete mixers well under way and has covered its tool buying. Recent advances have added about 12 per cent to the cost of radials and 15 per cent to planers.

The Moline Iron Works, Moline, Ill., will build a malleable foundry and an enameling shop. The Chicago Electric Mfg. Co. and the Sloan Valve Co., both of Chicago, have plans ready for new plants.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

WESTMINISTER STATION, VT.—The Abenaquet Machine Works has had plans prepared for a machine shop, 1-story, 150 x 500 feet, to cost $200,000.

ATTLEBORO, MASS.—The Mossberg Pressed Steel Corp. recently was incorporated with $325,000 capital, by Frank Mossberg, Sidney C. Bagney and Chester A. Van Der Pyl.

BOSTON.—The plant of the Underwood Machinery Co. recently was damaged by fire. The loss has been estimated at $100,000.

BOSTON.—The Reliance Machine & Specialty Co. has been incorporated with $15,000 capital, by James H. Duffy, Gerald N. Thaxter and Leonard Bartlett.

BOSTON.—The Commercial Metals Corp. has been incorporated with $500,000 capital, by William B. Nash, David M. Cook, Reading, Mass., Flavel Shurtleff and F. L. Mitchell.

BOSTON.—The Sherman Service, Inc., Cleveland, has been incorporated as an industrial engineer, with $1000 capital, by Fred J. Beck, W. N. Patterson, Everett, Mass., and F. S. Moore.

BOSTON.—Warren W. Scott, Inc., has been incorporated to make electrical fixtures and supplies with $40,000 capital, by Warren W. Scott, Holbrook, Mass., and Cyril E. Scott.

BOSTON.—The Johnson-McCarthy Corp. has been incorporated to make automobiles and motors with $10,000 capital, by Martin J. Thorsen, Allston, Mass., C. S. Johnson and Charles E. McCarthy.

CAMBRIDGE, MASS.—The Riverside Boiler Works has let the contract for a 2-story, 85 x 90-foot warehouse.

CHELSEA, MASS.—The Winnisimmet Ship Yard, Inc., has let the contract for a shipbuilding plant.

CLINTON, MASS.—The Spaulding-Herrmann Mfg. Co., Inc., has been incorporated to make tools, etc., with $2700 capital, by Charles H. Spaulding, Charles C. Herrmann and L. F. Spaulding.

GREAT BARRINGTON, MASS.—The Stanley Insulating Co. is reported planning a 2-story plant at a cost of $35,000.

LYNN, MASS.—The Davis Lynn Storage Battery Co., Commercial street, plans a plant addition, 1-story, 50 x 200 feet, to cost $35,000.

WILLIMANSETT, MASS.—G. Haarmann & Co., Inc., structural and ornamental steel and iron work, Holyoke, Mass., has a permit to build a 57 x 200-foot plant and a 40 x 42-foot office building at an estimated cost of $100,000.

PROVIDENCE, R. I.—The Brown & Sharpe Mfg. Co. has started on a foundry addition, 140 x 180 feet, to cost $165,000.

PROVIDENCE, R. I.—The Johnson Tool Co. has been incorporated with $50,000 capital, by Adolf E. Johnson, East Providence, R. I., Andrew E. Johnson and John L. Anderson.

PROVIDENCE, R. I.—The C. A. Wilkinson Co. has been incorporated to make metal products with $180,000 capital by Howard H. Wilkinson, Ralph A. Wilkinson and E. Butler Moulton.

BRIDGEPORT, CONN.—The Bridgeport Press Co. has let the contract to Levering & Garrigues, New York, for a 164 x 225-foot addition to its casting plant, to cost $150,000.

HARTFORD, CONN.—The plant of the New Britain Machine Co. will be removed to Watertown, Mass.

HARTFORD, CONN.—The Hartford Rubber Works Co. plans to expend more than $4,000,000 on new buildings and equipment.

MERIDEN, CONN.—The Cuno Engineering Corp. will build a plant.

NEW BRITAIN, CONN.—The Fafnir Bearing Co. will build a 36 x 96-foot plant addition.

NEW BRITAIN, CONN.—Landers Frary & Clark have completed plans for a 6-story factory building, 120 x 300 feet.

NEW BRITAIN, CONN.—The American Foundry Co. has let the contract for a 60 x 260-foot with ells, 22 x 56 feet and 31 x 42 feet, foundry.

NEW BRITAIN, CONN.—The American Hardware Corp. has let the contract for a 5-story, 46 x 154-foot addition to the Corbin Cabinet Lock Co. plant, to cost $80,000.

NEW HAVEN, CONN.—The Aaron Electric Co., 999 Hawthorne street, is about to start on a plant addition, to cost $16,635.

NORWALK, CONN.—The Norwalk Ignition Co. has been incorporated to make spark plugs, accessories, etc., with $25,000 capital, by D. A. Whitehead, Carroll W. Prochaska, formerly of the Malleable Iron Fitting Co., and J. A. Mills.

WATERBURY, CONN.—The American Brass Co. has let the contract for a 1-story, 88 x 420-foot with ells, 10 x 75-foot and 60 x 75-foot additions to cost $120,000.

WEST HAVEN, CONN.—The New Haven Machine Co., 179 Milford turnpike, will build a 2-story, 44 x 100-foot machine shop at an estimated cost of $25,000.

North Atlantic States

AMENIA, N. Y.—The Amenia Electric Light & Power Co. has been incorporated with $25,000 capital, by E. J. Chaffee, L. F. Eaton and E. B. Thompson.

AUBURN, N. Y.—The Eagle Wagon Works has awarded a contract for a storage building, 1-story, 44 x 51 feet.

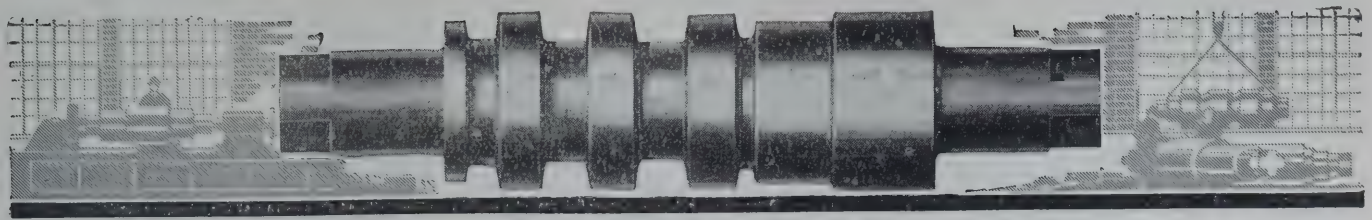
AUBURN, N. Y.—The Auburn Button Works, 48 Canoga street, has awarded a contract for a boiler and engine house, 1-story, 56 x 71 feet, to cost $10,000.

BINGHAMTON, N. Y.—The S. R. S. Auto Accessory Co. has been incorporated with $50,000 capital, by R. F. and G. C. Rath and L. Sturdevant.

BROOKLYN, N. Y.—The Kings County Gas Appliance Co. has been incorporated with $10,000 capital, by T. J. Nisbet, 721 Forty-first street, and others.

BROOKLYN, N. Y.—The Jensen Oil Engine & Machine Co. has been incorporated with $20,000 capital, by C. P. and C. and B. Jensen, 220 Wakeman place.

BROOKLYN, N. Y.—The Regal Machine Works,



Rolling Mill Jim Back from a Fishing Trip



Say, Fella's—

Just got back from a fishing trip, acted wise before I went tho'., put in Hubbard Rolls, knew they'd give no trouble; got back found things running fine.

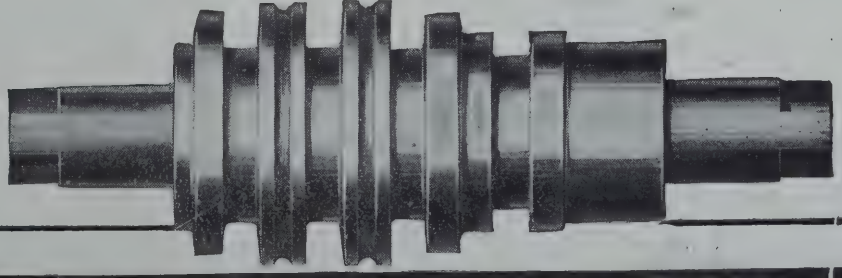
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



Inc., cloth laying and cutting machinery, recently was incorporated with $20,000 capital, by C. Sussman, L. Cooper and N. Diamond, 41 Park Row.

BUFFALO.—J. H. Williams & Co., 400 Vulcan street, has awarded contracts for a boiler shop, 1-story, 28 x 48 feet.

BUFFALO.—The Bairy Machine Corp. has been incorporated with $50,000 capital, by W. H. Wilson, J. L. Kinney and B. G. Weber.

BUFFALO.—The Perfect Auto Lock Corp. has been incorporated with $125,000 capital, by F. E. Pond, A. A. Patrzkowski and F. G. Safee.

BUFFALO.—The Buffalo Nipple Machine Co., Inc., 335 Glenwood avenue, has had plans drawn for a plant addition, 2-stories, 32 x 76 feet, to cost $10,000.

CAYUGA COUNTY, N. Y.—The Northern Cayuga Light and Power Corp. has been incorporated with $50,000 capital, by C. E. Dudley, F. Longley and J. D. Bloomfield, Meridian, N. Y.

ELMIRA, N. Y.—The Willys-Morrow Co. has let the contract for a new plant.

ELMIRA, N. Y.—This city plans to issue bonds amounting to $5,000,000 for an addition to its waterworks plant.

FRANKFORT, N. Y.—The International Crusher Co. recently was incorporated with $10,000 capital, by G. M. Mitchell, M. A. Rause and P. H. Walsh.

HERKIMER, N. Y.—The Fulton Chain Construction Corp. has been incorporated with $10,000 capital, by C. H. and H. K. Vanauken and M. C. Tryon.

UTICA, N. Y.—The Economic Iron Works, Inc., recently was incorporated with $10,000 capital, by G. and C. M. Lorenz and F. G. King.

ROCHESTER, N. Y.—Josiah Anstice & Co., 220 North Water street, is contemplating a foundry, 200 x 300 feet, to cost $185,000.

ROCHESTER, N. Y.—The Rochester Automotive Equipment Corp. has been incorporated with $5000 capital, by G. L. Clark, W. A. Mine and L. R. Lewis.

SUFFERN, N. Y.—The Rocksange Iron Works, Inc., has been incorporated with $50,000 capital, by W. H. Pavitt, A. Grunewalk and M. Hineser, 2981 West Twenty-seventh street.

TROY, N. Y.—The Bossard Railway Signal Corp., signals, switches, etc., recently was incorporated with $50,000 capital, by W. E. Hamilton, Fonda avenue, M. J. O'Sullivan, 381 Division street, Amsterdam, N. Y., and J. L. Lehman Jr., 10 First street, Troy.

CARLISLE, PA.—J. F. Rogers Co. will erect a 1-story power plant, 45 x 80 feet.

CHESTER, PA.—Contracts have been awarded by the American Locomotive Co., for two plant extensions. One is for a machine shop, 60 x 350 feet, and the other a foundry building 175 x 600 feet.

EAST STROUDSBURG, PA.—The Metal Crafter contemplates a plant addition.

ELLWOOD CITY, PA.—The Beaver Clay Products Co. let the contract for a plant to cost $100,000.

ELLWOOD CITY, PA.—This city will build a garbage disposal plant.

ERIE, PA.—The board of water commissioners will build a reservoir.

FARRELL, PA.—This town has arranged for a bond issue of $24,000 for waterworks extensions.

LANCASTER, PA.—The E. T. Fraim Lock Co. plans a machine shop 44 x 82 feet.

MIDDLETOWN, PA.—The Wincroft Stove Co. has a site in Philadelphia and will build a plant to cost $100,000. E. N. Colquhor is in charge.

MONACA, PA.—This city plans a waterworks plant.

NORRISTOWN, PA.—The Valley Forge Magnesia Co., which is erecting a plant at East Valley Forge, has been incorporated with a capital of $125,000. The officers of the company include John P. DuBoise, secretary and George B. Hurdle, superintendent.

PHILADELPHIA.—The Albro-Clem Elevator Co., Erie street, has awarded contracts for a 1-story, 78 x 118-foot machine shop to cost $13,000.

PHILADELPHIA.—At a cost of $475,000, R. H. Wood & Co. will erect a 5-story, 100 x 250-foot building and a 2-story, 78 x 79-foot building. In addition, the company will erect a small addition to its forge shop.

PHILADELPHIA.—T. S. Johnson & Sons, 622 Cherry street, is reported planning to build a 2-story, 45 x 60-foot plant for the manufacture of sheet metal material and heating products.

PHILADELPHIA.—The Belmont Iron Works has been awarded a steel contract for a machine shop addition, 100 x 200 feet, by the Newton Machine Tool Co.

PITTSBURGH.—The Oliver & Snyder Steel Co. will build a boiler house 44 x 64 feet.

PITTSBURGH.—The plant of the National Bolt & Nut Co. recently was damaged by fire. The loss has been estimated at $100,000.

SHARON, PA.—Taylor & Sons have the plans for the iron works of A. N. & Louis Rosenblum.

WILKES-BARRE, PA.—The Guarantee Steel Corp. is taking bids for a power house.

CLIFTON, N. J.—The Athenia Steel Co., Colfax avenue, plans a plant addition, 2-stories, 50 x 100 feet, to cost $20,000.

EDGEWATER, N. J.—A general contract for a $1,000,000 plant addition by the Aluminum Co. of America has been awarded to the Turner Construction Co., New York. The building will be L shaped, 81 x 450 feet with a wing, 80 x 176 feet.

ELIZABETH, N. J.—The Dussenberg Motors Corp. will begin work soon on the enlargement of its plant as a unit for the Willys Corp. The new plant will be used for the manufacture of automobiles.

HARRISON, N. J.—The Driver-Harris Co. has let a contract for a 3-story plant, 50 x 100 feet, to cost $50,000.

NEWARK, N. J.—The Colonial Stamping Co. will award contracts shortly for alterations to its plant.

NEWARK, N. J.—The Balbach Smelting & Refining Co., 580 Market street, has awarded a contract for a plant addition.

NEWARK, N. J.—A general contract for a boiler house, 38 x 45 feet, for George Stengel, Inc., has been awarded to O'Rourke & Briscoe, as architects, to C. J. Shubert Sons.

NEWARK, N. J.—Henry J. and John V. King, have completed plans for a 48 x 100-foot building for the Die Casting Co., Irvington, N. J.

NEWARK, N. J.—The American Platinum Works, 231 New Jersey Railroad avenue, has awarded contracts for a factory and boiler house.

NEWARK, N. J.—The New Toy Co., 200 Fifth avenue, New York, has awarded contracts for a factory and chemical building.

NEWARK, N. J.—The Tanners Machinery Co., 31 Clinton street, has been incorporated with $100,000 capital, by Ralph G. Steinhardt, Lawrence J. Steinhardt and others.

PLAINFIELD, N. J.—The American Motors Corp. is contemplating a plant at Hartford, Conn.

WILMINGTON, DEL.—The Lobdell Car Wheel Co. is about to start work on an addition, 1-story, 52 x 65 feet, to cost $16,000.

BALTIMORE.—The Baltimore Spring Works will build a 3-story addition.

BALTIMORE.—The Baltimore Tube Co. has let the contract for a 1-story plant 75 x 144 feet to cost $25,000.

BALTIMORE.—Hill & Ferguson, 112 East Nineteenth street, New York, have the plans for a waterworks plant here.

BALTIMORE.—A 2-story factory building, 53 x 102 feet, costing $40,000 will be erected here by the Consolidated Gas, Electric Light & Power Co.

BALTIMORE.—With a capital of $400,000, the Robeison Co. has been incorporated to manufacture packing and sealing machinery. Joseph P. Murray and Frank S. Muzzey, of Philadelphia, and Theresa Schneider, of Gibbstown, Pa., are the incorporators.

ELKTOWN, MD.—This town plans to spend $80,000 for improvements to its waterworks plant. Wm. L. Mackhall is president of the water board.

ROANOKE, VA.—The Roanoke Consolidated Iron Corp. recently was incorporated with $350,000 capital.

Central States Activity

EDGERTON, WIS.—The Continental Axle Co. is taking bids for a plant, 1-story, 58 x 290 feet, to cost $70,000.

EDGERTON, WIS.—The Edgerton Barn Equipment Co. is purchasing a number of items of new machinery and has contracted with the Rock River Machine Co., Janesville, Wis., for a large shear and punch press.

KEWASKUM, WIS.—Foundations for a 1-story aluminum goods factory, 100 x 200 feet, will be laid before winter by the Kewaskum Aluminum Co., a new $150,000 corporation. A. L. Rosenheimer is president.

LA CROSSE, WIS.—The Matthews Mfg. Co., Cleveland, O., is reported contemplating a branch here. The original investment will be about $70,000 in factory and machinery.

MANITOWOC, WIS.—The Tinsel Mfg. Co. has acquired the business and equipment of the National Toy Mfg. Co., Milwaukee, and is moving the plant to this city, where a 3-story, 60 x 120-foot addition has been completed.

MILWAUKEE.—C. D. Eising, 2221 Wells street, is having plans prepared for a 1-story building, 50 x 150 feet.

MILWAUKEE.—The Newport Co., a recent consolidation of the Newport Chemical Co., the Newport Hydro-Carbon Co. and others, will build a chemical laboratory at its main works in Carrollville, Wis., at an estimated cost of $100,000.

MILWAUKEE.—J. M. Nash, 842 Thirtieth street, plans a machine shop, 2-stories, 30 x 125 feet, to cost $75,000.

MILWAUKEE.—The A. O. Smith Corp., pressed, stamped, forged and machined automobile parts, is reported planning to double the size of its plant.

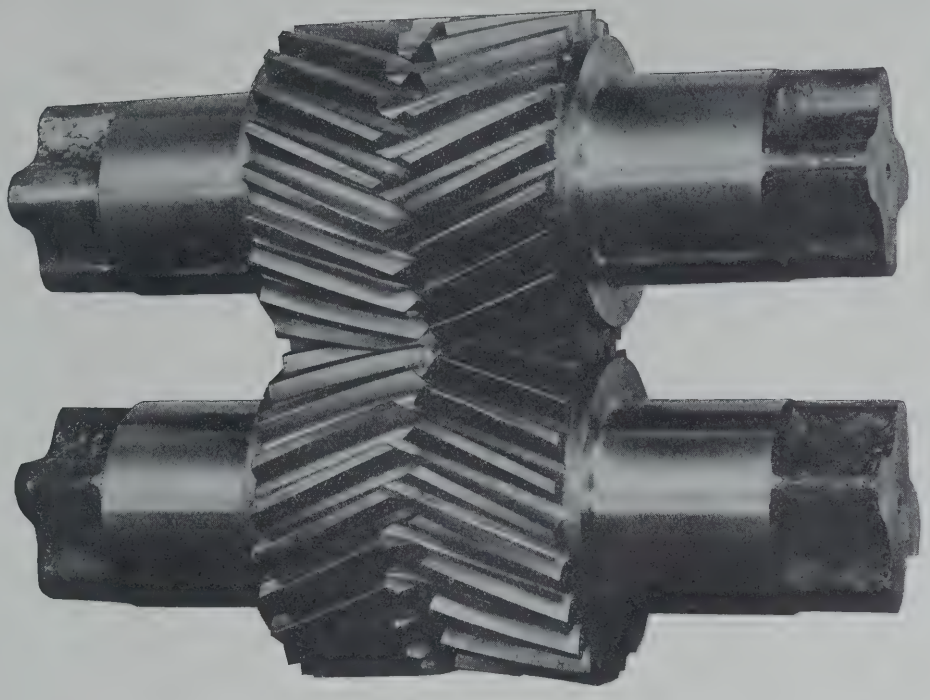
MILWAUKEE.—The Koehring Machine Co., concrete mixers, etc., has been granted a permit to erect a power plant addition, 51 x 71 feet, to cost $25,000.

MILWAUKEE.—The David White Co., 419 East Water street, surveying instruments, has increased its capital from $25,000 to $50,000 and will enlarge its facilities.

MILWAUKEE.—The Milwaukee Shaper Co. has increased its capital from $75,000 to $150,000 for the purpose of doubling its production. The company has leased 25,000 square feet.

MILWAUKEE.—The Worden-Allen Co. has the contract to fabricate and erect the steel for a 1-story factory and power house, 135 x 475 feet, for the Edmonds Shoe Co. The factory and necessary equipment will cost about $250,000.

MILWAUKEE.—The W. S. Seaman Co., 480 Virginia street, manufacturer of automobile bodies, has reincorporated its business as the Seaman Body



MILL PINIONS

MADE FROM

Open Hearth Steel Castings

We own and operate one of the largest steel foundries in the West, making castings from 1 to 100,000 pounds.

THE FALK COMPANY

MILWAUKEE, WIS.

AGENTS: Pittsburgh—W. O. Beyer, 1024 Park Bldg. New York—M. P. Fillingham, 50 Church St. Wilkes-Barre—Vulcan Iron Works. Denver—Denver Engineering Works. San Francisco—F. W. Grimwood, Rialto Bldg.

Say you saw it in THE IRON TRADE REVIEW

Corp., with a capital of $150,000. Enlargement of plant and equipment is planned.

MILWAUKEE.—The Kahn Mfg. Co. has been incorporated with a capital of $150,000 to manufacture spark plugs, ignition devices and other accessories. August Haberer, Edward Wagenknecht and Albert Brandenberg are the incorporators.

MILWAUKEE.—The Seaman Body Corp. recently was incorporated with $120,000 capital, to manufacture automobile bodies and parts. The incorporators are Harold and Irving Seaman of the W. S. Seaman Co., Milwaukee, manufacturer of automobile bodies.

MT. VERNON, O.—The plant of the Mt. Vernon Foundry Co. will be enlarged according to a current report.

RACINE, WIS.—This city contemplates expending $500,000 in enlarging its waterworks plant.

RACINE, WIS.—The Ajax Auto Parts Co., Fifteenth street, is completing plans for a 1-story machine shop addition, 65 x 120 feet.

ST. LAWRENCE, WIS.—Gehl & Wendt, machinists and automobile dealers, plan a shop addition, 65 x 70 feet.

WAUPACA, WIS.—Plans for a 1-story machine shop and assembling room for the Stewart Tractor Co. are being completed.

WEST BEND, WIS.—The West Bend Equipment Co., maker of steel devices and appliances for farms and shops, has let contracts for a 2-story plant addition, 80 x 100 feet, to cost $30,000. A. H. Klumb is president.

PORTLAND, IND.—The Guedel Mfg. Co., capitalized at $50,000, has been chartered to manufacture automobile parts by M. G. Bimel, H. B. Guedel and W. M. Guedel.

TERRE HAUTE, IND.—The machine shops at the plant of the American Car & Foundry Co. were damaged by fire with a loss of $100,000. Rebuilding will be started immediately.

AKRON, O.—The Firestone Steel Products Co. has awarded contracts for a 1-story, 100 x 200-foot plant to cost $500,000.

BARNESVILLE, O.—This city contemplates a power house at the municipal water works.

CINCINNATI.—The Pfau Mfg. Co. is having plans drawn for a foundry, 50 x 225 feet, to cost $45,000.

CLEVELAND.—The Anderson Rolled Gear Co. recently was incorporated with $5000 capital, by H. N. Anderson and others.

CLEVELAND.—The Automotive Service Co. has been incorporated with $200,000 capital, by Cambie C. Silverthorn and others.

CLEVELAND.—L. Malewitz, Waterloo road, plans a 2-story, 75 x 90-foot plant for the manufacture of metal stamping products, to cost $30,000.

CLEVELAND.—The Austin Co., engineer, has been awarded a contract to erect a foundry for the Burd High Compression Ring Co., Rockford, Ill.

CLEVELAND.—The Ohio Foundry Co., 9806 Quincy avenue, recently awarded contracts for an addition, 49 x 49 feet, to cost $10,000.

CLEVELAND.—The Cleveland Twist Drill Co., 4727 Hamilton avenue, has had plans prepared for a 1-story, 67 x 114-foot forge shop to cost $20,000.

CLEVELAND.—The Fink Body & Fender Co., 2075 East Sixty-fifth street, is having plans prepared for a plant, 2-stories, 62 x 101 feet, to cost $60,000.

CLEVELAND.—The Electric Smelting & Aluminum Co. recently was incorporated with $10,000 capital, by Charles P. Hine, 1239 Engineers building, and others.

CLEVELAND.—The Consolidated Iron Steel Mfg. Co. has been incorporated with $1,812,500 capital, by A. V. Cannon, 1414 Williamson building, and others.

CLEVELAND.—The Holam Mfg. Co., 4011 Clark avenue, manufacturer of light metal stamping products, recently awarded contracts for a 2-story, 80 x 116-foot plant to cost $40,000.

CLEVELAND.—The R. F. Carpenter Mfg. Co., 984 East Sixty-fourth street, manufacturer of metal doors and partitions, is reported contemplating a 1-story, 60 x 100-foot plant, addition to cost $20,000.

CLEVELAND.—Announcement has been made that the Chandler Automobile Co. and the Cleveland Automobile Co., a subsidiary of the former concern, have awarded contracts for extensive plant additions.

CLEVELAND.—The White Motor Car Co., East Seventy-ninth street, plans a 2-story, 210 x 884-foot machine shop to cost $175,000. The company also plans a 1-story, 200 x 600-foot addition to its main plant at a cost of $600,000.

CLEVELAND.—The National Copper & Smelting Co., care of Frank G. Carpenter, 804 Illuminating building, is reported contemplating a plant here at an estimated cost of $100,000. Actual construction is not expected to begin before the first of next year.

CLEVELAND.—The Ohio Trailer Co. at a recent meeting of stockholders, decided to change its name to the Ohio Motor Vehicle Co., and will increase its capital from $300,000 to $1,000,000. The company plans to manufacture a six-cylinder automobile. Charles A. Riegler is president.

DAYTON, O.—The Eureka Tool & Die Co. recently was incorporated with $12,000 capital, by L. O. Shank and others.

DAYTON, O.—The Dayton Metal Products Co. recently increased its capital from $200,000 to $6,000,000. It is erecting two plant additions.

ELYRIA, O.—The Elyria Welding Co. has been incorporated with $5000 capital, by Charles G. Beardslee and others.

ELYRIA, O.—The Elyria Steel Products Co. has purchased 26 acres on which it plans a plant, the main building to be 80 x 160 feet. D. Miller is president.

KENTON, O.—The Ohio Machine & Tool Co., 830 South Leighton street, has awarded contracts for an addition to its machine shop, 1-story, 41 x 80 feet.

LORAIN, O.—The Hoffman Heater Co. has let contracts for a plant, 1-story, 96 x 300 feet, to cost $40,000.

MT. VERNON, O.—The sale of $10,000 of additional stock for enlargements to its plant, has been effected by officers of the Mt. Vernon Foundry & Engineering Co. The plans call for a building at an estimated cost of $20,000.

MT. VERNON, O.—The expenditure of between $300,000 and $500,000 in the construction and equipment of six additional buildings, is contemplated by the C. & G. Cooper Co., in which small gas engines will be manufactured. According to the report the plans call for a pattern storage building, 120 x 470 feet, an enlargement of the machine shop, construction of a cleaning room, 108 x 120 feet, erection of foundry building addition, construction of wood working shop and the construction of an erecting shop.

NILES, O.—The Youngstown Pressed Steel Co., 2131 Wilson avenue, Youngstown, O., has awarded contracts for a plant here, 1-story, 520 x 560 feet, to cost $600,000.

TOLEDO, O.—Work on the first unit of the proposed plant for the Toledo Machine & Tool Co. has been started. The plant will consist of a foundry, 153 x 378 feet, boiler building, 40 x 50 feet, power house and engine room, 40 x 55 feet, and a sand storage building, 20 x 200 feet. Henry J. Hinde is president and general manager.

LOUISVILLE, KY.—The Louisville Atomizer Fuel Co. has been organized with a capital of $200,000 by J. M. Denton and others and will build a plant to manufacture air appliances.

MOUNDSVILLE, W. VA.—The Cameron Tool Co. has let the contract for a new plant.

Business in Canada

MONCTON, N. B.—The city council plans improvements to its waterworks plant and system at a cost of $107,553.

SACKVILLE, N. B.—The Eastern Electric & Developing Co. will build an addition to its power house.

SUSSEX, N. B.—Buildings owned by the Wallace Machinery Works here were damaged by fire with a loss to buildings, machinery and patterns amounting to $25,000.

LOUISBURG, N. S.—J. W. Madden and W. N. MacDonald are interested in a syndicate which is preparing plans for a dry dock here.

CHARLOTTETOWN, P. E. I.—Bruce Stewart & Co., Ltd., Great George street, awarded the general contract to H. & S. Lowe, 240 Hillsborough street, for a machine shop to cost $45,000.

MONTREAL, QUE.—Paxton & Mitchell, Ltd., have been incorporated to manufacture and deal in iron, steel, metals, machinery, tools, etc., with $100,000 capital by Gordon G. Hyde, John G. Ahearn, Ronald C. Grant and others.

MONTREAL, QUE.—The M. E. Casey Co., Ltd., has been incorporated by Michael A. Phelan, Westmount, Que.; Charles G. Ogden, Charles S. LeMesurier and others of Montreal, with $50,000 capital to manufacture engines, motors, woodworking machinery, tools, etc.

BRANTFORD, ONT.—The Electric Tin Products Co. has a site here and an electric smelting system will be installed.

BRANTFORD, ONT.—The Brantford Oven & Rack Co. will build an addition and install machinery and equipment.

BRANTFORD, ONT.—Houlding & Walker, Ltd., have been incorporated with $100,000 capital by Reginald L. Houlding, Irwing Walker, Franklin L. Johnson and others to manufacture machinery, motors, etc.

GLENCOE, ONT.—The Hydro Electric Power Commission plans an electric lighting plant and system here to cost $12,000.

NORTH BAY, ONT.—The Wagar Furniture Co., Ltd., has been incorporated with $40,000 capital, to manufacture furniture, tin and metal products, etc., by Walter S. Wagar, Harvey A. Heavener, John Blanchet and others.

OJIBWAY, ONT.—Actual construction work is progressing on the plant of the Canadian Steel Corp. One foundation for a 600-ton furnace is now in and work has been started on a second.

TORONTO, ONT.—Plans are being prepared for alterations to old buildings and the erection of an addition to the plant of the Chase Tractor Corp., 28 Atlantic avenue.

TORONTO, ONT.—M. A. Cuming & Co., Ltd., has been incorporated to manufacture hatters' tools, etc., with $40,000 capital, by Wilfred Field, 157 Bay street, and others.

TORONTO, ONT.—The Dominion Dehydrator Co. Ltd., has been incorporated to manufacture machinery, with $150,000 capital, by Henry J. Martin, 6 Adelaide street east, Thomas N. Poole and others.

TORONTO, ONT.—The Canadian Edison Appliance Co., Ltd., has been incorporated with $1,000,000 capital, by William A. J. Case, room 801 Dominion Bank building, James B. Taylor, 78 Belhaven road and others.

TORONTO, ONT.—The Non Twist Canopy Ring

Canada, Ltd., has been incorporated to manufacture lighting and heating fixtures, machinery, iron, steel and brass products, with $500,000 capital, by Frand D. Parmenter, 291 Glencairn avenue, Isaac H. Weldon, 75 Adelaide street, and others.

WINDSOR, ONT.—The Helbring-Wright Chemical Co. plans to erect a plant here.

WINDSOR, ONT.—The Peninsular Machine Co., Detroit, is making arrangements to establish a manufacturing plant in this city.

WOODSTOCK, ONT.—The National Metal & Waste, Ltd., has been incorporated to manufacture iron, etc., with $40,000 capital by Arthur W. Stone, Max Cohen, Arthur E. Izzard and others.

NORTH VANCOUVER, B. C.—The Wallace Shipbuilding Co., Ltd., is having plans prepared for a drydock.

VANCOUVER, B. C.—M. Wagstaffe, Kingsway, will erect a machine shop here.

VANCOUVER, B. C.—The Mainland Engineering Co. is building a plant at Coal Harbor.

VANCOUVER, B. C.—The Electrical Mfg. Co. has a permit for a new plant on Granville Island.

VANCOUVER, B. C.—T. H. Laslett, 721 Seymour street, will build a factory here at a cost of $10,000 for the manufacture of brick, etc.

VANCOUVER, B. C.—The Imperial Oil Co. will spend $600,000 on improvements to its plant.

VANCOUVER, B. C.—The Sunlock Mines, Ltd., plans a concentrator to cost $100,000, an aerial tramway and other mine development to cost $60,000, on Vancouver Island.

VANCOUVER, B. C.—The Electric Mfg. Co. will establish a plant on Industrial Island for the manufacture of heavy type slate-back switches and a new type of externally operated switches.

Business Changes Recently Announced by the Trade

SINCE Oct. 1, the name and office of the Gary Foundry & Machine Co., East Gary, Ind., has been the Calumet Foundry & Machine Co., 148th street and Railroad avenues, East Chicago, Ind. The foundry and machine shop at East Gary is operated as plant No. 1 and the foundry, formerly the East Chicago Foundry Co., together with the pattern shop, formerly the East Chicago Pattern Works, as plant No. 2 at East Chicago. William H. Kleppinger is president of the combined companies; P. S. Graver is vice president; W. F. Graver, treasurer, and Charles A. Creahan, secretary.

GOULD MFG. CO., Seneca, N. Y., maker of rotary, triplex and centrifugal pumps, has opened a district sales office in Detroit, 804 Dime Bank building, with E. B. Gould in charge.

* * *

The Levering & Garrigues Co., New York, ironworker, has removed its Boston office from 141 Milk street to 14 Broomfield street, room 754. C. S. Grow is the contracting engineer in charge.

* * *

The Avery Mfg. Co. has established a branch office at 326 Pershing avenue, Davenport, Iowa. J. J. Coats, Minneapolis, is manager.

* * *

The Westmoreland Fuel Co. has moved its Pittsburgh offices from the First National Bank building to 645 Union Arcade.

* * *

The Sizer Forge Co., 244 Larkin street, Buffalo, has established a district sales office at 208 South La Salle street, Chicago, with Marshall C. Edmunds in charge.

* * *

The Birmingham office of the Chicago Pneumatic Tool Co., Chicago, was removed on Oct. 1 from 801 the Brown-Marx building to 1925 Fifth avenue north, where a complete service station and stock of tools and repair parts will be maintained.

* * *

The Cleveland-Cliffs Iron Co., Cleveland, has extended its general offices on the thirteenth floor of the Rockefeller building. The roof of the twelfth floor of a wing of the building was raised, and an additional floor added to provide more room for the company.

* * *

The Lake Superior Iron Ore association has moved its headquarters from the Perry-Payne building, Cleveland, to room 1001 Rockefeller building.

* * *

The Shawinigan Electric-Metals Co., Ltd., has moved its United States sales office from 932 Leader-News building, Cleveland, to 1500 Westminster building, Chicago. It also has arranged to carry stocks of magnesium in warehouses in New York, Chicago and Detroit. D. P. Falconer is sales agent.

* * *

Charles Morningstar & Co., Inc., of New York, is about to open an office in Kobe, Japan, under the management of I. Ninomiya.

* * *

The Albert P. Hill Co., Inc., Pittsburgh, advertising, has removed its offices from the Peoples Bank building to new and larger quarters. It now occupies the entire top floor of the building at 233 Oliver avenue.

* * *

The firm name of the L. Wolff Mfg. Co., Chicago, has been changed to the Wolff Mfg. Co., and the business will be continued with increased capital and facilities.

* * *

The Monel Metal Products Corp. is the new corporate style for the Bayonne Casting Co., Bayonne, N. J.

* * *

The name of the American Shell Co., Paterson, N. J., has been changed to the Gillespie Motor Co. Allied plants are the East Jersey Pipe Co., and the Gillespie Foundry Co., both at Paterson.

* * *

The purchasing department of the Charcoal Iron Co. of America, now located in Marquette, Mich., will be moved to Detroit about Jan. 1. R. F. Birchard will remain in charge of the company's purchasing.

* * *

The Stecker Electric & Machine Co. has moved into a new plant at Greenwood and Dewey avenues, Detroit.

* * *

Sprout, Waldron & Co., mill builders and furnishers, of Muncy, Pa., announce the opening of an office in Kansas City. H. C. Malsness is in charge.

* * *

The Poole Engineering & Machine Co., Baltimore, has opened a branch office in Boston in the Old South building, in charge of Robert W. Catlin.

* * *

The name of the Cochran Pipe Wrench Mfg. Co., Chicago, was changed on Oct. 1 to the Cochran Mfg. & Forging Co., without change in its management, to indicate more clearly the business in which it is engaged.

* * *

The Universal Rolling Mill Co., with plants at Bridgeville and Charleroi, Pa., recently changed its name to the Universal Steel Co. This company manufactures tool and alloy steel.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.38c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	6.15c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.50c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25

Chicago to:

Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½

Lap Weld

2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½

Lap Weld

2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½

Lap Weld

2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Electric GG Steels

SILICO-CHROME MANGANESE

SPRING STEEL ROLLED BILLETS

DIE BLOCKS

PISTON RODS

FORGED AND HEAT TREATED

FORGED CAR AXLES

Heat Treated

Superior Properties

Write for data

HAMMERED TOOL STEEL BARS

BEARING STEELS

GENERAL STEEL COMPANY

Public Service Building **MILWAUKEE, WISCONSIN**

DETROIT REPRESENTATIVE: D. J. Crowley, 832 Dime Bank Building

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$20.00 to 20.50
Chicago	18.50 to 19.00
Eastern Pennsylvania	19.00 to 20.00
Cleveland	18.00 to 18.25
St. Louis	17.50 to 18.00
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.00 to 15.50
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Valleys	19.50 to 20.00
Boston (dealers)	15.00 to 15.50

BUNDLED SHEETS

Pittsburgh	15.00 to 15.50
Eastern Pennsylvania	15.00 to 16.00
Cleveland	13.00 to 13.50
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	11.50 to 12.00

STEEL RAILS, SHORT

Chicago	$19.50 to 20.00
Boston (dealers)	15.50 to 16.00
Cleveland	18.00 to 18.50
St. Louis	21.50 to 22.00
Birmingham	19.00 to 20.00
Cincinnati	18.50 to 19.00

STOVE PLATE

Pittsburgh	$19.00 to 20.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	20.50 to 21.50
Cleveland	18.00 to 18.50
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Boston	20.00 to 21.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	26.50 to 27.00
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$17.50 to 18.00
St. Louis	16.50 to 17.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.00 to 21.50
Chicago	20.50 to 21.00
St. Louis	19.00 to 19.50

BALED SHEETS

Pittsburgh	17.00 to 17.50
Chicago	14.50 to 15.00

FROGS, SWITCHES, GUARDS

Chicago	$18.50 to 19.00
St. Louis	18.50 to 19.00
Eastern Pennsylvania	19.00 to 20.00

BOILER PLATE, CUT

Chicago, No. 1	$15.50 to 16.00
St. Louis	14.00 to 14.50

ANGLE BARS—STEEL

Chicago	$20.00 to 21.00
St. Louis	18.50 to 19.00

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$22.00 to 23.00
Pittsburgh, No. 2	20.00 to 20.50
Chicago, No. 1	22.00 to 22.50
Chicago, No. 2	18.75 to 19.00
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	23.25 to 23.75
St. Louis, No. 1	20.00 to 20.50
St. Louis, No. 2	19.00 to 19.50
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	17.00 to 18.00
New York, No. 1 (dealers)	23.00
Boston (dealers)	18.50 to 19.00

WROUGHT PIPE

Eastern Pennsylvania	$18.00 to 19.00
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	15.50 to 16.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers)	19.00 to 19.50

BUSHELING

Chicago, No. 1	$17.50 to 18.00
Chicago, No. 2	12.00 to 12.50
Cleveland, No. 1	17.00 to 17.50
Cleveland, No. 2	14.50 to 15.00
St. Louis, No. 1	17.50 to 18.00
Buffalo, No. 1	16.50 to 17.50
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$12.50 to 13.00
Chicago	9.00 to 9.50
Eastern Pennsylvania	15.00 to 16.00
Eastern Pennsylvania (blast furn.)	13.00 to 14.00
Cleveland	8.25 to 8.50
Buffalo	12.00 to 12.50
New York (dealers' price)	11.00 to 11.50
St. Louis	9.50 to 10.00
Cincinnati	7.50 to 8.00
Birmingham	13.00 to 14.00
Valleys	11.00 to 11.50
Boston (dealers)	10.00 to 10.50
Boston (blast furnace) (dealers)	10.50 to 11.00

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	11.00 to 11.50
Eastern Pennsylvania	16.00 to 17.00
Cleveland	13.25 to 13.50
St. Louis	11.50 to 12.00
Buffalo	13.50 to 14.00
New York (dealers' price)	12.00 to 12.50
Cincinnati	9.00 to 9.50
Birmingham	13.00 to 14.00
Valleys	14.25 to 14.75
Boston (dealers)	11.50 to 12.00
Boston (blast furnace) (dealers)	11.00 to 11.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	31.00 to 32.00
Eastern Pennsylvania	35.00
Cleveland	27.00 to 28.00
St. Louis	31.00 to 31.50
Buffalo	28.00 to 29.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	22.50 to 23.00
Cleveland	27.00 to 28.00
St. Louis	22.50 to 23.00
Buffalo	24.00 to 25.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	16.50 to 17.00
Cleveland	16.25 to 16.75
St. Louis	15.50 to 16.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$20.00 to 20.50
Cleveland	18.25 to 18.75
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	20.00 to 21.00

FORGE FLASHINGS

Cleveland, large	$13.00 to 13.50
Cleveland, small	16.50 to 17.00
Chicago, small	14.00 to 14.50
Boston (dealers)	12.00 to 12.50

ORGE SCRAP

Chicago	$18.50 to 19.00
Eastern Pennsylvania, No. 1	15.50 to 16.00
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	23.00 to 23.50
St. Louis	21.50 to 22.00

ANGLE BARS—IRON

Chicago	$22.50 to 23.00
St. Louis	23.50 to 24.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
St. Louis	12.50 to 13.00
Cleveland	15.00 to 15.50
Buffalo	16.00 to 17.00
Chicago	14.00 to 14.50

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania, cupola	25.00 to 26.00
Cleveland	34.00 to 35.00
St. Louis	29.00 to 29.50
Buffalo	28.00 to 29.00
Chicago	27.00 to 27.50
New York (dealers)	24.00 to 25.00
Birmingham	21.00 to 22.00
Boston (dealers)	24.50 to 25.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	21.00 to 22.00
Chicago	25.00 to 25.50

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$24.00 to 24.50
Pittsburgh, steel	21.50 to 22.00
Chicago, iron	22.50 to 23.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, iron	22.25 to 22.75
St. Louis, iron	23.00 to 23.50
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	19.00 to 20.00
Boston	23.00 to 24.00
Cincinnati	21.00 to 21.50

NO. 1 CAST SCRAP

Pittsburgh, cupola	$25.00 to 26.00
Chicago, cupola	25.50 to 26.00
Eastern Pennsylvania, cupola	25.00 to 26.00
Cleveland, cupola	22.75 to 23.00
New York, cupola (dealers' price)	22.50 to 23.00
Cincinnati, No. 1, cupola	21.50 to 22.00
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	26.00 to 26.50
Buffalo	24.50 to 25.00
Boston	27.00 to 28.00
Valleys	22.75 to 23.00

HEAVY CAST

New York (dealers)	21.50 to 22.00
Buffalo	21.00 to 22.00
Pittsburgh	22.00 to 23.00
Cleveland	17.25 to 17.50
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$20.00 to 21.00
Pittsburgh, agricultural	19.00 to 20.00
Chicago, railroad	20.50 to 21.00
Chicago, agricultural	20.50 to 21.00
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	20.00 to 21.50
Cleveland, agricultural	17.50 to 18.00
St. Louis, railroad	17.00 to 17.50
St. Louis, agricultural	16.50 to 17.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

3 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	25.00 to 25.50
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	25.00 to 26.50
Birmingham	22.00 to 23.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	19.50 to 20.00
St. Louis	20.00 to 20.50

BOILER PUNCHINGS

Chicago	$21.50 to 22.50
Eastern Pennsylvania	23.00 to 24.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

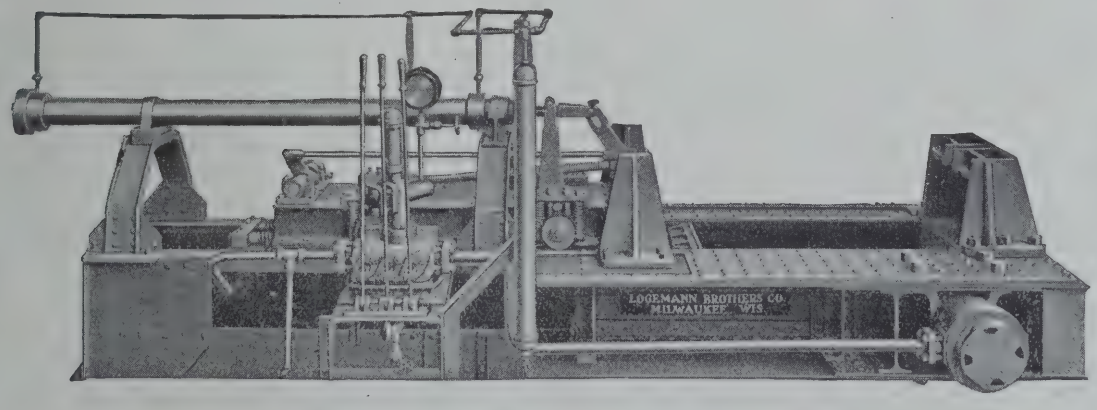
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

FINISHED PRODUCTS.—The St. Louis Screw Co., St. Louis, has issued its ninth catalog, an 80-page booklet in which specifications and other data, pertaining to the company's products are given. These products include, bar iron, screws, bolts, nuts, washers, etc. The booklet is well illustrated.

CORE OVENS.—Catalog No. 148 recently published by the Whiting Foundry Equipment Co., Harvey, Ill., is devoted to a description of core oven equipment in general. Ovens equipped with three types of doors are described and illustrated. Core oven racks, core makers' benches, puller machines, core oven cars and trucks, etc., are among the equipment described. Many of the illustrations are of actual installations.

LADLES.—The Whiting Foundry Equipment Co., Harvey, Ill., has published an illustrated booklet, in which crane ladles, truck ladles, slag truck ladles, bottom tap ladles, teapot spout ladles, shank ladles, trolley ladles, car wheel ladles and reservoir ladles, for use in modern foundries, are described and illustrated. Data given, includes construction, capacities and other specifications useful to persons interested in such equipment.

MACHINE EQUIPMENT.—An interesting booklet has been issued by Somers Fitler & Todd Co., Pittsburgh, containing a pictorial description of the company's warehouses and office departments. This is supplemented by a brochure on the officers, policy of the company and general information concerning the machinery and equipment in which it deals. The booklet is elaborate, is printed on heavy stock, and the illustrations are well presented.

MOTOR-DRIVEN TOOLS.—Bulletin No. 103, being circulated by the Stow Mfg. Co., Inc., Binghamton, N. Y., contains descriptions and illustrations of tools manufactured by the company. Those described are, heavy-duty drills, hand drills, portable drills, buffer and grinder, general utility tools, screw driver, flexible grinder, grinder for lathe carriage or tool post, etc. All are motor-driven. Specifications and other data concerning each tool is given.

ELECTRIC FURNACES.—The Booth Electric Furnace Co., Chicago, has issued an 8-page bulletin describing its improved 2-phase, 2-electrode furnace. The bulletin is well illustrated giving a graphic presentation of construction and operation. The furnaces are built in five sizes, from 1500 pounds to 12 tons rated capacity, although each will melt approximately 25 per cent over the rate. The new furnace is oblong, with two electrodes through the roof and an auxiliary electrode inserted through the door in the front of the furnace. A simple mechanism for tilting facilitates the handling of slag through either door into the pit.

BY-PRODUCT PLANTS.—A 68-page booklet, entitled, "By-Product Coke and Gas Plants," has been published by the Koppers Co., Pittsburgh. A brief, but thorough, history of the development of the by-product coke oven is given and is followed by descriptions of the modern coke oven, regenerative gas ovens, combination coke and gas ovens, by-product recovery methods, ammonia concentrating plants, recovery and refining process, coal and coke handling systems, the utilization of coke oven gas, tar distilling plants and laboratory and research work. The booklet is profusely illustrated throughout with cuts of actual installations and is printed on heavy coated stock.

TITANIUM ALLOY.—The Titanium Alloy Mfg. Co., Niagara Falls, N. Y., has issued a 32-page booklet, describing the use and effect of titanium alloys in deoxidizing steel. It contains numerous analyses, tensile tests, and endurance tests as well as photomicrographs of treated and untreated steel. An interesting table shows effect on steel rolled into plates and sheets, particularly the latter when galvanized. The pamphlet is an effort to make clear the theoretical reasons for expecting titanium to be of value in steel. The same company has issued a pamphlet on pigments produced from titanium oxide and the result of tests from panels erected in various parts of the country to indicate its resisting power. A leaflet comes from the same source covering a new opaquing material made from zirconium products for use in the manufacture of white opaque glass and enamels.

ELECTRIC HOISTS.—A brief description of the salient points of a line of electric hoists manufactured by the Victor R. Browning Co., Cleveland, is given in an 8-page booklet, which the company recently published. According to the booklet, this line of hoists is built for use in structural shops, automobile factories, foundries, machine shops, loading platforms and other industrial works where continuous rough use is encountered. Some of the features of these hoists, as pointed out by the catalog are: The castiron hoist drum has all surfaces machined and contains deep grooves to receive cable; the removal of six cap screws gives access to the compact controller, which can be removed as a complete unit; heat treated gears and disc load brake occupy an individual compartment and operate in oil; the motor, which operates on ball bearings, is contained in a separate compartment and is protected by a steel plate. Other parts of the hoist are described and the numerous illustrations give the reader a comprehensive idea of the equipment.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A firm in Belgium desires to purchase machines for cutting tobacco and for manufacturing cigarettes. Opportunity No. 30742.

Machines for working and blowing glass are desired by a firm in Italy. Opportunity No. 30743.

A firm in the Netherlands desires silver-working machines, including flattening mills, pressing machines, joiners' benches, drill machines, lathes and polishing machines. Opportunity No. 30746.

The representative of a firm in Italy now in the United States desires agencies for the sale in Italy of coal, machinery for making needles and pins, etc. Opportunity No. 30749.

A manufacturer in Paraguay desires machines for the manufacture of wax matches. Correspondence should be in Spanish. Opportunity No. 30751.

A merchant in Belgium desires an agency and consignments of hardware, such as carriage hardware and forge equipment. Opportunity No. 30752.

A municipality in the Dutch East Indies desires 2300 tons of cast iron pipe. Opportunity No. 30755.

An engineer in France desires representation of an American firm as an agent or technical and commercial assistant for the sale of machinery and tools of all kinds. Opportunity No. 30755.

An American exporting company desires to purchase suitable engines and boilers of a type necessary for running a rice-milling plant. Opportunity No. 30761.

A firm in India desires connections with exporters and manufacturers of cutlery, hardware, antimony ware, novelties, etc. Opportunity No. 30762.

The government of a South American republic desires to purchase linotype machines, presses and similar equipment. Correspondence should be in Spanish. Opportunity No. 30767.

A firm in Turkey desires to secure agencies and requests samples and catalogs covering portable houses and mechanical carpentry, baths, sinks, water-closets, building hardware, etc. Opportunity No. 30769.

An engineer in a municipality of South Africa desires to purchase a stamping machine. Opportunity No. 30770.

A firm in Czechoslovakia desires agencies for the sale of agricultural implements. Opportunity No. 30771.

Representation is desired by a firm in the Dominican Republic of exporters of iron and steel, chemicals, and other materials. Opportunity No. 30772.

A company in South Africa desires catalogs of machinery for use in the dried fruit business, such as grading, sorting, pressing and drying machinery. Opportunity No. 30778.

The representative of a firm in Argentina is in the United States and desires an agency for the sale of automobiles and accessories, novelties, specialties, etc. Opportunity No. 30819.

Catalogs and quotations on agricultural machinery and hand machinery for making underwear are desired by a man in Italy, in view of securing an agency for selling throughout that country. Opportunity No. 30823.

A commission agent in France desires an agency for the sale of leather, machine tools, etc. Opportunity No. 30825.

A company in England desires to represent on a commission basis manufacturers of any patent or specialty which can be marketed in conjunction with shipping and collieries. Opportunity No. 30831.

An army officer in Europe desires catalogs of logging machinery, logging railway, portable cranes, circular, band and multiple-blade saws, also complete estimates for an outfit capable of cutting, transporting and sawing into boards, 100,000 tons of timber per annum. Correspondence should be in Spanish. Opportunity No. 30832.

A firm in France desires to purchase and later secure an agency for all kinds of machinery for the manufacture of shoes. Opportunity No. 30835.

The purchase of shearing machines up to ¾-inch, punches, drills, pneumatic-riveting plant, and electric welding machinery, is desired by a party in Roumania. Opportunity No. 30836.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, October 16, 1919 *No. 16*

Strike Factor Passing Rapidly

Ceases to be Regarded as Major Consideration in Some Districts—Resumption of Mills and Furnaces is Speeded up—New Business Continues Active—Many Boat Contracts Placed—Pig Iron Market Higher

STRIKE interruptions virtually have ceased to be regarded as a major factor in iron and steel production in certain districts. Generally more progress has been made the past week in restoring former activities of the mills and furnaces than in any similar period since the walkout of the workmen. A good many plants have reached or are approaching the stage of operations in effect at the time of the strike. This does not represent capacity output, however, since a shortage of labor in various cases then was felt and developments of the past few weeks have not contributed to improve this underlying situation. With the steel strike well in hand producers are giving serious consideration to the effect of a possible suspension in the coal fields Nov. 1.

The improvement in the operating position of the industry has been marked by the first break in the strike in the much-affected Cleveland and Youngstown districts. All the blast furnaces at Cleveland still are idle, but two mills have resumed. In the Mahoning valley the first steel works blast furnaces to be started since the strike are under way, and some steelmaking and mill capacity is active. It is expected that from this starting point, operations gradually will be extended. Sheet production is being restored with greater rapidity. The largest maker began the week with 85 per cent of capacity active and some additional mills have resumed since. Its tinplate operations are around 60 per cent. Independent sheet and tin plate plants are up to about 75 per cent of the rate of output prevailing before the strike. The Carnegie Steel Co. has increased the number of blast furnaces in commission since the outbreak of the strike from 20 to 35.

Many Ships Are Let

Ship work is calling for some round tonnages of steel and the prospects of the plate market correspondingly have brightened. New contracts tentatively or actually closed with four or five eastern yards call for 25 to 30 vessels, representing a requirement of 75,000 to 100,000 tons of steel. Most of these boats are of the tanker type. A provisional order for eight vessels of this kind has been closed by one large steamship interest at New York. Pacific coast yards are inquiring for 16,000 tons of ship steel from mills in the Chicago district.

Iron Market Is Higher

With some of the merchant furnaces still banked and unable to ship, prompt pig iron is increasingly scarce, and the market has moved upward. The $26.75 furnace price for this year and first half which steel was quoted by important lake interests, disappeared this week. Whatever new business now is booked will be subject to an indeterminate advance to be announced by Jan. 1. In all sections some sales are being made on a higher basis. In their quest for tonnage, buyers are taking up off lots without hesitation. Some round sales of basic and malleable have been closed at Chicago.

Premiums are being freely paid for prompt or early material. Steel bars are reported to have sold as high as 2.80c, Pittsburgh. Semifinished material, the supply of which has become more pinched by the resumption of various finishing mills, is being held $2 higher by middlemen. Bar iron has been advanced $2 at Chicago. The demand for reinforcing bars is heavy and prices are strong.

Structural business appears to be going ahead more vigorously after some hesitancy on the part of prospective buyers. Reported awards of the week total about 15,000 tons. A 10,000-ton hotel at Detroit is up for bids.

Export Sales Maintained

Export sales are well maintained it is estimated around 400,000 tons per month. The longshoremen's strike at New York now has interposed a further check on deliveries and unshipped tonnage is backing up. Sheets and wire for overseas shipment are scarce and premiums of $3 to $5 per ton are being paid in these lines. Japan continues to buy freely. Inquiries from that source alone total 60,000 tons of basic and several thousand tons of foundry pig iron. New purchases amount to about 10,000 tons of iron. Orders for shipbuilding material placed by Japan this year are estimated around 400,000 tons. A British inquiry calls for 10,000 tons of low phosphorus iron. A 10,000 to 15,000-ton bridge over the Danube for Roumania is expected to come to this country, credits having been arranged.

OCTOBER 16, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Tariffs on a New Base

CONSIDERABLE opposition has developed to the tungsten ore tariff as proposed in Timberlake bill H R 4437 now pending before the senate finance committee. The bill, as it passed the house, calls for a duty of $10 a unit, equal to $700 a ton of 70 per cent ore and works out to about $1 a pound of metallic tungsten contained in ferrotungsten. The bill also carries an amendment imposing a retroactive tax on stocks of imported ore already in this country, which has aroused much condemnation.

Representatives of a number of companies interested in tungsten met in New York recently, including tool steel manufacturers, exporters of finished tools, ferrotungsten producers, refiners of tungsten ore and importers. A resolution was framed at the meeting and has been sent to each of the members of the senate finance committee, declaring "undivided and determined opposition" to the bill. The resolution laid stress on a statement credited to the United States geological survey that American supplies are sufficient to last for only three years. The western producers of tungsten ore had argued for the tariff on the ground that the domestic tungsten industry must be protected so that the nation would have supplies in the event of future war.

The whole tariff question has been affected by the events of the past five years and no doubt it may take five times five years for the brains of this generation to settle many of its new complexities. Relative labor costs have been thrown out of balance temporarily, but central and eastern Europe, with three times as many people to the square mile as in the United States eventually must work out lower labor costs, when protection may again be an imperative consideration. But for the time being, when our balance of trade has grown so overwhelming that it is a detriment rather than an asset, when imports of raw materials are to be encouraged that our exports of finished products may be maintained, and when economy of production to reduce living costs is universally urged, it would seem a step backward to endorse such a tariff now. Legislation should look to the greatest good for the greatest number. This being so, the senate finance committee should consider the tungsten tariff bill thoroughly and seriously before stamping it with its approval.

Bringing Out the Truth

WHILE it seems that the senate committee on education and labor will be able to do nothing in the way of recommending legislation for settlement of the steel strike, the visit of members of that committee to the Pittsburgh district should prove desirable to the industry. Its trip through mills ought to convince it, if it went with open minds, that working conditions as painted by labor agitators do not exist, but on the contrary are altogether satisfactory. It should prove to the committee that the workmen in the main are contented, live comfortably and desire to be left alone. It should prove that the acts of violence of which the committee has heard so much in reality are being perpetrated by the strikers urged on by agitators who would not hesitate for a moment to destroy not only the steel industry but the government itself if they had the power. And, what is more, the visit should convince the members of the committee that there can be no doubt as to the outcome of the strike, and that Americanism and justice will prevail and labor unionism as represented in the present issue will be utterly routed.

Indeed it has been almost routed now and in effect the strike has been won by the manufacturers. It is because this is so well known to him that President Samuel Gompers of the American Federation of Labor has tried the last resort of asking the industrial conference in Washington to "arbitrate" the strike. He is hoping against hope that something may be brought about which will

save the unions from a direct and disastrous defeat and preserve some standing before the country for the shaken American Federation of Labor. Yet Gompers knows as well as any clear-thinking man that the principle involved cannot be "arbitrated" and Judge Gary has made that fact distinctly plain.

The senate committee members must have learned many things, if it made its visit for the purpose of obtaining first hand information.

Winning the Real Export Prize

THE recovery of exports in iron and steel for August, according to the figures just announced, following the sharp slump in July, suggests strongly that special conditions operated to bring about the decrease in the latter month. In June the country shipped to foreign destinations 561,020 gross tons which by a considerable margin was the largest month of the year. In July this total dropped precipitately to 287,685 tons. Eliminating both June and July from calculations, it is shown that the average outborne deliveries for the seven months beginning in December, 1918, or the month following the armistice, were 379,231 tons. The combined average of the low and high months of the year, or June and July, was 424,337 tons. It is evident therefore that the August figures of 396,743 tons approximately are on a par with what may be regarded as the normal monthly export movement since the ending of the war.

The falling off of exports in July variously had been attributed primarily to the foreign exchange situation and to the dock strike in New York during that period. It would seem to be indicated by the August total that foreign exchange was the lesser of the two factors as a retarding influence. While the premium on the American dollar caused by the preponderating flow of trade to this side, operates strongly to discourage purchases from American mills and furnaces, because in effect it raises the price, it is well to remember that this situation is applicable chiefly to Europe and not so uniformly to other countries of the globe to which this country may sell iron and steel. In fact in some of these countries the American dollar is near parity. After all it is the demand for iron and steel from the world apart from Europe that is the important thing for the American manufacturer. Before the war Europe on the whole produced sufficient iron and steel within itself to supply its own needs, and in time, it promises to restore itself to this position. The rich prize in the iron and steel export trade of the world is that which lies in the insufficient-producing or nonproducing countries and at the present time the United States appears to have a commanding lead in this commerce.

Now is Time to Save Coal

CONSIDERING the high cost of coal in England it is not surprising that the subject of fuel economy held the close attention of prominent British ironmasters for two days at the recent autumn meeting of the Iron and Steel institute. As outlined elsewhere in this issue, discussion centered about a report on "Fuel Economy and consumption in the Manufacture of Iron and Steel," presented on behalf of the British association fuel economy committee. This report includes the results of investigations covering 21 companies operating blast furnaces and contains interesting revelations.

Of the blast furnaces examined, only those of three firms were equipped with double bells, while two companies operated stacks with open tops. Furnace gas was used in internal combustion engines for generating the blast in only five of the plants investigated. Half of the operators lacked sufficient data to enable them to estimate even approximately the heat losses at the stoves and boilers, and four admitted that they had no data whatever as to the temperature and composition of the chimney gases. One producer made an attempt to utilize the heat in molten slag, and three companies which had adopted or experimented with hot blast claimed that the resulting economy was not sufficient to justify its use. Referring to the problem of fuel economy in isolated furnace plants, the report reads, "It is indeed depressing to have to record the confession of one firm that it has 40 per cent of gas above its requirements which is allowed to go to waste; but we fear that a similar admission would have to be made by many other undertakings if a strict inquiry were instituted into their fuel consumptions."

In view of the difficulty Great Britain is encountering in maintaining coal production, the conditions revealed in the report are particularly significant. While it is true that under certain conditions the value of strict fuel economy is discounted by other factors, such as prohibitive cost of new equipment, etc., there seems to be sufficient evidence in the report to warrant the statement that in the plants investigated too little attention is being paid to the consumption of fuel. There can be no excuse for failure to know temperatures and composition of gases, and the practice of allowing surplus gas to go to waste is particularly intolerable at this time when fuel of all kinds is so much in demand. The means of effecting vast economies are known but not employed. The problem is one of scientific organization, co-ordination and application rather than of the discovery of new principles, and merits the serious consideration of the United States as well as England.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1084 AND 1086

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	28.00
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	28.65
Malleable, Chicago, furnace	27.25
Malleable, Buffalo, furnace	27.25 to 29.00
Malleable, delivered eastern Pa.	30.00 to 32.90

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$31.35 to 33.35
No. 1 foundry, Chicago furnace	28.00
No. 2, foundry valley, Pittsburgh	28.15
No. 2 foundry, Buffalo	26.75 to 28.50
No. 2 Northern, Boston	31.90 to 32.90
No. 2 foundry, Cleveland furnace	27.25
No. 2 foundry, Ironton furnace	29.75
No. 2 foundry, Chicago furnace	26.75
No. 2X, eastern del., Phila.	31.35 to 32.35
No. 2X, eastern, N. J. tidewater	31.35 to 32.35
No. 2X, eastern, Boston	33.90 to 34.90
No. 2X foundry, Buffalo furnace	28.00 to 29.50
No. 2 foundry, del., Philadelphia	30.10 to 31.10
No. 2 foundry, N. J. tidewater	30.10 to 31.10
No. 2 southern, Birmingham	26.75 to 27.50
No. 2 southern, Cincinnati	31.35 to 31.60
No. 2 southern, Chicago	31.75 to 32.50
No. 2 southern, Phila.	33.25 to 34.00
No. 2 southern, Cleveland	31.75 to 32.50
No. 2 southern, Boston	35.50 to 36.00
No. 2 southern, St. Louis	31.00 to 31.75
Virginia, No. 2X, furnace	30.00
Virginia, No. 2X, Philadelphia	34.10
Virginia, No. 2X, Jersey City	34.40
Virginia, No. 2X, Boston	34.70
Gray forge, valley, Pittsburgh	27.15
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	28.60 to 29.40
Silveries, 8%, furnace	40.25 to 43.00
Ohio Silveries, 8%, Chicago	44.05 to 46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	39.80
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	32.75
Charcoal, Superior, Chicago first quarter 1920	33.75

Coke

(At the ovens)

Connellsville furnace	$4.00 to 4.25
Connellsville foundry	5.50 to 6.00
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	8.50 to 9.50
New River furnace, nominal	7.50
Wise county furnace, nominal	5.75 to 6.00
Wise county foundry, nominal	7.50 to 8.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	100.00 to 105.00
Spiegel, 18 to 22 per cent furnace, spot	34.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.25 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	22 to 24 cents
Ferrovanadium, 35 to 40 per cent, per pound contained, according to analysis	$6.00 to $7.50
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50
Open-hearth, Philadelphia	42.50
Open-hearth, Philadelphia	38.50
Bessemer, Pittsburgh	38.50
Bessemer, Youngstown	38.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	55.00

SHEET BARS

Open-heath, Pittsbugh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.745c
Bar iron, common, Chicago	2.72c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.77c
Bar iron, common, Pittsburgh	2.75c
Hard steel bars, Chicago	2.55c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 45.00
Relaying rails, Pittsburgh	39.00 to 41.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1084.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

	Black	Galv.
Base, Pittsburgh	Per cent off	
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1084.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$62.80
Six-inch and over, Chicago	59.80
Four-inch, New York	59.30
Six-inch and over, N. Y.	56.30
Four-inch, Birmingham	51.00
Six-inch and over, Birmingham	48.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.78½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.76½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	2.70c to 3.10c	off
Hot pressed, square tapped	2.45c to 2.85c	off
Hot pressed, hexagon blank	2.70c to 3.10c	off
Hot pressed, hexagon tapped	2.45c to 2.85c	off
Cold pressed, square tapped	2.45c to 2.85c	off
Cold pressed, square blank	2.70c to 3.10c	off
Cold pressed, hexagon blank	2.70c to 3.10c	off
Cold pressed, hexagon tapped	2.45c to 2.85c	off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Oct. 15, 1919	Average prices Sept. 1919	July 1919	Oct. 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	34.40
*No. 2 Foundry, Pittsburgh	28.15	28.15	28.15	35.40
*No. 2 Foundry, Chicago, furnace	26.75	26.75	26.75	34.00
Lake Superior charcoal, Chicago	32.75	32.75	31.75	38.70
Malleable, valley	27.25	28.65	28.65	35.90
Malleable, Chicago	27.25	27.25	27.25	34.50
*Southern, No. 2, Birmingham	26.75	26.75	25.00	35.25
*Southern Ohio, No. 2, Ironton	26.75	26.75	26.75	34.00
Basic, eastern del., eastern Pa	28.00	27.00	26.50	36.60
**No. 2X, Virginia, furnace	30.00	29.25	26.50	37.50
*No. 2X, eastern del., Philadelphia	31.25	29.95	29.50	38.85
Gray forge, valley del., Pittsburgh	27.15	27.15	27.15	34.40
Ferromanganese, 80 per cent, delivered	110.00	105.00	112.00	250.00†
Bessemer billets, Pittsburgh	38.50	38.50	37.30	47.50
Bessemer sheet bars, Pittsburgh	42.00	42.00	40.80	51.00
Open-hearth sheet bars, Pittsburgh	42.00	42.00	40.80	51.00
Open-hearth billets, Pittsburgh	38.50	38.50	37.30	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.745	2.595	2.595	3.73

	Prices Oct. 15, 1919	Average prices Sept. 1919	July 1919	Oct. 1918
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.72	2.62	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65c	2.55	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2,895	2.845	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.31	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.53	3.51	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.70	5.66	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.00	4.65	4.00	6.00
Connellsville foundry coke	5.75	5.90	4.90	7.00
Heavy melting steel, Pittsburgh	20.00	20.50	19.90	29.00
Heavy melting steel, eastern Pa	19.50	19.00	18.85	28.50
Heavy melting steel, Chicago	18.50	19.10	19.40	29.00
No. 1 wrought, eastern Pennsylvania	27.00	27.00	24.70	34.00
No. 1 wrought, Chicago	22.00	21.25	21.20	33.50
Rerolling rails, Chicago	26.50	25.50	24.70	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Prompt Iron Scarce, Prices Rise

Eastern Furnaces Virtually Booked Full for This Year—Off-Lots More in Demand—$26.75 Price Disappears in Middle West and Producers Plan Indeterminate Advance for Next Year—Round Lot Sales Made at Chicago

Philadelphia, Oct. 14.—The supply of pig iron in the East now practically is sold up for the rest of the year. Most furnaces have no more to sell while the others have only a little. It is expected there may develop shortly a situation like that during the war where the only spot iron obtainable, was off grades and small tonnages. While consumers are pretty well covered and there are few big inquiries, there is a constant call for prompt tonnages. Most of the recent demand upon eastern furnaces has come from New England consumers and is due to the inability of idle Buffalo furnaces to make deliveries on their contracts. Prices reflect a strong situation No. 2X (2.25 to 2.75 silicon) now ranges from $31 to $32 eastern Pennsylvania furnaces while No. 2 plain (1.75 to 2.25 silicon) is $1 lower and No. 1X (2.75 to 3.25 silicon) is $1 higher. The minimum for western Pennsylvania stacks which still have some iron for this year is $29, $30 and $31 furnace respectively for the three grades. The price on Virginia No. 2X is $30 furnace. There is no Virginia No. 2 plain obtainable and one furnace has withdrawn on silicons higher than 2.75. Another Virginia furnace is selling high silicons at the regular government differentials, $31.75 for No. 1X, etc. Only one eastern Pennsylvania furnace is a seller for next year. This interest continues to book first quarter orders at $32 furnace for No. 2X and $33 for No. 1X. Premiums above the regular market continue to be secured. One maker sold round lots of No. 2 plain at $31 and $32 eastern Pennsylvania furnace. Two round lots of malleable have been sold at $31 eastern Pennsylvania furnace. Two sales of basic to eastern consumers have been closed, one involving several thousand tons and the other 1000 tons at the market price of $28 delivered. Sales of low phosphorus include 1000 tons of standard iron at $37 furnace and another of 1000 tons of copper-bearing at $35 furnace. Several small lots of copper-bearing including one for Pacific coast also have been placed. The Standish, N. Y., furnace went into blast today. The trade reports an active inquiry from eastern consumers for gray forge for first quarter. All furnaces now worried over threatened coal strike of Nov. 1 and banking or blowing out of numerous stacks would not cause surprise.

Good Demand in Boston

Boston, Oct. 11.—Spot pig iron has tightened in the local market, until at present it is doubtful if a sizable order would be taken by any of the regular furnaces. The Susquehana furnace at Buffalo, is entirely out of the market and deliveries from its yard are moving slowly. Other Buffalo furnaces are nearly all sold up as far as this year's delivery is concerned, although one or two still offer iron for first quarter. Several of the eastern Pennsylvania furnaces have withdrawn from this year's market, and one furnace reports having to refuse business from an old customer which was offered at any price, delivery before Jan. 1. Virginia furnaces are offering some iron and making some sales but their attitude is extremely independent and many inquiries have been turned down. One furnace in the Virginia territory has sold 2X iron (2.25 to 2.75 silicon) at $30, furnace, and quotes this as its minimum price even for lower silicon iron. Prices for 1920 iron have advanced about $1 in nearly all of the furnaces where this delivery is offered. Small sales of 2X iron (2.25 to 2.75 silicon), have been reported for first quarter delivery at $33, furnace. Bethlehem is offering 1920 iron, as well as some lots for spot and last quarter delivery. A Buffalo furnace is known to have shaded the 1920 price, and one of its customers reports a quotation of $28, furnace, for first quarter delivery of 2X eastern iron (2.25 to 2.75 silicon). Sales in this territory during the past week have totaled about the same as the week previous. A Rhode Island consumer bought 1000 tons of malleable iron from an eastern Pennsylvania furnace for next year delivery at the same price as the spot market for 2X iron. A Framingham, Mass., consumer has been in the market for 4000 tons and placed an order for half of this during the week.

Foreign Demand Grows

New York, Oct. 11.—Pig iron demand from abroad is reaching large proportions. Japan alone has inquiries out for approximately 60,000 tons of basic, and, in addition, wants several thousand tons of foundry iron. One Japanese buyer during the week placed an order for 5000 tons of basic, which, with a previous order, makes a total of about 10,000 tons of this grade closed by Japanese interests during the past 10 days. It is understood most of this tonnage was booked by an eastern steelmaking interest. Japanese buyers during the week closed for considerable foundry iron in the South, at $28, Birmingham, for 1.75 to 2.25 silicon, while in some instances $28.50, Birmingham, was paid. In addition to the Japanese inquiry, heavy tonnages are wanted for other countries. An Eng-

lish interest wants 10,000 tons of low-phosphorus, and a Belgian consumer, 5000 tons of this grade. A Scandinavian buyer asks 1000 to 2000 tons of foundry, South America 800 tons of foundry, and numerous other feelers have been put out.

Domestic demand also increased very noticeably during the past week. Heavy sales are reported in Connecticut and other New England states, and new inquiries from that section are heavy. There is an improved inquiry from New York state and New Jersey melters. Altogether, current domestic inquiries call for more than 20,000 tons, principally foundry iron. Included are one lot of 5000 tons, one of 3000 tons; two of 1500 tons, each, and many smaller tonnages, mostly for shipment next year. The desire to buy is based largely on the fear of consumers that if they do not take prompt action, they will be unable to get sufficient iron to get a lower price. Prices on foundry iron rapidly are hardening. Eastern Pennsylvania No. 2X foundry (2.25 to 2.75 silicon) is being sold at $32, furnace, and the minimum is not far from $30.50, furnace. Buffalo iron is bringing fancy prices. While the bulk of this tonnage has been sold in this district at $29.50 to $30, Buffalo, for 2.25 to 2.75 silicon, moderate lots of this grade, even slightly off quality, have brought as high as $33, Buffalo. It is believed $32, eastern Pennsylvania furnace, now is minimum on 2.25 to 2.75 silicon for next year, and the asking price in a number of cases is $33. A consumer in this district recently placed 1000 tons of basic at a price which it is said now could not be duplicated. A small tonnage of eastern Pennsylvania malleable has been sold at $31, furnace. Some eastern Pennsylvania bessemer iron has been offered at $31, furnace.

Sales Are Considerably Smaller

Pittsburgh, Oct. 14.—Transactions for pig iron have dwindled to extremely small proportions the past few days due to the fact that the Steel corporation subsidiaries have blown in a number of stacks which were banked following the outbreak of the strike and no longer are in the market to make up the defficiency in their own production. Estimates of the purchases of the Steel corporation run anywhere from 45,000 to 60,000 tons, largely basic, but including a fair amount of bessemer. At least 30,000 to 40,000 tons of basic were purchased for the Pencoyd works of the American Bridge Co. while the remainder was scattered among the works of the American Steel & Wire Co. and some went to one of the valley plants of the Carnegie Steel Co. These purchases have pretty well cleaned up stocks of the steel making grades that were on the yards of the merchant blast furnaces and some of the independent steel companies. Business during the past two or three days has been largely in small lots but fairly well scattered among the different grades. Malleable has been moved at $27.25 furnace while sales of bessemer in lots running from a carload up to 500 tons are noted at the full market price of $27.95 furnace. A good many small lot inquiries are coming out for foundry iron and most producers are willing to take on these orders at the regular market base of $26.75 furnace for No. 2 grade (1.75 to 2.25 silicon. Some sellers, however, are quoting as high as $29 furnace for No. 2 foundry but no business yet has been reported at that figure. The Carnegie Steel Co. now has 35 blast furnaces in operation as compared with about 20 the first few days of the strike, while the Pittsburgh Steel Co. has one of its two stacks at Monessen, Pa., in blast and in the Mahoning valley, the Brier Hill Steel Co., Youngstown Sheet & Tube Co., Republic Iron & Steel Co., all have furnaces again in operation. The stack of the Clinton Iron & Steel Co., Pittsburgh, was blown in last Saturday night on foundry iron.

Selling in Buffalo District

Buffalo, Oct. 14.—Uncertainty of the labor situation has not served to stop all selling of iron in this district. Although most of the interests are out of the market, one is booking fair tonnages of iron for 1920. During the past week this interest sold three grades, aggregating a few thousand tons. Some No. 2X (2.25 to 2.75 silicon) has been sold at $29.50. No. 2 foundry (1.75 to 2.25 silicon) has been sold for $28.50, and 2.75 to 3.25 silicon iron has been sold for $31. There is no anxiety to take orders. Plenty of inquiry is in sight, and it is generally believed that with the settlement of the strike the price of iron will increase. Other interests affected by the strike are not contracting, and will not sell until their furnaces are operated.

$26.75 Price Disappears

Cleveland, Oct. 14.—With shipments shut off from all the local furnaces the iron market in this district continues to show increasing strength, especially for spot or nearby delivery. Numerous consumers are coming into the market for spot iron and they are freely willing to pay premiums, which in most cases are being asked by the comparatively few furnaces able to ship into this territory. Some melters are complaining that their supplies are running dangerously short and that their operations are likely to be affected by the shortage unless they are helped out by shipments from some of the furnaces with which they have contracts. Additional sale scales of southern Ohio iron at $29.75 furnace for $32.15 Cleveland for 1.75 to 2.25 silicon have been made in the past week. An offer of $30 furnace for 2.25 to 2.75 silicon is reported by one maker. A sale of 1000 tons of malleable at $28 Buffalo was closed. Makers continue to find a ready market for off lots, one of them selling 2000 to 3000 tons additional in the week at differentials from the $26.75 base price. This same interest disposed of 4000 to 5000 tons of standard grades at the $26.75 base price. This latter figure, however, now has disappeared from the market, either for this year or for shipment after Jan. 1. Some producers still will protect regular customers through the first half, but the prices on these tonnages are left open and are subject to such determination as shall be made by Jan. 1. This is due to the uncertainty over future costs. Shipments of steel-making iron in various directions still are suspended because of the interference of the strike on steel works operations. Where some of the mills have resumed, these shipments have not yet been ordered forward, since these plants have a considerable stock on hand which was accumulated from material in transit at the outbreak of the strike. New inquiry for iron is fair, but that for forward delivery does not seem so liberal. Where the furnaces are able to ship, their stocks continues to be reduced.

Chicago Inquiry is Heavy

Chicago, Oct. 14.—Melters of pig iron in the Chicago district are looking to their forward requirements and some heavy inquiry is being entertained for first half delivery. Demand for prompt iron is less in tonnage but more insistent since it is dictated by actual needs. A local seller disposed of 500 tons of southern iron which was in transit and ready for immediate delivery. Production in the immediate Chicago district promises to be increased as striking furnace forces are returning gradually to work. One furnace which had been banked for three weeks was put in blast a few days ago. As more men return other idle furnaces will resume. The tendency of producers seems to be to retire from the market for the next few weeks until the situation as to cost of fuel and labor have been decided and until future freight rates are more certain. It seems likely that when selling for 1920 delivery is started actively quotations will be higher than have prevailed recently, although leading makers would prefer not to increase their prices. Two large sales have been made recently for first half, a malleable foundry taking 10,000 tons of that grade and an Indiana consumer closing for an equal tonnage of malleable and foundry. An inquiry is current for 10,000 tons for first half for the Indiana plant of a Chicago manufacturing interest. An inquiry for 500 tons of 2.75 to 3.25 silicon for first quarter from a northern Illinois manufacturer is out. Iron from outside sources is being delivered in the Chicago district, at $3 to $4 over the nominal Chicago figure, indicating the anxiety for prompt delivery. Some of this iron is coming from the South and considerable tonnage from the Soo. Lake Superior charcoal producers formally have not opened their books for 1920 delivery, but have made quotations on definite inquiries for next year at about $1 above the 1918 schedule. An important southern producer who has been selling at $28, furnace, for 1.75 to 2.25 silicon is willing to take some business for first quarter at $29 for the same grade.

Want 8000 Tons of Malleable

Cincinnati, Oct. 13.—A general inquiry for approximately 8000 tons of malleable bessemer has been issued by the Link Belt Co., for shipment to its Indianapolis plant during the last quarter of 1919 and first half of 1920. There is a better inquiry for foundry iron for first quarter and first half shipment, but the reluctance of furnaces to take on any more business for that delivery is more marked. If any contracting is being

done it involves only small tonnages for favored customers. Some southern foundry iron (1.75 to 2.25 silicon) is being sold for last quarter shipment at $28, Birmingham, with $1.10 advance asked for 2.25 to 2.75 silicon. Northern foundry iron seems to be cleaned up for prompt shipment, and Ironton producers are holding at $29.75, furnace, for 1.75 to 2.25 silicon. The feeling is general that furnaces will soon fix a figure for next year, and when this is done heavy buying is likely to start. The foundries state that they are handicapped in bidding on future contracts without a supply of iron in sight. However, the furnace operators are equally handicapped because they are not yet able to make a conservative estimate of what their producing costs will be after Dec. 31.

Buying at St. Louis Not Large

St. Louis, Oct. 11.—Buying of pig iron to take the place of tonnages from Chicago and the East, delayed by the strike, has not been up to expectations of dealers in this district. Consumers do not want to buy at present prices and most of them are supplied. Some activity continues in southern iron, mainly in small lots for immediate shipment to fill in with. One dealer reports sales amounting to 1000 tons, and total sales during the past week are estimated at from 2500 to 3500 tons. One important Eastside interest, it is believed, will be in the market for 6000 to 8000 tons of basic before the end of the month. Consumption is on a large scale, all foundries working at full capacity. The Mississippi Valley Iron Co.'s furnaces are still out of blast. Repairs and enlargements will not be completed before Jan. 1.

Good Market in South

Birmingham, Ala., Oct. 14.—Southern furnace companies are able to sell pig iron without the least difficulty. Regular customers are being accommodated and no effort is being made to obtain business, confidence being manifested that all the iron offered will find an easy market. The sale of 1000 tons of 1.75 to 2.25 silicon foundry iron to Japanese interests, to be shipped during the last quarter, may be followed by other export business. Opinion among manufacturers now is that the base price of iron, $28 for No. 2 foundry, (2.25 to 2.75 silicon) is too low, and in some quarters the belief prevails that when 1920 buying starts $30 will be considered as a minimum. Production is to be increased, as railroad cars are not so scarce as recently. Two producers are practically out of the market for a while, and others are selling cautiously. Inquiries for 1920 iron are numerous. Production is now estimated to be at least 200,000 tons a month in Alabama. It is impossible to accumulate coal, coke, ore and limestone at the furnaces, but officials are not expressing any apprehension as to a coal strike Nov. 1.

Approximately 138,000 tons of various grades of pig iron are piled in furnace yards in this district. The stock of foundry grades particularly is low. In this district 26 stacks are in operation.

Coke Market is Stronger

Spot Beehive, Furnace Grade, Advances 25c in Week, Due to Curtailment of Production—Foundry Coke Quoted at $5.50 to $6

Pittsburgh, Oct. 14.—Spot beehive oven coke of furnace grade is fully 25 cents a ton higher than it was a week ago; not that the demand has increased materially so much as because of a sharp curtailment of production probably brought about by withdrawing the fires from some ovens and by drawing the ovens at considerably longer intervals than usual. Occasionally some unconsigned cars become available and in the past few days sales of such tonnages have been made as low as $3.85, ovens. As a general proposition, however, the market is not quotable below $4 on oven shipments, and some bases exist for quotations as high as $4.15 and $4.25, ovens. The Connellsville region seems to be well cleaned up on free coke and with the blowing in of several steel plant blast furnaces, the market gives signs of having seen its lowest level for the present. Meanwhile, no actual business is being negotiated in 48-hour fuel for the first half of next year, although consumers are putting out feelers as to prices and prospects. The market on standard foundry coke still is quoted at $5.50 to $6, ovens, with supplies fairly generous, due to the recent practice of oven operators in drawing coke at 72 or 96-hour intervals. This condition means that more foundry coke is available than is needed to meet contract obligations and spot sales consequently are rather harder to negotiate at better than $5.75, ovens. The Connellsville production of coke for the week ended Oct. 4 is estimated by *The Connellsville Courier* to have been 157,600 tons as compared with 186,120 tons in the previous week.

Look for Advance at Boston

Boston, Oct. 11.—With the Providence by-product producer sold up for this year, and with the Connellsville concerns apparently uninterested in New England, a rise in spot coke prices seems probable. The first half flat rate price of $11.90 is holding firm, and new business is continually being placed at this figure.

Sells for Next Year

New York, Oct. 11.—The northern New Jersey by-product coke producer has opened its books for first half on foundry coke contract at $6.50, Connellsville, which is equivalent to $9.50, delivered at Newark and other northern New Jersey points. This seller, however, continues to ask $6, Connellsville, for this year, equivalent to $9.10, delivered. Western Pennsylvania foundry coke reflects some weakness and may be had for spot shipment from $5.50 to $6, Connellsville. This is a decline of about 25 cents.

Sell for First Half Shipment

Cincinnati, Oct. 13.—A few contracts for both Connellsville and Wise County foundry coke are being closed for first half shipment. The former is sold for that delivery around $6.50 to $7, and the latter at $7.50 to $8. A little spot business is being done at the minimum figures named. Furnace coke production has been reduced appreciably in the Connellsville field, and $4 may now be considered minimum, although some interests are asking $4.50, ovens. New River foundry coke is hard to get, although an occasional car is obtained at $9 to $10.

Prices Shaded at St. Louis

St. Louis, Oct. 11.—Temporary shading in coke prices was reported during the week, applying mainly to tonnages released in the Connellsville district by closing down of plants affected by the strike. One dealer reported having been offered 25 cars of 72-hour foundry coke on track in Ohio, which he was able to sell to St. Louis melters at a price slightly under current quotations.

Ore Going Forward

To Furnaces as Strike Conditions Continue to Improve

Cleveland, Oct. 14.—More ore is going forward to furnaces than at any period since the strike of foreign-born laborers in the iron and steel industry. Improvement in the strike situation is reflected in the gradual lifting of embargoes declared by the railroads to prevent blockades of loaded cars at furnaces. While some furnaces have resumed operations and are again consuming ore, owners of others not yet in operation are succeeding in obtaining labor with which to unload cars and are stockpiling the ore.

Some measure of relief has thus been afforded ore companies which are seeking to make deliveries before the close of the season, but storage facilities at lower lake ports are overtaxed and many boats are idle and awaiting to be unloaded. Should present conditions continue several weeks more, ore companies say they will be unable to bring down all the ore contracted for.

Negotiations are in progress for some additional sales, but prospective buyers are told there is slight chance for obtaining the ore, unless the steel strike should be declared off within a few days.

In September furnaces took 3,698,602 tons off Lake Erie docks while in the same month in 1918 they took 4,863,253 tons. The balance of ore on docks at Lake Erie ports Oct. 1 was 8,203,427 tons, compared with 8,931,454 on Oct. 1, 1918.

All docks with but two exceptions are working, and no further steps have been taken by the lake seamen toward a strike.

Some Scrap Grades Rise

Rolling Mill Material in Demand—Western Turnings Sold in East—Embargoes Hold Back Market on Heavy Melting Steel

FOR COMPLETE SCRAP PRICES SEE PAGE 1085

Chicago, Oct. 14.—As a result of increased demand for bar iron to replace steel bars made scarce by the steel strike, demand for rolling mill grades of iron and steel scrap has increased, and quotations have been advanced from 50 cents to $2 above former levels. The same condition obtains in the various grades of cast scrap, which are also in heavy demand and light supply. Conditions in the steel strike continue to hold down production of steel and mills have not yet removed embargoes preventing scrap being shipped in. The situation is becoming difficult for dealers as they have considerable material bought to apply on contracts which they are unable to ship. Railroad offerings are moderate for the most part. The Southern offers 2300 tons, the Santa Fe 1360 tons, the Northern Pacific 1000 tons, the Chicago, Milwaukee & St. Paul 500 tons and the Burlington 400 tons.

Boston Market Active

Boston, Oct. 11.—A partial recovery has been made from the low ebb of last week in the scrap market. Heavy melting steel is active; the price has advanced and is still advancing. Pennsylvania steel furnaces have been heavy buyers of scrap in many sections of the East during the past week. Philadelphia scrap brokers who have made large sales have been hurriedly placing orders here to protect themselves against a rise in price. The Worcester, Mass., subsidiary of the Steel corporation has been steadily buying heavy melting scrap, and other steel plants have made purchases here. Rerolling steel rails, stove plate, No. 1 machinery and borings have been particularly active. Lawrence, Amesbury, Everett, Readville, Fitchburg, and Taunton, Mass., have all been represented in the week's sales of No. 1 machinery, and the price in most cases has been $28, delivered. Pipe scrap has dropped, and is now being offered at $14 to dealers in Boston. Chemical works have been buying borings and dealers have paid as high as $14.50 for select lots. The Boston Elevated is asking for bids covering a lot of miscellaneous scrap, including cast motor frames, armature cores, steel shafts, and coil shells.

Transactions Are Limited

New York, Oct. 13.—While some large tonnages have been reported as having been placed by eastern consumers, the local scrap market has continued quiet. Sellers assert that heavy melting steel has been moving somewhat more freely but that the situation generally is inactive. Consequently, prices are undergoing little change. Clean cast borings have been marked up $1 and quotations generally are stronger, but only in the one instance has there been an advance.

Western Scrap is Sold

Philadelphia, Oct. 14.—Deprived of their usual outlet by reason of the strike, western scrap dealers are offering machine shop turnings at low prices in the east, particularly for shipment from the west. One eastern mill bought 10,000 to 15,000 tons at $14.75 delivered which is 75 cents under the regular eastern market. These western offers only are temporary and are expected to cease as soon as the mills are operating. The eastern scrap market generally is strong. While no more heavy melting steel has been sold, the steel mills generally want to buy but are offering to pay $19 and $19.50 while the dealers are holding for $21. An eastern furnace bought several thousand tons of blast furnace turnings at $14.50 delivered. Cast scrap and wrought scrap are in good demand and are strong. The only weak spot is wrought pipe for which there is no call.

Bids will be taken by the Philadelphia ordnance office up to Oct. 20 on 2189 net tons of 75-millimeter shell forgings at the plant of the Worthington Pump & Machinery Corp., Hazelton, Pa., and on 415 gross tons of bar steel at the plant of Bonney Vise & Tool Works, Allentown, Pa., and up to 2:30 p. m., Oct. 27, on 2404 net tons of 155-millimeter shell forgings at the plant of the Bethlehem Steel Co., Steelton, Pa.

Market is Quiet But Firm

Pittsburgh, Oct. 14.—No appreciable increase is noted in the demand here for scrap iron and steel while the shipments of material against contracts are more or less curtailed by railroad embargoes, but the market nevertheless has a firm tone and sentiment is fairly cheerful. Owing to the fact that steel companies have been operating open-hearth furnaces more fully than blast furnaces it is believed that reserve stocks of scrap held by these interests have been heavily depleted and their belief that the strike shortly will be a thing of the past also encourages dealers to look for better markets before long. Reports reaching this market from the East tell of a strong demand for heavy melting steel at $20, delivered Philadelphia. This is equivalent to about $21.50, delivered here, on eastern scrap of this grade as there is a freight differential on eastern shipments of about $1.50 a ton in favor of Philadelphia over Pittsburgh. Small lots of heavy melting steel have been bought by steel companies here at $20, delivered, but it is frankly admitted that no big tonnages can be obtained at that figure. Sales of unguaranteed low phosphorus scrap are noted at around $20 to $20.50 and other grades of steel scrap which usually command a slight premium over heavy melting grades, now are quoted at abou the same price. Almost no demand exists for sheet steel scrap and it is quoted at a greater discount than usual under heavy melting grades.

Good Demand for Borings

Buffalo, Oct. 14.—Some grades of scrap are active, despite the strike. There is a good demand for cast and stove plate and demand for borings is exceptionally good. No changes in prices are recorded, though some of them are nominal. There have been few sales, and so far as can be learned, no large ones.

Much Tonnage On Track

Cleveland, Oct. 14.—A large amount of scrap iron and steel is on track in this district, and dealers believe it will take melters a week or 10 days to clear this away once full operations are resumed. Some melters are working again, but dealers do not look for anything like active trading for two to three weeks.

Large Stocks Held at Cincinnati

Cincinnati, Oct. 13.—Yard stocks of scrap are larger than recent estimates indicated. This applies especially to scrap for open-hearth melters. Shipments to outside districts are still delayed, although an improvement in the car situation is looked for soon. The closing down of the Whitaker-Glessner plant at Portsmouth, O., has shut off another melter of scrap in this territory. All steel scrap continues weak and erratic, and only nominal quotations can be given.

Bids will be taken by the Cincinnati ordnance office up to 2 p. m., Oct. 23, on 638½ gross tons of 2⅜-inch cold drawn steel rounds at the United States storage depot at Cincinnati, and up to 2 p. m., Oct. 24, on about 460 net tons of 2⅞-inch screw stock at the plant of the Maxwell Motors Co., New Castle, Ind.

Prices at St. Louis Marked Up

St. Louis, Oct. 13.—The market for scrap iron and steel is steady and higher, with the strength mainly in rolling mill grades. Mills in this district are doing considerable business as a result of the steel strike and dealers are disposed to advance quotations on the grades most in demand. Foundries also are very busy, especially the cast iron foundries. Consumption is on a large scale, and several of the most important consumers who have been drawing heavily on reserves will be obliged to enter the market soon. Rerolling rails are relatively quiet, the leading consumer of that material being virtually out of the market. Cast grades are strong, and about 50 cents higher.

Buying Government Scrap

Birmingham, Ala., Oct. 14.—Southern dealers in scrap iron and steel are keeping up their stocks, although trade is only fair. Consumers are said to be getting government scrap, but it is expected there will be a demand for a large quantity of industrial and agricultural scrap by 1920.

More Mills

Now are Operating on Sheets—Leading Interest at 85 Per Cent

Pittsburgh, Oct. 14.—The effect of the strike upon the operation of sheet mills steadily is waning. The American Sheet & Tin Plate Co. now has about 85 per cent of its sheet mills running, a gain in a week of about 5 per cent, while the independent mills now active represent close to 60 per cent of the total and to a considerably higher average if figured from the number which were in operation the last day before the strike was called. The week's gain among the independents has been fully 10 per cent, largely accounted for by the resumption by the Canton Sheet Steel Co., Canton, O., and some of the valley makers. The Apollo Steel Co., Apollo, Pa., which went down on the first day of the strike and resumed operations about a week later is reported to be getting back to normal operations, while the Allegheny Steel Co., Brackenridge, Pa., is running practically normal and the West Penn Steel Co., also at Brackenridge, Pa., is maintaining a fair rate of operation. Marketwise, conditions do not change much. Demands still are heavy, but makers are disinclined to consider other than specifications against old orders and even these are being scaled by most producers. Companies making their own sheet bars are building up stocks before trying to get all their mills going.

Big Orders Go Begging

New York, Oct. 11.—Owing to the fact that a number of sheet mills are idle because of the strike and that the plants now operating are booked to capacity for this year, numerous orders are going begging. One consumer is seeking to place 5000 tons and there are a number of inquiries involving between 1000 and 5000 tons each which cannot be placed. As a result of this situation, the recent shading has disappeared and sheet prices are being maintained.

Eastern Market Strong

Philadelphia, Oct. 14.—The mills of the leading eastern producer of galvanized sheets are shut down temporarily by a local strike. The market here is strong and orders are going begging.

Stocks Are Well Sold

Youngstown, O., Oct. 14.—With the exception of the Trumbull Steel Co. and the Sharon Steel Hoop Co., all sheet mills in the Mahoning valley remain inactive. Everything points to an early resumption of other sheet mills this week. Mill stock is not what could be called large. Considerable tonnage remains on the floors, however, principally because the railroad crews have refused to move loaded cars out of or empty cars into mill yards. Dealers have combed this district for the last three weeks until now little stock in the mills remains unsold. Attractive premiums have been paid for stock carded for immediate consignment. Available tonnages of medium and light-gage sheets, however, were bought up rapidly at the beginning of the shutdown and dealers state that mills in nearby territories have little material in these gages to offer. Sheet bars are extremely scarce.

New Business

In Wire Products Being Passed—Full Output in South

Pittsburgh, Oct. 14.—Although the past week has seen a resumption in operations by some of the makers of wire and wire products and increased production by those who recently started up after the suspension caused by the strike, none of the manufacturers yet has been able to make much headway in catching up with contract obligations and new business is getting no consideration. Even those who were unaffected by the strike have little surplus tonnage for immediate shipment. Production of rods is heavier than recently, but still far short of normal.

Production Normal in South

Birmingham, Ala., Oct. 14.—The plant of the American Steel & Wire Co. at Fairfield is producing wire and nails on a normal basis, and the entire output is in demand. Sufficient orders are in hand to keep the plant in operation for a long time. The wire departments of the Gulf States Steel Co., at Alabama City, are operating at capacity.

Detroit Buys

Round Tonnage of Cast Iron Pipe—Mill Orders Go Begging

Chicago, Oct. 14.—Detroit has placed orders for 7000 tons of cast iron pipe of which 2000 tons of 42-inch and 3000 tons of smaller sizes, went to the United Cast Iron Pipe & Foundry Co., and the remainder was divided between the American Cast Iron Pipe Co. and the Lynchburg Foundry Co.

Labor Reduces Shop Output

New York, Oct. 13.—Deliveries of cast iron pipe in the East are being further advanced, with the result that some shops are sold up to December.. In virtually all instances, the shops are unable to consider shipment before November. This situation is attributed principally to the shortage of labor, which has limited operations in most cases to around 65 per cent.

Mill Operations Gaining

Pittsburgh, Oct. 14.—Pipe mill operations are gaining in this district due to a steady return to work of men who have been out as a result of the strike. Both the A. M. Byers Co. and Spang, Chalfont & Co., now have some finishing capacity in operation. While the Pennsylvania works of the National Tube Co. which was down for a few days following the outbreak of the strike, now is operating at better than 50 per cent of capacity.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Oct. 8	23.50	54.25	6.25	7.40	33.00	8.50	41.00
Oct. 9	23.50	54.50	6.25	7.45	33.00	8.50	41.00
Oct. 10	23.50	54.50	6.25	7.60	33.00	8.50	41.00
Oct. 13	Holiday in New York market.						
Oct. 14	23.50	54.50	6.30	7.55	33.00	8.50	41.00

* October shipment from Singapore.
† American Smelting & Refining Co.'s price.
‡ Producers' price. Outside market, Oct. 8, 21.50c, Oct. 9, 22.25c, Oct. 10, 22.25c, Oct. 14, 22.375c; lake, 22.75c, casting 21.50c.

NEW YORK, Oct. 14.—Prices of nonferrous metals generally advanced sharply the past week, due largely to active buying by dealers and to a lesser extent by consumers, based on the favorable news from the steel strike districts. The London market was also strong and active and the higher prices for zinc in that market enabled a resumption of exports. The metal trade expressed belief that a large pent-up demand has accumulated in recent dull weeks and that when the steel trouble is concluded a renewed buying movement will come.

The large copper producers continued to stand pat at the 23.50c price for electrolytic but did little domestic business, scattering orders for export being placed through the Copper Export association. Dealers, however, advanced their quotations about 1c a pound, increasing them from the low of 21.25c to 22.25c. The amount of second hand copper still available at last seems to have become scarce and consumers have been picking up bargains here and there. Casting copper advanced from a low of 20.00c to 21.50c; lake copper was held at high as 22.75c. The steel strike has not perceptibly affected the brass industry as yet.

The zinc market advanced on heavy buying by dealers who brought the price up from 7.00c to 7.60c, East St. Louis, during the past two weeks. Increased interest by consumers also was evident, several consumers in the strike district inquiring for metal for shipment the remainder of the year. A good export demand for zinc developed during the week.

The lead market gained strength, sales being made at prices above the level of 6.25c, New York, the quotation of the leading interest. The highest price reached was 6.30c.

The strike of longshoremen in New York, together with the delay in arrival of 1500 tons of tin aboard the Gaelic Prince which suffered in a collision in the harbor last week, held back tin. The result was that prices of tin in New York warehouse were about one cent higher than that quoted for thousands of tons on board ship in the harbor. Spot Straits tin became quite scarce and was held at 56.00c to 56.50c, while tin ex-steamer was quoted at 54.50c. The London and Singapore markets advanced sharply. Futures are 54.50c, f.o.b. New York. Spot 99 per cent tin was obtainable at 54.25c.

Bar Production Growing

Consumers Getting Along With Available Material—Sales Reported at 2.80c—Chicago Bar Iron Up $2—Reinforcing Bars Short

Chicago, Oct. 14.—Production and shipment of soft steel bars in this district is on the increase, and each week sees a better total moving from mill to consumer. Users of steel bars are standing solidly behind the mills in the effort to combat present conditions and are not applying any pressure to obtain better deliveries. Up to this time practically all consumers have had sufficient material, relying in great measure on stocks which were accumulated before the strike and supplementing these with material being shipped currently. Effort of mills to deliver finished steel to consumers most in need is resulting in well-balanced distribution.

Heavy demand is being met for bar iron from manufacturers who can use it in place of steel and makers have advanced their quotation $2 per ton to 2.45c, Pittsburgh, the equivalent of 2.72c, Chicago mill. This change was made at the close of last week, and business has been booked at that level. In fact some bar iron has been sold as high as 3.00c, Chicago mill.

Hard steel bars rerolled from rails continue extremely strong, and some makers have sufficient business on books to keep them busy until the beginning of 1920.

Specifications Piling Up

Philadelphia, Oct. 14.—Steel bar makers whose plants are crippled by the strike report that specifications are piling up at a rate which will keep them out of the market for a long time after they resume operations. The leading maker continues to take business from regular customers but is handicapped in making promises as to delivery. Those plants not affected are proceeding carefully in taking new business, because of sold-up conditions. An eastern maker is obtaining 2.60c, Pittsburgh, for soft bars of forging quality, while the minimum for iron bars here is 2.50c, Pittsburgh. Sales are being made occasionally at 2.60c and 2.70c, Pittsburgh. Much bolt business is coming from shipyards. One yard during the past week placed 500,000 bolts and a corresponding number of nuts. Another yard is inquiring for 210,000 bolts, with a corresponding number of nuts. The Pennsylvania railroad has bought several hundred tons of track bolts.

Sales Reported at 2.80c

Pittsburgh, Oct. 14.—Makers of merchant steel bars generally are not producing more than enough to meet specifications against contracts and some who have been hampered by the strike cannot meet specifications. Demands from consumers not getting full shipments on orders are sharp and producers having tonnage available for prompt shipment can obtain substantial premiums over the regular market base. One company here, making both steel and iron bars, lately has been getting 2.80c, base, Pittsburgh, on immediate shipments. A Pittsburgh maker of concrete reinforcing bars recently closed on 1700 tons for a new building for the Cadillac plant of the General Motors Corp., Detroit, at a price in excess of 3.00c, Pittsburgh. This company was able to make prompt shipments and the buyer was willing to pay the premium to secure the bars. Principal producers of iron bars are holding to 2.75c, Pittsburgh, for common merchant iron and report the demand to be fairly good, with some buyers substituting iron for soft steel bars.

Concrete Bars in Demand

Cleveland, O., Oct. 14.—A very great demand for reinforcing bars is current, but buyers are having considerable difficulty to supply their wants, owing to the idleness of considerable mill capacity. Warehouse stocks have been drawn upon heavily to carry on building operations, but greater difficulty is now being experienced in doing this owing to the reduced supply of material available. Prices on reinforcing bars are strong, ranging from 2.50 to 3.00c mill. Consumers of soft steel bars, generally in this territory, do not seem to be suffering to a severe extent by the reduced deliveries from the mills.

Plans are being prepared for a building for the Templar Motor Car Co. to require 40 tons of bars.

Bolt Demand Heavy

Chicago, Oct. 14.—Manufacturers of bolts and nuts continue to meet heavy demand from consumers and with mill books carrying practically enough business to engage capacity almost to the end of the year, it is difficult to entertain more than a part of the inquiry. Production is going forward at a high rate and the situation is entirely satisfactory, with prices unchanged.

Bar and Rod Shortage Felt

Pittsburgh, Oct. 14.—Shortage of bars and rods is being felt by some makers of nuts, bolts and rivets but not to the extent of seriously affecting production. Demand is good for all three products and some makers have advanced their steel prices on nuts, quoting blank nuts at 2.50c off list and tapped nuts at a discount of 2.25c. Most makers, however, are holding to discounts of 2.85c on tapped and 3.10c on blank nuts.

Lack Normal Bar Supplies

Pittsburgh, Oct. 14.—Some makers of cold-finished steel bars and shafting whose source of supply of merchant steel bars temporarily is cut off by the strike, are somewhat hampered in the production of certain sizes. As a rule, however, the effect of the strike has been extremely slight due to the fact that the cold-finished steel interests were carrying fairly good stocks of bars before the trouble began. Steady expansion is reported in the demand for cold-finished steel with prices holding quite firmly at 3.60c, base Pittsburgh.

English Ferro

Sold at $103 Tidewater—Alloy Market Continues Quiet

New York, Oct. 11.—The most important development in the ferromanganese market during the past week has been the sale of 300 tons of English metal guaranteed to contain 76 per cent manganese, at a price equivalent to $103, c.i.f. tidewater, for delivery over November and December. There is considerable variation in price on English metal. On one inquiry for a round tonnage an importer quoted $100, c.i.f. tidewater. Another importer continues to ask $110, freight allowed. Domestic producers still quote $110, delivered, on 78 to 82 per cent metal. Current inquiry is confined largely to carload lots.

Demand for spiegeleisen has been of small proportions during the past week and involves mostly carloads. The market continues at $34 to $35, furnace, for 18 to 22 per cent metal. There is another inquiry out from Belgium for a round tonnage. Italian inquiry continues to come out. Considerable tonnage has been closed here by Italy in the past several weeks.

A contract for over 15,000 pounds of contained tungsten for shipment over the remainder of the year was closed at $1.25 a pound, delivered. This was imported alloy sold by a dealer and the price was about the same as quoted by domestic makers.

Competition for orders for 50 per cent ferrosilicon continues sharp. A car sold at $81, delivered eastern point, and another car offered at $82, delivered Pittsburgh, to a dealer, was not taken. A less than carlot, offered at $90, delivered East, was accepted. A car of 75 per cent ferrosilicon sold at $146.50, delivered eastern point.

The ferrochrome market continues irregular. The leading maker is said to be quoting 26 to 30 cents for next year's deliveries, but other makers are offering alloy containing 4 to 6 per cent carbon at 22 to 24 cents a pound contained for this year's delivery, this price meeting quotations on French offerings.

The ferrovanadium market shows little change. The leading maker is quoting $5.50 a pound contained for its high silicon product, while smaller makers are quoting above $6 on low silicon alloy. The Primos Chemical Co., whose plant was badly damaged by fire last spring, is reported to have resumed shipment of ferrovanadium.

A merger of ferroalloy interests is rumored, in which some leading interests are identified. If the project is consummated as proposed, it will be a notable development to the ferroalloy industries.

Little is Going On

Pittsburgh, Oct. 14.—Demands for ferroalloys are few and small, and actual selling values are not well defined. Ferromanganese is quoted up

to $110, delivered, for 80 per cent, but it is doubtful if $105 would be refused for either domestic or foreign material delivered in the Pittsburge district. This price appears to be minimum, although a report has been current here that brokers have made a bid of $95, c.i.f. Atlantic coast, for a liberal tonnage of English alloy. Doubt is expressed in some quarters as to the authenticity of this report, and as far as can be learned no business has resulted.

Sale of a few small lots of 18 to 22 per cent spiegeleisen, not for this market, are reported here at $34, furnace. Almost nothing has been done in 50 per cent ferrosilicon lately; this alloy nominally is rated at $80, furnace, freight allowed, but it is intimated that less is being accepted by some makers.

The market also is dull on bessemer ferrosilicon and it is believed that firm offers below quotations would at least be considered and possibly accepted by some makers. Low grade electrolytic ferrosilicon is being offered at prices that are competitive with bessemer ferrosilicon.

Prompt Steel

Wanted by Various Mills—Middlemen Ask Premiums—Inquiries Current

Pittsburgh, Oct. 14.—Current production of billets and sheet bars is hardly sufficient to meet the contract obligations of produecrs and a number of inquiries are on the open market, mostly for prompt shipment, for both kinds of steel. On one sheet bar inquiry amounting to 1000 tons a price of $51.50 was named by middlemen while premiums of $2 a ton on billets are frequently quoted. Makers of wire rods could dispose of considerable tonnage if they had it available.

Offers Billet Tonnage

Philadelphia, Oct. 14.—Because of some idle finishing capacity, one eastern mill now has some billet tonnage to offer in the open market,. No semifinished sales are reported.

Strip Business Normal

Pittsburgh, Oct. 14.—While some of the makers of strip steel in this district are somewhat hampered by the lack of common labor due to the strike, all of the plants are running and in some cases at full capacity. Deliveries of billets are improving as the steel plants increase their operations and in this respect the position of the strip steel interests was helped by the fact that they had fair sized stocks on hand when the labor disturbances began. New demands for strip steel are reported to be fairly numerous but are not getting much attention as booking are sufficient to absorb all production for the remainder of the year.

The financial statement of the Cockshutt Plow Co., Brantford, Ont., for the year ending June 30 last is the best in the company's history.

Many Boats Are Placed

Eastern Plate Mills Excited Over Reports of Contracts Calling for 20 to 25 Vessels—16,000 Tons Up for Pacific Coast

Philadelphia, Oct. 14.—The eastern plate market is excited by the great improvement in business and particularly in the number of new boat contracts which are being placed. The Union Shipyards of Baltimore has taken orders for two boats, the Bethlehem Steel Co. at Sparrows Point is reported to have seven or eight vessels, the Sun Shipbuilding Co. is reported to have five or six, and the Newport News Shipbuilding & Dry Dock Co. has closed for two. Most of these boats are tankers of large tonnage capacity. The mills report numerous orders for plates in lots of 3000 to 5000 tons each and many smaller ones. The Lukens Steel Co. is operating practically at capacity. It now has 14 open hearth furnaces in operation compared with 11 before the strike. All mills are adhering to 2.65c, Pittsburgh and one eastern maker has taken some car load orders from western consumers at 2.65c mill.

Vessels About to be Placed

New York, Oct. 11. — A large steamship interest with headquarters in New York has placed tentative orders for eight tankers with the understanding that the contract will be signed some time within the next two weeks. It is understood that these are 10,000-ton vessels, and that the contracts have been let with four Atlantic coast yards, not in this district, each to build two vessels. This is the biggest project which has come up of late affecting the plate market. About 25,000 tons are involved. Negotiations are proceeding for the letting of additional ships for a number of different interests, so that considerable plate business is forthcoming from this source. Plate demand has shown a marked improvement in this district during the past week, and the shading which was noted up to recently, has about disappeared. The market now is being maintained at 2.65c, Pittsburgh, or 2.92c, New York.

Fairly Well Sold Up

Pittsburgh, Oct. 14.—Good demands are coming to platemakers here from consumers whose regular source of supply is shut off and the mills have become fairly well filled up. Makers of tanks are the principal buyers, for they more than the other users of plates suffered from the curtailment of production incident to the strike. No business is being taken at less than 2.65c, Pittsburgh, and makers are taking only desirable tonnages at that figure.

Shipyard Places Tonnage

Cleveland, O., Oct. 14.—One of the local shipyards which recently inquired for 2500 tons of plates has closed for all or a part of this tonnage. Eastern mills which have been shipping into this territory on the basis of 2.65c, Pittsburgh have fallen behind in deliveries and now stipulate from six to eight weeks. Local production of plates has been resumed by the opening of the Otis Steel Co. plants.

Users Holding Back

Chicago, Oct. 14.—Producers of steel plates find a tendency on the part of consumers to remain out of the market and to avoid placing further tonnage on mill books or filing specifications against existing contracts. This is attributed in part to a manifest desire on the part of plate users to assist in the present strike and also a general feeling of unsettlement because of labor conditions. From the point of view of the mills, it would be preferable for specifications to be filed promptly that they might be in order as soon as full production is resumed. In spite of this attitude, considerable business is being considered and is passing into the form of contracts.

Tin Mills Gaining

Operations Working Up to Normal, Although One Plant Closes

Pittsburgh, Oct. 14.—Shutdown of the Yorkville, O., works of the Wheeling Steel & Iron Co. represents the only loss of the past week in tin plate mill capacity, and this to a considerable extent is made up in the total active mills by the starting of several mills of the American Sheet & Tin Plate Co., which now has about 55 per cent of its mills going. The Weirton Steel Co., Weirton, W. Va., also has increased its active mills considerably. At the Farrell, Pa., works of the American Sheet & Tin Plate Co., 24 out of the 30 mills are in operation, while the New Castle and Shenango works of this company both at New Castle, Pa., are running 100 per cent, which is somewhat higher than these mills were operating just before the outbreak of the strike. At Gary, Ind., 50 per cent of the tin mills are running. Suspension at the Yorkville plant of the Wheeling Iron & Steel Co. brings up anew the question of the value of a contract with the Amalgamated Association of Iron, Steel and Tin Workers. This plant has been kept in operation largely through the agreement, but on Oct. 7 the laborers, machinists and electricians employed there organized and presented a scale of wages to the company. A week was given the company to accept or reject the scale, but two days after the scale was presented the men went out and their action tied up the plant. Under the terms of the agreement, any craft organizing and formulating a scale is not to call a strike upon rejection by the company, the matter to be considered at the annual conference between the association representatives and the employers.

Building Work Proceeds

Liberal Tonnage Represented by New Structural Awards and Inquiries—10,000 Ton Hotel Up at Detroit

Cleveland, Oct. 14.—Demand for standard structural shapes is good, and building activity seems to be going forward again after a temporary lull due to unsettled labor conditions in the steel industry. One of the largest jobs being figured by fabricators, is the addition to the building of the Cleveland Trust Co., requiring 3000 tons. Bids are being taken on this job by the architect, George P. Post, through his New York office. It is reported that the general contract has been awarded but so far this has not been verified. Fabricators are expecting to figure soon on about 10,000 tons for the Biltmore hotel to be erected in Detroit, by John McE. Bowman, head of the Pershing Square group of hotels, New York City. A number of smaller jobs are being figured in the Cleveland district.

Building Operations Improving

Boston, Oct. 13.—According to building permits from the principal New England cities, residence construction gained decidedly during the first part of October. This has not affected structural steel companies as yet, but it indicates an improvement in other building lines. The tone of the market is better and owners are beginning to take the attitude that the steel strike is settled. Bids are being taken for the Beach telephone exchange building in Boston which will take 750 tons and for the New Bedford hotel, New Bedford, Mass., to take 300 tons. Plans are being prepared for a new office building in Hartford which will require about 3000 tons.

Lettings Reach Good Total

New York, Oct. 14.—While the large individual awards of the past week are lacking structural lettings in the East comprise a good total. The largest award to be noted involves 1750 tons for Continental Candy Co., Jersey City. Another sizeable award comprises 1000 tons for the Allerton apartment, Manhattan; another involving 700 to 800 tons is reported placed. Apartment house building, however, is not as active as two months ago. New inquiries only fairly numerous, a lot of 1100 tons for a hospital at Elizabeth being among the largest.

Eastern Mills Filling Up

Philadelphia, Oct. 14.—Eastern shape mills are filling up with orders, which are coming especially from jobbers and fabricators. Eastern mills are getting some orders which would be placed elsewhere, if it were not for the strike. An important development of the week is that some fabricating shops which were operating on this work, and were using allocated material, now apparently have made final adjustment with the Emergency Fleet corporation, and are again ordering plain material. Bids are expected to be taken soon on a large office building for the Atlantic Refining Co.

Shape Mills Not Pressed

Pittsburgh, Oct. 14.—Shape mills in this district are not crowded with business, although the fabricating shops are fairly well off in the matter of bookings. Inquiries still are coming out for substantial tonnages of fabricated steel, but actual lettings have been few and small lately, probably because investors feel this to be a poor time to go ahead on account of the unsettled labor situation. Steel for the car shops of the Pennsylvania railroad at Stark, O., 400 tons, has been awarded to the McClintic-Marshall Co., which also has taken 800 tons for the General Motors Co., Detroit. Plain material prices are firm, but the market still leans in favor of the buyer on fabricated steel.

The regular monthly meeting of the Bridge Builders and Structural society was held at the William Penn hotel here last Friday. It is understood that the labor situation was the chief topic of discussion.

Good Tonnage is Placed

Chicago, Oct. 14.—Various projects calling for fabricated steel material which have been hanging fire for some time are coming through, providing excellent tonnage for fabricators and structural mills. The contract for steel for the John Crerar library building in Chicago, 1450 tons, which has been before the market several months, has been awarded to the American Bridge Co. An inquiry is out for 500 tons for a bridge over Red river, connecting Paris, Tex., with Hugo, Okla. Plain material prices are well maintained at 2.72c, Chicago.

CONTRACTS AWARDED

Building for Cleveland Rubber Corp., Cleveland, 711 tons; to T. H. Brooks & Co.

Building for Parish & Bingham Co., Cleveland, 850 tons; to McMyler-Interstate Co.

Machine shop extension for Ball Engine Co., Erie, Pa., 125 tons; to Fort Pitt Bridge Works.

Factory for Ace High Chocolate Co., Boston, 190 tons, to W. A. Root, Inc.

Building for John Crerar Library, Chicago, 1450 tons, to American Bridge Co.

Freud Hotel building, Detroit, 1186 tons, to Russell Wheel & Foundry Co., Detroit.

Warehouse and office building for the Marshall Wells Co., Duluth, 284 tons, to the National Iron Works.

Steel trestle for supporting coal handling towers at Superior, Wis., for the Northern Coal & Dock Co., 192 tons, to the Northwestern Bridge Co., Milwaukee.

Salt River bridge, for Gila country, Ariz., 133 tons, to El Paso Bridge & Iron Co.

Building for Continental Candy Co., Jersey City, 1700 tons to Hay Foundry & Iron Works.

Allerton apartment, New York City, 1000 tons to Passaic Structural Steel Co.

Building for Southern Stove Co., Richmond, Va., 300 tons; let to independent.

Extension to Watervliet arsenal, Watervliet, N. Y., 250 tons; let to American Bridge Co.

Buildings for New Jersey Zinc Co., Hazard, Pa., 300 tons; let to independent.

Addition to machine shop and foundry of Lewis Steel Products Co., Toledo, O., 150 tons to Northwestern Bridge & Iron Co.

Addition to Oxford Paper Co.'s plant, Rumford, Me., 300 tons; let to Megquier & Jones.

Crane runways for Worthington Pump & Machine Co., Harrison, N. J., 200 tons; let to independent.

Mill building for Manomet Knitting Co., Lawrence, Mass., 700 tons; let to American Bridge Co.

New York state power plant, Troy, N. Y., 600 tons; let to West Side Structural Co., New York.

Bridge for Chesapeake & Ohio railroad, 100 tons; let to Mt. Vernon Bridge Co.

Building for the Atlantic Land Co., Pittsburgh, 225 tons to the Jones & Laughlin Steel Co.

Building for the Fowler Nail Co., Buffalo, 400 tons to the Jones & Laughlin Steel Co.

Garage for the Shaw Motor Co., New Kensington, Pa., 100 tons to the Jones & Laughlin Steel Co.

Building for car shop Pennsylvania railroad, lines west, Stark, O., 400 tons to the McClintic-Marshall Co.

Building for the General Motors Corp., Detroit, 800 tons to the McClintic-Marshall Co.

Bank building for the First National Bank, Marietta, O., 150 tons to the McClintic-Marshall Co.

CONTRACTS PENDING

Addition to Cleveland Trust Co.'s building, Cleveland, 3000 tons; bids being taken.

Warehouse for Jordan Motor Car Co., Cleveland, 300 tons; bids being taken.

Detroit Biltmore hotel, Detroit, 10,000 tons; bids to be taken soon.

Telephone building for New England Telephone and Telegraph Co., Boston, 750 tons, bids in.

Hotel for New Bedford Hotel Co., New Bedford, Mass., 300 tons, bids in.

Bridge over Red River connecting Paris, Tex., with Hugo, Okla., 500 tons. Bids asked.

Hospital, Elizabeth, N. J., 1100 tons, bids being taken.

Addition to Connecticut Metal & Chemical Co.'s plant, East Berlin, Conn., 300 tons; bids being taken.

Public schools No. 43 and 83, Manhattan, N. Y., 500 tons; bids being taken; general contract let to Connors Bros., New York.

Buildings for West Virginia Metal Products Co., Fairmont, West, Va., 1300 tons; bids being taken; general contract let to F. T. Ley & Co.

Addition to plant of Carpenter Steel Co., Reading, Pa., 600 tons; bids closed.

Repairs Short

On Railroads Because Strike Wipes Out Meager Reserve of Material

Chicago, Oct. 14.—While consumers of steel products in general have sufficient material to carry them for some time, railroads in many instances find themselves short of rails, track fastenings and other steel material necessary for current repairs. This situation comes about from the fact that railroad buying at present is being done in a hand-to-mouth way which prevents accumulation of any stock to meet an emergency. As a result the present strike situation has left them without reserve and even the most urgent repairs must be neglected in many instances. C. E. Sharp, St. Louis, has issued an inquiry for 50 steel cars for Mexico.

Foreign Countries in Market

Philadelphia, Oct. 14.—It is reported in the car market here that China is in the market for 1000 cars, Belgium for a large number, estimated at 10,000 to 20,000, and another country for a large number. The New York Central railroad, Chesapeake & Ohio, and other roads have placed substantial orders for car repairs and car-repair parts.

Trend of Export Trade Changing

Larger Producers Now Offering to Accept Foreign Sales Contracts — Deliveries Dependent Upon Settlement of Strike — Sales Much Larger Than Shipments — Oriental and South American Inquiries Heavy

NEW YORK, Oct. 13.—Delays to shipments due to the strike have curtailed materially exports of iron and steel during the past month. The actual cleared exports during both September and October, it is now reckoned by trade authorities, will be far below the total foreign sales made during either month. The strike of workers in the mills was the first check to deliveries, then the British railroad strike held up the departure of the great majority of ships. Now the longshoremen at New York, who handle the bulk of export shipments, are tieing up the foreign trade movement. These delays are costly and the effect has been a temporary increase in prices quoted to foreign inquirers for American iron and steel.

On the other hand, it is declared by the vast majority of export houses, that there has been no diminution in business. The United States Steel Products Co., is estimated to be doing a foreign business of at least 250,000 tons a month, while the Consolidated Steel Corp., is selling around 100,000 tons. A conservative estimate would be that the American producers are selling abroad at the rate of 400,000 tons a month, but it is believed by many trade authorities the actual figure would be much larger than this.

Purchasing agents declare they have been able to fill their immediate wants with the smaller independent mills, not affected by the strike, and in some instances they have been given prices below those quoted by the Steel corporation.

The trend of the market, however, is more conservatively reflected in the activities of Steel Products and the Consolidated companies. A week ago neither of these agencies was willing to make a quotation. It is now learned that one has offered to take an order to be filled "at mills' convenience." The other has offered to accept a new foreign order for filling two to three months after the settlement of the strike.

Exporters have paid a premium of $5 a ton on wire and from $3 to $5 on sheets. Foreign sales of wire have been extremely heavy and exporters have been compelled to purchase from warehouses. The sheet market, they say, has been crowded by the demands of the domestic automobile makers. Bars are also scarce in the export market, while foreign demand is large. A premium is demanded on bars and purchases are being made on the base of 2.50c Pittsburgh. Reports have been current in this market of prices as high as 2.70 and 2.80c on bars.

South American railroads hold out one of the best opportunities for American steel. Negotiations are still on between representatives of the Latin-American countries and New York bankers looking toward the granting of credits under which orders for rails and pipe will be put through. South America has continued its purchases of wire, rods, structurals, tinplate, sheets and pipe. One house reports the sale of 800 tons of structurals. Small sales of boiler tubes and pipe have been made in Cuba. South America has sent in a number of new inquiries for wire, the individual inquiries being in small tonnages. Inquiries for 5000 tons of rails and 800 tons of foundry iron have been received. Japanese purchasers in this country declare that the market in Japan is growing weak in one or two particular lines, and one cancellation of an American order of minor importance was reported. Japan has so far this year placed orders for probably more than 400,000 tons of plates and shapes for shipbuilding. During the past week a new contract was signed for a few thousand tons of sections and plates for shipbuilding. It was declared by the purchasing agent that this material was purchased from small independent mills at a price 10 cents below that of the Steel corporation.

Another Japanese purchaser declared that he has experienced some difficulty in placing orders since the strike and that quotations have been advanced 3 per cent. He has, nevertheless, bought sheets, bars, galvanized wire, rods and tinplate in quantities from 20 to 150 tons. The same agent is now trying to purchase similar goods varying in size from 100 to 200 tons. Another Japanese purchaser declared that he was compelled to purchase 50 tons of wire out of stock because he could find no American mill willing to deliver. An order for 1000 tons of plates was placed. This Japanese house is now in the market for 100 tons of sheets and 1500 tons of structurals.

Other houses report the sale of small tonnages of ship and tank plates, rods, light rails and shapes to China. Inquiries are now out for approximately 60,000 tons of basic pig iron for Japan. Japanese purchasers have been able to place an order for 5000 tons and another for 1000 tons of iron. A previous order for 5000 tons makes a total of approximately 10,000 tons sold within the past 10 days. Japan also is inquiring for several thousand tons of foundry iron. The Japanese have closed for some foundry iron in the south on the basis of $28, Birmingham, for 1.75 to 2.25 silicon, while in some instances $28.50, Birmingham, was obtained for this grade.

Although European business is considered as nil, England has continued her inquiries for billets. A number of American houses are bidding on the big sluice gates to be built in South Africa at a cost of approximately $1,000,000, and are also bidding on the $3,000,000 Danube bridge projected by Rumania. Satisfactory arrangements have been made for credits, and the business is looked upon as assured to American producers.

An interesting order which has just been placed involves about 200 tons of shapes which will be shipped to France for repairing damaged wind mills in Belgium and France. Interest in European prospects, however, is waning as producers in those countries rebuild their plants. According to information now in this market, signs of German competition in the steel trade of Europe has already appeared. One case was cited where an American bid for a French machine tool order amounted to 1,800,000 francs, whereas the Germans offered to fill the order for 450,000 francs. This great disparity in prices was evidently due in part to the depressed rate of exchange.

A British inquiry for 10,000 tons of low phosphorus pig iron has been received. A Belgian consumer wants 5000 tons of the same grade. A Belgian inquiry for a round tonnage of spiegeleisen also has been received. A Scandinavian buyer wants 1000 to 2000 tons of foundry iron. Italy continues to inquire for spiegeleisen.

Thousands of Strikers Returning

Stampede in Pittsburgh District Prevented Only by Organizers Holding Out Promise of Favorable Report by Senate Committee—Backbone of Disturbance Broken —All Districts Report Increase in Operations

CONTINUED improvement in the strike situation is reported from Pittsburgh, Chicago, Youngstown, Cleveland and Buffalo, the principal districts affected, while elsewhere the strike has virtually passed into history. Operatives in the districts named believe the backbone of the strike is broken, basing their opinion on the ever-increasing number of men returning to work.

The movement in the Pittsburgh district is so strong, it is reported, that organizers are preventing a stampede only by the most strenuous efforts, informing the men that the senate committee on education and labor will report the results of its investigations in a few days and pave the way for the return of all the men who went out on strike.

More than 500 men returned to work in one day at the Gary plant of the Illinois Steel Co., while 800 reported for work at the plant of the Wisconsin Steel Co., South Chicago. In Cleveland the first break in the strike came with the return of employes of the Otis Steel Co., enabling the company to operate its Lakeside and Riverside plants. Operating conditions are improving throughout the Mahoning valley.

Strike in Pittsburgh District Wearing Out

PITTSBURGH, Oct. 14.—Slowly but steadily the steel strike is wearing out. It was a flat failure in this district, in that comparatively few plants were compelled to suspend operations and all are now running, while those which are crippled are steadily getting back to normal as the men continue to return. Strikers are reporting for work in plants all through the Pittsburgh district, and apparently all that is preventing a stampede is the fact that the organizers are telling the men that the senate committee which has been investigating the strike will settle it, and all will be able to go back in a few days.

It is the general belief that the cause of the strikers suffered by the recent visit to Pittsburgh of the senate committee, and beyond the possibility of the introduction of an Americanization bill by that committee, it is believed nothing is likely to result from the investigation and hearing. One notable feature of the hearing here was the absence of both William Z. Foster and John Fitzpatrick, who were in charge of the strike. Admission by one of the organizers that it was the organizers and not the men who insisted upon going through with the walkout over the President's request for a postponement damaged the strikers' cause.

The American Association of Iron, Steel and Tin Workers, which would have benefited most by the success of the strike, appears to be likely to come out of the trouble weaker instead of stronger. Its agreements with the manufacturers have only in a few instances kept the plants going, and not a few of the companies which had signed up considered that the contracts have been rendered void by the failure of the Amalgamated to fulfill its part of the deal. At the hearing by the senate committee last week it was testified that one of the articles of the agreement provides that failure by the employer to accept the scale presented by newly organized crafts in mills working under the agreement shall not be cause for a strike, but that the new plant must await the annual conference between the manufacturers and the Amalgamated representatives for an adjustment.

Statistics submitted to the committee showed that the Duquesne plant of the Carnegie Steel Co., had 6075 foreign-born workmen on Aug. 1, of whom 3354, or 55.2 per cent were naturalized, 362 or 5.9 per cent had first papers, and 2359 or 38.9 per cent were unnaturalized. Of the 459 who went out on strike, 48 were citizens, 44 had first papers and 346 were unnaturalized.

Workers Now Protected, Return at Chicago

Chicago, Oct. 14.—Conditions in steel mills in the Chicago district are distinctly better, and many observers believe the next five days will see the struggle virtually ended. At the Gary plant of the Illinois Steel Co., this morning more than 500 workers returned after being away since Sept. 22. At the plant of the Wisconsin Steel Co., South Chicago, which has been closed by agreement, more than 800 men reported for work, and the remainder are expected back within a few days. Operations at the South works of the Illinois Steel Co. continue to increase as more men return. Unloading operations at the ore docks at the South works have been suspended, but part of the crew has returned and is being organized to handle cargoes now in the harbor. At Gary the ore docks have been manned continuously, and last week seven large cargoes were unloaded. Several smaller boats have been held in the harbor, and will be placed under the unloaders when opportunity affords.

The Inland Steel Co. is organizing its force and beginning to produce steel. One blast furnace has been put under burden and is producing pig iron. The other two are undergoing repairs and will not be relighted immediately. Since troops took charge at Gary and Indiana Harbor, the situation has improved greatly and men who desire to return to their duties are not restrained in the same way as formerly. The present week is expected to see larger forces in every department.

Operations Resumed by Otis Steel Co.

Cleveland, Oct. 14.—Strike conditions are considerably improved in the Cleveland district. The first important break in the ranks of the strikers occurred Monday, when many employes of the two plants of the Otis Steel Co. returned to work. At the Lakeside plant of the company more than 400 men reported, while

at the Riverside plant about 800 men returned. At the H-P nail works of the American Steel & Wire Co., conditions are gradually improving, and at present about 380 men are at work. This number is being added to daily, officials state. No effort is being made to operate the plant of the Lake Erie Bolt & Nut Co., although a considerable number of the men have returned. At other plants in the district no activity has been reported, officials of these companies preferring to let their plants remain idle for the present.

The spread of the strike to the finishing plants which was reported last week, has been checked. About half the men who went on strike at the plant of the National Screw & Tack Co. have returned to work. At one plant of the Cleveland Hardware Co., where a similar strike had been called, production is normal. At the company's second plant many of the strikers have returned.

Repeated efforts of union organizers to cause a strike at the plant of the National Tube Co., Lorain, O., have failed.

Increasing Operations in Mahoning Valley

Youngstown, O., Oct. 14.—Operating conditions show considerable improvement throughout the Mahoning valley. The Trumbull Steel Co., Warren, O., now has 16 hot mills, the strip mills and three open-hearth furnaces at its Warren plant, and several hot mills at its Leavittsburg, O., plant in operation. These plants are operated under agreement with the Amalgamated Association of Iron, Steel & Tin Plate Workers. The workmen affiliated with this association were asked by President Tighe to abide by their contract with the Trumbull company. The company resumed operations in its various departments under the same conditions that existed prior to the closing of its works. The policy of paying rates equal to those prevailing for similar positions in other Mahoning valley mills will be continued according to W. H. B. Ward, vice president of the Trumbull company.

Two open hearths at the plant of the Brier Hill Steel Co. are now in operation, the furnaces having been tapped late Sunday evening for the first time since the walkout. A large number of workmen entered the mills Monday and efforts will be made to start additional furnaces. One of the plate mills of this company, about two miles north of the steel works, began rolling Monday. The switching crews of the Erie railroad, however, have refused to move cars into the plant, according to reports coming from strike headquarters.

The No. 4 stack of the Republic Iron & Steel Co., at Haselton is now in blast and it is expected that operation at the open-hearth plant will be resumed this week. The Brown-Bonnell and bessemer departments of this company remain inactive. The Youngstown Sheet & Tube Co. will make efforts this week to start its bessemer, open-hearth and sheet departments. Four hot mills at the Lowellville plant of the Sharon Steel Hoop Co. resumed Wednesday. The sheet mill crews at this plant are affiliated with the Amalgamated association.

Demurrage charged to the various steel companies here has decreased since the strike occurred. The Industrial Association of Traffic Managers held a meeting in Pittsburgh Tuesday to discuss the legitimacy of demurrage charged the steel companies under present conditions. It is felt that some action should be taken by the interstate commerce commission to suspend the charges during the strike. The matter recently was presented to the regional directors at their Chicago meeting but on account of their time in office being doubtful, only minor action is expected from this source.

Mills at Canton, O. Show Gain in Operations

Canton, O., Oct. 14.—More activity in steel mill operations is being shown here than at any time since the strike began. At the plant of the Canton Sheet Steel Co., the sheet mills began rolling Monday morning, and by noon practically 100 per cent operation was being maintained, according to an announcement by C. A. Irwin, president. The plant of the American Sheet & Tin Plate Co., is running at approximately 80 per cent, according to a statement issued by the plant manager, W. A. Harris. Several men returned for work in the tube department at the plant of the Timkin Roller Bearing Co. Repairs to steel mill equipment are being made and it is expected this department will get underway soon.

I. W. W. Agitators Busy on Ore Ranges

Duluth, Oct. 14.—I. W. W. agitators are endeavoring to stir up trouble among miners at various points on the iron ore ranges. At Ely 200 strikers endeavored to picket the mines of the Oliver Mining Co., but were dispersed by police. No miners have gone on strike in the other districts. Conditions continue normal at the Minnesota Steel Co.'s plant in Duluth.

Every Department of Mills in Alabama Busy

Birmingham, Ala., Oct. 14.—Every department of the steel mills of the Tennessee Coal, Iron & Railroad Co., and the American Steel & Wire Co., subsidiaries of the United States Steel Corp., in this district, is in full operation. Some of the foreigners who were not reinstated now are seeking work elsewhere. Production is greater than it was a month ago.

More Men Return to Work in Buffalo District

Buffalo, Oct. 14.—More workmen have returned to the plants of the Lackawanna Steel Co., and the Donner Steel Co. A blast furnace started last week at the Lackawanna plant continues in operation. Pickets are making an effort to get men out at the Buffalo Union furnace but have failed. Laborers have begun unloading four ore carriers lying at the Rogers, Brown & Co.'s slip since the beginning of the strike.

Wisconsin Mills Are Again in Operation

Milwaukee, Oct. 13.—With the return of a large percentage of striking employes during the past week and a considerable part of those remaining out reporting for work on Monday, the Bay View mills of the Illinois Steel Co., in Milwaukee, are again operating at a satisfactory rate. The stack which was blown out a few days after the trouble began Sept. 22 was relighted during the week. The other stack was not operating at the time. Only a comparatively few workmen were brought here from other cities by the Illinois Steel Co. At the offices of the plant it is stated that the trouble is virtually over.

Wage Increases Greater Than Cost of Living

Average weekly earnings of employes in the metal industries increased 88 per cent from September, 1914, to March, 1919, while the cost of living increased but 61.3 per cent from July, 1914, to March, 1919, according to a report issued by the National Industrial Conference board.

Average wages of men in eight lead-

ing industries as measured by average hourly earnings increased from 74 to 112 per cent, while increases in weekly earnings ranged from 62 to 110 per cent. The increase in hourly earnings in the metal industries was 74 per cent. Average hourly earnings in the various industries represented in March were as follows: Metal, 50.2 cents; cotton, 38.9; wool, 40.5; silk, 45.3; boots and shoes, 53.9; paper, 45.0; rubber, 61.2; chemical, 49.0.

The board states that the highest percentage of increase was recorded in the industries which paid the lowest wages, and vice versa. "Thus hourly earnings of male workers in cotton manufacturing increased over 100 per cent as against an increase of about 70 per cent for male workers in the metal manufacturing industries," it reports.

Referring to the comparison of increases in wages with increases in the cost of living, the board states: "This indicates that these workers were in general able to maintain and even to improve their standard of living prevailing in 1914."

Bethlehem's Machinists Return to Work

New York, Oct. 15.—Striking members of the machinists' union have returned to work at the Bethlehem Steel Co.'s plants. With machinists at work, Bethlehem officials estimate that their total force is 98 per cent of normal.

Senate Body Urges Americanization

WASHINGTON, Oct. 13.—Returning Monday from Pittsburgh, where they investigated the steel strike, members of senate committee on education and labor, declared some legislative plan for Americanization is necessary. Senators expressed amazement at the great proportion of foreigners on strike who are unable to speak the English language. They were gratified at living and working conditions of steel employes and wages paid them.

Plans for legislation for Americanization will be discussed at a meeting this week, perhaps Thursday. The committee has in mind the bill of Senator Smith, Georgia, member of committee. This measure would direct the secretary of the interior to co-operate with the states in the education of illiterates. Senator Kenyon, in a statement issued today, said the committee hopes for action by congress at this session. Other members are doubtful that such legislation can be acted on at this session. The judiciary committee has discussed a plan to have congress authorize the department of justice and the department of state to issue rules and regulations to govern immigration. It is contended that immigration could be restricted so that only desirable immigrants would be allowed to enter the country. Senator Walsh has suggested that it might be well to pass legislation making it compulsory for immigrants to learn the English language within five years after their arrival.

Senator McKellar said that both living and working conditions of steel employes were good, and better than he expected to find them. Wages, he said, also are sufficient and should not be cause for complaint. Senator Sterling expressed similar views, but was not sure that an 8-hour day, which Senator McKellar thought might be inaugurated in all departments, would prove satisfactory to the workmen, who wish to work overtime.

Senator Kenyon declared every citizen should do his part to correct the present condition under which 500,000 people, in this country for more than 10 years, cannot read or write the English language. Neither he nor any other member of the committee would discuss the merits of the strike, although it is believed the committee, or at least a majority of its members, is not in sympathy with the strikers. Some members think the Pennsylvania state constabulary conducted itself well, but that in some instances it was too abrupt and rough.

Senator Sterling declared the cause of labor is not being promoted by activities of such men as Foster and Fitzpatrick, whom he vigorously assailed. Gompers, he said, in approving of radical action, has "bowed to the storm," and unless Gompers repudiates the radicals the public will lose confidence in him as a safe leader of labor.

Gompers' Resolution Likely to Fail

WASHINGTON, Oct. 14.—Rules governing the national industrial conference so entangled the debate today that the session this afternoon adjourned just as the question was called for a vote on Samuel Gompers' resolution to have a committee appointed to arbitrate the steel strike. Gompers made the only speech for or against his resolution, and during the course of his address he practically conceded defeat of the strike, admitting that if it fails the organized labor movement may as well suspend.

Gompers' speech was characterized by many as the speech of his life, and immediately following it Gavin McNab, of the public group, a strong believer in arbitration, moved a postponement of the vote until next Friday. A vote was finally reached on McNab's motion and it was defeated. This brought the conference to a point where the rules again conflicted with progress and another adjournment was taken, this time until Wednesday morning. Unless something unforeseen develops between now and that time a vote on the Gompers resolution will no doubt be taken and the latter will be defeated.

Dr. Charles W. Eliot, tried to have the Gompers resolution ruled out on the point of order that the resolution was not in conformity with the purpose the President had in mind in calling the conference. Chairman Lane, however, declined to rule it out and when he called for debate Gompers made his speech, which was a summing up of labor's demands.

During Gompers' speech he declared that labor's willingness to have the strike arbitrated was in effect leaving the matter in the hands of four opposed to labor and two in favor of it. This was taken by some to be an admission that labor recognizes itself as opposed to the public interest. He also said that should the employers defeat organized labor in this strike it then will have other forces to contend with which will be less lenient. This was taken to be a recognition of the advancing power of the I. W. W. in the ranks of labor.



Auburn, N. Y., Twine Mill Council and Auburn Works Council of International Harvester Co.

Works Council Serves as Court

Equal Representation for Employes and Company Provided in International Harvester Co.'s Method for Establishing Spirit of Mutuality—Right of Appeal and Arbitration Among Important Features of Plan

DISTINCT contribution to the new era of industrial administration has been made by the International Harvester Co. in the inauguration of one of the most comprehensive plans of employe representation thus far formulated in the evolution of relations between capital and labor in America. This plan, adopted last March by an overwhelming majority vote in 19 of its 20 plants, is described by the company as a progressive development of its industrial program and as recognition of the desirability of mutual and equal determination by the employes and the management at each plant of the policies governing their relations.

Although experience with the new plan necessarily has been brief, both the management and the workers profess entire satisfaction with the results it has actually produced, as well as with its promise for the future. It has proved mutually beneficial to the company and the employes, to the former because it holds the promise of increased production and efficiency, and to the latter because they are receiving benefits and consideration impossible of attainment under the old system.

What is the precise nature of the plan that is proving successful both from the standpoints of the company and the employes? It was submitted to the workmen for a vote with the following introduction:

"The directors and officers of the company have for some time been working out a plan to establish closer



COUNCIL AT TRACTOR WORKS OF THE INTERNATIONAL HARVESTER CO., AT CHICAGO

relations between the employes and the management. To this end they now offer the following Harvester industrial council plan for the consideration of its employes, hoping that it may meet with their approval."

Works Councils Established

The plan created at each plant adopting it a works council in which representatives elected by the employes have equal voice with representatives appointed by the management in the consideration of matters of mutual interest. Every employe is guaranteed the right to present any suggestion, request or complaint and to have it promptly considered and fairly decided. Effective machinery for appeal and for the settlement of works council deadlocks is set up. Impartial arbitration by mutual consent is provided for in case agreement is found impossible.

The plan is composed of 20 articles. In the first article is set forth the doctrine of equal representation in the consideration of all questions of policy relating to working conditions, health, safety, hours of work, wages, recreation, education and other similar matters of mutual interest.

The second, third, fourth and fifth articles deal with the method of organization of the works council. The basis of representation is fixed at one employe representative for each 200 or 300 employes, with the provision that in no case shall there be less than five employe representatives in the works council. In each council the number of management representatives shall not be greater than the number of employe representatives and both have at all times equal voice and voting power in considering matters coming before the council.

To aid in carrying out the plan the company established a department of industrial relations, which is charged with the duty of giving special consideration to all matters pertaining to labor policies and the well-being of the employes.

The draft of the plan describes the qualifications of an employe representative in the following words:

"To be eligible for nomination as employe representative from any voting division, the employe must be employed therein. Foremen, assistant foremen, and other employes having the power of employment or discharge shall not be eligible for nomination. Only employes who are citizens of the United States, 21 years old or over, and who have been continuously in the works service for one year immediately prior to nomination as shown on the records of the employment department shall be eligible for nomination as employe representatives."

The next section outlines the methods of nomination and election of employe representatives, the men first nominating candidates and then voting on the two names receiving the highest number of votes. After the employe representatives have been chosen the company announces its representatives on the council.

Once organized the works council affords full opportunity for presentation and discussion of all questions relating to working conditions, wages, protection of health, safety, hours of labor, recreation and similar matters. Upon its own initiative the council may institute investigations of matters of mutual interest and make recommendations thereon to the works management. Similarly the management may refer matters to the council for investigation and report.

Employes' Rights Safeguarded

One significant and important feature of the plan is the provision for conferences between the council and the superintendent in regard to all matters of mutual interest and another is that the council shall receive from the management regular reports regarding accident prevention, sanitation, restaurant, medical service, employment, educational programs, and recreational activities, including information as to the cost, efficiency and results obtained.

The text of the plan makes it clear that the works council shall be concerned solely with shaping the policies of the company relating to the matters specifically mentioned. It is added that when the policy of the company as to any of these matters has been settled its execution shall remain with the management, but the manner of that execution may be at any time a subject for the consideration of the works council.

Ample safeguards are provided to guarantee any employe or group of



THE HAMILTON, ONT., WORKS COUNCIL OF THE HARVESTER COMPANY

employes opportunity to appear before the council and present their case. Any such group of employes shall select not more than three spokesmen from their own number to appear before the council. The council may call any employe before it to testify regarding any matter under consideration and the members of the council, or any sub-committee, may go in a body to any part of the plant to make investigations.

The plan provides a method of voting on matters under consideration and sets up machinery for appealing to the president in cases of tie votes, and for reference to a general council or for arbitration, in the event a compromise settlement is not reached. The sections describing these details together with an explanation of the organization and functions of the general council follow:

"After complete investigation and full discussion of any matter under consideration by the works council, the chairman shall call for a vote, which shall be secret, unless otherwise ordered by the council. The employe representatives and the management representatives shall vote separately. The vote of a majority of the employe representatives shall be taken as the vote of all, and recorded as their unit vote. Similarly, the vote of a majority of the management representatives shall be taken as the vote of all and recorded as their unit vote.

Provides for Arbitration

"Both the employe representatives and the management representatives shall have the right to withdraw temporarily from any meeting of the works council for private discussion of any matter under consideration. When the works council reaches an agreement on any matter, its recommendation shall be referred to the superintendent for execution, except that if the superintendent considers it of such importance as to require the attention of the general officers, he shall immediately refer it to the president of the International Harvester Co. who may either approve the recommendation of the works council and order its immediate execution by the superintendent or proceed with further consideration of the matter.

"In case of a tie vote in the works council, it shall be in order to reopen the discussion to offer a substitute or compromise recommendation, on which the votes shall be taken in the same manner as above provided.

"The president, or his specially appointed representative, may confer with the works council as a whole, or any subcommittee thereof, or any group of employe representatives, at such time and place and in such manner as in his opinion will best serve to bring out all the facts of the case.

"Within ten days after the matter has been referred to him, the president shall either (a) propose a settlement thereof; or (b) refer the matter directly to a general council. If the settlement proposed by the president is not satisfactory to a majority of the employe representatives, and if after a further period of five days no agreement has been reached, then the president may, if he deems it advisable, refer the matter to a general council.



WORKS COUNCIL AT WISCONSIN STEEL CO., SOUTH CHICAGO WORKS OF INTERNATIONAL HARVESTER CO.

"If the president decides not to refer the matter to a general council, or if the vote of the general council is a tie, then the matter may, by mutual agreement of the president and a majority of the employe representatives, be submitted to arbitration. The general council shall be formed in the following manner: The president shall issue a notice designating the several works which he deems jointly interested. Thereupon the employe representatives in the works council at each of the works designated shall select two or more of their own number to act as members of the general council. There shall be one such member of the general council for each 1000 employes or major fraction thereof, except that no works shall have less than two representatives in the general council.

"The management representatives in the general council shall be appointed by the president and shall not exceed the number of employe representatives.

"The president or some person designated by him shall act as chairman of the general council, without vote.

"The first meeting of the general council shall be held within ten days after the president's notice calling such council.

"The general council shall, when necessary, take recesses in order to allow employe representatives therein to confer with other members of their works councils. For this purpose special meetings of the works councils as a whole, or of the employe representatives alone, shall at the request of the employe representatives serving on the general council be convened at the respective works, and full opportunity shall be given for conference and discussion with such representatives regarding their attitude and action on the pending matter."

Representative Protected

In the event of a disagreement in the general council on any matter, it may by majority vote of both management and employe representatives be submitted to arbitration. The method of selecting the arbitrator is for the employe representatives to make a choice and the president to do likewise. If these two agree, their decision shall be final. If they do not agree, they shall call in a third arbitrator and a decision of the majority of these three shall be final.

Perhaps one of the most important features of the plan is that which guarantees the independence of the employe representative and safeguards him against discrimination on account of any action taken in good faith in his representative capacity. He is given the right to appeal directly to the president for relief from alleged discrimination, and, moreover, if the president's decision is not satisfactory to him, recourse may be had to arbitration.

Under the new plan there can be no discrimination against any employe because of race, sex, political or religious affiliation, or membership in any labor organization. The constitution provides that decisions affecting wages shall be subject to revision whenever changed conditions justify, but not oftener than at intervals of six months.

Discuss Economy at Fall Meeting

Iron and Steel Institute Presents 1919 Bessemer Medal to Italian Metallurgist—Consider Advantages Gained by Establishing Coke Ovens, Blast Furnaces and Rolling Mills in Close Proximity

UNUSUAL interest attended the autumn meeting of the Iron and Steel institute held at London, England, Sept. 18 and 19 when the subject of fuel economy with special reference to steel works and foundry practice was thoroughly discussed. The economies effected in German steel works were outlined in one of the papers.

Sir Robert Hadfield, who presided in the absence of President Eugene Schneider, announced that the Prince of Wales has consented to become an honorary member of the institute. Dr. Hadfield presented to Dr. Cav. Federico Giolitti, Turin, Italy, the Bessemer medal for 1919 in recognition of his eminent metallurgical services. Dr. Giolitti is a son of a former Italian premier, and has done most useful work in connection with the development of new processes for the cementation of steel and for the heat treatment of mild steel as a medium for hard steel in machine construction.

The remainder of the morning and afternoon sessions were devoted to the reading and discussion of papers on fuel economy. George Ainsworth presided at the afternoon session in the absence of Sir Robert Hadfield. The papers were prefaced by the reading of a letter from Dr. George Beilby, as follows:

"As vice chairman of the carbonization and metallurgical subcommittee of Lord Haldane's coal conservation committee, I am deeply interested in the idea put forward in the report of the committee by Benjamin Talbot and Professor W. A. Bone on the establishment of steel works comprising coke ovens, blast furnaces and rolling mills all situated in such close proximity that the heat and power supplies can be pooled and drawn upon with the maximum economy by each and all of the separate departments. I venture to hope that we shall learn from the discussion that steps are being taken to develop this statesmanlike proposal."

Suggests Efficiency Certificate

With regard to training skilled workmen to appreciate the importance of fuel economy, Dr. Hadfield said that experience in his own company's works has been quite gratifying. Whenever the question of fuel efficiency has been properly placed before the worker he has quickly responded and endeavored to assist his employer. He also stated that in this connection the federation of British industries is glad to assist by lectures, distribution of pamphlets and other means which can be used as educational propaganda in various industries. It was also suggested that efficiency certificates and prizes might be introduced.

Referring to the question of coal output, Dr. Hadfield said, "While speaking of America, may I say that several have asked how it is that coal output per man in America is so much more than in England. It must not be forgotten that many American collieries are not hundreds of yards, but only hundreds of feet in depth; also many of them are open workings, it being only necessary to scratch the ground to obtain the coal."

Reports on Fuel Economy

Dr. W. A. Bone read the report on "Fuel Economy in Steel Works" prepared by himself jointly with Sir Robert Hadfield and A. Hutchinson, and presented on behalf of the British association's fuel economy committee. In the introduction, Dr. Bone said that fuel economy is most necessary at this time and that manufacturers must face very high fuel costs. Moreover, whenever good fuel efficiency is attained, efficiency and economy in other directions follow and vice versa. The speaker deplored the fact that the recently established fuel laboratories are receiving inadequate support and declared the good work may fail unless the government is made aware by the manufacturers of the great importance of this subject.

Cosmo Johns read a paper jointly prepared by himself and L. Ennis on "Fuel Economy in German Iron and Steel Works." A paper was read in abstract by R. J. Sargent, jointly prepared by Sir Robert Hadfield and himself on "Fuel Control in Metallurgical Furnaces."

Benjamin Talbot, opening the discussion said that no doubt more fuel than is necessary is used. Referring to the question of linking up units, he mentioned five plants in Middlesbow so close together that it is quite possible to connect up both as regards gases and a central power station. Mr. Talbot declared that such a combination would take care of the high peaks which often mean big consumption, and stated that the fact the plants are separate entities should not be allowed to prevent the economy secured through co-operative action. He said that in the operation of coke ovens at the blast furnaces the manager should have absolute control of the manufacture of his coke. The coke made at distant ovens often is inferior. To secure the desired economy it will be necessary to return to the cleaning of coal in a fairly satisfactory manner. With regard to the week-ends, gas should be stored so that it can be used in the neighborhood for lighting, heating or for domestic purposes.

F. W. Harbord declared that in many works the cost of necessary modifications to effect a considerable saving would not be prohibitive, though he agreed that in many of the works it would be quite impossible. He stated, however, that there is no reason why every blast furnace should not have a double bell. Something simple and efficient that can be installed at a reasonable cost is desired. Most important savings can be effected by organizing staffs with a view to detecting and preventing leakages. All gases should be analyzed.

Cheap Coal Has Been Factor

Henry Ridge pointed out that economy has not been exercised in the past because coal has been obtained very cheaply. Experiments now in progress may prove that it is possible to use a much cheaper form of apparatus for gas-cleaning. He entirely agreed as to the insufficiency of the data with regard to the use of gas engines for open-hearth practice. A very serious cause of waste arises from the loss of heat units in the slag, which at present cannot be recovered. This is a subject to be dealt with in the future.

Frank Foster insisted that a great saving can be effected by doubling the rate of driving the blast furnace and the steel furnace. The slow rate of driving the blast furnace is largely due to the shape of the furnace which tapers up small in proportion to the bosh. Above all, bet-

ter furnaces are needed because rapid melting cannot be attained without high temperature. Either by increasing the natural suction on the air regenerators or by thinning the air the amount of gas delivered can be greatly increased, and the rate of melting greatly improved. Other countries, especially the United States, are doing better than Great Britain in this respect.

Synthetic Cast Iron

Sir Robert Hadfield presided at Friday's meeting. The first paper read was "Synthetic Cast Iron," by Charles A. Keller, Livet, France, presented in the absence of the author by the secretary.

Dr. Hadfield said he cannot quite see the object of turning steel into cast iron and then turning it back to steel. He declared it must be very wasteful, though no doubt the process proved very valuable during the war Dr. Stead stated that except for cost, the making of synthetic cast iron is a delightful experience, particularly for the chemist. He agreed, however, with Sir Robert Hadfield that the process hardly appeals to the average metallurgist, and unless, like the French company which has cheap and enormous water power for the generation of electricity, giving very low cost of production, manufactures have very cheap power they cannot look to this process as a practical scheme for Great Britain.

J. H. Whiteley read the paper by himself and A. F. Hallmond on "The Action of Iron Oxides upon the Acid Furnace and Structure." Cosmo Johns called attention to the curious fact that a lining is not considered satisfactory until it is soaked with the oxides, yet the oxides are eventually destructve.

Dr. Hadfield did not accept the theory of the surrounding atmosphere. The visible fumes are merely escaping gases. Dr. Benedict declared nitrogen is the protecting agent in fluid steel. A. F. Hallmond, one of the authors, replying said the useful service done by oxides of iron upon the lining is in strengthening the roofs and sides, preventing cracking. He inclined strongly to the view that the roof of the furnace is corroded mainly by iron oxide even in the basic process. The main property to be aimed at in making silica brick for steel works purposes is density. The more silica in the brick the longer time is required to wear it away, and it is a feature of the English brick that it contains a large proportion of unconverted quartz.

Woody Structures of Steel Fractures

The paper by J. J. Whade, Le Creusot, France, on "The Woody Structures of Fractures of Transverse Test-pieces Taken from Certain Special Steels" was read by the secretary. A paper by A. M. Portevin, Paris, on "Notes on Defective Fractures in Tensile Test-pieces During the Inspection of Gun-parts," was discussed simultaneously.

The chairman said there is no question that apart from the composition, the quality of steel to be subjected to transverse tests is largely influenced by the temperature treatment in the furnace and the casting temperature. He has had identical metals behave quite differently as to final physical characteristics. Dr. Giolitti attributed the woody structure to the action in some cases of the surrounding gases in solution, which acquired an oxidizing action on the matter round them. Owing to the shortage of steel it was necessary during the war to make gun forgings from ingot croppings. Chromium was used, but it was difficult to get rid of the woody structure. He believes the nonmetallic inclusions act as germs of crystallization.

High Temperatures Necessary

F. M. Service emphasized the necessity of a very fluid slag during the boiling period, that is high in ferrous oxide. The temperature is highly important. When the metal is run as low as 1420 to 1440 degrees Cent. from the furnace into the ladle there is trouble. Nickel chrome steel has been produced successfully at from 1550 to 1560 degrees Cent. He claimed it is not safe to forge at temperatures as low as 900 degrees Cent. The best remedies for woody structures are high temperatures in the furnace, a proper slag and a high working temperature.

A. H. Dickenson said he considers woody fractures, sliding fractures and all such cases are due to the original structure of the ingot in which there are nonmetallic inclusions. The worst of such inclusions are those which are so small as to be invisible.

Establishing the Value of Patents

BY RALPH H. BUTZ

THE problem of making proper provision for the depreciation in value of patents is one that confronts a large number of manufacturers. This depreciation in value occurs very rapidly in some instances, while in other cases it may take place slowly. In view of these conditions it must be admitted that to estimate the life of a patent at the time of its acquirement is a difficult task. However, it is a problem that should receive the attention of every manufacturer who has no desire to write this asset into his balance sheet at an inflated or fictitious value.

There is no doubt that a patent is an asset so long as it has not become obsolete. In fact it is easier to establish the real value of patents than the theoretical value of good will. A patent may be carried on the books at a valuation far in excess of its actual worth, owing to the fact that no provision has been made to charge depreciation during those years when the depreciation really occurred.

The danger of such a policy is readily realized when it is known that the book value of such a patent must be charged to profit and loss in one amount after its usefulness has been exhausted. It is a far better method to extinguish the book value of a patent in equal annual instalments than to charge the entire amount to profit and loss at one time, thereby reducing the profit for that year to an unusual extent.

While it is true that some patents have considerable value after their legal life has expired, such cases must be considered as exceptional and contingent upon certain circumstances. A great number of patents are of little value after the tenth year, and the manufacturer who refuses to recognize this possibility may not be considered conservative.

As a rule the depreciation of patent values occurs most rapidly during the first few years of its existence, and during which years the greatest profit is derived from its application or use. This fact should be remembered when the schedule of depreciation charges is being constructed. One manufacturer, who is very conservative, maintains a schedule of depreciation charges by which the book value of his patents is extinguished at the end of five years. This schedule

should prove interesting to other manufacturers who are making efforts to arrange their schedule for this purpose on a sound basis, and for this reason the figures are given: First year, 30 per cent; second, 25; third, 20; fourth, 15; fifth, 10.

These percentages apply to the original value, not to the diminishing balance, and by this method the original value is completely extinguished at the close of the fifth year. Of course, this is an ultraconservative policy, for some of the patents may not have depreciated more than 50 per cent during the five-year period. However, the gross profits are of such volume that this expense is absorbed without any undesirable effects.

Three years ago a manufacturer purchased a patent at a cost of $50,000. He estimated the useful life of this patent to cover a period of not more than four years. He finally decided to write down the value of this patent on a royalty basis, and added to the cost of production a nominal amount for each machine. At the end of 18 months the original cost of the patent had been absorbed in the production cost, and without reducing the net profit over that of former periods. This patent has not yet become obsolete, but a sound policy was adopted to which the condition of the business will testify.

Values Should Not be Inflated

What are proper charges to the patents account? The first charge is the purchase price of the patent Unless there are good reasons to the contrary the patents account should not be charged with a greater value than the actual purchase price. That some manufacturers increase the book value of patents over the purchase price was demonstrated quite recently when the assets of a certain concern were examined by an accountant. In this instance it was found that the purchase price of patents on record amounted to $22,000. These patents were carried on the books at a value of $41,000. The annual depreciation charge amounted to 5 per cent of this increased valuation.

The cost of litigation to protect patents is also a proper charge to patents account, although such expenditures are frequently charged to legal expenses, to which there can be no objection. Expenditures for the purpose of procuring assignments and shop rights for the use of patents are also charges to the patent account.

A satisfactory method to allow for depreciation is to build up a reserve for the purpose. In this manner the full purchase price of the patent may be carried on the patent account until its useful life or legal life has expired, and then the entire amount can be charged to the reserve established for this purpose. Such a reserve is established in the same manner as reserves for plant, machinery, etc. In this manner the asset account and the liability account will be reduced in like amount whenever a patent is charged off the books.

Smelting Iron in Sweden 200 Years Ago

BY PETER BONDE

SWEDEN'S history in the art of making iron and steel extends far back in the centuries and is set with interesting and picturesque incidents connected with the efforts of the inhabitants of that rugged land to convert the native mineral supplies into useful articles. How the farmers and other isolated groups on the outskirts of the then trackless country obtained their supplies of iron 200 years ago is a story of hardship and ingenuity.

At that time iron was as scarce as gold. In the few places where the ore lay exposed on the surface of the ground the people had no interest in producing iron except for their own small needs. Under the conditions of life that then prevailed, practically everything for which iron and steel is considered now indispensable, was made of wood, such as plows, harrow-bins, door locks, etc. For certain purposes, however, such as horse shoes, nails, tools, firearms, etc., it was necessary to have iron and steel. The story of how the inhabitants filled that need even in locations where no iron ore could be found, is related in this article.

His supply of iron having begun to run short, the mastersmith of the village in the northern part of one of Sweden's biggest province, Dalecarlia, turned his thoughts to its replenishment. So in the fall days when the frost had made the ground hard and a thin blanket of snow had covered it, he told his neighbors to get ready for a departure into the woods and marshes to make up the year's supply of iron. It was a company of healthy, happy and strong men bowed under heavy burdens that set out to the scene of their labors. Earlier in the fall days the mastersmith with his helpers had made a trip into the woods and marshes and had made the necessary arrangements for the work that was to follow. He had found and chosen places nearby springs and creeks where the water had a rusty color, indicating the presence of iron ore. Then he had shoveled the red earth to higher ground to allow it to become as dry as possible before the ironmaking operations were undertaken. This iron ore socalled, was of the lowest grade, which today is considered practically worthless by scientists and ore experts. The party having set out from the village, traversed a long distance into the woods finally reaching a small log cabin, primitive in style, but well built and comfortable. There the men made their home. Close to the cabin was a creek with a waterfall in which was built a waterwheel. After the



REPRODUCTION OF AN OLD ILLUSTRATION OF A PRIMITIVE SWEDISH BLAST FURNACE

men had become comfortably adjusted in their new quarters—they were in no hurry to get started on their labors—they gradually took up the task before them. Some of them went with skii sleds to transport the ore to a point close by the waterwheel where the blasting oven was located. There the ore was dumped and later shoveled up on shelves which were laid on top of each other on a rack. After the shelves were filled, a big fire was made under the rack and the latter burned in order to eliminate as much dirt as possible from the ore. While this transportation and burning process was in progress, the mastersmith and one helper were busy getting the blasting oven in operating condition. The construction of this oven was done in this way: In the ground close to the waterwheel was dug a round hole from 7 to 8 feet in diameter and about 2 feet deep. In the excavation was built a chimney of rocks about 5 to 6 feet in height with fillings of sand and clay. The latter frequently had to be carried from great distances. The bottom of the blasting oven was concave in form, and was made strong and tight. In the bottom was an opening into which was inserted an air pipe of wood. The outer end of this pipe was divided and each part connected with an airtight wooden cylinder with an open top. In these cylinders air tight pistons were fitted and on the tops of the latter vertical shafts were applied in each of which was inserted a square plug. The shafts were hung on flat, flexible poles of spruce which were fastened to the ground. The waterwheel was constructed with a long axle which ran on a line close to the piston shafts. In the axle were inserted square plugs which, when the axle was revolving, came in contact with the plugs in the piston shaft causing the pistons to be depressed. The air thereby was pressed out of the cylinders and through the pipes into the oven. When the axle plug had turned far enough it slipped out of the plug in the shaft so that the flexible spruce pole lifted the piston. The arrangement was such that when one piston was forced down the other was lifted, thus permitting a constant stream of air to pass through the pipes and into the oven.

Before the waterwheel was put in motion, the men had filled the blasting oven with dry wood and had made a slow fire. The oven then was filled with coal. The waterwheel was started and the ore was shoveled into the oven. The blast was increased from time to time as the process advanced. Afterward the mastersmith with a rod stirred deeply the contents of the oven to ascertain the progress of the smelting. When he determined that the operation had reached the right stage, the blast was turned off and the red hot mass was allowed to cool off somewhat. There remained a lump of iron in the bottom of the oven which was taken out while hot, placed on a flat stone and hammered with a big sledge. It was then cut to pieces with a cold chisel. The iron then was put in some haystack in an adjoining meadow, which had been harvested in the summer. There it was left until sufficient snow had made it possible for horses and sleds to reach the spot and convey the metal to the village. At the blacksmith's shop the iron pieces were reheated and forged into the various products under the hammer. The quality of the iron thus obtained in this crude fashion it is declared has remained unsurpassed to the present day.

When the supply of the socalled "iron dirt" was exhausted in one place, the mastersmith looked up another location. Today in Sweden may be seen the ruins of many of these primitive smelters. Each fall the operation of iron-making in the forest was repeated. When the men returned to their village after their expeditions for iron they brought with them also heavy burdens of fish and fowl which they had hunted during their stay in the marshes and woods.

Strikes Hamper Output of German Works

As the result of strikes and large increases in wages German manufacturers, especially those in the Dusseldorf district, have almost exhausted their reserves, according to an open letter received by the bureau of foreign and domestic commerce from the employers' association of the Dusseldorf district. The letter states that strikes have been increasing, despite large increases in wages, and customers hesitate to place orders on account of the uncertainties in the political and industrial situation. Part of the letter follows:

"In October of 1918 the production of five blast furnaces in this district amounted to 116,281 metric tons of pig iron; in March, 1919, it was 63,000 tons and in April was further reduced to 54,635 tons. A number of steel works producing 105,611 metric tons of steel per month in 1918, had an output of only 68,000 tons in March, 1919, and in April, 1919, production had decreased to 33,797 tons, less than one-third of the output for 1918. In a majority of the works production has been reduced to less than 50 per cent of the output recorded in the months preceding the revolution."

Finances have been heavily hit by the abnormal demands for increased wages. To quote examples from the letter: "In five months after the revolution one firm paid out in salaries and wages about 1,900,000 marks and sold goods for 1,500,000 marks. Another firm produced goods valued at 4,600,000 marks in 1918, employing 900 workers, of whom about 100 were prisoners of war, 200 to 300 reclaimed soldiers and the remainder women and youths. During the same period in 1919 the firm employed 1200 able-bodied workmen and produced goods of a value of 2,500,000 marks."

The letter further states that as a result of the steady losses a number of employers are seriously thinking of closing their factories, and reports from the industrial districts, show that labor is bringing about its own ruin, as many employers are discharging their men. To quote further from the letter:

"A sharp light is thrown on this frightful situation by the recent declaration of the board of directors of the Krupp Co., before the workers in mill at Essen. The mill cannot fully employ its workers in the finishing departments as there is a shortage of raw materials and semimanufactured articles, due to the reduced production of the furnaces and foundries. The firm informed the workers it will endeavor to protect them as far as possible against the consequences of reduced production. In case the conditions do not improve within a reasonable time, the company will continue to pay its unemployed workers 70 per cent of their wages for a definite time and later refer them to the unemployment insurance fund of the state, while those doing the work of the helpers will, after a like period, receive only helpers' wages."

Time for Filing Patents is Extended

The industrial property section of the peace treaty, as it appears in the *Congressional Record,* provides for an extension of the time for filing applications for foreign patents and for reviving foreign applications or patents which have lapsed during the war in the contracting countries, according to a statement by Clarence J. Loftus, Chicago, counsellor in patent and trade-mark causes. He says this section in substance also provides:

1. That any time within six months from the coming into force of the treaty, convention applications may be filed in convention countries based upon applications filed subsequent to July 31, 1913. Heretofore, it has been

necessary to file such applications within 12 months from date of filing application in the home country.

2. That the necessary steps for the prosecution of pending applications can be taken within one year from the coming into force of the treaty.

3. That taxes not paid during the war may be paid now or at any time within one year from the coming into force of the treaty.

4. That the failure to work patents in such countries as the law requires working will not forfeit the patent or constitute a ground of revocation of the patent for a period of one year from the coming into force of the treaty.

5. That as to patents in force on Aug. 1, 1914, no working is required for a period of two years from the coming into force of the treaty.

6. That no action can be maintained by German nationals based on the manufacture, sale or use of industrial property rights during the war where such manufacture, sale or use was made by the government of the allied or associated powers or by anyone acting on behalf or with the assent of such government.

7. That assignments made during the war which might defeat the objects of the present treaty may be considered void by the allied or associated powers.

Develops Plant for Heavy Forgings

GRADUAL development, culminating in recent improvements in the heat treating department, has given the Allis Chalmers Mfg. Co., Milwaukee, an unusually well equipped plant for producing, heat treating and machining large forgings. The initial steps toward establishing a forge department were taken 12 years ago, when in developing large units for steam, electric and hydraulic plants, the company was face to face with the necessity of either going to the large forging plants in the eastern part of the United States for the large forgings required, necessitating delay and inconvenience as well as interferring very materially with deliveries; or putting in a forge plant large enough to take care of this heavy work. The management decided upon the latter course, planning and designing a shop to take care of future expansion by installing a 3000-ton hydraulic press of the steam intensifier type. Later a 1000-ton press, which is shown in Fig. 1, and a series of various sized hammers were added. This equipment provided more capacity than was required for the company's needs, and therefore the extra product, either rough forged, rough machined or finish machined, was offered.

In order to keep pace with the growth of the forging department, it was necessary to provide additional facilities for heat-treating. Improvements and extensions covering a period of several years have given the heat-treating department ample equipment to handle all products of the forge shop. At the present time, the heat-treating shop contains 10 horizontal and two vertical furnaces for large forgings and various other units for small work.

Among the horizontal heat-treating furnaces are three car type box furnaces, 8 x 12 x 16 feet; two car type furnaces, 6 x 8 x 30 feet; two car type

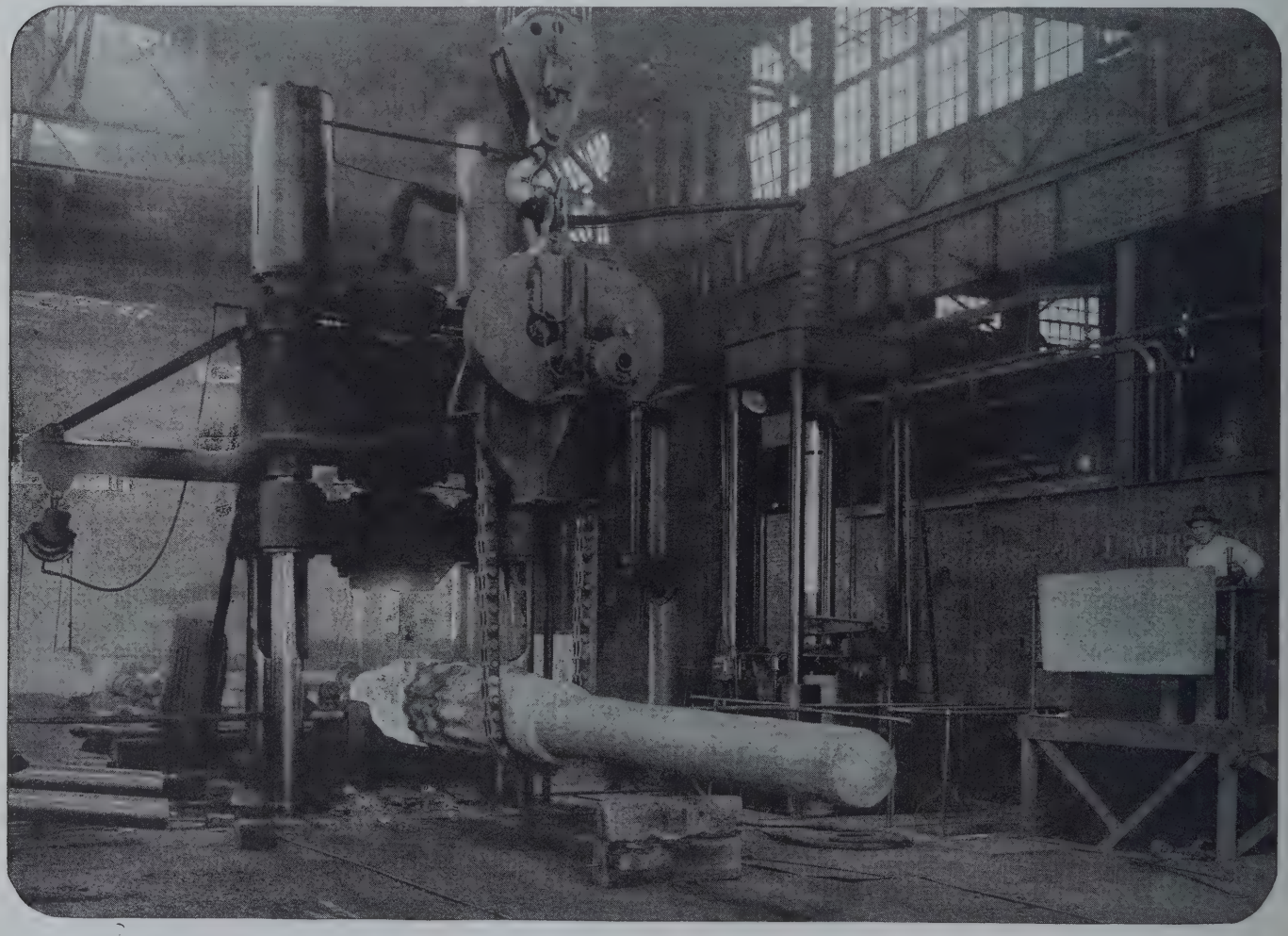


FIG. 1—ONE OF THE SMALL HYDRAULIC FORGE PRESSES. THE LARGEST MACHINE IN THE FORGE DEPARTMENT IS A 3000-TON PRESS

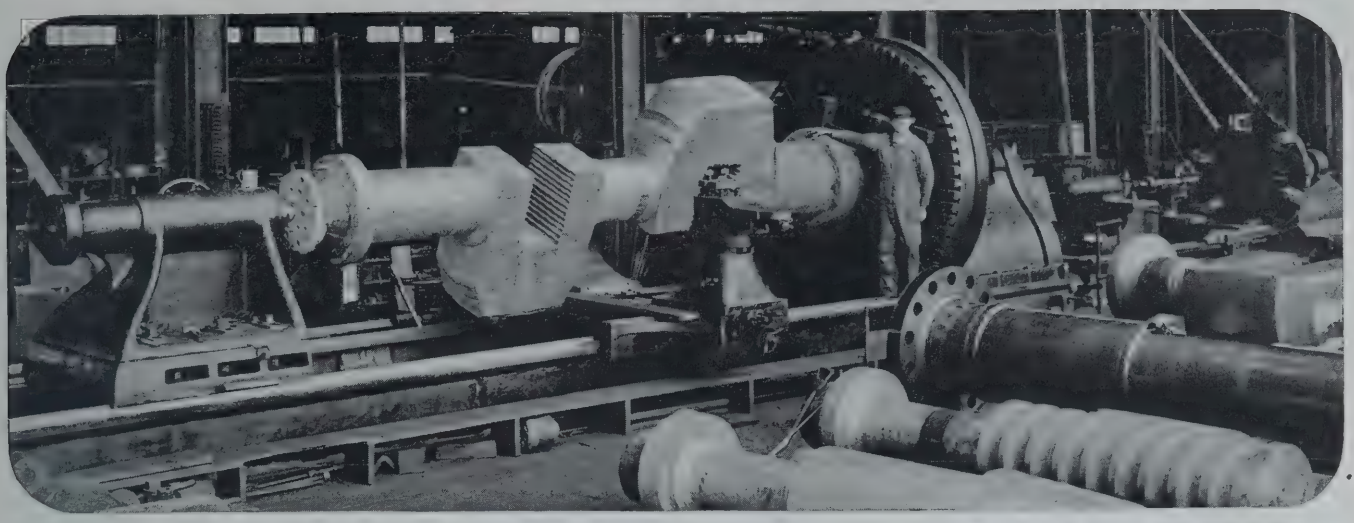


FIG. 2—TURNING A TWO-THROW CRANKSHAFT IN MACHINE SHOP WHICH SERVES FORGE SHOP

furnaces, 6 x 8 x 45 feet; one car type furnace, 6 x 8 x 50 feet; one open top furnace, 5 x 7 x 16 feet, and one open top furnace, 6 x 8 x 50 feet. All of the horizontal furnaces are oil fired and of the semimuffle type. For heat treating hollow shafts and similar forgings two large vertical furnaces are provided. The largest, which is 70 feet high and 14 feet in diameter, accommodates shafts 60 feet long. The other furnace is 50 feet high and 14 feet in diameter. Both are of the semimuffle type and are oil fired. They are equipped with recording pyrometers arranged so that temperature readings may be obtained at intervals of a few feet over the entire length of each forging. The indicators for the pyrometers of all furnaces are installed in a central station where the temperature readings are under the observation of metallurgists.

The equipment of the heat-treating department also includes a number of horizontal and vertical quenching tanks in which large forgings can be handled. The largest vertical tank, 14 feet in diameter and 75 feet deep, is shown in the foreground at the left of Fig. 3, which is a view of the heat-treating department.

The machine shop is equipped to rough-turn and finish forgings ranging up to 60 feet in length. Special machines for hollow boring marine shafts and similar forgings are installed. The entire plant, comprising the forging, heat-treating and machine shop departments, now is capable of handling the largest product of the largest forging press, which is equivalent to a 40-ton forging worked down from an ingot weighing from 55 to 60 tons. Within this weight, the plant can forge, heat treat and machine shafts up to 48 inches in diameter and up to 60 feet long.

During the war the company, because of its facilities for making large forgings, engaged in ordnance and marine work for the government, producing guns; tubes; torpedo cylinders; recoil cylinders and pistons for large navy guns; shafting for battleships, cruisers and destroyers; and shafting connecting rods, rudder stocks, etc., for the Emergency Fleet corporation.

Arsenal Tests Increase

Tests of iron and steel and other materials at the Watertown, Mass., arsenal during the fiscal year ending June 30, 1919, included 43,964 specimens, exclusive of those carried out during the course of experiments and not finally reported with the experiments. The number of specimens tested for the ordnance department was 43,536, while the number tested for private parties was 428. This shows an increase of 258.9 per cent over the figures of last year, the number of tests made during the year ending June 30, 1918, being 12,248. These facts are contained in the report of Lieut. Col. T. C. Dickson, commandant at the Watertown arsenal, which recently was submitted by Brig. Gen. C. C. Williams, chief of ordnance, to the secretary of war.

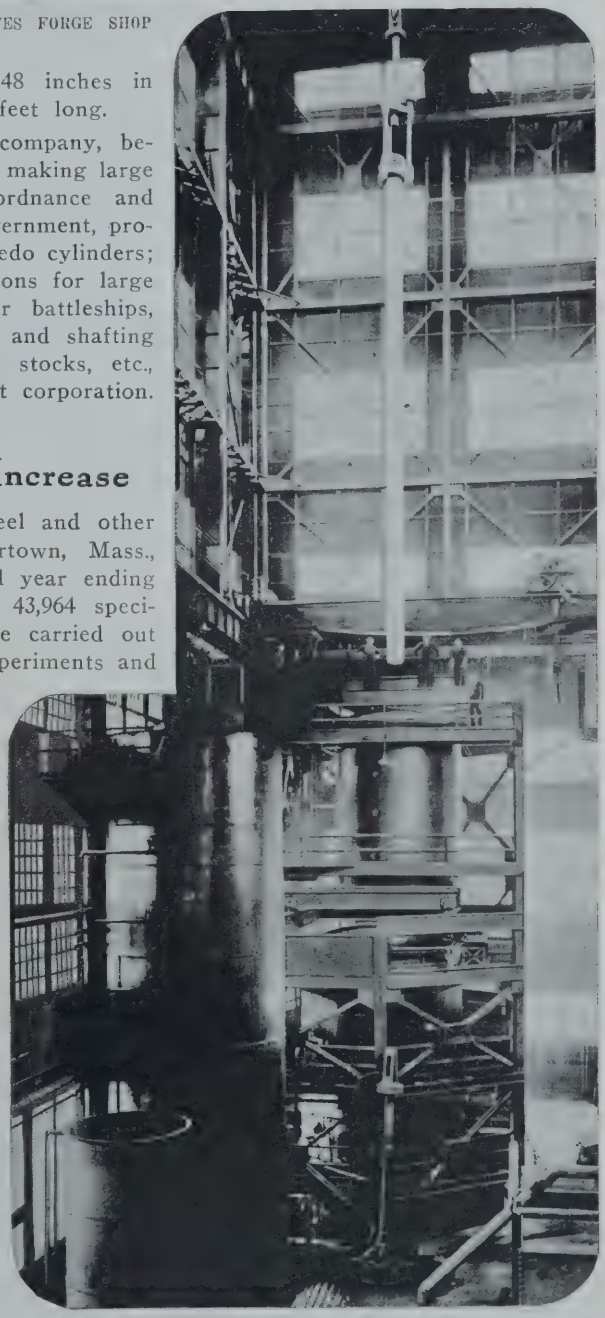


FIG. 3—INTERIOR OF HEAT-TREATING DEPARTMENT, SHOWING QUENCHING TANKS

Luxemburg Industry Far Behind

Only 16 of 47 Blast Furnaces in Operation, With Output 26.4 Per Cent of Pre-War Figure—Steel Production But 21.2 Per Cent of Normal—Big Plants Owned by Germans Still Idle

OFFICIAL statistics received recently in this country give the present rate of operations of blast furnaces, steel plants, mills and foundries in Luxemburg and afford a basis for some interesting comparisons with normal production in that territory.

At present 16 furnaces with a capacity of 2870 tons are in operation, while 31 with a capacity of 5425 tons are out of commission. The normal production of pig iron before the war was 236,000 tons monthly, or, at that rate, 2,832,000 annually. At present the monthly production is but 62,500, or but 26.4 per cent of the prewar output. If the present rate of output is continued for a year the total would be 750,000.

Present production of steel is 21.2 per cent of the normal output before the war. The normal monthly output was 157,000 tons, or 1,884,000 annually. The present output is 33,400 monthly.

Semifinished 19.85 *Per Cent*

The output of semifinished steel is 19.85 per cent of the prewar figure. Normal monthly production was 131,000; yearly, 1,572,000, while today the monthly production is 26,000. Iron, steel and bronze foundries produced 3480 tons of castings monthly before the war; at present the production is but 660 tons.

The average of these statistics shows that the iron and steel industry of Luxemburg is operating at but 22 per cent of its prewar capacity.

In 1918, four of the large companies operating in Luxemburg produced 908,314 tons of iron; 594,418 tons of ingots and castings; 330,144 of finished material and 189,863 tons of semi-finished. Three of these companies were distinctly German concerns, while one included French and Belgian capital. The record of production in 1918 does not include the output, if there was any, of one large plant owned by a Belgian company, manufacturing iron and steel. All of these companies, and another, operating only a foundry, are now in some degree productive. They represent the iron and steel industry of Luxemburg, and their present production, compared with their prewar output, in detail follows.

Iron and Steel Production in Luxemburg

SOCIETE DES ACIERIES REUNIS DE BURBACH-EIGH-DUDELANGE (ARBED)

A Luxemburg company with French, Belgian and Luxemburg capital. It possesses three separate companies.

I. The Usine d'Esch-sur-Alzette

2200 Workmen

Blast furnaces: Two of 110 tons capacity, one of which is lighted; one of 160 tons, not lighted; three of 225 tons, of which two are lighted.

	Tons
Monthly normal production	30,000
Actual	15,000

Thomas converters: Four, each of 23 tons capacity.

Normal monthly production	25,000
Actual	12,000

One blooming mill; five rolling mills and one wire mill.

Monthly normal production	20,000
Actual	10,000

II. Usine de Dudelange

1800 Workmen

Blast furnaces: Four of 130 tons, of which two are lighted; two of 150 tons, of which one is lighted.

Monthly normal production	25,000
Actual	12,000

Thomas converters, four of 23 tons.

Normal monthly production	20,000
Actual	11,000

Martin furnaces, two of 25 tons.

Normal monthly production	3000
Actual	none

One blooming mill and five rolling mills.

	Tons
Normal monthly production	18,000
Actual	8000

Foundry.

Normal monthly production	980
Actual	190

DEUTSCH-LUXEMBURGISCHE BERGWERKE UND HUTTEN AKTIEN GESELSCHAFT

A German capitalized company, with two distinct plants.

I. Usine de Differdange

4900 Workmen

Blast furnaces: Ten of 190 tons, of which two are lighted, eight extinct, one unusable and two undergoing repairs.

Normal monthly production	55,000
Actual	9000

Thomas converters: Five of 25 tons.

Normal monthly production	50,000
Actual	none

One blooming mill, six rolling mills, one wire mill.

Normal monthly production	45,000
Actual	none

II. Usine de Rumelange

Blast furnaces: Three of 110 tons, all extinct.

Normal production per month	9000
Actual	none

SOCIETE DE OUGREE-MARIHAYE

The Luxemburg organization of an important Belgian company.

I. Usine de Rodange

1000 Workmen

Blast furnaces: Five of 150 tons, of which three are

lighted, one extinct and one in construction.

	Tons
Normal monthly production	22,000
Actual	13,000

Thomas converters of 12 tons.

Normal monthly production	20,000
Actual	9000

One blooming mill, two rolling mills.

Normal monthly production	18,000
Actual	8000

Foundry (Iron).

Normal monthly production	1250
Actual	none

Structural steel plant.

Normal monthly production	250

III. Usine de Dommeldange & Eich

1200 Workmen

Blast furnaces: Three of 110 tons, of which one is lighted.

Normal monthly production	9000
Actual	2500

Martin plant with two Wellman furnaces, one of 20 tons and one of 30 tons.

Normal monthly production	1000
Actual	800

Electric furnaces for refining of Martin product: Three of the Roechling system of 3.5 tons.

Normal monthly production	700
Actual	600

Foundry (Iron).

Normal monthly production	110
Actual	80

Foundry (Steel).

Normal monthly production	540
Actual	250

Foundry (Bronze).

Normal monthly production	50
Actual	10

Structural steel plant.

Normal monthly production	400

GELSENKIRCHENER BERGWERKS UND HUTTEN AKTIEN GESSELSCHAFT

A company of German capital, possessing two plants.

I. Usine d'Esch-sur-Alzette

900 Workmen

Blast furnaces: Five of 280 tons, three of which are lighted.

Normal monthly production	40,000
Actual	8000

II. Usine Adolph-Emil-Hutte at Belval

2000 Workmen

Blast furnaces: Six of 250 tons, none of which is lighted.

Normal monthly production	40,000
Actual	none

Thomas converters: Five of 23 tons.

Normal monthly production	35,000
Actual	none

Two blooming mills, three rolling mills, one wire mill.

Normal monthly production	30,000
Actual	none

SOCIETE DES ACIERIES DE STEINFORT

A Luxemburg company with German capital.



FRENCH ENGINEER'S MAP, SHOWING LUXEMBURG IN RELATION TO IRON AND STEEL INDUSTRIES OF LIEGE, LONGWY, THIONVILLE AND BRIEY

Usine de Steinfort

500 Workmen

Blast furnaces: Two of 45 tons, both extinct; one of 120 tons, in operation.

	Tons
Normal monthly production	6000
Actual	3000

Martin furnace of 18 tons.

Normal monthly production	2000
Actual	none

Electric steel plant: One furnace of 3.5 tons.

Normal monthly production	300
Actual	none

UNION DES ACIERIES (SOCIETE ANONYME)

A Belgian company.

Usine at Luxemburg Gare

450 Workmen

Foundry (Iron).

Normal monthly production	100
Actual	30

Foundry (Steel).

Normal monthly production	450
Actual	100

Refining Basic Electric Steel

Officials of a Western Steel Company Organize Interplant Association for the Purpose of Promoting Co-operation and Thereby Stimulating Production—Questionnaire Brings Out Interesting Details of Manufacture

BY W. H. PAYNE

IF ELECTRIC furnace steel is to be made on a competing price basis with the open-hearth product, it is essential that all short cuts and time saving methods be adopted in its manufacture. The demand for electric-alloy steel used for gun and ship forgings increased much faster in proportion to the experience necessary to thoroughly control the product.

To electric steel manufacturers this meant: *First,* that in order to maintain the market for electric forging steel, it would be necessary to pay attention to every detail in its manufacture. *Second,* that one way of doing this was to teach furnace operators as far as practical the chemistry of furnace refining processes. *Third,* that bonus systems be inaugurated for operation covering the lowest limit of electrical consumption per ton of steel produced, which necessarily would be tempered by the amount of refining and grade of the product; percentage of losses from off heats caused by irregular operations; and, tonnage over a definite period of time.

With the foregoing in mind the officials of the General Steel Co., St. Francis, Wis., organized an interplant association which includes the electric furnace superintendent, the furnace melters, the metallurgist, the chief chemist and the works engineer.

The object of the organization is to promote co-operation among the melters and thereby increase furnace production and efficiency.

Answers to a questionnaire which was presented at a recent meeting of this organization are as follows:

Oxidizing Period

In what kind of furnace lining may phosphorus be removed?

In the process of refining steel phosphorus can be removed commercially in a furnace which has a lining composed of a basic refractory, the best example being dead-burned magnesite, in the brick form for the bottom layers and side walls above the slag line, and in a loose crushed form to "sinter in" by layers when forming the working bottom. Since, in the process of removing sulphur and phosphorus from steel, it is necessary to use lime slag, which is a basic material, it is necessary to hold this bath of steel and the slag in a basic lining to prevent chemical reactions which will destroy the bottom.

Give an example of an average mixture of a basic oxidizing slag, in a 12-ton electric furnace, for a 0.60 per cent carbon, a 0.07 per cent phosphorus and a 0.06 per cent sulphur meltdown and how fast is it best to put it in?

This is a high meltdown. It would be advisable to form a basic-oxidizing slag of about 500 pounds of lime and 350 pounds of iron ore. This is to be mixed in as about one-third of the cold charge has been thrown in. It is imperative that the iron ore be kept from the furnace lining, as not only the chemical reactions of the oxides in the ore will soften the bottom and cause it to come up, but the mechanical action by the boiling of the steel as the ore breaks up, will make the first condition worse. After the furnace has melted down and the banks "pulled," it is good practice to throw a few shovels of lime around the banks to protect the walls from the cutting action of the iron ore. Additional lime and ore may be added according to the discretion of the melter in charge. A high carbon meltdown will hold a heavy slag. About 50 or 60 pounds of mill scale will cut or thin a hot heavy slag.

In what form is phosphorus in the molten steel before it combines to form an oxide in the process of being removed?

Phosphorus is found in the molten steel as a solution with iron known as phosphide of iron, Fe_3P.

In what stable form is phosphorus in the slag?

Phosphorus is found in the slag, as basic calcium phosphate, $Ca_3(PO_4)_2$ which is a stable constituent under normal furnace conditions.

In what form is carbon in the molten steel, and is it necessary to remove carbon to as low as 0.15 or 0.20 per cent before the phosphorus may be oxidized?

Carbon is found in plain steel as a carbide of iron Fe_3C. Under average conditions it is generally conceded that it is necessary to remove carbon to as low as 0.15 or 0.20 per cent before phosphorus may be oxidized to any extent.

In the meltdown as previously mentioned where you are making a medium carbon steel, say 0.40 to 0.50 per cent, can phosphorus be oxidized down to 0.02 per cent without removing carbon, by working the furnace at the proper temperature?

It is a well established fact that oxygen has a stronger attraction for carbon as the temperature of the furnace is increased. In working down the heat therefore, it would be best to work the furnace as hot as possible, taking into consideration other factors, until carbon is worked out to about 0.35 per cent, and then work the furnace colder as this gives best conditions to begin the removal of phosphorus. On the contrary, if you are making a low carbon steel of about 0.10 or 0.15 per cent it would be best to work the oxidizing period hot all the way through.

Can you therefore remove phosphorus fastest at a low furnace temperature?

Yes, when the carbon is fairly low (about 0.35 per cent), because the lower temperature, swings the advantage over to the removal of phosphorus as it lessens the attraction of oxygen for carbon.

In how many chemical reactions is phosphorus removed from steel and what are the chemical equations?

Phosphorus is removed by oxidizing reactions according to the following equations. If limestone is used, it is first necessary to break it up into lime and CO_2 gas as follows:

Limestone — Lime + A Gas

1. $CaCO_3 + \text{heat} = CaO + CO_2$

Iron Phosphide + Iron Oxide = Phos. Pent oxide + Iron

2. $6\,Fe_3P + 5\,Fe_2O_3 = 3\,P_2O_5 + 28\,Fe$

Phos. Pent oxide + Lime = Basic Calcium Phosphate

3. $3\,P_2O_5 + 9\,CaO = [3\,Ca_3(PO_4)_2]$

The author, W. H. Payne, is chief engineer for the General Steel Co., St. Francis, Wis.

Equation No. 1 shows that, limestone plus heat will break up into lime plus carbon dioxide.

Equation No. 2 shows that when iron ore or mill scale is brought into contact with the phosphorus in the steel (other conditions being correct) that phosphorus pent oxide is formed and free iron, which goes back into the metallic bath, while the lighter phosphorus oxide comes up in the slag.

Equation No. 3 shows that phosphorus pent oxide on coming up in the slag and in contact with lime, forms a stable compound, calcium phosphate. This compound will remain in the slag and is raked off, other conditions being correct.

It is probable that some of the last phosphorus to be oxidized does not go through the latter equation, but is removed as an oxide when the slag is pulled.

Why is iron ore added to a high-carbon meltdown in preference to mill scale, as an oxidizer?

Iron ore is used because of its high specific gravity which means that it will work through the molten bath instead of floating on the slag as light mill scale will do.

If you expect a high-carbon and phosphorus meltdown is it a good policy to add mill scale with the charge?

Since the objection to the use of mill scale is because of its light weight, it is best to mix with the furnace charge, as near as possible, the correct amount of mill scale to remove the carbon and phosphorus present. The addition of mill scale with the charge insures that the oxides will be mixed thoroughly and that oxidization will begin as early as is possible with each heat.

Why does iron ore cut a basic-furnace lining?

The acid silicon in the iron ore combines with the basic refractories and because the fusion point of the combination, is lowered, the bottom may "come up." This condition is made worse since the mechanical action of the oxides cause a violent agitation of steel adjacent to the fused lining, helping to work it up.

Reducing Period

In what kind of furnace lining only may sulphur be commercially removed?

Because of the reducing conditions (that is, entire absence of oxygen) necessary for the removal of sulphur the basic electric furnace is adapted to lowering the sulphur content, in the process of refining steel.

Give an example of a basic reducing slag in a 12-ton electric furnace for an 0.06 per cent sulphur removal?

With this meltdown, it will be advisable to form a reducing slag of about 250 to 300 pounds of lime, 90 to 100 pounds of finely ground petroleum coke, and 75 pounds of fluorspar. This should be mixed before thrown in on the bare steel, from which the oxidizing slag has just been pulled or raked off as clean as possible.

How fast is it added to the molten steel?

The reducing slag should be thrown in quickly, being careful not to cool the furnace too much. It is highly important that the slag be scattered all over the bath. To insure a flexible temperature control, the operating board should be provided with series rheostats in the automatic control circuits, thus giving the furnace melter any amount of current at two different voltages, which he may desire. When the cold reducing slag is thrown on, the furnace may be run on "high" for a sufficient time to thoroughly heat up the bath and mix the slag by causing violent agitation of the steel.

Why is powdered petroleum coke used on the slag?

Petroleum coke is preferred over other forms of carbon, because of its low specific gravity, which means that it will float on the slag and not go into the steel and increase the carbon content. Carbon is necessary in the reducing slag for two reasons: First, to absorb all remaining oxygen and remove it in the form of gas. Second, for the formation of calcium carbide.

Why is it first necessary to get all of the remaining oxygen out of the steel and slag before the sulphur may be taken up?

Since sulphur is removed finally as calcium sulphide, CaS, and because oxygen has a stronger attraction for calcium than sulphur, any amount of oxygen will react to render passive a corresponding proportion of calcium in the slag.

In what form is sulphur in the molten steel?

Sulphur is in the molten steel as iron sulphide, FeS, and manganese sulphide, MnS.

In what stable form is sulphur held in the hot slag?

Sulphur is held in the hot slag as calcium sulphide, CaS.

In how many different chemical reactions is sulphur removed from the hot steel, and what are the chemical equations?

Sulphur is removed from the hot steel according to the following equations. If limestone is used, it is necessary to first break it up.

	Limestone		Lime			Carbon dioxide
1.	$CaCO_3$	+ heat =	CaO	+		CO_2

	Iron Sulphide		Lime	Carbon		Calcium Sulphide	Carbon monoxide
2.	FeS	+	CaO	+ C	=	CaS	+ Fe + CO

	Lime		Carbon		Calcium carbide	Carbon monoxide
3.	CaO	+	$3C$	=	CaC_2	+ CO

	Lime	Calcium carbide	Iron sulphide			
4.	$2\,CaO_2$	+ CaC_2	+ $3\,FeS$	=		
					Calcium sulphide	Iron	Carbon dioxide
					$3\,CaS$	+ $3\,Fe$	+ $2\,CO_2$

Equation No. 1 shows that limestone plus heat will break up into lime and carbon dioxide.

Equation No. 2 which takes place at moderate furnace temperature, before calcium carbide is formed, shows that iron sulphide, in the presence of lime, will make stable calcium sulphide, iron and carbon monoxide gas.

Equation No. 3 shows the formation of calcium carbide as the slag works into condition, and that lime, when in the presence of carbon (from petroleum coke), forms calcium carbide and the gas.

Equation No. 4, which takes place at the high temperatures, when calcium carbide has been formed, shows that iron sulphide (which being lighter than pure iron comes up to the slag) in the presence of calcium carbide, with an excess of lime, is robbed of its sulphur to form stable calcium sulphide, and the gas, leaving free iron, which being heavier goes back into the bath.

It will be noticed that equations Nos. 2 and 3, evolve a carbon monoxide gas, which on escaping from the openings around the electrodes, burns to carbon dioxide, with a characteristic flame. This gas, by surrounding the electrodes, and having an affinity for oxygen, aids in protecting the carbons from oxidizing or eating away. It is generally conceded that a small proportion of sulphur is removed during the oxidiza-

(*Concluded on page* 1055)

Invent Novel Tin Plate Machine

Four Plates Handled Simultaneously in Unusual Type of Machine in Welsh Mill Which Automatically Feeds, Pickles, Tins and Cleans Plates at Rate of 125 Boxes in 24 Hours

PRACTICALLY all of the steel plates tinned in the United States are fed into the tinning pots singly by hand. The tinned plates leave the palm-oil bath automatically and drop onto a conveyor which operates at right angles to the tin pot. By means of this conveyor the plates are fed into the branning machine.

A novel departure from this type of tinning machine recently was made by Spence Thomas, manager director, and W. R. Davies, general works manager of the Melingriffith Tin Plate Works, Whitchurch, near Cardiff, South Wales. The machine, shown in Fig. 1, which was invented by these men, automatically feeds, pickles, tins and polishes four plates at once, the plates traveling straight forward throughout the process. Each machine is driven by a 20-horsepower motor, occupies 20 x 30 feet of floor space and has a normal capacity of approximately 125 boxes of tin plate per 24 hours.

After the plates are annealed, following the cold-rolling process, they are piled on the four charging tables built side by side at one end of the machine. Serving each table is a cone-shaped, rubber sucker, which is kept moist by sprays of water. The suckers are mounted on rocker arms which operate simultaneously from the common shaft, *A*, shown in Fig. 2. This shaft is operated by gears keyed onto the left end. When the four rocker shafts bring the suckers in contact with the plates, the top plate from each pile is transferred to the receiving tables, *B*. These are so built that the sucker arms pass between, releasing the plates upon the tables. The sucker arms then return to their original position.

How the Plates Are Fed

When the receiving tables are tilted the four plates drop, side by side, into the pickling baths, *C*, where any oxidation which may have occurred during the annealing process is removed. By means of lugs extending from the rim of the wheels, *D*, the plates are pushed between the first pair of a series of rolls, which, by the aid of stationary guides, direct the plates into the fluxing pans, *E*. While the plates are in transit from the pickling to the fluxing baths they are drenched with water, the latter draining underneath the rolls into the trough, *F*. The pair of rolls built just over the charging end of the fluxing pot, operate at an increased speed and force the plates through the fluxing solution quickly. It has been found that by speedily passing the plates through the fluxing bath considerable economy in the consumption of tin is effected, inasmuch as the plates do not become dry or unduly heated.

The rocker arms, *G*, mounted on the shaft, *H*, push the plates into a pair of rolls which forwards them into the tin pots, *I*. By means of similar rolls and guides arranged in series, the plates are directed up through a solution of palm oil. Upon issuing from this bath they are caught between two rolls which squeeze off the excess tin. They are then directed into a double-type branning machine where revolving arms assist in thoroughly cleaning and removing the palm oil from the top surfaces. As the plates issue from the primary branning machines, they pass upward between guides until the lower edges are positioned just over the entrance to the secondary branning machines. A trip motion causes the plates to fall into the secondary cleaning apparatus with the reverse sides in position for branning. After this operation is completed the cleaned plates pass between four sets of dusting rolls, *K*, and drop onto an endless conveyor, *L*. This delivers them to a final series of burnish-

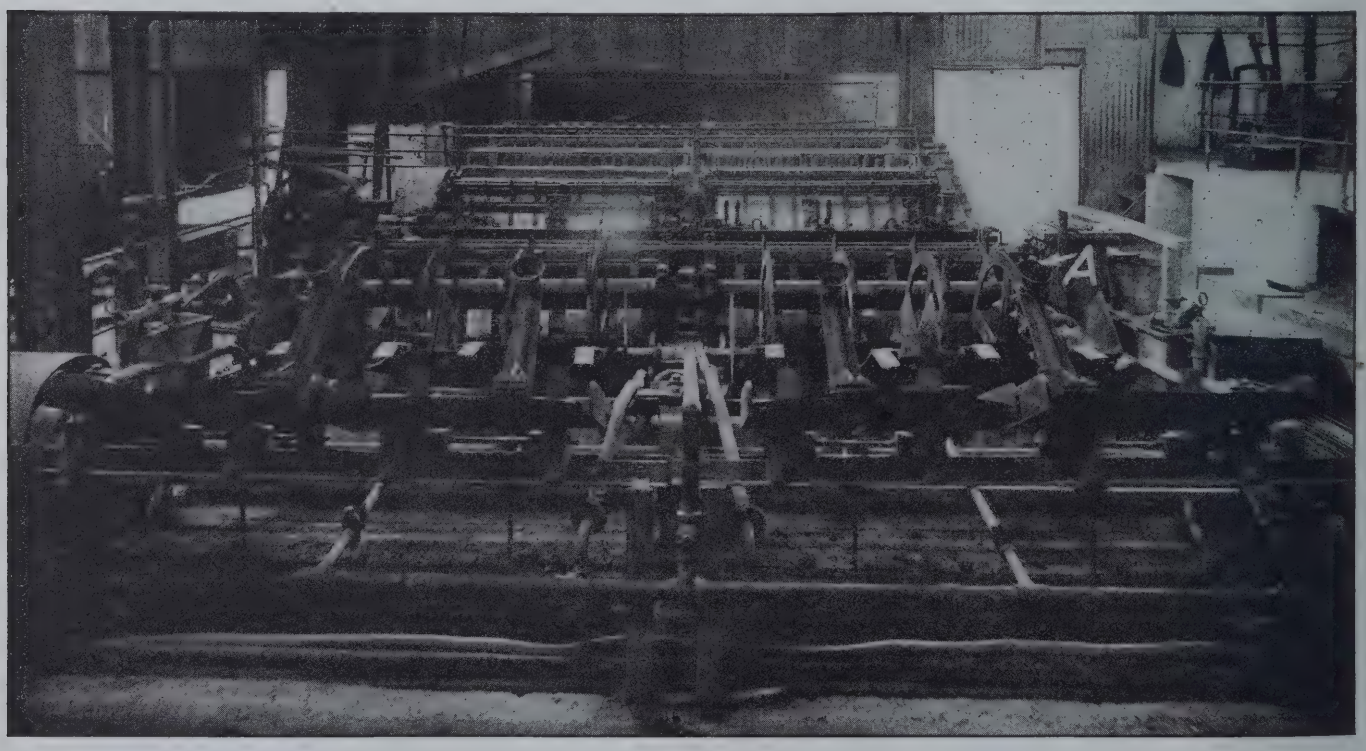


FIG. 1—AUTOMATIC FEEDING, PICKLING, TINNING AND POLISHING MACHINE WHICH HANDLES FOUR PLATES AT THE SAME TIME

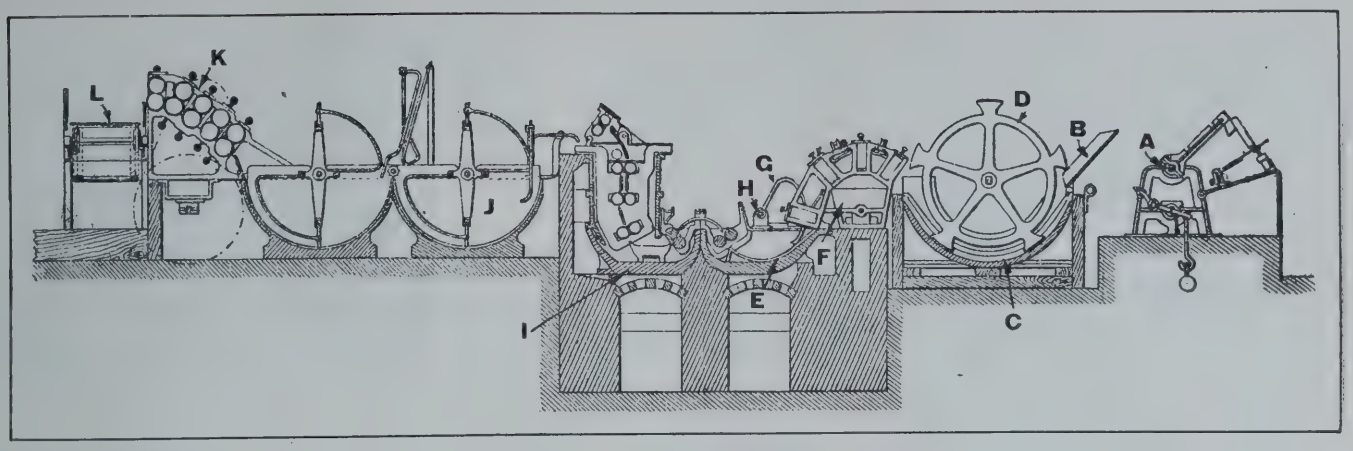


FIG. 2—ELEVATION OF TINNING MACHINE WHICH PRODUCES APPROXIMATELY 125 BOXES OF TIN PLATE PER 24 HOURS

A Shaft on which sucker arms rotate
B Receiving tables
C Pickling bath
D Wheel with lugs which push plates between pair of rollers, *R*
E Fluxing pans
F Troughs in which water is drained
G Rocker arm
H Rocker arm shaft
I Tin pots
J Branning machines
K Dusting rolls
L Conveyor which carriers plates to burnishing rolls

ing rolls. The latter operate at right angles to the first set of rolls and impart a high polish to the surface of the product. The tinplate is then conveyed to the boxing department.

Refining Steel

(*Concluded from page* 1053)

tion period of the electric process also, according to this equation.

Iron Sulphide	Oxygen		Iron	Sulphur dioxide
FeS	$+ O_2$	$=$	Fe	$+ SO_2$

This equation shows that iron sulphide plus an excess of oxygen in the oxidization of carbon, and phosphorus forms sulphur dioxide (which leaves furnace as a gas) and free iron which goes back to the hot steel bath.

Under what furnace conditions do the foregoing reactions take place fastest?

The reactions for the removal of sulphur from steel take place fastest when the furnace is working hot.

Why is fluorspar used on reducing slags? Explain its reactions. Why may you get too much spar, and how may you counteract its effect?

Fluorspar is added to a viscous slag to make it thin, and therefore in a condition which will prevent the greatest chemical activity. A "heavy" slag will not cover the steel completely, but will form in little piles, leaving pure steel in places. The thinning of a slag by fluorspar is a physical action, in which the spar acts as a flux. Calcium fluoride melts at 902 degrees Cent. which is several hundred degrees below the formation temperatures of the ferrous-calcium compounds, of which the slag is largely composed. As the fluorspar melts, it dissolves the other constituents of the slag, and for this reason is generally called a flux. The addition of a little lime or powdered petroleum coke will counteract any ordinary excesses of spar.

Why do we use limestone instead of slacked lime, what is the effect of lime dust on silica roof brick, and is this deteriorating effect on the roof of sufficient consequence to warrant the use of limestone which requires heat to break up?

Limestone ($CaCO_3$) is used instead of lime (CaO) because it costs a great deal less than lime, it is much easier to handle, the percentage of loss in handling is much less, handling is much easier on men because of entire absence of dust, and limestone brings about a better mixing of the slag as it boils in breaking up. Lime, however, does not require heat to break it up, therefore it acts faster on a slag. Whether or not the fluxing effect of lime dust on the acid silica roof and upper wall brick, is of sufficient consequence to prohibit its use, should be determined by a thorough trial over a period of time.

What is the color of the best carbide slag?

The best carbide slag is a grayish-white fluid slag, which when sampled, by allowing some to stick to a hot test bar, and plunging into cold water for an instant, and removing, will crumble, and give off acetylene gas with the characteristic odor, indicating the presence of calcium carbide, CaC_2. The slag which has the largest proportion of calcium carbide in it, indicates a slag which has the highest affinity for sulphur.

Why may a reducing slag go back, and what may be added to make it "come" again?

A carbide slag may be black if too much carbon is added, or may change to a black oxidizing slag if enough is not present to remove all oxides. A little fine ferrosilicon will "bring" it again if it is a black oxidizing slag, but should be used as little as possible for two reasons: First, on account of the cost. Second, an excess will go into the bath, but this is not likely to occur if it is broken up fine. Powdered petroleum coke will act to help "bring" a carbide slag which is black and glassy.

Is the fact that a strong sulphur smell is sometimes noticeable, when pouring a heat of electric furnace steel into a ladle, due to the oxygen in the air combining with the sulphur in the slag when it is exposed, or is the sulphur smell due to further oxidization of what is left in the steel?

This smell is undoubtedly due to sulphur from the slag, as the slag contains a much larger per cent of sulphur than the refined steel.

What will happen to the furnace bottom and banks which has been patched with dolomite, if the reducing slag is not kept basic with lime?

If a reducing slag is not kept basic with lime, the slag will rob the dolomite which has been thrown around the banks, of some of its limestone, and thus cut the banks.

How does an occasional roof brick dropping into a reducing slag effect it?

Since a silica brick promotes acid reactions it will be necessary to add plenty of coke and lime to counteract and hold the slag basic. The lime acts by converting the brick into a silicate, and the carbon of coke, by forming silicon carbide.

Why may ground electrodes be used to a better advantage for recarborizing than other forms of carbon as petroleum coke or retort carbon, etc.?

Ground carbon electrodes having a greater density than other forms or ordinary carbon mentioned, of the

same mesh; and having all of the volatile matter distilled out during the process of graphitizing when manufacturing; require a high temperature for volatilizing. These two points permit the electrode carbonizer to work down into the bath to a greater extent.

Crane Doors Opened by Compressed Air

In order to move a traveling crane in and out of the erection shops, the Heine Safety Boiler Co., St. Louis, recently installed a number of large doors of unusual design. The wide upper door shown in the accompanying illustration has seven windows and weighs 9000 pounds. It is lifted by compressed air. Half of the weight



END OF THE BOILER ERECTING BUILDING THROUGH WHICH THE TRAVELING CRANE MOVES WHEN TRANSFERRING MATERIAL TO OR FROM THE YARD

of this door is counterbalanced, making the net lifting weight for the air approximately 4500 pounds. To permit the crane to pass through the doorway, this door, which is 64 feet wide, must be lifted 9 feet.

Two small swinging doors through which the cage for the craneman passes are visible in the accompanying illustration beneath the left-hand girder. These doors swing open simultaneously with the lifting of the wide door. During their eight months of use, these air-operated doors have given no trouble whatever. The design was worked out by Lichter & Jens, consulting engineers, and the installation was supervised by the engineers of the Heine company.

The two central swing doors shown in the accompanying illustration are 27 feet high and 17 feet wide. They are operated from the inside by means of a crank. The latter is installed at the end of a shaft which passes through the brick wall at a convenient height for hand operation. On the outer end of this shaft is a pinion which engages a bevel gear. A vertical shaft connects the bevel gear with a spur gear which in turn engages a segmental rack.

The dimensions and design are such that the doors swing open with little exertion on the part of the operator, who does this while the air lifts the wide upper door. The swinging doors weigh about 2000 pounds each, are made of steel throughout, and are operated separately. The frame work is all-steel, hence there will be no warping, shrinking or sticking. When installing these doors a plumb line was made to pass through the hinge holes to insure perfect alignment. A smaller door is fitted into one of the large doors so well that it is invisible in the photograph. This small door is for the use of workmen in passing in and out, when the large doors are not needed.

Friction Cones Control Crane Movements

A crane, which is operated by friction cones and two electric motors, was brought out recently by the Lane Mfg. Co., Montpelier, Vt. Both motors are of the constant-speed, nonreversing type and afford three movements. The bridge girders are supported by cast-iron end trucks. The latter are provided with cast-iron, double-flange, chilled wheels. The trolley is designed for accessibility of all parts and is reinforced with steel tension rods. The sides are joined together by several large steel

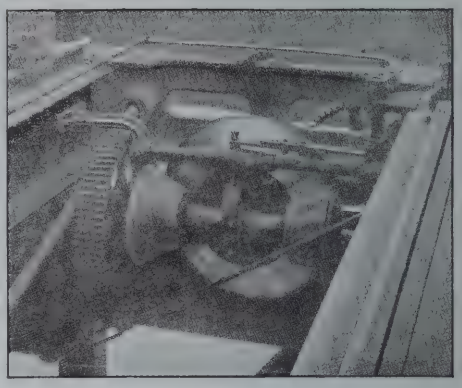


FIG. 1—FRICTION CONES PROVIDE HOIST AND TROLLEY MOVEMENT

shafts. Power for hoist and trolley movement is transmitted by friction cones through steel worms and bronze gears running in oil. The cones are shown in Fig. 1.

The worm-gear drive acts as a load brake and is controlled by a hand wheel conveniently located. Two speeds of the hook are supplied with one part of rope. A luffe block is provided with a hook and a hinged-housed sheave, so that by running the line through this sheave and attaching the single-rope hook to a girt on the under side of the trolley, a two part reaving of the rope is effected, thereby supplying four hoist speeds.

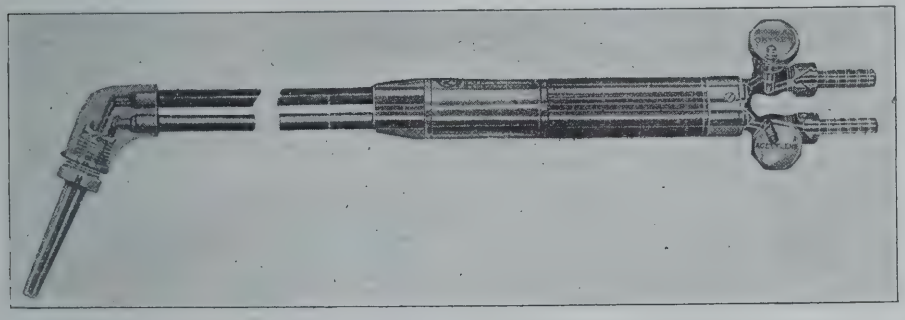
The hoist motor, through the same power cones, operates the trolley motion on the bridge at approximately 100 feet per minute. The reverse is obtained in the same manner as with the hoist movement. All movements are controlled by hand wheels. The bridge motor drives a friction disk by transmission through a pair of opposed cones, alternately contracting therewith. Control of the bridge travel movement in either direction is effected by shifting the cones by means of a lever connected to a rod running the full length of the bridge to the operator's station. The latter is shown in Fig. 2.



FIG. 2—OPERATOR'S PULPIT TRAVELS WITH THE TROLLEY TRUCK

Welding Torch Embodies New Features

A new welding torch, which embodies a number of unusual features, has been developed by the Air Reduction Sales Co., New York. The torch consists of an unusually small number of parts, some of the threaded connections prevalent in earlier models of welding torches being eliminated. The torch heads are drop-forged of the same material as the tip, so that both parts are subject to the same coefficient of expansion and contraction. In order that operators cannot make the mistake of connecting the feed hose to the wrong connection the oxygen valve is equipped with a right hand thread and the acetylene valve with a left hand thread, the nuts on the feed hose having corresponding threads. The handle is knurled and bears a stamped gas pressure table which serves as a permanent source of information for the operator. The valve handles are of octagon shape and are on the left side of the torch. It is claimed that on account of the manner in which the gases are mixed this torch will not backfire.

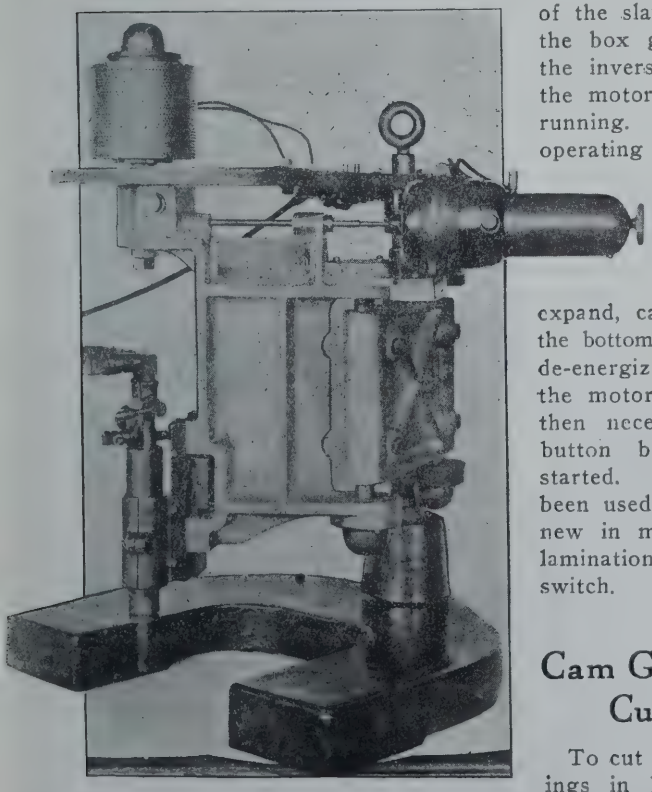


TORCH IN WHICH HEAD AND TIP ARE OF SAME MATERIAL AND SUBJECT TO THE SAME COEFFICIENT OF EXPANSION

Switch Has New Type of Overload Protection

A new starting switch for induction motors, which is operated by push buttons, has just been developed by the Electric Controller & Mfg. Co., Cleveland. The switch is enclosed in a steel box, which is shown with cover removed in the accompanying illustration. It is provided with conduit connection for all wires. The switch is operated by push buttons, also arranged for conduit connection.

The two wires extending the length of the slate on the left hand side of the box give overload protection of the inverse time element type, while the motor is starting and when it is running. The wires are stretched and operating value of the overload protection is adjusted by changing the tension of the wires. If too much current is being taken by the motor, the wires will expand, causing the small contact at the bottom to be opened. This in turn de-energizes the magnet coil and cuts the motor off the power line. It is then necessary to push the "start" button before the motor can be started. This principle, which has been used in ammeters, is said to be new in motor starting practice. No laminations are use in part of the switch.



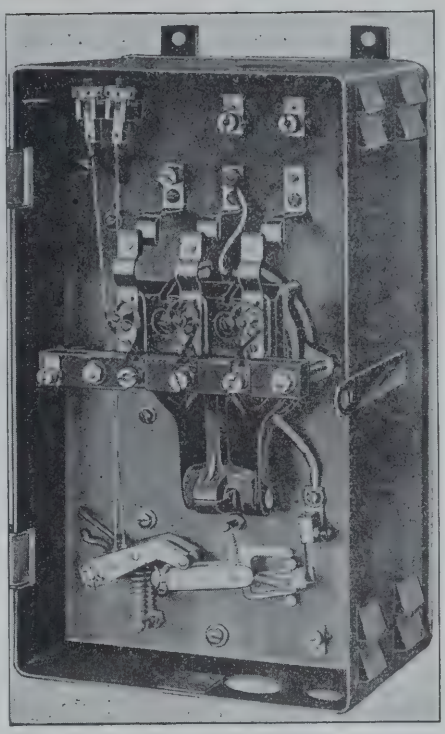
VARIOUS SHAPED HOLES ARE CUT AUTOMATICALLY BY USING DIFFERENT CAMS

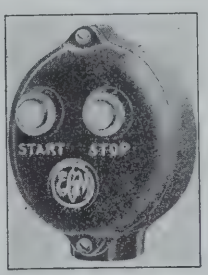
Cam Guides Torch in New Cutting Apparatus

To cut hand holes and similar openings in boiler and ship plates and other wrought iron and steel sections, the Davis-Bournonville Co., Jersey City, has designed an oxy-acetylene torch which operates automatically. This machine, as shown in the accompanying illustration, comprises a cast-iron base with a U-shaped opening through which the torch flame strikes the work beneath.

At the back of the base is a vertical post to which a double-jointed radial arm is pivoted. The cutting torch is mounted on the outer end of the arm which provides for movement in any direction over the area covered. The jointed arm is made of two aluminum castings mounted on ball bearings. The path traversed by the torch is controlled by an internal cam at the top, the shape of which determines the shape of the opening made.

A feed roller on the outer end of the radial arm and surrounded by a yoke in which is placed the cam, is magnetized by a powerful electro magnet and is thus attracted to the inner face of the cam, the parts in contact being made poles of the magnet, one of which rotates and acts as a traction driver. The traverse feed is provided by a small variable speed electric motor mounted on the radial arm. The motor drives the feed roller through a double worm





ABOVE: STARTING SWITCH FOR INDUCTION MOTORS. OVERLOAD PROTECTION DEPENDS UPON THE TENSION OF WIRES AT LEFT. WIRES EXPAND WHEN TOO MUCH CURRENT IS TAKEN, OPENING CONTACT, DE-ENERGIZING COIL, AND CUTTING OFF POWER—*AT LEFT:* PUSH BUTTONS WHICH CONTROL ACTION OF STARTING SWITCH

reducing gear. The direct current which operates the motor energizes the electro magnet and is turned on and off by a push button. The speed of the motor is controlled by a small knurled disk on the motor itself.

The electrical control is connected with the torch oxygen valve in such a manner that when the oxygen is turned on the feed motion automatically starts and continues until the complete pattern has been cut. The cam holder permits ready change of cams. It is claimed that a hand hole having a periphery of 12 to 13 inches can be cut smoothly in ½ to ⅝-inch steel plate in one minute. The machine is provided with an eye bolt so that it can be handled by a traveling crane or hoist.

Ojibway Project

Is Being Pushed by Steel Corp.'s Canadian Subsidiary—More Resuming

Windsor, Ont., Oct. 13.—The Canadian Steel Corp., subsidiary of the United States Steel Corp., is increasing its activity in construction work at its new plant at Ojibway, near Windsor, Ont. The number of men at work has been increased to 500 and more would be employed if they could be obtained. Preliminary work is well advanced. The docks are well on the way toward completion. Foundations have been laid for four large blast furnaces, and the erection of two of them is in progress. The steel required for construction is being fabricated in the United States and partial deliveries will be made during the next few months. The furnaces are expected to be completed by next spring. They will rank with the largest in the United States, with a capacity of from 600 to 700 tons of pig iron per day.

The blooming and billet mills of the Dominion Steel Co.'s plant at Sydney, N. S., resumed operation last week after extensive repairs. With the exception of the open-hearth and blast furnaces all departments are in operation.

Operations also have been resumed at the open hearth of the Sydney mines plant of the Nova Scotia Steel & Coal Co. Two of the five furnaces resumed smelting, and in a short time it is expected the whole plant will be working to capacity. D. H. McDougall, president of the company; W. D. Ross, vice president, and Col. Thomas Canbley, chairman of the board of directors, sailed on Oct. 8 for England, the object of the trip being to extend the connections of the company abroad. They will endeavor to secure additional shipping accommodation to place the company in a position to regain the markets abandoned during the war.

The company has already sold coal in Holland and the Mediterranean and some enlargement of this trade is hoped for. Mr. McDougall stated that the company entertained great expectations of building up a large market for Wabana iron ore in Great Britain. With this object in view the development of the Wabana iron ores is being pushed. It also is expected that preliminary arrangements will be made which will result in orders from abroad for steel cars and heavy forgings used in ships.

Institute Program

For Sixteenth General Meeting at New York is Announced

Announcement of the program for the sixteenth general meeting of the American Iron and Steel institute to be held at the Hotel Commodore, New York City, Friday, Oct. 17, has been officially made. The usual buffet luncheon will be served between the morning and afternoon session. The banquet will be held at the Hotel Commodore, Friday evening.

The list of papers and addresses is as follows:

Address of the president: Elbert H. Gary.

The Work of the Bureau of Mines: Van H. Manning, director, bureau of mines, Washington, D. C.

X-Ray Examination of Metals: W. F. Ruder, research metallurgist, General Electric Co., Schenectady, N. Y.

Magnetic Analyses of Steel: R. L. Sanford, physicist, bureau of standards, Washington.

The Electrification of Reversing Steel Mills: Wilfred Sykes, Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa.

The Open Hearth Furnace and Processes: Henry M. Howe, Bedford Hills, N. Y.

Temperature Measurements in Steel Furnaces: G. K. Burgess, chief of the division of metallurgy, bureau of standards, Washington.

The Manufacture of Ingots for Locomotive Tires and Rolled Wheels: Lawford H. Fry, Standard Steel Works Co., Burnham, Pa.

The Blast Furnace Hearth: Walter Mathesius, superintendent blast furnaces, Illinois Steel Co., South Chicago.

There is to be a discussion of each paper under the five-minute rule.

Refractory Orders

Numerous—Shipments Held Up By Labor Shortage and Embargoes

Pittsburgh, Oct. 14.—The steel plant strike remains an important factor in the market for refractories. Just as many orders are coming out for fire clay and silica brick, however, as before the outbreak of the trouble and makers are keeping their plants running at a fairly high rate, but shipments are considerably restricted by the fact that most blast furnaces and steel plants still are short of common labor and this class of workmen is essential for the unloading and piling of such shipments.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 41.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent.	$ 40.00 base
76 per cent.	100.00 base

Railroad embargoes are in force against most plants, as the administration is taking good care to guard against a shortage of rolling stock which would be sure to result because of the inability of the iron and steel companies to unload cars promptly under present conditions.

With the strike showing signs of disintegration, however, no uneasiness is felt among the makers of refractories, who are looking for an early resumption of normal deliveries. Plants are averaging around 70 per cent of capacity. No change is noted in prices, but the market is firm. Particularly is this the case in magnesite brick, as supplies of raw material still are meager, due to the fact that imports are almost nil.

The National Trading Co., Cleveland, contemplates the establishment of offices in Philadephila and Chicago.

Steel Exports Partially Recover

August Figures Exceed July Total, Equal April, But are Less Than May and June —Imports Register Small Increase Over July—Foreign Exchange Situation Still a Check on Export Business

ALTHOUGH exports of iron and steel for August regained part of the loss suffered in July, the month's total was materially less than that of June and May but practically equal to the figure of April. Imports for the month indicated a slight increase over July. The exchange situation apparently continues the major factor in holding overseas trade in iron and steel in check.

August exports totaled 396,743 gross tons compared with 287,685 tons in July, a gain of 109,058 tons or 38 per cent. Against the high record of exports of December, 1917, of 653,344 tons, the August figure represents 60.7 per cent. With three exceptions, gains were shown in every leading iron and steel product. The principal exception was pig iron, the total for which in August was only 36,071 tons compared with 42,327 tons in July. Some of the largest gains were made in steel billets, ingots and blooms, steel rails, structural iron and steel, sheets and plates, ship and tank plates, wire and pipes and fittings.

August imports gained only 2.58 per cent compared to a 34.2 per cent gain in July. The August total was 28,987 tons while that of July was 28,258 tons. The slight gain was sufficient however to give August the highest record since June, 1917, when 29,080 tons were imported. Losses in August occurred in structural shapes, rails, sheets and plates, tin and terne plate and tin scrap. All other products made gains, the most noticeable being pig iron and scrap.

Imports of iron ore expanded from 23,347 tons in July to 32,117 tons in August, the larger part of the increase coming from Sweden.

EXPORTS PIG IRON AND SEMI-FINISHED

(Gross Tons)

1916—	Pig iron	Semi-finished material
January	19,319	55,315
February	15,061	87,406
March	19,439	107,675
April	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
August	60,264	160,921
September	64,122	163,104
October	92,756	162,669
November	106,781	120,883
December	105,195	162,901
Total	607,236	1,504,563
1917—		
January	69,146	183,656
February	49,018	131,566
March	69,629	193,469
April	44,783	162,209
May	61,112	168,158
June	83,406	190,907
July	32,305	106,085
August	62,083	170,503
September	44,287	148,932
October	47,115	209,667
November	25,733	150,120
December	67,593	203,085
Total	656,210	2,018,357
1918—		
January	20,581	195,385
February	10,540	173,272
March	9,849	144,443
April	11,282	177,128
May	22,567	159,299
June	22,896	139,377
July	20,265	139,612
August	26,028	189,851
September	34,494	135,450
October	35,452	125,023
November	30,825	150,024
December	24,577	63,890
Total	269,356	1,792,754
1919—		
January	36,757	11,594
February	20,840	10,407
March	22,158	8,176
April	17,038	11,488
May	37,087	20,771
June	39,758	46,016
July	42,327	21,318
August	36,071	36,162
Total eight months	252,036	165,932

IRON ORE IMPORTS

(Gross Tons)

From	August 1919	August 1918	Eight months ending August 1919	Eight months ending August 1918
Spain	6,200	....	54,937	15,563
Sweden	14,015	....	48,823	.....
Canada	616	9,179	9,376	60,429
Cuba	11,286	83,213	140,872	460,387
Other countries	...	....	702	.....
Total	32,117	92,392	254,710	536,379

IMPORTS VARIOUS ORES AND FERROALLOYS

(Gross Tons)

	August 1919	August 1918	Eight months ending August 1919	Eight months ending August 1918
Ferromanganese	601	3,743	16,994	26,169
Ferrosilicon	1,598	167	4,619	1,730
Manganese ore	8,246	33,975	249,810	309,697
Tungsten-bearing ore	553	583	5,025	4,928
Nickel ore	1,415	5,470	14,422	38,684
Total	12,413	43,938	290,870	381,208

IRON AND STEEL IMPORTS

(Gross Tons)

	August 1919	August 1918	Eight months ending August 1919	Eight months ending August 1918
Pig iron	5,101	3,910	36,109	29,852
Scrap	21,991	3,568	97,559	29,895
Bar iron	156	295	1,043	1,283
Ingots, blooms and billets	328	2,833	5,680	25,553
Structural shapes	15	173	708	1,800
Rails	968	740	14,639	....
Sheets and plates	36	55	694	1,304
Tin and terne plate	27	...	130	32
Tin scrap	345	605	3,771	4,157
Wire rods	20	683	118	6,541
Total	28,987	12,862	160,451	100,417

IRON AND STEEL EXPORTS

(Gross Tons)

	August 1919	August 1918	Eight months ending August 1919	Eight months ending August 1918
Pig iron	36,071	26,028	252,121	144,179
Scrap	4,033	71	11,908	1,679
Steel billets, ing. and bl'ms	36,162	189,851	165,425	1,311,902
Wire rods	9,686	9,585	87,429	95,829
Steel rails	48,700	42,542	461,924	282,262
Steel bars	54,219	47,852	381,439	419,212
Iron bars	4,143	5,713	49,240	33,861
Struc. iron and steel	33,051	20,300	273,772	153,010
Hoops, bands and scroll	3,638	3,988	38,029	35,874
Sheets & plates	81,569	75,721	732,227	86,433
Ship and tank plates, punched and shaped	2,466	629	9,092	20,718
Tin and terne plate	9,262	17,620	141,501	192,126
Barbed wire	9,499	35,171	61,466	144,890
All oth. wire	21,691	15,551	137,034	102,528
Cut nails	84	347	2,334	2,954
Wire nails	7,788	5,248	68,942	53,713
All other nails incl. tacks	866	1,032	12,979	7,425
Pipes and fit'gs.	27,488	11,092	178,296	106,875
R. R. Spikes	1,790	1,007	19,594	7,029
Bolts, nuts, rivets and wash.	3,229	2,147	29,871	17,107
Horseshoes	769	73	2,909	2,245
Cast radiators	539	214	2,407	1,449
Total	396,743	511,782	3,119,939	3,223,300

IMPORTS AND EXPORTS

(Gross Tons)

1916	Imports	Exports
January	15,824	360,102
February	20,279	368,980
March	15,159	438,649
April	20,176	384,452
May	32,114	538,657
June	26,885	515,214
July	14,774	502,330
August	23,255	571,401
September	25,559	643,762
October	30,169	588,892
November	42,545	554,219
December	44,134	580,988
Total	310,891	5,947,646
1917—		
January	40,910	608,281
February	24,947	449,099
March	37,943	606,559
April	48,213	519,397
May	26,479	582,303
June	29,080	629,305
July	28,859	346,393
August	26,129	503,075
September	19,058	499,067
October	14,310	571,868
November	13,995	473,549
December	14,642	653,344
Total	324,565	6,442,240
1918—		
January	12,475	490,259
February	12,941	438,848
March	14,345	379,924
April	11,371	462,887
May	14,387	488,515
June	13,913	418,605
July	11,511	452,759
August	12,520	512,104
September	8,440	473,688
October	15,744	426,767
November	11,582	471,427
December	28,996	356,641
Total	168,225	5,372,424
1919—		
January	16,913	371,570
February	12,302	344,180
March	17,632	367,224
April	16,560	396,813
May	17,885	422,282
June	21,056	561,020
July	28,258	287,685
August	28,987	396,743
Total eight months	159,593	3,147,517

Conference Splits on Steel Strike

Organized Labor Now Misinterprets Purpose of the Meeting it Would Not Wait for, and Seeks to Divert It to Obtaining a Favorable Settlement—Many Plans Proposed for Elimination of Labor Troubles

WASHINGTON, Oct. 14.—Interjection of the steel strike into the deliberations of the industrial conference was not unexpected. While the conference had been arranged by President Wilson long before the strike was called and primarily was intended to deal more with fundamentals, the introduction by the labor group of resolutions asking for a conference committee to arbitrate the strike brought up the first real concrete problem for the conference's attention. Rules and plan of organization of the conference had, up to that time, been the storm center of debate, and gave indications of the heat which is expected to develop in the discussion of subjects now before the conference.

Samuel Gompers, chairman of the labor group, is said to have been unwilling to bring the steel strike into the conference, but was forced to do so by the more radical members of his group and members of the American Federation of Labor. Once in, however, Gompers naturally would have to fight for favorable action on the resolutions by the conference. That he intended to fight was indicated last Friday when a recess was taken until today. He objected to immediate adjournment without the general committee having first made its report on the steel strike resolution. Thomas L. Chadbourne, chairman of the general commitee, refused to say what subjects were under consideration by the committee.

Radicals Demand Consideration

The steel strikers having failed in their attempt to call out all the steel workers or to tie up effectively the plants of the manufacturers, or even win any semblance of support from the senate committee investigating the strike, were expected to ask the conference to help them. The President had indicated his willingness to intercede in their behalf when he sent Bernard M. Baruch to ask E. H. Gary to receive the strike organizers' commitee. And before the conference was resumed this morning it was generally conceded the labor group had purposely misinterpreted the President's intention in calling the conference. Unwilling to let the steel strike settle itself upon such fundamentals as the conference might approve, the radical element insisted Gompers present the one thing uppermost in their minds.

There was a report in circulation last week that Chadbourne and Baruch, because of Judge Gary's refusal to meet the labor unionists and his subsequent refusal to arbitrate the strike, were trying to win sufficient support in the public group to cast its vote with the labor group. Under the rules, each of the three groups, employers, employes and public, has one vote, to be determined by a majority vote in each group. All three votes must be unanimous on any proposition to commit the conference to that proposition. It is apparent the employers group would never consent to a vote favorable to the labor resolution. Consequently, while it was admitted the public and labor groups might agree on the strike resolution, and the employers oppose it, the action, it was said, would be decidedly embarrassing to Judge Gary, who is in the public group.

While the steel strike resolution was expected to be the main topic under consideration in the open conference today, attention also was given to other business brought before the conferees. This included a resolution by A. A. Landon, vice president, American Radiator Co., which would call off all strikes and lockouts for a period of three months in order that production may be stimulated to the maximum; proposals for a series of labor boards, similar to the national



NATIONAL INDUSTRIAL CONFERENCE

In the group are all of the delegates to the conference besides others, including leaders in finance and labor and representatives of farmers' organizations who are attending the sessions of the conference.

In the first row, left to right, are Samuel Gompers Jr., Matthew Woll, Louis Titus, Miss Sarah Conboy, Thomas Chadbourne, Samuel Gompers, Bernard Baruch, Miss Ida M. Tarbell, Judge E. H. Gary, Secretary of the Interior Lane, Secretary of Labor Wilson, Frank Morrisson, John D. Rockefeller Jr., M. F. Tighe, Miss Clara Sears Taylor, John Barrett, director of the Pan-American Union. In the second row are Hugh Kerwin, William Mahon, Robert S. Brookings, C. S. Barrett, Mr. Galloway, Dr. Charles W. Elliot, Henry B. Dennison, H. B. Endicott, L. E. Sheppard, Wm. H. Johnston, A. A. Landon, John H. Donlin, Bert M. Jewell. In the third row may be found George R. James, John Hays Hammond, Paul L. Feiss, Gavin McNab, Paul Scharrenberg, W. G. Lee and Lathrop Brown.

war labor board only more detailed, by Gavin McNab, John D. Rockefeller Jr., and Secretary Wilson, and numerous other measures, the more important of which, from the manufacturers' standpoint, being that introduced by the employers' group for consideration.

The employers presented a clear, concise statement of principles which is said to be the first comprehensive declaration yet made touching points made by labor in its various demands upon employers and in the declarations presented last week immediately after the introduction of the steel strike resolutions. Before the session was resumed today, it was believed the general committee may have consolidated the employers' and the employes' declarations into a single code and that, in the event of the failure of passage of the steel strike resolutions, the strike might be settled along the lines laid down. Of course, all the while it is borne in mind that Judge Gary has declared absolutely against interference by arbitration or any other method by outsiders.

Judge Gary is not the only steel representative in the conference. Among the others there is John D. Rockefeller Jr., a director of the Colorado Fuel & Iron Co., John W. O'Leary, secretary-treasurer of the Arthur J. O'Leary & Son Co., Chicago, and president of the National Metal Trades association; Herbert F. Perkins, president of the Wisconsin Steel Co., and Thomas L. Chadbourne, who was of counsel for the Midvale Steel & Ordnance Co. The conferees, by groups, are as follows:

PUBLIC: Bernard M. Baruch, chairman, E. H. Gary, John Spargo, Thomas L. Chadbourne, Dr. Charles W. Eliot, Charles Edward Russell, Fuller E. Calloway, John D. Rockefeller Jr., Robert S. Brookings, George R. James, O. E. Bradfute, Ward M. Burgess, Henry S. Dennison, Thomas D. Jones, A. A. Landon, H. B. Endicott, Paul L. Feiss, E. T. Meredith, Gavin McNab, Louis Titus, L. D. Sweet, Bert M. Jewell, Lillian D. Wald, Ida M. Tarbell and Gertrude Barnham.

EMPLOYERS: Harry A. Wheeler, chairman, Herbert F. Perkins, E. T. Trigg, John J. Raskob, Homer L. Ferguson, J. N. Tittemore, T. C. Atkeson, C. S. Barrett, E. L. Marston, Howard W. Fenton, L. F. Loree, Carl R. Gray, R. H. Aishton, Frederick P. Fish, J. W. O'Leary, S. Pemberton Hutchinson, and E. Farnham Greene.

EMPLOYES: Samuel Gompers, chairman, Frank Morrison, M. F. Tighe, Daniel J. Tobin, J. F. Valentine, W. D. Mahon, T. A. Rickert, Jacob Fischer, Matthew Woll, Mrs. Sara Conboy, William H. Johnston, Paul Scharrenberg, John H. Donlin, H. E. Wilis, Timothy Shea, W. G. Lee and L. E. Sheppard.

Principles Include Collective Bargaining

PRINCIPLES enunciated by the employers' group of the national industrial conference in a statement to the conference are as follows:

PRODUCTION—There should be no intentional restriction of productive effort or output by either the employer or the employe to create an artificial scarcity of the product or of the labor in order to increase prices or wages.

THE ESTABLISHMENT AS A PRODUCTION UNIT—The establishment, rather than the industry, as a whole or any branch of it, should, as far as practicable, be considered as the unit of production and of mutual interest on the part of employer and employe. Each establishment should develop contact and full opportunity for interchange of view between management and men, through individual or collective dealing or a combination of both.

CONDITIONS OF WORK—It is the duty of management to make certain that the conditions under which work is carried on are as safe and as satisfactory to the workers as the nature of the business reasonably permits. Every effort should be made to maintain steady employment of the workers both on their account and to increase efficiency.

WAGES—The worker should receive a wage sufficient to maintain him and his family at a standard of living that should be satisfactory to a rightminded man in view of the prevailing cost of living. Women doing work equal with that of men under the same conditions should receive the same rates of pay and be accorded the same opportunity for training and advancement.

HOURS OF WORK—The standard of the work schedule should be the week, varying as the peculiar requirements of individual industries may demand. Overtime should, as far as possible, be avoided, and one day of rest in seven should be provided.

SETTLEMENT OF DISPUTES—Each establishment should provide adequate means for the discussion of all questions and the just and prompt settlement of all disputes, but there should be no improper limitation or impairment of the exercise by management of its essential function of judgment and direction.

RIGHT TO ASSOCIATE—The association of men, whether of employers, employes or others, for collective action or dealing confers no authority and involves no right of compulsion over those who do not desire to act or deal with them as an association. Arbitrary use of such collective power to coerce or control others without their consent is an infringement of personal liberty and a menace to the institutions of a free people.

RESPONSIBILITY OF ASSOCIATIONS—Every association, whether of employers or employes, must be equally subject to public authority and legally answerable for its own conduct or that of its agents.

FREEDOM OF CONTRACT—With the right to associate recognized, the fundamental principle of individual freedom demands that every person must be free to engage in any lawful occupation or enter into any lawful contract as an employer or an employe and be secure in the continuity and rewards of his effort.

THE OPEN SHOP—The principles of individual liberty and freedom of contract upon which our institutions are fundamentally based require that there should be no interference with the open shop. While fair argument and persuasion are permissable, coercive efforts aimed at turning an open shop into a closed union or closed nonunion shop should not be tolerated. No employer should be required to deal with men or groups of men who are not his employes or chosen by and from among them.

THE RIGHT OF STRIKE OR LOCKOUT—In the statement of the principle that should govern as to the right to strike or lockout, a sharp distinction should be drawn between the employment relation in the field (a) of the private industry, (b) of the public utility service and (c) of government employment, federal, state or municipal.

In private industry the strike or the lockout is to be deplored; but the right to strike or lockout should not be denied as an ultimate resort after all possible means of adjustment have been exhausted. Both employers and employes should recognize the seriousness of such action and should be held to a high responsibility for the same. The sympathetic strike is indefensible, antisocial and immoral. The same may be said of the blacklist, the boycott and also of the sympathetic lockout.

In public utility service the public interest and welfare must be paramount and controlling consideration. The state should, therefore, impose such regulations as will assure continuous operation, at the same time providing adequate means for the prompt hearing and adjustment of complaints and disputes.

A strike of government employes is an attempt to prevent the operation of government until the demands of such employes are granted, and cannot be tolerated. The right of government employes to be heard and to secure just redress should be amply safeguarded.

TRAINING—Practical plans should be inaugurated in industry and outside of it for the training and upgrading of in-

dustrial workers, their proper placement in industry, the adoption and adaptation of apprenticeship systems, the extension of vocational education and such other adjustments of our educational system to the needs of industry as will prepare the worker for more effective and profitable service to society and to himself.

Plans Proposed for Settlement of Labor Disputes

SEVERAL important plans for the adjustment of labor disputes have been submitted to the national industrial conference, among them being one worked out by Secretary of Labor Wilson. Secretary Wilson gave the conference the following outline of his plan:

"There shall be created a board of equal numbers of employers and employes in each of the principal industries and a board to deal with miscellaneous industries not having separate boards. The representatives of labor on such boards shall be selected in such manner as the workmen in the industry may determine. The representatives of the employers shall be selected in such manner as the employers in the industry may determine.

"Whenever any dispute in any plant or series of plants that can not be adjusted locally the question or questions in dispute shall be referred to the board created for that industry for adjustment. The board shall also take jurisdiction whenever in the judgment of one-half of its members a strike or lockout is imminent. Decisions of the board on questions of wages, hours of labor, or working conditions must be arrived at by unanimous vote. If the board shall fail to come to a unanimous determination of any such question, the question in dispute shall be referred to a general board appointed by the President of the United States in the following manner:

"One-third of the number to be appointed in agreement with the organization or organizations of employers most representative of employers; one-third of the number to be appointed in agreement with the organization or organizations of labor most representative of labor; one-third of the number to be appointed by the President direct.

"Any question in dispute submitted to the general board for adjudication shall be decided by the unanimous vote of the board. If the general board fails to arrive at a decision by unanimous vote the question or questions at issue shall be submitted to an umpire for determination. The umpire shall be selected by one of the two following processes: First, by unanimous selection of the general board. Failing of such selection, then the umpire shall be drawn by lot from a standing list of 20 persons named by the President of the United States as competent umpires in labor disputes.

"In all disputes that may be pending locally, or before the industrial board, or before the general board, or before the umpire the employers and employes shall each have the right to select counsel of their own choice to represent them in presenting the matter in controversy.

"Whenever an agreement is reached locally, or by the unanimous vote of the industrial board, or by the unanimous vote of the general board, or by the decision of the umpire the conclusion arrived at shall have all the force and effect of a trade agreement which employers and employes shall be morally bound to accept and abide by.

"It is understood that this plan would not interfere with any system of joint wage conferences now in existence unless or until the failure to agree in such a conference made a strike or lockout imminent."

John D. Rockefeller Jr., proposed the following plan for settlement of industrial disputes:

"Whereas, the common ground of agreement and action with regard to the future conduct of industry, and the development of a new relationship between capital and labor which the President sought in calling this conference can only be discovered as we approach the problem in the spirit of justice, brotherhood, and of willingness to put one's self in the other man's place, the coming of which means the substitution of confidence for distrust, of good will for enmity, of co-operation for antagonism; and

"Whereas, this spirit can be developed only by the resumption of personal relations between employer and employe or the nearest possible approach thereto; and

"Whereas, some form of representation in industry is essential in order to make personal relations possible under modern industrial conditions: Now therefore be it

"Resolved, that this conference recognizes and approves the principle of representation in industry under which the employes shall have an effective voice in determining their terms of employment and their working and living conditions; and be it further

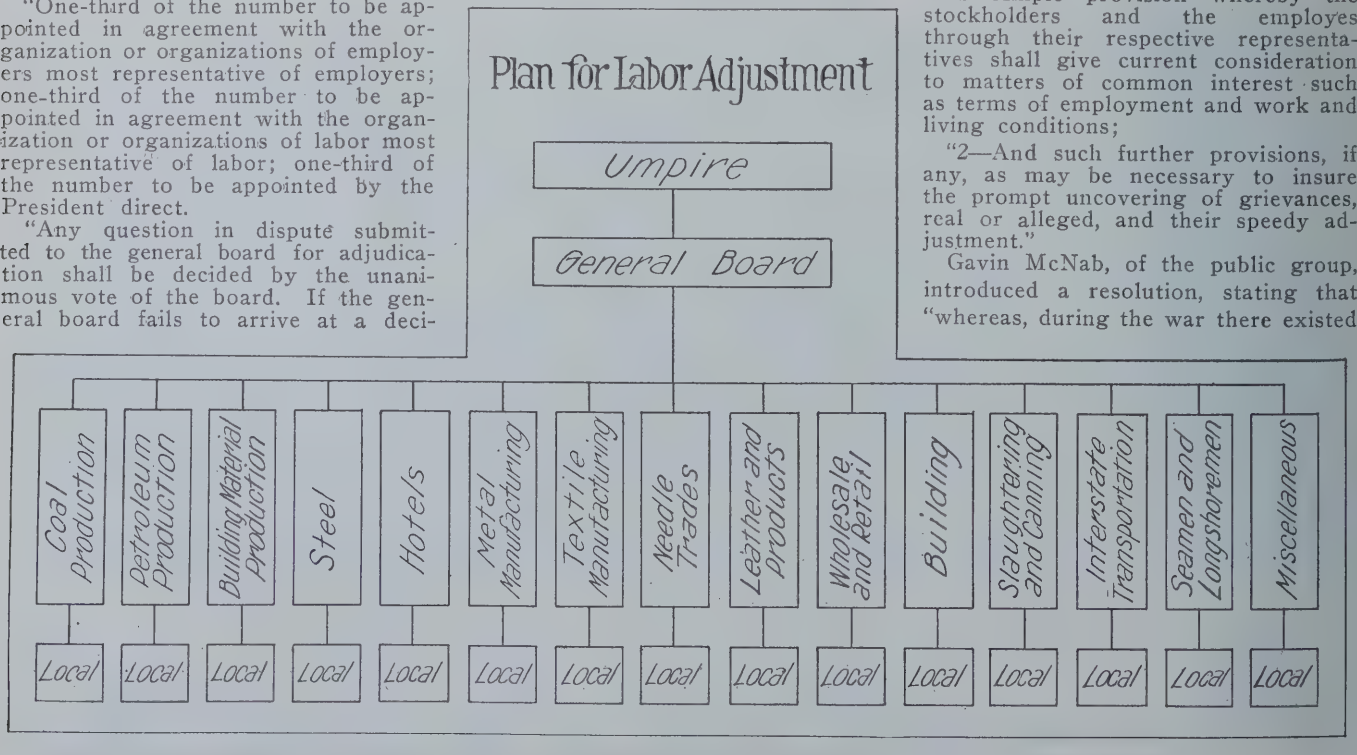
"Resolved, that just what form representation shall take in each individual plant or corporation, so long as it be a method which is effective and just, is a question to be determined by the parties concerned in the light of the facts in each particular instance; and be it further

"Resolved, that any form of representation to be adequate must include:

"1—Ample provision whereby the stockholders and the employes through their respective representatives shall give current consideration to matters of common interest such as terms of employment and work and living conditions;

"2—And such further provisions, if any, as may be necessary to insure the prompt uncovering of grievances, real or alleged, and their speedy adjustment."

Gavin McNab, of the public group, introduced a resolution, stating that "whereas, during the war there existed



FORM FOR ORGANIZATION OF INDUSTRIAL BOARD FOR SETTLEMENT OF LABOR DISPUTES AS PROPOSED BY SECRETARY OF LABOR WILSON

such a body known as the war labor board, which was measurably successful in the adjustment of controversies between capital and labor," the conference petition the President to recommend to congress the immediate enactment of legislation creating a national board of conciliation and arbitration.

The board would be constituted as follows: "Four members, at least one of whom shall be a woman to be appointed by the President, two members to be chosen by the senate, and two members to be selected by the house of representatives. The remainder of said board shall consist of ex-presidents of the United States and the secretary of the department of labor." The resolution proceeds to say:

"Said board shall be available for determination of all disputes between labor and capital. It may act as a board on request by the parties to a controversy or may appoint one of its members to act as third party where each party has appointed a representative and so requests.

"It shall have the right as a board to summon witnesses, to send for parties and papers and conduct full investigations. Any member of such board appointed to conduct a hearing or to make an investigation or to act as third party member of a board of arbitration shall have the power to summon witnesses and compel attendance and compel production of papers for a distance of 50 miles from the place of hearing.

"It shall be a condition of any arbitration conducted by this board that in the interests of the public, that both parties to the controversy shall continue to resume normal relations, but that the decision when rendered shall relate back to the date of the controversy and be in its effects retroactive."

Declaration of Principles Made by Labor

ORGANIZED labor represented in the employes' group of the national industrial conference submitted the following as its declaration of principles:

"1—The right of wage-earners to organize in trade and labor unions for the protection and promotion of their rights, interests and welfare.

"2—The right of wage-earners to bargain collectively through trade and labor unions with employers regarding wages hours of labor, and relations and conditions of employment.

"3—The right of wage-earners to be represented by representatives of their own choosing in negotiations and adjustments with employers in respect to wages, hours of labor, and relations and conditions of employment.

"4—The right of freedom of speech of the press and of assemblage, all being responsible for their utterances and actions.

"5—The right of employers to organize into associations or groups to bargain collectively through their chosen representatives in respect to wages, hours of labor, and relations and conditions of employment.

"6—The hours of labor should not exceed eight hours per day. One day of rest in each week should be observed, preferably Sunday. Half-holiday on Saturday should be discouraged. Overtime beyond the established hours of labor should be discouraged, but when absolutely necessary should be paid for at a rate not less than time and one-half time.

"7—The right of all wage-earners, skilled and unskilled, to a living wage is hereby declared, which minimum wage shall insure the workers and their families to live in health and comfort in accord with the concepts and standards of American life.

"8—Women should receive the same pay as men for equal work performed. Women workers should not be permitted to perform tasks disproportionate to their physical strength or which tend to impair their potential motherhood and prevent the continuation of a nation of strong, healthy, sturdy and intelligent men and women.

"9—The services of children less than 16 years of age for private gain should be prohibited.

"10—To secure a greater share of consideration and co-operation to the workers in all matters affecting the industry in which they are engaged, to secure and assure continuously improved industrial relations between employers and workers and to safeguard the rights and principles herein before declared, as well as to advance conditions generally, a method should be provided for the systematic review of industrial relations and conditions by those directly concerned in each industry.

"To this end, there should be established by agreement between the organized workers and associated employers in each industry a national conference board, consisting of an equal number of representatives of employers and workers, having due regard to the various sections of the industry and the various classes of workmen engaged, to have for its object the consideration of all subjects affecting the progress and well-being of the trade, to promote efficiency of production from the viewpoint of those engaged in the industry and to protect life and limb, as well as safeguard and promote the rights of all concerned within the industry.

"With a further view of providing means for carrying out this policy, the federal government, through its department of labor, should encourage and promote the formation of national conference boards in the several industries where they do not already exist. To still further encourage the establishment of these national conference boards in each industry, these conference boards should be urged whenever required to meet jointly, to consider any proposed legislation affecting industries in order that employers and workers may voluntarily adopt and establish such conditions as are needful, and may also counsel and advise with the government in all industrial matters wherever needful legislation is required.

"The federal government should also undertake to extend the functions of the department of labor to ascertain and provide adequate information and advice to the several national conference boards on all matters affecting the life, health, and general welfare of the wage-earners within such industries."

Address Foundrymen

At the October meeting of the New England Foundrymen's association held Oct. 7 at the Exchange club in Boston, Harry D. Gates of the Pangborn Corp., Hagerstown, Md., gave an illustrated talk on sand blasting in its relation to the foundry. Robert A. Lamont of the Boston branch of the Mercury Mfg. Co., presented a moving picture film which he called the "trackless train" and which showed interesting applications of the small truck tractor in industrial establishments. Edgar C. Davidson of the Safety First Shoe Co., was unanimously voted a new member of the association.

Machinery Exposition is Opened in New York

For the sale at home and abroad of products manufactured in America, a permanent exhibition has been established at Grand Central palace, New York City. This is under the auspices of the International Exposition of Industries, which comprises the international machinery and mining industries, factory appliances and municipal equipment expositions as well as farm tractor and implement and hardware and house-furnishing exchanges. A centralized market where all lines of American manufactured products can be grouped under one roof and where manufacturers and buyers can meet and enter into immediate business arrangements, is thus furnished for the first time.

Europe's demand for reconstruction materials is expected to bring a great number of representatives from overseas, and full preparations have been made at the exposition to display the required material so that they may have a comprehensive selection to choose from. The attention of purchasing agents, both in Europe and in this country, has been called to Grand Central palace with its permanent industrial market by representatives of trade corporations.

Steel Suit Before Highest Court

Government Attack on United States Steel Corporation Finally Reaches Supreme Court, an Argument Situation Expected Early in 1920—Counsel for Defense Charge Government Abandons its Original Theory of Illegality

WASHINGTON, Oct. 14.—Eight years practically after it was filed, the government suit to dissolve the United States Steel Corp. finally has been submitted to the United States Supreme court. While necessarily it is uncertain when this case, the most important anti-trust proceedings ever before the supreme court, will be decided, it is considered by some that the finding may be handed down shortly after the New Year. Upon that decision will rest the question whether the Steel corporation, with its highly organized development is to be broken up into individual units or whether it is to be maintained as a single entity and continue as an economic factor of the greatest importance in the industrial world. In the lower court the finding was favorable to the Steel corporation, which prompted the government to appeal to the Supreme court, and business interests generally are hoping that the finding of the lower court will be affirmed by the Supreme court.

The original suit was filed in a federal court in Trenton, N. J., on Oct. 26, 1911. The final arguments, which were begun on Monday of last week were completed on the following Friday. The government's side was presented by Assistant Attorney General C. B. Ames and Attorney Henry E. Colton. Judge Ames both opened and closed the arguments, and succeeded former Assistant Attorney General G. Carroll Tod, who previously had charge of the government's prosecution. The Steel corporation's side was presented by General Counsel Richard V. Lindabury and Attorneys D. A. Reed and C. A. Severance.

Chairman E. H. Gary of the Steel corporation sat with other spectators and heard the opening argument made by Mr. Lindabury on Wednesday afternoon and was also present on the last day of the arguments to hear those made by Mr. Reed and Mr. Severance. With him on the first day he listened to the arguments were Comptroller William J. Filbert and the former's private secretary, George K. Leet, together with James B. Bonner and other representatives of the local offices of the corporation. On Friday he was accompanied by Mr. Leet and representatives of the corporation. He listened intently to the arguments, and at times, in order to catch the statements by the attorneys or the questions asked by the justices, he would lean forward and cup his ear, but his expression remained unchanged. By coincidence the day on which Judge Gary heard the opening argument for the corporation, which meant so much to it and to himself, was the seventy-third anniversary of his birth.

Gary Hears Arguments

At the request of Judge Ames the government is going to have its arguments printed and copies will be supplied to the court by Friday of the present week. General Counsel Lindabury said the corporation did not wish to have its arguments printed, so this will not be done. It is unusual either to have a stenographic report made of arguments before the Supreme Court or to have them printed. The practice is resorted to only in the most important cases and done through the request of counsel presenting cases upon the approval of the court.

In its arguments the government maintained its original charge, said Judge Ames, that the Steel corporation at the time of its organization in 1901 was a combination in violation of the Sherman antitrust law and still is; that it is a preponderating factor in the steel industry and can control prices and restrain trade. Counsel for the corporation contended that the corporation was not formed for purpses of monopoly, has never attempted to monopolize or monopolized the trade and could not monopolize it if it desired. It was pointed out that subsidiaries of the corporation produce only about 40 per cent of the steel consumed in this country and about 45 per cent of the total steel output of the country, and that the srength of its competitors is so great that it could not dominate the market.

In opening the case for the government, Judge Ames made a lengthy review of the organization of subsidiaries of the Steel corporation, their methods of conduct, including pooling plans, etc., and left up to the formation of the corporation itself, claiming it was organized for purposes of monopoly. He contended that pooling agreements which had been made by the different steel company groups were not lived up to in 1898 and that the result was competition. The average price of 10 specified steel commodities in December, 1898, he said, was $28.28 a ton, while in March, 1900, when it was charged the agreements had been renewed, the average price of the same commodities had increased to $57.50. It was maintained that the corporation still has the power of domination and monopoly of the industry and when asked by Chief Justice White what remedy the government sought, Judge Ames replied that no complete plan had been worked out. He said, however, the government is asking for dissolution of the holding company, the Steel corporation, and several of the subsidiaries. The latter, it was declared, should be under direct control and active management. Each was said to have a complete organization and clearly is equipped for efficient service. Judge Ames did not name all the subsidiaries which he contended should be dissolved, but mentioned the Tennessee Coal, Iron & Railroad Co., the Carnegie Steel Co., the American Steel & Wire Co., and the American Sheet & Tin Plate Co. In his closing argument, however, he assented to a view by Chief Justice White that the latter understood the charge against the Tennessee Coal, Iron & Railroad Co. was not being pressed. Judge Ames said it was the thought of the department of justice that the court would not care to have its opinion as to how the dissolution should be brought about but that it might be worked out along the plan followed in the tobacco case. Attorneys for the corporation in their arguments contended that the government had admitted that a number of Steel corporation subsidiaries had been formed legally, including the Federal Steel Co., the Carnegie Steel Co., the Union Steel Co., the Shelby Steel Tube Co., and the Tennessee Coal, Iron & Railroad Co., and that the government had abandoned these and numerous other charges. In addition to the claim that the Steel corporation has a substantial domination of the steel industry, Judge Ames said it has control of the transportation of ore from

the Lake Superior district and of ore deposits there.

In opening arguments for the Steel corporation, General Counsel Lindabury said that the argument of Judge Ames was so different to the position of the court below, and to that of counsel for the government in the original case that it was rather confusing. It was stated by Mr. Lindabury that the government apparently had abandoned its brief and was presenting a different theory than that in the brief or ever heard before. Consequently, he said, any attempt to argue from the points made in the brief and those of Judge Ames was somewhat difficult. The strength of the argument of Judge Ames, it was asserted, was devoted to the organizations taken over by the Steel corporation 19 years ago, which dealt most with "ancient history." At some length, however, Mr. Lindabury pointed out the evolution of the iron and steel industry since the early 80's, the time of the old iron mills. Production of steel in this country, it was declared, did not become great until 1885 when Thomas and Gilchrist discovered a way to remove phosphorus from iron, resulting in reducing the cost of manufacture and destroying many iron mills. The greatest change of all, he said, was advent in 1890 of the Jones mixer, by which hot metal is carried direct to the open-hearth furnace. This also drove many iron mills out of business and those that still existed had to be consolidated as salvage, he said, and modernized if they were to continue, and this was given as an explanation of the formation of what now are subsidiaries of the Steel corporation.

Mr. Lindabury said that the charge that subsidiaries had been organized with monopolistic intent was based on a mistaken idea, declaring that the only articles they produced in 1899, one of the years referred to by Judge Ames, were tinplate, wire nails and tubes and that the rise in the prices of these commodities was not disproportionate with the rise of such commodities in Germany and England. The advances of which the government made so much, he said, meant nothing either way and could not be applied to prices on those commodities made by subsidiaries at the time.

The proportion of the production of steel by the Steel corporation, he said, was never more than 50.1 per cent of the total output, and this proportion, he maintained, has gradually fallen until at the time hearings on the case were closed it was only 45 per cent of the total output and 40 per cent of the steel consumed in the United States. The corporation's proportion of ore reserves, it was said, is a less percentage than that of any of the large independent steel companies. He said the corporation has approximately a 40 years' supply of ore reserves, while it is estimated it should have a 50 years' supply, which he said the independents have. Monopoly of ore, he said, is out of the question. Regarding the transportation of ore from the Lake Superior district, Mr. Lindabury said that after complaints had been made by independent companies as to the rates charged by the Steel corporation two rail lines carrying ore to the docks, the interstate commerce commission reduced the charges. It was added that it always has been conceded by the independents that they get as good service in the transportation of ore as the subsidiaries themselves do.

In continuing his argument on Thursday, Mr. Lindabury, replying to a question by Justice Day, said the lower court had held that the corporation did not have the power to fix prices, divide territory, or to control the industry. Reiterating that at the time of its organization, the Steel corporation produced 50.1 per cent of the rolled steel output of the country, Mr. Lindabury said this really gave an exaggerated idea of its power from a point of sales because the corporation subsidiaries used much of the semifinished steel it made for the manufacture of finished products.

Pools Are Discussed

Taking up the question of pools, Mr. Lindabury said the Steel corporation withdrew in 1904 from all of them in which it had participated with the exception of the wire pools and the latter, he said, were operated secretly for several years afterward by an agent of the Steel corporation without the knowledge of corporation officials. The pools, when operated, said Mr. Lindabury, were thought to be legal because of an opinion given by the late Senator Hoar, who drew the final draft of the Sherman act and who had written to a friend in Worcester, Mass., that the steel pools that he did not think they came within the prohibition of the law. In 1904, however, Mr. Lindabury told the court, an attorney connected with an independent steel company held that the pools did violate the Sherman law and because of this the Steel corporation withdrew. The so-called Gary dinners, said Mr. Lindabury, were three in number and were held in 1907-08, when the industrial situation was perilous and the conferences were designed to stabilize industry. This movement, he said, was participated in by 90 per cent of the steel industry.

Referring to the purchase by the Steel corporation of steel plants, Mr. Lindabury said it is a remarkable fact that it never bought one of them for the purpose of scrapping and he ventured the opinion that there probably is not a similar case of the kind in any trust suit brought to the attention of the Supreme Court.

Attorney Colton, followed Mr. Lindabury and said that, contrary to the statement of Mr. Lindabury, the government still stood on its original brief and holds that the Steel corporation, as a result of the wholesale combination of competitors, resulting in restraint of trade, does dominate the industry and was formed for illegal purposes and still is an illegal corporation.

Declaring that even if it were true that the Steel corporation lost money during the war, Mr. Colton said this would be no reason for not dissolving the corporation. He asserted, for that matter, that the truth is the corporation made enormous profits during the war. But, he maintained, nothing the corporation did during the war had anything whatever to do with the present case.

"You consider that that is outside of the record, do you?" asked Justice Day.

"Yes, your honor, we do," replied Mr. Colton.

With respect to the alleged power of the Steel corporation to control prices, etc., which Mr. Colton had discussed, Justice McKenna asked if any competitor had come forward and said it was compelled to take prices named by the Steel corporation.

Mr. Colton replied that the independent companies "very glady accepted the prices named by the corporation."

"In other words, you consider that the corporation kept its prices so comfortably high that the others were glad to accept them?" inquired Justice Pitney.

Mr. Colton answered in the affirmative.

At the time hearings in the case were closed eight years ago, said Attorney Reed, the Steel corporation had only about 46 years' supply of standard ore in reserve in the Lake Superior district as against a supply of 63 years held by its competitors. In sight in the Lake Superior district, he said, is about 2000 years' supply of the lower grades of ore.

Mr. Reed said the law does not forbid combinations which allow reasonably competitive conditions to prevail. To show such conditions do prevail, he adopted the government's

own figures as to the prices of 10 commodities and explained that the prices on steel since the organization of the Steel corporation had gone down in money price while other commodities had gone up. Other reasons he gave were the growth of the industry as a whole, competitors from 1901 to 1918 increasing output from 4,000,000 to 24,000,000 tons annually; growth of competitors out of all proportion to that of the Steel corporation, and the fact that steel purchasers find there has been extremely active competition prevailing. The government's case as to suppression of competition, he said, was made up entirely of inferences and not by any testimony whatever.

The government, he said, would determine the case upon conditions as they existed in 1901, when the corporation was organized, and would ignore the intervening years. He maintained and read court decisions to prove that it is proper to take into account the intervening years and said it was shown that the corporation never committed or intended an offense in the first place.

In his argument, Attorney Severance said that the government had abandoned numerous charges, including those that the Carnegie Steel Co., the Federal Steel Co., the Union Steel Co., and the Shelby Steel Tube Co., were formed illegally. Touching upon the Tennessee Coal, Iron & Railroad Co., Mr. Severance said charges as to it had also been abandoned and Chief Justice White said he understood these particular charges were not being pressed. Attorney Severance said that the government also had charged that the Steel corporation was guilty by reason of its connection with the various pools, but that this claim like others, has been abandoned, as has been the charge that the corporation restrained and monopolized foreign trade.

In substance, he said, the case has settled down to a charge that the corporation has a preponderating share in the steel business of the United States. He dwelt at some length on this point to show that the corporation could not be a preponderating element because of its production of only about 40 per cent of the steel consumed in this country and by reason of the strength and large production of independent companies. Decrees of courts were cited to show that the corporation does not come within the antitrust act, that in the International Harvester Co. in particular being quoted.

Competition in the steel trade, he pointed out, is "active, normal, keen and vigorous." Speaking of the simularity of steel prices quoted in trade papers, Mr. Severance said they are only comparative and that there are no absolute market prices because there is no exchange in which steel is sold as is the case with grain or stocks. The Gary dinners were explained as a movement in years of industrial peril which was meant to stabilize conditions in the industry and had been justified in the decision of Judge Woolley in the lower court. In any event, he argued, the movement did not have anything to do with the case because the suit has been brought to dissolve the Steel corporation and not all of those in the movement.

Judge Ames in closing the case summarized the government's contentions that the corporation was and is a combination in violation of the law and said the controversy hinged on two main points: first, whether constituents of the corporation were competitors of each other, and, second, the effect of the subsequent conduct of the corporation since it was organized. He claimed the constituents of the corporation had been competitors and that the subsequent conduct of the corporation showed it was and is a monopoly.

Dealing with the growth of competitors of the corporation, Judge Ames said it merely indicated the growth of the industry itself. The Steel corporation, he said, has grown 40 per cent and increased its output 2,500,000 since 1901, and that the Bethlehem Steel Co., with the greatest growth in percentage amounting to approximately 3700 per cent, had increased its output only 700,000 tons.

The Steel corporation, he maintained, can dictate terms and prices to its competitors and the question as to whether or not it is a benevolent corporation has nothing to do with the present case.

Neither Justice McReynolds nor Justice Brandeis sat in the case, although during the last day they were on the bench and listened to arguments. Justice McReynolds was disqualified because of having been attorney general during earlier proceedings in the suit and Justice Brandeis did not participate because of previous expressions he has made regarding the Steel corporation.

The New York chapter of the American Steel Treater's society held its monthly meeting Oct. 15, at the Bush Terminal Sales building, 132 West Forty-second street, New York. R. W. Newcomb, of the Charles Engelhard Co., read a paper entitled: "Precautions Involved in the Use and Care of Pyrometer Equipments."

Better Output

Shown in Benzol But it is Only Fraction of Normal

New York, Oct. 11.—As virtually no nearby offerings are being made, quotations on spot benzol largely are nominal. The steel strike has made great inroads upon production and dealers have but little or no benzol left after meeting old contracts. Contract business is being quoted at 24 to 29 cents for pure benzol and at 22 to 24 cents for 90 per cent benzol. The improvement in production, while noticeable, is not keeping pace with the clearing up of the strike situation generally. It is said that men now returning to work are for the most part in some branch of the industry other than coke producing. The Chicago district is producing some benzol, but the Mahoning valley is reported to be inactive. Production now is about 35 per cent of normal, as compared with around 25 per cent a couple of weeks ago.

Toluol and solvent naphtha, although affected by the strike are available in better quantities for spot as demand has not been heavy. The market on toluol and solvent naphtha is quoted at 26 to 30 cents, and 22 to 27 cents, respectively, for both spot and contract.

Buying by the drug trade for next season features the naphthalin market. The dye industry also is figuring but not on so large a scale. Owing to the large demand, spot material is very scarce, and prices, consequently, largely are nominal. Spot and contract business may be quoted at 6½ to 7½ cents on flakes and 8½ to 9½ cents on balls.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

SALE of its warehouse plant, stock and good will to Joseph T. Ryerson & Chicago, is announced by the Ferguson Steel & Iron Co., Buffalo, following its recent organization. The new owners will make this the fifth unit in their chain of warehouse plants, which already includes plants at Chicago, New York, Detroit and St. Louis.

This latest purchase includes a main building of about 100,000 square feet, divided into three spans, served by several bridge cranes, together with a large crane-served yard, office building, garage and storehouse. It is located on the New York Central railroad and adjoins the main Buffalo yards. This location provides excellent rail transportation facilities. The plant is also well situated for rapid city delivery by motor truck. While plans are not yet fully determined, a considerable improvement and enlargement of the property will be undertaken this winter. After these improvements, it will comprise a complete unit for warehouse service to supply finished steel products, covering an extensive range of standard mill sections, with a complete installation of cutting and handling equipment. Exceptional facilities for cutting length stock will be featured by the new owners. In addition a varied stock of special items called for in connection with warehouse business will be carried.

This arrangement was perfected in order to supply the needs of steel users in western New York and Pennsylvania, northeastern Ohio and Ontario. A. C. Allshut is in charge.

* * *

FOUNDATION for one 600-ton blast furnace has been completed at Ojibway, Ont., for the Canadian Steel Corp., and work has been started on a second.

* * *

FOR installation at the Mitsubishi shipyard at Kobe, Japan, C. H. vom Baur, 15 Park Row, New York, has sold a 1-ton electric furnace to Mitsubishi Zozen Kaisha. It will be employed for making basic steel for castings.

* * *

WORK on the erection of a plant for the manufacture of cans for the Tacoma Can Co., Tacoma, Wash., is nearing completion, and operations in the new plant are expected to be started soon. The building will have a total floor space of 9300 square feet.

* * *

THE Atlantic Steel Co., Atlanta, Ga., now is represented in the New York metropolitan district by Baird & Martin, Inc., 120 Liberty street, New York City. This firm consists of Charles T. Baird, president; Percival V. Martin, vice president, and Lawrence H. Tasker, treasurer.

* * *

ORDERS have been issued for dismantling the Dantzler Foundry & Machinery Co., Gulfport, Miss. The plant has been closed for some time because of a strike and a decision to quit business was made following the rejection of the workers of an invitation to return to work at the old wage scale.

* * *

FOR the purpose of manufacturing automobile radiators, the Lockport Auto Radiator Corp., 291 Market street, Lockport, N. Y., has been formed with temporary offices at 175 Walnut street, that city. Capital stock is $30,000 and while a plant has been secured, the company requires stamping presses, spot welders and other small tools.

* * *

CONTRACTS have been made by the H. P. Deuscher Co., Seventh and Honover streets, Hamilton, O., for the new equipment it will require for its new core ovens and core room, 100 x 50 feet, and cranes for its new foundry, 45 x 60 feet. These new buildings are to be of brick and concrete construction and will cost approximately $25,000.

* * *

THE Dickey Steel Co., Inc., Woolworth building, New York City, recently was appointed eastern sales and export representative of the Hammond Steel Co., Inc., Syracuse, N. Y., manufacturer of high speed, alloy and straight carbon tool steels, as well as a complete line of alloy steel bars, weldless rings, die blocks and special shapes.

* * *

BIDS are under consideration by the Ohio Steel Products Co., Mineral Ridge, O., for the erection of two buildings, one, 60 x 400 feet, to be used as a tube mill, and the other, 70 x 272 feet, for a conduit plant. The buildings will be of brick and steel construction and will be equipped with the most modern machinery. C. E. T. Tousley is vice president.

* * *

EDWARD S. FRENCH, secretary and treasurer of the Belleview Utilities Co., Inc., Belleview, Fla., has advised that the company, which recently was incorporated to operate electric light, water and cold storage plants, is in the market for storage tanks, 8000 to 10,000 gallons capacity, and water tanks, 10,000 to 20,000 gallons capacity and a quantity of 2-inch wrought pipe.

* * *

IN July the Granby Consolidated Mining, Smelting & Power Co. began to produce coke and by-products in its coke ovens at Anyox, B. C. The plant, which is the only one of its kind on the Pacific coast, has been two years in preparation and is now in full operation. Coal for the 32 ovens is supplied from the Granby's properties at Cassidy, Vancouver island.

* * *

THE Atlas Machine Works, Detroit, recently was incorporated to produce parts for the Detroit Motor Parts Co., 133-135 Larned street, Detroit. The company has purchased equipment valued at $43,000 and is located in a 2-story brick building. No outside work is contemplated at present. E. F. Wilkinson is president and R. B. Merrill, secretary and treasurer.

* * *

THE New Britain Machine Co., New Britain, Conn., has made an offer for the steel government building on its property used during the war for the assembling of big guns, which has caused plans to be halted for dismantling and removing it to the United States arsenal, Watertown, Mass., as intended last week. It is expected the war department will accept the offer, in which event the company probably will use the factory for the building of one-man tractors. This company recently voted to increase its capital stock from $1,500,000 to $2,000,000 for the purpose of building an addition to its plant and making other improvements for the development of its new tractor line.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

INCORPORATED with $325,000 capital, the Mossberg Pressed Steel Corp., Attleboro, Mass., will engage in the metal stamping business and will specialize on products used in the textile, wire and cable industries, manufacturing such articles as spools, reels, beams, beam heads, etc. The company expects to take possession of a large brick building in about a month, which is now being altered. A great amount of equipment has been purchased but it is understood the company is still in need of power presses and some machine tool equipment. Officers of the company are: President, Frank Mossberg; vice president, S. O. Bigney; treasurer, C. A. VanderPyl, and secretary, A. A. Underwood. With the exception of Mr. Bigney, all of the officers were formerly connected with the Frank Mossberg Co., of Attleboro, Mass.

* * *

THE Worcester Machine Screw Co. branch of the Standard Screw Co., Worcester, Mass., is reorganizing its departments, which will necessitate curtailment of production for about two months. Machinery is being shipped to other branches of the company in the East and West and machinery from these plants is being sent to Worcester. Some special lines of production will be attempted at the Worcester plant.

* * *

CAPITALIZED at $20,000, the Stephen Decatur Hausler Co., 280 Broadway, New York, recently was incorporated to represent machinery manufacturers in the New York district. At present the firm represents the Buchalter Tool Co., and the Janos Asbestos Co., both of New York, but is planning to enlarge its representative list. S. D. Hausler is president.

* * *

WHILE a formal list of its machine tool and equipment requirements is not at present prepared, the Chase Tractors Corp., 28 Atlantic avenue, Toronto, Ont., announces it will be in the market for various types of machinery in the near future. It has on hand at present a large number of used machines which are being overhauled and after these are put into service, the company will be able better to determine its exact additional requirements.

* * *

GRAY iron, brass, bronze and aluminum castings will be produced by the Chemung Foundry & Supply Co., Inc., Elmira, N. Y., which was recently incorporated with $50,000 capital. The company is now ordering equipment and expects to begin operations within a few weeks. Its temporary address is 158 Harriet street. Officers are: President, Harry N. Rubin; vice president, J. P. Ward; treasurer, John D. Ward, and secretary, G. L. Siegel.

* * *

FOUNDATIONS for the new plant of the Youngstown Pressed Steel Co., Warren, O., are nearly completed. The framework for the main building paralleling the main line of the Erie railroad is finished and considerable progress is being made in the erection of the structural steel work. Nearby the Pressed Steel Co.'s plant the Supreme Motors Co. has completed a new brick building. Installation of machinery was completed recently and the officials of the company expect to begin operations soon.

* * *

TWO lots have been purchased by the Johnson Auto Signal Co., Vancouver Wash., on which the company plans to erect a 4-story building, 50 x 100 feet. The lower floor of the structure will be devoted to a machine shop and a brass and aluminum foundry. The upper floors will be used for office, assembly and storage rooms. Automobile signals and other automobile accessories are manufactured by the company, of which A. W. Johnson is president and C. A. Bourne, secretary.

* * *

THE Marshall & Huschart Machinery Co., 17 South Jefferson street, Chicago, has added several new lines which it will represent exclusively in the Chicago territory. The additions include the Queen City Machine Tool Co., Cincinnati, cylindrical grinders; Giddings & Lewis Mfg. Co., Fond du Lac, Wis., horizontal boring machines; Hardinge Bros., Inc., Chicago, precision bench lathes, and the Cochrane-Bly Co., Rochester, N. Y., metal sawing machines, filing machines and universal duplex millers and shapers.

* * *

THE Badger-Packard Machinery Co., 133-139 West Water street, Milwaukee, has decided to confine its business to dealing in machinery and transmission supplies, and is discontinuing its machinist supply department, the stock of which has been purchased by the John Pritzlaff Hardware Co., Milwaukee. The Badger-Packard business henceforth will concentrate on iron, steel and wood working machinery, both new and used; motors, electrically-driven tools, and a complete line of power transmission appliances.

* * *

ORGANIZATION of the La Fayette Motors Co. to manufacture passenger cars is announced by Lee Higginson & Co., New York. The company will have an initial capital of $4,000,000 consisting of 40,000 shares of nonvoting cumulative preferred stock, this being part of a total authorized issue of 60,000 shares and 40,000 shares of common stock of no par value. A modern 3-story factory building has been purchased in Indianapolis. The officers of the company are: President, Charles W. Nash, Kenosha, Wis., president of the Nash Motors Co.; chairman, James J. Storrow, Boston; vice presidents, D. McCall White and Earl F. Howard, both of Indianapolis.

* * *

JOHN E. JORDAN, Grafton, Mass., formerly superintendent of the Standard Foundry Co., Worcester, Mass., has purchased the Pero Foundry Co., Worcester, and reopened it after a several months' shutdown due to the molders' strike in that city. The same name will be retained but new officers will be elected. The foundry had been in the Pero family more than 30 years and its retirement will remove the pioneer molders of Worcester from active business life. The company was incorporated in 1904, with $15,000 capital, Prespey Pero being president, Edward Pero vice president and Mrs. Ida G. (Pero) Dolan, treasurer. Mr. Jordan before going to Worcester was located in Indian Orchard, Mass.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ORA J. FISH, for a number of years second vice president and secretary of the American Shipbuilding Co., Cleveland, resigned at the annual meeting of the company in Jersey City, N. J., on Oct. 9, effective immediately. Both offices will be filled at a subsequent meeting of directors. Other changes in the personnel of the directors of the company were: Resignation of R. L. Ireland as member of the executive committee, Henry S. Pickands, of Pickands, Mather & Co., Cleveland, being named his successor; Samuel Mather, J. H. Wade Jr., and R. G. Mutchins Jr., resigned during the year as directors, their places being taken by G. G. Wade, H. S. Pickands and Herbert P. Powell.

H. H. Outwater has been transferred from Buffalo to the New York office of Rogers, Brown & Co., where he has joined the selling staff.

L. Riese has been placed in charge of the San Francisco office of the Republic Iron & Steel Co., Youngstown, O., recently re-opened in the Reality building.

W. J. Bryan has been appointed sales manager of the Budd Wheel Corp., with offices at 1252 Book building, Detroit.

Samuel E. Stephenson, of the Wellston Steel & Iron Co., Wellston, O., recently was elected president of the Commercial bank, Jackson, O.

Wiley T. Rabon, formerly with the Carolina Machinery Co., Inc., Asheville, N. C., founder and machinist, has become affiliated with the Brenneis Mfg. Co., Oxnard, Cal.

Charles G. Shaffer who resigned his position as superintendent of the Singer Mfg. Co., Elizabeth, N. J., has been made superintendent of the Gillespie Foundry Co., Inc., Paterson, N. J.

Thomas Boyd has resigned as superintendent of the Medina Iron & Brass Co., Medina, N. Y., to become manager of the Crescent Foundry Co., Rochester, N. Y.

Alvin H. Klemme, formerly secretary of the Eagle Foundry Co., Belleville, Ill., has been made factory manager of the Remmert Mfg. Co., that city, maker of locomotive washing machines. He succeeds William Remmert, who takes charge of the sales organization, which duty will necessitate much traveling throughout the country to establish agencies.

Martin Hawk, Manchester, Eng., foreign manager of the Carborundum Co., Niagara Falls, N. Y., having charge of plants in Germany, France and England, is making a visit to the United States.

Fred J. Hartman, of Pittsburgh, has assumed his duties as secretary of the Pennsylvania industrial board, succeeding William Lauder, of Riddlesburg, Pa., who resigned as secretary to serve the board in another capacity.

A. C. Allshul, formerly in charge of the Milwaukee district offices of Joseph T. Ryerson & Son, Chicago, has been transferred to Buffalo, to take charge as branch manager of the warehouse recently acquired by purchase from the Ferguson Steel & Iron Co.

T. Archie Thorn, formerly affiliated with the Harrington-Robinson Co., Boston, now is associated with the Aborn Steel Co., Inc., 22 Clarke street, New York, at its Boston warehouse, 171 High street. He will have charge of an increased stock of high grade tool steel, alloy steel and other steel bars.

C. C. Persiani, for the past four years treasurer of the Clark Bros. Bolt Co., Milldale, Conn., has resigned to become an official of the Pawtucket Mfg. Co., Pawtucket, R. I., maker of bolts, nuts and special machinery. Mr. Persiani had been with the Clark Bros. Bolt Co. for 40 years and before becoming treasurer was superintendent.

Judge E. H. Gary, chairman of the United States Steel Corp., celebrated his seventy-third birthday in Washington on Oct. 8. On that day he attended the sessions of the Supreme Court of the United States, before which arguments are being heard in the dissolution suit against the Steel corporation.

B. H. Reddy has resigned as chief engineer of the National Roll & Foundry Co., Avonmore, Pa., to become associated with the Southern California Iron & Steel Co., Los Angeles, Cal. Mr. Reddy formerly was chief engineer of the National Pressed Steel Co. and designed and constructed the plant of that company at Massillon, O. In addition to his wide experience in steel plants, Mr. Reddy has been identified with iron foundry work, having been at one time superintendent of the Bowler Foundry Co., Cleveland.

E. C. Johnson, former branch manager in Philadelphia for the White Motor Co., Cleveland, and later for the Packard Motor Car Co., Detroit, has returned from overseas, where he served with the motor truck transport corps, and has become general manager of the New York branch of the Standard Steel Car Co., Pittsburgh, which has purchased the interest of the Taylors Motors Corp., and will conduct the New York place as a branch.

Conrad B. Rubery has been appointed works manager for the Sizer Forge Co., Buffalo. For several years, Mr. Rubery was in charge of production at the plant of the Heppenstall Forge & Knife Co., Pittsburgh, but resigned that position early in 1916 to take charge of shell steel production in the United States for the British munition commission. He went to England in December, 1916, where he acted as supervisory forging engineer for the ministry of munitions until the end of the war. W. L. Goodrich, New England representative for the Sizer Forge Co., was able to leave Mercy hospital, Springfield, Mass., on Oct. 1, after an operation for appendicitis. He is fast improving in health and will soon be able to resume his duties.

J. B. Childe, general manager of the Canton spring and forge plants of the Standard Parts Co., Cleveland, has been promoted to take charge as general manager of the Perfection Spring division of the Standard Parts Co. He formerly was general manager of the Hess Spring & Axle Co. and later occupied an official position with the Western Spring & Axle Co. After the latter organization was taken over by the Standard Parts Co. he was placed in charge of the Canton plants. H. E. Clay succeeds Mr. Childe as general manager at Canton. He formerly was plant manager of the Perfection plant, and later became production expert. He recently supervised the construction of the company's new spring plants at Flint and Pontiac, Mich.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

CARL E. EBY, who has been sales manager for the Hyatt Roller Bearing Co., New York City, industrial bearings division, has been appointed to the board of directors of Hyatt, Ltd., a new company formed to market the company's roller bearings in Europe. Mr. Eby's headquarters will be in New York. G. O. Helmstaedter, formerly Chicago district manager, has been promoted to succeed Mr. Eby as sales manager.

Charles C. Ramsdell, vice president of the Gilbert & Barker Mfg. Co., West Springfield, Mass., has returned from a three months' business trip to Europe.

H. F. Himes, formerly connected with the Dimler-Himes Tool Co., Dayton, O., now is manager of the Dayton branch of the Wayne Machinery Co.

C. L. Halladay has been appointed assistant to C. C. Hanch, general manager of the Maxwell Motor Co., Detroit.

W. M. Pattison, president of the W. M. Pattison Supply Co., Cleveland, was elected vice president of the City club, Cleveland, at a meeting of its board of directors, held Oct. 6.

C. Louis Allen, who formerly was president of the Pyrene Mfg. Co., is president of the Allen Corp., New York City, a new company formed to manufacture fire extinguishers.

Theo. T. Lane has been appointed director of purchases for Briscoe & Stahl, Book building, Detroit. The company is purchasing machinery for Bellanger Freres, Neuilly, France.

E. H. Martindale has resigned as sales engineer of the National Carbon Co., Cleveland, to become president and general manager of the Handy Supply & Mfg. Co., that city.

A. W. Frehse, formerly sales engineer of the Detroit Pressed Steel Co., has been appointed chief engineer of the automotive division of the Standard Steel Car Co., Pittsburgh.

H. M. Thomas now is production engineer of the United States Tractor & Machinery Co., Menasha, Wis. For many years he was superintendent of the Anderson Engine Co.

Hercules Smart has been made manager of the Detroit store of the Illinois Tool Works, Chicago, to succeed D. J. Rice. Mr. Smart formerly was manager of the company's New York office.

Albert F. Mellen, who has been laboratory assistant at the Norton Co., Worcester, Mass., has been appointed assistant general manager of the Cleveland branch office of the company.

David F. Edwards has resigned as secretary-treasurer of the Gier Pressed Steel Co., Lansing, Mich., to become an executive of the Duesenberg Motors Co., Elizabeth, N. J.

Robert W. Catlin has been appointed Boston district manager for the Poole Engineering & Machine Co., Baltimore. He has charge of the recently opened branch office in the Old South building, Boston.

William Spaulding Warner, who was chief engineer for the United States Housing Corp., has resigned that position and taken a place on the engineering force of the Stanley Works, New Britain, Conn.

Robert F. Herrick, Milton, Mass., president of the Reed-Prentice Co., Worcester, Mass., is going to Europe shortly with a party of textile manufacturers to investigate textile and general business conditions.

Fred S. Campbell now is in charge of the foundry operated by the Turner Machine Co., Danbury, Conn., having resigned his position as foundry superintendent for the Hitchings Co., Elizabeth, N. J.

Albert E. Coleman, for the past 22 years plant and construction engineer for the Pratt & Whitney Co., Hartford, Conn., has resigned to become vice president of the Bent-Bartlett Co., of that city, general contractor.

E. J. Kearney, secretary and treasurer of the Kearney & Trecker Co., Milwaukee, manufacturer of milling machines, left Sept. 29 for a three-month trip to Europe. Mr. Kearney plans to combine business investigations with sightseeing.

F. F. Coutts has resigned his position as general foundry foreman for the Midwest Engine Co., Indianapolis, and has been made foundry superintendent for the Fulton Iron & Machine Co., St. Louis, maker of diesel engines and cane crushing machinery.

W. N. Brown has been appointed sales engineer for the Joseph L. Skeldon Engineering Co., Cleveland and Toledo, O. His headquarters will be at Cleveland. The company builds complete steam, electric and hydraulic plants.

Walter P. Coghlan has been appointed general sales manager of the American Hammered Piston Ring Co., Baltimore, effective Nov. 1. For the past five years, he has been affiliated with the Klaxon Co., Newark, N. J., in the capacity of secretary and sales manager.

Edward W. Dodge, formerly connected with the Norton Co., Worcester, Mass., has been made general sales manager of the Detroit-Star Grinding Wheel Co., Detroit, recently incorporated to take over the businesses of the Star Corundum Wheel Co., and the Detroit Grinding Wheel Co.

S. E. Weaver, who for several years was manager of the Union Twist Drill Co., in eastern Pennsylvania as well as in the southern territory, has become identified with the sales force of the Davidson Tool Mfg. Corp., 118 Maiden Lane, New York City. He will represent that company in a similar capacity in his old territory.

Charles L. Taylor, a former partner of Andrew Carnegie, president of the Carnegie Hero Fund and vice chairman of the United States Steel and Carnegie Pension Fund, was given the honorary degree of doctor of engineering by the Lehigh university Oct. 4, when the university observed founders' day. Mr. Taylor was graduated from Lehigh university with the class of 1867.

C. L. Goodrich, assistant superintendent of equipment of the Pratt & Whitney Co., Hartford, Conn., will leave soon on a business trip to Chili by way of the Panama canal and down the west coast of South America. B. H. Blood, general manager of the Pratt & Whitney Co., will sail from New York soon on a business mission to England, France, Belgium, Italy and Switzerland. W. R. Tomlinson, works manager, will be in charge during the absence of Mr. Blood.

Agitators Grilled by Senators

Hearing at Pittsburgh Reveals Investigators' Contempt for Union Organizers Who Give Shifty Answers—Leader Formerly Was Employed by Government Employment Service at $250 Monthly—American Workers Express Satisfaction

PITTSBURGH, Oct. 13.—When Jason G. Brown, labor organizer, admitted under questioning by Senator McKellar at Saturday afternoon's session of the hearing held here by the senate committee on education and labor in connection with the steel plant strike, that the organizers and not the men turned down the request for a postponement of the strike until after the industrial conference, the cause of the strikers received a severe jolt. At the same time the belief was strengthened materially that the strike was nothing more than an attempt by the radical element to gain control of the American Federation of Labor.

Brown told of efforts made during the past year by the organizers to hold meetings at various steel plant centers in the Pittsburgh district; of frequent arrests and fines imposed on the labor leaders when they attempted to hold meetings after having been denied permits.

"How many steel employes were in the unions?" asked Senator McKellar. Brown was unable to give a satisfactory answer. "Why is it we can't get the number of employes in the unions?" exclaimed the senator. "It seems impossible to ascertain from any of the organizations how many men are unionized. That is one thing we are trying to discover."

"Do you know whether a good many of those who have gone out have returned to work?" asked Senator Sterling.

"I have heard it in a general way," responded Brown.

"Would you admit that quite a number had gone back?" the senator continued.

"I might say for the sake of argument that there have been," admitted Brown.

Was Employed by Government

Senator Kenyon delved considerably into Brown's earlier career, asking him about his activities in and about Seattle during one or two outbursts of radicalism there. Brown said he had been employed in the government employment service at a monthly salary of $250 until congress failed to pass the appropriation for this service. Before the war, he said, he was president of the international timber workers' union, and he came to Pittsburgh about a year ago to assist in organizing the iron and steel workmen.

Naturalizing Foreigners to Vote

During his testimony Brown attempted an oratorical peroration on American institutions, which "our forefathers in the Revolutionary war, among them mine, fought for."

The oratory was a little too much for Senator Sterling, who in a deliberate way addressed the witness: "Mr. Brown, you speak of men whose forefathers established American institutions. Is not the great body of strikers here now composed of men other than those who claim as their forefathers those who fought in the Revolutionary war? Are they not the men who have been persuaded into this strike, and are they not the men on whom you have most depended in holding these meetings to join the strike and for whom you have carried on this campaign? And further, as part of the same question, are not the descendants of the men who fought in the Revolution the men who are staying back and remaining in the mills?"

"That is a hard question to answer," replied the witness. "As to the first part of the question, I will say yes. As to the Americans staying in the mills, I will say in some places it is true and in some places it is not."

"And is it not a matter of fact," pursued the senator, "that the great proportion of foreigners who are out on strike are unnaturalized and are not citizens of the United States?"

"I think a large percentage of them are, but I cannot give them in per cent," said Brown. "We have been trying to get the strikers naturalized, and the reason we are trying to is so we can vote men out of office and put in others to make fairer laws. So we have a selfish reason."

"Then you are not depending upon Americans, but must depend upon getting foreigners naturalized at the earliest possible date to obtain reform?" said Senator Sterling. Brown replied that the people "in this part of the country" are not acting wisely in electing men to office in this way.

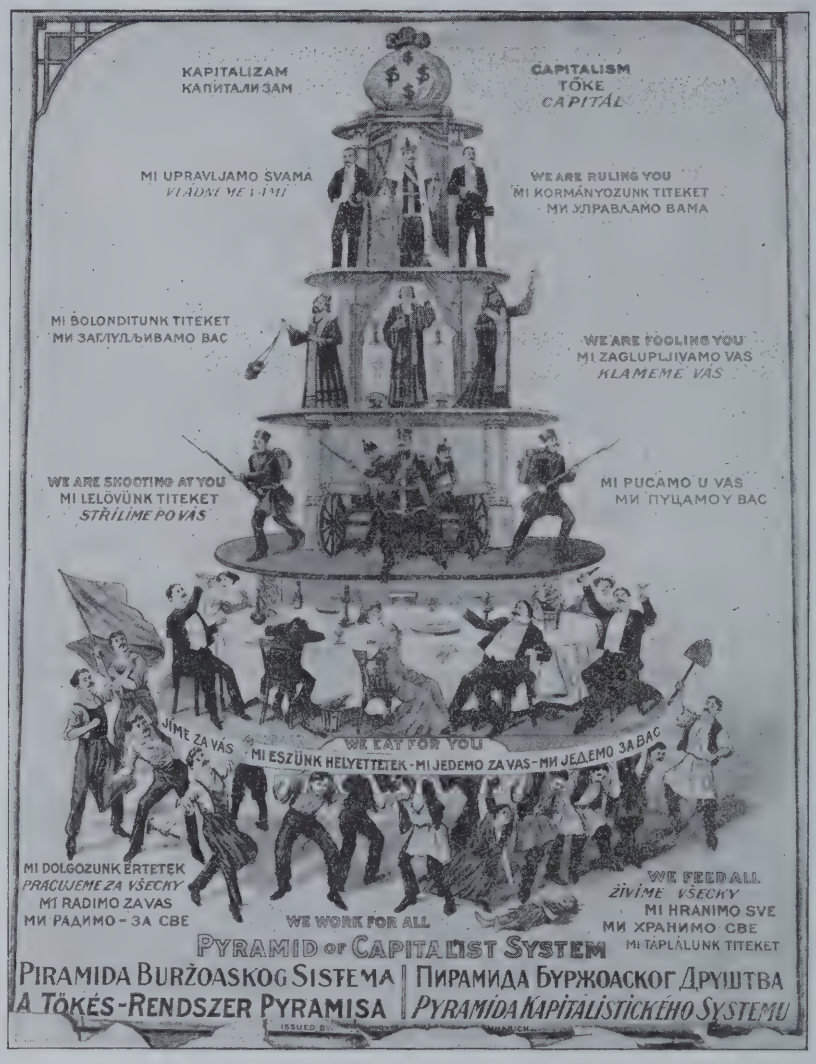
Senator McKellar said: "I want to call your attention to the fact that at Clairton yesterday (Friday), when I asked a crowd of perhaps 125 or 150 strikers how many there were who were Americans, or who had become naturalized Americans, and asked them to raise their hands, there were only three who held up their hands. It is a thing which must give us all very great concern."

The witness spoke of the refusal of Judge Gary to confer with strike organizers and said: "The feeling of the organizers was that if they did not get a conference, that if they did not have something to tell the men of some definite achievement, that the thing would go on. The feeling was generally on the part of the organizers that if this strike was not called under the direction of the organization, and thereby some discipline maintained, that it would be called here and there, and the whole thing would fail."

"Then," demanded Senator McKellar, "it was the organization?" "No," said the witness. "It was not the men, was it?" questioned the senator. The witness went into a long and evasive explanation.

Committee Seeks Only the Truth

Senator McKellar interrupted. "Let me call your attention to this fact," he said. "This committee is undertaking to get to the truth of this whole matter—the living truth. It has no ax of any kind to grind. Yesterday (Friday) this committee interviewed quite a body of strikers at Clairton, and I was impressed—I do not know how it struck the other members of the committee—I was convinced that these men were exceedingly reasonable, and that a man like you could have gone to these men and said, 'Here is the President of the United States, the man who is responsible for law and order in our country, the man who is responsible for square dealing in our country, the man who is chief executive of our land; he has asked us to postpone this matter until we can call representatives of capital and labor together, until they can get this matter adjusted to the benefit of all.' A man



Foreign Agitators at Work in America

THE influence of foreign-born radicals among the alien workmen in the United States is shown by the above reproduction of lithographs seized by the authorities in a recent raid on some of the foreigners' homes in Monessen, Pa. In one instance the picture was found on the wall above that of a religious portrait. In addition to the American language four of the leading Slavish tongues are used to describe the meaning of "the pyramid of capitalist system." The pictures were printed in colors and the flag waved by the man at the left of the lower group is red. "We work for all. We feed all," is the caption given the lower group. The leisure class about the banquet board "eat for all." Above, the soldiers say "We are shooting at you." Higher still is the clergy "fooling you," and over them are the rulers, while above all is gold, or capital.

It is a portrayal of the imaginings of the fanatic on sociological problems, but is important to this country in showing how ideas born centuries ago among the downtrodden of Europe and Russia are still fermenting in the United States. The soldiers are of Slavish character; the high church is depicted as a dominating factor, something entirely false in its application to this country. The figures above the churchmen represent foreign royalty—all inapplicable to this country and conditions obtaining here, although with sinister influence on the uneducated and unamericanized.

like you could have told that body, and they would unanimously have approved. The organizers did not tell the men that at any time." The witness answered that they could not have told that to men because they could not hold meetings. Senator McKellar continued: "Didn't you gentlemen who organized these men, especially these foreigners, so many who could not speak our language, didn't you think you were taking a great responsibility to call those men out on a strike or to continue that call, when here was the President, to whom we all owe respect at all times, whoever he may be, when he was asking in the interests of the whole people, not of any class, that the matter be deferred simply until picked men, representing all classes and all organizations of men in our country, could be gotten together and devise ways and means of settling this whole thing?" "It is a difficult thing, Senator; you see, we all look at it from one side," Brown answered. "Here is the President, whom you say is friendly to you," the senator declared. "Yet you turn down that friend. You gentlemen turn down the man who stood by you in order to get even with a man who would not confer with you."

Senators Kenyon, Sterling, Phipps and McKellar arrived here early Friday morning and started on a trip through the Monogahela valley. Opportunity was afforded the senators to visit the plants of the Carnegie Steel Co., at Homestead, Duquesne and Clairton and the National works of the National Tube Co., at McKeesport, the homes of workmen on strike and at work, which John Fitzpatrick had described as hovels, and to interview the men at work and on strike. In an interview as to conditions at the mills, Senator Phipps said that he found the mills at Homestead and McKeesport running normally and those at Clairton, somewhat crippled but showing a good recovery. The men interviewed at the plants expressed themselves as well satisfied with working conditions and wages. Strikers generally gave as reasons for being out that they wanted more money, shorter hours, that they were not being paid for overtime or that they could not live on what they were earning. Few men at work at the plants visited had been asked to join the unions. The senators found plenty of evidence that workmen had been intimated either directly or indirectly through members of their families. Figures were provided the senators as to the operations at the Homestead works of the Carnegie Steel Co., which showed a steady and constant increase in the number of men reporting for work from Sept. 24, when the attendance was 62.1 per cent of the total, up to and including the day of the visit, Oct. 10, when 75.8 per cent of the men reported.

At the Clairton works it was found that 2600 men are now at work.

Steel Earnings Are Improving

Third Quarter's Operations of Lackawanna Steel Co. Results in Recovery From Deficit of Previous Three Months—Improvement in All Steel Lines is Indicated—Good Showing by Other Companies is Suggested

BY JOHN W. HILL, FINANCIAL EDITOR

THE showing of the Lackawanna Steel Co., in its report for the third quarter of the year, the first public exhibit of earnings for the period of any of the large steel companies, indicates the improvement that had taken place in the industry from the close of the June quarter to the beginning of the attempted steel strike on Sept. 22. With earnings of $343,327 for the three months operations ended with Sept. 30 as against a deficit of $233,066 for the previous three months, the Lackawanna company shows a strong recovery. The company was affected to an unusual degree by the rigors of the readjustment period, because of the nature of its output, which is confined largely to heavy steel materials, including rails, merchant bars, structural shapes, plates, etc. Most of these lines have not shared in the recovery that was enjoyed months ago by the lighter products.

During the third quarter, however, improvement in the building construction industry and the beginning of some buying for railroad account is reflected in Lackawanna's earnings. As soon as labor difficulties disappear the company promises to share freely in the expected period of pronounced prosperity. The enormous potential accumulated demand of the railroads, it is indicated, will assure tremendous buying on their part for several years. Some estimates place the needs of the transportation lines at 5,000,000 tons of rails, while rolling stock and equipment of all kinds are in a run down condition and much material will be required to restore them to an efficient basis.

No extensive buying, of course, may be expected from the roads until their future is settled. Director General Hines announces that he is proceeding with plans to turn the roads back to their owners, per schedule, at the first of the year. In the meantime congress is desperately struggling with the problem and seeking a solution that will satisfy all factions—something that is impossible. The bill introduced by Senator Cummins has attracted most conspicuous attention of any of the ideas advanced in congress. The measure has drawn the fire of the labor unions because it contains an antistrike provision.

Congress is faced with the necessity of framing some sort of a plan for the return of the roads within the next two and one-half months and doubtless as soon as the peace treaty is out of the way it will concentrate its attention upon this problem. The railroad brotherhoods are pushing their propaganda for nationalization of the roads but the American public from all manifestations of general opinion is opposed to this proposal.

The showing of the Lackawanna report has aroused speculation respecting the earnings, during the quarter, of the other large companies in the industry. Both the United States Steel Corp. and Republic Iron & Steel Co. reports will appear soon and they are expected to disclose even better improvement than that of Lackawanna.

The stock market continues unshaken in its conviction that the steel industry will win the fight for the open shop and that after the attempted strike has definitely cleared away, the industry will enter into an era of tremendous prosperity. Despite the depressing influence of the exchanges, demands for steel continue to flow in from many parts of the world. Steel common stock has been leading the industrial list on the New York stock exchange in a steady advance for a week and it is evident that the financial community has great faith in the future.

The exchange situation may undergo some improvement as a result of a conference to be held in the East within the next two or three weeks of representatives of the treasury department, the federal reserve board and the department of commerce with leading bankers from the most important business centers of the United States and delegates from Great Britain, France, Italy, Belgium, and possibly other nations of Europe. Remedial measures will be considered at this meeting in an effort to work out some plan for satisfactory regulation of the financial interchanges between nations.

Lackawanna Steel Profits Show Some Gain

Profits of the Lackawanna Steel Co. during the third quarter of 1919 were $343,327, an encouraging exhibit following the deficit of $233,086 during the preceding three months. The best quarter of the year, however, was the first, when net profits reached $1,207,729. None of the three months periods of 1919 compares favorably in point of earnings with 1918 quarters. The September quarter of last year yielded profits of $3,056,286.

For the nine months of the year profits were $1,317,350 as compared with $9,839,102 in the corresponding period in 1918. Unfilled orders on September 30 were 178,981 gross tons as against 451,405 on the same date in 1918, and 122,399 tons on June 30 of this year.

As shown by the accompanying comparative income accounts for the three quarters of this year and the third quarter of 1918 there were variations in the amounts reserved for extinguishment of minerals and depreciation. The high point for mine extinguishment was reached in the third quarter of 1918 with $137,907, while the smallest sum, $45,906, was charged off from earnings in the first quarter of 1919. The comparative income accounts for the three 1919 quarters and third quarter of 1918 follow:

	Third quarter 1919	Second quarter 1919	First quarter 1919	Third quarter 1918
Total net after taxes and other expenses	$1,184,674	$446,757	$1,997,991	$3,935,719
Deduct bond and other interest:				
Lackawanna Steel Co.	228,180	227,667	230,460	233,156
Subsidiary companies	40,675	41,091	41,925	43,020
Balance	915,818	177,997	1,725,667	3,659,542
Less appropriations:				
For extinguishment of minerals	77,094	63,956	45,906	137,907
Depreciation and renewals	495,396	347,127	472,651	465,348
Profit for third quarter	343,327	*233,086	1,207,729	3,056,286

* Deficit.

Machinery Sellers Marking Time

Tendency Among Buyers to Postpone Purchases Until Labor Situation Clears is Marked —Inquiries Are Numerous—Heavy Demand From Automotive and Allied Industries Creeps Eastward—Crane Sales Negligible

CLARIFICATION of the labor atmosphere is the one thing necessary, it is thought to release much pent-up machinery and equipment business. While there has been no decline in the rate of inquiry, particularly throughout the Middle West, numerous orders have been held up because of the steel strike and this has had a discouraging effect upon sellers. As it becomes more apparent, however, that the strike has spent its force, a feeling of optimism is manifest and the trade believes that for the present period of waiting and of quoting on tentative lists, they will shortly be repaid with sizable orders.

Perhaps one of the largest lists on which action is deferred because of the strike is that of the New Departure Mfg. Co., Bristol, Conn., subsidiary of the General Motors Corp. It calls for $1,000,000 worth of equipment. The General corporation too will probably buy some machinery including presses for the plant of the International Arms & Fuse Co., Bloomfield, N. J., after it takes formal possession. These inquiries, with a number of others, tend to show that the demand for tools from the automotive and allied industries so heavy throughout the Middle West for many months, is creeping eastward. The North American Motors Corp., Pottstown, Pa., has a $300,000 list out and the International Motors Corp., Allentown, Pa., has started work on a $1,000,000 expansion. Smaller lists are out from the Parish Mfg. Co., Reading, Pa.; the Willys Corp., Elizabeth, N. J., and a tire concern. This tendency to defer action until the labor cloud lifts is noted in Chicago and Cleveland as well. In the latter city, lists from the Hoffman Heater Co., Lorain, O., and the Youngstown Pressed Steel Co., Youngstown, O., are receiving attention. Nothing definite is obtainable regarding the tool requirements of the projected Cleveland plant of the Fisher Body Corp., Detroit, but since a $10,000,000 plant is planned, they will be large, including many presses. Several smaller inquiries are out for drop hammers, boring mills, etc.

Prices continue their upward trend. It is reported in Chicago that millers have been advanced 10 per cent while a Cincinnati, O., manufacturer of vertical boring mills has increased his price a like amount. In Pittsburgh, prices are almost up to the highest point prevailing during the war. Deliveries continue to be deferred from 8 to 10 weeks and in many cases even further.

Crane awards are at a low ebb. Hubbard & Co., purchased two cranes for its Milwaukee plant. Other purchasers include the Merritt Mfg. Co., Lockport, N. Y., McIntosch & Seymour, Auburn, N. Y., Brewer Drydock Co., Staten Island, N. Y., and M. W. Kellogg & Co., Jersey City, N. J. The latter company will buy several overhead cranes a little later. W. R. Grace & Co., New York City; Richards Mfg. Co., Bloomsburg, Pa.; Turner, Vaughn & Taylor Co., Cuyahoga Falls, O., and the Klein Iron Works, Bellevue, O., all recently made inquiry for prices on cranes.

Demand From Automotive Industry Reaches East

DEMAND for machine tools by the automotive and allied industries, which has been so prevalent throughout the Middle West during the past several months, gradually is being extended to the east. Actual buying has not assumed large proportions so far but sizable inquiries are noted, and others seem not far off as negotiations affecting several important projects in that branch of industry are being consummated.

The largest list current is one involving about $1,000,000 worth of machine tools for the New Departure Mfg. Co., Bristol, Conn., a subsidiary of the General Motors Corp. For some weeks past, the New Departure plants have been undergoing considerable enlargement and some equipment has been purchased from time to time. The present list is by far the largest so far issued. Another large list of equipment, approximately $300,000 worth, is to be purchased by the North American Motors Co., Pottstown, Pa. The North American Co. recently was merged with the Bethlehem Motors Co., Allentown, Pa., which has just been awarded a $10,000,000 contract from England. The International Motors Corp., also of Allentown, Pa., is starting on a $1,000,000 expansion program, which will involve considerable machine tool equipment.

Considerable equipment will be required for the Reading, Pa., plant of the Parish Mfg. Co., which is to be enlarged for the manufacture of heavy automobile frames. The Parish company, with plants in Reading and Detroit, has just been taken over by the Spicer Mfg. Corp., Plainfield, N. J., manufacturer of universal joints and shafts for automobiles, along with the Sheldon Axle & Spring Co., with plants in Wilkes Barre, Pa., and Chicago.

With the taking of formal possession of the plant of the International Arms & Fuse Co., Bloomfield, N. J., by the General Motors Corp. within a few days, heavy machine tool requirements are likely to develop. Much pressing machinery will probably be desired. Another northern New Jersey plant, the Duesenberg plant of the recently organized Willys Corp., at Elizabeth, will be greatly enlarged, thus requiring considerable new machinery for the manufacture of a new 6-cylinder car. The



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Lee Tire & Rubber Co., Spring Mills, Pa., expending about $60,000 upon plant expansion, is in the market for a small list of tools.

A Cincinnati manufacturer of vertical boring mills has advanced prices 10 per cent. Increases are in prospect for the near future by other manufacturers of machine tool equipment.

Crane inquiries of the past week include a 7½-ton overhead for export by W. R. Grace & Co., 7 Hanover square, New York City. The Richards Mfg. Co., Bloomsburg, Pa., is in the market for a 10-ton overhead crane, with 50-foot span, Pawling & Harnischfeger have been awarded two 5-ton wall cranes by McIntosh & Seymour, Auburn, N. Y. The 75-ton overhead crane for the Duquesne Light Co., Pittsburgh, recently mentioned, went to the Niles-Bement-Pond Co. The Brewer Drydock Co., Staten Island, N. Y., bought a 10-ton locomotive crane from the Buffalo Hoist & Crane Co., Buffalo. M. W. Kellogg & Co., Jersey City, N. J., has purchased a 15-ton used Ohio locomotive crane from the Industrial Equipment Co., 149 Broadway, New York. The Kellog company later will buy several overhead cranes.

Pittsburgh Market Has Better Tone

WITH the steel plant strike steadily losing its force and normal conditions gradually being restored in the Pittsburgh district, a more cheerful sentiment is beginning to develop in the machinery and machine tool trade. Orders for cranes, against which inquiries have been out for some time from steel manufacturers, are expected to be closed as soon as the labor atmosphere is cleared. Hubbard & Co. has placed its order for two cranes for its Chicago plant with the Milwaukee Electric Crane Co. One 10-ton and one 5-ton are involved. This company also has taken a 10-ton crane for the Merritt Mfg. Co., Lockport, N. Y., veneering machinery manufacturer. Fair demands are being made upon the makers of lighter equipment, but no big lists have come out lately. Makers are well booked and are quoting prices only slightly below the war quotations and not guaranteeing deliveries short of eight and 10 weeks.

Large Order Held Up by Strike

WHILE demand for machine tools continues excellent in the Chicago market, some effects of the steel strike are being noted and in several cases business is being held up until it is settled. One instance has come to note in this city where a large manufacturing concern has deferred buying considerable equipment because the contract calling for an addition to its plant is delayed until the strike is ended. It is believed the order for the machinery will come through as soon as the steel strike is over. A general advance of 10 per cent has been made on millers. Deliveries are becoming more advanced and as a rule 60 to 90 days are required on most lines.

The Samson Tractor Co., Janesville, Wis., division of the General Motors Corp., is buying its equipment in small lots instead of putting out an inquiry for its entire requirements at one time. The Nash Motors Co. is preparing to issue a list of the equipment needed for its new Milwaukee plant, which will be heavy. A new manufacturer of refrigerator machinery has obtained space for its manufacturing operations and is about ready to buy its machinery.

Tool Orders Withheld; Inquiries Are Numerous

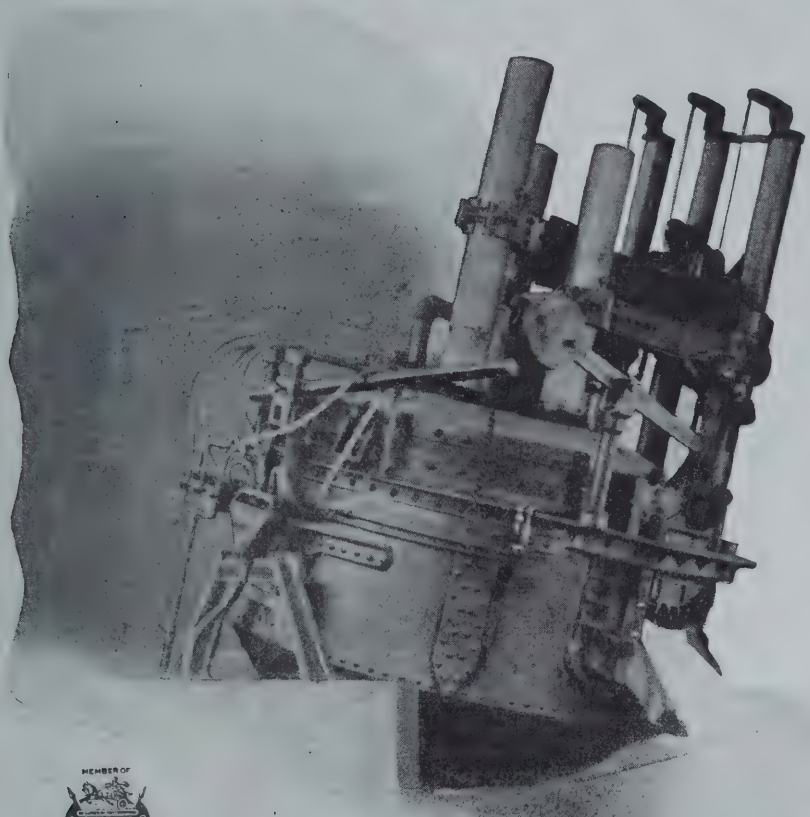
DEFERRED action upon needed machine tools because of the steel strike is the chief concern of the moment with sellers of equipment in the Cleveland market. Many companies which have perfected their building plans now are blocked by the element of uncertainty in the labor market and are postponing their machinery purchases accordingly. With the end of the strike in sight, however, much business is expected to be closed shortly. Sizable lists are issued by the Hoffman Heater Co., Lorain, O., which is erecting a plant, 96 x 300 feet, costing $40,000, and the Youngstown Pressed Steel Co.,

Machinery Exports for August Show Further Reduction

UNSTABILIZED exchange further is reflected in the continued decline of machine tool and machinery exports from the United States. In June, these aggregated $8,606,565; in July, $4,440,819, and from the statistics just issued by the bureau of foreign and domestic commerce, the total for August shows another reduction of $591,676 to $3,849,143. England maintains her position in the van of the other countries, with $971,844, as against $1,475,698 in July. France still is second with $785,558 as compared with $1,130,486 the preceding month. Japan has come up from eighth place in July, with $86,437, to third in August, with $432,387, that place having been held by Belgium in July. Belgium takes fifth place in August with $242,701, fourth being held by Canada with $387,322. Detailed figures follow:

	Lathes		Other Machine Tools		Sharpening and Grinding Machines		All other Metalworking Machinery		Total	
	August	July	August	July	August	July	August	July	August	July
France	$118,536	$107,663	$207,829	$ 235,944	$ 65,985	$174,644	$ 393,208	$ 612,235	$ 785,558	$1,130,486
England	327,519	335,390	244,835	558,795	58,252	100,334	341,238	481,179	971,844	1,475,698
Italy	264	8,136	40,562	29,250	....	8,601	17,405	68,577	58,231	114,564
Belgium	45,213	174,435	3,726	53,284	60,802	43,278	132,960	287,041	242,701	558,038
Japan	69,952	6,318	40,594	16,348	19,832	13,412	302,009	50,359	432,387	86,437
South America	26,136	49,604	18,302	18,912	6,250	15,787	33,566	144,716	84,254	229,019
Canada	27,652	27,225	69,867	50,285	18,282	17,485	271,521	86,741	387,322	181,736
China	10,075	555	895	2,007	481	3,046	7,018	4,777	18,469	10,385
Netherlands	27,148	11,157	12,820	7,051	1,998	3,900	5,409	21,840	47,375	43,948
Norway	2,288	7,412	8,587	12,781	1,490	1,078	12,228	11,338	24,593	32,609
Sweden	13,625	19,208	2,442	10,402	6,867	29,341	22,238	66,376	45,172	125,327
Denmark	468	5,934	26,381	18,136	10,149	9,931	12,754	36,403	49,752	70,404
Russia in Europe	....	....	57,000	436	....	....	.....	.....	57,000	436
Spain	19,550	22,388	19,425	15,206	6,107	5,737	56,894	66,510	101,976	109,841
Cuba	31,845	2,585	34,815	10,880	6,309	1,166	16,225	7,355	89,194	21,986
British India	5,980	1,721	13,252	1,200	3,617	240	137,588	33,156	160,437	36,317
Total	$726,251	$779,731	$801,332	$1,040,917	$314,987	$453,545	$1,843,253	$2,056,701	$3,849,143	$4,440,819
All other countries	49,183	60,460	114,137	49,465	48,566	25,565	80,992	78,098	292,878	213,588
Grand Total	$775,434	$840,191	$915,469	$1,090,382	$314,987	$453,454	$1,843,253	$2,056,701	$3,849,143	$4,440,819

FARRELL-CHEEK STEEL CASTINGS





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THERE'S A DIFFERENCE

between Farrell-Cheek Electric Furnace Steel Castings and Electric Furnace castings in general.

Farrell-Cheek begins with a formula to suit the particular requirement—and from scrap to finished casting—the utmost skill and experience goes into its making. Producing castings of uniform higher quality.

Are you interested in consistently better castings—

Farrell-Cheek Steel Foundry Company

Maker of castings that are a little better than the next best

Sandusky, Ohio

STAFF

Say you saw it in THE IRON TRADE REVIEW

Youngstown O. which is building a $600,000 plant at Niles, O., 520 x 560 feet. The Ohio Machine & Tool Co., Kenton, O., will require a few tools for its machine shop addition and the S. Flory Mfg. Co., Bangor, Pa., requires a number of tools. The Torbensen Axle Co., Cleveland, still is in the market and is receiving quotations on drill presses. The Mossberg Pressed Steel Corp., Box 66, Attleboro, Mass., wants some power presses as well as a number of machine tools. It is understood that the McMyler-Interstate Co., Bedford, O., is getting ready to issue a sizable list of miscellaneous equipment. Some dealers are quoting on the $300,000 list issued by the North American Motors Co., Pottstown, Pa.

One interesting phase of the present day machinery market in the Middle West is the preponderance of small size inquiries. These continue to be received at a brisk rate and mainly call for one or two machines. The Fox Furnace Co., Elyria, O., wants a 36 x 36-inch x 12-foot planer. The Electric Steel & Forge Co., Cleveland, is taking quotations on 2500 and 3000-pound steam drop hammers. A 1500-pound drop hammer is sought by the Adams Axle Co., Findlay, O. Radial drills are wanted by the Wagner Steam Pump Co., Canton, O., and the National Radiator Co., Johnstown, Pa. A 4-foot radial is desired by the Bovaird Co., Bradford, Pa. The Columbus Heating & Ventilating Co., Columbus, O., wants a 25-inch lathe while the Steiner Mfg. Works, Erie, Pa., desires a 20-inch. The J. H. Miner Saw Works, Lumberton, Miss., wants a used 36-inch drilling machine. The Anderson Rolled Gear Co., Cleveland, is endeavoring to obtain a 42-inch Bullard boring mill and a used mill of the same size and type is desired by the Ohio Register Co., Wadsworth, O. A 60-inch boring mill is wanted by Shartle Bros. Machine Co., Middletown, O. O. E. Brown, 718 North Lawndale avenue, Chicago, wants 15 and 6-inch gear generators while a keyseater is sought by Arnold Creager Co., New London, O. R. L. Graham, Wiarton, Ont., wants woodworking machinery for his new plant.

While sales of tools have not been numerous or large, some bookings are reported. Most of these continue to come from the automotive industries. The Bean Spring & Mfg. Co., Massillon, O., organized recently with $500,000 capital, has closed on its machinery requirements to produce automobile springs and accessories. Several large items of machine tools and other shop equipment have been purchased by the Murray-Mylrea Co., Antigo, Wis., founder and machinist. The purchase includes a 36 x 48-inch x 10-foot planer and a 6-foot lathe. An order for 60 drills recently was booked by this company and now is being filled. The Packard Motor Car Co., Detroit, building a machine shop; the Hupp Motor Car Co., that city, erecting a plant addition; and the Cadillac Motor Car Co., also of that city, putting up a new plant, all have been recent purchasers of machinery in Cleveland, Detroit and elsewhere.

Much crane business is being held up by the strike. Inquiries for locomotive cranes, however, are fairly numerous, and a few awards recently have been made. Turner, Vaughn & Taylor Co., Cuyahoga Falls, O., is in the market for a 15 or 20-ton locomotive crane. The Klein Iron Works, Bellevue, O., also desires quotations on traveling cranes. T. L. Church, chairman of the board of control, Toronto, Ont., wants a cantilever crane.

As formally announced last week the Fisher Body Corp., Detroit, is forming an Ohio corporation for the purpose of building a $10,000,000 plant in Cleveland. No definite news regarding the machine tool equipment is obtainable, but a large number of presses, machine tools, etc., will be purchased. Dies, fixtures, etc., are being made at Detroit.

The project at Toledo, O., to be engineered by A. Bentley & Sons, and thought by some to be a shipyard, still is in abeyance. For it a huge tentative list of machine tool requirements was issued two or three weeks ago. It is understood that $1,000,000 capital already has been promised contingent upon the contract for the work being obtained by the Bentley company.

Other projects which now are before machinery sellers as promising outlets for their products include: A plant for the Milholland Machine Co., Indianapolis, recently incorporated at $1,200,000; new buildings for the Bridgeport Machine Co., Bridgeport, O., and the Cameron Tool Co., Moundsville, W. Va.; a factory for the Wheeler Transmission Co., Indianapolis; an engine manufacturing plant for the Chief Motor Co., Port Huron, Mich. to be erected on 10 acres purchased a few days ago; a 4-story plant for the Landis Machine Co., St. Louis, which will cost $245,000. A fire recently damaged the machine shop of the American Car & Foundry Co., Terre Haute, Ind., and it is thought that much equipment will have to be replaced. The James Holan Mfg. Co., and its subsidiary, the Holan Metal Products Co., Cleveland, are increasing their manufacturing facilities.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

TROY, N. H.—Bids closed Oct. 6 for a 4-story main building, 2-story, pickerhouse, 1-story boiler house and an extension to the present boiler house of the Troy Blanket Mills. The extensions will cost $500,000.

BEVERLY, MASS.—The United Shoe Machinery Co. has awarded a contract for a building to cost $275,000.

BOSTON.—The Commercial Metals Corp. has been organized with $500,000 capital. William B. Nash is president.

BOSTON.—Plans have been drawn for a foundry and machine shop to cost $160,000, at the Charlestown navy yard.

BOSTON.—Avery, Saul & Avery have placed a contract with the Austin Co., Cleveland, for a building, 100 x 200 feet, to cost $70,000.

CAMBRIDGE, MASS.—The Prest-O-Lite Co. is taking bids for an addition.

EVERETT, MASS.—The Bethlehem Steel Products Co. contemplates the erection of warehouses here.

FRAMINGHAM, MASS.—The Dennison Mfg. Co. has awarded a contract for a plant to cost about $200,000.

GARDNER, MASS.—The Kuniholm Mfg. Co. has been incorporated to make children's vehicles with $50,000 capital, by Hugo M. Kuniholm, C. Harry Kuniholm and others.

HOLYOKE, MASS.—The Cowan Truck Co. has let a contract for a plant, two stories, 100 x 200 feet, to cost $100,000.

HOLYOKE, MASS.—Plans are being drawn for a machine shop, two stories, 100 x 200 feet, for the



Van Dorn Iron Works Co.

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THERE'S nothing gentle about a dig from the lugs on the flat "feet" of a baby tank.

Talk about your "toe-holds." There's no comparison.

And think of the tremendous weight resting on these narrow lugs, sufficient to crumble up any floor but a KREODONE Wood Block Floor. It stands the "gaff"—and likes it. See the excellent condition of this floor in spite of it?

The reason?

KREODONE floor blocks are of selected long leaf yellow pine, treated with our special, PURE—*mark the word*—creosote oil, which not only preserves the blocks indefinitely but makes them free from the very common, sticky, tarry smudge and other adulterations.

Specify KREODONE floors in your contracts. They stand the severest wear and give the aggressive service which results in the greatest economy and durability.

Write our Engineering Dept. for FREE analysis and specifications on any space you want to cover—also our illustrated KREODONE Catalog.

Get the *Genuine KREODONE* Blocks
Watch that Spelling—it means Service

REPUBLIC CREOSOTING COMPANY, Indianapolis, Indiana

Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

BRANCH OFFICES:

315 Peoples Gas Bldg., Chicago
206 Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland
31 Transportation Bldg., Philadelphia
828 Plymouth Bldg., Minneapolis
445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hammond Bldg., Detroit

National Blank Book Co., to cost $100,000.

LYNN, MASS.—The Davis Lynn Storage Battery Co. has started work on an addition, 50 x 200 feet.

PIGEON COVE, MASS.—The Cape Ann Tool Co. contemplates an addition to house a drop forge shop.

SOUTH EVERETT, MASS.—The Beacon Oil Co. has let a contract for a refining plant here.

SPRINGFIELD, MASS.—The United Mfg. Co. contemplates a 1-story machine shop addition and a boiler room, to cost $12,000.

WALTHAM, MASS.—Work has been started on a machine shop, 82 x 150 feet, for W. H. Nichols.

WAREHAM, MASS.—The Cape Cod Shipbuilding Corp. has been incorporated by Charles Gurney and others. Plans of the company have not been announced.

WATERTOWN, MASS.—The government has let the contract for a storehouse for machinery, 42 x 362 feet, at the United States arsenal, to cost $31,528.

WILLIAMSETT, MASS.—G. Haarmann & Co., Inc., iron worker, has let the contract for a plant, two stories, 40 x 100 feet.

WOLLASTON, MASS.—The Tubular Rivet & Stud Co. has let the contract for 2-story, 40 x 230-foot, 80 x 200-foot and 87 x 225-foot factories.

WORCESTER, MASS.—A 4-story, 61 x 332-foot plant is being erected for the Waldon Worcester, Inc., manufacturer of wrenches, etc.

WORCESTER, MASS.—The Osgood Bradley Car Co. will build a 1-story, 90 x 300-foot plant addition at a cost of $45,000.

WORCESTER, MASS.—The Worcester Pressed Steel Co. plans a 1-story, 90 x 150-foot storage building, to be equipped with an electric traveling crane

PAWTUCKET, R. I.—The Collyer Insulated Wire Co. has let the contract to Fred T. Ley & Co., Inc., Springfield, Mass., for a plant.

PROVIDENCE, R. I.—The Johnson Tool Co. has been incorporated by Adolph E. Johnson, Andrew E. Johnson and J. L. Anderson.

BRIDGEPORT, CONN.—The Hawthorne Mfg. Co. has increased its capital from $200,000 to $297,000. E. A. Hawthorne is one of the directors.

HARTFORD, CONN.—The Fafiner Bearing Co. will erect a 36 x 96-foot factory addition.

HARTFORD, CONN.—The general contract for an $80,000 addition, 5-stories, 48 x 154 feet, to the plant of the Corbin Cabinet Lock Co. has been awarded by the American Hardware Corp. to the J. H. Crozier Co.

NEW BRITAIN, CONN.—The North & Judd Mfg. Co., hardware, has increased its capital from $1,500,000 to $2,000,000, for the purpose of financing the W. & E. T. Fitch Co., New Haven, just recently purchased. The Fitch concern manufactures a kindred line of hardware.

North Atlantic States

BATAVIA, N. Y.—The E. E. Peck Co., hardware specialties, recently was incorporated with $12,000 capital, by W. J. Ives, D. K. and E. E. Peck.

BROOKLYN, N. Y.—The Art Craft Metal Stamping Corp. recently was incorporated with $50,000 capital, by S. J. and D. Shapiro, 176 Bergen street.

BROOKLYN, N. Y.—The Karbo Bronze Foundries has been incorporated with $20,000 capital by J. M. Plummer, N. McGlashan and C. M. Stevenson, 60 Seabring street.

BUFFALO.—The Dairy Machine Corp., dairy machinery, recently was incorporated with $50,000 capital, by W. H. Watson, J. L. Kinney and B. G. Weber, 925 Fidelity building.

FRIENDSHIP, N. Y.—The American Crane Co. has been incorporated with $15,000, to make machinery, by W. A. Barber, W. B. Foster and E. D. Sheppard.

HUNTINGTON, L. I., N. Y.—The Collins Motors, Inc., plans an assembling plant, 1-story, 100 x 350 feet. A. H. Collins is president.

LOCKPORT, N. Y.—The Stouts Mfg. Co., motor and auto devices, has been incorporated with $300,000 capital, by H. W. Lowell, E. H. Huber and L. F. Stout.

NEW YORK.—The Adriance Machine Works, Inc., has been reorganized with $215,000 active capital.

NEW YORK.—The Woodlawn Metal Co. recently was incorporated with $30,000 capital, by H. and A. Dreyer and J. B. Finkelstein, 38 Park Row.

NEW YORK.—The Atlas Sheet Metal Works recently was incorporated with $5000 capital, by S. Sigal, H. and W. Cooper, 1723 First avenue.

NEW YORK.—The Never-Fail Carburetor Co. has been incorporated with $5000 active capital, by J. H. and J. B. Ballantine, 50 East Forty-second street.

NEW YORK.—The Ship Fender Corp. has been incorporated with $10,000 capital, by G. Stewart, W. Endemann and L. W. Wagner, 1163 Fulton avenue.

NEW YORK.—The Steam Engine Automobile Corp., motors, engines, machines, recently was incorporated with $100,000 capital, by W. J. Martin, E. J. Widmer, 10 East Forty-third street, and J. N. Lewis, Hotel Manhattan.

NEW YORK.—Alloys & Products, Inc., recently was incorporated with $150,000 capital, by M. I. Phillips, G. J. Rosen and S. H. Sternberg, 238 Broadway.

NEW YORK.—The United States Pan Mfg. Corp., metal utensils, recently was incorporated with $300,000 capital, by E. H. Lockwood, C. Fox and H. Horton, 66 Broadway.

NEW YORK.—The American Felting Machine Co. recently was incorporated with $200,000 capital, by S. F. Peterkin, L. Rivers and C. A. Dearborn, 439 Manhattan avenue.

NEW YORK.—The Cling Blade Scissors Corp. has been incorporated with $100,000 capital, by A. Littauer, C. Storz and A. S. Herrfeldt, 473 West 158th street.

NEW YORK.—The Automotive Specialty Corp. recently was incorporated with $15,000 active capital, by A. Pinover, E. Rogow and L. E. Bogel, 311 West Fifty-ninth street.

NEW YORK.—The Build-Craft Electric Mfg. Co., electrical appliances, has been incorporated with $10,000 capital, by F. Sauozuk, C. Kriser and V. J. Lohn, 25 Church street.

NEW YORK.—Klett & Soostmeyer, Inc., hardware and supplies, recently was incorporated with $25,000 capital, by H. Klett, H. Soostmeyer, 117 East 129th street, and H. A. Steinbock, 81 East 125th street.

NEW YORK.—H. B. Gordon, manufacturer of radiators, is erecting a building, two stories, 100 x 263 feet, at an estimated cost of $150,000. The Austin Co., Cleveland, has the contract.

NEW YORK.—The Berry & Foote Co., iron and steel products, has been incorporated with $50,000 capital, by A. C. Foote, J. H. Berry and G. F. Foote, Poughkeepsie, N. Y.

NEW YORK.—Waldes & Co., metal goods and novelties, has been incorporated with $1,000,000 capital, by L. Rothfeld, D. C. Lewis and E. D. Boyer, 141 Broadway.

NEW YORK.—The Eastern Steel & Wire Co. recently was incorporated with $1,250,000 capital, by G. D. Emmons, A. Scheff, and H. A. Huckle, 691 Fresh Pond road.

NEW YORK.—The Peerless Metal Decorating Co. has been incorporated with $25,000 capital, by E. and J. Rossotti and J. Garofalo, 542 West Broadway.

NEW YORK.—The Metallurgic Products Corp. has been incorporated with $50,000 capital, by G. W. Wylie, I. L. Anderson and W. P. Barker, 27 William street.

NEW YORK.—The Gravure Machinery & Equipment Corp. recently was incorporated with $100,000 capital, by L. Edel, R. S. Spitaleri and A. Hurwitz, 230 West 107th street.

NEW YORK.—The De Matteis Boiler System Co. recently was incorporated with $24,000 active capital, by A. De Matteis, E. Fasani and C. L. Zucca, 118 West Forty-ninth street.

NEW YORK.—Dwight P. Robinson & Co., engineer, 161 Broadway, is drawing plans for a foundry addition, 150 x 300 feet, to the plant of the Coshocton Iron Works, Monongahela, Pa.

NEW YORK.—The Automatic Expansion Co., metal specialties, recently was incorporated with $50,000 capital, by F. Roeger, E. Kuebler and L. Bach, 541 East Forty-eighth street.

NEW YORK.—The National Auto Accessories Co. has been incorporated with $25,000 capital, by L. Epstein, 127 West 112th street, H. Epstein, 25 Post avenue, and others.

NEW YORK.—The Empire Repair & Electric Welding Co. has been incorporated with $1,000,000 capital, by E. F. Luckenbach, R. C. Thackhara and P. Kuhne, 44 Whitehall street.

NEW YORK.—The New York Power, Steam & Engineering Corp. recently was incorporated with $52,500 active capital, by T. W. Barnes, S. E. Trumbull and A. V. Clements, Albany, N. Y.

NEW YORK.—The Monsoon Cooling System, Inc., ventilating apparatus, recently was incorporated with $25,000 capital, by J. F. Dailey, 819 West 180th street, M. Strunsky, 165 Broadway, and E. L. Farfield.

NEW YORK.—The American Keith Co., Inc., power fans, high pressure blowers, etc., has been incorporated with $100,000 capital, by S. K. Breene, 26 Cortlandt street; J. G. Snyder, 256 Broadway, and J. N. Regan, 109 West Seventieth street.

NEW YORK.—The United Foundries Corp., brass and aluminum foundry business, has been incorporated with $100,000 capital, by M. Ellins, 831 Lafayette avenue, G. Mennin, 90 Howard avenue, and W. Costello, 9 Guian street.

NEW YORK.—The Universal Shops, Inc., heavy hardware, engines, machinery, etc., has been incorporated with $25,000 capital, by D. E. Austin, 194 Rugby road, J. F. Montgomery and R. J. Kent, 1819 Beverly road.

NEW YORK.—The West Virginia Metal Products Corp., room 1409, 14 Wall street, is having plans prepared for a plant to include a brass and copper rolling mill, 1-story, 280 x 360 feet, a cast shop, 80 x 280 feet, and an office, store and shipping building, 1-story, 30 x 50 feet.

PORTCHESTER, N. Y.—The Auto Accessories Mfg. Co. has been incorporated with $5000 capital, by I. Rosenberg, M. Axelrod, 891 Fox street, and others.

ROCHESTER, N. Y.—The Producers Machine & Specialty Corp., machine shop, foundry and factory supplies, has been incorporated with $100,000 capital, by C. F. Bierbach, J. G. Carroll and J. G. Schreiner.

ROCHESTER, N. Y.—The Precise Mfg. Corp., machinery and tools, has been incorporated with $43,500 active capital, by H. L. Chapin, E. Lopperman and C. F. Hallick.

SNYDER, N. Y.—The Electro Refractors Corp. has been incorporated with $200,000 capital, by Walter H. Kelly, Luke E. Melward and Louis F. Bedders.

BEAVER FALLS, PA.—The Pittsburgh Seamless Tube Co. has broken ground for an addition 60 x 120 feet.

BOYERTOWN, PA.—A $50,000 plant addition will

be erected by the Boyertown Burial Casket Co., which when finished will be equipped with a machine shop.

EAST McKEESPORT, PA.—The Gleeson Mfg. Co., patterns, has been incorporated with $12,000 capital, by C. M. Wilson and others.

McKEESPORT, PA.—The Amper Iron & Metal Co. has been organized with $5000 capital by Robert Amper, Thomas Amper and A. M. Amper.

PHILADELPHIA.—Joseph T. Fowkes & Co., machinery, recently was incorporated with $30,000 capital, by Otto G. Mohr and others.

PHILADELPHIA.—Boyer & Crawford has a permit to erect an engine and boiler house, one story, 49 x 62 feet, to cost $40,000.

PHILADELPHIA.—The Griffith Tool Works has awarded a contract to D. O'Dea for a 1-story forge shop addition, 50 x 50 feet, to cost about $5000.

PHILADELPHIA.—The Newton Machine Tool Works, Inc., recently awarded a contract for a machine shop, one story, 102 x 170 feet, to cost $50,000.

PITTSBURGH.—The Meyer Wagon Co. has let the contract for a 3-story factory to cost $47,000.

PITTSBURGH.—The A. Garrison Foundry Co. has let the contract for a foundry 120 x 190 feet.

READING, PA.—The Parish Mfg. Corp., with plants in this city and Detroit, has just been taken over by the Spicer Mfg. Corp., a Virginia organization. In addition, the Spencer Co. has also taken over the Sheldon Axle Spring Co. The Parish plant at Reading will be enlarged.

STROUDSBURG, PA.—The Bennet-Guyer Co. has leased the George E. Stauffer foundry here.

BLOOMFIELD, N. J.—The General Motors Corp., New York, will take possession of the plant of the International Arms & Fuze Co., of this city, this week. The new owners will use the works for the manufacture of automobile parts.

BLOOMFIELD, N. J.—S. P. Townsend & Co., manufacturer of lawn mowers, etc., has awarded a contract to the Austin Co., Cleveland, for a building, three stories, 60 x 240 feet. The contract, which totals an expenditure of $150,000, covers repairs and alterations to the company's present building.

CAMDEN, N. J.—The Corson Corp., metal fixtures, has been incorporated with $100,000 capital, by Ralph Corson, P. H. Dudley and H. C. Helm.

CAMDEN, N. J.—Daly, Wielandt & Co., 2725 Sherman street, steel and structural iron construction, has been incorporated with $25,000 capital.

CAMDEN, N. J.—The Millville Cast Iron Products Corp., 419 Market street, has been incorporated to manufacture castings, etc., with $50,000 capital.

EDGEWATER, N. J.—The United States Aluminum Co. has awarded a contract to the Turner Construction Co., New York, for plant extensions.

ELIZABETH, N. J.—The Oorley De Wolfe Co., pipe fittings, etc., has been incorporated with $300,000 capital, by Raymond Dawson, W. R. Wynne and Emil Neblo.

HARRISON, N. J.—A $40,000 rolling mill will be erected here by the Driver-Harris Co.

HARRISON, N. J.—The Henry T. Worthington Co., pump manufacturer, has plans for a $90,000 plant addition.

NEWARK, N. J.—George Stengel, Inc., will erect a 1-story boiler house.

NEWARK, N. J.—The Prest-O-Lite Co., Inc., has plans for a plant here to cost $140,000.

NEWARK, N. J.—William S. Roe has purchased the plant of the National Saw Co.

NEWARK, N. J.—The Lidgerwood Mfg. Co. has filed plans for a one-story pattern shop.

NEWARK, N. J.—The United Die & Tool Works has been incorporated with $200,000 capital, by W. J. Peck, F. P. Ballinger and L. S. Meyers.

NEWARK, N. J.—The New York Motor Device Co. has been incorporated with $100,000 capital, by William O. Huguley, G. A. and Herbert Knillschritt.

NEWARK, N. J.—To manufacture electric signals, the Electric Signal Mfg. Co., Inc., has been incorporated with a capital of $100,000. Incorporators include Harry H. Packing, Charles O. Geyer and Stanley L. Gedney Jr.

NEWARK, N. J.—Plans have been filed by the Prest-O-Lite Co., Inc., for a main building, 34 x 132 feet, which will be used for office and factory purposes; a 1-story, 31 x 351-foot charging building and several other structures, costing in all $140,000.

TRENTON, N. J.—The Mercer Motors Co., Whitehead road, will expend $650,000 for enlargements and improvements including new machinery.

TRENTON, N. J.—The Super Motor Co. has been incorporated with $100,000 capital, by Charles A. Pidcock, Morrisville, Pa., Godfrey W. Schroth and others.

BALTIMORE.—The Reus Bros. Co. will build a plant here to make automobile parts.

HURLOCK, MD.—With a capitalization of $250,000, the Eastern Shore Can Co. has been organized, and will build a plant with a daily output of 250,000 tin cans. The new company intends to erect a 2-story building, 100 x 150 feet. W. M. Wright, Preston, Md., is president.

Central States Activity

APPLETON, WIS.—The Reliance Motor Truck Co. plans a 4-story plant addition, 70 x 300 feet, to cost $100,000.

CARROLLVILLE, WIS.—The United States Glue Co. has awarded a contract to the Northwestern Bridge & Iron Co. for a power house addition.

CHIPPEWA FALLS, WIS.—A farm implement plant costing $150,000 will be erected by E. G. Pannier & Son Co. It will be 2-stories, 125 x 210 feet.

CHIPPEWA FALLS, WIS.—The Yates & Johnson Co. is erecting a gray iron foundry and machine shop at an estimated cost of $75,000. The main shop is 100 x 225 feet.

FOND DU LAC, WIS.—The Vulcan Mfg. Co., architectural iron and structural material, has broken ground for a shop addition, 60 x 100 feet, to cost $50,000.

KENOSHA, WIS.—The International Earth Boring Machine Co., Chicago, has purchased a site here, on which it is reported planning a plant to cost $250,000.

MANITOWOC, WIS.—The Manitowoc Plating Works recently completed a plant addition.

MANITOWOC, WIS.—The Aluminum Goods Mfg. Co. has awarded contracts for a rolling mill addition to its plant here. The building will be 300 x 340 feet and will cost $500,000.

MARATHON, WIS.—The Star Mfg. Co. has been organized with $1,000,000 capital to manufacture milking machines and other mechanical farm devices. John L. Sell of Wausau, Wis., is interested.

MERRILL, WIS.—The Merrill Iron Works has changed its corporate style to Merrill Machinery & Supply Co., and is adding a department for jobbing machine tools, machinery and supplies of all kinds.

MILWAUKEE.—The A. O. Smith Corp. has awarded contracts for the first of a series of new shop buildings. The building will be 160 x 740 feet.

MILWAUKEE.—The Vim Tractor Co., J. E. Kiefer, president, 835 Caswell block, will build a machine shop and assembly building 80 x 200 feet, costing $200,000.

MILWAUKEE.—The Ramstack & Sons Mfg. Co. has been incorporated with $100,000 capital to manufacture spark plugs and other gas engines ignition specialties.

MILWAUKEE.—The Standard Light Co. has been incorporated with $25,000 capital by David Stern, Morris Tax and David Seigel, to manufacture electrical fixtures and specialties.

MILWAUKEE.—The Res Mfg. Co., 2907 Meinecke avenue, hardware specialties, is taking bids for a 2-story plant addition, 30 x 75 feet, and is in the market for some new equipment.

OSHKOSH, WIS.—The Oshkosh Motor Truck Co. plans an addition.

RACINE, WIS.—The Splitex Radiator Co., organized some time ago to manufacture radiators, etc., has taken over the business of the M. Jensen & Co., sheet metal works, and is consolidating the factory in its new plant.

VALDERS, WIS.—William F. Cristel will build a machine shop, 50 x 120 feet, at an estimated cost of $15,000.

DETROIT.—The Hupp Motor Car Co. is having plans prepared for a plant addition.

DETROIT.—The Detroit Graphite Co., Twelfth and Fort streets, is having plans drawn for a plant addition.

DETROIT.—The Detroit Insulated Wire Co. is taking bids for additions. J. H. Hunter, 64 Wesson avenue, is president.

DETROIT.—The Cogshill Mfg. Co., West Warren avenue, will build an automobile accessories plant, 50 x 70 feet.

DETROIT.—The Union Smelting & Refining Co., New York, is reported considering the establishment of a plant here.

DETROIT.—Dodge Bros., according to a report, have purchased 600 acres near Mt. Clemens, Mich., as the site for a motor car parts plant.

DETROIT.—The General Aluminum & Brass Mfg. Co., East Grand boulevard and St. Aubin street, is taking bids for a power house.

DETROIT.—The Gilmore Marine Motor Co. recently was incorporated with $25,000 capital, by George Gilmore, 404 Twenty-fourth street, and others.

DETROIT.—F. A. Volbrecht, of the Bradfield Co., is erecting a plant at Wayne, Mich., to be devoted to the manufacture of automobile steering wheels.

DETROIT.—The E. D. Jackson Construction Co. has been awarded a contract to erect a plant, to include a foundry, for the American Blower Co.

DETROIT.—The Standard Screw Products Co. has awarded a contract for a factory and machine shop addition, 2-stories, 60 x 100 feet, to cost $50,000.

DETROIT.—The Universal Automotive Co. has been incorporated with $100,000 capital, by C. R. Vincent, Rookery building, Chicago, and others.

DETROIT.—The Enterprise Foundry Co., 1127 Warren avenue, is taking bids for a foundry and general works addition, 50 x 80 feet.

DETROIT.—The Sharpe Electrical Appliance Co. has been chartered with $10,000 capital, by Frank G. Van Dyke, Dime Bank building, and others.

DETROIT.—The Detroit Hexagon Drill Co., recently organized with $300,000 capital, has taken a three year lease on a plant here.

DETROIT.—The Iron Products Co. has been incorporated by George L. Lewis, 98 Fort street east, and others.

DETROIT.—The Automotive Machine Co. has been incorporated with $10,000 capital, to manufacture

automobile parts, by Gustin T. Dubois, 465 Cadillac avenue, and others.

DETROIT.—The Michigan Machine Co., Sixteenth and Porter streets, will build a 3-story factory building, 107 x 158 feet, costing $150,000.

DETROIT.—The O. & S. Bearing Co., 214 Artillery avenue, has awarded contracts for a 1-story, 40 x 50-foot plant to cost $10,000.

DETROIT.—The C. R. Wilson Body Co. has appropriated $1,000,000 for plant extensions in Detroit and Bay City, Mich. A 6-story building will be erected here.

DETROIT.—The Sprague-Hayes Mfg. Co. has been chartered with $10,000 capitail to manufacture machinery, by E. W. Sprague, 100 Canfield avenue, and others.

DETROIT.—The Erdman-Guider Co., manufacturer of motor car bodies, plans to move its plant to Saginaw, Mich. The company is capitalized at $500,000. A. R. Guider is president.

DETROIT.—The Bennett-Sustrich Co. has purchased the commercial motor car body manufacturing business of the Southwick-Pom Co. James L. Bennett is president.

DETROIT.—The Cline Pattern & Mfg. Co. has been chartered with $40,000 capital to manufacture machinery and tools, by W. F. Hasse, 1331 Twenty-fifth street, and others.

DETROIT.—Smith, Hinchman & Grylls, engineers in the Whitney building, are taking bids on a brass foundry to be erected at Marysville, Mich., for the Pressed Metals Co. of Canada.

DETROIT.—The 3000-acre site of the Wills-Lee motor industry development at Marysville, Mich., is being made ready for building operations. The organization's offices are in the Book building.

DETROIT.—The Irreversible Steering Gear Corp. has been incorporated with $200,000 capital, by Charles H. Bloomstrown, Detroit, George F. Kehew, Boston and Harry Darlington, Philadelphia.

DETROIT.—The Detroit Spark Plug Mfg. Co., capitalized at $10,000, has been chartered to manufacture automobile accessories by Chauncey P. Watson, Paul B. Moody and Phillip E. Moody.

DETROIT.—The J. W. Murray Mfg. Co., has issued $500,000 in preferred stock to provide plant expansion. The company makes sheet metal parts for motor cars.

DETROIT.—The Commercial Mfg. Co. recently was chartered with $350,000 capital to manufacture automobile accessories, by F. C. Lorimer, 54 Clifford street and others.

DETROIT.—The Cost Cut Counter Bore Co. has been incorporated with $10,000 capital to manufacture tools, dies and machinery, by David Greenspon, 18 Napoleon street, and others.

DETROIT.—The Muzzy-Lyon Co. recently was incorporated with $75,000 capital to manufacture and deal in machinery, by J. Howard Muzzy, 71 Clairmont avenue and others.

DETROIT.—The Improved Products Co. recently was organized with $10,000 capital to manufacture metal products, by Cesaire Emery, 94 Leroy street, River Rouge, Mich., and others.

DETROIT.—The Apex Motor Corp. has been chartered with $200,000 capital to manufacture automobile parts, by Fred M. Guy, Grand Rapids, Mich., and others.

FLINT, MICH.—The Champion Ignition Co. will add 120,000 square feet of floor space. The building will be 3-stories, 108 x 172 feet.

GRAND RAPIDS, MICH.—The Keeler Brass Works will build an addition at an estimated cost of $25,000.

GREENVILLE, MICH.—The Tower Motor Truck Co. is reported contemplating a plant addition, 2-stories, 80 x 100 feet.

HILLSDALE, MICH.—The Alamo Farm Light Co., manufacturer of farm lighting outfits, is enlarging its present plant, by an addition, 200 x 240 feet. The contract has been awarded to the Austin Co., Cleveland.

BELLEVILLE, ILL.—The Remmert Mfg. Co. contemplates a boiler house. The company manufactures washing machines.

CHICAGO.—The Allsteel Equipment Co. has awarded a contract for a plant, one story, 80 x 100 feet.

CHICAGO.—The Apex Appliance Co. has a permit to erect a plant, two stories, to cost $135,000.

CHICAGO.—Hubbard H. Erickson & Co. is taking bids for a foundry, 40 x 22 feet, to cost $10,000.

CHICAGO.—The Standex Mfg. Co., tractors, 341 East Ohio street, contemplates a plant, one story, 90 x 120 feet, to cost $50,000.

CHICAGO.—The Gloria Light Co., 1100 Washington boulevard, is having plans drawn for a plant, three stories, 84 x 125 feet, to cost $40,000.

CHICAGO.—The automobile body plant of the William Erby & Sons Co., 121 West Grand avenue, recently was damaged by fire.

CHICAGO.—The Armstrong Bros. Tool Co., 339 North Francisco avenue, has awarded contracts for a plant addition, to cost $65,000.

CHICAGO.—The Appleton Electric Co., 224 North Jefferson street, has started work on a plant, four stories, 148 x 296 feet, to cost $50,000.

CHICAGO.—Domorski Bros., 5307 South Ashland avenue, auto bodies, is having plans drawn for a plant, one story, 50 x 127 feet, to cost $20,000.

CHICAGO.—The Illinois Iron & Machinery Co. has been incorporated with $20,000 capital, by Samuel Morks, Maurice Stein and Harry N. Pritzker.

CHICAGO.—The Gill Mfg. Co., 351 West Fifty-ninth street, has awarded a contract for a plant, 1-story, 120 x 240 feet, to cost $75,000.

CHICAGO.—The Edison Electric Appliance Co., 5660 West Taylor street, has awarded a contract for a plant, 1-story, 255 x 342 feet, to cost $270,000.

CHICAGO.—The Allbright-Nell Co., 5323 South Western avenue, packing house machinery, has awarded a contract for a 1-story, 140 x 200-foot plant, to cost $75,000.

CHICAGO.—The Ideal Refrigerating Machine Co., 2256 Walnut street, capitalized at $50,000, has been chartered by Herman W. Kleist, Benjamin U. Burns and C. D. Turner.

CHICAGO.—The Iron & Steel Products Corp., 168 North Michigan avenue, capitalized at $5000, has been chartered by Charles Fernand, Alting Axel and Ever Lagerholm.

CHICAGO.—The Chicago Electric Mfg. Co., E. S. Preston, president, 2811 South Halsted street, will build a 2-story plant, 100 x 133 feet, costing $60,000.

CHICAGO.—The Standard Mfg. Co., 341 East Ohio street, will build a 1 and 2-story tractor plant, 90 x 220 feet. L. J. Hallberg, 116 South Michigan avenue, is architect.

CHICAGO.—The Simplex Candy Machinery Co., 155 North Clark street, capitalized at $200,000, has been chartered by Earl C. Moeller, Emil Reinhold and John F. Moeller.

CHICAGO.—The Electric Steel Co., 555 West Monroe street, capitalized at $10,000, has been incorporated by H. L. Rodd, Anton Hanson and C. H. Lemboke.

CHICAGO.—The Lario Wrench & Mfg. Corp., 313 West Austin avenue, capitalized at $150,000, has been chartered by John V. Larson, Frank F. Corby and Winsor Chase.

CHICAGO.—The Walden W. Shaw Taxi Co., W. W. Shaw, president, 1006 Michigan boulevard, will build an automobile assembling and repair plant, costing $150,000.

CHICAGO.—The Sloan Valve Co., William E. Sloan, president, 625 West Jackson boulevard, will build a 1-story plant, 70 x 350 feet. A. S. Alschuler, 28 East Jackson boulevard, is architect.

CHICAGO.—George C. Nimmons, architect, 122 South Michigan avenue, is taking bids for a power house, 150 x 190 feet, administration building, 361 x 442 feet, and warehouse, 110 x 419 feet, for Sears, Roebuck & Co.

CHICAGO.—E. Edelman & Co., E. Edelman, president, 351 East Ohio street, will build a plant, 217 x 307 feet, including general offices, machine shop, plating department and assembly. A. S. Alschuler, 28 East Jackson boulevard, is architect.

SPRINGFIELD, ILL.—An election will be held Nov. 4 to issue $400,000 in bonds for a municipal electric light plant.

INDIANAPOLIS.—F. J. Groth, Toledo, O., manufacturer of automobile springs, will build a $100,000 factory building, 60 x 500 feet.

INDIANAPOLIS.—The Wheeler-Schebler Carburetor Co. will erect three factory buildings one, 108 x 132 feet and two others, 20 x 50 feet.

INDIANAPOLIS.—The Federal Steel Products Co. has been incorporated with a capital of $100,000, by John Glava, William A. Epperson, and Joseph B. Wilkins.

INDIANAPOLIS.—The F. & W. Mfg. Co. has been incorporated with $30,000 capital to manufacture mechanical devices, by George E. Frisz, James D. Wiltshire and L. R. Zapf.

INDIANAPOLIS.—The National Automotive Co., capitalized at $25,000, has been chartered to manufacture automobiles by George A. Pearson, Bruce M. Wylie and James M. Clarke.

INDIANAPOLIS.—The Milholland Machine Co. recently was incorporated with $1,200,000 capital, by H. T. Benham, Lloyd O'Brien, O. L. Towell, R. L. Williamson and H. B. Wilson.

INDIANAPOLIS.—The J. F. Rose Mfg. Co., capitalized at $20,000, has been chartered to manufacture hand pumps and other specialties by J. F. Rose, Fred H. Rose and E. Bensley.

INDIANAPOLIS.—The Indianapolis Body Corp., capitalized at $150,000, has been chartered to manufacture automobile bodies and accessories by Clarence R. Irish, Harry P. Millspaugh and Peter M. Kling.

INDIANAPOLIS.—The National Spring Products Co., a Delaware corporation, has qualified to do business in this state, with $50,000 capital. Charles W. Moores, Indianapolis, is named as agent. The company will manufacture cushion springs.

INDIANAPOLIS, IND.—Articles of incorporation for the Wheeler Transmission Co. have been filed, showing the capital stock as $500,000. George W. Ray, president, has stated that the company plans to purchase a factory site and erect a building or secure a building outright.

MUNCIE, IND.—The Chevrolet Motor Co. is having plans drawn for an assembly building and power plant.

MUNCIE, IND.—The General Motors Corp. has taken over the plant of the T. W. Warner Co. of this city.

TERRE HAUTE, IND.—The Rowland-Powers Consolidated Collieries Co. has increased its capital from $2,125,000 to $2,350,000.

TERRE HAUTE, IND.—The Bowen Motors Railway Corp. has completed plans for a plant to produce gasoline propelled passenger cars.

TERRE HAUTE, IND.—The machine shop of the American Car & Foundry Co. recently was damaged by fire. The loss was estimated at $100,000. The building will be rebuilt.

AKRON, O.—The Ohio Rubber Mold & Machine Co. recently was incorporated with $10,000 capital, by R. R. Vanke and others.

CANTON, O.—The Zahner Metal Sash & Door Co. has sold a plant site to the Republic Stamping & Enameling Co.

CANTON, O.—The Northwestern Bridge & Iron Co. has the contract to erect two manufacturing buildings for the Diebold Safe & Lock Co. here. The buildings will be 100 x 200 feet, two stories, with 150-foot clear for craneway extension, and will cost $150,000.

CLEVELAND.—The Nottingham Steel Co. recently

was incorporated with $10,000 capital, by A. J. Halle, 429 Society for Savings building, and others.

HAMILTON, O.—Work has started on a machine shop for the Long & Allstatter Co., which will cost $50,000.

MINERAL RIDGE, O.—Work has started on a new building for the Ohio Steel Products Co., to cost $65,000.

MINERVA, O.—Plans have been drawn for a power house for this city. Bids will be taken soon.

TOLEDO, O.—The National Pattern Co. recently was incorporated with $10,000 capital, by Leo Foley and others.

TOLEDO, O.—The National Pattern Co. has been incorporated with $10,000 capital, by G. Leo Foley, James R. Cable, Pearl R. Cable, Catherine Foley and John W. Raab.

WOOSTER, O.—The F. R. Fortune Tool & Mfg. Co. recently was incorporated with $200,000 capital, by R. K. Evans, F. R. Fortune, E. Paumier, William Harris and Clarence L. Allis.

IRVINE, KY.—The Irvine Machine & Garage Co. recently was incorporated with $20,000 capital, by John Wallace, Edward Brandenburg and others.

LEXINGTON, KY.—The Timmins-Walters Machine Co. has been incorporated with $3000 capital, by D. P. Walters, William Timmins and Frances Timmins.

CLARKSBURG, W. VA.—The Clarksburg water board has let the contract for a pumping station.

HUNTINGTON, W. VA.—The American Thermos Bottle Co., New York, is reported planning a $600,000 plant here.

Throughout the West

EVERETT, WASH.—It has been estimated that $2,000,000 will be needed to finance the proposed municipal power plant.

SEATTLE.—The Parmalee Boiler Co. plans a new shop and assembling plant.

SEATTLE.—The Majestic Furnace & Mfg. Co. has increased its capital from $50,000 to $100,000, and plans a 2-story addition.

SEATTLE.—The Acme Motor & Machine Co. has been incorporated with $15,000 capital, by M. R. Farrekk and others.

SEATTLE.—A steel pump and power house, 16 x 64 feet, will be constructed by the Petroleum Co. at 1710 Sixteenth avenue.

SEATTLE.—The Amalgamated Appliance Corp. has been incorporated with $5,000,000 capital, by Fred N. Hallett, C. F. Hallett and R. P. Burlingham.

SEATTLE.—Frank Waterhouse & Co. have taken preliminary steps for a $2,000,000 ocean terminal here. The first work will be a 120 x 150-foot dock.

SEATTLE.—Articles of incorporation have been filed by the Hampton Automatic Train Stipping Co. The company was incorporated by J. Johnson and W. Hampton.

SEATTLE.—Articles of incorporation have been filed by the Seaboard Machine Works. The company, which is capitalized at $20,000, was incorporated by D. M. Miller, A. J. T. Edwards and J. M. Mathews.

SPOKANE.—F. E. Martin will erect a power house here at an estimated cost of $21,110.

SPOKANE.—Burns, Jordan & Welch have been awarded contracts for the construction of 30 miles of railroad from Granger into the Drumheller coal mines.

YOUNGSTOWN, WASH.—A part of the plant of the Pacific Coast Steel Co. recently was damaged by fire.

ASTORIA, OREG.—The Pacific Power & Light Co. has started work on its new power station.

ASTORIA, OREG.—A syndicate composed of C. H. Davis Jr., Portland, Oreg., Max H. Houser and others of Portland, and the Weyerhaeuser timber interests, is reported planning a sawmill here.

CORVALLIS, OREG.—The Whiteside & Locke Hardware & Implement Co. has purchased a site on which it plans to build a plant addition, 2-stories, 50 x 100 feet at a cost of $50,000.

PORTLAND, OREG.—Contracts for a standard gage railroad for the Alsea Lumber Co. have been awarded to Boschke, Miller Grier Co., general contractors, Northwestern Bank building. The railroad will be seven miles long.

FRESNO, CAL.—J. G. Teeple and associates are planning construction of a structural shop with headquarters at 644 Call building, San Francisco. Plans have been drawn for a shop 60 x 75 feet.

LONG BEACH, CAL.—The Hazen Metal Collapsible Shipping Case Co., capitalized at $200,000, has been chartered to manufacture metal products by James A. Hazen, Earl B. Gandy and William B. McQueen.

LOS ANGELES.—The Electro Alloys Co. recently was incorporated with $20,000 capital, by Herbert L. McNair, G. G. Gray and John Gaenzle.

LOS ANGELES.—The Wilhite Machine & Auto Works, 1245 South Hope street, has been organized by Samuel C. Wilhite and others.

LOS ANGELES.—The Alloy Steel & Metals Co., capitalized at $250,000, has been chartered to manufacture metal products by A. W. Warr, J. B. Quinn and F. R. Knight.

LOS ANGELES.—The Welch Motor Equipment Co., capitalized at $10,000, has been chartered to manufacture automobile equipment by George R. Welch and Harry P. Hubbard.

LOS ANGELES.—The T.N.T. Automobile Mfg. Co., capitalized at $1,000,000, has been chartered to manufacture automobiles by William R. Ruess, Harry A. Miller and Edward R. Maier.

LOS ANGELES.—The Portable Welding & Brazing Co., 636 Mission road, has been organized to manufacture metal products and operate a repair plant, by C. H. Thomas and J. M. Robbins.

LOS ANGELES.—The Pacific Mfg. & Electric Co., 206 North Los Angeles street, has been organized to manufacture electrical products, by J. N. Van Patten, J. M. Morris and others.

LOS ANGELES.—The Wilson & Williard Mfg. Co., Verona avenue, oil well tools, etc., has plans for a 1-story addition to its machine shop, 40 x 110 feet, and a 1-story forge shop addition, 50 x 75 feet.

SAN FRANCISCO.—The Standard Gas Engine Co. has awarded a contract for a 1-story machine shop, 40 x 60 feet.

SAN FRANCISCO.—The Eureka Boiler Works has purchased a site adjoining its plant on which it plans to erect an addition.

SAN FRANCISCO, CAL.—The J. Hendy Iron Works, 75 Fremont street, is having plans prepared for a plant to cost $400,000.

Business Changes Recently Announced

THE office of President A. C. Dinkey of the Midvale Steel & Ordnance Co. hereafter is to be located at the executive headquarters of the company at 14 Wall street, New York City. Chairman W. E. Corey and Secretary W. B. Dickson in the past have been at the Wall street address and Mr. Dinkey in connection with the general sales office in the Widener building, Philadelphia. Some of the officials now stationed at Johnstown are to take up their quarters in Philadelphia.

The Merrill Iron Works, Merrill, Wis., has changed its name to the Merrill Machinery & Supply Co., with F. E. Taylor continuing as president and active manager.

* * *

The Morton Machinery Co., Philadelphia, has removed to enlarged quarters at 139 North Third street.

* * *

The Curran-Detroit Radiator Co., Detroit, has moved into a new plant at Lafayette boulevard and Vermont street. The company makes automotive engine radiators.

* * *

Arthur G. McKee & Co., Cleveland, engineers and contractors, removed their principal office to 2422 Euclid avenue, that city, on Oct. 15.

* * *

The Universal Rolling Mill Co., with plants at Bridgeville and Charleroi, Pa., recently changed its name to the Universal Steel Co. This company manufactures tool and alloy steel.

Effective Oct. 15, the offices of the Cromwell Steel Co., Lorain, O., whose reorganization was noted on page 968 of the Oct. 9 issue of THE IRON TRADE REVIEW, are located on the third floor of the Sincere building, East Fourth street and Prospect avenue, Cleveland.

* * *

The San Francisco office of the Republic Iron & Steel Co., Youngstown, O., has been reopened in the Reality building with L. Riese in charge.

* * *

The name of the B. F. Biggs Pump Co., Lafayette, Ind., has been changed to the Biggs Pump & Supply Co., without change in ownership or policy.

* * *

The Erie Iron & Steel Co., Erie, Pa., announces the removal of its branch offices from its previous quarters in the Real Estate Trust building to new quarters at 1002 Land Title building, Philadelphia.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.38c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	6.15c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.50c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 0c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

	Black	Galv.
STANDARD WEIGHT		
Butt Weld		
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..
PLUGGED AND REAMED		
Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28
DOUBLE EXTRA STRONG PLAIN		
Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

	Black.	Galv.
THREADS AND COUPLINGS		
Butt Weld		
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½
DOUBLE EXTRA STRONG PLAIN ENDS		
Butt Weld	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Link-Belt Cranes in France

JUST as Link-Belt Locomotive Cranes have served our country speedily unloading cargoes from the transports on the docks at France, so can they serve you.

For handling heavy materials; for storing coal; for storing and rehandling clinker, handling iron and steel, or switching cars, the Link-Belt Locomotive Crane is a useful and profitable machine around the yard. When not in use for the specific purposes for which it is purchased you will find there is always some other profitable work for such a machine to do.

We have developed out of years of experience a vast fund of knowledge about the handling of materials, which we shall be pleased to place at your disposal.

Write for Link-Belt Locomotive Crane Catalog No. 370.

277

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- ☐ Elevators and Conveyors
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- ☐ Silent Chain Drives
- ☐ Truck and Tractor Chains
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- ☐ Portable Loaders
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Write for Catalogs
Place X in Square

LINK-BELT LOCOMOTIVE CRANES

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$20.00 to 20.50
Chicago	18.50 to 19.00
Eastern Pennsylvania	19.00 to 20.00
Cleveland	18.00 to 18.25
St. Louis	17.50 to 18.00
Buffalo	19.00 to 20.00
New York (dealers' prices)	15.00 to 15.50
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Valleys	19.50 to 20.00
Boston (dealers)	15.50 to 16.50

BUNDLED SHEETS

Pittsburgh	15.00 to 15.50
Eastern Pennsylvania	15.50 to 16.00
Cleveland	13.00 to 13.50
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	11.50 to 12.00

STEEL RAILS, SHORT

Chicago	$21.50 to 22.00
Boston (dealers)	15.50 to 16.00
Cleveland	18.00 to 18.50
St. Louis	21.50 to 22.00
Birmingham	19.00 to 20.00
Cincinnati	20.00 to 20.50

STOVE PLATE

Pittsburgh	$19.00 to 20.00
Chicago	24.00 to 24.50
Eastern Pennsylvania	21.00 to 22.00
Cleveland	18.00 to 18.50
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Boston	20.00 to 21.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$17.50 to 18.00
St. Louis	16.50 to 17.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.00 to 21.50
Chicago	20.50 to 21.00
St. Louis	19.00 to 19.50

BALED SHEETS

Pittsburgh	17.00 to 17.50
Chicago	14.50 to 15.00

FROGS, SWITCHES, GUARDS

Chicago	$18.50 to 19.00
St. Louis	18.50 to 19.00
Eastern Pennsylvania	19.00 to 20.00

BOILER PLATE, CUT

Chicago, No. 1	$15.50 to 16.00
St. Louis	14.00 to 14.50

ANGLE BARS—STEEL

Chicago	$20.00 to 21.00
St. Louis	19.00 to 19.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$22.00 to 23.00
Pittsburgh, No. 2	20.00 to 20.50
Chicago, No. 1	22.00 to 22.50
Chicago, No. 2	19.25 to 19.50
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	23.25 to 23.75
St. Louis, No. 1	20.50 to 21.00
St. Louis, No. 2	19.50 to 20.00
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	17.00 to 18.00
New York, No. 1 (dealers)	23.00
Boston (dealers)	18.50 to 19.00

WROUGHT PIPE

Eastern Pennsylvania	$18.00 to 19.00
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	14.00 to 14.50

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers)	19.00 to 19.50

BUSHELING

Chicago, No. 1	$18.50 to 19.00
Chicago, No. 2	12.50 to 13.00
Cleveland, No. 1	17.00 to 17.50
Cleveland, No. 2	14.50 to 15.00
St. Louis, No. 1	18.00 to 18.50
Buffalo, No. 1	16.50 to 17.50
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$12.50 to 13.00
Chicago	9.00 to 9.50
Eastern Pennsylvania	15.00 to 16.00
Eastern Pennsylvania (blast furn.)	14.00 to 15.00
Eastern Pennsylvania (chemical)	18.00 to 19.00
Cleveland	8.25 to 8.50
Buffalo	12.00 to 12.50
New York (dealers' price)	11.00 to 11.50
St. Louis	10.50 to 11.00
Cincinnati	7.50 to 8.00
Birmingham	13.00 to 14.00
Valleys	11.00 to 11.50
Boston (dealers)	10.00 to 10.50
Boston (blast furnace) (dealers)	10.50 to 11.00

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	11.00 to 11.50
Eastern Pennsylvania	16.00 to 17.00
Cleveland	13.25 to 13.50
St. Louis	11.50 to 12.00
Buffalo	13.50 to 14.00
New York (dealers' price)	13.00 to 13.50
Cincinnati	9.00 to 9.50
Birmingham	13.00 to 14.00
Valleys	14.25 to 14.75
Boston (dealers)	13.00 to 14.00
Boston (blast furnace) (dealers)	11.00 to 11.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	31.00 to 32.00
Eastern Pennsylvania	35.00
Cleveland	27.00 to 28.00
St. Louis	31.00 to 31.50
Buffalo	28.00 to 29.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	22.50 to 23.00
Cleveland	27.00 to 28.00
St. Louis	22.50 to 23.00
Buffalo	24.00 to 25.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	16.50 to 17.00
Cleveland	16.25 to 16.75
St. Louis	16.00 to 16.50
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$20.50 to 21.00
Cleveland	18.25 to 18.75
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	20.00 to 21.00

FORGE FLASHINGS

Cleveland, large	$13.00 to 13.50
Cleveland, small	16.50 to 17.00
Chicago, small	14.00 to 14.50
Boston (dealers)	12.00 to 12.50

FORGE SCRAP

Chicago	$19.00 to 19.50
Eastern Pennsylvania, No. 1	15.50 to 16.00
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	25.50 to 26.00
St. Louis	21.50 to 22.00

ANGLE BARS—IRON

Chicago	$23.50 to 24.00
St. Louis	23.50 to 24.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
St. Louis	12.50 to 13.00
Cleveland	15.00 to 15.50
Buffalo	16.00 to 17.00
Chicago	14.00 to 14.50

STEEL CAR AXLES

Pittsburgh	$26.00 to 27.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	29.00 to 29.50
Buffalo	28.00 to 29.00
Chicago	27.50 to 28.00
New York (dealers)	24.00 to 25.00
Birmingham	21.00 to 22.00
Boston (dealers)	24.50 to 25.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers' price)	23.00 to 25.00
Chicago	26.50 to 27.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$24.00 to 24.50
Pittsburgh, steel	21.50 to 22.00
Chicago, iron	22.50 to 23.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, iron	22.25 to 22.75
St. Louis, iron	22.50 to 23.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	19.00 to 20.00
Boston	23.00 to 24.00
Cincinnati	21.00 to 21.50

NO. 1 CAST SCRAP

Pittsburgh, cupola	$25.00 to 26.00
Chicago, cupola	27.50 to 28.00
Eastern Pennsylvania, cupola	25.00 to 26.00
Cleveland, cupola	22.75 to 23.00
New York, cupola (dealers' price)	22.50 to 23.00
Cincinnati, No. 1, cupola	21.50 to 22.00
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	27.50 to 28.00
St. Louis, agricultural	26.50 to 27.00
Buffalo	24.50 to 25.00
Boston	28.00 to 28.50
Valleys	22.75 to 23.00

HEAVY CAST

New York (dealers)	21.50 to 22.00
Buffalo	21.00 to 22.00
Pittsburgh	22.00 to 23.00
Cleveland	17.25 to 17.50
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$20.00 to 21.00
Pittsburgh, agricultural	19.00 to 20.00
Chicago, railroad	21.00 to 21.50
Chicago, agricultural	21.00 to 21.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	20.00 to 21.50
Cleveland, agricultural	17.50 to 18.00
St. Louis, railroad	18.00 to 18.50
St. Louis, agricultural	16.50 to 17.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	26.50 to 27.00
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	25.00 to 26.50
Birmingham	22.00 to 23.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	19.50 to 20.00
St. Louis	19.00 to 19.50

BOILER PUNCHINGS

Chicago	$23.00 to 24.00
Eastern Pennsylvania	23.00 to 24.00

Shipments from Stock

Government material at prices ~~lower~~ under present card quotations.

1500	tons	Billets $7\frac{29}{32}$
2000	"	Shell 3" - 4½" - 6" - 9"
1000	"	Tie Bars 5/8 x 3"
800	"	Ingots for 9" Shell
100	"	C.R. Bessemer Rounds $1\frac{9}{32}$

Ask for prices on these, also let us know what other grades you need, or have for sale.

The James A. Miller Co.
McCormick Bldg
Chicago.

New Trade Publications

DECARBONIZING OUTFIT.—A small 4-page leaflet has been published by the Davis-Bournonville Co., Jersey City, N. J., describing an outfit for burning out carbon deposits in gas engine cylinders.

SAND BLAST EQUIPMENT.—A 28-page booklet devoted to sand blast equipment, is being circulated by the American Foundry Equipment Co., New York. The equipment described, includes rotary table rooms, automatic tables, revolving barrels, blast cabinets, pressure tanks, dust arresters and accessory equipment. Each is fully described and illustrated.

ROCK CRUSHING PLANT.—The Allis-Chalmers Mfg. Co., Milwaukee, recently published bulletin No. 1411, which is a 45-page illustrated booklet, containing a description and illustrations of a modern rock crushing plant. Various data pertaining to the parts of the crusher are given and the latter part of the booklet contains a number of line drawings of actual crushing and screening plant installations.

CORE OVENS.—The Ohio Blower Co., Cleveland, has published an 8-page bulletin, in which core ovens, core cars and racks and rotary ballbearing ventilators are described and illustrated. Complete data are given concerning each product and numerous illustrations, showing typical installations, etc., supplement the descriptions. A temperature chart taken on one of these ovens, is given as a supplement to the booklet.

CONTRACTORS TOOLS.—A 40-page illustrated booklet has been issued by the Warren Tool & Forge Co., Warren, O., in which a line of contractors and railroad tools, such as picks, hammers, hoes, crow bars, etc., are described and illustrated. Detailed tables on the weights and measurements of the tools are given. Where possible, both the metric and English systems are used, and complete transposition tables of both systems are presented on the last page of the booklet.

DUST COLLECTOR.—Bulletin No. 1454, issued by the Allis-Chalmers Mfg. Co., Milwaukee, is devoted to describing and illustrating a dust collector, which the company manufactures. The machine is of the bag filter type and according to the bulletin, the collecting of dust is accomplished by filtering the air or fumes through cloth bags of special weave, which are automatically cleaned, discharging the residue into a hopper at the bottom of the machine. The collector consists of a number of annular compartments, each containing 12 bags. The operation of the dust collector, as well as its construction, capacity, horsepower requirements, maintenance, etc., is outlined in the booklet.

RADIAL DRILL.—A 4-page leaflet in which a radial drill is described and illustrated is being distributed by the Silver Mfg. Co., Salem, O. The base of this machine is strongly ribbed both lengthwise and crosswise. An oil channel is cast all around which drains into a reservoir under the column, which is of semisteel. Eight changes of feed are provided as well as depth gage and automatic feed trip for drilling to a predetermined depth. The tapping attachment, with which the drill is equipped, is of the expanding ring type. Steel gears are used throughout as are bronze bearings. Other data, including specifications, are given and illustrations show the various parts of the machine.

ELEVATORS.—A loose-leaf booklet has been published by the Warner Elevator Mfg. Co., Cincinnati, in which parts of freight elevators, which it manufactures, are described and illustrated. The traction engines, with which these elevators are operated, are of the direct-connected type. The motor, worm gear, brake and traction sheave are mounted on a heavy cast iron bed plate; all parts are interchangeable; the worm wheel, according to the booklet, is hobbed from a solid blank of phosphor bronze and is bolted to a cast iron spider; the worm and worm shaft are machined from a solid forging of high carbon steel. the ball thrust bearing is mounted on the end of the worm shaft and the brake is applied by a heavy spiral spring. Other parts of the engine are described, as well as four types of motors and three types of cars. One page of the booklet is devoted to a description of a direct-current controller.

WIRE CHAINS.—An elaborate cardboard covered booklet, of 112 pages, in which weldless wire chain and accessories are described and illustrated, is being distributed by the Chain Products Co., Cleveland. This is the seventh chain catalog issued by the company and is known as catalog C 30. In its composition an effort has been made to present the various products in a comprehensive manner and to this end, the booklet has been divided into three sections, namely: Coil chain, chain specialties and miscellaneous attachments. Each individual size is listed separately. The constructon and other data pertaining to the various chain are given, as well as the various uses to which they are put. Border decorations add to the appearance of the booklet.

PANEL BOARDS.—Bulletin No. 47942, devoted to a description of safety panel boards and cabinets, is being distributed by the Sprague Electric Works of the General Electric Co., New York. These panel boards are applicable wherever the live front type of panel board has been used. Branch circuit switches and main switches are said to be distinctive features. They are of simple design and are positive in action. The blades of the branch circuit switches make direct contact with the branch connection bars, and the brushes of the main switches make direct connection with the main buses, providing the minimum number of electrical joints. The booklet is replete with specifications and other data. A number of illustrations are given.

UNDER-FEED STOKER.—A 16-page booklet in which an automatic under-feed stoker is described and illustrated, recently was published by the Universal Automatic Under-Feed Stoker Co., Johnstown, Pa. The booklet explains in simple language the operation, etc., of the stoker, and this non-technical description, which is a deviation from the usual descriptions of similar appliances, will enable the average person to understand the workings of the equipment in a clear sense. The stoker may be applied to any kind of furnace, including not only all types of water tube, fire tube and various marine boilers, but also metallurgical furnaces for heating or melting ferrous and nonferrous metals, kilns, dryers, etc. A number of illustrations supplement the description.

CYLINDER TEST GAGE.—A 4-page bulletin in which a test gage for detecting the variations in cylinder diameter, is described and illustrated, is being circulated by the Federal Products Corp., Providence, R. I. According to the folder the gage feelers when inserted in the cylinder bear at their inner ends, by means of spiral springs, against a cone cam which is connected by a steel rod through an outer casing to a rack and spur movement operating a gage dial. A lever is also attached to the steel rod by means of which the cone cam is lowered, permitting the feelers to recede sufficiently to be inserted in the cylinder. Once inside the feelers are automatically released against the inner sides of the cylinder. Other details of the gage are given as well as a number of illustrations.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

An agency on a commission basis is desired by an engineer in Spain for the sale of rails, ties, screws, angle plates, tubular steel posts, and wheels and tires for railroad coaches and freight cars. Opportunity No. 30845.

A merchant in France desires an agency on a commission basis for the sale of cutlery, hardware and household utensils. Correspondence should be in French. Opportunity No. 30848.

The electrical commissioners of a city in Australia desire quotations and full information on boiler house machinery, coal and ash handling equipment, coal mining machinery, turbogenerators, condensing plants, electrical storage batteries, machine tools, traveling cranes, electrical instruments, and similar equipment. Opportunity No. 30856.

A commercial agent from Egypt, now in this country, desires an agency for the sale in Egypt and Syria of agricultural machinery, machine tools, etc. Opportuity No. 30857.

The president of an American trading corporation will sail to the Balkans shortly, and desires agencies for the sale of automobiles, motor boats, motors, agricultural machinery, machinists' tools, etc. Opportunity No. 30858.

The purchase of cement-making machinery is desired by a party in Roumania. Correspondence should be in French. Opportunity No. 30860.

A firm in Norway desires to purchase kitchen utensils and equipment. Opportunity No. 30861.

A merchant in Algeria desires to purchase safes, office furniture, typewriters, etc. Correspondence should be in French. Opportunity No. 30865.

A manufacturer in French West Africa desires to purchase butchers' tools and machinery. Correspondence should be in French. Opportunity No. 30866.

An agency is desired by a firm in Roumania for the sale of agricultural machinery. Catalogs and price lists are requested. Correspondence should be in French. Opportunity No. 30867.

The representative of a firm in Australia is in this country and desires an agency for the sale of hardware, tools, emery wheels, grinders, etc. Opportunity No. 30868.

An official of a navigation company in Roumania desires to purchase steel plates for shipbuilding purposes, chains, anchors, etc. Correspondence should be in French. Opportunity No. 30871.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, October 23, 1919 *No. 17*

Shortages Bring Price Advances

Market Effects of Strike Registered in Sharp Rise of Pig Iron, Scrap and Certain Mill Products—Plant Operations Continue to Improve But General Output is Still Much Below Normal

LOSS of production with a consequent shortage of material, caused by the strike, has created a situation where consumers are bidding up iron and steel prices rapidly in their efforts to protect themselves against their requirements. The impending coal strike with its threat of a further far-reaching dislocation of industry, is serving both to intensify this insistent demand and to raise the prospect before the producers of higher operating costs. Material available for early delivery freely is commanding sharp premiums and this is tending also to lift prices for future shipments. The most pronounced advances have been in pig iron, semifinished material and certain grades of scrap. The finished steel market is being steadied by the continued willingness of producers to accept business at the levels prevailing before the strike, though the influence of this is offset in some degree because of the uncertainty of deliveries. Likewise buyers do not hesitate to offer advances for material in sight or of assured shipment. Further restrictions placed on car supply by the railroad administration to speed up coal traffic is a new factor in the present situation.

Iron Advance is Swift

Pig iron has shown the most impetuous action. In virtually all districts there has been a quick upward move of $2 to $3 per ton both for shipment this year or through the first half. Buffalo foundry iron has been sold in considerable tonnage at $29 to $30 for the base grade, at $29.50 for malleable, at $31 to $32 for No. 2X, while high silicon has brought as high as $34; Cleveland foundry at $29 to $30 and $29.50 for malleable; eastern Pennsylvania base grade at $31 to $32 and No. 2X at $32 to $33; Alabama No. 2 at $29; and Virginia at $30 and higher. The Chicago market is up $2 and the minimum of valley No. 2 is $28 to $29. Steelmaking grades still fail to reflect any decided change, although the recent purchases of the Steel corporation now placed at 100,000 tons or more, have absorbed much of the free iron of this character. St. Louis steelmakers have placed 25,000 tons of basic at Chicago for first half.

Mill Prices Are Higher

Sheet bars have been sold $3 higher at $45, Pittsburgh. Eastern makers of semifinished steel have advanced rerolling and forging billets $5 and sheet bars $2.50, and report sales of billets on the higher basis. Sales also have been closed at $40.50, Pittsburgh, a $2 advance. The Bethlehem Steel Co. has advanced steel bars $3 per ton to 2.50c, Pittsburgh. Premiums are being offered by consumers on steel bars for prompt shipment. Plates are strong at 2.65c, Pittsburgh. Sales of 8700 tons of bar iron have been closed to northern Pennsylvania oil interests as a substitute for steel bars at approximately the equivalent of 2.75c Pittsburgh. Cast iron pipe in the South is up $3 to $5.

Output is Gaining

Operating conditions continue to improve steadily. The men are returning to work in all districts but the movement is exceedingly slow in some cases, notably at Cleveland, though there has been a considerable increase in production there and two blast furnaces have been started; the situation in the Mahoning valley is much better. At the Youngstown works of the Carnegie Steel Co., 90 per cent of the American-born employes are at work. Independent mills in Youngstown territory have several blast furnaces, and numerous open-hearth furnaces and mills in commission. An effort of the agitators to carry the strike to the Lake Superior ore regions has resulted in failure.

Export prices also are working higher. Sellers have anticipated in their quotations an advance of $5 in wire products. Wire nails for export are at $4, Pittsburgh, against the domestic price of $3.25 to $3.50. An order for 8500 kegs for Japan at the higher price was declined. A Pittsburgh maker accepted about 50,000 boxes of tin plate of an inquiry for 100,000 boxes at $7, Pittsburgh. An inquiry for 41,900 tons of billets for Belgium has attracted attention. Belgium and Holland have been recent buyers of 10,000 to 12,000 tons of spiegeleisen around $35, f.o.b. New York. Japan placed 3000 tons of structural shapes.

OCTOBER 23, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
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Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Strike Dictates the Market

STRIKE conditions have produced a fundamental change in the iron and steel market. The fourth week of the walkout finds a number of the plants still crippled and in one or two cases in idleness, others working at part capacity and a considerable number back at about the stage of activities which prevailed when the trouble began, Sept. 22. Absence of the men from their posts and the lapse of efficiency due to the upset operations have resulted in a large loss of production and this total is being increased daily. It is this loss of production which has created a new underlying basis of trading conditions, which is having a very apparent effect upon the market. This situation is being intensified by the fact that while operations generally are working back to their level of Sept. 22, the progress necessarily is gradual and the complete restoration of a tonnage output equal to that period promises to be delayed.

When the strike outbreak came the iron and steel industry generally was pursuing the policy of discouraging price advances although a condition of supply and demand existed in numerous products which warranted higher quotations. This attitude of iron and steel producers of opposing advances was in support of the general movement aimed at bringing down the high cost of living. New factors accountable wholly to the strike, now have tended to put the situation beyond the influence of any conservative selling policy. With production lowered by the interruptions of plant operation and consumption maintained at a high point and still expanding, an acute shortage of steel has been produced and is continuing. Buyers shut off from their regular sources of supply have been combing the market for available material, in order to sustain their own operations, and they have been bidding up prices without hesitation. Furthermore, there has been a disposition on various sides which has been aggravated by the threatened coal strike to prepare for future eventualities by adding to current stocks wherever possible. Prices consequently are moving up rapidly in pig iron and in certain forms of steel where the dislocation of supply has been the most pronounced. Some producers of finished steel still are willing to quote former prices for new orders. These largely are nominal, however, because of the uncertainty of the delivery. The steadying influence of such quotations accordingly is minimized. Material available for prompt or early shipment is making its own price, and this higher figure for the time being is constituting the real market.

The present market situation in iron and steel is a striking illustration of the economic wastefulness and loss involved in the indiscriminate use of the strike weapon. The manufacturers are losing profits, the men are losing wages and the consumers are adding to their costs. In the end the bill comes back to the public for settlement, but the whole country will have sustained an irretrievable loss. In this light, a strike so unjustified in truth and reason as the steel strike or the threatened suspension of the coal mines, becomes a plain economic crime.

Let Trade Guilt be Defined

ANYTHING which smacks of uncertainty has a directly adverse effect upon business, and, by affecting the prosperity of the country, reacts upon the public. There constantly exist many factors of uncertainty which cannot be removed except by the passage of time. But there are others which can and should be removed. One of these factors is the uncertainty as to the status of big business combinations with respect to our so-called antitrust laws. These comprise the Sherman act of 1890, the federal trade commission act of 1914, the Webb-Pomerene act of 1914, and certain provisions of the revenue laws of 1894 and 1913. But the basis for all of these laws is the Sherman act itself.

When the senate passed the Sherman act it was in the belief that the courts never would hold that it prohibited the lawful and harmless combinations which previously had been permitted in this country without complaint. But the Sherman act was far from a

perfect instrument and it took the supreme court of the nation 21 years to adopt this reasonable attitude in its construction of the law. The decisions which already have been made under the Sherman act make one thing plain, namely, that it is illegal for any corporation to operate in restraint of trade. But they also show that there is no guarantee from possible constructions of the law, as to what may constitute guilt. In fact, all big business interests, excepting those already dealt with under the Sherman law, exist with doubts as to their legal status.

In view of the unsatisfactory character of the existing antitrust laws, it is significant to note that there now is before congress a bill which calls for the creation of a commission which shall decide beforehand whether a corporation, upon organization, is proceeding in accordance with the law, or whether any of its acts are opposed to the decisions of the supreme court. This bill, of which Representative Henry J. Steele, of Pennsylvania, a corporation attorney, is the author, is based on the fact that there now is no certainty as to what constitutes a monopoly, or illegality. It therefore is proposed that there shall be established a body to which honest men may repair for guidance and a clean bill of health.

Clearly, the prosperity of a great industrial country such as the United States must depend in large measure upon its large corporations. Such interests lower the cost of production, improve the condition of the worker, make possible national participation in the markets of the world, and promote general stability. The country needs them and cannot afford to handicap them with needless uncertainties. A law such as that proposed by Representative Steele would do much to eliminate the greatest uncertainty of all.

Solving Refractory Problems

IN AN article dealing with the effect of heat on refractories, published elsewhere in this issue, reference is made to a series of tests recently developed in an attempt to solve some of the many problems associated with the use of clay and silica brick. These tests are of importance to the iron and steel industry in that they clear up to a considerable extent the reasons for the wide variation in the performance of refractory brick. For instance, they help to explain why the life of a blast furnace lining varies from two to seven years; basic open-hearth roofs from 25 to 400 heats; soaking pits from six to 18 months; converter bottoms from four to 16 heats and ladle linings from four to 25 heats. The tests also shed light upon the phenomenon of one brick in a blast furnace lining remaining solid while those around it disintegrate.

Results of many tests of commercial silica brick show the crushing strength falls off from 50 to 60 per cent in heating the brick from room temperature to 1350 degrees Cent. Brick defective because of fire cracks loses 46.4 per cent of its weight when subjected to a spalling test at 540 degrees Cent., while brick without fire cracks loses only 26.3 per cent. Other tests of the series indicate that the finer the grind of the brick the greater is the loss from spalling. They also show that the performance of clay brick is similar to that of silica brick in many ways.

These tests, as well as many investigations which have been made, serve to clarify the problems of refractories and to pave the way for more intelligent co-operation between consumers and producers. Inasmuch as this co-operation is so important and so urgently needed, it is extremely gratifying to know that the research work, which always must form the basis for co-operative effort, is making headway.

Organized Labor on Trial

ORGANIZED labor is carrying a tremendous responsibility in the present steel strike, one which will leave its mark for many years and may seriously set back the general cause of unionism in this country. This is the accepted presence within its ranks of radical and ultra-radical interests which in recent years have desisted from fighting organized labor and have adopted a policy of infiltration, burrowing within, like a worm.

Whether or not the rank and file and the conservative leaders of unionized workers have realized this fact it cannot be escaped. The existence of a strong party within the ranks of labor seeking to use the machinery already at hand to further the destructive propaganda, is being brought out so clearly that the general public has seen and grasped the imminence of this danger.

This was the real cause of federal troops taking charge in Gary, Ind., and neighboring industrial cities. Maj. Gen. Leonard Wood outlined the situation as follows:

"The gravity of the situation in Gary is found in the presence of a dangerous and extremely active group of I. W. W. and anarchistic elements which are striving to bring about extensive disturbances against law and order. These elements are working against everything which this country stands for."

The work of federal secret service men has resulted in many arrests and the seizure of large quantities of radical literature. Whether organized labor is in sympathy with these extreme methods or in opposition to their objects counts for little in the last analysis, since the public will not tolerate any organization which is the haven, even unwittingly, for such groups and allows them to work along the lines already uncovered at Gary. Organized labor must purge itself of this deadly contamination before it goes before the people to ask favors or rights or even consideration.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1152 AND 1154

Pig Iron

Bessemer, valley	$27.95
Bessemer, Pittsburgh	29.35
Basic, valley	25.75
Basic, Pittsburgh	27.15
Basic, delivered, eastern Pa.	28.00
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	29.90 to 30.90
Malleable, Chicago, furnace	29.25
Malleable, Buffalo, furnace	27.25 to 29.50
Malleable, delivered eastern Pa.	33.10 to 33.60

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$34.10 to 35.10
No. 1 foundry, Chicago furnace	30.00
No. 2 foundry, valley, Pittsburgh	29.40 to 30.40
No. 2 foundry, Buffalo	29.00 to 31.00
No. 2 Northern, Boston	33.90 to 34.90
No. 2 foundry, Cleveland furnace	29.00 to 30.00
No. 2 foundry, Ironton furnace	29.75
No. 2 foundry, Chicago furnace	28.75
No. 2X, eastern del., Phila.	33.10 to 34.10
No. 2X, eastern, N. J. tidewater	33.10 to 34.10
No. 2X, eastern, Boston	35.90 to 37.90
No. 2X foundry, Buffalo furnace	30.00 to 32.00
No. 2 foundry, del., Philadelphia	32.10 to 33.10
No. 2 foundry, N. J. tidewater	32.10 to 33.10
No. 2 southern, Birmingham	28.00 to 29.00
No. 2 southern, Cincinnati	29.80 to 30.80
No. 2 southern, Chicago	33.00 to 34.00
No. 2 southern, Phila.	34.50 to 35.50
No. 2 southern, Cleveland	33.00 to 34.00
No. 2 southern, Boston	36.00 to 37.00
No. 2 southern, St. Louis	32.25 to 33.25
Virginia, No. 2X, furnace	30.00 to 31.00
Virginia, No. 2X, Philadelphia	34.10 to 35.10
Virginia, No. 2X, Jersey City	34.40 to 35.40
Virginia, No. 2X, Boston	34.70 to 35.70
Gray forge, valley, Pittsburgh	28.40
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	29.00 to 30.00
Silveries, 8%, furnace	40.25 to 43.00
Ohio Silveries, 8%, Chicago	44.05 to 46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	40.50 to 41.00
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	32.75
Charcoal, Superior, Chicago first quarter 1920	33.75

Coke

(At the ovens)

Connellsville furnace	$4.50 to 4.75
Connellsville foundry	5.50 to 6.00
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	8.50 to 9.50
New River furnace, nominal	7.50
Wise county furnace, nominal	6.00 to 6.50
Wise county foundry, nominal	7.50 to 8.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	100.00 to 105.00
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.20 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	22 to 24 cents
Ferrovanadium, 35 to 40 per cent. per pound contained, according to analysis	$5.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50 to 40.50
Open-hearth, Philadelphia	47.50
Open-hearth, Youngstown	38.50 to 40.50
Bessemer, Pittsburgh	38.50 to 40.50
Bessemer, Youngstown	38.50 to 40.50
Forging, Pittsburgh	51.00
Forging, Philadelphia	60.00

SHEET BARS

Open-hearth, Pittsburgh	$42.00 to 45.00
Open-hearth, Youngstown	42.00 to 45.00
Bessemer, Pittsburgh	42.00 to 45.00
Bessemer, Youngstown	42.00 to 45.00

SLABS

Pittsburgh and Youngstown	41.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.745c
Bar iron, common, Chicago	2.72c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.77c
Bar iron, common, Pittsburgh	2.75c
Hard steel bars, Chicago	2.55c to 2.65c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 45.00
Relaying rails, Pittsburgh	39.00 to 41.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1152.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	23½

Full pipe schedule page 1152.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$62.80
Six-inch and over, Chicago	59.80
Four-inch, New York	59.30
Six-inch and over, N. Y.	56.30
Four-inch, Birmingham	54.00
Six-inch and over, Birmingham	53.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.78½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.76½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅛ in. and smaller Pitts.	60–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	2.70c to 3.10c off
Hot pressed, square tapped	2.45c to 2.85c off
Hot pressed, hexagon blank	2.70c to 3.10c off
Hot pressed, hexagon tapped	2.45c to 2.85c off
Cold pressed, square tapped	2.45c to 2.85c off
Cold pressed, square blank	2.70c to 3.10c off
Cold pressed, hexagon blank	2.70c to 3.10c off
Cold pressed, hexagon tapped	2.45c to 2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Oct. 22. 1919	Average prices Sept. 1919	July 1919	Oct. 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	34.40
*No. 2 Foundry, Pittsburgh	29.40	28.15	28.15	35.40
*No. 2 Foundry, Chicago, furnace	28.75	26.75	26.75	34.00
Lake Superior charcoal, Chicago	32.75	32.75	31.75	38.70
Malleable, valley	28.50	28.65	28.65	35.90
Malleable, Chicago	29.25	27.25	27.25	34.50
*Southern, No. 2, Birmingham	28.00	26.75	25.00	35.25
*Southern Ohio, No. 2, Ironton	29.75	26.75	26.75	34.00
Basic, eastern del., eastern Pa	28.00	27.00	26.50	36.60
**No. 2X, Virginia, furnace	30.50	29.25	26.50	37.50
*No. 2X, eastern del., Philadelphia	33.10	29.95	29.50	38.85
Gray forge, valley del., Pittsburgh	28.40	27.15	27.15	34.40
Ferromanganese, 80 per cent, delivered	110.00	105.00	112.00	250.00†
Bessemer billets, Pittsburgh	40.50	38.50	37.30	47.50
Bessemer sheet bars, Pittsburgh	45.00	42.00	40.80	51.00
Open-hearth sheet bars, Pittsburgh	45.00	42.00	40.80	51.00
Open-hearth billets, Pittsburgh	40.50	38.50	37.30	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.745	2.595	2.595	3.73

	Prices Oct. 22. 1919	Average prices Sept. 1919	July 1919	Oct. 1918
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.64
Iron bars, Chicago mill	2.72	2.62	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65c	2.55	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2,895	2.845	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.31	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.51	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.70	5.66	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	4.50	4.65	4.00	6.00
Connellsville foundry coke	5.75	5.90	4.90	7.00
Heavy melting steel, Pittsburgh	20.00	20.50	19.90	29.00
Heavy melting steel, eastern Pa	19.50	19.00	18.85	28.50
Heavy melting steel, Chicago	19.00	19.10	19.40	29.00
No. 1 wrought, eastern Pennsylvania	27.00	27.00	24.70	34.00
No. 1 wrought, Chicago	22.50	21.25	21.20	33.50
Rerolling rails, Chicago	28.00	25.50	24.70	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Pig Iron Prices Advance Rapidly

Market Shows General Upward Move of $2 to $3 as Supplies Become More Restricted—Liberal Tonnage Being Closed on Higher Basis—St. Louis Steelmaker Buys 25,000 Tons of Basic at Chicago

Chicago, Oct. 21.—After having held steadily to $26.75, furnace, for No. 2 foundry long after other producing centers had advanced to a point where a considerably higher quotation could have been made in competition and not until cost of production had forced an advance, the local pig iron market is now quoted $2 higher. This applies to sales for 1919 delivery as well as to the first half. The leading interest also is applying its higher differential on silicon above the No. 2 grade, which has been in effect for some time. Buying for prompt delivery has become more and more difficult and because of the great decrease in production resulting from the strike, practically the only source of prompt iron now is the South and East. As a result all iron consigned from the Birmingham district, Tennessee and the valleys is being disposed of as soon as it starts for this market. Melters will take virtually anything offered, even at price several dollars higher than the prevailing Chicago market. Local producers not only are oversold against probable production to Jan. 1, but have also contracted for the major portion of first half output. All but a few recent sales have been at the old price. As a result of this condition and the uncertainties of the future, selling is being restricted as much as possible.

While all grades are in demand, basic and malleable seem to be most active. A large user in the St. Louis district closed recentlly for 25,000 tons of basic for first half. An inquiry for 12,000 to 15,000 tons of basic for the same delivery is current. A Chicago interest has placed 10,000 tons of malleable for a plant located in Indiana, 3000 tons for 1919 delivery being placed with eastern makers, mostly in the valleys, and 7000 tons for first half being divided among furnaces at Chicago and in northern and southern Ohio. A large manufacturer of car wheels has placed 5000 tons of malleable for first half with Chicago furnaces. A northern Illinois machinery manufacturer bought 2000 tons of 2.50 to 5.00 silicon for 1920, and 200 tons of 4.50 silicon for this year. Virginia makers are quoting much above other producers. A Tennessee stack about to blow in is quoting $28.75 for 1.75 to 2.25 silicon, $30 for 2.25 to 2.75 silicon, and $31 for 2.75 to 3.25 silicon, for 1919 delivery. This price applies at the furnaces with freight rate of $4.40 to Chicago. Low phosphorus iron is being sold at $40 to $42, delivered Chicago. Production is being increased gradually. Two merchant stacks have been returned to service, and a third will be relighted shortly.

Pay Premiums for Spot Iron

Boston, Oct. 20.—A reversal in the foundry iron market for first quarter as compared with spot and last quarter iron has taken place. A week ago there was a premium on 1920 iron and today there is a premium on spot iron, with a tendency toward softening in the future delivery market. Iron for immediate delivery is hard to obtain and many round orders have been refused. Foundries which have been relying upon Buffalo furnaces for supplies have anxiously placed orders with the first furnace offering spot iron, practically regardless of price. The spread on first quarter and first half iron is continually widening. Sales of Buffalo No. 2X (2.25 to 2.75 silicon) for first quarter have been reported at $27 furnace, and a sale of 200 tons of eastern Pennsylvania iron of the same grade was made during the week at $28 furnace for first quarter. Most of the business has been in small tonnages. One or two Virginia furnaces have spot iron to offer and this is finding a ready small-lot sale at $31.25 furnace for 2X. The Sullivan Machinery Co., Claremont, N. H., bought 700 tons of No. 2 northern (1.75 to 2.25 silicon) for first quarter at a price which is reported to be low. An eastern Massachusetts concern bought 400 tons of spot eastern Pennsylvania 2X iron at $32 furnace. A Rhode Island consumer bought 200 tons of spot No. 2X at $33 eastern Pennsylvania furnace. One Birmingham furnace interest reports approximately 50,000 tons of foundry iron stored in its yards. Sales and inquiries have been exceptionally light among Boston dealers. Several of the large textile machinery foundries have placed small orders for spot delivery merely to be on the safe side. The Chapman Valve Co., Springfield, Mass., has been asking for 500 tons for immediate delivery, and has placed part of this. The Framingham Foundries, Framingham, Mass., is out for 500 to 1500 tons, and other concerns are asking for last quarter lots ranging from 200 to 1500 tons.

Prices Move Up Rapidly

New York, Oct. 20.—A boom market in pig iron has developed in the East. In view of the scarcity of iron, the continued demand is serving to move up prices rapidly. Eastern Pennsylvania foundry has been sold direct by makers during the past week as high as $33, furnace, for 2.25 to 2.75 silicon, and at $32 for 1.75 to 2.25 silicon for shipment this

year. The minimum on central Pennsylvania foundry is up to $31, furnace, for 2.25 to 2.75 silicon, and $30, furnace, for 1.75 to 2.25. Virginia iron is higher, as is reflected by a sale of 400 tons of 1.75 to 2.25 silicon at $30, furnace. One Virginia maker reports a sale of 2.25 to 2.75 silicon, at $35, furnace, for shipment to a nearby consumer. Asking prices on 1.75 to 2.25 silicon, southern, range from $29 to $29.50, Birmingham, although some low manganese iron is said to be obtainable at less. Southern foundry, containing 2.25 to 2.75 silicon, is held at $29.50 to $30, Birmingham, according to prices quoted the past week. Buffalo iron has been sold during the week at $31, furnace, for 2.25 to 2.75 silicon, and $30 for 1.75 to 2.25 silicon. All of these prices apply to foundry iron for shipment this year. The furnaces generally continue indisposed to sell for next year. At least two eastern Pennsylvania furnaces during the week sold first quarter or first half tonnage at $32, furnace, for 2.25 to 2.75 silicon, and this price is considered minimum. A round tonnage of Buffalo iron for first half has been sold at $31, Buffalo, for 2.25 to 2.75 silicon, and at $30, Buffalo, for 1.75 to 2.25 silicon. It is understood some central Pennsylvania foundry has been sold for first half at $31, furnace, for 2.25 to 2.75 silicon.

Business closed in this district during the past week involved 10,000 to 15,000 tons of foundry iron for domestic consumption. In addition there was some export business which included 1000 tons of eastern Pennsylvania iron to Sweden at $32.25, furnace, for 2.25 to 2.75 silicon. Inquiries of at least 10,000 tons of foundry are current. There is considerable export inquiry. Nothing has developed from the inquiries for 60,000 tons of basic for Japan. Some malleable has been sold at $32, eastern Pennsylvania furnace, equivalent to about $34, New Jersey tidewater. A sale of 3000 tons of basic recently was made to a Bridgeport consumer.

Foundry Prices Move Up

Pittsburgh, Oct. 21.—Prices of foundry pig iron here have begun to swing into line with those in other districts and $26.75 furnace, definitely has disappeared for No. 2 grade (1.75 to 2.25 silicon). Most producers now are asking $29 furnace for the remainder of the year, and $28 is as low as any sales recently have been made. Although 600 tons of No. 2 foundry for the first half were taken at $30 furnace, the more general disposition of furnace interests is to fight shy of 1920 contracts. A fair amount of business recently has been done in basic and bessemer. A Pittsburgh district steel foundry recently closed for 500 tons of standard bessemer for November-December at $27.95 furnace. Another lot of 250 tons was taken by a Pittsburgh district steel manufacturer, also at the regular market price, while several small orders have been placed. A Pittsburgh district steel foundry is looking for 1500 tons, for November and December, and the first month or two of 1920. Not much has been done in basic iron since the Steel corporation subsidiaries withdrew from the market which they did recently, following purchases aggregating in the neighborhood of 90,000 tons of steelmaking iron. All but about 20,000 tons of it was basic, the remainder being bessemer. A sale of 2000 tons of basic to a Pittsburgh district steel manufacturer for this year is noted at $25.75 valley furnace. Sales of foundry iron generally have been in small lots, due to the fact that the producers have little free iron for the remainder of the year. A number of foundries are running short of supplies and are trying to pick up tonnages here and there. Active demand for foundry iron also is being made by brokers, who freely have offered $26.75 furnace without securing any appreciable tonnage. A small sale of No. 1 foundry (2.75 to 3.25 silicon) for prompt delivery is noted at $33.75, while small lots of No. 2X (2.25 to 2.75 silicon) have sold at $31 and $32. Small tonnages of malleable have been sold at $27.25 valley furnace and a sale of 2400 tons of Lake Superior charcoal iron for this market for the first half has been made at the full schedule of $31.25. Little change has taken place in the number of active stacks since a week ago except valley steelmaking plants have more furnaces blowing while the stack of the McKeefrey Iron Co., Leetonia, O., is expected to go in shortly on bessemer.

Prices Increased at Buffalo

Buffalo, Oct. 21.—The price of pig iron in this district is increasing. One of the two interests not affected by the strike has sold several thousand tons of foundry at these prices: Silicon, 1.75 to 2.25, $29; silicon, 2.25 to 2.75, $30; silicon, 2.75 to 3.25, $31. A considerable tonnage of malleable has been sold at $29.50. This iron is for 1920 delivery and is being sold in limited quantities. The company doing the business is sold up for this year. It also is reported that even higher prices have been realized on tonnages of resale iron. Foundry iron (1.75 to 2.25 silicon) brought $31; silicon 2.25 to 2.75, $32.25, and silicon 2.75 to 3.25, $34. This is the best price realized here in some time. A sale of 2000 tons of malleable for November shipment was closed at $28, furnace. An interest which is out of the market for 1920 iron will resume quoting in another month and announces that there will be a considerable advance over present prices. Two large producers still are crippled by the strike, one furnace being down.

Prices Showing Upward Trend

Birmingham, Ala., Oct. 21.—A lull was noted during the past week in the buying of pig iron. Quotations are showing an upward trend, $29 for No. 2 foundry (1.75 to 2.25 silicon) now being named. Inquiries are still numerous for delivery during the first quarter but $30 is the lowest price considered. No sales are announced at this figure. Furnace companies are making no effort to get 1920 business, but it is apparent that the books will be open for the coming period by the end of this month. While there is some iron in furnace yards in this district, the aggregate tonnage is less than a month's output. Railroad car service is improved, and there is a good outward movement.

Car Supply Greater Factor

Cleveland, Oct. 21.—Supplies of cars to the furnaces which already were insufficient, have been cut down sharply during the past few days by the railroad administration in an effort to concentrate equipment on the coal routes because of the threatened coal strike. It has become increasingly difficult to move iron from furnace stocks; direct shipments have not been much affected as yet but in the present situation it is feared these two may be interfered with. The result is that deliveries of iron where the furnaces have been able to ship, are becoming more uncertain. This is adding its effect to tighten the market on iron both for early and forward shipment, and further advances have been established. Local makers are holding 1.75 to 2.25 silicon foundry for this year at $30 furnace and for first half at $29 furnace, and have made sales on this basis. Malleable is quoted at 50 cents higher. A portion of a round purchase of malleable by an Indianapolis melter for first half, went to Cleveland makers on this basis. Further sales of southern Ohio iron at $29.75 furnace for No. 2 foundry, or $32.15 Cleveland, have been made. Some valley No. 2, slightly irregular in phosphorus, has been selling for early shipment at $28.50 furnace or $29.90 Cleveland. One producer sold 2000 tons of off cast additional at regular differentials under the old $26.75 base. A fairly good run of sales for early shipment continue to be made but the tonnage is not heavy. Inquiries for first half are more numerous and there is some selling at the advances. Recent sales of about 10,000 tons of basic for first quarter are reported by on valley producer at $25.75 furnace. Some of the northern Ohio steel plants which have been strike-bound have ordered resumption of basic shipments against contracts. Pig iron production in Cleveland has been resumed by the blowing in of one of the furnaces of the Cleveland Furnace Co., one of the McKinney Steel Co. group and the Upson Nut Co. stack.

Take on More Business for 1920

Cincinnati, Oct. 20.—Southern Ohio producers are more willing to take on business for next year. Quite a number of sales of foundry iron (1.75 to 2.25 silicon) have been reported at $29.75, Ironton, for first quarter and first half shipment. It is rumored that this price has been shaded for desirable customers. However, the furnaces are not willing to sell their entire output for the period named as they still are in the dark as to what future costs will be. Southern producers are able to get a premium on iron for prompt shipment and some iron analyzing 1.75 to 2.25 silicon has brought as high as $29, Birmingham, although the regular price for delivery through the remainder of the year is $28. No interest in the South is yet willing to announce that its books are open for next year, although there are a large number of inquiries out for first quarter and first half iron. Northern malleable continues quite

active. It is understood that the Link Belt Co. has purchased a part of the 8000 to 10,000 tons of malleable wanted for its Indianapolis plant from producers in the Cleveland district and the remainder elsewhere.

Foundry Iron Cleaned Up

Philadelphia, Oct. 21.—Demand upon eastern furnaces from pig iron consumers in this district but mainly in New England and to some extent in New York state has served to clean the market of foundry tonnage for this year. As a result, the unusual spectacle has been witnessed the past week of sales of Pittsburgh and valley foundry and malleable iron for shipment to New York state and eastern Pennsylvania. One eastern interest being unable to obtain iron in east, bought western No. 2X (2.25 to 2.75 silicon) at higher than $34 delivered. On occasional lots of eastern Pennsylvania iron sold the past week for this year $32 furnace has been minimum and $33 has been done for No. 2X. Several thousand tons of gray forge were sold to an eastern Pennsylvania consumer at $29.40 delivered and at least 7000 tons were refused because the furnaces cannot spare it. It is reported one eastern puddling mill is down because of a lack of iron. Producers' ideas on first quarter gray forge are $3 to $4 higher than the present price. The largest inquiry now out is 6000 tons of gray forge for first quarter. The Altoona Iron Co. also is reported in the market for a big tonnage of gray forge. Eastern Pennsylvania malleable was sold the past week at $32 and $32.50 furnace. Western charcoal iron which has been selling actively here of late now is pretty well taken up through the first quarter and an advance of $2 is talked of. Central Pennsylvania furnaces practically are sold up for this year but still some iron to offer at $30 and $31 furnace for No. 2X. One of these furnaces now is selling some first quarter iron at $30.50 to $31 furnace for No. 2X. More than 1000 tons of Virginia No. 2X was sold the past week at $30 furnace and some was sold at $31 but these prices now have been withdrawn by this seller and an advance is expected. Some Virginia No. 1X has been sold the past week at $31.75 furnace. Although the last sale of basic was $28 delivered eastern Pennsylvania this could not now be duplicated as makers are asking $30 and $31 furnace and this grade very scarce. Over 1000 tons of standard low phosphorus were sold the past week at $37 furnace.

Heavy Consumption at St. Louis

St. Louis, Oct. 20.—Consumption of pig iron in this district continues on a large scale. Practically all users, except steel plants are working at capacity. Demand for foundry iron is in excess of supply, and several foundries have been obliged to refuse business because of uncertainty relative to obtaining iron. Southern furnace interests are well sold through the balance of this year, and aside from a few car lots and some off iron, have nothing available for immediate delivery. There is some trading in small tonnages, ranging from 200 to 600 tons.

Coke is Advanced Sharply

Increase in Price of Coal and Threat of Strike Send Spot Furnace Fuel Up to $4.60—Producers Holding Surplus in Anticipation of Shortage

Pittsburgh, Oct. 21.—The price of spot furnace coke has mounted with great rapidity in the past few days under the influence of conditions in the coal market. A week ago it was possible to buy standard 48-hour fuel as low as $4, ovens, as well as a few tonnages of unconsigned coke for even less. Today $4.50 is as low as could be done and $4.60 and $4.75, ovens, are the more common asking prices of those operators who have any surplus tonnages over contract requirements and are willing to sell. Not a few of the Connellsville producers have some surplus coke but are inclined to hold it in the belief that next week will see even higher prices than now prevail. While there is a fairly active buying movement in progress in furnace coke in anticipation of a shortage in the event that coal miners strike, the chief reason for the advance is to be found in the rapid rise in the coal markets recently. The sales of mine run gas coal are reported as high as $3.50, mines, while the same figure has been paid for screened ¾-inch pan-handled coal, and low volatile central Pennsylvania coal has done $4 for run of mine. Even the railroads are buying coal for stock and in the event that the strike is called off it is probable that a great deal of high-priced coal will be in the hands of consumers. The Connellsville region is a non-union one, but in well-informed quarters it is stated that with a strike on elsewhere, there would be bound to be some sympathetic response in that region, while at best it would probably be swamped with demands for coal. Nothing actually is going in contracts for furnace coke although a number of inquiries have come out from consumers. A basis of six to one on basic pig iron is said to have been quite freely offered by the blast furnace interests for first half of 1920 fuel. Foundry coke shows no special change in price, for demands are comparatively moderate and supplies are fairly large. The Connellsville production of coke for the week ending Oct. 11 is estimated by *The Connellsville Courier* to have been 152,764 tons as compared with 157,600 tons in the previous week.

More Buying in East

New York, Oct. 20.—Coke sellers report some improvement in the demand in this district and a few thousand tons have been sold.

Strike Threat is Factor

Boston, Oct. 20.—The threatened coal strike has become the big factor in the coke market. Many Connellsville ovens announce that no more orders will be taken for shipment to New England points. With the Providence by-product producer sold up for this year consumers mainly are depending upon the Everett producer for new orders above present contracts. Prices are unchanged at $10.90 for 1919, and $11.90, flat for first half of 1920. Spot prices, however, have been shaded in some instances. It is probable that $10.25 to $10.50 could be done on a sizable order for immediate shipment.

Prices Advanced at Cincinnati

Cincinnati, Oct. 20.—The Wise county field has been drawn on quite heavily of late both for furnace and foundry coke. It is reported that some furnace coke has been sold recently for shipment to southern iron producers. Prices have advanced sharply and 48-hour Wise county coke is quoted around $6 to $6.50, ovens, and foundry grades from $7.50 to $8.

Good Demand at St. Louis

St. Louis, Oct. 20.—Dealers report an excellent demand for coke, with foundry interests buying the most. Prices are steady with Connellsville 72-hour coke quoted at from $6.50 to $7. A fair tonnage of New River coke was reported sold to a melter in the northern part of this district, at $11, for delivery through the balance of the year.

Trying to Accumulate Supplies

Birmingham, Ala., Oct. 21.—Coke production in the Birmingham district is being rushed. Demand for both furnace and foundry coke is brisk, and apparently an attempt is being made to accumulate supplies to meet emergencies.

Ore Shipments

Curtailed by Government Taking Cars to Move Coal

Cleveland, Oct. 21.—Just as ore shipments to furnaces were picking up after several weeks of stagnation due to the strike in the iron and steel industry an order was issued this week by the railroad administration taking from the ore shippers 50 per cent of their cars for immediate use in anticipation of a strike in the coal industry Nov. 1.

Cars at lower lake ports awaiting to be loaded with ore for the furnaces must be sent back empty to the coal mines in order that maximum shipments may be made before the threatened walkout and to insure an early distribution of the available supply.

The curtailment of car service will interfere seriously with shipments, ore companies say; and as nearly all the storage space at lower lake ports is taken, a still slower movement of ore from the Lake Superior district is anticipated.

Apparently the threatened coal strike is affecting the ore trade in another respect. A leading ore operator has received orders from one of the largest furnaces in the East to suspend 15 per cent of the total tonnage of ore ordered for the season, and similar requests have been received from other furnaces.

Foundry Scrap in Demand

Cast, Malleable and Other Grades Move Higher as Pig Iron Scarcity Grows—Melting Steel is Sluggish

FOR COMPLETE SCRAP PRICES SEE PAGE 1154

Chicago, Oct. 21.—With the steel strike well in hand some movement of scrap to mills resumed and a heavy demand for cast and malleable and other grades for foundry use, quotations on iron and steel scrap in the Chicago district are moving upward gradually. Cast scrap for gray iron foundries is increasing as melters find their supply of pig iron becoming less and it has sold as high as $29, delivered Chicago. Malleable grades, which have not been in demand and which have been ruling at $6 per ton under No. 1 cast are now picking up, as foundries are seeking this material to piece out their needs in the face of reduced pig iron deliveries. Considerable tonnage of rolling mill grades is moving to bar iron mills. Rerolling rails are unusually scarce and mills using this material are competing actively for the tonnage offered. The ordnance department took bids a few days ago on 1500 tons of 3-inch shell forgings at Moline, Ill., and made a tentative sale at $18.50 per net ton on 300 tons and $18 per net ton on 1200 tons. The same department received a bid of $19.60 per gross ton on 820 tons of 6-inch shell forgings at Port Clinton, but this was rejected and the material probably will be offered again. The Rock Island railroad has put out one of the largest lists offered recently by any western railroad, involving 4200 tons, of which 1000 tons is No. 1 steel rails and 750 tons wrought scrap.

Buyers Are Cautious

Boston, Oct. 20.—The scrap iron market continues to improve. Pennsylvania consumers' recent purchases have not reached the tonnage looked for. Buyers invariably pursue a cautious course as the situation still is far from clear. Some companies have been buying steel scrap instead of pig iron because of difficulty in obtaining the latter. Borings find a ready sale at $13.50, and little cast scrap is allowed to accumulate. Foundries which have hesitated to buy pig iron in many cases have been getting in good supplies of scrap, and the price of No. 1 machinery has held firm at $28 delivered.

Scrap Advanced at New York

New York, Oct. 20.—With demand steadily increasing, prices in the local scrap market are moving upward. This tendency especially is noted in heavy melting steel, borings and turnings. The market on heavy steel now appears to be firmly established at $15.50 to $16, New York, and borings and turnings at a similar advance of 50 cents to $11 and $11.50. Advances also have been made in old steel shafting, railroad wrought and heavy cast scrap. Owing to the improvement in the labor situation in eastern Pennsylvania, the movement of steel borings and turnings has increased considerably, with the freer supply of labor for unloading, the rejections which were noted recently, particularly at Bethlehem, no longer are in evidence. A better demand is also in evidence for cast scrap.

Foundries Buy Up Cast

Philadelphia, Oct. 21.—Brisk buying of cast scrap has featured the eastern scrap market the past week. New England foundrymen who have been unable to get the usual pig iron shipments from Buffalo because of the strike have been buying pig iron elsewhere and scrap to fill in. Big tonnages of cast scrap have been moved here to New England during the past week at $28 to $28.50 delivered. For eastern Pennsylvania delivery, however, the market on cupola cast continues at $25 to $26. Wrought scrap also is in good demand as well as forge and bundled sheets and all borings and turnings, but heavy melting steel is dull due to the fact the mills will not pay what dealers ask.

Buyers Still are Cautious

Pittsburgh, Oct. 21.—Possibility of a coal strike has become a factor in the scrap market, for while consumers generally have been showing more interest as the steel strike has lost its force, purchases have not resulted. The general explanation is that the steel manufacturers, as well as the founders, want to be sure business is not going to be tied up by closing of the coal mines. A rather strong tone is noted in scrap prices, notwithstanding the lack of activity. It is patent in view of the fact that production of pig iron at steel plants has suffered heavily, and as not much scrap has been moving to the steel plants, stocks of scrap must have been drawn upon extensively. Most steel companies now are issuing permits for the shipment of tonnages held up by railroad embargoes. It is reported that a round lot of heavy melting steel recently was bought by a Pittsburgh district steel company at $22, delivered, but this cannot be verified. Only small lots of this grade are available and these are moved at about $20 to $20.50. Railroad malleable is scarce, and users have lifted their bids materially. A fairly good market exists for wrought scrap and for cast iron scrap, with No. 1 cupola readily saleable at $25 to $26.

Good Demand for Car Wheels

Buffalo, Oct. 21.—Demand for car wheels features the Buffalo scrap market. Good inquiries are reported by dealers from users in this district, but this grade is difficult to obtain. Cast scrap also is active, and the price remains firm. Local users are not in the market for much heavy melting steel, but this situation is expected to change in a week or so, when local mills plan to resume operation. There is a light demand for steel from other districts. Heavy melting is quoted at $18 to $19.

Cast in Good Demand

Cleveland, Oct. 21.—While heavy melting steel continues to drag in the Cleveland scrap market, cast grades are in heavy demand. Some No. 1 cast has been sold here for $26, and the range now is $25.50 to $26. Heavy cast has moved up to $18.50 to $19, and car wheels to $23 to $24. Malleable also is wanted and both the railroad and the agricultural grades have been advanced. Many dealers are reported to have sold short on malleable, and are now in a tight place. With melting steel demand still low on account of the strike, the price is a trifle firmer. Dealers believe the market will pick up shortly, as attempts are being made to operate more plants in this district.

Cincinnati Market is Firmer

Cincinnati, Oct. 20.—The scrap market is quiet but a trifle firmer. Embargoes against shipments to the Pittsburgh district are a factor, but the situation is showing some signs of improving. Heavy melting steel, that has been weak for some time past, now is recovering, but no recent advances are noted. Foundry scrap continues to move freely. All prices are unchanged.

Strong Demand Felt at St. Louis

St. Louis, Oct. 20.—Consumptive demand for scrap iron and steel has improved and prices have been marked up on practically all grades. Dealers are bullish in their views, some of them looking for a return of a boom almost as pronounced as during the war. Rolling mills throughout the country are trying to purchase scrap wherever it can be obtained, and St. Louis dealers can now ship supplies East at a profit. Reports received here indicate an acute shortage of rolling mill grades both in the East and North. All the foundries are busy and the market for their grades is strong, with available supplies light. The American Steel Foundries is in the market for a round tonnage of special grades of heavy melting steel, and the American Car & Foundry Co. has also been inquiring for material, but is unwilling to pay the prices asked. The St. Louis Screw Co. is in the market for all varieties of rolling mill material, and stove manufacturers have placed inquiries for fair tonnages for prompt delivery. Offerings out of first hands are extremely light. The only railroad list before the market was one from the Wabash, offering 200 tons.

Need Scrap in South

Birmingham, Ala., Oct. 21.—Improvement is noted in the scrap market in the South, although quotations are unchanged. Some of the consumers of heavy melting steel and other material are making inquiries, but are unwilling to pay the prices quoted.

Fair Shipments

Continue in Sheets—Operations Gain —Talk Advance in Galvanized

Pittsburgh, Oct. 21.—The sheet situation continues to improve. All the mills, which shut down as a result of the walkout of Sept.22 and since have resumed, still are operating and with a fuller complement of men than was the case even as recently as a week ago. Men have been going back to work at practically all plants throughout the country, capacity now in use is being more fully manned and production is running along more evenly. Shipments still are lagging but gradually are improving. The American Sheet & Tin Plate Co. continues to operate more than 80 per cent of its sheet mills and the showing of the independents is practically as good, due to the fact that the Trumbull Steel Co., Warren, O., this week is running 100 per cent. Numerous demands for sheets are coming out from consumers whose ordinary source of supply is curtailed or shut off as a result of the strike. Most companies, save possibly one or two which are short of sheet bars, are making fairly good shipments on contracts. None of them is paying any attention to the new demands.

Orders Are Turned Away

Philadelphia, Oct. 21.—Sheets are constantly more difficult to obtain and particularly so by reason of the strike in the mill department of the leading eastern maker of blue annealed. Orders are being turned away right along. Among the current orders is one for 300 tons of blue annealed for India.

May Advance Galvanized

Youngstown, O., Oct. 21.—Sheet shipments from valley mills continue on a small scale since only two plants are rolling. At these particular plants orders in hand are heavy and it is not thought any additional business will be considered until these makers start on 1920 bookings. This condition was true of every valley sheetmaker even before operations were interrupted by the strike. Five weeks ago rolling schedules at many of the sheet mills in this district showed but few openings.

The present level of galvanized sheets is likely to change soon in the opinion of certain makers of this product here. They feel that independent makers will be compelled to boost the price unless the upward movement of spelter is checked. Those makers whose supply of spelter is running low, will have to replenish their stocks on a 7.70c basis. They state that with spelter at this figure, coated stock on a 5.50c basis will not show even a fair profit. That the price of spelter is not only pinching sheetmakers but galvanized nailmakers as well is evidenced by the recent advance of 5.00c per keg in the price of this product.

Inquiries coming to valley sheet mills now active, are heavy; where mills are inactive, however, inquiries are light. Dealers state stock sheets are well bought up and that tonnages of any grade available for immediate shipment, are becoming scarcer right along. In the case of certain brokers, who are authorized to sell several hundred tons of black sheets for the French government, higher premiums are asked this week than last.

Little Business

Being Accepted in Wire Products—Export Nails Bid High

Pittsburgh, Oct. 21.—Although operating conditions are improving among the manufacturers of wire and wire products, about the only new business that is being taken is in fence wire and on this line makers are making no guarantees as to time of shipment. The orders, in fact, amount to little more than reservations. One company has a limited tonnage of barbed wire and of the heavier gages of galvanized wire for immediate shipments, but in general, current production of wire, nails and other products is insufficient to meet more than a small portion of the live contract obligations of the producers. Export demands for wire and nails are extremely heavy, particularly from the Orient. One maker here reports having turned down an order for 8500 kegs of nails at $4 a keg, Pittsburgh, for shipment to Japan because the tonnage was not available. Actually it is believed $4.25 or even $4.50 would be paid for export nails in 8, 16 or 20-pennyweight sizes. The country is bare of these sizes as wooden building construction has been on a far heavier scale than is generally supposed and with production limited, supplies have gone down rapidly. Plants of the American Steel & Wire Co., all through this district are gaining in operation and production.

Railroad Needs

Being Lined up by Purchasing Officials—Egypt Places Locomotives

Chicago, Oct. 21.—Manufacturers of steel rails and fastenings find that purchasing departments of railroads are lining up their requirements for 1920 and preparing the way for purchases as soon as they are given permission, or the roads actually are turned back to their owners. For some time supplies of necessary material have been held back and heavy buying undoubtedly will follow their return to private ownership. Some selling of rails for prompt delivery is being done in small tonnages. Demand for light steel rails has slackened somewhat because of the threat of a miners' strike, which will cut down the quantity used in mine work. Export inquiry is excellent, that coming to the western mill being mostly from South America and the Orient.

The Texas Pacific railroad is inquiring for 69 passenger equipment cars of several sorts, which will require about 1000 tons of finished steel. An Indiana carbuilder is figuring on 250 cars but the name of the railroad has not been divulged.

Egypt Places Locomotives

New York, Oct. 20.—An award of 50 locomotives for Egypt has been made the Baldwin Locomotive Works. Inquiries for 65 additional locomotives for Egypt are current.

Higher Rail Prices Reported

Pittsburgh, Oct. 21.—Vague rumors have been heard here of a $2 advance in the price of standard rails but this cannot be confirmed at the offices of the leading maker in this district.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Oc. 15	23.50	54.25	6.25	7.50	33.00	8.50	41.00
Oct. 16	23.50	54.25	6.25	7.50	33.00	8.50	41.00
Oct. 17	23.50	54.50	6.50	7.625	33.00	8.50	41.00
Oct. 20	22.00	54.25	6.50	7.65	33.00	8.50	41.00
Oct. 21	22.00	54.25	6.50	7.70	33.00	8.62½	41.00

* October shipment from Singapore.
† American Smelting & Refining Co.'s price.
‡ Producers' price. Outside market, Oct. 15, 22.25c; Oct. 16, 22.25c; Oct. 17, 22.25c; Oct. 20, 22.00c.

NEW YORK, Oct. 21.—The most important development in the metals market the past week was the departure of leading copper producers from the 23.50c price, previously firmly maintained for three months. One of the largest agencies quietly sold several thousand tons of electrolytic copper at prices down to 21.75c, f.o.b. refinery, then advanced its quotation to 22.00c. Outside sellers continued to do a little business in second hand copper at around 22.00c. Export demand for copper has been in evidence now and then, Germany placing orders for about 700 tons through sellers outside the Copper Export association. Japan also has been inquiring for copper. Inquiries for about 600 tons of copper rods for shipment to Europe came into the market Oct. 20. Casting copper is steady at 21.00c to 21.25c; Lake copper 22.00c to 22.25c.

The American Smelting & Refining Co. advanced its lead price Oct. 16 a quarter cent a pound to 6.50c, New York, 6.25c, East St. Louis. Before that action, however, outside sellers had been asking 6.50c, New York, while immediately afterwards outside sellers advanced their prices to a substantial premium.

The feature of the zinc market has been the resumption of export inquiries and sales, and today galvanizers inquired. England and Japan both have been in the zinc market and several thousand tons are reported to have been sold. England has wanted both grade A and prime western, while Japan has inquired for 98 per cent zinc, equivalent to prime western. Prime western is quoted about 7.75c to 7.80c, East St. Louis basis for October shipments, with five points premium for November and December.

Bar Users Playing Safe

Consumers Close Tonnage to Win Place on Mill Books—Eastern Prices Up—8700 Tons of Bar Iron Placed

Chicago, Oct. 21.—With production uncertain, most consumers of finished steel are seeking to place their contracts with makers in order to secure a place on rolling schedules and thus stand a better show of receiving material when conditions improve. At present practically all consumers who have followed this rule in the past and specified promptly are receiving steel while the hand-to-mouth buyers who did not insure their supply are not so well situated and are seeking by other means to obtain prompt deliveries. The result is that fairly large tonnages of soft steel bars are being contracted for mostly for current shipment, but a moderate portion is for next year's delivery. Prices have not been changed from those prevailing over the past few months.

Excellent demand exists for bar iron with railroads taking moderate tonnages. The latter are taking whatever excess is manufactured by the mills of the Santa Fe and Great Northern railroads, which is not large, but exerts considerable influence in the market. Booking of business is sufficient to keep mills operating steadily but does not create a backlog.

Manufacturers of hard steel bars rerolled from rails are turning down business as they are unable to take all that offers.

Bethlehem Advances Price

Philadelphia, Oct. 21—The Bethlehem Steel Co. has advanced the steel bar base to 2.50c, Pittsburgh, making the price on forging quality 2.75c. This level is the same to which the Cambria Steel Co. advanced some time ago. Those mills which are operating are accepting business from their regular trade but are so fiilled up with orders that they must accept new ones cautiously. Considerable new bolt business continues to come from shipbuilders and several hundred tons were placed the past week. The Emergency Fleet corporation is taking bids on 1500 kegs of fitting-up bolts.

Premiums Could be Obtained

Pittsburgh, Oct. 21.—Although production of merchant steel bars is gaining as a result of the resumption of operations at a number of the mills and the fact that men are daily coming back to work, supplies are extremely inadequate for the demand and there is no question but what some buyers who must have supplies immediately would be glad to pay premiums to secure them. An offer of a premium, however, does not interest manufacturers just now, as they are more chiefly concerned in meeting contracts so that they will not get too far behind their obligations. Users of merchant steel bars have been considerably less affected by the labor disturbance than have been the producers. Scarcity under these conditions was to be expected.

Substitution of iron bars for steel still is noted, sales aggregating 8700 tons of iron bars being noted to northern Pennsylvania oil interests who are taking the material and converting it into drill rods because of their inability to secure steel bars. This business went almost entirely to western bar iron makers and was placed at a price approximately equivalent to 2.75c, Pittsburgh, for common merchant iron. Pittsburgh district producers of iron bars are holding generally at 2.75c, although it is reported that one maker recently has named a price as low as 2.50c.

Bolt Mills Lack Bars

Chicago, Oct. 21.—Manufacturers of bolts and nuts are meeting considerable difficulty in obtaining sufficient raw material, as the steel strike has limited shipments of steel bars. In some cases plants have been forced to close down for lack of material. Demand from consumers is heavy and much of it cannot be entertained. The uneven condition of steel supply leads consumers to enlarge their inquiries to mills in operation to make up the deficiency. However, in most cases bolt makers are willing to take only their share. An inquiry for 5,000,000 bolts now current in this market has been turned down by some producers.

Bar Shortage is Felt

Pittsburgh, Oct. 21.—Although none of the makers of nuts, bolts and rivets here has been obliged to suspend operations because of the shortage of bars and rods, resulting from the strike, some of them are suffering from insufficient supplies of steel. Shipments to both consumers and jobbers are going forward fairly well and no real pinch yet exists in the supply. Prices are unchanged.

Production is Gaining

Pittsburgh, Oct. 21.—Hoop and band mills in this district are running more normally and production is gaining steadily. Makers, however, are committed for some time in advance, and it will be probably a couple of months before normal conditions are restored. Consumers are not pressing producers unduly for shipments but new demands are getting no consideration. Cotton ties are in ample supply to meet all current demands.

Now Turning Down Orders

Pittsburgh, Oct. 21.—From a condition where they were inclined to take orders regardless of their size, some makers of cold finished steel bars and shafting now are so heavily committed that they recently have been obliged to turn down new orders, among them some extremely attractive ones. Nonintegrated manufacturers are beginning to feel the pinch in the supply of merchant steel bars, due to the strike suspensions, and those makers who produce their own raw material have been flooded with business from those consumers unable to get full shipments from regular sources. Automobile and tractor builders want large tonnages for prompt shipment. The market is extremely firm at 3.60c, base, Pittsburgh, because production is falling behind consumption and orders are backing up on makers.

Spiegel Tonnage

Of 10,000 to 12,000 Placed by Belgium and Holland—Sale at $33

New York, Oct. 20.—Despite the fact that some makers of spiegeleisen have been firmly maintaining a minimum price on 18 to 22 per cent metal, of $35, furnace, this figure has been shaded right along on the few attractive orders that recently have been offered. Following a recent sale of 400 tons at $34, furnace, as previously reported in THE IRON TRADE REVIEW, a sale of 100 tons was made during the past week at $33, furnace. The market now may be quoted at $33 to $35, furnace, for 18 to 22 per cent. Current inquiries include one lot of 500 tons, another of 300 tons, and some smaller lots. The most important business in the spiegeleisen market for some time involved the sale, about 10 days ago, of about 12,000 tons of spiegeleisen for export to Belgium and Holland, at prices which are reported to have been higher than $31, eastern furnace, or around $35 net, f.o.b. New York. Other export inquiries are out for 18 to 22 per cent.

There is a disposition to quote higher prices on ferromanganese and during the past week $115, delivered, has been asked on domestic metal for shipment this year. Next year's metal is held at the regular price of $110, delivered. English metal at the moment is not playing much of a part in the market. All English makers appear to be out of the market, with one exception. This interest still authorizes its agent to take business at $100, c.i.f. tidewater, but the latter has not taken any business at this figure. Domestic makers are inclined to believe there is going to be a scarcity of ferromanganese. New buying of the week was light.

About 400 to 500 tons of 75 per cent ferrosilicon recently have sold at around $142 to $145 delivered Pittsburgh district. Several cars of 50 per cent sold at $82, delivered Pittsburgh district, and another car at $82.50.

Between 12 and 15 tons of ferrotungsten imported from England sold at prices somewhat below $1.20 a pound contained, the minimum published quotation of domestic makers. Germany and Japan have been inquiring for ferrovanadium.

Wants $115 for Ferro

Philadelphia, Oct. 21.—One eastern maker is asking $115 furnace delivered for prompt ferromanganese but has not sold at that price yet. It is re-

ported 5000 tons of spiegeleisen were sold to Italy at $33.10.

Not Much is Going On

Pittsburgh, Oct. 21.—Demands for ferroalloys are few and small. Most consumers have some material due them and of course when in a position to use any merely have to order material forward. A few small inquiries for ferromanganese have been before makers recently but buyers are slow to close until they have received bids from all makers. One buyer who has been in the market for 150 tons of 80 per cent material reports having had a quotation of $100 c.i.f. Baltimore on 78 to 82 per cent alloy. The more general asking price, however, on this material is $105, while 76 to 80 per cent alloy is quoted at $100 at tidewater. American makers generally are holding to $110 delivered, for 78 to 82 per cent material.

Only small lots of 50 per cent ferrosilicon have been moving and these have gone generally at $80 furnace, freight allowed. Sellers quoting $85 delivered, into this district report having lost more or less business and even less than $80 is being quoted by Canadian producers, one of whom has named a price of $78, packed, delivered Pittsburgh. Bessemer ferrosilicon still is extremely slow of sale and prices are no more than steady. Small sales of ferrotungsten are quoted at $1.15 a pound and a little ferrovanadium has been sold to consumers recently at $5.75 a pound. Brokers are not able to buy this latter material as cheaply as are consumers.

Tin Plate Demand

For Export is Heavy—Mill Operation Continues to Increase

Pittsburgh, Oct. 21.—The hot mills of the McKeesport Tin Plate Co., which suspended operations a few days ago before the strike, resumed operations this morning, 22 of the 44 mills going into commission. The Trumbull Steel Co., Warren, O., got back today to 100 per cent operations of its tin plate mills. Meanwhile no loss is to be noted among the mills that were active a week ago, and with a steady return of men, production is getting back to normal. Makers of tin plate generally were committed up to the first of December before the strike broke and it probably will be well into next year before these obligations are met. There are only a few of the manufacturers who have any surplus for early delivery and these are in receipt of heavy export demands, among them being an order for 100,000 base boxes for first quarter shipment. The company getting this order accepted only one-half of it, naming a price of $7 per base box, Pittsburgh. Firm offers of $7.25 per base box, Pittsburgh, have been made by Japanese buyers, who would be glad to pay this price if they could get prompt shipments.

An order just placed at Philadelphia calls for 4000 base boxes of tin plate for export to India.

Plate Orders Are Heavy

Eastern Mills Being Besieged With Tonnage—Sun Shipbuilding Co. Places 18,000 Tons and Has 22,000 Tons Pending—Prices Strong

Philadelphia, Oct. 21—The plate market in the East to some extent now has taken on a boom aspect. Big tonnages are being placed right along. Several lots around 5000 tons and many from 1000 to 3000 have been closed. These are for all purposes, but shipbuilding has the prominent place. The mills are unable to promise delivery under six to eight weeks and in some cases orders are being cancelled because the plates are wanted at once. At least two eastern mills are tied up for the rest of the year, mainly on plates for export. Plate prices now are minimum at 2.65c, Pittsburgh, and this price cannot now be shaded on export. One of the larger eastern buyers is the Sun Shipbuilding Co., which has taken 18,000 tons and has 22,000 tons under option. The New York Shipbuilding Co. has bought 3500 tons. The Baldwin Locomotive Works expects to get 200 locomotives for Belgium. The mills as a rule are refusing to sell for next year but one large buyer succeeded in placing a first quarter tonnage with an eastern mill at 2.65c, Pittsburgh.

Makers Are Well Booked

Pittsburgh, Oct. 21.—Manufacturers of plates in this district who have their plants in operation have about all the business they can reasonably meet for the remainder of the year and are not showing much interest in new inquiries even at the full market price of 2.65c, Pittsburgh. So many demands came to makers here from buyers, ordinarily supplied elsewhere, that they soon became committed as fully as they care to be. Reports from the East state that plate makers are obtaining as high as 2.75c, Pittsburgh, but this price has not yet been obtained here, although some buyers probably would be glad to pay it if assured of prompt shipments.

Better Tonnage

Is Shown in Tubular Goods—Cast Pipe Up in South

Pittsburgh, Oct. 21.—Production of tubular goods, both steel and wrought iron, is holding its own, and in some instances is gaining. The National Tube Co. has about the same amount of capacity in operation it had a week ago, but has been able to increase production slightly because more men are back. Normal conditions exist now at the McKeesport, Ellwood City, Pa., and Lorain, O., works of this company, while at its Pennsylvania works in Pittsburgh, half of the furnaces are in operation. Neither the Youngstown Sheet & Tube Co., nor the Republic Iron & Steel Co., Youngstown, O., is operating much pipemaking capacity and the Wheeling, W. Va., producers still are down. The Jones & Laughlin Steel Co. is running its pipe mills full, while at both the Pittsburgh and Girard, O., plants of the A. M. Byers Co., the puddlers are working and some finishing capacity is operating. Spang, Chalfant & Co. also are getting back to normal. Market conditions are much as they have been, with plenty of new business coming out, but not much disposition on the part of manufacturers to consider it.

Private Buying on Good Scale

New York, Oct. 20.—Outstanding among recent awards in the eastern cast iron pipe market is the placing of about 1500 tons with the Warren Foundry & Machine Co., for the soldiers' and sailors' memorial bridge at Harrisburg, Pa. This business was sublet through the Central Construction Co., of that city. The only other large tonnage, that for East Hartford, Conn., involving about 2000 tons, is still pending. The general contract for this work has been let.

Sellers continue to report a good volume of private buying and a lack of public demand.

Western Demand Slack

Chicago, Oct. 21.—With scarcely an important tonnage now under consideration in western territory, manufacturers of cast iron pipe see little hope of adding much to their bookings from this district before the winter season sets in. Prices have become decidedly firm, and no incentive exists to bring about buying on the score of economy, and the close approach of freezing weather is putting an end to excavation. The latter condition is causing contract holders to ask immediate delivery. The American Cast Iron Pipe Co. has taken 650 tons for Columbus, O., the National Cast Iron Pipe Co., 200 tons for Duluth, and the United States Cast Iron Pipe & Foundry Co., 100 tons for Broadwater, Nebr.

Southern Prices Advanced

Birmingham, Ala., Oct. 21.—Cast iron pipe plants in the Birmingham district are literally swamped with business, and there are still many specifications being bid on. Pipe prices have advanced, 4-inch pipe now being quoted at $54, and 6-inch and over, at $53. Every pit at cast iron pipe plants in the South is in operation, and more pig iron is being melted at present than at any time in the past three years.

Sheet Demand Heavy

New York, Oct. 20.—Although mill shipments are somewhat freer, owing to improvement in the strike situation, the situation in the local warehouse market is little changed. Demand for sheets and bars and for many small items continues heavy, and stocks of such material remain low.

New Awards are Lighter

September Contracts Equal Those of August But Buyers Now Acting More Deliberately—Fabricating Workers' Strike Hurts Chicago Market

New York, Oct. 20.—Sizable awards have been lacking in the eastern structural market during the past week. At the same time, new inquiries of importance have been few. Included among the larger projects is a building for the Park Bank Co., New York City, calling for about 1100 tons. This project has been contemplated for some time. Two copper companies, the Anaconda and the Nichols, have issued inquiries for 500 and 400 tons, respectively. The Nichols company plans to erect a building at its plant on Long island, and the Anaconda company, it is understood, requires the steel for work at Butte, Mont.

The report of the Bridge Builders and Structural society issued recently for September is regarded generally as being most favorable owing to the conditions which prevailed during latter part of the month. Despite the unsettlement resulting from the steel strike, the figures showed that 78½ per cent of the capacity of the shops was contracted for, the bookings aggregating 141,000 tons, a total similar to that of the preceding month. A comparative statement follows:

Month	Per cent	Approximate tonnage
September, 1919	78½	141,000
August	78½	141,000
July	74	133,200
June	65	177,000
May	49	88,200
April	24½	48,100
March	17½	32,300
February	12½	22,500
January	12	21,600
December, 1918	29	52,270
November	27	48,700
October	43	77,400
September	60	108,000
August	57	102,000
July	116½	209,700
June	56	100,800
May	60	108,000
April	64	115,200
March	47	84,600
February	55	99,900
January	53	95,400
December, 1917	121	205,200
November	77	138,600
October	61½	110,700
September	29	52,200
August	38	68,400
July	41½	74,700
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000
December, 1916	86	148,000
November	78	134,000
October	77	133,500
September	52½	99,400
August	64	112,600
July	47½	83,600
June	58	100,000
May	80	137,000

Lettings Maintain Average

Boston, Oct. 20.—Statistics compiled by F. W. Dodge Co. show New England building operations mostly industrial establishments so far in 1919 to have exceeded any previous year since 1900. Requests for new plans indicate a large amount of steel construction in 1920 if conditions are at all favorable. The larger contracts let during the past week have been for concrete construction. Structural lettings, while individually small, have shown an aggregate comparing favorably with the average. An office building at Manchester, N. H., will take 125 tons, and the Memorial building for the city of Lowell, 650 tons. Bids are in for the Telephone Exchange building, Boston, approximately, 800 tons.

Orders Piling Up on Eastern Mills

Philadelphia, Oct. 21.—The shape business is active and orders are piling up on the mill so that in some cases deliveries are deferred. One company says that for the past month it has been taking order at a rate double the capacity of its mill. Shape orders are coming principally from fabricators, and also from jobbers. The mills deny they are taking much tonnage which would not come to them but for the strike. A good amount of export business is being done, including the sale of 3000 tons to Japan, and a round tonnage for the Dutch East Indies. The full price applied to this export business, and no more is being taken at 2.55, eastern mill. There is much interest in the Fidelity building project which is to come up for bids soon. It involves about 10,000 tons.

Pittsburgh Mills Well Booked

Pittsburgh, Oct. 21.—Makers of shapes in this district are pretty well booked and are in constant receipt of fresh orders. These conditions, however, are ascribed to the fact that so much capacity in other parts of the country is idle on account of the strike and demands naturally seek the center where they are most likely to be filled. Structural lettings during the past week have been well below the inquiries.

Chicago Bridge Shops Strike

Chicago, Oct. 21.—A strike of employes of fabricating shops in Chicago has shut off the market for structural work in this city, just after the settlement of the building trades strike had started the business forward after several weeks of complete idleness. This has practically stopped production of fabricating material from shops in this city, with a consequent cutting off of demand for plain material from mills. Outside demand is fair and results in mills having plenty of orders on which to work. The largest tonnage let in the West recently involves 1181 tons for a rolling mill building at South Chicago for the Interstate Iron & Steel Co. The state of California has awarded 959 tons for a state building at San Francisco. An inquiry for about 2000 tons of steel for a hotel in Chicago has been halted until finances have been arranged.

CONTRACTS AWARDED

Bridge for Boston & Maine, 100 tons, to Boston Bridge Co.

Addition to the plant of the National Metal Molding Co., Economy, Pa., 350 tons to the Jones & Laughlin Steel Co.

Repair work for Steel & Tubes Co. of America at Indiana Harbor, Ind., 150 tons to Worden-Allen Co.

Hoist house for McKinney Steel Co., Bessemer, Mich., 200 tons to Worden-Allen Co., Milwaukee.

Factory addition for Burgess Battery Co., Madison, Wis., 200 tons to Worden-Allen Co., Milwaukee.

Merchant mill for Interstate Iron & Steel Co., South Chicago, 1181 tons, to McClintic Marshall Co.

State building for the state of California at San Francisco, 959 tons, to the Palm Iron Works.

Manufacturing plant for the James Mfg. Co., Fort Atkinson, Wis., 654 tons, to Federal Bridge Co.

Stack and assembly building for the J. I. Case Threshing Machine Co., Racine, Wis., 274 tons, to Federal Bridge Co.

Service building for Harry P. Branstetter, Esq., Chicago, 131 tons, to American Bridge Co.

Building for Union Motor Truck Co., Bay City, Mich., 200 tons; let to Whitehead, Kales & Co.

Garage for Wink Motor Car Co., Allentown, Pa., 168 tons; let to Lehigh Structural Steel Co., Allentown, Pa.

Power house, State hospital, Utica, N. Y., 450 tons to Phoenix Bridge Works.

Boylston Mills, East Hampton, Mass., 500 tons to Phoenix Bridge Works.

Buildings in Mexico, 110 tons to Phoenix Bridge Works.

Royal Mills, River Point, R. I., 500 tons to Phoenix Bridge Works.

Building for Pennsylvania Forge Co., 250 tons to Belmont Iron Works.

CONTRACTS PENDING

Building for Anaconda Copper Co., reported to be erected at Butte, Mont., 500 tons, pending.

Apartment house at Baltimore, 400 tons, contract pending.

Building for Park Bank Co., New York City, 1100 tons, contract pending.

Building for Nichols Copper Co., Laurel Hill, N. Y., 400 tons, contract pending.

Cattle barn for the state of Iowa university station at Des Moines, 500 tons. Bids asked.

Memorial building for the city of Lowell, Mass., 650 tons, bids in.

Telephone exchange building, Boston, 800 tons, bids in.

Extenson to faitory building, Revere Rubber Co., Providence, R. I., 400 tons; bids being taken.

Higher Prices

Being Named on Semifinished—Sheet Bars Sell at $45 Pittsburgh

Pittsburgh, Oct. 21.—An acute shortage of practically all kinds of semifinished steel still exists here and so many urgent demands are coming from nonintegrated manufacturers, whose regular sources of supply are shut off or crippled by the strike, that it is no exaggeration to say that substantial premiums over the market basis readily could be obtained. As a matter of fact a Pittsburgh district steel company which has not been materially affected by the labor disturbance and which had some surplus steel was able to dispose of it as sheet bars at $45 a gross ton, Pittsburgh, as against $42, the regular market price.

Eastern Prices Advanced

Philadelphia, Oct. 21.—After continued complaint over the high cost of semifinished steel as compared with the selling price, eastern makers have advanced rerolling and forging billets $5 and sheet bars $2.50 per ton to $43.50, $46 and $44.50 Pittsburgh, respectively. About 2000 tons of rerolling billets have been sold at the new figure of $43.50, Pittsburgh.

Export Inquiries Crowd Market

Producers Refusing Fourth Quarter Business—Deliveries are Delayed Until First of Year—Europe Despairing of Getting Supplies Here—Sales are in Volume to South America and to the Orient

NEW YORK, Oct. 20.—Due to the heavy demand and curtailment of production by the strike, nearly all export houses report that they are out of the market for the fourth quarter with one or two exceptions. Foreign purchasers are being advised that plates and structurals and some bars can be had. Blue annealed sheets also have been offered. Otherwise no iron or steel product can be delivered before the first quarter of next year. Notwithstanding the pressure of foreign inquiries there does not appear to be any great demand for quotations on deliveries for the first quarter. A great bulk of the foreign sales already made, which were scheduled for delivery during the fourth quarter, have been delayed until the first quarter of 1920.

Export houses are nevertheless satisfied with the volume of business done and feel hopeful of the prospects for sales during the remainder of the current year. There has been a marked curtailment of business with Europe, but this is compensated for by the business that has been done with the Orient and South America. During the past week or so the sales have included the usual run of orders, the foreign purchasers buying only such goods as they absolutely need.

Despite the unsettled conditions the foreign demand has been so insistent and in such a large volume that they have frequently called forth quotations in face of the unwillingness of the American producers to anticipate the market. In a number of cases the export house has itself assumed the risk and made the quotation to the foreigner. From the terms of these quotations it is learned that the exporters have anticipated an advance of $5 per ton on wire and similar products for future delivery. It is anticipated that there will be no material advance in the price of bars, structurals, plates or sheets. Should any increase be made by American producers it will be contingent upon the terms of the settlement of the strike and the industrial conference now in progress in Washington.

Sheets Are Allocated

Some export houses contend that their foreign inquiry is but normal but qualify this with the statement that they can sell abroad practically everything they can contract for in this country. One house which does a large business with the Orient said it was able to obtain all the commodities it desires, with the exception of sheets. It was said that the United States Steel Products Co. allocates the sheets it has for sale abroad according to the normal consumption of each market. Some of these markets abroad have already purchased up to the full of their allocation while others have not.

Demand for nails has been so insistent that exporters are now paying a higher price. Nails for export are being quoted at $4, Pittsburgh, or $4.05 f.a.s., New York. The f.a.s. New York price on plain wire is $3.77, on galvanized wire, $4.47, and on barbed wire, $4.89. These increased quotations indicate the direction in which the market is tending.

While inquiries are being received and some sales are being made, the exporters are beginning to realize that the European trade is of negligible quantity. The market was much excited over an inquiry from Belgium for 41,900 tons of billets, but it was said that the producers were unwilling to quote a price low enough to interest the Belgian inquirers. Among the few English inquiries noted in the market were those for 200 tons of sheets, 60 tons of varnished wire and 30 tons of barbed wire. Among the recent sales made to England were 750 kegs of nails and 6000 reels of wire. Italy has sent in an inquiry for 2000 tons of pig iron, 2000 tons of plates and 1000 tons of sheets.

Spain Curtailing Purchases

Spain also is curtailing her purchases of iron and steel here. During the immediate past quotations have been made to Spain on 2000 tons of pig iron, 1000 tons bars, 3000 boxes of tin plate, 350 tons of brass and a small tonnage of steel plates. The export house curtailed its commission to 2 per cent, but the Spanish prospects said the prices were too high and refused the offer.

A great volume of wire has figured in the sales to South America. Argentine has closed order for 32,000 reels of galvanized wire, 50 tons of plain wire, 1000 boxes of tin plate, 10,000 reels of galvanized barbed wire, 85 tons of rivet wire, and 2000 coils of varnished wire. Sales of 600 reels of plain wire and 40 tons of nail wire to Montivedio were reported. Typical of the type of business that is being done generallly with South America were the sales of 60 tons of tubes and 200 cases of tin plate sold there by one house during the past week. There have also been sales of tin plate, sheets, nails, wire and similar products to Central America.

One house reported the sale of two carloads of tubes and 10 tons of copper to Australia. Some heavy shafting and plates have been purchased for the sugar industry in Hawaii, the latest order closed being for approximately 500 tons. Hawaiian sales also include sheets and nails. Among the sales made to the Philippines were 4000 reels of barbed wire, 200 tons of galvanized sheets and 300 tons of light rails. Exporters have also sold 6000 kegs of nails and four carloads of pipe to the Dutch East Indies.

One house reported the sale of 400 tons of wire rods, 50 tons of shafting, 40 tons of zinc, 120 tons of hoops, 2200 cases of tin plate and 3000 kegs of nails to China. This same house sold 50 tons of hoops to Japan and 800 cases of tin plate to Manchuria.

The strike of the longshoremen at the port of New York, which may spread to other ports, has been giving the exporters considerable trouble. Little shipping has left this port for the past week or so and the longer this strike continues the more uncertain are the exporters about future conditions.

The railway equipment manufacturers have made progress with their foreign equipment finance corporation. It was announced that this corporation will have a capitalization of $100,000,000 and will soon be ready to extend credits to all those countries which are in need of railway equipment. Each of the equipment manufacturers entering into the financing corporation, it is understood, will subscribe $5,000,000 to the capitalization. Several representatives of American equipment companies are already in Europe and the field there has been under careful observation. It is generally agreed that Europe's needs will be great and already several large orders are pending. One of these is for 400 locomotives for the Belgian government. There is another order in sight for 20,000 cars. The placing of these is awaiting credit arrangements.

Big Meeting Promised

Indications point to a large attendance at the sixteenth general meeting of the American Iron and Steel institute to be held at the Hotel Commodore, New York City, on Friday of this week. Acceptances for the banquet Friday evening which will be addressed by prominent figures in the iron and steel and industrial world, some of them of international renown, have been unusually large in number.

Steel Bids Uniform

Washington, Oct. 21.—Bids on 10,500 tons of plates, 3400 tons of shapes and 15 tons of bars each for battleships No. 51 and No. 52, were opened last week by the navy department disclosing the following prices offered: Carnegie Steel Co., 2.50c, plates; 2.45c, shapes, and 2.35c, bars; with the Midvale Steel & Ordnance Co., the Bethlehem Steel Co. and the Phoenix Iron Co. bidding at prevailing market levels.

Steel Strike is Nearing the End

Good Progress is Made by Furnaces and Mills in Districts Where Strikers Were Most Strongly Organized—Men Now Returning at Cleveland and Youngstown —Pittsburgh Agitators Lose Injunction Suit

STEADY progress toward a resumption of normal operations of blast furnaces and steel mills is reported in those districts in which the strikers were most strongly fortified, a development encouraging employers to believe that the strike is near an end. In the Youngstown district, the Youngstown Sheet & Tube Co. has every department working except its puddling mills, while at the Ohio works of the Carnegie Steel Co., 90 per cent of the American-born workers of foreign parentage have returned, as well as a large percentage of the foreign-born workers. The Trumbull Steel Co. has increased operations. Many instances are cited by employers in the Youngstown district where pickets have deserted their posts and returned to work.

In the Cleveland district, where the strikers were considered particularly well organized and where city authorities have been especially favorable to their cause, operations are showing increasing activity as more men continue to return. The McKinney Steel Co. is operating one of its four blast furnaces, two of its 14 open hearths and its blooming mill, and also is running partially its by-product plant. The Cleveland Furnace Co. is operating one of its furnaces

In the Pittsburgh district strike conditions are constantly growing better The strikers were defeated in an injunction suit which they instituted against Pittsburgh officials to compel the latter to issue them permits to hold organization meetings in certain areas. The more radical groups of foreign laborers are not being re-employed, although applying for reinstatement.

Two of the three mills in the Buffalo district are planning to operate this week on an extended scale. The Lackawanna Steel Co. has increased its force to between 2500 and 3000 men and is operating a blast furnace and certain open-hearth and mill units. The organizers sent 600 pickets to this plant but the police believed that number too large and dispersed them. The Donner Steel Co. is planning to resume operations Oct. 22.

In the southern and eastern districts the strike is virtually at an end, and the situation in the Chicago district also is reported to be much improved.

Prospects of a coal strike Nov. 1 are not considered alarming in the steel industry, although the steel strikers claim this will assist them. The coal supply is said to be ample for 90 days' requirements.

Pittsburgh Strikers Lose Injunction Suit

PITTSBURGH, Oct. 21.—Little outward evidence that a strike exists against the steel plants is at hand in Pittsburgh proper, where the fortunes of the labor organizers have fallen so low that they lately have been obliged to resort to lawsuits. The authorities at Pittsburgh like those in the state of Pennsylvania believe in law and order and it has been the policy of the mayor of the city to refuse permission for labor meetings to be held in those parts of the municipality that are considered as strike areas. Labor interests recently sought an injunction against the city officials to restrain interference with their meetings. The injunction has been refused.

Outside the city, except for occasional outbreaks brought about by the interference on the part of strikers with men on their way to and from the plants, conditions are steadily growing better. Not a plant in the district which was affected by the walkout four weeks ago has failed to maintain and extend the recovery which began to set in during the second week of the trouble. In every plant more men are back at work than at any time since the first few days of the strike period. Few American workmen went out and most of them are back. Foreign labor has stayed out to a considerable extent, and a large number of them are out of the steel plants for good.

Disclosures of Attorney Jacob Margolis, who claims to represent the I. W. W. in Pittsburgh, before the senate committee on education and labor in Washington with regards to activities of the Russians at Homestead, not a few of whom had been employed by the Carnegie Steel Co., and who lately have been trying to go back to work, have established a barrier against their employment in the plant of this company. Because of the foreign character of the strike the belief is growing among steel company officials that a protection against a recurrence of the present trouble will be found in the employment only of Americans, either native or naturalized.

Little fear is entertained among the steel manufacturers that a strike of the coal miners on Nov. 1 will have any effect on the steel situation. Despite the feverish buying of coal which has been in progress the past week or ten days it is reliably stated that visible supplies are sufficient for 90 days at least and it is believed that if the coal miners cannot win in a month they cannot win at all.

McKinney Steel Co. Begins Plant Operations

Cleveland, Oct. 21.—Although more iron and steel plants in this district announced their intention to resume operations Monday so few men reported at most plants that officials did not consider it wise to attempt operations. Employers, however, say the number of strikers asking for reemployment is increasing steadily. Approximately 472 men are working at the H-P nail works of the American Steel & Wire Co., and officials of this company state large numbers of men have asked to be re-employed at the other plants of the company.

One plant of the Otis Steel Co. is operating on practically a normal basis, while the company's Lakeside works is operating partially. Between 300 and 400 men have reported for work at the plant of the Upson Nut Co. The McKinney Steel Co., the largest independent producer in

the district, has resumed operations on a partial basis. One of the four blast furnaces, two of the 14 open-hearth furnaces and the blooming mills are operating. The by-product coke plant is also working on a partial basis.

Officials of the Union Rolling Mill Co. planned to open the plant Tuesday, but the number of men reporting was insufficient. Many men have reported at the Lake Erie Bolt & Nut Co.'s plant, but so far this company has not resumed operations.

One blast furnace of the Cleveland Furnace Co. has resumed operations.

Attempt to Call Out Ore Miners Fails

Duluth, Minn., Oct. 21.—The ore miners' strike in the Ely district is proving to be a failure. The North Chandler mine is now working with a full crew and two other mines that were closed are working with reduced crews. Agitators' efforts at other mines have fallen flat. The Minnesota Steel Co.'s plant here is operating normally.

More Furnaces and Mills Busy in Chicago District

Chicago, Oct. 21.—Continuous improvement is made in the steel strike situation as more men return to work. Percentages of operation are difficult to state as the forces have been disorganized, and it is slow work building up again for efficient operation.

A sharp contrast is presented in this district, showing plainly that intimidation is the most effective means of continuing the strike and that where this is at a minimum men return to work. In Indiana, including Gary and Indiana Harbor, the presence of federal troops has served to maintain order and workers have returned to their tasks in large numbers. In some cases the mills have been unable to accommodate them as fast as they have applied, the men being forced to wait until the next day before being assigned. Mills in these places are operating at a high rate.

In Illinois, including South Chicago and its environs, the only protection is the city police and deputy sheriffs, all political appointees, and the strikers have free rein. This situation is retarding resumption of operation.

Both Gary and South works of the Illinois Steel Co., have increased blast-furnace and open-hearth operations and have put additional rolling mills into service. The By-products Coke Corp., has been able to light part of its ovens and has blown in one stack at Federal furnace. The Iroquois Steel Co., has lighted one stack and will light another shortly. Production from these sources is small because of difficulties in getting them under way after being cold.

Most Americans are back at work, while few of the foreigners who do not speak English have returned. The latter depend on the labor agitators for their sources of information and are given garbled reports designed to keep them out. The strike has been definitely lost by the strikers and the remainder of the struggle is simply a wearing-down process until all the men are back at work or their places filled by others.

More Activity is Noted in Mahoning Valley

Youngstown, O., Oct. 21.—Throughout the Mahoning valley iron and steel plants gradually are being steered into productive channels again. More activity in concerted steel-plant operation was witnessed Monday and Tuesday than at any time during the past five weeks. At the Ohio works of the Carnegie Steel Co. this week more than 90 per cent of the American-born employes together with many of the foreign-born workmen entered the mill gates, according to an authorized statement issued by the officials. About 100 more men than was noted one week ago returned to work Monday. The Ohio works now has one blast furnace, a bessemer converter which was dried out Sunday night, two open-hearth furnaces and the blooming mill in operation. Further plans point to the starting of the McDonald bar mills this week.

The Youngstown Sheet & Tube Co. now has every department of its East Youngstown plant working with the exception of the puddling mills. The largest number of men returned for works at this plant than at any other plant in the Youngstown district. Further down the valley at Lowellville, O., two open-hearth furnaces at the plant of the Sharon Steel Hoop Co., are being tapped regularly. Officials of the company expect to start as many sheet mills as possible this week. An increase in the number of men returning to work at this plant Monday particularly was noticeable.

No. 4 blast furnace of the Republic Iron & Steel Co. continues to operate and plans now are formulated to turn the blast on an additional stack toward the week end. At its Haselton plant four open-hearth furnaces are making steel as compared with two last week. The finishing mills at the Brown-Bonnell plant of this company still are at a standstill. The bar mills of the Republic company at Moline, Ill., now are rolling double turn.

Considerable increase in activities is noted at the plant of the Brier Hill Steel Co. Six open-hearth units as compared with three a week ago, are producing steel. Five of these were operating Monday while the sixth unit was charged Tuesday when the morning shift went to work. One blast furnace supplies the open hearths with hot metal. The coke ovens and the blooming mill were placed in action last week. The larger of the two plate mills at Mosier, about two miles north of the main plant, continues to roll its product.

In the upper part of the valley the Trumbull Steel Co. has five of its seven open hearths making steel; the blooming, bar and strip mills rolling; and its sheet, tin plate and terne plate departments working the usual 8-hour turns. This plant now is operating normally, the workmen having returned to work about 10 days ago under the same conditions which existed before the walkout.

The Industrial Association of Traffic Managers held a meeting in Pittsburgh last Tuesday to consider the question of car demurrage which now is confronting all steelmakers effected by the present tieup. A committee wa appointed to wait on Director General Hines in order to come to some agreement as to the legitimacy of the charges under the present strike conditions. This committtee will hold a consultation with Mr. Hines in Washington Thursday.

Buffalo Mills Planning to Operate on Large Scale

Buffalo, Oct. 21—After a month of comparative inactivity among the three steel plants in this district, two of the mills are planning to resume operations on a large scale. The Lackawanna Steel Co. has augmented its force to the extent of 2500 to 3000 men, and now has in operation a blast furnace and certain open-hearth and mill units. The company states operations are being increased and men are being re-employed as fast as they apply for work. Strikers attempted to put a force of 600 pickets at the plant Monday, but these were dispersed by the police, who declared that the number was excessive.

The Donner Steel Co. proposes to resume operations Wednesday. Men are being steadily taken back at this

plant and Tuesday it was said that about 800 men were at work. A certain percentage of this number was busy all last week on general work. No attempt is being made to operate the Rogers, Brown Co.'s plant at Lackawanna, in accordance with the statement made Sept. 23 that the plant would not be operated until the entire 600 men return. Attempts to force a strike at the Buffalo Union furnace have met with failure, and the Wickwire Steel Co., and the Donner Tonawanda furnaces continue to operate at capacity.

Embargo Placed on Shipments From Boston

Boston, Oct. 20.—The effect of the steel strike, at first entirely unnoticed in New England, is now beginning to be felt in many localities and in many markets. Plants of the United States Steel Corp. in Pennsylvania and Ohio have been in most cases placed on the embargo list for shipments from Boston, Worcester and several other New England points. The continued idleness of most of the Buffalo foundry iron furnaces has inconvenienced many of the foundries in this district, particularly in Vermont and New Hampshire, where in some cases an actual exhaustion of the supply has been reported.

Form Export Combination in Foundry Equipment

For the group development of the foundry equipment export trade under the provisions of the Webb act, the Foundry Equipment Export Corp. has been organized to engage in the sale of all kinds of foundry supplies, equipment and accessories required by casting manufacturers. The corporation has been incorporated under the laws of Delaware with a capital of $50,000. A temporary office has been established at room 114, 40 Wall street, New York. The following companies are stockholders of this export corporation:

American Foundry Equipment Co., New York; Grimes Molding Machine Co., Detroit; Arcade Mfg. Co., Freeport, Ill.; American Molding Machine Co., Terre Haute, Ind.; S. Obermayer Co., Chicago; Buch Foundry Equipment Co., York, Pa.; National Engineering Co., Chicago; E. J. Woodison Co., Detroit; J. W. Paxson Co., Philadelphia; Whiting Foundry Equipment Co., Harvey, Ill. Officers of the Foundry Equipment Export Corp. follow: Col. T. S. Hammond, Whiting Foundry Equipment Co.,president;L. L. Munn, Arcade Mfg. Co., first vice president; E. J. Woodison, E. J. Woodison Co., second vice president; V. E. Minich, American Foundry Equipment Co., treasurer; and S. T. Johnston, S. Obermayer Co., secretary. The executive committee consists of R. S. Buch, Buch Foundry Equipment Co.; V. E. Minich, G. L. Grimes, Grimes Molding Machine Co.; S. T. Johnston and the president. Alba B. Johnson Jr., Morris building, Philadelphia, has been engaged as manager of the corporation. Headquarters probably will be established in London soon for European operations.

Gompers Resolution Voted Down

Public Group in Industrial Conference Joins Employers in Opposing Arbitration of Steel Strike, and Also Votes Against Resolution for Collective Bargaining—Union's Demands Considered Autocratic

WASHINGTON, Oct. 21.—The public group in the national industrial conference tonight sprung a surprise and joined the employers' group against labor, voting down both the Gompers' steel strike resolution and the resolution in favor of collective bargaining. One week ago, when the employers engineered a movement to delay a vote on the Gompers' resolution, the public group stood with the labor group, but after a strenuous week devoted to considering compromise suggestions the public group by a majority vote deserted labor. This is expected to have a decidedly beneficial effect upon the public generally in the present steel strike. Had the vote been taken a week ago the result would undoubtedly have been the reverse.

Full explanation of why the public group, of which Judge E. H. Gary is a member, voted with the employers is lacking, but from a statement made by Thomas L. Chadbourne, of the public group, on the floor at the close of the session Tuesday night, it is believed one of the 12 demands of the steel strike committee in regard to abolition of shop councils and labor organizations, other than trade or labor unions, led to the public group's action. Most of those in the public group were under the impression labor would interpret the term "collective bargaining" in its broad sense, but, confronted with labor's interpretation in the form of the steel strikers' demands, it is believed the members saw the evils of unionism as voiced by Judge Gary.

Judge Gary's address Monday afternoon, towether Samuel Gompers made a weak and ineffectual reply, together with the conference decision on collective bargaining was of sufficient force to change the public group's vote on the strike resolution. Before these votes were taken Tuesday night, amendment after amendment was voted down, two to one.

What effect the action will have on the future of the conference remains to be seen. The conference will resume work Wednesday, at which time labor will probably make known its decision as to whether it will leave the conference or remain. If the members of the group decide to quit Chairman Lane will read a letter from President Wilson in which it is understood the President pleads for continuance of the conference until a solution for labor troubles is found. If the conference goes forward, as it is expected, it is apparent different tactics will be employed by labor.

Before adjournment Tuesday night chairman Lane suggested what is generally accepted as the best plan. That is to have an adjournment for 10 days or two weeks, during which time properly constituted committees may frame a definite program so that when the conference reconvened the program can be taken up in detail. Had this procedure been adopted at the start and had Samuel Gompers waited with his resolution to arbitrate the steel strike it is believed the conference would not have spent two weeks in considering it. It is argued by some officials that the results so far demonstrate that present industrial disputes will not be arbitrated by the conference, nor will it be stampeded into adopting industrial principles without labor frankly stating its position, and being willing to accept the interpretation of such phrases as collective bargaining, the 8-hour day, etc.

Analyzes German Iron Practice

Saar Coal Alone is Not a Strongly Coking Coal and is Unsuitable for Transportation—Most Blast Furnaces are Equipped With Two Rows of Tuyeres—Few Steel Shells Used

SHORTLY after the armistice was signed, the British minister of munitions appointed a commission to visit the steel works in Lorraine and in that part of the Saar valley occupied by the French authorities. Special attention was paid to the character and extent of the technical and other developments which took place during the war; to present conditions of plants and machinery; to the prospect of these areas either as competitors with, or market for, British industries; and, to the developments in fuel economy in the steel trade of these areas.

The report made by this commission, a summary of which appeared in the Sept. 18 *issue of* The Iron Trade Review, *contains brief descriptions of the plants investigated in Lorraine, in the Saar valley and in the Cologne district, and from the detailed information thus given it has been possible to gain a general idea of the methods employed by the Germans in operating the blast furnaces in these areas. While not differing radically from American or British standards, German practice embodies a number of features which merit attention. Tendencies observed by the commission indicate that iron and steel works managers in the districts visited have attempted to effect economy by concentrating furnaces, rolling mills and accessory departments of a plant on one site and by using washed blast furnace gas in gas-driven prime movers to generate electric energy and to provide air for furnaces. The utilization of cleaned gas was particularly noticeable in large central stations where* 10, 12 *or more gas engines of from* 1500 *to* 5000 *horsepower were installed.*

Most of the modern furnaces in the districts visited are smaller than the latest American stacks, and have about half the capacity. The blast pressure in European furnaces is much lower than that used in the United States and the tuyeres are larger. The arrangement of the gas off-take from the furnace, and the operation of the stoves differ from American practice.

PRACTICALLY all the pig iron produced in the Lorraine district is used for basic-steelmaking. The iron ore is obtained from the Lorraine deposits, most of the steel companies owning their own mines. The distance between the iron and steel works and the mines varies, but in no case exceeds 11 miles. A few of the works are built near the mines.

The ore is brought to the works by means of aerial ropeway; in few cases it is brought by electric or steam locomotives to the storage bins. Materials are delivered to the furnace top with a minimum of handling, many of the modern plants being provided with Pohlig-type hoists. The average cost of the ore delivered into the blast furnaces in Lorraine is about $1.54 to $1.74 per ton. The iron ore in the district is of two qualities, calcareous and siliceous, a self-fluxing mixture of these being used. The average analysis of these ores, which are used extensively, follows:

	Calcareous	Silicious
Iron	25 to 30	26 to 35
Lime	18 to 20	5 to 7
Silica	7 to 8	15 to 20

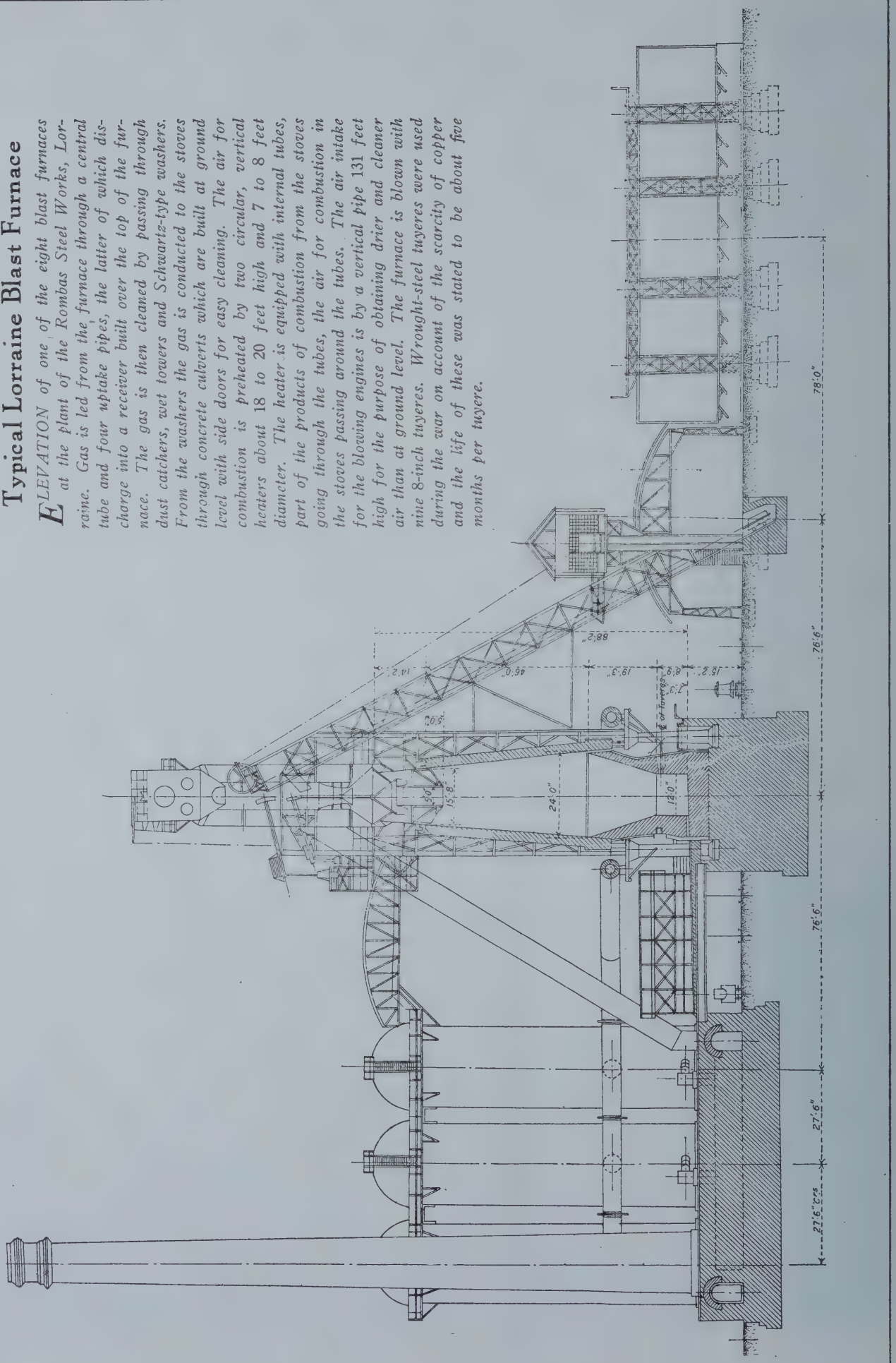
All the Saar valley plants obtain their ore by rail. Some of the companies have their own mines, others having to purchase the ore they require. The cost of mining the iron ore in Lorraine is becoming greater by reason of the fact that mining is necessarily at constantly increasing depths. Little ore is now obtained



POHLIG CHARGING APPARATUS AT THE PLANT OF THE GUTEHOFFNUNGSHUTTE AT OBERHAUSEN, GERMANY

Typical Lorraine Blast Furnace

ELEVATION of one of the eight blast furnaces at the plant of the Rombas Steel Works, Lorraine. Gas is led from the furnace through a central tube and four uptake pipes, the latter of which discharge into a receiver built over the top of the furnace. The gas is then cleaned by passing through dust catchers, wet towers and Schwartz-type washers. From the washers the gas is conducted to the stoves through concrete culverts which are built at ground level with side doors for easy cleaning. The air for combustion is preheated by two circular, vertical heaters about 18 to 20 feet high and 7 to 8 feet diameter. The heater is equipped with internal tubes, part of the products of combustion from the stoves going through the tubes, the air for combustion in the stoves passing around the tubes. The air intake for the blowing engines is by a vertical pipe 131 feet high for the purpose of obtaining drier and cleaner air than at ground level. The furnace is blown with nine 8-inch tuyeres. Wrought-steel tuyeres were used during the war on account of the scarcity of copper and the life of these was stated to be about five months per tuyere.



by open workings. Moreover the miners are agitating for shorter hours and increased pay; at present a good average miner earns $4.83 to $5.80 per day. It was stated that during the war the Germans used liquid air in some of the iron-ore mines of Lorraine in place of explosives for blasting purposes.

It is true that Germany will want iron ore from Lorraine (in 1913 she took 14,000,000 tons from Briey and 18,500,000 tons from Lorraine) but she will not be so entirely dependent upon this one source of supply as the Lorraine works will be upon Germany for coke, unless some means are provided to enable Lorraine to obtain coke from elsewhere, or to produce her own needs from Saar coal and imported coking coal.

If coke could be brought from Westphalia to Lorraine by part rail and part water the cost of transportation would be reduced considerably, but the opinion is expressed generally that the extra breakage to the coke would more than offset any such saving. The use of Saar coke alone is nowhere favored, and is regarded as more wasteful in the blast furnaces on account of its physical qualities than Westphalian coke at the higher cost. The cost of Westphalian coke at the ovens was about $11.58, and the transportation charge $2.32 making the delivered price $13.90 per ton at the furnaces. In the Saar valley the cost of basic iron production was given as $72.59.

Operation Depends on Coke Supply

The blast furnaces and steel plants in Lorraine, and to a lesser extent in the Saar valley, are dependent on supplies of coal and coke from Westphalia. The Germans have failed to carry out their obligations, under the terms of the armistice, to supply a specified quantity of suitable coke, which was the immediate cause of all plants in Lorraine being partially operative. The entire dependence of all the Lorraine iron and steel works upon Germany for fuel supplies, places them in an unenviable position. At the time of the investigation none of the blast furnaces were in full operation on account of the acute need of coke. Only five of the 60 blast furnaces in Lorraine which were found to be in good condition at the date of the armistice, were in operation. The total number of blast furnaces in Lorraine is given as 68.

The French authorities have had as many as 27 or 28 furnaces in blast at one time since they recovered Lorraine. The furnaces, however, were operated slowly on account of the shortage of coke. In most cases, the stacks are designed for the production of basic iron from the phosphoric iron ores of the district. In nearly all cases a basic-bessemer steel works is attached, the necessary power for operating the works being obtained from the blast-furnace gas. Where no steel works is at present established in connection with a blast-furnace installation, the surplus gas is used in large gas engines for supplying power to Metz and the villages in the district.

The great and successful development in the manufacture and operation of large gas engines on low-powered gas enables complete utilization of the blast-furnace gas to be effected. After rough cleaning part of the gas is used for heating the blast-furnace stoves (in no case was dirty gas being used for the stoves), and under boilers, the remainder after further cleaning being used for driving large gas engines installed for blowing purposes and for power generation, the former serving the blast furnaces and basic-steel converters, and the latter providing the power for the rolling mills, cranes and the plant generally.

At plants where the gas for the stoves was wet-cleaned, it was common practice to run a stove on gas from six to nine hours after a blast of two hours and a temperature drop from 150 to 200 degrees Cent. At plants where the stove gas was dry-cleaned the temperature drop of the stoves was reduced considerably, owing to the more frequent changing of the stove from gas to blast. A lower coke consumption per ton of output seemed to be generally obtained, and the total gas consumption at the stoves per ton of output to be reduced. On the new furnace under construction at Rombas arrangements were being made to preheat the gas for the stoves after dry cleaning by a Holberg-Beth type plant. At other works some of the stoves are equipped with blowers to supply the air for combustion under pressure in order to reduce the time otherwise required for the gas.

Nearly all the blast furnaces are brick built and banded. Few have steel shells either in the Lorraine or Saar districts, only those at Hagondange, Joeuf, Homecourt and Hayange being so constructed. Nearly all the furnaces are equipped with bosh tuyeres up to 6 inches diameter. Some have carbon linings in the bosh and hearth. The composition of the burden varies at different works according to the qualities of the respective ores used, but in general in proportion of about two to three of calcareous to one of siliceous. The iron content of the ore mixture runs from 27 to 33 per cent. An output of 200 tons per 24 hours is commonly obtained from a furnace 70 feet high with a hearth 13 to 14½ feet diameter; the pressure of the blast required being about 6½ to 7½ pounds per square inch.

The average analysis of the basic pig iron produced is as follows:

	Per cent
Silicon	0.6 to 0.8
Manganese	1.2 to 1.4
Sulphur	0.06 to 0.07
Phosphorous	1.8 to 1.9

The average analysis of the furnace coke used is:

	Westphalian	Saar
Sulphur	1.3 to 1.8	0.7 to 1.0
Ash	13.0 to 16.0	14.0 to 17.0

Coke Required Per Ton Iron

The consumption of coke per ton of pig iron produced varies from about 2425 to 3000 pounds at present, but before the war the coke figure was generally around about 2425 to 2645 pounds per ton of iron. Most of the blast furnace plants are equipped for running the hot metal to the mixers. The pig beds are under cover and are served with combined magnets and pig-breaking cranes. The week-end iron is usually cast in chills. Several blast-furnace plants were visited and

Cost of Pig Iron in Germany

Cost of Pig Iron Per Ton at Krupp's Rheinhausen Works as Estimated by the Belgian Economic Commission and Based on Normal Rate of Exchange

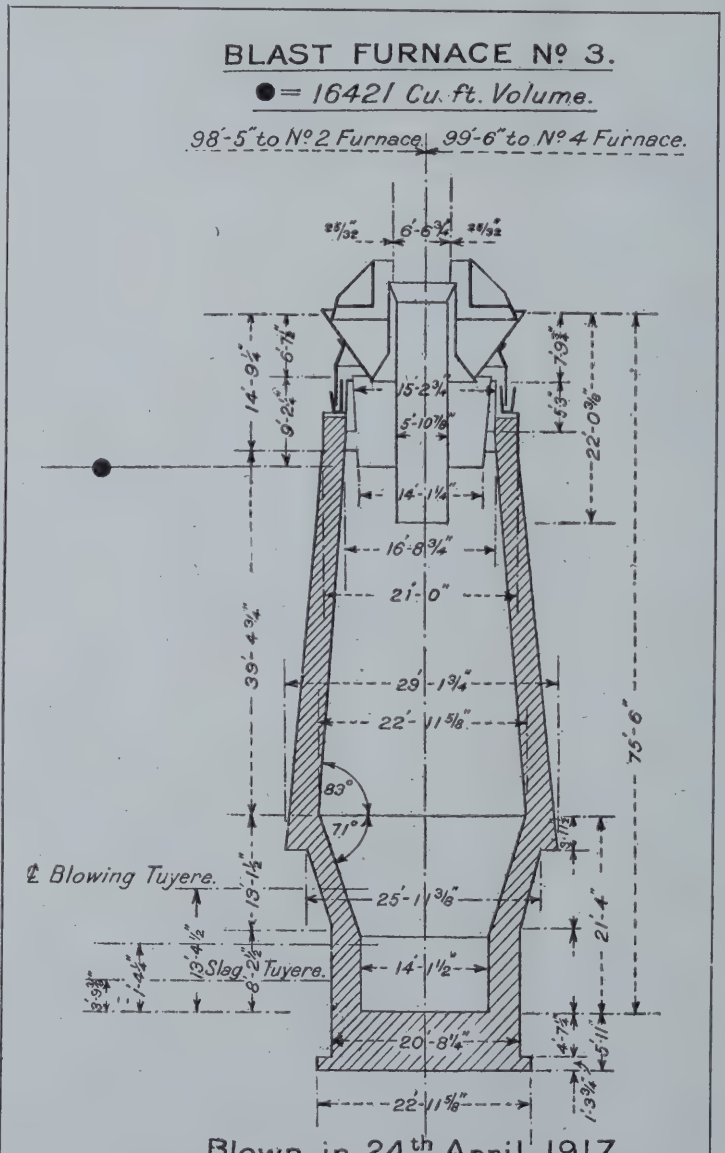
	1914	Oct., 1918	Feb., 1919
Coke	$3.81	$10.47	$25.23
Ore	$7.62-$7.85	$16.66	$32.13
Wages	$0.36-$0.48	$0.95	$2.14
Overhead charges	$0.83-$0.95	$1.40-$1.91	$3.57
Total	$12.61-$13.09	$29.51-$29.99	$63.07
Price of pig iron	$14.28-$15.47	$30.94-$33.32	$52.36
Price of coke	$3.57-$4.05	$9.52	$20.71
Price of ore—			
Minette	$1.67-$1.90	$3.33-$5.95	
Lahn	$2.62-$2.86	$6.43	
Biber	$3.09-$4.05	$6.90	
Swedish phos.	$3.57-$3.81	$15.47-$16.66	
Swedish nonphos.	.....	$17.85-$19.04	
Price of limestone	$0.83	$1.19-$1.31	

their respective practices inspected.

The Rombas Steel Works, Rombas, Lorraine, receives its supply of hot metal from the blast furnaces at Maizieres, a subsidiary plant, 7 miles distant. The two plants are connected by a private railroad. The Maiziere plant includes six blast furnaces, each of which produces 250 tons of metal per day. A new furnace, which will have eight 7½-inch tuyeres in the main row and eight 4-inch tuyeres in the bosh, is now being constructed. Each stack is equipped with four stoves, each stove being on blast three hours continuously and nine hours on gas continuously. Manganese ore for use at this plant was obtained prior to the war from India and the Caucasus. The practice at present, however, is to use spiegel slag to the extent of 10 per cent of the ore charged, having manganese content from 7 to 10 per cent. The officials at this plant stated they found it good practice to operate turbines in step with the gas engines for generating power, as by this means the load is kept more constant. The Rombas Steel Works prior to the armistice was known as the Romback works and was owned by German interests. It is now under the jurisdiction of the French, M. Barbier having been appointed director by the French government. This plant includes eight blast furnaces, an elevation of one of which is shown on page 1106. On the older stacks eight 8-inch tuyeres convey the blast into the furnace while the new one is equipped with nine tuyeres of the same diameter. No bosh tuyeres are used at this plant. The officials stated that wrought-steel tuyeres were used during the war when copper was extremely scarce, each tuyere lasting from four to five months. Stock is hoisted to the furnace top by means of the Pohlig bucket system, modified to a certain extent. At the time the commission visited this plant coke breeze instead of sand was being used for making up the pig beds. The beds were under cover and equipped with a magnet crane and a pig breaker.

At the Carlshutte furnaces, near Thionville, Lorraine, the commission found that in the No. 2 power house there was intended to be installed on foundations already erected a number of large new gas engines which were stolen from the French and Belgian works during the war. The engines were lying on the ground but not erected. The plant and machinery stolen amounted to 13,000 tons, valued at $13,510,000, and included all the structure and equipment for a complete steel works. It covered the whole site of the new steel works and lay along the sidings for a great distance. The proprietor of these works is now serving seven years for receiving this stolen property.

The small furnaces at the Volklingen Steel Works, Volklingen, near Saarbrucken, which are about 74 feet high, are typical of Saar district practice. A cross section of a furnace of this type is shown on this page. Higher furnaces are not advocated in this locality. Ore and coke are supplied the furnaces by inclined skipways from opposite sides of the line of furnaces but at one end, then along the line of, and around each furnace bell by monorail. The skips are moved by an independent motor on each skip carriage. An automatic electric block system is installed in order to prevent the over-running of individual skips. The block system is operated from a signal box by a single workman stationed on the top staging, who earns $2.62 per turn of eight hours.



Cross section of No. 3 stack at the plant of the Volklingen Steel Works, near Saarbrucken, Lorraine. Blast furnaces over 74 feet high are not advocated in the Saar valley

At the top of the furnace one man unlocks the balanced skips, empties the charge into the hopper and relocks the skips. This arrangement works fairly well, but is complicated, and appears to be more costly than if independent skip inclines were installed for each furnace. The top runways were at the level of the highest furnace and separate lifts from this level were provided to handle the skips required for the furnaces at lower levels. The skips were operated electrically around the bells of the lower furnaces. The coke consumption at these furnaces averaged 3307 pounds per ton of iron. Each stack was equipped with a central gas offtake at the top, as it usual in this district. At the blast furnace plant of the Dillingen Steel Works, Dillingen, near Saarbrucken, the stacks are built at 164-foot centers. Ore and coke are raised to the tops of the furnaces by means of inclined ropeways which carry tipping skips. Each stack has an ore ropeway on one side; each pair of furnaces is served by one coke ropeway on the opposite side of the furnaces. The skips when hoisted are moved around each furnace bell independently on monorails, the system being similar in certain respects

with that at Volklingen. One man is stationed at the top of each furnace. The management did not consider the arrangement as satisfactory as the bucket hoist.

On one of the blast furnaces, which was being relined, at the Burbach Steel Works, a row of cast-iron cooling plates had been built in between the main row of tuyeres and the bosh tuyeres, thus forming a continuous circle of cooling plates around the furnace. These plates were made by serrated bent wrought pipes cast into shaped plates. Wrought-steel tuyeres were used and it was stated that their life was from five to six months. Plans, however, were to return to copper tuyeres as soon as conditions permitted. The cast-steel hearth jacket on this furnace extended about 5 feet below the bottom of the hearth. During the war the officials of the company blew in one stack on ferromanganese, using Spathic ore obtained in Germany. This ore was said to contain from 12 to 15 per cent of manganese.

The Neunkirchen Steel Works, near Saarbrucken, makes its coke from Saar coal altogether and before the war was the only works in the district using Saar coal unmixed for coking purposes. The six stacks of this company are banded instead of jacketed. Under normal conditions, it is stated, 10 years service was being obtained from each furnace lining. However, this is not unreasonable when considering that the furnaces are worked on a blast pressure of but 7½ pounds per square inch. At these furnaces as at all others, with the exception of the stacks at the Hayange and Hagondange works, the gas is led from the top through a central out-take.

Nearly every place visited has a slag-brick plant installed. The bricks are made in machine presses, each press producing about 10,000 bricks per 24 hours. About 5 per cent of lime is added to the granulated slag to act as a binder and the mixture remains for 24 hours before being pressed. The bricks are then air dried. They are in large demand in the district for building purposes. Before the war the sales price at the works was about $4.28 to $4.76 per 1000; at present it is $11.58 to $12.55 per 1000.

At Hagondange in Lorraine, the cost of making basic pig iron was about $38.60 per ton made up of $5.79 for iron ore, $20.27 for coke and $12.55 for labor and other items.

It becomes questionable if the blast furnaces in Lorraine and Saar districts will in the future be able to produce basic pig iron at a lower cost than it can be made in England, for while these areas may be better located as regards ore, they are much worse located as regards fuel.

Hopes Are Blasted

PRIOR to the war German steelmakers frequently complained of the difficulty of obtaining adequate supplies of foreign ores, which was one of the chief causes of the war, as they hoped thereby to obtain possession of France's ore reserves. Due to the result of the war France has replaced Germany as the possesser of the largest iron-ore supplies in Europe, France's reserves having been increased by over 2,000,000,000 *tons, making them now about four times those of Germany. Before the war they were about the same. With France's new possession of Lorraine and the Saar valley she is in position to produce* 11,000,000 *tons of pig iron annually. In* 1913 *France's production of pig iron was about* 5,000,000 *tons.*

Making Chains for the Panama Locks

FOR the fenders for use in the locks of the Panama canal, 24 chains were required, with a total length of 10,500 feet, and a total weight of 500 tons. These chains were made of 3-inch, wrought-iron bars, and their manufacture taxed the chainmaking facilities in the United States for over a year. Some details of the construction and tests of these chains recently were presented in a paper by Henry Goldmark, before the Western Society of Engineers.

From tests, the diameter of the links for the fender chains was fixed at 3 inches and the working load at 220,000 pounds. Upon investigation the fact was disclosed that few plants in the United States had either experience or equipment necessary for making chains as large as 3 inches. The order for the 24 chains was therefore distributed among many private works throughout this country and England, and the plant of the United States navy yard at Boston was immediately set to work at its full capacity in the manufacture of these chains.

The first chain received at the Panama canal was made in the navy yard. When tested throughout its full length by a pull from a large winding machine, it broke at a defective weld, under a stress of about 220,000 pounds. In view of this weakness the broken chain was returned to the United States for further investigation and the whole question of chain design and manufacture was again considered. The returned chain was cut into two sections, each 35 feet long. One of these was carefully annealed and both were tested under similar conditions. The break in both cases occurred at a defective weld, and indicated little or no affect due to the annealing. In view of these results four test chains, 50 feet long, were ordered, and the manufacture of these was carefully guarded and supervised to attain the highest grade of chain.

Double-refined iron, entirely free from scrap, was specified. The links of two of these chains which were made by the navy department were end welded, whereas, the links of the other two, which were made by a private concern, were side welded. Tests of these four chains showed an average breaking strength of 514,000 pounds, with minimum breaking strength for one chain of 440,000 pounds with satisfactory results.

Under the specifications and after one and one-half years of endeavor, the 24 required chains were completed, and are now installed at the locks. At the time the Panama chains were begun the method of power-forging chains was not sufficiently perfected to warrant its adoption for such difficult work. However, at the Boston navy yard, the last six sections were made by this method with excellent results. The method in brief is as follows: the bar iron is cut by heavy shears into proper lengths, each length is then heated at one end and placed in an upsetting machine, which upsets and bends it at an angle of 90 degrees. In the same heat the scarf is put on under a 2500-pound steam hammer. On a second heat the other end is bent and scarfed in the same way. The next step is the bending of the link to its proper shape, after which end welding is done by means of two steam hammers, operated by compressed air. The last step is the heat treatment, and consists in heating the completed chain to about 1600 degrees Fahr. in an oil furnace and afterward carefully cooling it in air.

Promoting Safety in Steel Plant

Safety Engineer Must be Student of Human Nature and Capable of Winning Co-Operation of all Employes—Foreign-Born Workmen Can do Much, if Properly Coached—Experiences of One Company in Reducing Accidents

BY H. P. HEYNE

EACH establishment should have its shop discipline, but there are ways in which the employes can better inform themselves regarding what is expected of them, through the inauguration of a systematic program for conducting the work.

The new way to put safety across in any plant, is to meet the problems with a better understanding of affairs, and an assurance of fairness between the foremen and the employes, which should furnish the material for erecting the foundation for the co-operative spirit which the coming era is ushering in.

The two factors which bind men together are fellowship and good-will, based on mutual confidence. These are indispensable in attaining unity of purpose on the part of all for the welfare of all.

The spirit of co-operation brought about the desired results in the war. It will be found necessary to promote this same spirit in all lines of endeavor, and to direct our efforts toward minimizing the economic loss by teaching the elimination of waste and increasing human efficiency, which may be accomplished through advancing the average man's ability.

Men Must Trust Each Other

We are entering into a new age, and our advancement depends on enthusiasm and co-operation in industrial, social, and spiritual activities. We must eliminate all forms which may not be in accordance with what is just and of good repute. Not until we can trust each other without being skeptical, shall we have made a great stride in the progress of humanity. A truthful person, one who can be trusted under all circumstances, surely is an asset to any community.

We should unite and maintain the forces of progress as they were united in war, and stand for construction and development of world welfare against demolition and retrogression. We are living today in a changing era, and tomorrow will bring an advanced period in evolution, which means that more thought and action must be directed to the moral and intellectual side of life. The subject of living on a better and higher plane where all may come to a better understanding, should be taught and discussed, in private and public gatherings, so that the proper seeds may be sown in all directions and our efforts prove productive.

How Schools May Aid

We must get encouragement through our schools, for they are the greatest factors in the making of the future. Institutions of learning have devised ways and means for advancing education, through making studies interesting, and teaching as much as possible by facts. Pupils should be taught the right things in the right way, for many fundamentals have been neglected. There are many conditions today which might have been prevented had the persons been properly taught. It would not be amiss to direct our efforts to the end that all humans would be better and cleaner, through banishing all evil and destructive habits and customs. We have accomplished much through co-operation, fellowship, and efficiency; but there still remains a large area to be cultivated.

Let us not disdain nor ignore one another, regardless of our so-called station in life, for we are all members of the universal family, and should assist our less fortunate brothers.

In several departments where workmen have little or no knowledge of the English language, we appointed the more enlightened foreigners on mill safety committees, through an interpreter who explained to them just what was expected of members of the safety committee, and also that the safety committee button was presented to them in recognition of their ability in promoting safety among their fellow employes.

The committee button turned the trick, for the men felt that they were being considered, in assisting us in the work. The number of lost time injuries, those extending beyond balance of the working turn, was reduced 14 per cent for the first half of 1919 as compared with that for 1918, which was partially accomplished through getting the foreigners more interested in safety work. Our reduction in 1918 as compared with 1917 was more than 50 per cent. In other words, these fellows had a greater chest expansion. However, we made it clear that they must approach their fellows in a proper manner, otherwise they would not obtain their co-operation; and we made them feel that they were safety investigators and were considered a part of the safety organization.

The safety button is a badge of an accident preventionist, and must not be construed by the men as having any authority invested in them, other than to signify to their fellows that they are safety investigators. The button which, of course, was not presented until after the men had an understanding as to what was expected of them, had a good psychological effect.

The personnel of our workmen's committees up to June 30, 1919, was composed of foreigners to the extent of 12.6 per cent, and they have shown quite an interest in safety work. American members of our workmen's committees number 339, and foreigners, 49. Why should not the foreigners be considered the same as the Americans, for an injury is an injury, regardless of race, color, or creed? The foreigners are a part of our working force and should receive consideration at least to the point that they are human beings.

Interesting the Foremen

Accident statistics should consist of simple summaries and charts, which enable the executive, by brief reference, to know the present condition as compared with a preceding period. Without the records, it is difficult to determine the degree of progress.

We maintained records of injuries from different angles; including the classification by departments, occupations, and by foremen. The reports were furnished the foremen so that they could study conditions. The report indicating the injuries to men under the various foremen, shows at a glance the foremen's accident stand-

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A paper presented at the eighth annual congress of the National Safety council, Cleveland, Oct. 3. The author, H. P. Heyne, is safety inspector, United Alloy Steel Corp., Canton, O.

ing, and gives one something to work from when approaching the foremen, by comparing the rates with others who have a better classification. This scheme created and maintained the competitive spirit among the foremen, and made them talk and practice safety.

One of the important duties of a safety engineer, is that of keeping the foremen interested in accident prevention work, which means the changing of plans from time to time, so that their enthusiasm may be maintained.

The safety engineer should always be on the alert for articles dealing with accident prevention, and to distribute the information among the department heads and on bulletin boards, as the dissemination of the proper kind of information will manifest itself in a manner whereby the safety movement will be further advanced and receive the recognition to which it is entitled.

The service bulletins, issued by the National Safety council, may be put to good use by distributing the messages among the foremen, as these bulletins may show up some of their weak points, and cause them to think.

We get our foremen to read the bulletins together with other material, by attaching a circular letter to the papers, which they sign and pass on to the one whose name next appears on the list. The file is returned to the office after having made the rounds. In other words, we have a record of the papers having been read, and the psychological effect which the signing has upon the foremen. In cases of instructions, we give each foreman a copy for his file.

Too much stress cannot be laid on that section of safety engineering which deals with accident investigations, as corrective measures or methods are the outcome of the results of the investigations if they are conducted in a thorough and impartial manner. Each accident involving lost time should be thoroughly looked into, together with injuries where no time was lost, but which might have been serious.

On the more serious cases, we interview each witness to the accident, so that we may get at the root of the trouble. The witnesses make affidavits to their statements before a notary in our department. The injured employe's statement also is taken, so that we have full information from both sides.

When the statements have been secured, a meeting of the investigating committee is called, which is composed of the department superintendent and foreman of the division where the accident occurred and the members of the safety teams. The information is gone over, whereupon the committee renders an investigation report, which is signed by the members of the committee. The report brings out the results of the investigation as to what or who was to blame for the accident, and makes recommendations with the view to preventing a recurrence.

A copy of the witnesses' statements and the committees' report is forwarded to the general manager, general superintendent, and department superintendent. A copy also is retained in the permanent files of the safety department.

The time consumed in drawing up statements in a business-like form, and attacking the accident from various angles is well spent, in that each case is recorded in a detailed manner for future reference; and the psychological effect, which the investigations have upon the men, in time results in a reduction of injuries, and an economic saving to the employer.

When a proposition is to be offered, it would prove advantageous to take the matter up with the persons concerned and invite their suggestions, for they might have something to offer which would prove practical and beneficial. At the same time their having been consulted would have a good effect on the men, which leads to co-operation in the work.

When a person is having a hard time and comes for sympathy, it is best to recognize his sufferings and find some word of encouragement. Then again, when one approaches with a message of his good fortune, try to share it with him in a sincere manner. This is human engineering, and will assist in a proper understanding and the binding together of individuals with a proper feeling and interest toward each other.

Supervisors should not criticize employes without first having made an investigation, and then it is not necessary to ride "roughshod" over them, but give them an opportunity for an explanation, as a correct interpretation may clear the situation.

After all, what have we gained by following the method of "rawhiding"? The men become dissatisfied, which affects their efficiency, and upon the first opportunity they will leave the service of the company; this necessitates the "breaking in" of a new man, which results in a loss of production, with greater liability to accidents, as well as increase in turnover. Every one desires co-operation in the work, and if the supervisors are considerate but firm, they will be successful in having the men work *with* them instead of working for them.

Safety engineering might be called the study of human nature, which will be one of the important business principles in the future, and is worthy of serious thought.

One quality which plays an important part in safety engineering is the habit of being courteous, by simply saying "please" and "thank you," and bidding the time of the day; just a mixture of good manners and kindliness. It produces sunshine on the cloudy days; its presence cheers a person and puts him in a better mood. We can assist each other by being friendly, and our friendliness will be reflected among our acquaintances, who will become friendly in spite of themselves.

A safety engineer should be an example of good-fellowship, to the extent where he needs an adding machine when he starts to count up his friends. Safety first is applied common sense—it is a service of unselfish usefulness, for there can be no efficiency without common sense.

Book Review

The Coal Trade, by Sydney A. Hale, Editor, *Coal Trade Journal;* cloth; 273 pages, 6 x 8 inches; published by the Estate of F. E. Saward, 20 Vesey street, New York, and furnished by THE IRON TRADE REVIEW for $3.

Statistics down to the latest available date, of the coal trade are given in this forty-sixth annual edition, the publication of which purposely has been delayed beyond the usual press date, in order to present complete data, held up at their source by pressure of war work. The publisher took this course rather than publish incomplete figures.

In addition to the general review of the coal industry in 1918, which occupies 54 pages and deals with production, trade history, values and market conditions throughout the United States, a similar amount of space is devoted to the activities of the United States fuel administration, including price fixing, prices and zoning. Other sections of the volume are devoted to bituminous production by states, bituminous transportation and rate statistics, anthracite production and distribution with transportation statistics, coke and briquets, and export and import statistics. Labor and miscellaneous statistics also are given.

Effect of Heat on Refractories

Fire Cracks Caused by Severe Thermal Changes Shorten the Life of Fire Brick—Degree of Fineness Has Pronounced Effect of the Spalling Loss—Results of Recent Tests

BY C. E. NESBITT AND M. L. BELL

IN MANUFACTURING iron and steel the part played by refractories is most important and up to the present time has not had the proper consideration. Owing to increased production, larger and more complicated furnaces and economy of operation, the necessity for greater efficiency from refractories has arisen. This improvement in refractories can only be accomplished by the cooperation of the consumer and the producer. The consumer should be familiar with the condition prevailing in his furnaces, such as temperature, slag, gases, dust, mechanical wear, abrasion, expansion and contraction, etc., so that he is in a position to know what the brick must stand. On the other hand the manufacturer of refractories should know the limitations and possibilities of his product. He should know the effect on quality in service, produced by variation in moisture, fineness of grind, proportionate sizing of particles, method of molding, drying and burning. Such information enables him to advise the consumer the kind of brick best suited for his particular needs.

In the iron and steel industry the temperature range is wide. Temperatures in the interior of a blast furnace vary from 260 degrees Cent. at the top to 1800 degrees Cent. at the tuyeres. Refining temperatures are high in open-hearth, bessemer converters, and electric furnaces, while temperatures in quenching and annealing furnaces are moderate. Besides this wide range of temperature, refractories must meet a wide variation in physical requirements such as corrosive action of acid, basic or neutral slags, sudden thermal changes, load, abrasion, impact and expansion.



FIG. 1—SMALL PORTION OF DISINTEGRATED REFRACTORY BRICK AFTER FIVE YEARS' SERVICE IN BLAST FURNACE. NOTE SIMILARITY OF CRACKS IN SMALL PORTION AND IN UNUSED BRICK

Early in our investigation we found need for simple tests which would give us some data on the important qualities necessary in refractory brick. These tests should be easily and rapidly executed to be able to be made in quantity and should show a close relation to actual service conditions. This means that the tests employed must be shorter and more severe than actual working conditions and must show variation in working quality.

A series of tests was developed for both clay and silica brick. Data obtained from these tests, after use over an extended period showed that the most important working qualities could be determined by two or three tests, namely the spalling and hot-crushing tests for silica brick, and the spalling, hot-load and slagging tests for clay brick.

By the use of these tests, an attempt is being made to solve some of the refractory problems in the industry, a few of which are the following: Why does the life of a blast-furnace lining vary from two to seven years, basic open-hearth roofs from 25 to 400 heats, soaking pits from six to 18 months, converter bottoms from four to 16 heats and ladle linings from four to 25 heats? How can we explain the fact that one solid brick is found in a blast-furnace lining surrounded by a number of disintegrated bricks and in another place on the same level one disintegrated brick is surrounded by a number of sound bricks? These and many other problems which are difficult to solve

From a paper presented by C. E. Nesbitt and M. L. Bell at the Philadelphia meeting of the American Chemical society, Sept. 4, 1919.



FIG. 2—WEAR IN AN AIR FURNACE PRODUCED LARGELY BY SLAGGING ACTION AND TEMPERATURE CHANGES



FIG. 3—SPALLING OF CLAY BRICK IN THE ROOF OF AN AIR FURNACE SHOWING THE PITTED SURFACE

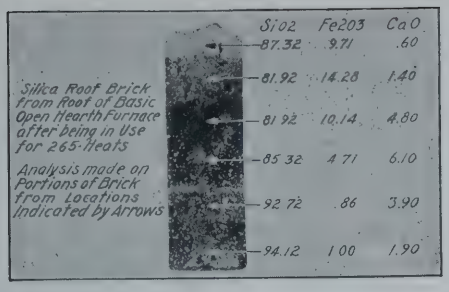


FIG. 4—CHANGE OF COMPOSITION DUE TO ABSORPTION OF IMPURITIES BY SILICA BRICK USED IN ROOF OF BASIC OPEN-HEARTH FURNACE

present themselves. Variations in quality of the refractories are due to method used in grinding, molding, setting, drying, burning and cooling.

Heat Decreases Crushing Strength

Silica bricks when heated from room temperature to 1350 degrees Cent. show a falling off of approximately 50 to 60 per cent in crushing strength, hence defects, which lower the mechanical strength of a product already weakened by heat, are serious factors. Good commercial silica brick crushed at room temperature and at 1350 degrees Cent. together with bricks defective because of fire cracks, poor molding, poor slicking, etc., showed the following strength in pounds per square inch:

Commercial Silica Brick at 30° Cent.	Commercial Silica Brick at 1350° Cent.	Defective brick at 1350° Cent.
1317	989	437
1755	1123	466
2323	1152	466
2685	1282	498
3062	1300	657
Avg. 2271	1169	505

Fire cracks also cause a decided shortening of the life of a silica-brick structure such as an open-hearth roof where there are severe thermal changes. This is well illustrated when commercial silica brick with and without fire cracks are subjected to a spalling test at 540 degrees Cent. The results are expressed in percentage loss in weight of the bricks used.

Free from Fire Cracks	With Fire Cracks
21.9	39.4
22.4	44.0
25.0	44.5
29.1	44.8
33.1	59.4
Avg. 26.3	46.4

Roofs of 90-ton open-hearth furnaces, working under normal conditions with producer gas should last for an average of 200 heats. Bricks taken from a furnace roof after 261 heats showed an average spalling loss of 20 per cent. Another roof which made 221 heats showed a loss of 23 per cent. In a similar roof in which the life was only 80 heats the average spalling loss was 47 per cent.

The degree of fineness or size of particles especially in silica brick has a pronounced effect on the spalling loss. The finer the grind the higher the loss which in turn means a decided shortening of the life of the structure when subjected to severe thermal changes. This is shown from the following test:

Fineness of Grinding	Spalling loss
4 mesh	30.4 per cent
8 mesh	47.6 " "
12 mesh	63.2 " "

The facts stated heretofore in regard to silica brick are generally true with clay brick, except that they are not so marked, owing to the fact that the raw materials have entirely different properties. However, the method of manufacture has a pronounced effect on the qualities of clay brick. This is illustrated by the average spalling value of six different brands of brick, three of which are machine made but by different processes, while three are hand made brick.

Average Percentage Loss by Spalling at 1350° Cent. Machine Made	Hand Made
26.9	7.3
11.7	3.4
9.4	16.7

Again this variation in quality of

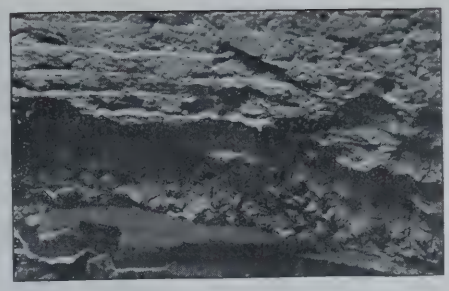


FIG. 7—ROOF OF BASIC OPEN-HEARTH FURNACE SHOWING FAILURE DUE TO UNEQUAL WEAR AS A RESULT OF SLAGGING AND SPALLING

refractories is shown by the results obtained from the load test in which a steel ball is pressed into a fire clay brick heated to 1350 degrees Cent. by applying a load of 1600 pounds. The results are the depth of penetration expressed in inches.

Machine Made	Hand Made
.27	.55
.46	.72
.29	.44

The degree of fineness to which the raw material is ground in clay brick produces results similar to those of silica brick, namely, the finer the grind the greater the spalling loss. The results given here are the averages obtained from two brands of clay brick.

Coarse Grind	8.47 per cent	loss by spalling
Fine Grind	49.95 per cent	loss by spalling

Reduction in strength by heating is shown by the impact test. A steel ball weighing approximately 2½ pounds was dropped by a suitably designed machine from successive increasing heights of 2 inches upon the heated brick. The brick tested was a well-known ladle brick made largely of plastic clay.

Temperature, degrees Cent.	Average inches
30	51.2
340	40.3
480	33.6

The effect of extreme variation in degree of burn is well illustrated in a recent shipment of clay checker brick. The average spalling loss was



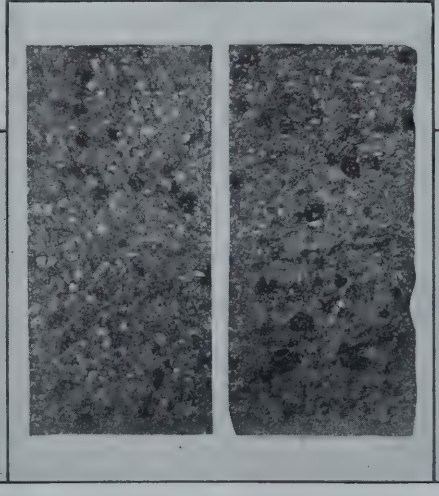




FIG. 5—CLAY BRICK FROM COLD-BLAST MAIN OF A BLAST FURNACE SHOWING EROSION PRODUCED BY THE DUST CARRIED IN THE BLAST. FIG. 6—BLOCKS CUT FROM TWO SIMILAR SILICA SHAPES SHOWING VARIATION IN FINENESS OF GRIND. FIG. 8—SILICA BRICKS DEFECTIVE FROM FIRE CRACKS, POOR SLICKING AND FOREIGN MATERIAL

14 per cent for the average burn and 60 per cent for the hard-burned bricks.

From all comparative data it is evident that refractories require more than general consideration. They demand a most thorough study by both the producer and consumer. Investigators should adopt simple practical tests which can be run in quantity and which give data showing variations in quality.

The consumer judges his refractories by the life obtained and demands a product giving a more uniform life. Variations in uniformity are largely due to methods of manufacture. It is believed that a much more uniform product can be secured if a careful study is made of the variation in manufacture which affects the important qualities.

To afford the university student a special opportunity for theoretical and practical training in electrical apparatus, the Georgia School of Technology is installing a full equipment of electrical machinery manufactured by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. This equipment, which practically composes a complete power plant, consists of a 187-kilovolt-ampere generator and a 125-kilovolt-ampere generator driven by steam turbines through reduction gears; a surface condenser; a 175-kilovolt-ampere coupled type generator for gas or steam engine drive; a 25-kilowatt, direct-current geared turbine exciter unit; a 3-phase induction motor driven by a 50-kilowatt, direct-current generator; one 15-horsepower, two 50-horsepower and one 100-horsepower squirrel cage induction motors; three 50-kilovolt-ampere, 220-2200-volt transformers; one 2-kilovolt-ampere 50,000-volt testing outfit and one complete switchboard including an automatic voltage regulator and necessary control for all of the above generators and exciters together with a number of alternating and direct-current feeders.

How to Prevent Blast Furnace Slips

OBSTRUCTIONS in the working of blast furnaces frequently occur and are often a source of considerable trouble. They constitute impediments in the furnace arising from various causes, such as faulty distribution of the charge and preventing the proper and regular descent of the stock. While the charge below the scaffold is working down, the material above is left without support from beneath and the weight of the ore, coke and limestone is at the same time being increased constantly by the addition of materials at the top of the furnace. Under these circumstances the obstruction at a certain point frequently gives way and descends with considerable force constituting what is known as a slip and ejecting ore, coke and limestone through the bleeder or explosion door sometimes as high as 100 to 150 feet into the air. The view at the left of accompanying illustration shows the beginning of a blast-furnace slip while that at the right shows the furnace a few minutes later.

Among the causes contributing to the formation of slips are the production of an imperfectly fusible slag; faulty shape of the furnace; bad fuel, such as weak coke which crumbles away under the weight of the other materials in the charge; charging too large a proportion of refractory ore, and faulty charging which does not maintain a regular heat distribution, owing to the larger pieces of coke collecting around the walls of the furnace, while the small and impermeable ore is concentrated in the center. A slip, besides preventing the regular descent of the charge, also obstructs the free passage of the blast, the escape of the furnace gases and injects cold stock into the hearth.

Aside from altering the design and construction of a furnace perhaps the most common method of preventing slips, especially when the furnace is working on high pressure and when prompt action is required, is to reduce the pressure of the blast to about 8 pounds per square inch until the stock is dislodged. By this means, the condition is righted for the time being, although it usually is necessary to continue the checking of the blast at intervals of 45 minutes. In the meantime other procedures are found useful. These include changing the burden and the method of charging; altering the length of the tuyeres; charging extra coke; or, manipulating the volume, pressure and temperature of the blast.



UNUSUAL VIEWS OF BLAST FURNACE AT TWO DIFFERENT STAGES OF A SLIP

View at left shows a blast furnace slip at its greatest intensity and at the right, the appearance of the furnace at the end of the same slip. The cloud of gases shown at the left contains considerable ore, coke and limestone which is shot into the air sometimes as high as 100 feet above the top of the furnace. During the forepart of a slip the gases in the upper part of the furnace sometimes are under a pressure of from 10 to 20 pounds per square inch

Automobile Builders Protected

A Special Organization Disposes of Motor Vehicles Released From Military Uses — German Industry is Restricted on Account of Substitute Materials — Iron Ore is of Poor Quality

AS GREAT interest has been shown in the matter of how the United States government intends to dispose of surplus war supplies, it is pertinent to note how Germany is dealing with automobiles and trucks used by her armies. Twenty German automobile manufacturers organized a special company in 1915 to take over the motor vehicles released by the German army and to dispose of them with as little disturbance as possible to the automobile industry. The Germans foresaw a flooding of the automobile market after the war and undoubtedly this would have occurred had there not been an enormous shortage of repair parts.

The automobile industry of Germany, it is reported, is gaining rapidly in production despite numerous strikes and riots. The demand for motor cars, especially of the lighter type, is far above production. Sales have been restricted by the government until essential business requirements have been fulfilled.

The expected drop in prices has failed to materialize, especially in the case of commercial vehicles. A three-ton truck, which sold in Germany for about $3927 before the war may now be obtained for $7200, equipped with tires of iron and wood. Such a truck used during the war and now overhauled may be bought for $2880. While orders are now being accepted by the manufacturers, the scarcity of raw materials and uncertain conditions make it necessary for them to stipulate a delivery period of several years and to protect themselves thoroughly in regard to prices.

Substitutes Were Sought

The wide extension and prolongation of the world war brought unexpected and destructive disturbance into the industrial world of Germany by cutting off, for more than the provided for few months, the supply of raw materials, particularly of imported raw materials, according to *Zeitschrift für angewandte Chemie*. It became necessary, therefore, to economize in the use of those materials, to develop the home sources of supply, and to seek for substitutes. As consequences of these compelling conditions, the industries of all the belligerent countries, but especially those of Germany, have developed in direction and degree that makes it necessary to take full account of the changed circumstances in any scheme of reconstruction. Moreover, it is obvious that much of what has been done in one country can be done in others. The outstanding features of the changes, actual and contemplated, which will have their reflex in the engineering and manufacturing world may be classified under the four heads of power, transport, raw materials, and substitutes.

Must Use Water Power

The question of power concentrates itself around the two points of water fall utilization and the wider application of electric energy. These two points are closely related, inasmuch as the utilization of water power is largely dependent on electric transmission. This is a matter to which German engineers, as well as statesmen, are turning expectant attention. Closely related to this question of the production and distribution of power is that of transport by road, river and canal. Here great developments are possible, and are urgently called for, to meet the altered circumstances of the times. The supply of raw materials is a question of the first rank, and for the moment is, for Germany, the most pressing. Germany's wealth in coal is an assured quantity in the future development of her industries. But the cry has gone out for more economical consumption. To this end special scientific institutions have been and are being founded. The conservation of the coal reserves connects itself with the further utilization of water power. But the fuel question cannot be thought of without that of quick and cheap transport arising in the mind. Germany is rich in iron ores as well as in coal, though their quality is inferior to that of France's in the Briey basin. Improved and more economical methods of working will go far to counterbalance a relative poorness of ore. Meanwhile the country is being carefully searched for yet undiscovered deposits. Though Germany may be for long cut off from supplies from the West, it may look for larger imports from the East. The country's wealth in zinc is a factor to reckon with, while her ability to produce aluminum is unlimited.

Another raw material of growing importance is mineral oil. With a view to obtain a larger home supply of oil, borings are being made in likely places all over Germany. Some of them are already yielding a promising supply. Of imported oil, nearer sources than the United States are likely to be found. The question of substitute materials must not be lost sight of; their number is surprisingly great, and some of them, doubtless, have come to stay.

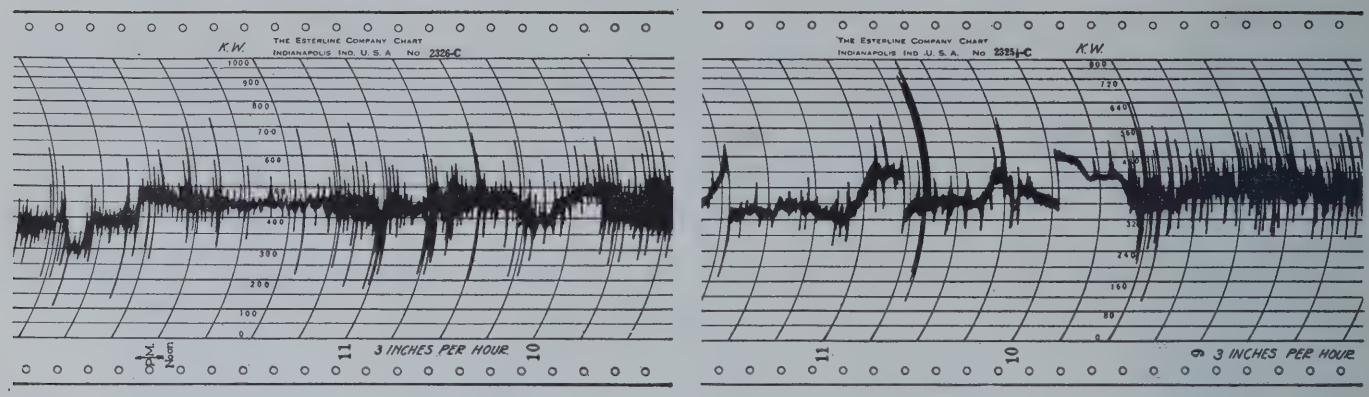
Production of pig iron in German blast furnaces during the year 1913 amounted to 16,770,000 tons. In this production 37,830,000 tons of iron ore and 700,000 tons of manganese ore were used. Of the iron ore and ferromanganese ore smelted, 25,900,000 tons were produced in Germany, and 11,900,000 tons imported from foreign countries. The tonnage imported from the various countries follows: Sweden, 4,201,715; Spain, 3,726,254; Belgium, 68,841; France, 2,237,979; Greece, 141,269; Austria-Hungary, 107,053; Russia, 423,957; Africa, 792,555; America, 173,588; other countries, 50,799. Of the manganese ore smelted, only 2059 tons were produced in Germany or imported from Austria-Hungary and Sweden, while the tonnage imported from other countries was: Greece, 3227; Russia, 433,632; Spain and Brazil, 85,163; India, 176,751.

Nearly all German iron ores are poor, with less than 40 per cent iron content, while 75 per cent of the iron ore produced in German mines is so rich in phosphorus as to be suitable only for the Thomas smelting process. Of the imported ores it may be estimated that 55 per cent are Thomas ores and 45 per cent bessemer ores.

Iron Ore is Limited

The total reserve of iron ore in Germany amounts to only about 2,300,000,000 tons, and the most important German iron ore district, the German-Lotharingian minette district, will be exhausted within 45 years, while the Siegerland and Nassau districts, which are the next in order of importance, will be exhausted in 42 and 66 years respectively. Only a few districts of little importance for the ore supply of the country have reserves sufficient to last for more than 100 years. Thus great importance attaches to foreign sources of supply.

Germany is almost entirely dependent on foreign countries for her supply of manganese ores. The most important manganese ore deposits are at Tochiatura, in the Caucasus, of which the total reserve is estimated at 110,000,000 tons, and Nikopol, in Ukrainia, of which the reserve is estimated at 7,400,000 tons.



Graphic records showing power consumed in a 2-ton electric furnace. The curve at the left was obtained during a run on 3000 pounds of high nickel steel and that on the right during a run on high speed steel.

Curves Reveal Significant Facts

Valuable Data Which Indicate Performance of Personnel, Machine Equipment, and Administration Policies in Manufacturing Plants Are Obtained From Graphic Records

AFTER years of experience it has been established that in many operations the power input to machine tools is a measure of the efficiency of the tools and that the power consumption is a factor which should be considered when machines are installed and grouped in a shop. Power input also is recognized as a reliable criterion of the output of metal working plants, as under certain conditions a definite relationship exists between the kilowatt consumption and the quantity of product. Graphic records have aided materially in studying the bearing of power consumption on efficiency and production, and have revealed significant facts which have enabled engineers to correct the defects exposed.

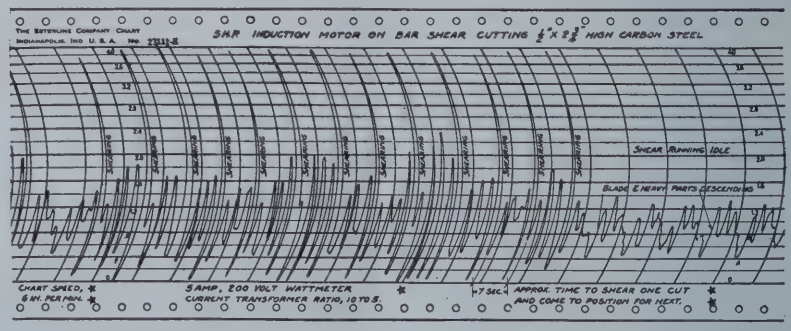
Upon studying the power consumed by large drawing and stamping presses it has been determined that improperly matched or dies with other imperfections can be detected by the power curve. Records are taken whenever new dies are put in use and if the consumption at any step in

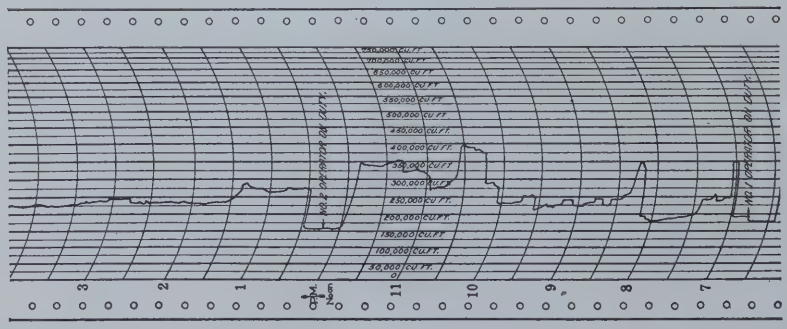
Aid to Efficiency

THE curves shown and explained in the accompanying article are of particular interest to engineers and plant executives in the iron and steel industry as they illustrate in a striking manner how records have helped to solve production problems. The curves were selected from a large number appearing in a circular entitled "Typical Graphic Records," just published by the Esterline Co., Indianapolis.

Motor Was Too Large

THE curve at the right showing the power consumption of a bar shear revealed the fact that the 5-horsepower three-phase induction motor driving it was subjected to an average load of less than 1½ kilowatts. A 2½-horsepower motor was substituted and has given satisfactory service, showing that the shear was over-motored by 100 per cent.





Checks Operators' Work

FREQUENTLY it is desirable to check the work of gas plant operators. The curve at the left shows that the operator who was on duty from 7 a. m. until noon failed to control the gas output within reasonable limits. No 2 operator who took charge at 1 p. m. maintained the output at or near 250,000 cubic feet during the afternoon.

a certain operation is excessive, the dies are examined and the defect corrected.

Frequently a graphic record of the power input can be used to advantage in determining the size of motor required to drive a machine. A case of this kind is illustrated by the curve shown on page 1116 which indicates the power consumed by a bar shear cutting ½ x 2¾-inch high carbon steel. This shear was driven by a 5-horsepower three-phase induction motor. According to the curve the maximum loads were slightly under four kilowatts and the average load on the motor did not exceed 1½ kilowatts. The 5-horsepower motor was replaced by a 2½-horsepower motor which has been giving satisfactory service, showing that the bar shear was over-motored by 100 per cent.

Measures Efficiency

The two charts shown on this page illustrate how the power input to a machine shop may be used as a measure of the efficiency of operation, and to some extent, of the output. The upper curve was taken on a power circuit feeding one department of a plant making automobile parts. It previously had been determined that the power input varied roughly with the output of finished parts. The chart shows that under the day rate system and partly because the machines were not properly grouped the men did not get the production up to normal until 45 minutes after the starting time and that the noon hour was anticipated by about 1½ hours. It took approximately 45 minutes to get the production up to normal after the noon hour and the falling off prior to 5 o'clock was much greater than that preceding the noon hour. These conditions were greatly improved by installing a bonus system, rearranging the machinery and making provisions for supplying the workmen with raw material more promptly than before. The lower chart shows the power consumption of a machine shop manufacturing automobile parts on the bonus system under highly efficient management. It will be noticed that the normal production is attained promptly at 7 and 1 o'clock, and that it is uniformly maintained until quitting time.

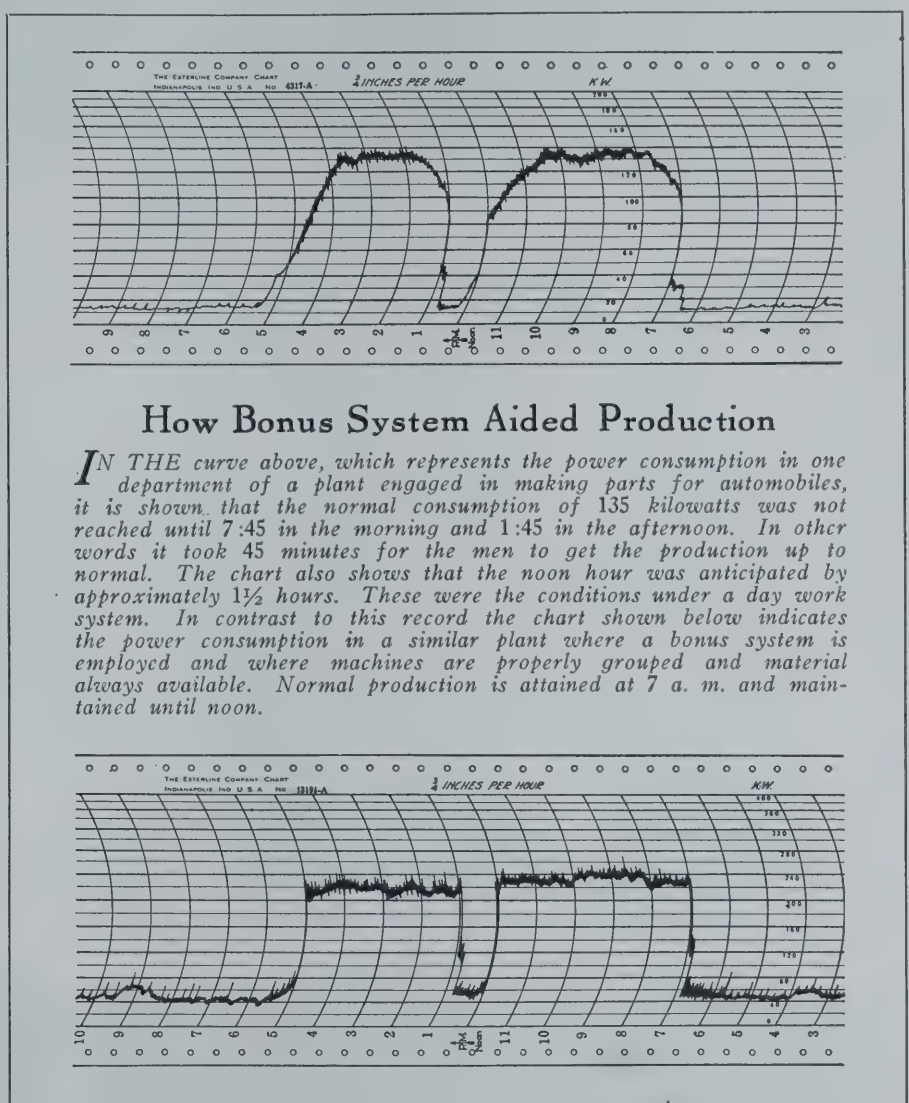
The curves at the top of page 1116 comprise the pictorial history of two heats in a 2-ton arc-type electric furnace. The curve at the left shows the power consumed during a run on 3000 pounds of high nickel steel. The charge was fed into the furnace without preheating. The power taken at the beginning of the heat was small, but as the resistance of the furnace circuit decreased owing to the heating up of the electrodes and the consolidation of the charge, the power rapidly increased until stable conditions were reached. The excessive variations were due to pieces of metal falling between the electrodes and short circuiting them as the charge melted down. The short circuits were only temporary as the fragments causing them were promptly melted. At the end of the run the temperature was lowered for a special treatment of the metal before pouring. The curve at the right shows the consumption during a run on high speed steel. This chart shows more irregularities as a result of short circuiting than the other record. A higher temperature was required toward the end of the run to secure certain physical characteristics.

The curve at the bottom of page 1116 showing the efficiency of two gas producer operators was obtained by a recorder attached to a gas meter. The afternoon operator maintained a uniform output while the production in the morning was irregular.

Has Record Coal Output

A total of 18,213,000 tons of coal, the greatest amount that has ever been recorded, was the consumption of industries in India in 1917, according to statistics made by the British government last year. The main demand came from the railroads which used 31 per cent of the amount, or 5,620,000 tons, and their requirements seem to govern the production. Fuel for the royal marine amounted to 1,429,000 tons or 7.8 per cent. Supply to shipping to other than the marine amounted to 1,514,000 tons or 8.3 per cent of the total output.

These three items accounted for 8,563,000 tons or practically half of the entire output. The greater part of the remainder was used by home industry, jute mills, cotton mills, iron and brass foundries, engineering workshops, brick and tile factories and pottery and cement works. Wastage and consumption at the collieries and domestic consumption by establishments which did not make returns accounted for the balance.



How Bonus System Aided Production

IN THE curve above, which represents the power consumption in one department of a plant engaged in making parts for automobiles, it is shown that the normal consumption of 135 kilowatts was not reached until 7:45 in the morning and 1:45 in the afternoon. In other words it took 45 minutes for the men to get the production up to normal. The chart also shows that the noon hour was anticipated by approximately 1½ hours. These were the conditions under a day work system. In contrast to this record the chart shown below indicates the power consumption in a similar plant where a bonus system is employed and where machines are properly grouped and material always available. Normal production is attained at 7 a. m. and maintained until noon.

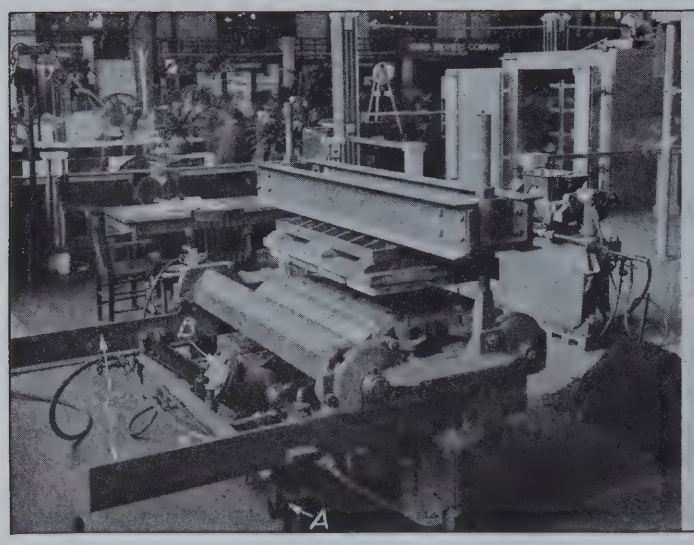


Fig. 1—Squeezer Head Moved Forward to Permit a Clear View of the Back Construction

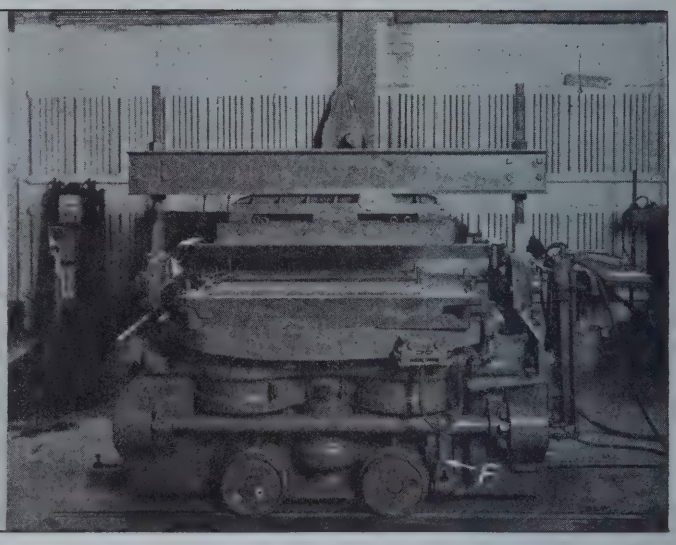


Fig. 2—Front of Machine Showing Lever which Actuates the Stripping Mechanism

Makes Cope and Drag Simultaneously

AN INTERESTING new combination jar-ram, squeezer and stripping-plate molding machine has been developed by the Cleveland-Osborn Mfg. Co., Cleveland, for making both cope and drag molds at one operation. It is an adaptation of a machine originally built for making rear axle housings at the plant of the Saginaw Malleable Castings Co., Saginaw, Mich.

The machine is self-propelled and has been designed to travel on a narrow-gage track parallel to the sand heap and to lay down a long single row of molds. The track may also be laid across a number of sand heaps and a number of molds laid down on each floor before the machine moves on to the next. It is provided with an air motor, *A*, Fig. 1, at the back of the main frame which enables it to travel under its own power.

The main frame and cylinders of the machine are cast integrally and the whole is mounted on four wheels running in ball bearings. Means of lubricating each wheel is provided so that the machine may be moved at all times with a minimum of power.

A pair of machined 6 x 1-inch steel bars, to which attention is directed by *C*, Fig. 1, are attached to the frame, one at each end. The overhanging ends are supported and held parallel and in line by a pair of cast-iron brackets shown in the same illustration.

As may be seen by consulting Figs. 1 and 4, the frame which carries the squeezer head moves back and forth on this pair of slides. This frame is of rigid construction and is mounted on four wheels which in turn are provided with roller bearings. Therefore but little effort on the part of the operator is required to move the head back and forth. The construction of the head and the means adopted for regulating the position of the pattern-plate to accommodate any depth of flask are clearly shown in Fig. 3. The steel I-beams carrying the head are held together at each end by cast-iron distance pieces which in turn function on substantial threaded rods or guides. By means of lock nuts, the distance pieces can be held in any position between the top and bottom of the rods. The I-beams support on their lower side a light rectangular plate which is rendered stiff and strong by external flange and a series of longitudinal and transverse ribs.

This plate is not brought into contact

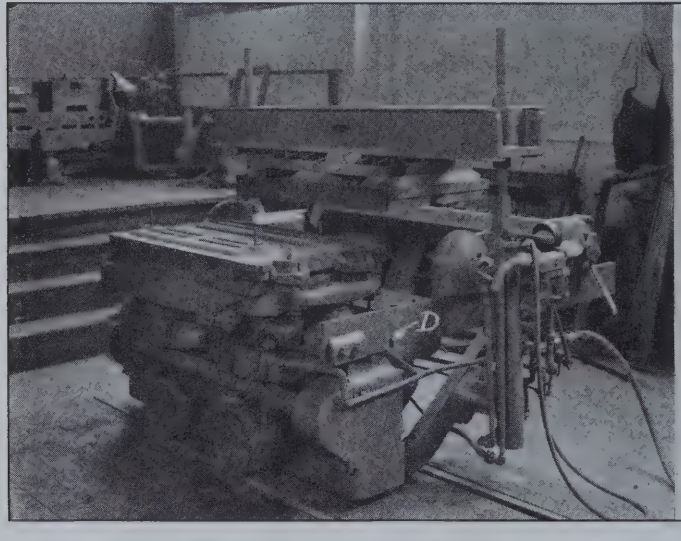


FIG. 3—THE MACHINE WILL NOT FUNCTION UNTIL A CATCH ON THE HEAD ENGAGES THE SLOT *D*

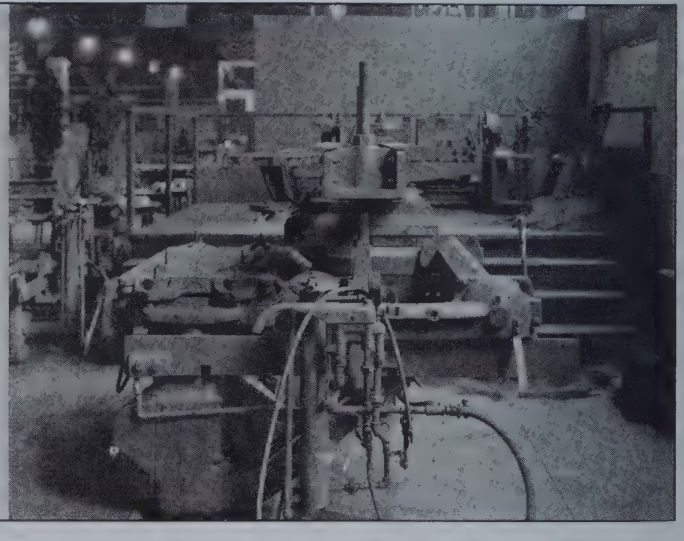


FIG. 4—CONTROL OF ALL MOTIONS EXCEPT TRAVELING IS CENTERED IN THE COLUMN *E*

with the sand in the flask. A strong, thick wooden board is used for that purpose. The upper side of the board is provided with three battens which are attached to the iron plate just referred to. A number of pads which come into intimate contact with the sand are attached to the lower side of the board.

Instead of letting the board go perfectly flat these pads are provided on account of the transverse bars in the flasks. The spaces between the pads correspond to the positions of the bars.

The air supply is centralized in the column *E*, Fig. 4. All the movements of the machine with the exception of traveling along the track are directed by the operator while standing near this column.

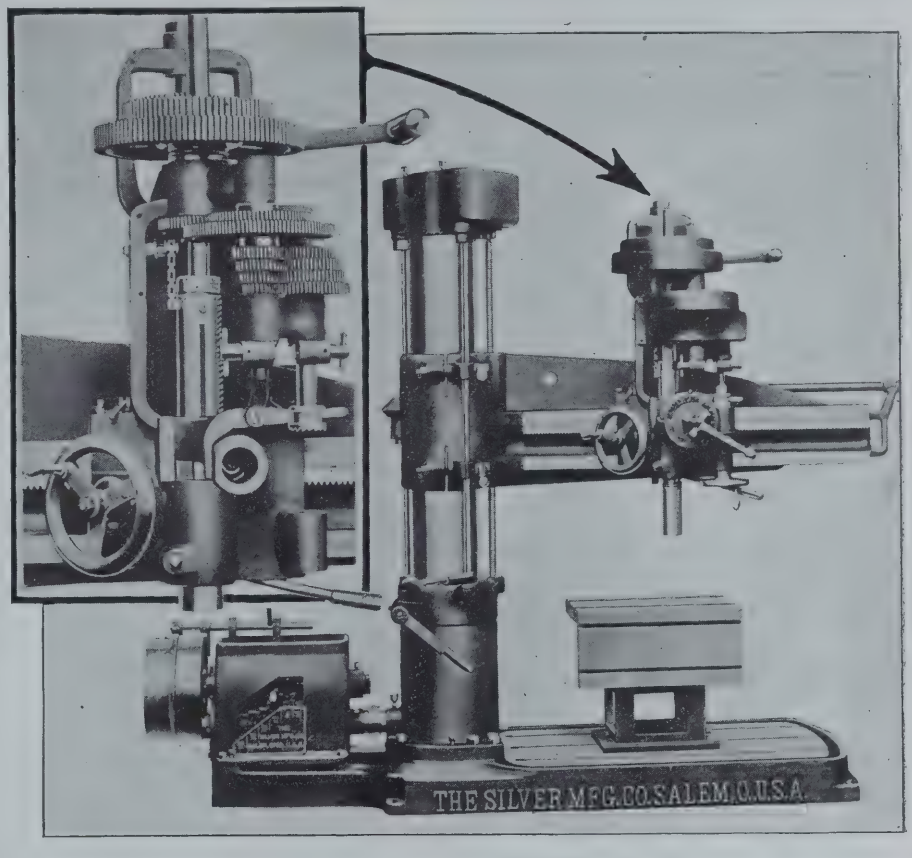
The cylinder for actuating the pattern stripping mechanism is shown at *B* Fig. 1, and at Fig. 2 may be seen the lever and shaft through which the force is transmitted.

Long stemmed chaplets bearing square heads are used as in ordinary radiator molding practice. There are holes through the patterns at the points where the chaplets are to be placed. Immediately below each hole a pin, which is made a loose sliding fit, is attached to a projection on the under surface of the stripping plate. The lower ends of these pins are threaded and by the aid of a pair of lock nuts they may be adjusted to any height within their limitations. Their relative height determines the thickness of metal in the proposed casting. Again, when the mold has been rammed, the stripping-plate lifts the flasks off the patterns and at the same time causes these pins to follow the chaplets up through the holes. Thus is discounted any possibility of the chaplets sticking in the pattern and therefore being loose in the mold.

When in use, the squeezer head is pushed back to the position shown in Figs. 2, 3 and 4. The cope and drag are placed on the pattern plate and a wooden frame 4 inches in height is placed on top to hold a surplus of sand. When the flasks have been filled with sand the valve controlling the jarring mechanism is opened and the mold rammed to a predetermined density. The wooden frame is then removed and the squeezer head brought forward. A thin iron straight edge, *H*, Fig. 2, precedes the squeezer board and provides a perfectly even surface for the pads to press against. The squeezer head automatically adjusts itself to the position of the flask by means of a catch which engages the slot *D* Fig. 3. The table is then raised and the sand squeezed. It is next lowered back to its original position, the vibrator set in motion and the flasks stripped from the patterns. Two men lift the flasks off the machine and set them on the floor.

New Radial Drill Has Safety Features

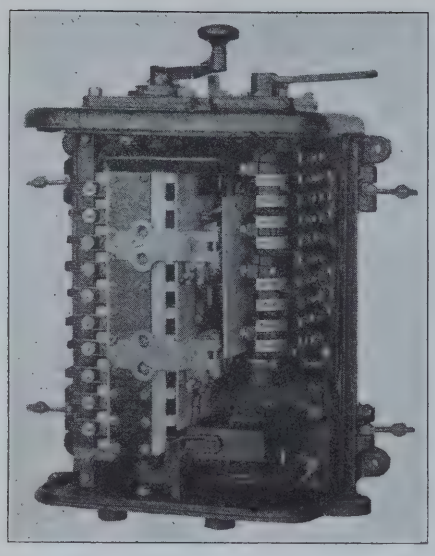
A radial drill having a number of novel features has just been developed by the Silver Mfg. Co., Salem, O. The base of the machine, which is built in 2½, 3 and 3½-foot sizes, is ribbed both lengthwise and crosswise, and has an oil channel which drains into a reservoir under the column. The column is of semi-steel and of new design. The inner column or post has a wide bearing on the base and extends to the top without taper. This casting has interior ribs which just clear the drive shaft. The outer column telescopes the post and rests on ball bearings which facilitates the swinging of the arm and also takes the thrust load. The radial arm is raised and lowered by power at a ratio of 2 to 1. The arm is clamped to the column by two levers, the bolts of which serve an unusual purpose. As shown in the accompanying illustration when the lever is placed in the clamping position it tightens the split hub through which the controller shaft runs, thus preventing the elevating screw from being set in motion while the arm is clamped to the column, avoiding any possibility of wrecking the machine. The arm also is provided with a safety nut which runs idle on the elevating screw. In case the threads of the elevating nut become worn sufficiently to allow the arm to drop, the weight of the arm is automatically transferred to the safety nut. The head has a wide bearing on the arm and carries the back gears which provide two speeds. The drive gear on the spindle revolves on ball bearings and is equipped with two keys for driving. The spindle is of high carbon crucible steel and the sleeve is bushed with phosphor bronze bearings. There are eight changes of feed ranging in geometrical progression from 0.005 to 0.040 inch per revolution of spindle. Any of these feeds may be obtained while drilling by two feed handles. The hand feed through the worm may be fed ahead of the power feed, saving time when starting to drill. It is controlled by a single lever which also acts as a quick return. The machine is equipped with a depth gage and automatic feed trip for drilling to a predetermined depth. The drill also is equipped with a tapping attachment.



NEW RADIAL DRILL—INSET SHOWS DETAIL OF HEAD

Six changes of speed can be obtained through the speed box which is bolted onto the base and provided with an oil pan permitting the gear to run in an oil bath. The speed box with the back gear on the head, provides 12 speed changes in all.

The University of Pittsburgh, school of economics, now is offering a com-



CONTROLLER FOR SERIES—PARALLEL OPERATION OF LOCOMOTIVE MOTORS

plete four-year course in industrial management in co-operation with the school of engineering. Work in the school of economics will be centered in the field of industrial organization and scientific management, cost accounting and employment management, and will be supplemented by scientific and laboratory study along engineering lines to furnish a background for the student who intends to specialize in the business side of industry.

Develops Drum Controller

A drum type controller for series-parallel control of two series motors has just been developed by the Cutler-Hammer Mfg. Co., Milwaukee. This controller, which is provided with both a main cylinder and a reverse cylinder, is for use on storage battery locomotives or on trolley locomotives using 250 volts or less.

The motors are accelerated by the main cylinder, which has seven points of control. A star wheel provides an interrupted motion to the lever, so the operator readily feels the speed points. The fourth point is the full series or low speed running point and the seventh the full parallel or high speed running point. All intermediate points are resistance points.

The reverse cylinder is positively interlocked with the main cylinder so it cannot be operated when the latter is in any but the "off" position. Two cutout switches allow either motor to be by-passed, if it becomes damaged.

A year ago of the 211 registered factories of the metal industry in the Moscow district, 79 or 38 per cent were closed, while the output of the rest was greatly reduced, only about 40 per cent of the workmen remaining. In last October, 161 of the textile factories were closed, and 14 cement works were idle. The number of workmen in the rubber industry has fallen from 32,000 to 7500. The greater number of these factories are closed, while the remainder have sufficient benzol for approximately two months. Moreover the naphtha industry, an important one in Russia, is in a languishing condition for want of fuel. The distillation works have been compelled, for lack of raw material, to dismiss workmen. A similarly lifeless state marks the sugar, paper and match-box industries.—*Zeitschrift für angewandte Chemie.*

New Heaters for Large and Small Ladles

New equipment for drying crane, bull and hand ladles, developed by the Hauck Mfg. Co., Brooklyn, N. Y., is shown in the accompanying illustration. The portable outfit, shown at the left, is designed for heating large ladles. It is claimed that this heater will thoroughly heat and dry the lining of a 50-ton ladle in 15 minutes, depending upon the heat required.

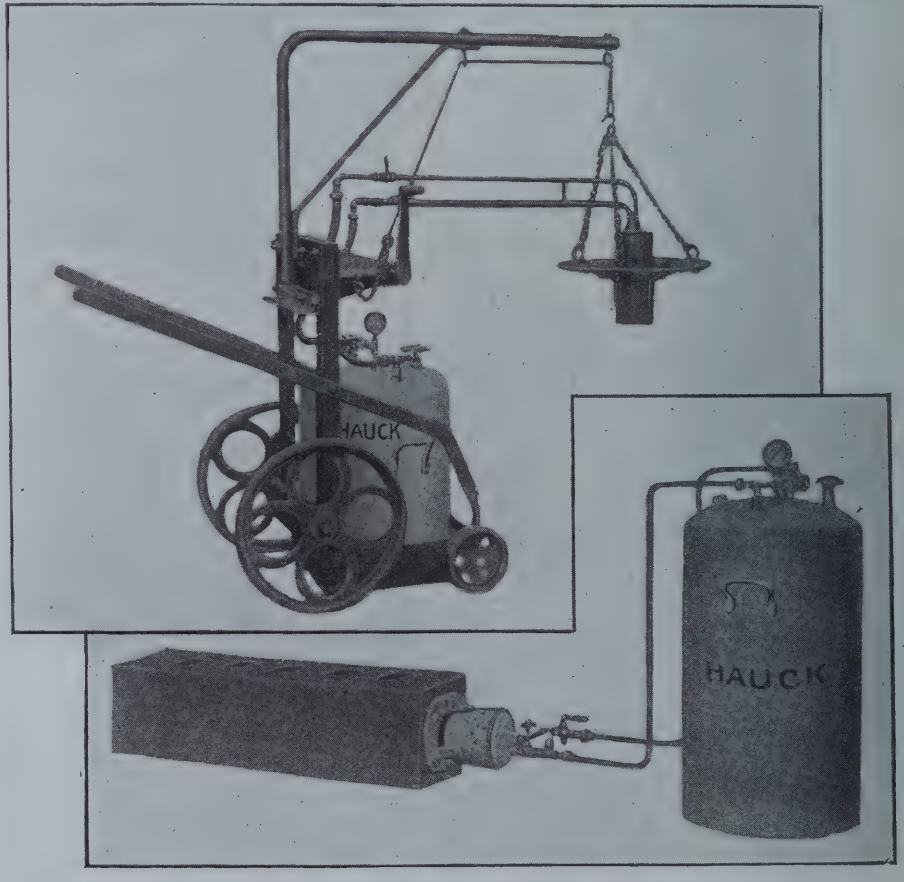
The apparatus consists of a 20-gallon steel oil tank, equipped with a 150-pound pressure gage, oil and air regulating valves, one length of special oil resisting hose and one length of high pressure air hose, one burner with long handle and deflecting plate. The tank is mounted on an angle iron truck. Attached to the truck is a swinging davit, from which is suspended by steel cable the burner with the deflecting plate. The deflecting plate may be lowered or raised as desired, as the steel cable is connected to a small winding crank on the truck.

The burner operates with compressed air from 20 to 100 pounds pressure and uses crude or kerosene oil. The flame of the burner, directed down towards the bottom of the ladle, spreads evenly, heating the sides and bottom of the ladle.

The device shown at the right of the accompanying illustration is designed to heat a number of small ladles at a time. The apparatus consists of a sheet iron box reinforced with angle iron and lined with firebrick, a furnace burner and a 20-gallon steel oil tank.

The ladles are placed bottom up over the opening of the box and the flame of the oil burner shoots up through the openings, drying the linings of the ladles. The fire box can be made any desired length to heat any number of ladles.

The burner consumes crude or kerosene oil in connection with compressed air at from 20 to 100 pounds pressure. The connections between the burner and the tank can be made with pipe.



PORTABLE APPARATUS FOR DRYING CRANE AND BULL LADLES—DEVICE FOR HEATING SMALL LADLES

Gear Standardization a Reality

Eighty Per Cent of the Industry Votes for Specific Plan, According to Report Submitted at Manufacturers' Convention in Boston — Labor and Technical Problems Receive Attention at Meeting

WITH the standardization of gear manufacturing well begun, and with labor questions thoroughly discussed, the American Gear Manufacturer's association closed its semiannual convention in Boston, Thursday night, Oct. 16. In many ways the convention proved one of exceptional accomplishment. One hundred and fifty members attended.

Standardization of gears has been considered by the association for some time, and is regarded as the most important work now under way. The committee on standardization met every day and several reports were presented at the regular sessions. B. F. Waterman, of Brown & Sharpe Mfg. Co., Providence, R. I., is the chairman of the committee.

A vote on the adoption of the committee's tentative plan for standardization was taken among gear companies, and the plan was endorsed by approximately 80 per cent of the industry in the country. There are many details still to be worked out, such as relate to back lash, tolerances and design, but with such a large percentage of the industry supporting the movement it is said gear standardization will soon be a reality.

On Monday, A. A. Alles Jr., of the Fawcus Machine Co., Pittsburgh, presented a paper on uniform cost accounting in which he explained the importance of keeping accurate costs. The federal trade commission some years ago investigated 250,000 business concerns, and of this number found but 5 per cent that knew their manufacturing costs. Mr. Alles said uniform accounting systems usually produce excellent results. He called attention to the fact that the American Foundrymen's association has been working along the lines of uniformity of costs and at its recent convention in Philadelphia, the cost committee recommended that details of its standard cost system be published in the proceedings.

To be successful, a cost accounting system must be so interwoven with the company's general account that either one would be incomplete without the other. "Unquestionably a great deal may be accomplished," said Mr. Alles, "if an organization such as ours enters heartily into an attempt at adopting uniform cost keeping methods."

Gives History of Worm Gears

On Tuesday, the principal paper presented was entitled "Worm Gears," by A. Fleckenstein, of the Hindley Gear Co. This paper covered the history of worm gears, which were in existence in the fifteenth century, and described many typical modern installations.

It is estimated that the load due to the fire of a heavy gun on a battleship is 350,000 pounds, and this is carried on the pitch line of a gear only 25 inches in diameter. One method of manufacturing the gears is to cut them from solid blanks, and accuracy is obtained by having the cutters which produce the worm and the wheel rotate on their own axes under positive drive. Afterward the gears are ground together to provide good contact and smooth motion.

Roger W. Babson, statistical expert, Wellsley Hills, Mass., talked to the members of the association at their luncheon, Tuesday, on the labor problem.

"The open shop," he said, "is fundamentally essential to industrial success. Next to this comes a recognition on the part of employers of the fact that wage earners are men. The labor question is progressive, and not a problem to be settled now for all time. The labor conference in Washington will be to the labor situation, what a safety valve is to a boiler. It will ward off an explosion by giving each side a better understanding of its feelings.

"Judge Gary is the first man to stand up publicly and tell the truth without trying to soften his terms for the pleasure of his opponents."

The solution of the labor problem, he said, is not one of wages and hours, but one of psychology. "Appeal to men's hearts and you have solved the problem," he declared.

In discussing the labor problem at the Wednesday session, J. D. Foote, of the Foote Bros. Gear & Machine Co., Chicago, said: "There is nothing mental or emotional about it. We cannot stop labor from organizing, and the only thing for the manufacturers to do is to organize themselves as strongly as possible. The demands of the labor unions are autocratic; there is no give and take to it; they will not reason. As to wages, I think we should not quibble over 5 cents an hour."

S. L. Nicholson, of the Westinghouse Electric & Mfg. Co., read a paper on system and organization in commercial activity. "You should know the possibilities of the territory around you," he said. "The salesman should know the talking points. Slipping belts decrease speed, gear drives give constant and reliable speed. Filling the demand is not developing business. Price is not a good reason for losing business. If you are in business you believe you can give as much for a dollar as your competitor. The salesman should know the plant and its operations, and if certain tools are going to be idle he should look up customers who want the things that are made by those particular tools."

Thursday, A. F. Cooke, of the Fawcus Machine Co., talked about herring-bone gears and told of some of the difficulties in manufacturing them for large, high-speed work. He told of installations recently made for the United States shipping board, in which gear trains transmitting 1400 horsepower were used to reduce revolutions per minute from 3200 to 90. In a test at the shop the gears were operated at 4200 revolutions per minute and during the test it was possible to hear ordinary conversation near the gears.

"After much investigation of the practice both in Europe and here, we adopted a spiral angle of 22½ degrees for all of our gears," said Mr. Cooke. "The high-speed gears are made of forged steel in order to cut down any tendency toward distortion in the heat treatment." The convention was welcomed to Boston by Arthur Hill, city counsel, representing Mayor Peters, and later in the week Mayor Peters himself formerly presented the keys of the city. The members visited many of the industries and points of interest in the Boston district, and witnessed the launching of the United States destroyer REID at the Squantum navy yards. The next convention will be held in Detroit, in April, 1920.

Mine Operations Fairly Active

Agitators Fail to Make Any Progress Among Workers on Iron Ranges—More Men Employed by Minnesota Steel Co., Than Before Sept. 22—Many Aliens Are Leaving—Anti-Tonnage Tax Organizations Formed

Staff Correspondence of The Iron Trade Review

DULUTH, Oct. 20.—Beyond a moderate slowing down in ore shipments from the docks at the outset, Duluth and the Minnesota iron range districts have not been affected by the steel strike. Not an employe quit at the plant of the Minnesota Steel Co., here, and the company's blast and open-hearth furnaces are operating at practically the same rate as they have been since early last summer. More men are now being employed by the company than when the steel strike was declared, as the result of an increased demand in this district for its semifinished steel, following the cutting off of supplies from plants in the Chicago district. Approximately 1700 men are employed in the various departments and there is no labor trouble.

There was no strike trouble of any kind on the Mesabi range, but in the Ely district of the Vermillion range, two mines of the Oliver Mining Co. and two independent mines, the Chandler and Zenith, were closed. The Oliver mines have been closed for the balance of the season, and it is not expected that the independent properties will be operated again this fall.

Operations have been on a fairly active basis at all the working mines on the ranges during the last few weeks. Since the settlement of the dock strike last month, efforts have been made by both the Oliver Mining Co. and the independents to speed up production with a view to delivering as large tonnages of ore as possible at the Lake Erie docks prior to the close of navigation. The measure of success attained is shown by shipments during September, 6,814,000 tons, despite slow operations during the first half of the month. If no further disturbing factors arise it is said ore shipments for the season from the Lake Superior district will amount to 50,000,000 tons.

It is interesting to note that the payrolls of the various operators on the ranges at the beginning of this month called for the disbursement of the largest amount of money since the season opened. The superintendent of one of the independent companies said that the wages of 500 or more miners at its mines averaged $7.30 a day during the previous two weeks, and similar information was given out by other operators.

Though operations of the Oliver Mining Co. were curtailed through labor troubles on the Vermillion range, work at its Mesaba range properties was pushed, and more than 12,500 men were employed at its mines in the Lake Superior district. It has been announced by officials of the company that a large force of miners will be employed during the winter months in development work.

Mining officials on the ranges are disturbed over the outlook for labor at the mines next season. Foreigners have been leaving the ranges at an alarming rate, more than 200 men going in one day recently from the Nashwauk, Minn., district. Letters received by the aliens urge them to return to their native countries in order to take advantage of the high rate of wages expected in reconstruction work.

The Oliver Mining Co. is facing injunction proceedings brought in the district court at Hibbing to restrain it, and the village of Hibbing from carrying out an alleged conspiracy to transfer the original business section of Hibbing to a new location, known as the Central addition, to facilitate the working of extensive iron deposits underlying the old townsite. Hibbing has been having a continuous moving day since early last spring. The mining company set out last winter to buy out the owners of improved property, and substantial sums have been paid. Many houses have been moved to the new town, and contracts involving expenditures running up into millions of dollars have been let for new structures. In view of that situation, it is generally thought that the proceedings are late. The main object of the plaintiffs is to obtain damages for loss in the value of their properties. They ask for the appointment by the court of a referee to determine the respective amounts, which they contend should not total less than $500,000.

At various places on the Minnesota ranges residents have organized clubs to promote an educational campaign in southern Minnesota regarding the unfairness of the proposed tonnage tax, the imposition of which has twice been blocked by vetoes of the governor. It is expected that the mining interests will be called on to face the tax issue again at the next session of the state legislature. The aim of the organizations is to inform the public in the southern part of the state what the effect of the tax would be on industry.

Fee owners and lesees of manganiferous iron ore properties on the Cuyuna range have been gratified by recent rulings of the tax commission at St. Paul, reducing the assessed valuation of the Clark mine for 1918 from $176,856 to $23,737, and the assessment for the same year on the Sultana mine from $151,799 to $33,309. Approximately the same action was taken regarding assessments for 1917. Similar reductions in the assessed valuations of other manganiferous or low grade ore bodies on the range are expected. Richard Hurd, the state tax commission's director of mines, in ruling on the petition to reduce the valuations, said that there never had been a normal demand for the manganiferous ores of the Cuyuna range. Production, in his opinion, was either for experimental purposes, or for the exploitation of stock. An abnormal demand was brought about by war emergency but as soon as peace was declared, Hurd said, the demand ceased. He pointed out that with one exception, every manganiferous property on the Cuyuna range has been closed down and that unless some practical means of enriching the Cuyuna ores can be found, or unless a sufficiently protected tariff can be worked out there would appear to be no chance for the successful operation of those properties. He estimated that an average of $100,000 had been spent on each of the 30 Cuyuna range manganiferous properties.

Owners of manganiferous properties on the Cuyuna range do not, however, take such a pessimistic view of the situation as does Mr. Hurd. It is claimed that the ores have been found merchantable and capable of economical treatment for the production of alloys.

Exporters Adopt Broad Policies

Favor Resumption of Trade With Germany and Russia, Improved Credit Relations, Increased Production, and Action on Peace Treaty at Earliest Possible Time—European Business Men Express Their Views at Convention

CALLING on American labor to increase its activity in order that the present standards of living in America may be maintained, and asserting that when peace is finally declared it shall be a real peace as far as trade with the central powers is concerned, the American Manufacturers Export association held its tenth annual convention in New York, Oct. 17 and 18.

During the two-days' session the convention discussed the possibility of trade with Russia and the new states of Europe, the American consular service and foreign credits. A few prominent British, Belgian and Italian business delegates were present, French industry had the larger representation, however, and all of the French delegates urged America to extend credits to Europe that the purchase of actual necessities can be made in the United States.

The call to American labor and the decision as to future trade relations with Germany were recorded in a series of resolutions adopted by the convention at its final session. In these resolutions a number of subjects of importance to American manufacturers were dealt with, and foreign trade policies were outlined. The manufacturers urged that the peace treaty be acted upon at the earliest possible moment. They recommended to congress that immediate action be taken to reorganize the diplomatic, consular and commercial services of the United States. They went on record as being willing to co-operate in the rehabilitation of Europe through the exportation of raw material and machinery, and resolved to improve the quality of American workmanship and develop facilities for increased production at home.

The urgent need of building up manufacturing organizations in this country in order that foreign trade which has come to the United States through the war may be retained was dwelt upon at length by George Ed. Smith, president of the Royal Typewriter Co., retiring president of the export association. He told the manufacturers they must expect a serious falling off in their foreign business in the near future, and should not delude themselves on that score. This same thing was hinted at by Frank A. Vanderlip, of New York; Louis E. Pierson, of the Irving National bank; Allen Walker, of the Guaranty Trust Co., and other speakers who discussed the very acute exchange situation and the necessity of organizing investment trusts or associations under the Edge law. One of the most concise expositions of the possibilities of co-operation among manufacturers to found institutions which will be able to extend foreign credits was given in a speech by Gilbert H. Montague, of the New York bar. Senator Owen, Oklahoma, showed a disposition to give way temporarily to the views of international bankers but said that when normal conditions have been restored if private bankers do not provide adequate facilities to finance foreign trade he will urge the government to lend a hand.

As a result of the rather controversial discussion of the credit situation the convention went on record for a conservative policy, expressed as follows:

That every facility should be provided by American industries and financial institutions, for the exportation to Europe of raw materials and machinery, which are essential to the revival of European industries.

That after supplying immediate and essential requirements for the rehabilitation of Europe our manufacturers should direct their selling efforts chiefly to the markets of those countries whose foreign exchange situation will not be still more adversely affected by the result of such selling efforts.

On Siberia and southern Russia the convention went on record as favoring this program:

That in behalf of American ideals and for the protection of American interests, official support in the form of economic assistance and generous credit facilities be given to the efforts of patriotic Russians, who are endeavoring to create a united and constituent country.

That in that part of Russia where life and property are secure, every effort should be made to supply the necessities of life to the Russian people.

That the American manufacturing and shipping interests and their bankers should at once unite to undertake the foregoing work.

Realizing that the extension of credits will not nearly meet the emergency of the present situation, the convention, although composed of the leading exporters of America, declared for a policy of importation of European goods.

Second in importance only to the action taken in connection with the subject of credits and Russian trade, was the expressed attitude of the manufacturing exporters on the matter of trade with Germany.

The purpose of the exporting manufacturers was expressed in a resolution, unanimously adopted, providing the following:

"When our government shall have ratified the peace treaty, the peace so concluded shall be, industrially, a real peace, and American manufacturers shall feel at liberty to resume trade with the people of the central powers in the manner that their individual interests may dictate, but in the allocation of output and the extension of credit generous consideration should always be given by the manufacturers of the United States to the needs of those peoples with whom they have been associated in the war."

Export Association's New Officers

PRESIDENT—*William Lawrence Saunders, chairman of the board of directors of the Ingersoll-Rand Co.*

VICE PRESIDENTS—*C. K. Anderson, president, American Wire Fabrics Co.; H. S. Demarest, Greene Tweed Co.; Julius Goslin, president, Joubert & Goslin Machine & Foundry Co.; J. S. Lawrence, president, Lawrence & Co.*

TREASURER—*William H. Ingersoll, Robt. H. Ingersoll & Bro.*

DIRECTORS—*Term of* 1921, *C. E. Jennings, president, C. E. Jennings & Co. Term of* 1922, *George Ed. Smith, president, Royal Typewriter Co., Inc.; Dwight Austin, managing director, Nestle's Food Co., Inc.; F. A. Seiberling, president, Goodyear Tire & Rubber Co.; Frank H. Taylor, president, S. S. White Dental Manufacturing Co.*

Confer on International Trade

Representatives of American Business Interests Meet in Atlantic City With Delegates From Iron and Steel, Financial and Shipping Houses of Europe—Credits and Exchange Rates Receive Consideration

ATLANTIC CITY, N. J., Oct. 23.—With representatives of many of the leading industrial interests in the United States and more than 40 delegates from financial and manufacturing establishments in Great Britain, France, Belgium and Italy in attendance, the international trade conference called by the chamber of commerce of the United States today began serious consideration of problems of world-wide trade relationship. The conference is of particular interest to steel manufacturers, and the delegates from European countries include representatives of some of the largest steel interests, as well as men concerned with financial and shipping affairs.

A definite understanding as to European requirements is expected to result from the conference, and such topics as credits and exchange rates are in the forefront for discussion. It is possible that initial steps will be taken toward the organization of an international chamber of commerce, as favored by the French delegation, headed by Charles Eugene Schneider, of Schneider & Co., Creusot, France, one of the most distinguished of the European representatives.

The delegates from France, England, Belgium and Italy, after the Atlantic City meeting, plan to make a tour of the United States to study industrial conditions.

Committees in charge of the various departments of the conference's program began work Monday, and the first session of the delegates was held late Wednesday. In a statement issued by the executive committee of the conference it is said that while requirements of European countries will be far in excess of the capacity of American mills to supply, larger order have not been placed in the last six months due to the unfavorable trend of exchange.

Summarizes Steel Situation

The committee authorized the following review of the steel situation in England, France, Belgium and Italy, prepared by an American expert in the foreign market for American steel.

"ENGLAND—Before the war England's finishing capacity for iron and steel products was in excess of her producing capacity, so that in 1913 she imported nearly 1,000,000 tons of semi-finished steel, which was imported from the United States, Germany or Belgium, depending upon where it could be bought cheapest. During the war her finishing capacity was much increased, and today it is probably over 25 per cent greater than her producing capacity.

"Today the books of the American mills are so full of orders for finished products that the majority of the mills require all of their semifinished steel for their own use, and while there is the same demand in England for this class of material, the quantities which the mills in the United States can furnish have been much curtailed. In the long run, this must result in the reduction of output of finished steel products in England, which will probably be reflected in the smaller tonnage that Great Britain will have to offer for export.

"FRANCE—At the close of the war, while most of the French steel mills were intact, France had a devastated district 30 miles wide along her north-eastern frontier. Here, factories had been destroyed as well as railroad lines, with all their bridges, stations and warehouses, so that France's necessities for steel were greater than those of any other European country.

"In anticipation of the award of Lorraine with its deposits of iron ore and many steel mills, and of the Saar valley with its great coal fields, the French government for the first six months after the armistice opposed the importation of steel from abroad, with a view to giving work immediately to returning soldiers. It was found that the tonnage of steel required was such that the only way reconstruction could proceed was by importing steel, and governmental restrictions were removed. As

Schneider Favors World Chamber of Commerce

ATLANTIC CITY, N. J., Oct. 22.—"In Europe we feel the vital necessity of keeping in close touch with this country," said Charles Eugene Schneider, head of Schneider & Co., Creusot, France, one of the leading iron and steel interests in Europe, who is chairman of the French delegation attending the international trade conference in Atlantic City. "We hope that the future will see our business men visiting the United States, and American business men in Europe, very frequently. Such a situation, I feel sure, would be a splendid thing and would be profitable to the nations on both sides of the Atlantic.

"I hope to see the creation of some kind of permanent organization that will bring the business and trade elements in France and America in close relationship. I hope that the establishment of a world chamber of commerce will be effected at this conference.

"I do not believe France needs steel, that is, not much steel. Some plates for shipbuilding and similar material, perhaps, will be necessary, but we are not going to ask for any huge shipments.

"The Creusot works are now operating at the greatest speed possible under the conditions. A large percentage of our factories, as well as our mines, were in German hands. It will take us two years to get the devastated regions functioning again in a business way. At our plant we are making railroad equipment and other material needed for the development of the country. We will turn out probably 300 locomotives this year. We are manufacturing some munitions of war, as we do not believe the time has come when France may safely disarm."

Monsieur Schneider added that trade with Germany would be resumed very soon, and that the first things France will want from her former enemy are iron and coal. France's greatest needs from America, he said, are coal, copper, grain and petrol.

a result, inquiries for large tonnages were received in this country, but most of them did not develop into orders because of the continued fall in exchange.

"The United States is handicapped in selling products in France, because we have never entered into a reciprocal commercial treaty which our materials would be admitted at the lowest duty, under the most-favored-nations clauses. It would seem as if this was an opportune topic to discuss with the French delegates at the conference, so that steps may be taken to have imports from the United States admitted under the minimum tariff.

"BELGIUM—When the Germans found it necessary to evacuate Belgium, they followed a deliberate policy of so crippling industries so as to make such competition impossible for years. It is said that trained metallurgists and steel-mill operators were sent from Germany to direct the looting and complete the destruction so that the mills would have to be rebuilt from their very foundations.

"Thirty steel works produced in 1913 over 2,500,000 tons of steel, of which 1,400,000 tons were rolled into rails, structural shapes, plates, etc. The iron and steel industry in Belgium is centered in the provinces of Hainout and Liege, and it was here that destruction was most complete.

"Like England's, Belgium's greatest need is for semifinished products, but her ability to buy these has been interfered with by the fall in exchange. To overcome this it is stated that a group of the most important steel works in Belgium has under consideration the forming of a holding company to negotiate a large bonded loan to buy materials and supplies.

"ITALY—Italy before the war was a particularly large importer of steel products, which came almost exclusively from Germany. Her production of steel had always been limited by lack of coal. During the war she increased her output of electric iron from 17,000 tons in 1916 to 56,000 tons in 1917, and with her enormous waterfalls it is possible the harnessing of this water power may result in partially overcoming her handicaps. For the next year or two Italy is bound to be a large purchaser of steel abroad."

The committee on metals will give special consideration to the needs of European countries. Members of this committee are:

E. A. S. Clarke, chairman, president of the Consolidated Steel Corp., New York City; O. K. Davis, vice chairman and secretary, secretary of the National Foreign Trade council, New York City; George H. Moseley, chamber of commerce of the United States, Chicago; W. A. Bostwick, president, International Nickel Co., New York City; William Butterworth, president, Deere & Co., Moline, Ill.; E. J. Cornish, president, National Lead Co., New York City; Thomas G. Cranwell, president, Continental Can Co., Syracuse, N. Y.; Walter Douglas, president, Phelps-Dodge Corp., New York City; John P. Elton, vice president, American Brass Co., Waterbury, Conn.; B. F. Jones Jr., president, Jones & Laughlin Steel Co., Pittsburgh; C. K. Leith, Madison, Wis.; John W. O'Leary, vice president, Chicago Trust Co., Chicago; Edgar Palmer, president, New Jersey Zinc Co., New York City; George N. Peek, president, Moline Plow Co., Moline, Ill.; Charles M. Schwab, chairman, Bethlehem Steel Corp.; W. B. Thompson, president, Inspiration Consolidated Copper Co., New York City; H. R. Wagner, American Smelting & Refining Co., New York City; Pope Yeatman, mining engineer, New York City.

The following committee has charge of all affairs of the conference related to reconstruction supplies which may be required in Europe:

E. W. Rice Jr., chairman, president of the General Electric Co., Schenectady, N. Y.; George A. O'Reilly, vice chairman and secretary, Irving National bank, New York City; William D. Southwick, chamber of commerce of the United States, Chicago; Charles W. Asbury, president, Enterprise Mfg. Co., Philadelphia; Max W. Babb, vice president, Allis-Chalmers Mfg. Co., Milwaukee, Wis.; C. S. Brantingham, Emerson, Brantingham Co., Rockford, Ill.; J. H. Burton, J. H. Burton & Co., New York City; C. L. Cornell, vice president, Niles Bement Pond Co., New York City; J. B. Doan, president, American Tool Work Co., Cincinnati; Dr. J. T. Duryea, president, Pierce, Butler & Pierce, New York City; Andrew Fletcher, president, American Locomotive Co., New York City; Charles A. Goodman, president, National Hardwood Lumber association, Chicago; E. M. Herr, president, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; John J. Kaul, Kaul Lumber Co., Birmingham, Ala.; John H. Kirby, president, Kirby Lumber Co., Houston, Tex.; Alexander Legge, vice president, International Harvester Co., Chicago; Stephen C. Mason, president, National Association of Manufacturers, Pittsburgh; John W. McClure, first vice president, National wholesale Lumber Dealers' association, Memphis, Tenn.; Albert E. Newton, Reid Prentice Co., Worcester, Mass.; George A. Ranney, president, National Implement and Vehicle association, Chicago; W. W. Salmon, president, General Railway Signal Co., Rochester, N. Y.; Hamilton Stewart, vice president, Harbison Walker Refractories Co., Pittsburgh; Ernest T. Trigg, vice president, John Lucas & Co., Philadelphia.

Hold Annual Meeting

The twelfth annual meeting of the National Association of Ornamental Iron and Bronze Manufacturers will be held at the Missouri Athletic club, St. Louis, Oct. 23 and 24. An interesting program has been arranged and a large attendance is expected. Among the papers to be read are: "The Labor Problem," by W. Hume Logan; "Industrial Engineering," by H. H. McClure of L. V. Estes, Inc., Chicago; "Uniform Costs," by L. W. Robinson of L. V. Estes, Inc., and "Factory Organization and Its Problems," by C. Zimmerman. An automobile tour of the city will follow the final session.

Allot Supplies

Of Coal for Products Because of Strike Effect on Output

New York, Oct. 20.—The steel strike continues to materially affect production of benzol. Good strides have been made toward normal output of iron and steel, but the coke producing branch of the industry is still lagging with the result that the production of benzol and other coke by-products are being materially affected. The output of benzol is said to be not more than 35 per cent of normal. As a result of this situation sellers of by-products continue to allot their supplies with the utmost discretion. Prices remain unchanged. Contract benzol is quoted at 24 to 29 cents for pure material and 22 to 24 cents for 90 per cent.

Output of toluol and solvent naphtha also are affected by the strike, but as demand for these products has not been heavy of late, little difficulty is being had by consumers in covering on their requirements. Toluol is still quoted at 26 to 30 cents, f.o.b. producers' plants, on spot and contract business, and solvent naphtha, 22 to 27 cents.

Drug merchants remain active in the naphthalin market, contracting for their next season's requirements. Some fairly good buying is also being done by the dye industry. Naphthalin in flakes is holding at 6½ to 7½ cents, and naphthalin in balls at 8½ to 27 cents.

Demand for sulphate of ammonia is relatively quiet, with prices unchanged. Sulphate of ammonia for spot delivery is quoted at $3.40 to $3.65, and for future shipments at $3.25 to $3.40 per 100 pounds at producers' plants.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.65

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.25 to 3.40

Appeal Ore Freight Rate Case

Independent Companies to Follow Action of Oliver Mining Co., in Asking Interstate Commerce Commission to Revoke "Spotting" Charge and to Reduce Rate From Mine to Dock, Increased by Director General

WASHINGTON, Oct. 21.—Independent ore companies and furnace interests owning ore mines are preparing to present to the interstate commerce commission petitions asking for the revocation of the "spotting" charge on ore cars and for a reduction of the freight rate from the mines to upper lakes docks. Their complaint will follow the lines of that filed recently with the commission by the Oliver Mining Co., against the director general of railroads, including the Chicago, Milwaukee & St. Paul railroad and others, among them noncontrolled lines. Ore companies appealed to the director general last spring for a modification of rates, but their petitions were denied. The charges are declared to be so unjust that by combined action it is now hoped to obtain favorable action through the commission.

The complaint of the Oliver Mining Co. is made against the director general for having terminated the former practice of applying rates from ore stock piles of the complainant in the Menominee, Gogebic, Marquette, Mesabi and Vermillion ranges in Minnesota and Michigan and for making a charge for the service of engines and engine crews for hauling in of the empty cars from the auxiliary railroad yards, setting the empties at the stock piles for loading and taking out from the stock piles the loaded cars to the auxiliary railroads. The complaint also is directed against cessation of the practice of extending prevailing rates on bituminous coal to the customary points of unloading on the coal trestles and in addition to making a charge for services of engines and engine crews for hauling loaded and empty cars to and from the trestles and for setting the cars for unloading.

It is charged that the change in rates has resulted in unreasonable charges and is in violation of section 10 of the federal control act. Request is made that the defendants desist from the alleged violations and that the commission allow reparation of $117,352.76 with interest at 6 per cent to the complainant.

For many years, the complaint says, it was the practice for the railroads to apply district rates on iron ore from the shafts or mouth of the mines and the stock piles at the places where the cars are loaded with ore. In April new tariffs became effective providing for a charge of $7.50 per hour or fraction thereof for the use of locomotives and switching crews in handling cars at steam shovels or shafts for the loading of ore from stock piles or shafts, and any other service required by mining companies, and, in addition, the tariffs provided charges for hauling the cars to the stock piles and setting for loading, and for taking the loaded cars from stock piles to auxiliary railroad yards, thereby throwing on the complainant the expense of performing a part of the service previously performed for the through district rate.

Section 10 of the federal control act was also violated, it is claimed, in advancing all the rates of iron ore from the respective districts 33.6 cents per gross ton, effective June 25, 1918, under order No. 28 of the director general. This increase, it is said, was ample to cover the full services which the carriers have been customarily rendering. The same tariffs resulted in the additional charges for delivering coal shipments.

The Oliver Mining Co. also has directed a complaint against the director general as the operator of the Duluth, Missabe & Northern railroad for increasing rates for hauling ore from mines from Arcturus to Bovey, Minn., a distance of three and one-half miles, the ore being concentrated at the latter point. Prior to June 25, 1918, the Missabe charged $5 a car for the movement of the ore between these points, but on that date the rate was advanced to 30 cents per gross ton, plus $5 a car, resulting in a car rate of $18.50. Subsequent to the effective date of the increase the complainant filed with the executive officer of the Missabe road a protest on the grounds that the increase was unreasonable, unjust and unduly discriminatory and in violation of general order No. 28 of the director general, for the reason that the subsequent movement of concentrates of crude ore at Bovey to Duluth, Minn., also bore an increase of 30 cents per gross ton. This, it is stated, resulted in the movement of the ore being increased 60 cents per gross ton from the original point of shipment. As a result of the protest from the rate assessed on the ore from Arcturus to Bovey a reduction of 30 cents per gross ton was made, plus $5 a car, to a gross rate of $6.50 per car, effective Oct. 8, 1918. The complainant seeks reparation to the amount of $95,394.26 on shipments from June 25, to Oct. 8, 1918.

Intra-City Rate Applied to Switching Service

Washington, Oct. 21.—On the theory that the service rendered was worth what the railroads charged, under the terms of the director general's rate order of June 25, 1918, J. Edgar Smith, examiner for the interstate commerce commission, has recommended the dismissal of the case of Rogers, Brown & Co., against the Pennsylvania Railroad Co. The service rendered was that of carrying limestone from a dock in Buffalo to the Hamburg turnpike, a distance of about 1.5 miles.

Under a general order the charge was increased from $2.10 per car to $2.60 per car, plus one cent per 100 pounds. On Nov. 8, 1918, the cost was reduced to $5 per car. Under the rate in effect from June 25 to Nov. 8, $28,159 was collected, while if the $5 rate had been in effect the charge would have been only $10,550. Under the old rate of $2.10 per car, the charge would have been less than half of the latter sum.

The rate was carried in a switching tariff and the complaint was drawn on the theory that it was a switching service, because yard engines and crews were used to bring the limestone from the dock to the blast furnaces. Examiner Smith held that it was an intracity, intraterminal, short-line transportation service in which there was just as much of a road haul as if the transportation had been from one city to another.

Next Congress May Provide Free Port Zones

Washington, Oct. 21.—Establishment of free zones in American ports as provided in bills before the sen-

ate committee on commerce and the house committee on ways and means has been discussed at length at public hearings. It is hoped to enact legislation of this character at the next session of congress.

The proposal to establish free zones originated with the tariff commission which prepared the first bill on the subject. In the last congress, Senator Sheppard, Texas, and Senator Jones, Washington, the former a democrat and the latter a republican, introduced bills providing for the creation of free zones in ports under certain conditions. Some opposition was caused by use of the word "free," which was suspected of interfering with the protective tariff system. As a consequence, new bills introduced by Senator Jones, Washington, and Representative Nolan, California, are being given the most consideration. These measures would establish "foreign trade" zones.

The general plan proposed is to authorize the secretary of commerce to grant permits to public corporations, representing municipalities or states, to establish free zones in ports, to which ships in international trade may resort without the necessity of paying duties on products which are not intended to enter into commerce in this country, but to be shipped to other countries, either before or after they are subjected to manufacturing processes.

Senate Bill Aims to Bar Foreign Products

Washington, Oct. 21.—A bill introduced in the senate recently by Senator Smoot, Utah, aims to prevent the "dumping" of foreign products in the United States. It evidently is intended chiefly to prevent Germany from unloading in American markets quantities of dyestuffs and similar articles at lower prices than the home cost of production. So far as Germany is concerned, however, it is pointed out that the depreciated German mark will not make it necessary for the manufacturer in Germany to sell his goods in markets of this country at lower prices than his cost of production. He will be in a position to pay his labor in German marks but to sell his goods in the higher values of the currency in the markets to which he exports, giving him an advantage.

The Smoot bill would be administered by the tariff commission, which also would have authority to exclude foreign merchandise, and by reason of this German or other foreign goods could be kept out of the country.

Gary's Stand

For the Open Shop is Indorsed by Implement Manufacturers

The National Implement and Vehicle association has placed itself solidly behind the leading steel interests of the country in the present fight for the open shop. The following telegram of confidence and approval was sent to Judge Gary of the United States Steel Corp. at the closing session of the annual convention of the association at Chicago, Oct. 15 to 17:

"This association, assembled in annual convention, expresses to you its unqualified approval of the stand you are maintaining for the open shop in industry. We are unalterably opposed to any policy which requires employers to deal with anyone other than their own employes, individually, collectively or by representation from their own ranks. This association assures you of its hearty support to this end."

Under the head of industrial freedom the association declared in resolutions adopted that the high cost of living is at the bottom of labor unrest and that this results from lowered production. Therefore attention must first be given to adequate production before improvement can be expected. The open shop is declared necessary for large production at the same time conceding to labor the right to organize but not to the extent of infringing on the superior rights of fellow employes and of employers to contract with each other on terms mutually satisfactory. Shortening of the working day is opposed as tending to decrease production, this leading to disapproval of the demands of miners for a 6-hour day and a 5-day week. The statement of principles to govern the employment relation in industry as submittted by the employers' group in the industrial conference was indorsed.

Unusually large attendance marked this convention.

H. M. Wallis of the J. I. Case Plow Works was made president of the association, and W. H. Stackhouse of the French & Hecht Co., Springfield, O., succeeds him as chairman of the executive committee. Vice presidents were named as follows: W. S. Thomas, Thomas Mfg. Co., Springfield, O.; L. Clark, Samson Tractor Co., Janesville, Wis.; C. M. Burdette, Sharples Separator Co., Chester, Pa.; John Van Nortwick, Appleton Mfg. Co., Batavia, Ill.; E. V. Jones, Bailor Blow Co., Atchison, Kan.; W. H. Ronninger, Banner Buggy Co., St. Louis; A. V. Burch, Blount Plow Works, Evansville, Ind.; H. S. Chapman, Field Force Pump Co., Elmira, N. Y.; S. L. Gillette, Minneapolis Steel & Machinery Co., Minneapolis; J. A. Martin, Piedmont Wagon Co., Hickory, N. C.; R. H. Yale, Plattner-Yale Mfg. Co., Lincoln, Neb.; A. E. West, Port Huron Engine & Thresher Co., Port Huron, Mich.; Finley P. Mount, Advance Rumely Co., Laporte, Ind., and R. W. E. Hayes, Hayes Pump and Planter Co., Galva, Ill., were added to the executive committee.

Hardware Producers Join Against Agitators

At the convention of the American Hardware Manufacturers' association held at Atlantic City, N. J., Oct. 14 to 17, inclusive, a resolution was adopted commending the refusal of the United States Steel Corp. to deal with "labor agitators" and also indorsing the "12 points" of the industrial conference now in session in Washington. A communication forwarded to Judge E. H. Gary, read in part:

"It is the sense of this association that the employer in this instance appears to be not only justified in, but should be commended on account of the position assumed against the demands made by professional labor agitators and so-called representatives of labor to the end that what we believe to be a great majority of its honest, loyal and capable employes, (whom we understand are not in sympathy with the agitation which has forced this issue) may be permitted to continue unmolested the present mutually satisfactory working conditions and relations with the industry, in which so many of them enjoyed a financial or stockholding interest."

Some of those attending the convention, speaking in general terms, said that while wages in American industry have doubled, the present efficiency is only 60 per cent of that of prewar times. One prominent delegate, when asked if there is any likelihood of a reduction in prices, said that he feared present prices would prevail indefinitely.

Frank H. Payne, Greenfield, Mass., was elected president of the association. Robert H. Tremain, Ithaca, N. Y., was re-elected president of the National Hardware association, comprising the jobbers.

Two new manufacturing enterprises have been chartered in Atlanta, Ga. The Pomeroy Mfg. Co., with an authorized capital of $1,000,000 will make smoke consumers, water softeners and roller friction clutches. The Railway Lock-Spike Co., also capitalized for $1,000,000, will make railway spike systems of a new design.

Gary Refuses to Arbitrate Strike

Defeat of Gompers Resolution by Industrial Conference Expected After Firm Speech by Chairman of Steel Corporation—O'Leary Makes Clear Statement of Employers' Position—Body's Future Course is Indefinite

WASHINGTON, Oct. 21.—While not unexpected, Judge E. H. Gary threw a bombshell into the deadlocked industrial conference yesterday when in his first and only speech to that body, he reaffirmed the position of himself and the United States Steel Corp. in refusing to arbitrate the steel strike.

Judge Gary's brief speech and a short one by Samuel Gompers in reply were the only ones made before the conference today, the remainder of the entire period being given over to an executive session of the employers' group, which some had expected might concede some of labor's demands. Washington is now at a loss to know what the future of the conference may be. The indefiniteness of the situation resulted not only from Judge Gary's stand, but from a statement at the White House that the President will see the conference complete its work if he has to appoint an entire new set of delegates.

Chairman Sets Rules Aside

Judge Gary's speech under the rules of the conference, really was out of order, as none of the employers' group was in the hall at the time Chairman Lane called the afternoon session to order. The rules provide that a majority of each group must be present, and the morning session of the conference was not held because none of the employers were in their seats when the roll was called. In the afternoon, however, Chairman Lane let the rules go by the board, and as soon as the meeting was in order Judge Gary arose and made his brief but pointed statement.

The paragraph dealing with unorganized labor made a particularly sound impression upon his hearers, including several in the public group and if the employers' representatives, who were in executive session at their headquarters at the time, required moral support from the steel industry, Judge Gary's statement on unorganized labor alone would have given it.

The conference yesterday, both before and after Judge Gary's speech, was practically where it was when it began functioning a week ago. Last week was given over chiefly to a discussion of the question of collective bargaining which had been raised in a resolution from the general committee to sidetrack the Gompers resolution which called for arbitration. The Gompers resolution, as a result of Judge Gary's statement undoubtedly will be defeated now, and it is possible that it will not be called up again.

The general committee, following adjournment yesterday afternoon was unable to meet because the employers' representatives were in session with their group. The committee met this morning to try to reconcile the groups on an acceptable collective bargaining resolution. The committee also spent all day Sunday on this task and was unable to accomplish anything. After Judge Gary made his speech the opinion was that the committee could only report some sort of resolution with but a recommendation. Judge Gary's speech follows:

"I desire to make a brief statement in relation to the question under discussion, as well as others submitted to this conference. Further explanation of any vote I may register will probably be unnecessary.

"Like other members of the conference, I recognize the public interest must always be considered as of the first importance, that all private interest must be subordinated. I am heartily in accord with the desire of the President to firmly establish proper and satisfactory relation between all groups of citizens connected with industry, including, of course, what has been designated as capital and labor. I believe in conciliation, co-operation and arbitration, whenever practicable without sacrificing principle.

Stands Firm for Open Shop

"I am of the fixed opinion that the pending strike against the steel industry of this country should not be arbitrated or comprised, nor any action taken by the conference which bears upon that subject. Also, that there should be maintained in actual practice, without interruption, the open shop; as I understand it, namely, that every man, whether he does or does not belong to a labor union shall have the opportunity to engage in any line of legitimate employment on terms and conditions agreed upon between employe and employer.

"I am opposed to a policy or practice which unnecessarily limits production, increases cost, deprives the workman from receiving the highest wage rates resulting from voluntary and reasonable effort, hinders promotion or advancement in accordance with merit, or otherwise interferes with the freedom of individual action.

"As unorganized labor, which embraces the vast majority of working people, has no special representation in this conference, I deem it appropriate to say that all labor should receive due consideration, and that it is the obligation, and ought to be the pleasure of employers at all times and in every respect to treat, justly and liberally all employes, whether unorganized of organized."

O'Leary Presents Employers' Side

The employers' viewpoint was expressed in a clean-cut way in a speech before the conference last week by John W. O'Leary, of Chicago, president of the National Metal Trades association, a member of the employers' group. Members of the labor group had sought to obtain hasty action by the employers' group on one of the resolutions providing for collective bargaining. Mr. O'Leary said:

"It was not entirely pleasant yesterday, sitting over here and being told how short-sighted we were, how unfair we were, how little we had of that human sympathy, as expressed by some of those who talked to us. It was not pleasant, and you know it; particularly when we realize that if you stopped for a moment, you who criticized us would have realized that as employers of labor no one could understand better the real value and meaning of contentment and happiness and cordial feeling in the employment relation than those who depend upon it for that vital necessity of industry, production. You cannot secure efficient production on the basis of strained relationship. So if you are not charitable enough to give us credit for human feeling, at least understand that from a dollars-and-cents viewpoint we know that a cordial and happy and contented relationship is the only relationship on which American industry can proceed.

"I have mixed with the men in this group sufficiently since I have been here to have a keen sense of the sincerity which prompted them to come and accept a duty which none of them desired personally. It was because they hoped we might approach this problem with a keen realization that our troubles in the past had

been based on misunderstandings, and that if we are to write a constitution for industry it must be so written that the misunderstandings of the past might be cleared. With this sincere desire to establish a relationship based on a clear understanding, we pleaded that no outside issues be inserted, and that there be no pressure to consider a specific subject.

"This question is not confined to one thing alone, nor to one plan alone. The whole program underlies it, and it should be considered on the basis of a whole program. So when you ordered the committee of fifteen to report in 24 hours a conclusion on the most vital of the various elements composing this constitution, we felt that we, as American citizens looking toward the future of our nation, could not undertake that particular assignment and offer to you something of which we might be assured we would stand on as protecting not our interests, but the interests of the United States.

Seeks Honest Investigation

"Let me take just a moment to recite to you the proceedings. The committee of fifteen met the general committee. We knew that we had one thing to deal with. We had discussed previously our procedure on these various subjects, so that there would be assembled in each instance the various resolutions and suggestions offered by members of the conference, from whatever group they might come, and that they would be brought together on the one subject, and all put before us for consideration.

"The labor group offered the platform which has been presented to this conference, and in a wonderfully clear way expressed their support of those principles. They suggested that no better language could be used, and we might do well to adopt that language. Some of us were familiar with the misunderstandings that had occurred in the past under that very language, and we desired to present other things that might be used. I am sure we were all impressed yesterday with the sincerity and depth of feeling in Mr. Rockefeller's splendid presentation. It seemed to me to be an echo of the sentiments of the men in my group.

"I asked whether or not we might have considered the resolution which expressed Mr. Rockefeller's views, as one of the methods of determining what our action should be on collective bargaining, but there was a feeling that we must adhere to the language which has been suggested, with as slight departure therefrom as possible, and the Rockefeller resolution did not follow that form.

"There was no discussion of the matter until the next morning. I again suggested that we take up the Rockefeller resolution, but things were pressing us so rapidly that I am sure the members did not quite comprehend what we were trying to accomplish in bringing forward these other thoughts, and it was not until an hour or two before the meeting yesterday that the Rockefeller resolution was ever read for the committee of fifteen. Now, that is no criticism of my fellow members on the committee of fifteen. It is rather a statement which will bring home to you the tendency which may come from abrupt and hasty action. You cannot consider many things if you only have a few minutes to consider them, and you must take a position which is not always a sound one.

"We felt that we had done all that was possible in trying to present to this conference the entire proceeding in an orderly manner, in affecting a constructive program; and I want to say to my fellow delegates unless we do proceed to consider this program on an orderly basis we will go forth from here not as a constructive agency but as a destructive one. It is not conceivable that we could do otherwise.

"I might spend time in denying statements made yesterday, but I am not going to. I could take issue with a speaker who stated there were more strikes in unorganized industry than in organized. I could take issue with anyone who stated that England has maintained her industrial position on almost complete union domination. I could take issue with the statement that a majority of American workingmen desire membership in trade unions, even though it were made by my esteemed colleague, Mr. Johnston. I might take issue with the statement that better relationship is established by outside representation. I might take issue with anyone who made the statement that more efficient production results through the trade union form of organization; but these things are open to all of us. Honest investigation will bring forth the facts. I do not ask you to take my statement, but I do ask you not to accept a statement to the contrary. I am quite content to rest on the facts as they come.

Do Not Deny Right of Bargaining

"Now, the question comes to some: 'Well, why not accept these principles?' Mr. Sheppard has indicated that is the view we ought to take. After all, we never have denied the right of organization. I have not heard anyone deny it yet. After all none of us here, or in most places that I know of, have ever denied the right of collective bargaining, as we understand collective bargaining.

"I have not heard many people deny the other point in the resolution in regard to freedom of conduct. It seems to be pretty generally accepted. Then, why not not accept these things as they are written? Because experience has shown us that the interpretation put on a vague statement is contrary to the thing which I feel it means, and if industry is to proceed upon a proper basis, a cordial basis, we must have understanding of meaning rather than misunderstanding.

"I cannot close without commenting on what I consider a most unfortunate and unfair statement which has been made here several times that would seem to indicate that we must take immediate action. I am not so convinced that the situation will end in revolution. Secretary Lane said in his opening remarks that this nation will not stand for revolution, and I believe and I hope the gentlemen will consider this very carefully. My abiding faith in the fundamental soundness of the American working man, and I include all of them, leads me to know that when he has the whole statement and the whole truth he can be relied upon to stand by the nation. Revolution in the United States is unthinkable. Men have been too long free agents. Men have lived too long under this flag of ours to ever consent to be brought into any movement which would destroy the nation that they love, and I hope we won't talk about that; but if we must talk about it, I want to remind you that the cure which the men who mention it offer seems to me belittling the nation that we serve.

A Cure for Industrial Ills

"What is the cure that is offered? That to save us from impending disaster we must strengthen by all the force that is in us one organization which is only one part of the citizenship of the United States. And I say that without any ill-feeling against that organization. I will guarantee that the majority of the members of that organization will stand fast to the principles of the United States, just the same as the majority of all the other citizens of the United States; but because an organization, representing a portion of our people, has in some instances lost control for the time being of some small portion of its people I cannot conceive that we are willing, as American citizens, to believe that the only way in which we can save this nation is by strengthening that machine.

"I have no objection to it being strengthened if the things which it offers are the things which the men want. Then, I say voluntarily, they shall have the privilege of strengthening it. But I hold as we are facing this particular thing that we talk about in this peculiar way, my faith is in the United States, in the government of the United States, and not in the employers, employes or the public alone. The sovereignty of government will be protected by the government; and I hope you will bear that in mind when we are urged that we must proceed hastily. Far better will it be, Mr. Chairman, if we proceed carefully and avoid any particular errors.

"In closing I just want to express this view of the employers' group. We presented to you a statement of what we considered the fundamental requirements of American industry. During all of our sessions we have never insisted upon the particular use of the language which we used, so long as the statement is clear. We are not going to get ahead so long as we leave loopholes for misunderstandings. Let us be frank. Let us have what we are brought here to get, a common ground, a ground of understanding rather than misunderstanding; and on that basis I believe you will find the employers' group will stand throughout this conference."

Ore Distribution

From Lake Superior District in 1918 Shown in Detail by Map

Sources of supply and channels of distribution of Lake Superior iron ore, concerning the details of which there frequently is demand for information, are graphically illustrated in a map prepared by the Lake Superior Iron Ore association. Tonnages given are for the season of 1918.

The map shows that 40,000,000 tons were shipped from the Mesaba range by water route, the only all-rail shipments from the range having been 30,000 tons to St. Louis and 10,000 tons to Mayville, Wis.

The Gogebic range poured 7,500,000 tons into the great artery of lake traffic, the Cuyuna range, 2,400,000 tons; Vermillion, 1,170,000; Menominee, 6,300,000, and the Marquette range, 3,400,000. A total of 50,400,000 tons of ore from the Mesaba, Gogebic, Vermillion and Cuyuna ranges was floated on Lake Superior, which with 3,400,000 tons from the Marquette range and 80,000 tons from Michipicoten, Canada, was increased to 53,900,000 tons floated. Rail haulage from Sault Ste. Marie reduced the total afloat to 53,200,000.

From this point 10,200,000 tons were diverted into Lake Michigan, this supply being augmented by 1,300,000 tons, shipped from the Menominee range in Michigan. Of the total 11,500,000 tons floated on Lake Michigan, 200,000 tons went to Milwaukee and 11,300,000 tons to Chicago, Indiana Harbor and Gary.

Forty-eight million, three hundred thousand tons were shipped across Lake Huron and then unloaded at ports as follows: Four hundred thousand tons at Detroit, 2,600,000 tons at Toledo, of which 2,000,000 were shipped to furnaces in southern Ohio; 1,600,000 tons at Huron, all going to eastern Ohio and western Pennsylvania furnaces; 3,500,000 tons at Lorain, 2,200,000 tons proceeding inland; 9,600,000 tons at Cleveland, 6,800,000 proceeding inland; 1,800,000 tons at Fairport, 1,800,000 tons at Ashtabula and 6,600,000 tons at Conneaut, all proceeding inland; 1,700,000 tons at Erie, Pa., 1,500,000 proceeding inland, leaving 8,800,000 tons unloaded at Buffalo, 4,700,000 tons being consumed by furnaces in that city and 3,800,000 going by rail to furnaces in central and eastern Pennsylvania.

The distribution of ore by rail shipments shows some marked contrasts in mileages. While most of the rail haulages are centered in eastern Ohio and Pennsylvania, the longest shipment was from Sault Ste. Marie to Nova Scotia. Ore also was shipped from the Mesaba range to St. Louis; from the Gogebic range to furnaces at Sligo, Mo., and from the Marquette range to a charcoal furnace at Midco, Mo., the latter being a distance of approximately 700 miles.

Comparison of the map and its data with a similar map showing distribution in 1909, prepared by John Birkinbine, shows that while 33,000,000 tons of ore were carried through the artery of Lake Superior in 1909, in 1918 the tonnage was 50,400,000. In 1909 the tonnage traversing Lake Michigan was 6,900,000; in 1918, 11,500,000. In 1909 that on Lake Huron was 33,700,000 tons, while in 1918 it was 48,300,000.

To Use Powdered Coal

New sheet mills being installed by the Mansfield Sheet & Tin Plate Co., Mansfield, O., will be fired with powdered coal. For this work the Quigley air transport system for distributing powdered coal, together with Quigley powdered coal feed controllers, burners, etc., will be used. The engineering work in connection with this equipment is being carried on by the Quigley Furnace Specialties Co., 26 Courtlandt street, New York City. The extensions of the Mansfield plant comprise six mills, four of which are being installed at the present time.

Welders to Meet

The American Welding society will hold a meeting at 8 o'clock, Oct. 24, at the Engineering Societies building, 33 West Thirty-ninth street, New York. Comfort A. Adams, president, will make an address and the program is comprised of the following papers: "A Theory of Metallic Arc Welding," R. C. Hudson; "Repairing a Lighthouse," by J. H. Deppeler; "Gas Welding During the War," H. S Smith; "Gas Cutting," F. E. Rogers; "Electric Resistance Welding," P. T. Van Bibber.

Following the papers and discussions, a moving picture entitled "Repairing the Northern Pacific" will be shown.

Hoist Builders to Meet

The Electric Hoist Manufacturers association will hold its next meeting at the offices of the Yale & Towne Mfg. Co., 9 East Fortieth street, New York City, on Tuesday afternoon, Oct. 28, at 2 p. m. C. W. Beaver, of the Yale & Towne Mfg. Co., is chairman, and W. C. Briggs, of the Shepard Electric Crane & Hoist Co., is secretary and treasurer.

Executives Inaugurate Training Course

The Simplex Wire & Cable Co., Boston, has just inaugurated a plan of training for its foremen and other executives. This company has recognized the importance of training for its men who hold supervisory positions, and it has laid out a program which promises to result in increased production and a more efficient factory organization. A group of 35 men have enrolled in a course which covers teamwork, handling men, organization, machinery and materials, production records, and management. The group includes the president, treasurer, and the factory manager.

The course will comprise the systematic study of text books on the subjects enumerated and the solution of typical factory problems relating to the texts. Meetings of the men enrolled in the class will be held in the plant every two weeks for three months, and there will be a short lecture delivered at each meeting. The foremen themselves elected to have this training installed and they plan to make it the leading feature of their meetings this fall. The training is under the supervision of the Business Training Corp., of New York, and the lectures will be given by the staff of that company.

To Retire Stock

The Sumner Iron Works, Everett, Wash., has filed notice of its intention to redeem and retire $100,000 of preferred stock, leaving the capital stock at $200,000. It is stated that the company now has an indebtedness of but $60,000. The retirement of the preferred stock of the company recalls that this was issued at the time the plant was burned six years ago. The company received offers of aid from several cities. The city of Everett raised $100,000 and the plant was rebuilt there.

To Build Tube Plant

Youngstown, O., Oct. 20—Construction work will be started immediately for the new plant of the Phenix Tube Co., at Warren, O. The company's plant now is located at Brooklyn, N. Y., but the officials plan to move it to Warren about Jan. 1 when the new buildings are expected to be completed. The Phenix company specializes on the manufacture of steel tubing for automobiles, bicycles and beds. S. A. Snell, formerly general manager of the Ohio Steel Products Co., Niles, O., has been appointed plant superintendent.

Congress Plans to Educate Aliens

Bills for Federal Aid and Co-operation With States in Americanization Work Being Pushed by Senators Who Investigated the Steel Strike—Attorney General Palmer Opposes Any Sweeping Ban on Immigration

WASHINGTON, Oct. 21.—Following their investigation into the steel strike in the Pittsburgh district where they found a large proportion of aliens in the steel industry were unable to understand or speak the English language, members of the committee on education and labor have determined to speed up action on Americanization bills before them.

The committee expects to meet tomorrow to consider three bills. Two of them were introduced by Senator Hoke Smith, Georgia, and the other by Senator McKellar, Tennessee, both members of the committee. The Smith bills were introduced several months ago, while the McKellar bill was launched after the senator returned from Pittsburgh.

Action to Come Later

It is not thought the bills can be passed at the present session of congress but it is hoped to obtain early action on them at the next session. In the meantime consideration has been given by the senate committee on judiciary to a plan to have congress authorize the department of justice and the state department to issue regulations governing immigration to prevent entrance of undesirable aliens, particularly those with radical views in regard to government. Attorney General Palmer has made it plain that he is opposed to legislation considered the past week in congress for a sweeping restriction of immigration.

It is probable that at the next session a comprehensive immigration bill will be passed, although there appears to be considerable sentiment in favor of the more drastic measures now before congress.

One of the Smith Americanization bills relates to illiterates over 16 years of age. It provides for a system of instruction through co-operation between the federal government and the states. The secretary of the interior, through the bureau of education, and in conjunction with any other federal agencies which could aid, would be directed to co-operate with the states in the education of aliens unable to speak, read or write the English language, and in the training of teachers and supervisors, and directors for such educational work. The bill would appropriate $12,500,000 annually until 1926 for the payment of salaries. For preparing them it would appropriate $750,000 annually for the term mentioned.

Conditions of Appropriations

These appropriations would be made available only in the event that each state or municipal corporation appropriated an amount equal to that allotted by the government.

The bill would require instruction for not less than 200 hours each year of all minors over 16 years of age unable to speak, read or write the English language, at schools or by other methods of elementary instruction, until such minors have completed a course in English equivalent to that supplied by third-grade schools.

Money would be allotted to a state in that proportion which the total number of foreign-born illiterates, 10 years of age and over, in that state bears to the total number of illiterates in the United States, exclusive of the District of Columbia, according to the latest United States census. Each state would be required to submit to the secretary of the interior for his approval plans showing the manner in which it is proposed to use the federal appropriation.

The bill also provides an appropriation of $250,000 for the fiscal year ending June 30, 1920, and $1,000,000 annually thereafter until 1926, for the purpose of administering the act, for investigations, studies, salaries of officers and assistants, furniture and equipment, printing, etc.

Would Create New Department

The other Smith bill creates a department of education. For the support of the department for the fiscal year ending June 30, 1921, it would appropriate $500,000, while "in order to encourage the states in the promotion and support of education" it would appropriate for the present fiscal year $100,000,000. Three-fourths of this amount would be used for the instruction of illiterates of 10 years and over, the instruction to "deal with the common school branches and the duties of citizenship, and when advisable to prepare for some definite occupation."

This section of the bill refers to native and not foreign-born illiterates, but section 9 provides that "in order to encourage the states in the Americanization of immigrants, three-fortieths of the sum authorized to be appropriated shall be used to teach immigrants 10 years of age and over to speak and read the English language and to understand and appreciate the spirit and purpose of the American government and the duties of citizenship in a free country."

It is further provided that five-tenths of the sum authorized shall be appropriated for the partial payment of teachers, for providing better instruction, extending school terms, etc., especially in rural schools, and in schools in sparsely settled localities.

Must Speak English Clearly

The McKellar bill is designed to provide for the education and naturalization of aliens and children of aliens. It provides that hereafter no alien shall be permitted to reside in the United States for a longer period than five years without becoming naturalized. Aliens would be admitted to citizenship at any time after three years' residence in the United States and one year's residence in the state in which he makes application for admission. No alien would be admitted to citizenship without being able to speak enough English to make his desire to become a citizen clearly intelligible to the judge to whom the application is made, in addition to having the qualification required by existing laws.

The bill also would require individuals and corporations employing as many as 30 aliens to provide at least one hour's instruction in the English language for five days in a week during a period of six months a year. It is provided, however, if a state, county or municipality furnishes night or day schools giving aliens such instruction employers shall include in the alien's time of work one-half hour so devoted to such education and pay for his time at the existing scale of wages. Children of aliens would be taught in English-

speaking schools. Aliens making application for citizenship would be required to tell the judge their views on government, and if their views conflicted with American principles they would be denied citizenship.

House Votes to Exclude Alien Agitators

WASHINGTON, Oct. 21.—Passage by the house last week by a vote of 314 to 1 of the bill to curb the activities of radical agitators and bolsheviki is expected to be followed by similar action soon in the senate. This legislation advocated by President Wilson and Secretary of State Lansing, is designed to maintain for a year the restrictions imposed as a war measure on immigration to the United States.

The legislation is in effect the same kind as as that which the senate committee on judiciary has been considering partly as the result of the investigation by the senate committee on education and labor of the steel strike. Members of the latter committee believe the measure will serve to exclude undesirables until congress can pass a comprehensive immigration law.

The state department urged action on the bill on the ground that there is great unrest and disorder throughout Europe and that many persons seeking admission to this country just now are engaged in propaganda against American institutions.

While the bill may prove effective, it is pointed out that the existing immigration law, passed in 1917, apparently is adequate to shut out from this country immigrants advocating anarchistic doctrines. This measure requires the literacy test, and is understood to cover a great many of the things now being sought by further legislation.

Despite the seeming confusion of laws, however, it is probable that much more discrimination will be exercised in the future.

The only vote against the bill passed by the house was cast by Representative Gallagher, Illinois, but there probably were other representatives who feel that present laws are adequate to cover the purpose intended.

Representative Cooper, Youngstown, O., a union labor man, who strongly upheld the bill recommended by the state department, declared that foreign agitators are responsible for much of the trouble in connection with the steel strike. He declared that it is time to make "America safe for Americans," and added that many American workmen have been threatened during the steel strike.

"I live in one of those great industrial districts that is now suffering from the steel strike, and I have on my desk sworn affidavits of some of the statements made to the workmen by these bolshevists and agitators that have been permitted to come into our country," he said. "They threaten American citizens if they go to work. The agitators are not citizens of the United States, but they come here with the spirit of bolshevism imbued in their hearts and minds and today they are appearing and preaching their doctrine to American workmen.

"The time has come when we have got to call a halt on the bolsheviki and agitators. We must call a halt upon this hellish doctrine that is being preached in our country by the followers of Lenine and Trotsky, and I know of no better way to stop it than to prohibit these men from coming to our land.

"Have we come to that stage in our national life when an American citizen, who loves his country, who has been a valuable asset to the community in which he lives, who has built himself a little house, who is trying to educate his children along the line of true American principles, and who wants to go to work, is threatened by one of these aliens who sticks a knife or a gun under his nose and says, 'I will kill you if you go to work.'

"Where does the protection come under the constitution of the United States? It is time we were taking some action along this line."

Labor Shortage Handicaps Malleable Industry

In connection with the insistent demand for malleable castings, the American Malleable Castings association reports that this condition has been anticipated and that ample facilities have been provided for both the present and future expansion of the industry.

It is stated, however, that at present the shortage of unskilled labor will not permit full use of the capacity. Fully 200,000 tons of malleable capacity is idle but would be immediately available if the necessary labor could be secured.

Improvement in this direction is not looked forward to with any great hope until the activities of other industries are curtailed or until there is a flow of immigration sufficient to build up the supply of labor available for foundry work. This means a large percentage of capacity idle continuously in every plant regardless of heavy unfilled orders.

Mid-West Meet

Of A. S. M. E. Will be Held Oct. 24 and 25 at Indianapolis

Industrial unrest and research are the subjects to be discussed at the joint meeting of the midwest sections of the American Society of Mechanical Engineers to be held Oct. 24 and 25 at the Claypool hotel, Indianapolis. The participating sections will include Birmingham, Chicago, Cincinnati, Cleveland, Detroit, Indianapolis, Milwaukee and St. Louis.

Registration will begin at the Claypool hotel at 9 a. m., Oct. 24 and at 2 p. m. a professional session devoted to industrial unrest will be held. The following papers will be presented: "Industrial Unrest," by Maj. W. C. Rogers, St. Louis; "Successful Methods for Improving Human Relations in Industry," by C. F. Scribner, Chicago; "The Results of Americanization Carried Out by the Commonwealth Edison Co., by A. D. Bailey, Chicago; "Training of Students in Industrial Management," by B. W. Benedict, Urbana, Ill.; and "Industrial Medicine," by O. P. Geier, Cincinnati.

At 6:30 p. m. a banquet will be held. Addresses will be made by M. E. Cooley, president of the American Society of Mechanical Engineers and Willis A. Moore, Cleveland. A professional session devoted to the subject of research will be held at 9 a. m., Oct. 25. The following papers will be presented: "General Consideration of the Present Status of Research in the Industrial Life of the Country," by Lieut. Col. C. F. Hirshfeld, Detroit; "The Administration of Industrial Research Affairs," by R. E. Carpenter, Cleveland; "Industrial Research," by Walter A. Spear and L. G. Robinson, Cincinnati; "Research in the Nela Park Laboratory," by E. P. Hyde, Cleveland; "Present Status of Ratigue of Metals Phenomena," by H. F. Moore, Urbana; "Design of

Purdue University Tractor Testing Plant," by C. H. Benjamin and G. C. King, Lafayette, Ind.; "Research," by G. S. Hessenbruch, St. Louis, and "Pure Science and Engineering Research," by J. R. Allen.

Staff of Edgar T. Ward Holds Annual Meeting

The first annual sales convention of the Edgar T. Ward's Sons Co. was held at the William Penn hotel, Pittsburgh, Oct. 13 and 14, and brought together not only the officers and district sales managers of this company but practically the entire sales forces of the various branches of the company which are located in Boston, Chicago, Detroit, Newark, N. J., New York, Philadelphia and Pittsburgh. The Edgar T. Ward Sons was founded in 1882 in Boston and continued in business under that name until 1918, when a new firm was organized under the name of the Edgar T. Ward's Sons Co., which was a combination of the company with the Boston Steel & Wire Co., Boston; the George Nash Co., with offices in New York and Chicago; Wilworth, Lockwood & Co., with offices in New York and Newark, N. J., and Field & Co. of Philadelphia.

The program for the first day's session consisted of an address of greeting by John Ward, treasurer of the company; "The Company's Facts and Problems," by James S. Winn, vice president; "Eye-opening Facts on Tool Steel," by G. H. Neilson, vice president and general manager; "Analyses of Steel," by H. W. Wills, metallurgist of the Braeburn Steel Co.; "Co-operation," by Herbert W. Lockwood, manager of the New York branch of the company; "The Downs Drill," by W. R. Down; "Die Blocks: Grades and Uses," by H. F. Jordan, Pittsburgh district sales manager; "A Tough Customer," by H. F. Gillette and H. M. Lutz. Discussions and "get acquainted" periods came during the day and in the evening, following dinner, the entire party attended a performance at one of the Pittsburgh theaters.

The Tuesday morning program consisted of a tour of inspection of the plant of the Braeburn Steel Co. at Braeburn, Pa., with lunch at the company's plant. A baseball game scheduled for the afternoon between teams made up from the eastern and western offices of the company was cancelled because of rain. The convention concluded with a banquet at the William Penn hotel at which H. W. Lockwood, secretary of the company, was toastmaster.

The officers of the company are: President, Edgar Ward, Boston; vice president, J. S. Winn, Chicago, and Leslie Edgcomb, Philadelphia, treasurer, John Ward, Boston, assistant treasurer, E. P. Hall, Boston; secretary, Herbert Lockwood, New York; Clerk, W. E. Adams, Boston. The sales policy board of the company comprises John Ward, E. P. Hall, E. B. Lapham, G. H. Neilson and H. L. Edgcomb. The district sales managers of the company are W. E Adams, Boston; E. B. Lapham, Chicago; W. F. Ruelman, Detroit; W. S. Ganong, Newark, N. J.; H. W. Lockwood, New York; H. L. Edgcomb, Philadelphia, and H. E. Jordan, Pittsburgh.

Obituaries

GEORGE W. JOHNSON, a conspicuous figure in manufacturing circles in western Pennsylvania, died on Oct. 12 at his home in New Castle, Pa. He was born in Clarksville, Mercer county, Pa., 72 years ago and moved to New Castle in 1880. He conducted the Arethusa Iron Works from 1885 to 1899 when it was sold to the American Sheet & Tin Plate Co. Mr. Johnson had large interests in limestone quarries and mines in Lawrence, Butler, Armstrong and Blair counties, Pennsylvania, as well as in Maryland and in West Virginia. He also controlled the Johnson Bronze Co., New Castle, Pa.

Nathaniel G. Manson, for many years engaged in the iron business in Boston, died at his home in Greenland, N. H., Oct. 5, aged 77 years.

Walter W. Pharo, president and treasurer of the Belmont Iron Works, Philadelphia, and president of the Tuckerton railroad, died recently at Beach Haven, N. J. He was a graduate of Haverford college, class of '76 and was a member of the Merion Cricket club and the University club. His home was at Haverford, N. J.

Julius Blackburn, who was connected with the Carnegie Steel Co. for the past 30 years and latterly had held an executive position in the assistant treasurer's office in Pittsburgh, died recently following an illness of several months. Mr. Blackburn, who was 51 years old, was a native of Hollidaysburg, Pa., but made Pittsburgh his home for the past 30 years. His brother, W. W. Blackburn, is secretary of the Carnegie Steel Co.

Benjamin F. Compton, superintendent of the brass foundry at the Bethlehem Steel Co.'s Bethlehem plant, for the past 10 years, died Oct. 9 at his home in Bethlehem. He was 62 years of age. Prior to his connection with the Bethlehem Steel Co., he had charge of the brass shop of the William Cramp & Sons Ship & Engine Building Co., Philadelphia.

Clayton S. Stevens, New Britain, Conn., designer of machinery, died in the New Britain General hospital, Sept. 27, aged 60 years. Before going into business for himself he was a designer of automatic machinery for the Stanley Works and for a long time was in charge of the "H. H." plant of the works, resigning several years ago on account of ill health.

Frank G. Goodale, for the past 13 years mechanical engineer for the Parker Wire Goods Co., Worcester, Mass., died in the Holden Cottage hospital, Holden, Mass., Oct. 5, aged 45 years. Before going with the Parker Wire Goods Co. he was a foreman for seven years at the South works of the American Steel & Wire Co. in Worcester.

Robert Neil Dickman, Chicago mining engineer, died at La Jolla, Cal., Sept. 14, following an operation. Mr. Dickman was of the former mining engineering firm of Dickman & MacKenzie. Mr. MacKenzie was killed in 1905 by Yaqui Indians while on business in Mexico. Mr. Dickman, at the time of his death, was on the staff of Robert W. Hunt & Co. He was born in Cleveland and was graduated at the University of Michigan in 1886.

Charles E. Lord, general patent attorney for the International Harvester Co., Chicago, died Sept. 25, aged 44 years, as a result of injuries received at the Deering plant Wednesday, when his automobile was struck by a switch engine. He had been head of the Harvester patent department since 1912. He was a member of the American Society of Mechanical Engineers, Society of Automotive Engineers and the American Institute of Electrical Engineers. He had served with the General Electric Co., Schenectady, the Bullock Electric Co., Cincinnati, and the Allis-Chalmers Mfg. Co., Milwaukee.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

EVAN F. JONES, president and general manager of the Clinton-Wright Wire Co., Worcester, Mass., since its incorporation on June 21, has resigned effective Nov. 1 to become general manager of the Elyria Iron & Steel Co., with works at Cleveland and Elyria, O. The election of his successor by the directors is expected to take place Nov. 3, when the stockholders also will meet to decide upon a new name and upon increasing the number of directors. At that time announcement probably will be made of a further consolidation with an eastern steel company, negotiations for which are said to be practically closed. Harry W. Goddard, chairman of the board of directors, will direct the affairs of the wire company until the election of a president.

J. S. Welwood, identified with the Union Natural Gas Co., up until the time he entered military service, recently joined the Pittsburgh sales force of the Lucey Mfg. Co.

C. E. Hutchison, formerly district representative of the La Belle Iron Works, St. Louis, now is associated with the Cleveland office of the Youngstown Sheet & Tube Co., Youngstown, O.

Harry Shaw has resigned as purchasing manager of the Hendee Mfg. Co., Springfield, Mass., to become treasurer and general manager of the Stoy Rubber Corp., Hempstead, L. I.

F. S. Easterly has been appointed to have charge of the office recently opened in Pittsburgh, located in the First National Bank building, by the Hyman-Michaels Co., Chicago, St. Louis and East Chicago, Ind.

Otto Rabe, president of the Kelsy Foundry Co., Chicago, has become affiliated with Christian M. Gottschau and others in the incorporation of the Gottschau Steam Motors Co., 1770 Berteau avenue, Chicago.

George M. Johnstone, stores manager of the Clinton Wire Cloth Co., division of the Clinton-Wright Wire Co., Worcester, Mass., in Clinton, Mass., has been promoted to production manager of the plant.

S. A. Snell has been appointed plant superintendent of the Phoenix Tube Co., which will locate at Warren, O., about Jan. 1. Mr. Snell resigned recently as general manager of the Ohio Steel Products Co., Niles, O.

A. J. Hazlett, who for the past nine years has been in the sales department of the West Penn Steel Co., Brackenridge, Pa., resigned that position recently and on Nov. 1, will assume his new duties as general manager of sales of the Eastern Rolling Mill Co., Baltimore.

Wilmer M. Wood, traffic manager



EVAN F. JONES

of the United States Cast Iron Pipe & Foundry Co., has become associated with the Kerr Steamship Co., New York City, as general freight agent. Mr. Wood had been associated with the United States company for approximately seven years.

Merrill Baker, vice president of the Vanadium Corp. of America, New York City, recently sailed for Peru where he will investigate the company's ore properties there, in connection with its plans for plant and transportation improvements.

V. B. Taylor, for some time connected with the general sales department of the Lyon Metallic Mfg. Co., Aurora, Ill., has been appointed manager of the Pittsburgh district sales office, located in the Oliver building, Pittsburgh. R. J. Nyce has been placed in charge of the company's new branch office at Philadelphia.

H. Z. Kelley has been appointed northeastern Ohio representative of the Keystone Bronze Co. and will establish offices in the Stambaugh building, Youngstown, O. Mr. Kelley resigned April 1 as secretary and assistant manager of the Falcon Bronze Co., Youngstown, having been associated six years with that company.

W. K. Frank, vice president of the Damascus-Bronze Co., Pittsburgh, presented a paper at the bimonthly meeting of the mechanical section of the Engineers Society of Western Pennsylvania held Oct. 14 at the Union Arcade auditorium, Pittsburgh. The subject of the paper was "Notes on Bronze and Babbitt Bearings."

W. W. Leck, who has been general superintendent of the rolling mills at the Steelton plant of the Bethlehem Steel Co., resigned recently to become general superintendent of the American Tube & Stamping Co., Bridgeport, Conn. John Craig, who has been Mr. Leck's assistant, has been promoted to the position previously held by Mr. Leck.

Willis McKee, formerly general superintendent of construction for Arthur G. McKee & Co., Cleveland, contracting engineers, has been appointed general manager of the company's open hearth and steel mill department. Mr. McKee originally was connected with the Duquesne works and Ohio works of the Carnegie Steel Co., leaving their employ to become chief engineer of the Republic Iron & Steel Co. Subsequently he became treasurer and general manager of the Elyria Iron & Steel Co., where he remained until about two years ago, when he became associated with Arthur G. McKee & Co. Rollin Gardner, formerly with the Westinghouse Electric & Mfg. Co. and the Allis-Chalmers Mfg. Co., has been appointed assistant to Willis McKee. H. B. Pearson, formerly project engineer for the W. J. Rainey Co., has been made general superintendent of construction for Arthur G. McKee & Co.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ALBERT E. NEWTON, vice president and general manager of the Reed-Prentice Co., Worcester, Mass., was re-elected president of the National Machine Tool Builders' association at its eighteenth annual meeting held at the Hotel Astor, New York City, Oct. 16 and 17. Prior to being elected to the presidency of the tool builders' organization in December, 1918, he had served that body as treasurer for over 10 years and for an even longer period had been an active member. Mr. Newton recently refused to be a candidate for the presidency of the National Metal Trades association, since he could not give proper attention to the effort of both organizations. A complete biographical sketch of Mr. Newton's career appeared in the Jan. 9, 1919, issue of THE IRON TRADE REVIEW.

F. J. Mumford has been appointed district sales manager for the Steel Sales Corp., Chicago, with offices in the Book building, Detroit.

C. M. Carmicheal and F. C. Lonney, with offices at 510 Washington Arcade building, Detroit, have been appointed representatives of the Batavia Gun & Forging Co.

E. E. Gates has been elected president of the National Metal Products Co., Indianapolis, which was recently organized, and is an outgrowth of the Indiana Die Casting Co.

H. G. Nash has been made manager of the Huntington, W. Va., district for the Hyatt Roller Bearing Co. with headquarters in the company's new branch office at 1016 Robson-Prichard building, Huntington.

F. W. Munger, production manager of the Detroit Pressed Steel Co., Detroit, has resigned his position to become head of the Materials Service Co., 501 Vinton building, Detroit, which he recently organized.

L. E. Stevens, assistant cost accountant for the Moline Plow Co., Moline, Ill., has been transferred to the company's plant at Poughkeepsie, N. Y., where he will assume his duties as factory accountant.

E. L. Chollman, formerly connected with the Southern Locomotive Valve Gear Co., has become identified with the Paxton-Mitchell Co., Omaha, Neb., as vice president and sales manager. He will have charge of sales in the southeastern territory.

T. W. Holt, who some time ago became assistant general manager of the Curtain Supply Co., Chicago, has been elected a director and secretary of the company to succeed William S. Estell, resigned. Prior to becoming identified with the Curtain company, Mr. Holt was affiliated with the Pressed Steel Car Co.

G. E. Anderson, formerly assistant to the vice president of the American Locomotive Co., has been appointed assistant eastern sales manager of the Duff Mfg. Co., Pittsburgh, with headquarters at its eastern sales offices, 50 Church street, New York City.

Ross E. Willis, formerly general field assistant for the Cleveland district ordnance office, has accepted a position with the Lakewood Engineering Co., Cleveland. His office will be at 1401 David Whitney building, Detroit. Before entering the service of the government, Mr. Willis was connected with the Bethlehem Steel Co.

Lieut. Col. R. L. Streeter, general manager of the Rock Island, Ill., arsenal, has resigned to become assistant mechanical engineer of the Aluminum Co. of America, at New York. Harold B. Dinneen, formerly manager of the John Deere Plow Co., has become assistant to R. H. Lea, production manager of the Moline Plow Co., Moline, Ill.

Jas. S. Hearons has become affiliated with the Gustin-Bacon Mfg. Co., Kansas City, Mo., mill supplies, as railroad representative. Since his return from France in July, where he held commission as captain in the Forty-ninth engineers (railway), Mr. Hearons has been with the Garlock Packing Co., St. Louis, with whom he was connected prior to his entering the service.

Hugh Morrow, prominent attorney of Birmingham, Ala., has been elected vice president of the Sloss-Sheffield Steel & Iron Co., that city, to succeed Landers Sevier. Mr. Morrow has been practicing law for 25 years, being a member of the firm of Tillman, Bradley & Morrow. He is to give all of his time to the new position. Mr. Sevier will not relinquish his connection with the company for the present.

Paul K. Rogers, secretary and treasurer of the Skinner Chuck Co., New Britain, Conn., will leave shortly for a month's trip to Europe to study trade conditions.

George W. Collins, for the past 10 years treasurer and manager of the C. F. Church Mfg. Co., Holyoke, Mass., has sold his interests to Otto Kolstad and J. F. Taylor, both of Springfield, Mass., and has become New York representative of the E. Stebbins Mfg. Co., Springfield, brass goods.

H. Percy Maxim has been elected chairman of the Hartford, Conn., section of the American Society of Mechanical Engineers. The members of the executive committee, in addition to the chairman ex-officio are: Vice chairman, S. F. Jester; secretary and treasurer, W. C. Beekley; R. S. Brown, W. P. Eales, F. E. Howard, C. F. Blake and N. D. Church.

John I. Thompson, chief engineer of the Koppers Co., Pittsburgh, was the speaker at the regular monthly meeting of the Engineers Society of Western Pennsylvania held at the Union Arcade building, Pittsburgh, Tuesday evening, Oct. 21. The subject of Mr. Thompson's paper was "Post-war Conditions in Europe," while also making a comparison of European and American by-product coke oven prices.

Fred A. Cornell, who for the past three years has represented the Timken Roller Bearing Co., Canton, O., in the east, with headquarters at Buffalo, has been transferred to Canton to take charge as manager of the newly organized section of the sales activities of the company, the machinery and industrial appliances division. Judd W. Spray, formerly western representative, has been transferred to Detroit, as central representative with offices at 701-2-3 Book building. Miss Margaret Redmond has charge of management detail of the Detroit office. Richard Creifelds Jr. has been appointed western manager, succeeding Mr. Spray, with headquarters at the Timken offices in the People's Gas building, Chicago.

Tool Makers Review Peace Trade

Builders' Association in Eighteenth Convention Finds First Year of Reconstruction Period Better Than Anticipated—Automotive Industry Contributes Largest Demand for Product—Government Owned Equipment Works no Hardships

MARKING the termination of the initial period of reconstruction the annual convention of the National Machine Tool Builders' association at the Hotel Astor, New York City, Oct. 15 and 16, proved of special interest to over 200 members in attendance. It was obvious from the remarks offered by the various speakers and from the sentiment expressed on virtually every side that the first year following the signing of the armistice, now closing, has proven more favorable than was anticipated about 12 months ago.

It was generally conceded that the year was not up to the standard set by the several similar periods preceding, in fact such was not to be expected. Nevertheless, barring the first four or five months, business throughout the industry has shown a steady gain, and at no time, it was remarked in some quarters, have plants been forced, through lack of business, to undergo any material inactivity.

That this should have developed to be the situation is regarded of special significance in view of the fact that to date little or no railroad demand has materialized and that export buying on the whole has been negligible. A little more than a year ago both of these sources were regarded probably as the most promising. The automotive and allied industries by far have contributed the most to the prosperity of the machine tool industry during the past year. However, this demand has been confined principally to the industries of the character in the Middle West.

It has also developed that the surplus equipment in the possession of the government at the close of the war has not worked a material hardship upon the machine tool industry, or at least no such burden as was expected at the outset. It was developed both at the meeting of the machine tool builders and at the convention of the machinery section of the National Supply and Machinery Dealers' association, held simultaneously at the same hotel, that the equipment yet to be disposed of ranged anywhere in valuation from $25,000,000 to $50,000,000. An accurate setimate is impossible since not all equipment has been listed. Colonel Le Mar, acting for the government, proposed to the dealers that they dispose of the government equipment, the commission offered being 10 per cent. This proposal, it is understood did not meet with the approval of the dealers, who believed that greater compensation was justified.

Varied Topics of Timely Interest Discussed

PRESIDENT NEWTON, in an opening address, stated that the present position of the machine tool industry was one of heavy responsibility. He said that despite the termination of the war, and its attending burdens, this responsibility was as great today as ever before. He alluded in this statement to the labor unrest as well as to the curtailment of production, which is resulting in such a critical situation not only in the United States at this time, but throughout the world. "There is a shortage of skilled and unskilled labor in all industries," Mr. Newton asserted, "and there is no immediate prospect of relief from this handicap." He continued as follows:

"It follows, therefore, that the existing supply of workers must be enabled to produce more than ever before. This can only be accomplished with exertion on the part of the workers, by re-equipping our factories with modern labor saving machinery, better tools and better fixtures.

"If all of the machine shops could be re-equipped with new machines, such as we are able to build today, the increased productive capacity would be well worth while. At present, there are thousands of factories equipped with hundreds of thousands of machines that are obsolete or practically so."

If the managers of even a small portion of these shops were to be impressed with the importance of installing new equipment, the machine tool industry would be confronted with a demand such as has never arisen before, Mr. Newton predicted.

Work of Tool Section Reviewed

C. E. Hildreth, general manager of the Machine Tool Builders' association, who this spring was appointed chief of the machine tool sales section of the war department, reviewed briefly some of the work that had been accomplished in the disposition of government equipment. In the early half of this year, he asserted, the war department had considered the plan of selling the equipment at auction, or rather by sealed bids, and at one time had taken important steps in that direction. In one instance, that of the equipment at the plant of the Union Switch & Signal Co., Swissvale, Pa., the government at one time was considering three such proposals. The machinery comprised about 640 tools, valued at approximately $940,000, and one of the sealed proposals called for the payment of $275,000, or less than one-third of the original valuation. This whole plan, Mr. Hildreth said, was set aside after his arrival in Washington, and in the three months which followed, under the fixed price plan, 205 of the machine tools, or approximately one-third of the original number, were sold for $278,000, a higher total than was offered under the former plan for the entire lot.

This plan, Mr. Hildreth pointed out, not only worked to the great advantage of the government, but also redounded to the benefit of the machine tool industry, for, he explained, the tools were in excellent condition and when the manufacturers were buying right, the industry profited. There were and continue to be instances where auctions are being held, Mr. Hildreth said but, practically without exception, only where the equipment involved is in poor condition. Of the new standard machines, virtually all are being retained by the government, being alloted to the arsenals, etc.

That unintelligent competition is the

worst thing machine tool builders have to face, is the opinion of William R. Basset, of Miller, Franklin & Basset Co., New York City, who addressed the association on "Uniform Cost Accounting." "This," Mr. Basset asserted, "virtually can be remedied by close attention to costs. With prices as erratic as they are today manufacturers cannot afford to leave anything to chance."

"In the old days," Mr. Basset said, "it was a fairly safe procedure to ascertain a cost, once or twice a year, and within certain limitations, to stick to that cost. Today, you have widely varying costs; labor conditions change from day to day, and your overhead necessarily varies. We have this year encountered fluctuations in overhead of from 150 to 225 per cent, the fluctuations occurring monthly for six consecutive months.

"You must have a sort of a clinical thermometer tucked away in the corner of your business mouth, that is going to tell you at least monthly what the variations in your costs are, so that you can go out and you can compete intelligently."

In the course of his remarks, Mr. Basset stated that federal taxes cannot be included in the costs. This, he said, was because the taxes are not determined until the last moment; however, it is possible to estimate fairly closely into what taxpaying class one may land. It is vitally necessary, he pointed out, that this be done, that the manufacturer knows what the taxes will be within certain limits, in order that the spot cash, which the government demands, will be available.

"I may say," Mr. Basset added, "to those who have not studied the 1919 taxes, that they differ rather materially from 1918. In 1918, it was necessary for some companies who made prodigious profits, to be obliged to pay 83 cents out of every dollar, over and above a certain per cent, to the government. This year, after you have attained a certain percentage of profit, you may be forced to pay 46 cents out of every dollar to the government, plus a possible state tax."

In one of the most stirring addresses ever delivered before the association, Bainbridge Colby, a lawyer of New York City, and formerly of the United States shipping board, asserted that the way to mastery of international trade is by a broadening study of the conditions that limit international trade and make either for success or failure in that field.

Mr. Colby also availed himself of the opportunity to appeal to manufacturers to organize to stamp out the I. W. W. menace, which he regarded as most serious. He stated that action was imperative. "Do not," he admonished, "spend overmuch time in deliberation; only to the point where you appreciate clearly the thing to do, and then advance to act, because it is in the verb, not the adjective; energy, not reflection; progress, not deliberation, that the solution of the ills of the hour lies."

Under the title of "International Finance," an address of the utmost interest was submitted by George B. Mallon, of the Bankers' Trust Co., New York City. At present, he asserted, there is a widespread realization of the necessity for a broad, generous market for foreign securities in this country to facilitate American export trade. These securities must not only be safe, but attractive. Commenting further, Mr. Mallon said:

"There seems to be a demand at present for a type of corporation that can make it its business to finance any kind of export business so that the American producer and the European consumer may sell and buy at once. It has been suggested, as the outcome of the investigations, that such a corporation, or perhaps several such corporations, be formed. It would probably send good credit men abroad and it would proceed to get the capital necessary for financing. It would, of course, be a stock company, and in effect it would be a banking corporation doing a foreign exchange business on long-time credits.

"For example, a purchaser of machinery in Belgium ordering tools in this country, on long-time credit, could obtain it through such a corporation. This credit would be examined and his bank would vouch for him. In some cases a group of banks might stand back of such a credit of perhaps a foreign government. The corporation financing this transaction would have back of it the individual purchaser, his bank, or banks, or government, and against these long-time credits it would issue debentures which would have in addition the guarantee of the corporation issuing them. These would have to be issued at a rate to make them attractive to the investing public. Some such plan is being considered, and, although it has not been perfected in its details, it now seems probable that something of this kind will be devised for the immediate financing of our export business."

In his address on "International Finance," George B. Mallon, of the Bankers' Trust Co., New York, stated that he believed the solution of the foreign trade problem lies in the final passage of the Edge bill, which still is pending in congress. He said:

"Our government is wisely disinclined to lend more money abroad, except in cases where it is absolutely necessary. Nor would it be sound finance to tie up our banking resources in long-time foreign credits. However, long-time credits must be extended to Europe, and from what I know of the plans under consideration, I think the problem will be solved as quickly as possible after the passage of the Edge bill.

"Under the Edge bill corporations may be formed with a capitalization of not less than $2,000,000 to undertake this kind of financing and serious consideration is now being given to how such corporations should be formed and what they might accomplish. It is conceivable, of course, that such a corporation might be formed in the machine tool industry, another in the steel industry, and others in other industries that export. Possibly that may develop later."

Of considerable interest to the association were the remarks of Alexander Luchars, president of The Industrial Press, publisher of *Machinery,* New York City, who this year made an exhaustive study of conditions in Europe from the standpoint of the machine tool builder, spending several weeks on the other side. His report covered the situation in seven countries. Mr. Luchars impressions and conclusions, which are contained in his report to the department of commerce and in an article on the German situation, published by himself, will appear in early numbers of THE IRON TRADE REVIEW.

The first day of the convention was given over to general sessions. The second, and last day, was devoted to committee meetings in the morning and an executive session in the afternoon. During this latter session the announcement was made that all officers had been re-elected for the ensuing year.

These officers follow: President, Albert E. Newton, vice president and general manager of the Reed-Prentice Co., Worcester, Mass.; first vice president, A. H. Tuechter, president of the Cincinnati-Bickford Tool Co., Cincinnati; second vice president, E. J. Kearney, secretary and treasurer of the Kearney & Trecker Co., Milwaukee; treasurer, Winslow Blanchard, president of the Blanchard Machine Co., Cambridge, Mass.; and secretary, Charles E. Hildreth, president of the Whitcomb-Blaisdell Machine Tool Co., Worcester, Mass. The spring meeting of the association will be in Atlantic City.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

AN ADDITION to the shop of the Newton Machine Tool Works, Inc., Philadelphia, is under construction. The new shop will cover a ground space, 230 x 400 feet, and will comprise 92,000 square feet of floor space. It will include an erection shop, a pattern and a storage shop, forge shop and power plant. The erection shop is to have one square foot of overhead light for every square foot of floor space and is to be used for the erection of machinery on a quantity basis. It is to be fitted with two 50-foot span overhead traveling cranes.

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THE Lewis Foundry & Machine Co., Pittsburgh, reecntly started its new 30-ton open hearth acid furnace and now is making steel and alloy rolls as well as a more extensive line of steel castings than it previously made.

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GROSS business of the Atlas Drop Forge Co., Lansing, Mich., during the last 12 months was $1,000,000. The company, according to S. H. Carpenter, general manager, will spend $100,000 for new equipment before the first of January.

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CONSTRUCTION work on the $1,500,000 additions to the plant of the Scullin Steel Co., at St. Louis, is nearing completion. The additions include rolling mills for merchant bars, reinforcing rods and other small structural shapes. The main drive will be by electricity.

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UNDER the name of the Ferdinand G. Schultz Co., Ferdinand G. Schultz, who recently resigned as Pittsburgh district sales manager for Shimer & Co., Philadelphia, has opened offices in the Jenkins Arcade, Pittsburgh, for the handling of pig iron, fuel, alloys, ore and sand.

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WORK has been begun on the new plant of the Foot-Burt Machine Co., Cleveland, and the company expects to be under its new roof by Jan. 1. The new plant will give the company 127,000 square feet of floor space. It will be used for making drilling machines and special machinery.

* * *

JOSEPH T. RYERSON & CO., Chicago, have bought a block at Fifteenth and Rockwell streets and Ogden avenue, adjoining the two blocks in Rockwell street already occupied by their warehouses. The property was owned by the Crane Co. and is occupied by a brick foundry building which will be adapted to warehouse use. No program for immediate improvement has been made.

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IN order to develop the production of 4-drive tractors, the Traction Engine Co., Boyne City, Mich., recently increased its capital stock from $75,000 to $150,000. Enlargement of its plant and the erection of additional storage buildings has been completed, as well as the remodeling of the Conrad Iron Works foundry. Additional machinery and equipment has been installed. No new machinery will be added before mid-winter or early spring. E. M. Ackerman is secretary of the company.

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A TRANSACTION recently was completed whereby the Clarendon Refining Co., Warren, Pa., will enter a new corporation recently formed known as the White Oil Corp. This new corporation also has taken over the holdings of P. J. and Thomas White and the Crown Refining Co., of Houston, Tex. The refinery of the Clarendon Refining Co. has a daily capacity of 1000 barrels and it also controls pipe lines, tank cars and a number of leases.

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A. I. LAING recently resigned as president and treasurer of the American Iron Products Co., 107 Liberty street, New York, and in the reorganization the following officers were elected: President, Charles H. Williams; vice president, E. Douglas O'Neill; secretary and treasurer, Proctor M. Denno. The board of directors includes Messrs. Williams, O'Neill and Denno, Herman Pregger and John F. McClure. All the officers and directors are old employes of the organization. The company has comprehensive plans for the further expansion of its business in foreign countries. It is adding several new departments.

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THE Worcester-Crompton Loom Co., and the Randolph Crompton experimental department, both of Worcester, Mass., have been taken over by the Mason Machine Works, Taunton, Mass., with whom Randolph Crompton, the owner, goes as supervisor of the automatic loom department. The Worcester business has been devoted on a small scale to making automatic cotton loom attachments. They now will be made on a larger scale by the Taunton company.

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ORGANIZED to manufacture, sell and distribute collapsible metal shipping cases, the Hazen Metal Collapsible Shipping Case Co., 408 East Seventh street, Long Beach, Cal., has purchased a site for its first factory building. Equipment which has been ordered, will be installed about Feb. 1, and the production of one metal case each seven seconds is contemplated shortly after that date. The cases will be made of black and galvanized steel sheets which to prevent rusting will be given a patented metal dip to give them a finish resembling porcelain.

* * *

QUANTITY production has been attained by the Great Lakes Malleable Co., Milwaukee, in its new plant on Reed street. The unloading of the first annealing oven to be packed was begun Oct. 2. So much business has been booked that practically all of the casting capacity is required and the addition of a third annealing furnace probably will be made within a short time. The main shop originally was that of the Maynard Steel Foundry Co., which as the Maynard Electric Steel Foundry Co. is operating in a new plant in Layton Park, Milwaukee. The Maynard shop was completely rebuilt for malleable work and two-furnace annealing building constructed during the summer months. Matthew Hoff, formerly of Montclair, N. J., is treasurer and works manager, W. T. Hercher, formerly of the Chain Belt Co. malleable department, is superintendent.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

SCHEDULED for completion in about 45 days, at Towson Heights, Md., the new plant of the Black & Decker Mfg. Co., maker of portable electric tools, will be 100 x 200 feet. It will adjoin the company's present plant on the west side and will be connected directly with it. The new building will add 20,000 square feet of manufacturing floor space to the present space of 12,000 square feet. This 32,000 square feet does not include store house, chemical laboratory or the new office building, to which the company's headquarters recently were removed from Baltimore. Sufficient machine tool equipment will be installed to double the company's output of portable tools, air compressors, etc. The Austin Co., Cleveland, has the contract for this building which will be of combined steel frame, glass and brick construction, finished in stucco. A modern steamheating system for the entire plant will be provided. Plans include women's rest rooms, maple flooring over groove pine underflooring over concrete. It is expected that the new factory unit will be completed by Dec. 1 and that operations will commence shortly after the first of next year. The Black & Decker company owns 125 acres of land in Towson Heights.

* * *

FREYN, BRASSERT & CO., Chicago, engineers, have been retained by the Shelton Iron, Steel & Coal Co., Stoke-on-Trent, England, as consulting engineers in connection with blast furnace and rolling mill improvements.

* * *

ADDITIONAL land near its present plant, has been purchased by the Chattanooga Coal & Iron Co., Chattanooga, Tenn. It is to be used for additions as the business of the blast furnace expands. A total of $22,900 was paid for the property.

* * *

GROUND will be broken immediately at Warren, O., for the new plant of the Phoenix Tube Co. The company now is located at Brooklyn, N. Y., but will move its plant to Warren, O., about Jan. 1 when the new buildings are expected to be completed. The Phoenix company manufactures steel tubing for automobiles, bicycles and beds. S. A. Snell, formerly associated with the Ohio Steel Products Co., Niles, O., has been appointed superintendent of the new plant.

* * *

AT A recent meeting of the United States Cement Tile Co., the following officers were elected: President, B. E. Thompson, Beaver, Pa., who is connected with the Rochester Clay Products Co.; vice president, H. N. Trimble, of the H. N. Trimble Steel Co., Pittsburgh; secretary, G. R. Mueller, Beaver, Pa.; treasurer, C. L. Kirk, Pittsburgh; superintendent, W. A. Ault, New Castle, Pa. The general offices of this company, formerly located at New Castle, have been moved to Pittsburgh, now being located at 2223 Farmers bank building. This company manufactures a steel reinforced cement roofing tile.

* * *

NEW officers and directors of the Moline Plow Co., Moline, Ill., chosen at the annual meeting, bring the official retirement of Frank Gates Allen, founder of the business. He is succeeded by George N. Peek. Officers are: Chairman of the board, John N. Willys; president and general manager, George N. Peek; vice presidents, H. S. Lord, J. L. Irving, R. W. Lea and O. H. Seiffert; secretary, L. C. Blanding, assistant secretary, T. J. Marshall; treasurer, H. S. Lord; first assistant treasurer, C. B. Odell. Directors are John N. Willys, George N. Peek, C. A. Earl, J. L. Irving, R. W. Lea, O. H. Seiffert, G. E. Huntoon, H. S. Johnson and L. C. Blanding.

* * *

THE Minerva Engine Co., Sixty-first street and Curtis avenue N. E., Cleveland, manufacturer of motor truck and tractor engines, has purchased an 8-acre site in that city, for purposes of expansion. Plans now are being prepared for a large engine factory which is to be erected immediately. Contract for the first unit comprising at least 30,000 square feet, is to be let immediately and the structure is to cost in excess of $100,000. This first unit is to be used for assembling and final testing of engines and will provide a large machine shop. The construction of a gray iron foundry also is contemplated. C. S. Goby is president; R. A. Johnson, vice president, and D. R. Long, secretary.

* * *

AS A development of its logging, sawmill and heavy duty machinery plant, the Sumner Iron Works, Everett, Wash., is establishing a tractor department. This is being done to provide against the decline of lumbering in the Pacific Northwest and to take advantage of the large highway construction program projected in that territory. A complete plant manufacturing road graders, drags, plows, trailers, etc., has been acquired and the equipment moved from Minnesota to Washington. The tractor department will manufacture on a royalty basis the four-wheel-drive tractor design now in production at the Topp-Stewart Tractor Co. plant in Clintonville, Wis. General Manager F. L. Powell of the Sumner works has been spending several weeks at the Clintonville works to familiarize himself with methods of manufacture and other details.

* * *

RECENTLY incorporated at $500,000 the Detroit-Star Grinding Wheel Co., Detroit, takes over the properties of the Star Corundum Wheel Co. and the Detroit Grinding Wheel Co. The equipment and property of the latter company eventually will be brought over to the site of the Star company at 241-261 Cavalry avenue, where the offices and factory of the new plant will be located. The organizers are: President, John R. Kempt; vice president, J. T. Wing; secretary and treasurer, Frank H. Wheldem. Mr. Kempt formerly owned and operated the Star Corundum Wheel Co., from its organization, May 1, 1907, Mr. Whelden has owned and operated the Detroit Grinding Wheel Co., for several years past, having succeeded the late Gilbert Hart, founder and organizer of that business. Mr. Wing has conducted the factory and mill supply house of J. T. Wing & Co., Detroit and Windsor, Ont., for the past 30 years. Edward W. Dodge is general sales manager.

Labor Blocking Own Interests

Would Have Shared in Rising Prosperity Had it Not Been Led Astray by Agitators—Republic Earnings Shows Fine Increase—Will Suffer if Industry is Bled Dry—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

THE great economic error committed by the radical leaders responsible for the attempted steel strike was once more impressively emphasized by the report of the Republic Iron & Steel Co., for the third quarter of the current year. Coming on the heels of the earnings showing of the Lackawanna Steel Co., which exhibited a fine recovery from the deficit of the previous three months, the Republic report provides accumulating evidence of the vigorous progress toward a high level of prosperity being made by the steel industry when the ill-advised walkout of the minority was called, Sept. 22, by the radical leaders.

In this prosperity exemplified by an increase in net profits for Republic of 148 per cent over the June quarter, labor undoubtedly would have shared. The steel industry has ever been the first to give its labor the benefit of increased earnings. This is vividly shown by the record of wage increases during the war period, when augmented business and rising prices resulted in higher profits. Wage increases followed each other in rapid succession during this period with the result that the remuneration of the workmen jumped from 100 to 150 per cent, greatly exceeding the rise in the cost of living with a 70 to 80 per cent increase.

War wages were at the highest peak ever known. Yet when the armistice was signed and industry slackened these wages were not disturbed. The policy of the industry was fixed on maintaining wages until the decline in the cost of living justified readjustments. Prices of steel products dropped, operations slumped, earnings tumbled from the imposing war-heights to levels humble indeed by comparison, but through it all wages were undisturbed. The companies carried the men cheerfully through the lean period back to the present of actual or closely-approaching prosperity.

The steel strike has an economic significance that makes it of especial interest to general business of the country. Although the nation has been disturbed by a daily average of more than 300 strikes for some months, trade has not felt any depression as a result. At present there are 65 unauthorized strikes in existence. The tendency of strikes is to reduce production and increase prices, but since the laborers have been winning in most cases, they have been compensated for their "vacations" and no decrease in the buying power has appeared. The steel strike, however, is the first conspicuous example where the men are meeting resistance and face the certain prospect of returning to work under the old conditions, with nothing but a loss of income for their pains. In fact the purpose of the strike was not for higher wages but union recognition. By this means the purchasing power of the workers involved will be diminished and goods should be in less demand. If other industries are compelled to cease operations from lack of material, or through resisted strikes, the buying power of the masses promises to fall off tremendously.

Present prices are being held upon an elevated plane in large measure by the buying stimulated by high wages. Cut off these wages from a considerable number of workmen and the demand for comforts, and luxuries and even necessities is bound to recede, with an inevitable effect upon trade and prices. Of course decreased production would mean lessened supplies and higher prices, if the purchasing power of the people remained constant.

Voluntarily reduced consumption and increased production is the only fundamental way in which the present difficulties caused largely by a world shortage of goods may be solved and prices may adjust themselves to a more reasonable basis. Wilful and unjustified strikes will bring reduced con umption enforced by lack of income. The radicals, however, with promises of things impossible of human attainment, have been able to convince a considerable element of labor that all the joys and comforts of life are to be had through the medium of some magic spell—and not through hard, diligent toil.

Labor has two alternatives in bringing down prices—it may increase production through efficient work, or it may drastically curtail the buying power of the country through "vacationing." In the one case it could enjoy good wages and have the comforts of life, while in the other it will bring only suffering and if persisted in far enough, industrial disaster.

With an era of great prosperity based on world wide need of goods at hand, it would be a sorrowful thing indeed if American labor were so blind as to persevere in its "grab-game" until it has bled industry dry and finds itself in the end hugging the empty shadow of disillusionment. In its mad rush to get "while the getting is good" labor is heading toward this very goal. If that ever is reached, labor will go hungry but it will be wiser.

British Iron and Steel Works Prosper

(Special Correspondence)

SEVERAL reports of British iron and steel companies recently issued show a continuance of prosperity and in many instances a marked expansion. Generally, it may be stated, the compannies had a very good year and have no reason to complain of the results they obtained.

Messrs. Pearson & Knowles, Ltd., for the year ended June 30, after allowing for excess profits, had a net balance of £248,141. A final dividend of 6½ per cent on the ordinary shares made the total 10 per cent, less tax, for the year, together with a bonus of 1s per share, free of tax. The sum of £50,000 was placed to reserve and £101,599 carried forward. This makes a dividend for the year of 15 per cent, compared with 45 per cent the previous year and 7½ per cent for 1914

and 1915.

The Staveley Coal & Iron Co. shows a net profit after providing for depreciation, of £279,168. Interim dividends having been paid, further payments are authorized, making 10 per cent for the year. A balance of £66,830 is carried forward. In addition, the company has been able to pay off the whole debenture issues.

The Sheffield Forge & Rolling Mills Co., Ltd., shows a net profit of £41,302. After applying £8000 for special renewals and extensions and making a general reserve of £15,000 a dividend of 10 per cent free of tax was paid. The balance of £3302 remained.

Messrs. Bolckow, Vaughan & Co., Ltd., Middlesborough, although not able to issue a full balance, had a profit available for distribution including an amount brought forward from last year, of £733,617. The expenditure during the year upon blast furnaces, steel furnaces, rolling mills and electrical installations was £574,753. A dividend of 12 per cent for the year was paid.

Messrs. John Brown & Co. report that operations at the Atlas Works have suffered materially from the want of orders for armor plate, while the result of the working of the collieries has been very unsatisfactory. The receipts from other branches and allied companies, however, have been well maintained. To strengthen the position of the company a considerable interest has been purchased in the Carnforth Hematite Iron Co., Ltd., and in Cravens' Railway Carriage & Wagon Co., Ltd. Large interests have been acquired in the Coventry Ordnance Works and the English Electric Co., Ltd. The latter comprises Dick Kerr & Co., Ltd., the Phoenix Dynamo Co., Ltd., Willams & Robinson, and other companies engaged in electrical production. The net profit for the year was £467,171, making the total surplus £631,565. The dividend for the year was 12½ per cent less tax. The position of John Brown & Co., Ltd., is fairly representative of the great independent armament firms who find it necessary to reshape their industrial course. This is the fifth year that the Brown company has been able to pay 12 per cent dividend on its ordinary shares, less tax. The value of freehold land, works, collieries, etc., is put at £5,901,425 or £370,320 more than shown in the previous balance sheet.

John Lysaght, Ltd., which figured recently in a large amalgamation with collieries in South Wales, reports a profit of £481,151. After providing for interest on debenture stock and dividends on 6 per cent preferred shares a balance of £965,482 remains from which it is proposed to pay a bonus of 4s per share, free of income tax, on the ordinary shares in addition to an interim dividend of 10 per cent free of income tax, which has already been distributed.

Republic's Profits Jump in Third Quarter

With a gain of 148 per cent over the previous quarter the net earnings of the Republic Iron & Steel Co. for the three months ended Sept. 30 provide evidence of the strong recovery registered by the steel industry during the last few months. The $1,271,147 available for dividends shown in the company's report established the high record for the current year and compares with the $510,916 of the previous quarter and the $1,053,956 of the first three months.

An especially significant feature of the report is the item of unfilled orders which on Sept. 30 stood at 433,495 tons of finished and semi-finished products. This is the highest figure for any previous quarter during either 1919 or of last year. It represents a gain of 131 per cent over the 187,361 tons as of June 30. On March 31, the unfilled orders were 114,305 tons and on Sept. 30 of 1918 they were 315,164 tons.

The company does not give the amount reserved for estimated taxes out of the quarter's earnings. The reduction in the charges for depreciation and renewal of plants of from $535,271 in the third quarter of 1918 to $337,747 in the quarter just closed is a reflection of the passage from the war to the peace period.

The nine months earnings were $2,836,019 as against $8,134,859 for the corresponding period of 1918. The report shows the charges for maintenance and repairs during the quarter were $1,287,908 as compared with $1,382,806. The accompanying table shows the comparative earnings reports of the company for the three quarters of 1919 and the third quarter of 1918.

	Third quarter 1919	Second quarter 1919	First quarter 1919	Third quarter 1918
Net earnings	$1,740,406	$952,770	$1,572,475	$2,829,555
Interest and income	135,478	169,816	200,971	82,648
Depreciation and mineral exhaustion	422,474	433,245	541,065	625,940
Interest on bonds	182,263	178,425	178,425	178,942
Net available for dividends	1,271,147	510,916	1,053,956	2,107,317
Preferred dividend	437,500	437,500	437,500	437,500
Common dividend	407,865	407,865	407,865	407,865
Surplus for quarter	425,782	*334,448	208,591	1,261,952
Unfilled orders, tons	433,495	187,361	114,305	315,164

*Deficit.

Pittsburgh Steel Working Capital is High

The annual report of the Pittsburgh Steel Co., shows that during the year ended June 30 net profits of $2,771,546 were earned as against $4,556,442 for the preceding year. The company had net sales aggregating $31,265,012 as compared with $37,930,842 last year. The decrease in sales and profits for 1919 are attributed to the reduced operations which followed the signing of the armistice and continued through the first six months of the current year.

The company's financial position is sound with current assets of $15,547,640 and net working capital of $12,646,261. The property account, according to the balance sheet, is shown to be $25,532,957 against $21,911,949 in 1918. During the year $1,275,433 was charged off for depreciation of plants and extinguishment of mines, and $244,015 for estimated war taxes. Last year taxes were $2,730,121. The comparative income account follows:

	1919	1918
Total sales	$31,265,012	$37,930,842
Mfg. costs, etc	27,240,756	29,409,724
Selling expenses, etc	1,069,482	1,324,086
Net operating profit	2,954,773	7,286,564
Miscellaneous income	60,824	89,534
Profits tax	244,051	2,730,121
Net profits	2,771,546	4,556,442
Preferred dividend	735,000	735,000
Common dividend	910,000	1,960,000
Surplus	1,126,546	1,861,442

The report tells of the purchase of the Alicia Coal & Coke properties consisting of 660 acres of coal land and 400 rectangular coke ovens located at Alicia, Fayette county, Pa. The price paid was $3,750,000, of which $1,000,000 was paid in cash on delivery of the deeds. The balance is payable in installments over a period of five years with interest at the rate of 5 per cent on deferred payments.

The company reports that it has purchased a tract of land at Monessen on which it proposes to build immediately 25 houses for employes. The average number of employes during the year was 5612 and the salaries and wages totaled $9,575,815 making an average annual wage per man of $1706. Wages have been maintained at the war levels throughout the year the report states.

Tool Sellers Continue Sanguine

Occasional Falling off Noted in Demand for Machine Tools and Equipment—In Middle West Sellers are Busy Day and Night—Crane Market Active—Chillicothe, O., Project to Require 35 Cranes

CONFIDENT expressions continue to be made by machine tool sellers regarding the present and prospective market. Many believe that unless something unforeseen occurs, the high rate of activity which now obtains, will continue for another six months at least. Others are not so optimistic. Interest in the East centered during the past week in the meeting of the National Machine Tool Builders' association, a report of which is published elsewhere in this issue. An improving sentiment is noted in the eastern territory and there as well as in other districts, the belief is held that after the labor situation becomes more stabilized, more machine tool sales will be consummated. In Pittsburgh, Cleveland, Detroit and in Chicago as well an occasional order is held up and the iron and steel strike is given as an excuse.

Inquiries and orders for small lots of tools continue to crowd the mails of tool sellers in Cleveland and Chicago. The Templar Motors Corp., in the former city, is said to be preparing a list of $300,000 worth of equipment. Some of the railroads are putting out tentative inquiries for machines as their purchasing agents endeavor to line up 1920 budgets. The Stevens Motor branch of the Moline Plow Co., Freeport, Ill., bought about $6000 worth of miscellaneous tools.

Of interest to the general machine tool trade is the announcement from Washington, that the war department has sold to La Construction Metallique, comprised of 500 companies in Belgium, about 2500 government-owned tools. Credit arrangements in this country for Belgium have been made to the extent of $50,000,000 and the Belgian government has authorized that 25,000,000 francs of this be spent for machine tool equipment now held by the ordnance, air service, purchase and storage service departments of the United States government.

Heavy equipment is moving freely from Pittsburgh. One company has specifications out for 17 cranes and the Carnegie Steel Co., Pittsburgh, wants four for its Upper Union mills. The Firestone Steel Products Co., Akron, O., asks for seven and the American Steel & Wire Co., Cleveland; the Rogers-Brown Iron Co., Buffalo; American Steel Co., Pittsburgh; Miner-Morse Corp., Erie; Heppenstall Forge & Knife Co., Pittsburgh; Pittsburgh Knife & Forge Co., Coraopolis, Pa., want one crane each. Sales of two cranes each were made recently to the American Locomotive Co., Schenectady, N. Y.; Sharon Steel Hoop Co., Sharon, Pa.; Youngstown Pressed Steel Co., and the Petroleum Iron Works, Sharon, Pa., the Weirton Steel Co., Weirton, W. Va. and the Ellwood City Forge Co., Ellwood City, Pa., bought one each. The Follansbee Bros. Co., Pittsburgh, is expected to issue specifications shortly for requirements at Toronto, O. The Newton Machine Tool Works, Inc., will require two cranes at Philadelphia. The Acme Road Machinery Co., Frankfort, N. Y., is inquiring for one crane in New York City. The second lot of cranes closed recently, has been sold to the McIntosch & Seymour, Auburn, N. Y. Considerable conveying equipment for the proposed terminal on Staten Island, N. Y., is expected to be closed soon by the Pan American Terminal & Dock Co., New York City. A steel and steel car plant project at Chillicothe, O., which will call for the expenditure of approximately $50,000,000,is of interest to crane builders in and around Cleveland, since 35 cranes will be required. W. H. Monahan Jr., Columbus, O., is the engineer in charge.

Sentiment Improves in Eastern Tool Market

ALTHOUGH few large lists were issued during the past week, demand in the eastern machine tool market is increasing and much better sentiment is in evidence. In addition to several sizable inquiries pending, the largest of which is that of the New Departure Mfg. Co., Bristol, Conn., actual buying of increasing proportions is being done. This activity for the most part is being comprised of small scattered orders.

Demand for cranes for the past couple of weeks has been somewhat quiet. This inactivity has been especially noticeable within the past few days. The Acme Road Machinery Co., Frankfort, N. Y., is inquiring for a 20-ton overhead crane, with 37-foot span. Westinghouse, Church, Kerr & Co., New York City, have purchased a 40-ton locomotive crane from the Industrial Works. Stone & Webster, Boston, are understood to have closed on a 15-ton locomotive crane. McIntosch & Seymour, Auburn, N. Y., have placed two 5-ton wall cranes with the Northern Engineering Works. This contract was reported to have been placed with another builder, and constitutes the second lot of cranes to be awarded the Northern works recently by McIntosch & Seymour. The Pan American Terminal & Dock Co., 255 Broadway, New York City, is in the market for considerable conveying equipment for a proposed terminal on Staten Island.

Belgium Takes Many Machine Tools

ANNOUNCEMENT has been made by the director of sales, Washington, that the war department has entered into a contract with La Construction Metallique, a co-operative society composed of the heads of approximately 500 industrial organizations of Belgium, for the



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sale of a quantity of surplus machine tools held by the department.

The Belgian government has arranged, through an American banking interest, for a credit of $50,000,000 in the United States, and La Construction Metallique has been authorized by the Belgian government to make purchases of machine tools against this credit to the extent of 25,000,000 francs. To date, La Construction Metallique has purchased from the war department approximately 2500 machine tools.

The contract with La Construction Metallique was made by C. W. Hare, director of sales, during his recent visit to Europe. La Construction Metallique recently sent to the United States a commission headed by Lieutenant Jean Jean, the director general of the co-operative society, to make a general survey of mechanical equipment which the bureaus of the war department hold as surplus.

The machine tools sold to La Construction Metallique are now being selected from the several districts of the ordnance department, the air service and the purchase and storage service, and are being put in transit to Belgium as rapidly as they can be prepared for shipment.

Some Holding Back Noted in Chicago

WHILE most dealers in the Chicago district find demand for machine tools is holding up to the high mark which has prevailed for several months, an occasional house notes a falling off. Business continues to be made up principally of small purchases, while large inquiries are practically absent. There is, however, considerable selling in lots which involve $6000 to $10,000, although at present prices of tools, this does not mean many separate machines. One dealer recently closed two lots at $8000 each which could be furnished direct from his salesroom. The Stevens Motor branch of the Moline Plow Co., at Freeport, Ill., recently closed for about $6000 worth of equipment including drills, milling machines and sheet metal working equipment. Dealers find it is difficult to buy tools in the possession of the government, as business methods are so foreign to the traditions of the trade that it is almost impossible to put through a deal in a way to give a profit. It develops now that the Moline Plow Co. will not be able to equip its rebuilt machine shop from government sources to the extent that had been thought. Considerable equipment which this company had thought it had contracted for was found later to have been allotted to government arsenals and to Belgian buyers. The Fitzsimons Steel & Iron Co., Chicago, manufacturer of cold drawn steel, has bought a site in Chicago on which it will build a manufacturing plant and warehouse. The Rudy Furnace Co., Dowagiac, Mich., is building an additional manufacturing building and a storage building. The Keller Brass Works, Grand Rapids, Mich., is building an addition. The Anderson Foundry & Machine Works, Anderson, Ind., is building a new plant.

Crane Orders Numerous in Pittsburgh

CONSIDERABLE activity marks the trade in cranes, both actual and prospective. The Champion Engineering Co., Kenton, O., has taken through its Pittsburgh office, a 15-ton crane for the Weirton Steel Co., Weirton, W. Va., a 15-ton crane for the Ellwood City Forge Co., Ellwood City, Pa. and two 50-ton cranes for the Schenectady, N. Y. works of the American Locomotive Co., The Sharon Steel Hoop Co., Sharon, Pa., has closed for two 15-ton cranes, with the Cleveland Crane & Engineering Co., Wickliffe, O. The Youngstown Pressed Steel Co., has closed with the Shaw Crane Works, Muskegon, Mich., for two cranes for its new plant at Warren, O., while the Petroleum Iron Works, Sharon, Pa., also has placed an order for two Shaw cranes.

In the way of prospective business it can be stated that specifications have gone out from one company for 17 cranes, while the Carnegie Steel Co., is in the market for four cranes for its Upper Union mills, Pittsburgh; the American Steel & Wire Co. is looking for a crane for its Newburgh works, Cleveland; the Firestone Steel Products Co., Akron, O., is in the market for seven 5-ton cranes; the Rogers, Brown Iron Co., Buffalo, is seeking a 10-ton crane; the American Steel Co., Pittsburgh, wants a 5-ton crane for its Ellwood City, Pa. plant; the Miner-Morse Corp., Erie, Pa., have put out an inquiry for a 15-ton traveling hoist; the Jessop Steel Co., Washington, Pa., is asking bids on two 10-ton cranes; the Heppenstall Forge & Knife Co., Pittsburgh, wants a 5-ton crane and the Pittsburgh Knife & Forge Co., which is erecting a new plant at Corapolis, Pa. is in the market for a crane, in addition to seven steam drop hammers and a full line of forge plant equipment. The Follansbee Bros. Co., which is about to start work on its new plant at Toronto, O., is expected to close shortly for some of the equipment.

Inquiries for heavy equipment exceed actual orders, but this is explained by conservatism created by the unsettled labor situation. Machine tools also are moving with less snap this month than they did in September, because of the labor situation.

High Rate of Inquiry is Maintained

TERRITORIES supplied by Cleveland and Detroit machine tool dealers, continue to contribute many inquiries and a large number of orders. These mostly are for small lots of from one to four machine tools and while considerable closing appears still to be held up because of the iron and steel strike, the buying represents a sizable total. Demands by the automotive and allied industries continue to be large and with the expansive market for cars coupled with the fact that automobile manufacturers are going in more and more for production, it is thought that this market for equipment is assured for several months to come.

In Detroit equipment sellers are working day and night trying to get out from under the load. The Olds Motor Works, Lansing, Mich., has been an active buyer as have practically all of the Michigan automobile manufacturers. The General Motors Corp., is equipping a truck manufacturing plant at Pontiac, Mich., and both the Paige-Detroit Motor Car Co., and the Cadillac Motor Car Co., are building large plants in West Detroit, the latter upon a 7-acre site. Inquiries for machine tools from the Cadillac company as well as orders reach Cleveland as well as Detroit. The Detroit Seamless Steel Tubes Co., likewise is building a large plant in West Detroit which soon will be ready for equipment installation. The Alamo Farm Light Co., Hillsdale, Mich., is building a new plant, 200 x 350 feet, and is in the market for new machine tool equipment, power transmission apparatus and electric motors. A fair sized machine shop is being erected at 436 Lawton avenue, Detroit, by the Edmund & Jones Corp. The Detroit Automatic Scale Co., Detroit, is in the market for a woodworking machine and two precision lathes. A few tools will be purchased by the Cogsdill Mfg. Co., West Warren avenue, Detroit, for a small automobile accessory plant. The Lutes Sinclair Co., Benton Harbor, Mich., wants a 24-inch turret lathe. Sales made in Cleveland during the past few days include a shaper and a vertical milling machine to the Cleveland Copper & Brass Co., Cleveland. The American Car & Foundry Co., New York, bought a twin spindle ball bearing polishing lathe for Chicago. The Garford Mfg. Co., Elyria, O., the Machine Products Co., and the Brown Hoisting Machin-



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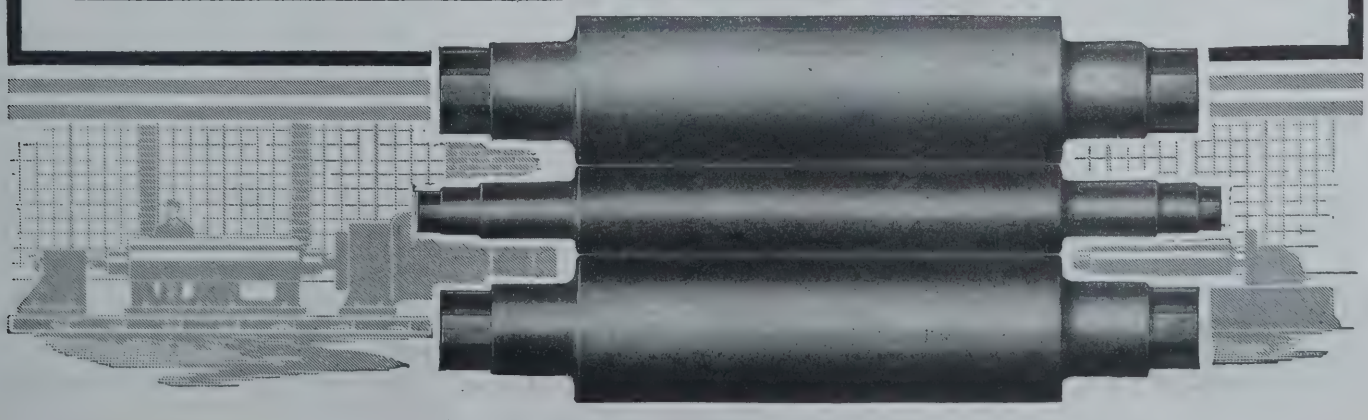
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Say you saw it in THE IRON TRADE REVIEW

ery Co., both of Cleveland, bought some miscellaneous equipment.

Several automotive companies figure among the miscellaneous inquirers. The Templar Motors Corp., Halstead avenue, Lakewood, O., desires to obtain a No. 6 milling machine, among other tools. It announces it will spend $700,000 on new buildings and $300,000 on new equipment for them. The F. B. Stearns Co., Cleveland, continues to enter the market from time to time and at present wants a hammer. The Buckeye Engine Co., Salem, O., is receiving quotations on shapers. The Carthage Foundry & Machine Works, Carthage, Mo., wants a new or second hand grinder, suitable for grinding flour mill rolls from 6 to 16 inches in diameter by 36 inches long. The Edward Mfg. Co., Cincinnati, O., wants a 5000-pound press with 3-inch stroke and the Wm. P. Johnston Co., that city, desires a 4-spindle, heavy duty drill press. The Cisco Machine Tool Co., Cincinnati, and the S. Flory Mfg. Co., Bangor, Pa., each wants large gear cutters. The Anderson Roll & Gear Co., Cleveland, desires a 34-inch Gisholt manufacturing automatic, and the National Safe & Lock Co., that city, a saw-sharpening machine as well as some cold saws. The H. O. Vark Bros., Troy, O., wants a small high-speed press, while the J. S. McCormick Co., Pittsburgh, is in the market for a pressure blower and molding machine. The Federal Motor Truck Co., of New York, Inc., 545 West Forty-fifth street, New York, is in the market for a few lathes, drill presses and other small shop tools. The Union Furnace Mfg. Co., Union Furnace, Huntington county, Pa., is receiving quotations on a 3-foot and 3½-foot radial drill. The Dayton Malleable Iron Co., Ironton, O., wants a speed lathe and the Lyle Corrugated Culvert Co., Minneapolis, a No. 11 Williams & White punch and shear. The Spencer Metal Products Co., Spencer, O., wants some steam drop hammers.

Action soon is expected by the Fisher Body Ohio Co., Cleveland, on the huge list of equipment it will require for its new Cleveland plant. This branch of the Fisher Body Corp., Detroit, was incorporated at Columbus last week with $10,500,000 capital by Richard Inglis and Thomas H. Jones, Williamson building, Cleveland.

A few inquiries continue to reach Cleveland from Canada. The Lang Produce & Storage Co., Water street, Brockville, Ont., wants machinery for the manufacture of cans, etc. The Frost Steel & Wire Co., Hamilton, Ont., seeks a 24 x 44-inch x 18-foot gap lathe; one 8-inch x 8-foot engine lathe with compound rest and a 3-foot radial drill.

Tentative inquiries are being issued by some of the railroads whose purchasing agents are making up their 1920 budgets. One of the largest of these is issued by the New York Central railroad, at Cleveland.

Purveyors of heavy equipment are interested in a project at Chillicothe, O., said to be a steel and steel car plant. It is reported that the entire expenditure will be between $49,000,000 and $50,000,000 and about one-third of it is to be spent this year. About 35 cranes will be required according to initial plans. W. H. Monahan Jr., Columbus, O., is the engineer in charge. The Mt. Vernon Foundry & Engineering Co., Mt. Vernon, O., is reported in need of a 10-ton crane.

The Shartle Machine Co., Columbus, O., recently purchased the Portsmouth Engine Co., Portsmouth, O., and will sell the equipment of the foundry, machine shop as well as pattern shop.

Building projects which give promise of large tool needs are as follows: 1-story machine shop, 102 x 170 feet for the Newton Machine Tool Works, Inc., Philadelphia; 3-story machine shop for the Wheeling Stamping Co., Wheeling, W. Va.; 4-story addition to plant of the Dalton Adding Machine Co., Cincinnati, O.; plant for the Cleveland Laundry Machine Co., 5184 Fowler avenue, Cleveland, 90 x 110 feet; 1-story plant, 60 x 350 feet, for the Erie Motor Truck Mfg. Co., Erie, Pa.; 1-story plant for the Dayton Metal Bodies Co., Dayton, O.; 2-story addition for the Randle Machine Co., Cincinnati; 1-story addition for the K-W Ignition Co., Cleveland, and a 55 x 58-foot addition to plant of the Ohio Machine & Boiler Co., University road, Cleveland.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

BIDDEFORD, ME.—The Saco-Lowell Shops will build a 100-foot machine shop addition and also a foundry.

PORTLAND, ME.—The Curlew Co. has been incorporated as a ship builder with $50,000 capital by Frank I. Cowan, H. W. Baston and Clement F. Robinson.

PORTLAND, ME.—The Kingfisher Co. has been incorporated as a ship builder with $50,000 capital by Frank I. Cowan, H. W. Baston and Clement F. Robinson.

PORTLAND, ME.—The Penguin Co. has been incorporated as a ship builder with $50,000 capital by Frank I. Cowan, H. W. Baston and Clement F. Robinson.

LEWISTON, ME.—A $200,000 power plant will be erected near here by the Androscoggin Electric Co.

PORTLAND, ME.—The Teal Co. has been incorporated as a ship builder with $50,000 capital by Frank I. Cowan, H. W. Baston and Clement F. Robinson.

PORTLAND, ME.—The Widgeon Co. has been incorporated as a ship builder with $50,000 capital by Frank I. Cowan, H. W. Baston and Clement F. Robinson.

RUTLAND, VT.—The Vermont Hydro-Electric Co. will build hydraulic plants and a dam to cost $450,000.

WINDSOR, VT.—The Windsor Foundry Corp. will build a 1-story, 80 x 200-foot foundry and will require new equipment.

BOSTON.—The Boston Insulated Wire & Cable Co. contemplate an addition.

BOSTON.—The Fred P. Lambert Co. has been incorporated to deal in metals with $10,000 capital, by John H. Brown, Fred P. Lambert and K. Mulleary.

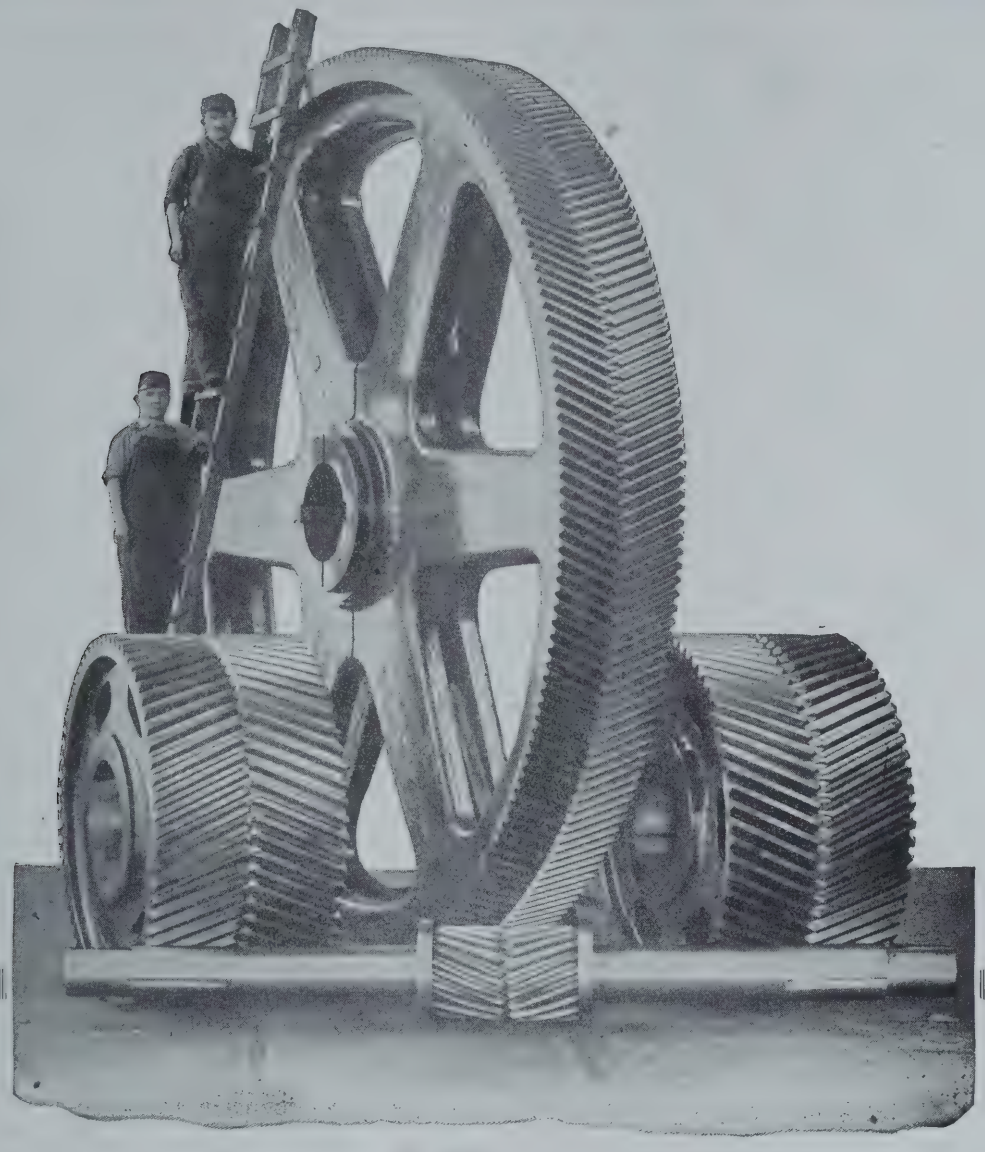
BOSTON.—The Dustless Victory Sieve Co. has been incorporated with $100,000 capital by Walter F. Goddard, Johan V. Platin and J. J. Walsh.

BOSTON.—The DeBats Special Tool Steel Co. recently was incorporated with $100,000 capital, by J. H. L. DeBats, Edward B. Martin and A. B. Phillips.

BOSTON.—The Mowbar Co. has been incorporated to make screws, bolts, blades, etc., with $200,000 capital by Alvin H. Bacon, Amaden M. Iovine, Meredith, N. H., and Alfred A. Tutin.

CAMBRIDGE, MASS.—The Midvale-Cambria Co. has let the contract for a 1-story, 60 x 149-foot warehouse.

CAMBRIDGE, MASS.—Penniman P. James, Main



Falk Herringbone Gears

Illustration shows a complete set of hobbed herringbone gears, furnished to the United States Aluminum Company for a double duo hot mill drive in their new plant at Edgewater, N. J. The largest gear is 16' in diameter I. D. P. 36" face. All three are made from extra high carbon steel castings, annealed by our special process.

The motor pinion in the foreground is made from a high carbon steel forging, in one piece with the shaft, with a ratio of about 12 to 1 to the large gear. Forged steel shrouds are fitted at the ends of the pinion teeth. Two Fly Wheels are mounted on the pinion shaft and the drive is designed to carry peak loads about 3000 Hp., with speed reduction from 345 to 28 R. P. M. The two small gears transmit about one-third of this power to a second line of rolls at 28 R. P. M.

All castings for large steel gears of this description are made in our own open hearth steel foundry. We furnish steel castings for all purposes from 1 lb. to 100,000 lbs.

Write for interesting Falk literature.

The Falk Company, Milwaukee, Wis.

AGENTS: Pittsburgh—W. O. Beyer, 1007 Park Bldg. New York—M. P. Fillingham, 50 Church St. Wilkes-Barre—Vulcan Iron Works. Denver—Denver Engineering Works. San Francisco—F. W. Grimwood, Rialto Bldg.

street, plans a factory and machine shop, 1-story, 150 x 150 feet.

CAMBRIDGE, MASS.—Plans are being drawn for a 1-story, 80 x 80-foot galvanizing building for the Riverside Boiler Works.

EAST BOSTON, MASS.—I. Young & Co., coppersmiths, will build a 2-story, 80 x 75-foot factory and garage to cost $35,000.

FALL RIVER, MASS.—The Fall River Bleachery is building a 1-story, 62 x 242-foot machine shop to cost $40,000.

HOLYOKE, MASS.—Bids closed recently for a warehouse, 2-stories, 60 x 100 feet, for George Prentiss & Co., wire makers. The building will cost $60,000.

LYNN, MASS.—The T. J. Cannon & Sons Machine Co. will build a 1-story, 61 x 70-foot addition for making automobile parts.

LOWELL, MASS.—The Massachusetts Cotton Mills has awarded a contract for a power house, to cost $100,000.

LOWELL, MASS.—The West End Spring Bed Co., Inc., has been incorporated with $10,000 capital by Harry I. Gerson, Samuel Rosenbloom and R. Rosenbloom.

MEDFORD, MASS.—Bids are in for six 1 and 2-story factory buildings and a boiler house to cost $300,000 for the Prest-O-Lite Co., New York.

NEWTON UPPER FALLS, MASS.—The Henry M. Lane Co., Detroit, is preparing sketches for several factory buildings for the Saco-Lowell shops.

PITTSFIELD, MASS.—Plans have been prepared for a $200,000 addition to the plant of the General Electric Co.

SPRINGFIELD, MASS.—The Springfield Foundry Co. has let the contract for a 27 x 66-foot plant addition.

SPRINGFIELD, MASS.—The Bemis & Call Co., hardware and tools, is planning a 4-story plant addition, 50 x 100 feet to cost $45,000.

SPRINGFIELD, MASS.—The Springfield Coach Works has been incorporated with $450,000 capital, by A. U. Premont, M. R. Foster and William S. Fish.

WORCESTER, MASS.—The Pero Foundry has been sold to John E. Jordan.

WORCESTER, MASS.—The Wynan-Gordon Co. has let the contract for a 1-story forge shop.

WORCESTER, MASS.—The Worcester Gas Light Co. has let a contract for a 2-story, 28 x 69-foot generator house.

WORCESTER, MASS.—The Superior Tool & Mfg. Co. has been incorporated with $10,000 capital by August F. Lundquist, Robert Williams, Carl E. Tideman, Ivar W. Alin and Olov G. Johnson.

WORCESTER, MASS.—The Beland Electric Mfg. Co. has been incorporated to build machinery, etc., with $100,000 capital by Lewis H. Peters, Medford, Mass., William H. Phelps, Arthur A. Blanchard, Southbridge, Mass., Albert W. Drake, Somerville, Mass., and Otho Sullivan.

PAWTUCKET, R. I.—Lang & Hoffman, New York, have let the contract for a 1-story, 80 x 90-foot addition to the Woodlawn Machine Screw Co., which they recently purchased.

PROVIDENCE, R. I.—The Franklin Machine Co. has let the contract for a foundry, 42 x 82 feet.

PROVIDENCE, R. I.—The General Copper Co. has been incorporated with $10,000 capital by Archie O. Joslin, Ira Marcus and Daniel J. Healy.

PROVIDENCE, R. I.—The Spartan Needle Co. has been incorporated with $200,000 capital by J. Frank Welcomb, Worcester, Mass., William P. Wood and Arthur M. Allen.

PROVIDENCE, R. I.—The Paco Sharpener Co. has been incorporated to make razor blade shapeners, etc., with $100,000 capital, by William F. Almy, Cranston, R. I., D. Bradford Perkins and Arnold C. Messler.

PROVIDENCE, R. I.—The Domestic Appliance Corp. has been incorporated to make labor saving devices with $25,000 capital by William M. Wilson, Stuart D. Brown and John Wilson, all of Cranston, R. I.

Bridgeport, Conn.—The American Tube & Stamping Co. will build a 60 x 198-foot factory addition.

North Atlantic States

BROOKLYN, N. Y.—The Agenda Novelty Mfg. Co., electrical and mechanical novelties, has been incorporated with $25,000 capital, by F. E. Bloch, H. J. Lauman and D. Goldfogle, 157 East Eighty-ninth street.

BUFFALO.—The Fowler Nail Co. recently awarded a contract for a 1-story plant.

BUFFALO.—The Buffalo Machinery Co. has a permit to erect a building at an estimated cost of $10,000.

BUFFALO.—The Robertson Cataract Electric Co., 748 Hertel avenue, has had plans drawn for a plant addition.

BUFFALO.—The Standard Foundry Co. has had plans drawn for a foundry, 80 x 140 feet, to cost $10,000.

BUFFALO.—The Watkins Commercial Body Corp., 666 Genesee street, has awarded contracts for a plant, 2-stories, 31 x 150 feet, to cost $18,000.

BUFFALO.—The Harding Steel Co., Fidelity building, has a site on which it is reported it will erect a steel fabricating plant. L. A. Harding is president.

DUNKIRK, N. Y.—The Empire Axle Co. has awarded a contract for a plant addition, 1-story, 95 x 200 feet.

HORNELL, N. Y.—The Wymarsh Foundry, Inc., recently was incorporated with $30,000 capital, by F. A. Wygant, G. H. Martin and C. E. Shults.

LONG ISLAND CITY, N. Y.—The A. N. Peterson Co. has had plans drawn for a foundry, 70 x 90 feet.

NEW YORK.—The National Lead Co. has awarded a contract for a plant addition, 5-stories, 50 x 60 feet.

NEW YORK.—The Gordon Radiator Co., 154 West Eighteenth street, has had plans drawn for a plant to cost $60,000.

NEW YORK.—The Dry Dock Sheet Metal Works, 140 West Forty-second street, contemplates a plant, 3-stories, 25 x 100 feet.

NEW YORK.—The Rubes Auto Accesories Mfg. Co. recently was incorporated with $100,000 capital, by D. A. Posner, C. Cobb and W. G. McIvor, 233 Broadway.

NEW YORK.—The Spaulding Chain Corp. recently was incorporated with $50,000 capital, by H. F. Heberman, E. P. Burtis and T. W. Robertson, 43 Cedar street.

NEW YORK.—C. H. Meyn, Inc., metal lathing, has been incorporated with $10,000 capital, by C. M. Meyn, H. G. Dieckhoff and C. L. Grad, 311 West 111th street.

NEW YORK.—The U. S. High Speed Tool Corp. has been incorporated with $750,000 active capital, by M. G. Kline, W. Sisenbergh and I. H. Zinovoy, 1125 Forest avenue.

NEW YORK.—The Kew Mfg. Corp., mechanical engineering, has been incorporated with $20,000 capital, by R. G. Clark, E. H. Owen and C. M. Hayes, 29 Broadway.

NEW YORK.—The Fine & Sternhell Co., foundry and factory supplies, has been incorporated with $7500 capital, by S. Fine, A. Sternhell and H. Vogel, 268 Fest 115th street.

NEW YORK.—Brooks-Harrington, Inc., engines, boilers, etc., has been incorporated with $20,000 capital, by A. S. Marselis, R. E. Brooks and W. G. Harrington, 50 Church street.

NEW YORK.—Phelps, Dodge & Co., 99 John street, have plans for improvements at Morenci, Arizona, costing more than $2,500,000. The program calls for a new concentrating plant.

NEW YORK.—The Hadges & McLain Co., metallurgical and electrical devices, has been incorporated with $100,000 capital, by E. Hadges, H. E. McLain and W. Loomer, 652 Amsterdam avenue.

NEW YORK.—The Ranwood Mfg. Corp., electrical and mechanical engineering, has been incorporated with $200,000 capital, by C. A. Wolf, L. B. Morehouse and M. D. Hird, 80 Fifth avenue.

PORT HENRY, N. Y.—The Port Henry Light & Power Co. contemplates a plant at an estimated cost of $200,000.

ROCHESTER, N. Y.—The Gleason Works has awarded a contract for a foundry addition.

ROCHESTER, N. Y.—The Rochester Forge has been incorporated to fabricate iron and steel with $125,000 capital, by W. H. Kline, E. E. Guntert and G. E. Wynkoop.

SYRACUSE, N. Y.—The C. W. Meade Corp., has been incorporated to manufacture hardware and machine attachments, with $100,000 capital, by C. W. Meade, F. F. Meade, and E. J. Page.

SYRACUSE, N. Y.—The Onondaga Auto Electric Service has been incorporated to manufacture electric apparatus, etc., with $75,000 capital, by W. H. Craig, 718 Allen street, W. N. Henderson, 137 Lexington avenue, and J. M. Dunne, 704 Midland avenue.

TROY, N. Y.—The Eastern Iron Products Co., care of The West Side Foundry Co., has had plans drawn for a plant, 1-story, 60 x 400 feet.

ALLENTOWN, PA.—The International Motor Co. contemplates a plant addition, 2-stories, 300 x 600 feet.

BRANCHTON, PA.—The Branchton Limestone & Ballast Co. has been incorporated with $75,000 capital, by James Lees, C. R. Lees, W. L. Lees, and H. B. Dorning.

ERIE, PA.—The Erie Motor Truck Mfg. Co. plans a plant, 1-story, 60 x 350 feet, to cost $125,000.

HAMBURG, PA.—William Neiman has acquired a site on which to erect a foundry, 144 x 365 feet.

KITTANNING, PA.—The Kittanning Limestone Co. has been incorporated with $50,000 capital, by Charles E. Moals, Fred Norman, D. C. Morgan and others.

NEWARK, N. J.—The Colonial Stamping Co. has had plans drawn for a boiler house addition, 1-story, 25 x 32 feet, to cost $4000.

PHILADELPHIA.—The Wincroft Stove Co. contemplates a factory and office building.

PHILADELPHIA.—A machine shop addition, 1-story, 20 x 54 feet, will be erected here by R. F. Sedgley.

PHILADELPHIA.—The Atlantic Refining Co. will start work shortly on a $60,000 plant addition, 4-stories, 56 x 129 feet.

PHILADELPHIA.—The R. H. Hood Co., 1842 Germantown avenue, has awarded a contract for two plant additions to cost $475,000.

PITTSBURGH.—W. K. Stamets has filed plans for a machine shop to cost $16,000.

PITTSBURGH.—The A. Garrison Foundry Co., has started work on a foundry, 60 x 120 feet, to cost $63,000.

PITTSBURGH.—The Heppenstall Forge & Knife Co. has purchased land adjoining its plant and is reported having plans prepared for an addition.

PITTSBURGH.—The Koppel Car Repair Co. recently was incorporated with $5000 capital, by

R. T. Rossell, E. C. McHugh, F. J. Young and others.

WYOMING, PA.—The Wyoming Shovel Co. has awarded contracts for a plant, 75 x 350 feet.

CAMDEN, N. J.—The American Western Piping Co. has been incorporated to manufacture devices for protection against fire, with $100,000 capital.

CLIFTON, N. J.—The Standard Auto Parts Co. of America, Park Row building, New York, has awarded a contract for a plant here to cost $100,000.

CLINTON, N. J.—The Athenia Steel Co., Colfax avenue, has broken ground for a 2-story plant addition, 50 x 100 feet, to cost $20,000.

ELIZABETH, N. J.—The Hurlbut Motor Car Co. recently was incorporated with $25,000 capital, by W. B. Harley Jr., Paterson, N. J., J. H. Young and P. J. Haas.

NEWARK, N. J.—The United Die & Tool Works, tool making, die cutting, etc., recently was incorporated with $200,000 capital.

NEWARK, N. J.—The Terminal Pattern & Model Works has awarded a contract for a plant addition, 3-stories, 25 x 90 feet.

NEWARK, N. J.—The F. & H. Foundry Co. recently was incorporated with $60,000 capital, by Christian Franz, William Hewitt and Lena F. Moree.

TRENTON, N. J.—The Mitchell-Bissell Co. has awarded a contract for a plant, 1-story, 75 x 260 feet, to be devoted to the manufacture of textile machinery fittings.

UNION, N. J.—The Aeroil Burner Co., Inc., has been incorporated to manufacture torches, oil burners, etc., with $30,000 capital.

UNION, N. J.—The Hind Steel Co. recently was incorporated with $200,000 capital, by Edward W. Blanchard, John and James W. Hind.

WEST ORANGE, N. J.—The Eagle Rock Tool & Mfg. Co., 11 Whittlesey avenue, has been organized by Andrew Erickson and others.

WILLIAMSTOWN, N. J.—The Williamstown Body Works recently was incorporated with $50,000 capital.

WILMINGTON, DEL.—The Lobdell Car Wheel Co. has awarded a contract for a machine shop addition, 2-story, 62 x 65 feet, to cost $16,000.

WILMINGTON, DEL.—The Delaware Marine & Motor Co. has awarded a contract for a machine shop, 1-story, 59 x 200 feet, to cost $22,000.

BALTIMORE.—The Edro Richardson Brass Co., 318 North Holiday street, has taken bids for a brass foundry.

BALTIMORE.—The Baltimore Tube Co. has awarded contracts for a plant, 1-story, 75 x 144 feet, to cost $25,000.

BALTIMORE.—The National Wire Wheels Works, Inc., 625 Equitable building, has been incorporated to do a general machine shop and foundry business, by Eli Frank, C. John Beeuwkes and Bernard R Youngman.

TOWSON, MD.—The Black & Decker Mfg. Co. plans alterations to its plant at an estimated cost of $40,000.

Central States Activity

BELOIT, WIS.—The Auto Trailer Co. is taking bids for a plant, 1-story, 160 x 510 feet, to cost $150,000.

CLINTONVILLE, WIS.—The F. W. D. Auto Co. has completed erecting additions to its plant and is installing a large amount of new equipment. Erection of the company's new Canadian plant at Kitchener, Ont., is nearing completion.

KENOSHA, WIS.—Charles W. Nash of the Nash Motors Co. heads a new corporation formed at Indianapolis with $6,500,000 capital, to manufacture a new automobile.

KENOSHA, WIS.—The Tri-Clover Machinery Co. has been reorganized by Ole Rasmussen, L. C. Thomson and T. Jensen to manufacture brass specialties. Work has started on a new plant to cost $25,000.

NEENAH, WIS.—The Neenah Brass Works has awarded a contract for a plant, 1-story, 30 x 1000 feet, to cost $20,000.

OSHKOSH, WIS.—The Oshkosh Washing Machine Co. contemplates a plant addition, 1-story, 80 x 200 feet.

BENTON HARBOR, MICH.—The Benton Harbor Malleable Foundry Co. has awarded a contract for a plant addition, 80 x 200 feet, to cost $100,000.

DETROIT.—Dodge Bros. are reported planning extensive plant additions.

DETROIT.—The Timken Detroit Axle Co. plans a boiler house, 1-story, 46 x 83 feet.

DETROIT.—The Edmund & Jones Corp., 436 Lawton avenue, contemplates a machine shop.

DETROIT.—The Wolverine Tube Co. has purchased the plant of the Motor Truck Body Co.

DETROIT.—The Cogsdill Mfg. Co. has awarded a contract for an auto parts factory, 1-story, 50 x 70 feet.

DETROIT.—The contract for an addition to the Packard Motor Car Co. has been let to the H. G. Christman Co.

DETROIT.—The steel contract for a 2-story plant for the Freuhauf Trailer Co. has been let to the Kellogg Structural Steel Co., Buffalo.

DETROIT.—The Big Four Stamping Co. recently was chartered with $20,000 capital, by William Peritz, 156 Winona avenue, and others.

DETROIT.—The Detroit Pressed Steel Co. has been reincorporated under the laws of Delaware and is preparing for capitalization and manufacturing expansion.

DETROIT.—The Welles Mfg. Co. has been incorporated with $20,000 capital to manufacture machinery, tools, etc., by H. V. Welles, R. E. Roseberry and Harry Perkins.

DETROIT.—Albert Kahn, architect, Marquette building, is letting contracts for a plant for the Paige-Detroit Motor Car Co. The first unit will be 275 x 600 feet.

DETROIT.—The Knight Metal Products Co. has been incorporated to manufacture automobile accessories, with $500,000 capital, by Harry W. Knight, Albert L. Ellsworth, William H. Brouse and others.

JACKSON, MICH.—The Jackson Stove & Stamping Co. recently was incorporated with $200,000 capital, by Walter V. Sherwood and others.

JACKSON, MICH.—The Central Screw Co., capitalized at $30,000, was incorporated by Robert E. Dwyer and others, to manufacture screw machine products.

KALAMAZOO, MICH.—The plant of the Sanitary Mfg. Co., which was recently damaged by fire, will be rebuilt.

KALAMAZOO, MICH.—The Eddy Paper Co. has started work on a power plant at Three Rivers, Mich., to be 57 x 191 feet.

KALAMAZOO, MICH.—Fuller & Sons Mfg. Co., truck transmissions, will build a plant addition. The company is said to be in the market for equipment.

LANSING, MICH.—The Atlas Drop Forge Co. is reported planning to expend $100,000 in the purchase of new equipment and the erection of a plant addition.

LANSING, MICH.—The Novo Engine Co. is erecting a unit, 130 x 160 feet, to be used as a machine shop.

MARYVILLE, MICH.—The Pressed Metals Co., of Canada, 112 Adelaide street, Toronto, Ont., will build a brass foundry here. Smith, Hynchman & Gulls, 710 Washington arcade, Detroit, are architects.

MENOMINEE, MICH.—The Signal Electric Mfg. Co., electrical and mechanical appliances, has been incorporated with $150,000 capital by Charles E. Hammond, George Fussner and Fred A. Roper.

MUSKEGON, MICH.—The Muskegon Scrap Material Co. has been incorporated with $50,000 capital, by I. and H. Rubinsky.

MUSKEGON, MICH.—The Standard Automotive Parts Co. has been incorporated with $100,000 capital, by Max C. Price and others.

MUSKEGON, MICH.—Fitz John-Erwin Mfg. Co. has been chartered with $100,000 capital to manufacture truck bodies, by H. A. Fitz John and others.

MUSKEGON, MICH.—The Standard Automotive Parts Co. has been incorporated with $100,000 capital, to operate a foundry and machine shop, by L. T. Girdler and others.

OWOSSO, MICH.—The Field Mfg. Co., auto bodies, is completing a plant extension.

OWOSSO, MICH.—The Standard Machine Co. will build an addition 48 x 50 feet.

PLYMOUTH, MICH.—The Reli Tool Steel Foundry Co. has been chartered with $5000 capital by Oliver Goldsmith and others.

PONTIAC, MICH.—The Pontiac Body Co. contemplates three plant additions to cost $250,000.

PONTIAC, MICH.—A 3-story assembly plant, engine plant addition and administration building, will be built by the Oakland Motor Car Co. F. W. Warner is president.

PORT HURON, MICH.—The Chief Motor Co. has purchased a 10-acre site on which it is reported planning to build a plant for the manufacture of automobile engines.

SAGINAW, MICH.—The Lenmar Mfg. Co. has broken ground for a plant addition and has increased its capital from $50,000 to $200,000.

SAGINAW, MICH.—Capacity of the Michigan Crankshaft Co., subsidiary of the General Motors Corp. will be quadrupled. A plant, 160 x 690 feet, will be erected at a cost of $600,000.

ST. IGNACE, MICH.—The Great Lakes Towing & Wrecking Co. will build a dock and machine shop here.

ST. LOUIS, MICH.—The Bollstrom Motors, Inc., has started on a new plant.

SAULT STE. MARIE, MICH.—The Loucks Mfg. Co. has been incorporated with $3000 capital, by Stanley D. Newton, Frederick Loucks and others, to manufacture machinery and do metal casting.

BELLEVILLE, ILL.—The Roesch-Kohl Enamel Range Co. will erect a 50 x 75-foot addition.

CHICAGO.—The Federal Electric Co., 72 West Adams street, is taking bids for a plant to cost $150,000.

CHICAGO.—The William R. Johnston Mfg. Co., 359 East Ohio street, contemplates a plant, 1-story, 120 x 450 feet, to cost $100,000.

CHICAGO.—The Edison Electric Appliance Co., 5660 West Taylor street, contemplates an addition 342 x 355 feet, to cost $270,000.

CHICAGO.—The Pettibone-Mullekin Co., 140 South Dearborn street, has awarded a contract for a steel foundry, 154 x 243 feet, to cost $200,000.

CHICAGO.—Plans are being drawn for a factory and power house for the Simplex Refrigerating Co., 343 South Dearborn street. The buildings will cost $50,000.

CHICAGO.—The Seng Co., 1450 Dayton street, is having plans drawn for an office building, two stories, 60 x 260 feet, a machine shop, one story, 200 x 900 feet, a service building, three stories,

50 x 220 feet, and a power plant and assembly hall.

CHICAGO.—The Seng Co., 1450 Dayton street, will build a plant, including an office building, 60 x 260 feet, machine shop, 200 x 900 feet, and service building, 50 x 220 feet, to cost $1,500,000. Davidson & Weiss, 53 West Jackson boulevard, are architects.

ELGIN, ILL.—Woodruff & Edwards contemplate a foundry addition, 85 x 132 feet, to cost $10,000.

ELMHURST, ILL.—The Kellogg Mackay Equipment Co. has had plans drawn for a plant.

FREEPORT, ILL.—The H. W. Horst Co., Rock Island, Ill., is building a 5-story building for the Furst McNess Co., manufacturing chemists.

GALESBURG, ILL.—The Row Mfg. Co. will build a factory building and will also install a bolt plant. Other improvements contemplated include a loading track extension. Six acres have been acquired for plant additions.

JACKSONVILLE, ILL.—This city will build a filtration plant at an estimated cost of $25,000.

JOLIET, ILL.—The Moore Bros. Co. contemplates a foundry, 67 x 70 feet, to cost $20,000.

JOLIET, ILL.—The Joliet Building Material & Contracting Co. is a new corporation capitalized at $20,000 by C. A. Vanfleet, E. R. Synold and E. R. Synold.

MT. VERNON, ILL.—The Mt. Vernon Car Mfg. Co. has had plans drawn for a foundry.

PEORIA, ILL.—The Burn-Oil Tractor Co. will increase its working space by the addition of a building containing 400 square feet.

PEORIA, ILL.—The Peoria Auto Signal Co. has been incorporated with $50,000 capital, and will manufacture automobile parts and devices. J. S. Barton is interested in the company.

SPRINGFIELD, ILL.—The Illinois Watch Co. has awarded the Austin Co. a contract to erect a 3-story addition, 80 x 144 feet, at an estimated cost of $100,000.

CRAWFORDSVILLE, IND.—The H. & D. Shock Absorber Co. which had been operated in Goodland, Ind., was bought by Dumont M. Peck of this city who will move the plant here. A building 80 x 200 feet will be erected.

EAST CHICAGO, IND.—J. Hartley has had plans drawn for a machine shop, 2-stories, 78 x 100 feet, to cost $20,000.

EVANSVILLE, IND.—The Evansville Arbor Press Co. recently was incorporated with $50,000 capital, to manufacture machinery and machine tools, by W. H. McCurdy, Joseph B. Graham, G. T. Eames, John O. Davis and William P. Rus.

FAIRMOUNT, IND.—The Fairmount Drop Forge Co., capitalized at $100,000, has been chartered to manufacture steel and copper products by Robert A. Morris, Joseph F. Carmichael and John Flanagan.

GARY, IND.—The National Spring Products Co. has awarded a contract for a plant, 4-stories, 500 x 890 feet.

GREENFIELD, IND.—Preliminary plans are being prepared for the establishment here of a plant by the Taylor Mfg. Co., automobile accessory manufacturer.

HAMMOND, IND.—The Hammond Mfg. Co. has been incorporated with $75,000 capital to manufacture machinery by Thomas A. Monro, Harry P. Monro and P. J. Foy.

INDIANAPOLIS.—The Haywood Tire & Equipment Co. contemplates a gray iron foundry, 100 x 200 feet.

INDIANAPOLIS.—The Triangle Machine Co. has been incorporated with $10,000 capital, by R. L. Cleveland, N. L. Boswell and E. C. Boswell.

INDIANAPOLIS.—The Wheeler Automatic Transmission Co. has been incorporated ith $500,000 capital by George W. Ray, J. M. Miller and others.

SOUTH BEND, IND.—The Engman-Matthews Range Co. is reported planning to move its plant from this city to Goshen, Ind.

CANTON, O.—The Columbia Coal & Power Co. recently was incorporated with $75,000 capital, by L. D. Blanchard, N. E. Wise and others.

CANTON, O.—The Canton-Detroit Foundry Co. recently was incorporated with $50,000 capital, by A. E. McCuskey, Williard J. Frey and others.

CINCINNATI.—The Randle Machine Co. contemplates a plant addition, 2-stories, 50 x 60 feet, to cost $20,000.

CINCINNATI.—The Dalton Adding Machine Co. plans a plant addition, 4-stories, 60 x 121 feet, to cost $85,000.

CLEVELAND.—The Ferro Enameling Co. has been incorporated with $1000 capital, by C. M. Horn and others.

CLEVELAND.—The Coach Builders Hardware Co. recently was incorporated with $10,000 capital, by James P. Wood and others.

CLEVELAND.—The Ohio Machine & Boiler Co., University road, has awarded contracts for a plant addition, 1-story, 55 x 58 feet.

CLEVELAND.—The Perfection Auto Body & Radiator Repair Co. has been incorporated with $10,000 capital by Jacob Leb and others.

CLEVELAND.—The Cleveland Laundry Machinery Co., 5184 Fowler avenue, contemplates a plant, 1-story, 90 x 110 feet, to cost $25,000.

CLEVELAND.—The K. W. Ignition Co., 2811 Chester avenue, plans a light manufacturing building, 1-story, 70 x 140 feet, to cost $20,000.

CLEVELAND.—The Jiffy Coupling Mfg. Co. recently was incorporated with $4000 capital, by Eva C. Lipman, M. H. Lipman and others.

CLEVELAND.—The Lakewood Foundry Co. has been incorporated with $20,000 capital, by M. Garber, A. Goldman, Engineers building, and others.

CLEVELAND.—The Chicago Nut Mfg. Co. has been incorporated with $300,000 capital, by W. S. Quinlan, George Holbrook, Union National Bank building, and others.

CLEVELAND.—The United Grinding Co. has been incorporated with $25,000 capital, by E. H. Rooke, E. P. Schlosser, W. C. Kelley, N. L. Harrington and Alfred A. Benesch.

CLEVELAND.—The McIntyre Metal Stamping Co. has been incorporated with $15,000 capital, by F. H. McIntyre, Louis B. Spanner, 227 Society for Savings building, and others.

CLEVELAND.—The Urban Machine & Tool Co. has been incorporated by M. M. Roche, E. C. Keough, 1048 Engineers building, and others. The company is capitalized at $100,000.

CLEVELAND.—The Fisher Body Ohio Co. has been incorporated with $10,500,000 capital, by Richard Inglis, Thomas H. Jones, Williamson building, and others. The company will erect a large auto body plant here.

CLEVELAND.—The Minerva Engine Co. has purchased a site here on which it plans to erect a plant to cost $100,000. The first unit will be for assembling engines, and will contain a large machine shop. A gray iron foundry will be erected later.

COLUMBUS, O.—The Modern Pattern Co. recently was incorporated with $5000 capital, by A. E. Tietze, John F. Yoakum, A. Floyd Wise and others.

DAYTON, O.—The Dayton Metal Bodies Co. is having plans drawn for a plant, 1-story, 60 x 100 feet, to cost $35,000.

EUCLID, O.—The Armington Engineering Co. has been incorporated with $25,000 capital, by N. J. Brewer and others.

MANSFIELD, O.—The Perfection Bed Spring Co. has awarded a contract for a plant addition to cost $15,000.

MANSFIELD, O.—The Bushnell Novelty Co. will start work soon on a plant addition, 2-stories, 32 x 48 feet, to cost $10,000.

MASSILLON, O.—The Ohio Cutlery Co. recently was incorporated with $75,000 capital, by W. E. Hemperly and others.

SPRINGFIELD, O.—The Springfield-Advance Machine Co. has been incorporated with $50,000 capital, by H. S. Bradley and others.

SIDNEY, O.—The Sidney Washing Machine Co. has been incorporated with $25,000 capital, by William A. Perry, W. H. Persinger, J. D. Barnes, William P. Metz and J. L. Perry.

TOLEDO, O.—The Bryan Pattern Machine Co. plans an office building, 2-stories, 30 x 50 feet, to cost $8000.

TOLEDO, O.—The American Swiss Magneto Co. has been incorporated with $100,000 capital, by J. A. Bohannon and others.

LOUISVILLE, KY.—The Jefferson Woodworking Co. is planning a plant addition, 1-story, 125 x 200 feet, to cost $13,000.

WHEELING, W. VA.—The Wheeling Stamping Co. plans a machine shop, 3-stories, 65 x 103 feet, to cost $35,000.

Throughout the West

ALBERT LEA, MINN.—The Albert Lea Tractor & Mfg. Co. is reported contemplating a foundry, to cost $35,000.

MINNEAPOLIS.—The Progressive Shoe Machine Co., 3132 Snelling avenue, has awarded a contract for a plant addition, 1-story, 48 x 120 feet.

KANSAS CITY, MO.—The Security Stove Mfg. Co. has plans for a foundry, 60 x 100 feet.

KANSAS CITY, MO.—The Progressive Brass Mfg. Co. is having plans drawn for a foundry, 83 x 150 feet, to cost $15,000.

ST.LOUIS.—The Union Electric Light & Power Co. plans an additional electric generating station.

ST. LOUIS.—The American Hinge Co. has been incorporated with $250,000 capital, by H. A. Paul, Muskogee, Okla., and others.

ST. LOUIS.—The Champion Shoe Machinery Co., 3741 Forest Park boulevard, has awarded the contract for a 1-story plant addition.

ST. LOUIS.—Articles of incorporation of the Niedringhaus Metalware Corp. have been filed. The firm, which is capitalized at $1,200,000, will manufacture and sell sheet metal wares. Officers of the company include Warne Niedringhaus, L. B. Wackmen and Thomas Conners.

ST. LOUIS.—The St. Louis Brass Mfg. Co., Washington and Jefferson avenues, is reported planning a plant addition to cost $500,000.

ST. LOUIS.—The Mississippi Valley Iron Co., 6500 South Broadway, plans a 1-story, 29 x 82-foot engine house, and a 1-story, 36 x 93-foot plant.

ST. LOUIS.—J. Flammang, care of the Ordnance Tool Co., 2914 North Market street, has awarded a contract for a plant, 2-stories, 65 x 100 feet, to cost $100,000.

ST. LOUIS.—R. L. Dutton, president of the St. Louis Pressed Steel Co. recently announced the company had purchased a site in East St. Louis, Ill., on which to erect a plant.

TEXARKANA, ARK.—The Southwestern Gas & Electric Co. will double its power plant at a cost of $75,000, including a 300-horsepower turbine engine.

FT. WORTH, TEX.—The Auto Equipment Co.,

capitalized at $350,000, has been chartered to manufacture automobile parts and equipment by Morgan Bryan, S. B. Franklin and E. M. Hyder.

PALESTINE, TEX.—Bonds for $250,000 have been voted for waterworks improvements.

PARIS, TEX.—Bids will be received until Oct. 20 by W. G. George, city secretary, for two 750-gallons per minute motor-driven centrifugal pumps and one 1500-gallons per minute motor-driven centrifugal pump with accessories.

RALLS, TEX.—The Continental Stamping & Mfg. Co. will build a sheet metalworking plant at an estimated cost of $75,000.

OKLAHOMA CITY, OKLA.—The Oklahoma Gas & Electric Co. has had plans prepared for an electric generating plant to cost $3,000,000.

Business in Canada

ST. JOHN, N. B.—The Corona Co., Ltd., 277 Union street, will build a factory here at a cost of street, will purchase material and equipment for the works.

MONTMAGNY, QUE.—The National Farming Machinery, Ltd., has been incorporated with $4,000,000 capital, to manufacture farm implements, tools, machinery, iron and steel products, etc., by Romeo Langlois, Armand Lavergne, Ernest Roy and others of Quebec, Que.

MONTREAL, QUE., Jenkins Bros., Ltd., 103 St. Remi street, have started work on a foundry here.

MONTREAL, QUE.—The General Iron & Metal Co., Ltd., has been incorporated to manufacture iron, etc., with $19,000 capital, by Isaac Kert, Abraham W. Muhlstock, Louis P. Caisse and others.

MONTREAL, QUE.—The French Clasp Co., Ltd., has been incorporated to manufacture metal clasps, etc., with $50,000 capital by Eugene Marchand, Donat Belanger, Arthur M. Lacoste and others.

MONTREAL, QUE.—The Canada Brass Products, Ltd., has been incorporated to manufacture electric light fixtures, iron, steel, brass and other metals, with $15,000 capital, by Louis Payne, Albert Maske, Jacques Penneton and others.

MONTREAL, QUE.—The Canadian Steel Tire & Wheel Co., Ltd., has been incorporated to manufacture steel tires, etc., with $1,000,000 capital, by George W. MacDougall, Lawrence MacFarlane, William B. Scott and others.

MONTREAL, QUE.—The Associated British Industries of Canada, Ltd., have been incorporated to manufacture motor vehicles, etc., with $100,000 capital by Boultbee Brooks, Herbert G. Longford, both of Worcestershire, England; Harry G. Atkinson, Charles T. Barlow, both of Birmingham, England, and others.

ST. HYACINTHE, QUE.—Victor Langelier, 45 Mandor street, will build a garage and machine shop here, and is in the market for equipment.

ALVINSTON, ONT.—Delmer Kearney will have plans prepared for a garage and is asking for prices on machinery and equipment.

BRAMPTON, ONT.—The Universal Batteries, Ltd., is having plans prepared for a manufacturing plant here. Representative of the company is Messervey's, Ltd., Foy building, Toronto, Ont.

BRANTFORD, ONT.—The Dominion Steel Products Co. states that because of the objection against closing Leonard street, the company will not go ahead with its proposed $100,000 addition.

BRIDGEBURG, ONT.—The Pierce Fuse Corp. of Canada, Ltd., has been incorporated to manufacture fuses, electric dynamos, motors, engines, machinery, etc., with $250,000 capital, by Edward J. Swift, 197 Wellesley street, George G. Plaxton, room 707, Kent building, and others.

CHATHAM, ONT.—The Dowsley Spring & Axle Works has let contracts for a new spring building.

FERGUS, ONT.—Beatty Bros., manufacturers of barn equipment, etc., will build an addition to cost $35,000.

GUELPH, ONT.—The Taylor Forbes Co., Ltd., will build an addition to its foundry.

GUELPH, ONT.—The Gibson Mfg. Co., York road, is building a machine shop here at a cost of $15,000.

HAMILTON, ONT.—The International Plow Works, Ltd., will build a manufacturing plant here.

HAMILTON, ONT.—B. H. Prack, Lumsden building, Toronto, Ont., will call for bids for a plant here to cost $200,000 for the International Plow Works.

OTTAWA, ONT.—The Rideau Iron & Metal Co., Ltd., has been incorporated with $25,000 capital, to manufacture iron, steel, metal products, machinery, etc., by Isidore Rosef and May Cornblat, both of Ottawa, Ona.; Max Katzman of Ogdensburg, N. Y., and others.

TORONTO, ONT.—The Toronto Carpet Mfg. Co., 1179 King street west, will call for bids soon for a power plant.

TORONTO, ONT.—Robert Marson, general contractor, has started work on a factory addition for the Kindel Bed Co., to cost $100,000.

TORONTO, ONT.—F. S. Mallory, 65 Adelaide street east, is preparing plans for an addition to the Canada Metal Co., Fraser avenue.

TORONTO, ONT.—The Kemp Mfg. Co., Ltd., 199 River street, sheet metal products, etc., has let the contract for a manufacturing building to cost $80,000.

TORONTO, ONT.—The Toronto Can Co., Ltd., has been incorporated with $40,000 capital, by William E. Ross, 57 Westmorland avenue, James A. Ross and others.

TORONTO, ONT.—The Kerr File & Tool Co., Ltd., has been incorporated to manufacture files, etc., with $40,000 capital, by George A. Marshall, 182 Spadina road, George H. Kerr, 9 Fisher street, and others.

TRAIL, B. C.—The Consolidated Mining & Smelting Co. is considering plans for the installation of two concentrating plants at Rossland and Kimberly.

Business Changes Recently Announced

IN ORDER to take care of its business in and around Pittsburgh and eastern Ohio, the Hyman-Michaels Co., of Chicago, with branches in St. Louis, and East Chicago, Ind., has opened an office in Pittsburgh, which will be in charge of F. S. Easterly and located in the First National Bank building, Pittsburgh.

* * *

The Rockwell-Drake Corp., Plainville, Conn., has changed its name to the Standard Steel & Bearings Co., Inc., and will continue to make ball bearings. An addition to the factory is under construction which will give it 60,000 more square feet of floor space and enable the company to double its output.

* * *

The Lyon Metallic Mfg. Co., Aurora, Ill., manufacturer of steel shelving, lockers, boxes, cabinets and general steel equipment, announces the opening of a new district sales office in Philadelphia at 519 Bulletin building, with R. J. Nyce in charge.

* * *

The Black & Decker Mfg. Co., manufacturer of portable electric tools, has removed its general office from Baltimore to Towson Heights, Md.

* * *

John Helmuth & Co., dealers in iron and steel, have resumed their main office at 30 Church street, New York. For the past five years, or during the war, main headquarters have been maintained in the Union Arcade building, Pittsburgh. The Pittsburgh office will be retained as a sales office to supply the territory to the west of that city, as well as to develop further the company's steel conversion business.

* * *

The Baldwin Locomotive Works, Philadelphia, has established South American headquarters at Buenos Aires. The office was opened by Wallace Lee, who since has been joined by Alfred D. Chandler Jr., and Senor Tirado.

* * *

The Reading Iron Co., Reading, Pa., recently established district sales offices in Pittsburgh and Chicago. F. M. English and R. A. Griffin, respectively, are in charge.

* * *

The Emerman Co., Erie, Pa., dealer in iron and steel scrap, has opened a branch office in Cleveland, at 306 American Trust building, under the direction of President Harvey Emerman and Louis B. Emerman.

* * *

The Peninsular Steel & Iron Co., Detroit, has changed its name to the Peninsular Steel Co.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.38c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	6.15c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.50c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25

Chicago to:

Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 0c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	28

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½

Lap Weld

2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½

Lap Weld

2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½

Lap Weld

2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Store Coal—Prepare for Winter

THE Link-Belt Locomotive Crane is one of the simplest machines which can be used for the unloading, storing and rehandling of coal, and now is the time to store coal.

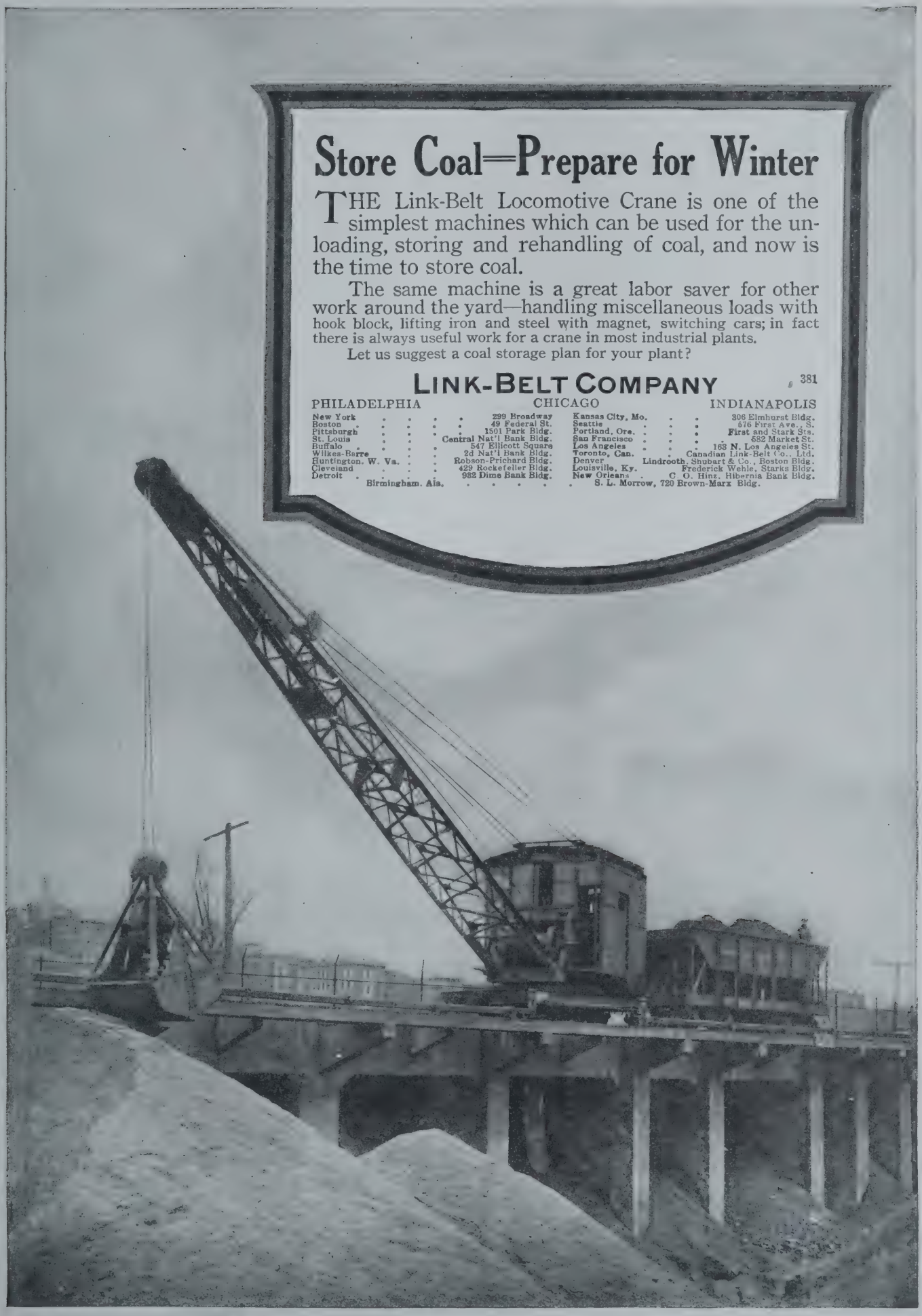
The same machine is a great labor saver for other work around the yard—handling miscellaneous loads with hook block, lifting iron and steel with magnet, switching cars; in fact there is always useful work for a crane in most industrial plants.

Let us suggest a coal storage plan for your plant?

LINK-BELT COMPANY

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PHILADELPHIA		CHICAGO		INDIANAPOLIS	
New York	299 Broadway	Kansas City, Mo.		306 Elmhurst Bldg.	
Boston	49 Federal St.	Seattle		576 First Ave., S.	
Pittsburgh	1501 Park Bldg.	Portland, Ore.		First and Stark Sts.	
St. Louis	Central Nat'l Bank Bldg.	San Francisco		582 Market St.	
Buffalo	547 Ellicott Square	Los Angeles		163 N. Los Angeles St.	
Wilkes-Barre	2d Nat'l Bank Bldg.	Toronto, Can.		Canadian Link-Belt Co., Ltd.	
Huntington, W. Va.	Robson-Prichard Bldg.	Denver		Lindrooth, Shubart & Co., Boston Bldg.	
Cleveland	429 Rockefeller Bldg.	Louisville, Ky.		Frederick Wehle, Starks Bldg.	
Detroit	932 Dime Bank Bldg.	New Orleans		C. O. Hinz, Hibernia Bank Bldg.	
Birmingham, Ala.				S. L. Morrow, 720 Brown-Marx Bldg.	



Say you saw it in THE IRON TRADE REVIEW

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$20.00 to 20.50
Chicago	19.00 to 19.50
Eastern Pennsylvania	19.00 to 20.00
Cleveland	18.75 to 19.25
St. Louis	18.50 to 19.00
Buffalo	19.00 to 20.00
New York (dealers)	15.50 to 16.00
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Valleys	19.50 to 20.00
Boston (dealers)	15.50 to 16.50

BUNDLED SHEETS

Pittsburgh	15.00 to 15.50
Eastern Pennsylvania	16.00 to 16.50
Cleveland	13.00 to 13.50
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	11.50 to 12.00

STEEL RAILS, SHORT

Chicago	$21.50 to 22.00
Boston (dealers)	15.50 to 16.00
Cleveland	17.00 to 17.50
St. Louis	22.50 to 23.00
Birmingham	19.00 to 20.00
Cincinnati	20.50 to 21.00

STOVE PLATE

Pittsburgh	$19.00 to 20.00
Chicago	25.00 to 25.50
Eastern Pennsylvania	21.00 to 22.00
Cleveland	19.25 to 20.25
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Boston	19.00 to 20.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops.	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$18.00 to 18.50
St. Louis	17.50 to 18.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.00 to 21.50
Chicago	21.00 to 21.50
St. Louis	19.00 to 19.50

BALED SHEETS

Pittsburgh	17.00 to 17.50
Chicago	15.00 to 15.50

FROGS, SWITCHES, GUARDS

Chicago	$19.00 to 19.50
St. Louis	19.00 to 19.50
Eastern Pennsylvania	19.00 to 20.00

BOILER PLATE, CUT

Chicago, No. 1	$15.50 to 16.00
St. Louis	14.50 to 15.00

ANGLE BARS—STEEL

Chicago	$20.50 to 21.00
St. Louis	19.00 to 19.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$22.00 to 23.00
Pittsburgh, No. 2	20.00 to 20.50
Chicago, No. 1	22.50 to 23.00
Chicago, No. 2	21.25 to 21.50
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	23.25 to 23.75
St. Louis, No. 1	21.00 to 21.50
St. Louis, No. 2	20.00 to 20.50
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	17.00 to 18.00
New York, No. 1 (dealers)	24.00
Boston (dealers)	18.50 to 19.00

WROUGHT PIPE

Eastern Pennsylvania	$18.00 to 19.00
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	14.00 to 14.50

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers)	19.00 to 19.50

BUSHELING

Chicago, No. 1	$19.00 to 19.50
Chicago, No. 2	13.00 to 13.50
Cleveland, No. 1	17.00 to 17.50
Cleveland, No. 2	14.50 to 15.00
St. Louis, No. 1	18.50 to 19.00
Buffalo, No. 1	16.50 to 17.50
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$12.50 to 13.00
Chicago	9.00 to 9.50
Eastern Pennsylvania	15.00 to 16.00
Eastern Pennsylvania (blast furn.)	14.00 to 15.00
Eastern Pennsylvania (chemical)	18.50 to 19.50
Cleveland	9.00 to 9.50
Buffalo	12.00 to 12.50
New York (dealers)	11.00 to 11.50
St. Louis	12.00 to 12.50
Cincinnati	7.50 to 8.00
Birmingham	13.00 to 14.00
Valleys	11.00 to 11.50
Boston (dealers)	10.00 to 10.50
Boston (blast furnace) (dealers)	10.50 to 11.00

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	11.00 to 11.50
Eastern Pennsylvania	16.00 to 17.00
Eastern Pennsylvania (chemical)	18.50 to 19.00
Cleveland	13.00 to 13.50
St. Louis	12.00 to 12.50
Buffalo	13.50 to 14.00
New York (dealers' price)	13.00 to 13.50
Cincinnati	9.00 to 9.50
Birmingham	13.00 to 14.00
Valleys	14.25 to 14.75
Boston (dealers)	13.00 to 14.00
Boston (blast furnace) (dealers)	12.00 to 12.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	33.00 to 34.00
Eastern Pennsylvania	35.00
Cleveland	35.00 ao 36.00
St. Louis	32.00 to 32.50
Buffalo	28.00 to 29.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	24.50 to 25.00
Cleveland	27.00 to 28.00
St. Louis	22.50 to 23.00
Buffalo	24.00 to 25.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	16.50 to 17.00
Cleveland	16.25 to 16.75
St. Louis	16.50 to 17.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$22.00 to 22.50
Cleveland	21.00 to 21.50
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	20.00 to 21.00

FORGE FLASHINGS

Cleveland, large	$13.00 to 13.50
Cleveland, small	16.25 to 16.25
Chicago, small	14.00 to 14.50
Boston (dealers)	12.00 to 12.50

FORGE SCRAP

Chicago	$21.00 to 21.50
Eastern Pennsylvania, No. 1	16.00 to 16.50
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	26.50 to 27.00
St. Louis	21.50 to 22.00

ANGLE BARS—IRON

Chicago	$25.50 to 26.00
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
St. Louis	12.50 to 13.00
Cleveland	17.00 to 17.50
Buffalo	16.00 to 17.00
Chicago	14.50 to 15.00

STEEL CAR AXLES

Pittsburgh	$27.00 to 28.00
Eastern Pennsylvania	32.00
Cleveland	34 00 to 35.00
St. Louis	29.00 to 29.50
Buffalo	28.00 to 29.00
Chicago	27.50 to 28.00
New York (dealers)	24.00 to 25.00
Birmingham	21.00 to 22.00
Boston (dealers)	24.50 to 25.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers)	24.00
Chicago	27.50 to 28.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$24.00 to 24.50
Pittsburgh, steel	21.50 to 22.00
Chicago, iron	24.50 to 25.00
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, iron	23.00 to 24.00
St. Louis, iron	23.50 to 24.00
Buffalo, iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	19.00 to 20.00
Boston	23.00 to 24.00
Cincinnati	21.00 to 21.50

NO. 1 CAST SCRAP

Pittsburgh, cupola	$25.00 to 26.00
Chicago, cupola	28.75 to 29.25
Eastern Pennsylvania, cupola	25.00 to 26.00
Cleveland, cupola	25.50 to 26.00
New York, cupola (dealers)	22.50 to 23.00
Cincinnati, No. 1, cupola	21.50 to 22.00
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	27.50 to 28.00
St. Louis, agricultural	26.50 to 27.00
Buffalo	24.50 to 25.00
Boston	28.00 to 28.50
Valleys	25.00 to 25.50

HEAVY CAST

New York (dealers)	22.00 to 22.50
Buffalo	21.00 to 22.00
Pittsburgh	22.00 to 23.00
Cleveland	18.50 to 19.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$24.00 to 25.00
Pittsburgh, agricultural	20.00 to 20.50
Chicago, railroad	22.00 to 22.50
Chicago, agricultural	22.00 to 22.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	20.50 to 21.00
Cleveland, agricultural	17.75 to 18.50
St. Louis, railroad	18.50 to 19.00
St. Louis, agricultural	16.50 to 17.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	28.00 to 28.50
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	26.50 to 28.00
Birmingham	23.00 to 24.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	20.50 to 21.00
St. Louis	19.00 to 19.50

BOILER PUNCHINGS

Chicago	$24.00 to 25.00
Eastern Pennsylvania	23.00 to 24.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

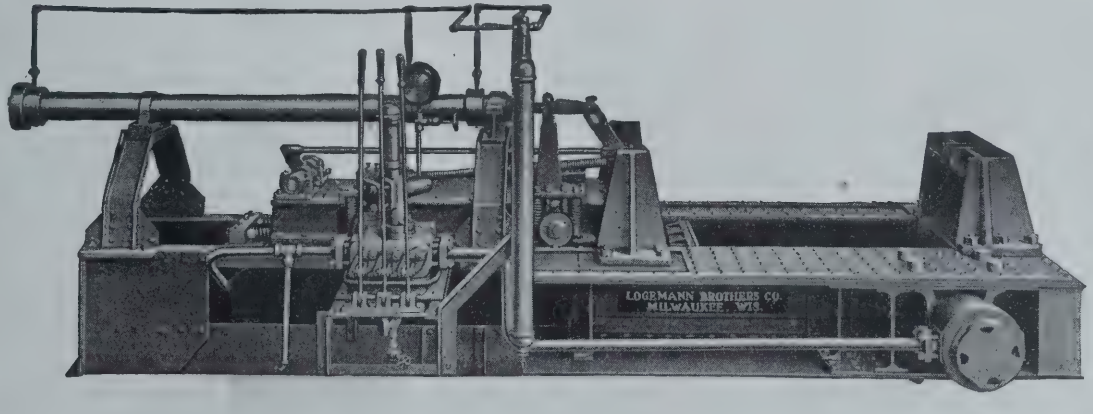
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LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
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Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

MARINE EQUIPMENT.—Anchors of all kinds, ship cleats, mooring posts, towing bitts, mooring rings, capstans, deck scuttles, ventilators, hawse reels, hawse pipes, deck irons, propellers, and other marine equipment are fully illustrated in a 56-page booklet being distributed by the Thacher Propeller & Foundry Corp., Albany, N. Y. Specifications and other data are given.

PRESSED METAL.—Entitled, "The Possibilities of Pressed Metal Engineering," an illustrated booklet is being circulated by the Boston Pressed Metal Co., Worcester, Mass. The booklet contains a number of illustrations of what has been accomplished by pressed metal engineering. Medium seamless drawn shapes, seamless drawn ferrules, and other types of seamless products are mentioned at length.

AIR HOISTS.—A variety of types of air hoists, both vertical and horizontal, are described and illustrated in a 24-page booklet recently published by the Whiting Foundry Equipment Co., Harvey, Ill. These hoists are of especial use in plants where the use of electricity is prohibitive. Compressed air and hydropneumatic elevators are also described and illustrated. The booklet contains general information and data pertaining to the equipment.

ELECTRIC FURNACE.—A standard electric furnace for the melting of brass is described and illustrated in a 16-page bulletin, recently published by the Electric Furnace Co., Alliance, O. In this furnace, electrodes are not used as a heating medium, the only service which they perform being their use to carry current into the resistor trough which forms the heating element. Other information given covers charging, melting and pouring, auxiliary mechanism and typical records. A number of actual installations are illustrated.

FIRE BRICK.—An attractive cloth-bound 56-page booklet is being circulated by John G. Stein & Co., Ltd., Bonnybridge, Scotland. The booklet contains views of the company's works, a description of one of the company's plants, miscellaneous weights and measures, sizes of bricks for various circles, testimonials, etc. Pages 23 to 40 inclusive contain illustrations of the various types and sizes of bricks manufactured, such as squares, scones or splits, side arch or culvert, end arch, etc. One section of the booklet contains line drawings of gas retorts, blast furnaces, hot blast stoves, cupola furnaces, open-hearth furnaces and gas producers, showing how and where the various kinds of brick are used.

CHAIN.—A booklet has been published by the Howe Chain Co., Muskegon, Mich., in which various kinds of chain manufactured by the company are described and illustrated. Among the chains described are straight line malleable detachable chain, closed end pintle chain, sawmill pintle chain, heavy closed end pintle chain, double locked chain, malleable iron and steel combination chain, ley bushed chain, malleable iron roller chain, etc. All of these types are fully described and illustrated and the uses to which they are suited are enumerated. Part of the booklet contains illustrations and descriptions of malleable iron elevator buckets, which also are manufactured by the company.

CONVERTER.—Catalog No. 150, issued by the Whiting Foundry Equipment Co., Harvey, Ill., is devoted to illustrating and describing a side-blow converter. The shell of the converter is of heavy steel plates. It is equipped with a dished bottom and removable top, and is supported by heavy cast iron standards in which trunnions are pivoted. The journals are of large area and the bearings are provided with removable caps and arranged for proper lubrication. A tipping mechanism is operated by an electric motor and consists of three reductions of cut gearing. The blast is conveyed to the tuyere box through the trunnion opposite the one used for tipping. This trunnion is connected to the tuyere box by a cast iron wind box. The tuyere box has a removable cover.

CUPOLA.—Catalog 146, a 44-page booklet published by the Whiting Foundry Equipment Co., Harvey, Ill., describes and illustrates cupolas manufactured by the company. Details on design and construction are given, as well as other data, including a table of sizes and capacity and descriptions and illustrations of cupola accessories. These cupolas are of heavy construction. The supporting columns are curved to allow the bottom door to clear in dropping. The shell is of steel plate, and the joints of stacks open downward and on the outside. Two rows of tuyeres are provided, which are flaring in shape and admit the blast through a small area in the shell, which is expanded into a large horizontal opening inside the shell of the cupola. Other parts are described and the booklet is replete with illustrations of equipment and actual installations.

ELECTRIC BRASS FURNACE.—A bulletin entitled, "Electric Furnaces in the Brass Rolling Mill," has been published by the Electric Furnace Co., Alliance, O. It contains a number of illustrations, several of actual installations, and a description of an electric furnace which the company manufactures. The furnace described is of the standard resistance type. It is rated at 105 kilowatts and has a hearth capacity of 1500 to 2000 pounds and a melting time of two hours. The cylindrical shell of the furnace is supported in front upon cast iron trunnions and in the rear by a screw which may be raised and lowered by a motor placed beneath the floor. A bowl shaped hearth located in the bottom of the furnace is lined with plastic material and is contained in a steel pan. The maximum capacity of the hearth is said to be a one ton charge.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A manufacturer in Scotland desires to purchase, with exclusive selling rights in the British Isles, supplies for builders, such as sanitary fittings, plumbing materials, etc. Opportunity No. 30877.

A firm in Spain desires to be placed in touch with makers of appliances for concentrating graphite. Opportunity No. 30878.

An agency is desired by a party in Italy for the sale of machinery and tools for metal and woodworking. Correspondence should be in Italian. Opportunity No. 30879.

Catalogs of hardware and textile machinery are desired by a firm in China. Opportunity No. 30884.

A representative of a firm in Java, expected in this country shortly, is desirous of getting in touch with manufacturers and exporters for the sale of safes, water filters, expanded metal, fencing and other supplies. Opportunity No. 30888.

An American consulting engineer located in Japan, who acts as buyer for several Japanese dockyards, one steel works and several government contractors, has asked for catalogs and prices from manufacturers with a view to establishing agencies for the sale of mining machinery, railway and dockyard equipment, power plants and machine tools. Opportunity No. 30889.

Plumbing material, bathroom fixtures, hardware, tools, zinc, tinware, iron and steel goods, electrical goods and supplies, tractors, agricultural machinery, etc., will be purchased by a commercial agent from Bolivia who will arrive in this country shortly. Opportunity No. 30891.

The representation of manufacturers of cash registers, marking apparatus, time recorders, etc., is desired by a commercial agent in Sweden. Opportunity No. 30895.

Agencies from American exporters and manufacturers for the sale of building materials, metals, technical instruments, machinery, etc., are desired by a merchant in Poland. Opportunity No. 30896.

A municipality in Colombia is in the market for fire department equipment, including ladders, chemical engines, masks, pumps, fire engines, etc. Correspondence should be in Spanish. Opportunity No. 30899.

The urban district council of a city in England desires to purchase 2000 tons of cast iron pipe for use in connection with the city's water supply. It is advised that bidders cable direct with a follow letter giving details. Opportunity No. 30902.

The government of a European country desires to place a trial order for six or more tractors. Opportunity No. 30905.

An agency is desired by a party in Italy for the sale of chemical products, hardware, brass goods, sewing machines, shoe machinery, typewriters, etc. Correspondence should be in Italian. Opportunity No. 30907.

The purchase of wire, wire rope, etc., is desired by a firm in England. Opportunity No. 30910.

A firm in Italy desires to purchase a machine for rolling lead and tin in sheets, having cylinders 900 millimeters in width and 400 millimeters in diameter; and a machine for cutting and rolling lead and tin sheets prior to winding same on spools. Correspondence should be in Italian or French. Opportunity No. 30913.

An American firm desires to purchase from manufacturers for export to its clients in the Orient, agricultural implements, hardware, tools, wire and sheets, chemicals, etc. Opportunity No. 30915.

Material and equipment for a railway to be built in one of the Scandinavian countries, including construction machinery, rails, rolling stock, etc., will be needed. Information, descriptions, illustrations, estimates, etc., are requested. Opportunity No. 30918.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, October 30, 1919 *No. 18*

Coal Strike Overhangs Market

Steel Producers Shut off Quotations and Sales Awaiting Week's Developments—Rail Sales Closed for Next Year at Unchanged Price — Early Material of all Classes Exceedingly Scarce—Output Steadily Gains

COAL strike possibilities are being anticipated by the iron and steel industry and constitute the ruling factor in the market for the present. Various producers of finished steel who have been accepting new business right along for forward delivery abruptly have terminated this practice and will make no further quotations until the situation clears. Some of them have recalled outstanding quotations. The result is that prices in many lines have become purely nominal and much business is suspended. Should the strike be averted and selling resumed, it is not believed likely that any permanent general price advances in finished steel will take place because the larger interests still are pursuing a policy of restraint against higher quotations.

The stronger market on semifinished steel and such raw materials as pig iron and certain grades of scrap which is based on increased operating costs and general scarcity, however, continues to hold prices at an advanced level. The sheet situation has become exceedingly tight and in the Youngstown district the limited tonnage available is moving at an advance of several dollars a ton. Eastern plate and shape makers no longer will equalize the Pittsburgh freight for western delivery.

More Plants Running

Interference by the Ohio state authorities in the steel strike situation at Canton, is helping along the restoration of operations at that point. This action likewise promises to work benefits to other Ohio districts where the inability or unwillingness of local officials to afford proper protection to the workmen materially has retarded the resumption of plants. General production of iron and steel is forging ahead steadily and reduced efficiency is being overcome by degrees. The shortage of common labor is a source of considerable difficulty. The Carnegie Steel Co. is producing at the rate of 70 per cent of total ingot capacity and the entire Pittsburgh district is 80 per cent or more active. The largest sheet maker is operating 85 per cent full and independent sheet mills at 80 per cent of the rate of production before the strike. At Gary and Indiana Harbor operations are at 75 per cent.

Iron Still on Rise

Pig iron sales for next year on a higher level generally established a week or so ago, have been heavy. A shortage of early iron is growing constantly more acute and this is resulting in various premiums being paid. The restricted supply of open top cars because of the coal crisis is seriously hampering shipments in some districts. A large central western interest with furnaces in the valley and along the lakes has booked 100,000 tons of foundry and malleable iron for first half delivery during the past few weeks at a $2 advance and now has withdrawn. Chicago makers have made a second advance in as many weeks and are naming $30 furnace for the base grade, representing a total rise of $3.25. Eastern irons generally are moving higher. A 10,000-ton sale of malleable for first half has been made at Buffalo at 29.50 furnace. Basic iron is backward but there is an nonconfirmed report at Pittsburgh of a sale of 20,000 tons for next year on a higher basis.

Some Rails are Sold

A widely-circulated report that standard open-hearth rails have been advanced $2 to $49 mill has been due to a misappresension of a quotation at Chicago made on a round tonnage for western roads. The price remains $47 and sales at this figure have been made by an independent mill for next year's delivery. It is believed that these are the first orders to be taken direct from the railroads in anticipation of their return to private control. Similar rail negotiations at Chicago involve at least 100,000 tons.

Foreign purchasers of iron and steel are showing a tendency to hold back because of immediate uncertainties affecting deliveries. An inquiry for 10,000 coal cars for Belgium requiring 65,000 tons of steel in addition to the axles is before American builders. An inquiry for 50,000 tons of relaying rails for Chile is reported. A 30,000-ton sale of shipbuilding material to Japan is credited to the Steel corporation.

OCTOBER 30, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland
BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Labor Obeys "That Impulse"

WITHDRAWAL from the national industrial conference by representatives of organized labor was typical of the position they have taken on all great issues involving the peace of industry which have been presented in recent years. It confirms the opinion held by many impartial observers that no progress can be made toward an equitable settlement of industrial problems until organized labor's leaders are made to respect obligations.

In the case of the industrial board those leaders were willing enough to proceed in accordance with rules agreed on by the board; they were willing to accept all the advantages that might result from the conference, but when they lost a point they promptly withdrew, and charged that the game was not played fair. It is another instance in which the representatives of trade unions have demonstrated that they will either dictate or destroy.

The withdrawal of the delegates under the circumstances that obtained, and in opposition to President Wilson's expressed desire that further thought be given to a program for industrial harmony, must have convinced the employers' and public groups that negotiations of this character are futile unless there be a clear understanding that labor, like the other parties to the conference, be pledged to abide by its decisions.

Collective bargaining was agreed to by the representatives of the employers, and it was agreed that the employes might select representatives of their own choosing, but the employers would not bind themselves to deal with representatives selected from outside of the shop personnel. Such an agreement would in effect bind them to a recognition of trade unions and the closed shop. The labor group tried to make it appear that the closed shop was not the issue; that their resolution providing for collective bargaining was an innocent measure, establishing a principle they declared to be universally recognized, but when the "joker" was revealed, and when it was shown how the resolution was susceptible of interpretation the labor group promptly withdrew.

The violation of labor's obligations to continue until the various issues were discussed and decided upon, then to accept or reject them as a whole if it did not consider itself bound to abide by the decisions of the conference, was so bald as to suggest that other reasons were at the foundation. At about the same time the Gompers resolution for collective bargaining was voted down his resolution for arbitration of the steel strike and for the principle of the open shop also was defeated, by action of the public group. The matter of collective bargaining might have been brought up at a later date and an agreement obtained satisfactory to all parties; the breach was not sufficiently wide to warrant labor walking out. But with final action taken on the steel strike, Gompers and his confreres realized that they had lost the strike and decided there was no more use for the conference.

Conferences such as that at Washington might serve a very useful purpose in extricating labor chieftains from a difficult situation, but where there is "no chance" of warping it to such a purpose, organized labor promptly obeys "that impulse."

Sounding the Slogan of Americanism

FEW men are given the opportunity to receive so wholehearted and unanimous an ovation from their associates or business competitors as was accorded Judge Gary at the semiannual meeting of the American Iron and Steel institute at New York last week. Both at the opening session of the day and at the banquet in the evening, the appearance of Judge Gary or some pertinent declaration on his part on several occasions was made the signal for an outburst of great and prolonged applause. This positive demonstration of approval of his position before the country on broad questions affecting the welfare of industry and brought to the front by the arbitrary demands of radical labor leaders, was

formally expressed by the assembled manufacturers in a resolution of unqualified indorsement. In that resolution the iron and steel industry of the country gave its fullest approval to the principle of the open shop and to that of collective bargaining such as shall not be restricted to a mere instrument for the promotion of unionism. There never has been any question as to where the iron and steel industry has stood upon these questions, but its straightforward enunciation of its position is important just now.

While the iron and steel industry in indorsing the course of the one who had acted as its spokesman was applauding a principle as Judge Gary himself modestly declared, the great tribute to the man and his leadership also was equally clear. Likewise apart from its peculiar trade significance, this action was a sincere appreciation of an exponent of true Americanism by a representative body of responsible citizens. The country at large and the steel industry especially is fortunate in these troubled times in possessing the quality of courage and of leadership of such a man as Judge Gary. Emphasis was laid upon this fact by the clear analysis of the domineering attitude of labor unionism, the sane and well-balanced opinion on incipient bolshevism in this country, and the stern remedy for all skulking enemies of law and order which he expressed in all his addresses.

The meeting of the American Iron and Steel institute was characterized by various unusual features and events which added, in an important way, to the history of that organization. It was honored by the presence of the king of Belgium and by other foreign dignitaries and leaders. In many respects it was probably the most remarkable meeting of its kind ever held by the institute. But the real service which it performed for the country under prevailing conditions was the clear, strong note of militant Americanism which it sounded against radicalism in all its vicious forms affecting both the peaceful relations of industry and the established institutions of the nation.

Peace Vital to Copper Market

ATTENTION frequently is called by copper producers to the effect on the copper market of the delay in the ratification of the peace treaty. They assert that inability to make satisfactory credit arrangements is delaying large purchases. Financial arrangements await until peace is promulgated.

At the international trade conference in Atlantic City last week it was said France would need 90,000 to 100,000 tons of copper in 1920, and Italy 15,000 tons, while Belgium will need large quantities of copper sheets. In addition, Germany and the smaller countries of Europe will need much copper. Germany alone imported an average of over 100,000 tons yearly for 10 years before the war. With exchange at present levels, the cost of American copper to the Germans now amounts to more than $1 a pound, as against 22 cents in New York.

Balanced against this potential demand, the copper producers have a large stock of refined copper, variously estimated at 500,000 tons or more. They are apparently carrying this metal for future demand, and are content to make sales against current production. Present copper prices, while considered moderate in comparison with market values of other commodities, seem based on the balance of current domestic consumption plus small export sales, against current output, and without regard to the large stock.

Non-Destructive Tests for Steel

DURING the past few years an increased amount of attention has been given to the subject of testing steel by methods which do not destroy the test pieces. Considerable progress has been made in utilizing magnetic methods in the study of the internal structure and mechanical condition of iron and steel, and a great amount of research work has been conducted to apply X-rays to the study of steel.

Well written papers, in which the present status of magnetic analysis and X-ray examination of steel is clearly outlined, were presented at the general meeting of the American Iron and Steel institute held in New York last week. It was shown that the work already done has furnished sufficient evidence that the magnetic and mechanical properties of steel strictly correspond. It seems that this warrants the conclusion that magnetic methods may be used to advantage in fundamental investigations and for nondestructive testing of steel products. The future development of magnetic testing probably will involve much study in an effort to properly interpret the results of analyses.

The study of steel by means of X-rays has not been perfected to the extent already attained in magnetic analysis. The rays, thus far, can only detect small inclusions and flaws, providing they are in the immediate neighborhood of the photographic plate and near the surface of the piece. Large imperfections near the center of large pieces must be detected by other means.

However, there is a wide field in modern industry for both methods and, as ably pointed out by Professor Howe, the X-ray may be considered as supplementary to magnetic analysis. The products of a mill can be tested magnetically, quickly and at little cost. The X-ray test, because it is slow and more expensive, should be used only on parts shown by other tests to be suspicious. In the case of steel to be used on products on which life depends, both tests should be used and every precaution taken to detect flaws.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1224 AND 1226

Pig Iron

Bessemer, valley	**$27.95**
Bessemer, Pittsburgh	29.35
Basic, valley	27.15
Basic, Pittsburgh	25.75
Basic, delivered, eastern Pa.	28.00
Basic, Buffalo, furnace	**26.75**
Malleable, Pittsburgh	29.90 to 30.40
Malleable, Chicago, furnace	29.25
Malleable, Buffalo, furnace	27.25 to 29.50
Malleable, delivered eastern Pa.	33.10 to 33.60

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$34.10 to 35.60
No. 1 foundry, Chicago furnace	30.00
No. 2 foundry, valley, Pittsburgh	30.40
No. 2 foundry, Buffalo	29.00 to 31.00
No. 2 Northern, Boston	33.90 to 34.90
No. 2 foundry, Cleveland furnace	29.00 to 30.00
No. 2 foundry, Ironton furnace	29.00 to 29.75
No. 2 foundry, Chicago furnace	28.75
No. 2X, eastern del., Phila.	33.10 to 34.10
No. 2X, eastern, N. J. tidewater	33.10 to 34.10
No. 2X, eastern, Boston	34.90 to 36.90
No. 2X foundry, Buffalo furnace	30.00 to 32.00
No. 2 foundry, del., Philadelphia	32.10 to 33.10
No. 2 foundry, N. J. tidewater	32.10 to 33.10
No. 2 southern, Birmingham	28.00 to 29.00
No. 2 southern, Cincinnati	31.60 to 32.60
No. 2 southern, Chicago	33.00 to 34.00
No. 2 southern, Phila.	34.50 to 35.50
No. 2 southern, Cleveland	33.00 to 34.00
No. 2 southern, Boston	36.00 to 37.00
No. 2 southern, St. Louis	32.25 to 33.25
Virginia, No. 2X, furnace	31.25 to 32.00
Virginia, No. 2X, Philadelphia	35.35 to 36.10
Virginia, No. 2X, Jersey City	35.65 to 36.40
Virginia, No. 2X, Boston	35.95 to 36.70
Gray forge, valley, Pittsburgh	28.40
Gray forge, Buffalo	26.25 to 28.00
Gray forge, eastern Pa.	29.00 to 30.00
Silveries, 8%, furnace	43.00 to 43.25
Ohio Silveries, 8%, Chicago	46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos, standard, Phila.	40.50 to 41.00
Low phos, Lebanon, furnace	35.00
Low phos, standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	34.75
Charcoal, Superior, Chicago first quarter 1920	35.25

Coke

(At the ovens)

Connellsville furnace	$5.00 to 5.50
Connellsville foundry	6.00 to 7.00
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	8.50 to 9.50
New River furnace, nominal	7.50
Wise county furnace, nominal	6.00 to 6.50
Wise county foundry, nominal	7.50 to 8.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	**$110.00**
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	100.00 to 105.00
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.20 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	22 to 24 cents
Ferrovanadium, 35 to 40 per cent per pound contained, according to analysis	**$5.50 to $7.00**
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	49.75
Bessemer, ferrosilicon, 11 per cent	53.05
Bessemer, ferrosilicon, 12 per cent	56.35

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$38.50 to 40.50
Open-hearth, Philadelphia	47.50
Open-hearth, Youngstown	38.50 to 40.50
Bessemer, Pittsburgh	38.50 to 40.50
Bessemer, Youngstown	38.50 to 40.50
Forging, Pittsburgh	51.00 to 53.00
Forging, Philadelphia	60.00

SHEET BARS

Open-hearth, Pittsburgh	$42.00 to 45.00
Open-hearth, Youngstown	42.00 to 45.00
Bessemer, Pittsburgh	42.00 to 45.00
Bessemer, Youngstown	42.00 to 45.00

SLABS

Pittsburgh and Youngstown	41.00 to 43.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.745c
Bar iron, common, Chicago	2.72c
Bar iron, common, Cleveland	2.52c
Bar iron, common, New York	2.77c
Bar iron, common, Pittsburgh	2.75c
Hard steel bars, Chicago	2.55c to 2.65c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 46.00
Relaying rails, Pittsburgh	39.00 to 41.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	**$2.10 to 2.45**
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c

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Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1⅛ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1224.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	39½	28½

Full pipe schedule page 1224.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$62.80
Six-inch and over, Chicago	59.80
Four-inch, New York	61.30
Six-inch and over, New York	58.30
Four-inch, Birmingham	56.00
Six-inch and over, Birmingham	53.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.78½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.76½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c
Boiler rivets, Pittsburgh	4.00c
Rivets ⅞ in. and smaller Pitts.	60–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–10 off
Cut thread	50 off
Larger and longer	40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60 off
Cut thread	50–10 off
Larger and longer	45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	75–5 off
Gimlet and cone point lag screws	60 off

NUTS

Hot pressed, square blank	2.70c to 3.10c off
Hot pressed, square tapped	2.45c to 2.85c off
Hot pressed, hexagon blank	2.70c to 3.10c off
Hot pressed, hexagon tapped	2.45c to 2.85c off
Cold pressed, square tapped	2.45c to 2.85c off
Cold pressed, square blank	2.70c to 3.10c off
Cold pressed, hexagon blank	2.70c to 3.10c off
Cold pressed, hexagon tapped	2.45c to 2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Oct. 29, 1919	Average prices Sept. 1919	July 1919	Oct. 1918
Bessemer, valley, del., Pittsburgh	$29.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	27.15	27.15	27.15	34.40
*No. 2 Foundry, Pittsburgh	30.40	28.15	28.15	35.40
*No. 2 Foundry, Chicago, furnace	30.00	26.75	26.75	34.00
Lake Superior charcoal, Chicago	34.75	32.75	31.75	38.70
Malleable, valley	29.00	28.65	28.65	35 90
Malleable, Chicago	30.50	27.25	27.25	34.50
*Southern, No. 2, Birmingham	29.00	26.75	25.00	35.25
*Southern Ohio, No. 2, Ironton	29.75	26.75	26.75	34.00
Basic, eastern del., eastern Pa	28.00	27.00	26.50	36.60
**No. 2X, Virginia, furnace	31.25	29.25	26.50	37.50
*No. 2X, eastern del., Philadelphia	33.60	29.95	29.50	38.85
Gray forge, valley del., Pittsburgh	28.46	27.15	27.15	34.40
Ferromanganese, 80 per cent, delivered	110.00	105 00	112.00	250.00†
Bessemer billets, Pittsburgh	40.50	38.50	37.30	47.50
Bessemer sheet bars, Pittsburgh	45.00	42.00	40.80	51.00
Open-hearth sheet bars, Pittsburgh	45 00	42 00	40.80	51.00
Open-hearth billets, Pittsburgh	40.50	38 50	37.30	47.50
Steel bars, Pittsburgh	2.35	2.35	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.745	2.595	2.595	3.73

	Prices Oct. 29, 1919	Average prices Sept. 1919	July 1919	Oct. 1918
Iron bars, Cleveland	$2.52	$2.52	$2.52	$3.61
Iron bars, Chicago mill	2.72	2.62	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.23
Tank plates, Pittsburgh	2.65c	2.55	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2,895	2.845	2.895	3.48
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.31	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.51	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.70	5.66	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	5.00	4.65	4.00	6.00
Connellsville foundry coke	6.50	5.90	4.90	7.00
Heavy melting steel, Pittsburgh	20.00	20.50	19.90	29 00
Heavy melting steel, eastern Pa	20.25	19.00	18.85	28.50
Heavy melting steel, Chicago	19.50	19.10	19.40	29.00
No. 1 wrought, eastern Pennsylvania	27.00	27.00	24.70	34.00
No. 1 wrought, Chicago	22.50	21.25	21.20	33.50
Rerolling rails, Chicago	29.50	25.50	24.70	34.00

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Pig Iron Shortage Grows Acute

Melters Cast About in all Directions for Early Metal—Restricted Car Supply Complicating Factor—Liberal Sales for Next Year Made at Advanced Levels—Cleveland Interest Sells 100,000 Tons—Chicago Prices Again Raised

Chicago, Oct. 28.—After having been moved from $26.75 to $28.75, furnace, for foundry iron containing 1.75 to 2.25 silicon, the Chicago market has advanced a second time to $30, furnace, for that grade and to $30.50, furnace, for malleable. These figures applies only on first half, as northern furnaces are unable to take on further orders for the remainder of this year. The new bid is $3.25 higher than that which prevailed through most of the present year. Local makers find they have comparatively small tonnage remaining for first half and with production cut off to a great extent during the past five weeks and the future uncertain, it is difficult to estimate closely how much iron will be available for the first half. As a result only regular customers are being considered for that delivery. Stocks on furnace yards promise to be practically cleaned up within a short time as demand has made it possible to deliver off iron and misfit lots which ordinarily would not be considered. Demand for iron is heavy. One local seller has disposed of considerable iron from the valleys, the first sales having been at $26.75, furnace, but $28.75, furnace now is being obtained. Iron is also being shipped into this district from Birmingham, southern Ohio and the Soo. The latter and Birmingham iron are being delivered here on a practical equality as to price. One recent sale covered 3000 tons of foundry from a valley producer to two Chicago consumers. An important southern producer recently sold 4000 tons of foundry to a Chicago melter. Malleable is unusually scarce, and while foundries using this grade have not met with difficulty as yet, stocks are falling and unless larger delivery is made, some of them may find it necessary to curtail operation. A Wisconsin consumer is inquiring for 3500 tons of malleable for first half, and another melter 2000 tons of malleable for the same delivery. It is rumored currently in this market that a recent sale of malleable from southern Ohio covered 3000 tons at $31.25, furnace, a $4 over the Redfield schedule. A sale of between 5000 and 10,000 tons of foundry is said to have been made at $30, furnace, for 1.75 to 2.25 silicon. With the strike of furnace men at Jackson, O., still in force, the situation as to silveries continues strong. Recent sales of 500 tons and 1000 tons of Ohio silveries have been made at $45.25, furnace, for eight per cent. A Tennessee maker is quoting $45.25, furnace, for eight per cent for first half, and is out of the market for this year. The latter has a freight advantage of 40 cents over the Ohio district. Lake Superior charcoal iron for first half has been advanced to $33 and $34.25, furnace, for the base grade.

Demand for Foundry Iron is Strong

Boston, Oct. 27.—The demand for spot foundry iron which was strong a week ago, has increased, and prices may be said to be secondary in many transactions. Inquiries exceed the available supply and there is a tendency on the part of foundries to become scared over the possibility of running out of iron. Odd lots are being grabbed as fast as offered even though the manganese and silicon content is not what is desired. Greater activity has also been reported in 1920 business. The weak spot in 1920 delivery has disappeared and while sales continue to be made at as much as $2 under spot delivery prices, this is because of the excessive prices in spot rather than a softening in future. A Buffalo furnace sold 1000 tons of 2X eastern (2.25 to 2.75 silicon) to a Massachusetts machinery manufacturer at $32 at the furnace for first half delivery. An eastern Pennsylvania furnace sold 500 tons of 2X eastern for first half delivery at $33 at the furnace. Sales for immediate delivery have been reported as high as $35 at eastern Pennsylvania furnaces for high silicon iron. The General Electric Co. wants approximately 3000 tons for its two Massachusetts plants. More furnaces are reported as sold for this year and some are going out of blast for repairs. Among these latter is Crane Iron Works which is out for alterations and improvements. The amount of iron sold during the week through Boston dealers has not been large, partly because of the scarcity of iron. The estimated total is 7000 tons about evenly divided between 1920 and 1919 business.

Sales Dwindle, Prices Advance

New York, Oct. 27.—It is becoming more difficult to obtain pig iron in this district, since practically all eastern furnaces are sold up for the remainder of the year. The amount of business during the past week was not nearly as large as in recent weeks. While pig iron is scarce, no instances have been reported in this territory where foundries have been forced to curtail operations due to lack of metal. As a matter of fact, it has been possible to get enough to meet requirements, although in a good many cases it was necessary to go to some trouble to do so. To obtain prompt iron, consumers have had to pay increasing prices. Thus, several sales of 2.25 to 2.75 silicon foundry for prompt

shipment have been made during the past week at $33, western Pennsylvania furnace, and the same grade has been sold at $33.25, Buffalo. A fair tonnage of Buffalo foundry, containing 2.75 to 3.25 silicon, has been sold during the past week at $35, Buffalo. Most makers continue out of the market on deliveries for next year. Some central Pennsylvania foundry for first quarter has been sold at $33, furnace, for 2.25 to 2.75 silicon. One of the few exceptions to the generally sold-up condition is in the case of Virginia iron, but even in that district there is very little iron to be had. One furnace, which recently was selling 2.25 to 2.75 silicon at $30, furnace, has advanced its price to $32, furnace, and has sold some tonnage. This interest also has sold some 1.75 to 2.25 silicon at $31, furnace. It is understood that some 2.25 to 2.75 silicon iron for this year has been sold at $33 and $34, Virginia furnace, but this is not verified. Fancy prices are being done on such Virginia high-silicon still available. One eastern Pennsylvania maker, in reply to an inquiry for first quarter, has asked $35, furnace, on 2.25 to 2.75 silicon, and $34, on 1.75 to 2.25 silicon. Considerable charcoal iron has been sold in this district for first half but offers have been withdrawn. Export business is developing slowly. One lot of 1000 tons of foundry was closed by a Japanese buyer after several postponements, and the buyer had to pay $1.25 per ton higher than he originally was asked.

Foundry Grades Jump in Price

Pittsburgh, Oct. 28.—Insistent demand and a shortage in the supply are finding reflection in a constantly upward tendency in prices of foundry and malleable grades of pig iron. In the past week 1000 tons of No. 2 grade was taken by a Pittsburgh district consumer at $29, valley furnace, while 500 tons of the same grade went to a Johnstown, Pa., radiator company, at the same price from another valley furnace, both sales were for delivery this year. Practically every merchant producer serving this district on foundry iron is sold out for this year and it is extremely doubtful if a price of less than $30, furnace, would be accepted on sizable tonnages for shipment up to Jan. 1. That, at any rate, now is the asking price of the interest who has not withdrawn from the market, and single cars continue to move at substantial premiums over that figure. One furnace interest, which had accumulated some inquiiries for first half recently opened its books and sold a round tonnage of valley iron on the basis of $28.75, furnace, for 1.75 to 2.25 silicon, and $30, furnace, for 2.25 to 2.75 silicon. This company then withdrew from the market. Generally, there is marked aversion to taking on 1920 business until a clearer line is to be had on cost but most interests are willing to accept reservations from regular customers on first half requirements and to make contracts providing for the naming of the price at a later date. Sales aggregating approximately 7000 tons of malleable are reported by a valley merchant interest at from $27.25 to $28.75. The bulk of these purchases was to Michigan and other Middle Western points for delivery this year.

Sell More Iron at Increased Price

Buffalo, Oct. 28.—More sales have been made by the Buffalo iron interest which last week quoted current delivery iron at the new price levels of $31 to $34 for foundry grades. Good tonnages have been sold at these figures. Another interest which has not been affected by the strike retired from the market for 1919 iron during the past week after selling several thousand tons. This interest obtained $31 for iron of 2.75 to 3.25 per cent silicon; $30 for 2.25 to 2.75 silicon, and $29 for 1.75 to 2.25 silicon.

A prominent consumer in this territory has closed for 10,000 tons of malleable for first half at $29.50 Buffalo, representing an advance of $2.25 over the former price.

Foundry Sales Are Heavy

Cleveland, Oct. 28.—The scarcity of pig iron is growing steadily and sellers are having much difficulty to find the metal to meet the new demands for early delivery. This situation is being complicated by the continued ban placed by the railroad administration on the use of open-top cars, exclusive of certain types, except for the coal traffic. Consequently the furnaces are having more trouble to load iron and are resorting to the use of some box cars. Some little valley iron is available for this year at $30 furnace, for 1.75 to 2.25 silicon and southern Ohio iron for early shipment continues to be sold in this territory at $29.75 furnace, or $32.15 delivered, for the same grade. Heavy sales of first half iron, particularly foundry, have been made by prominent producers on the basis of $28.75 furnace, for 1.75 to 2.25, and $30 furnace, for 2.25 to 2.75 silicon, and a round tonnage of this has been from valley furnaces. The total sales by one leading producer comprising principally first half iron and closed largely during the past two weeks are about 100,000 tons. This interest now has withdrawn from the market. Many of these sales have represented inquiries which have been accumulating for some weeks pending the opening of furnace books for delivery after Jan. 1. Some makers still are holding back on accepting orders for that period and one of them reports an aggregate inquiry for that delivery now on hand of 32,000 tons, the bulk of it foundry grades and in lots from 100 to 2500 tons. First half inquiry generally for foundry iron is active. No transactions in basic are reported but some of the valley steelmakers who are under contract have been endeavoring to increase these tonnages. Only two blast furnaces continue active in Cleveland, which is the same as a week ago.

Shortage Becoming Acute

Philadelphia, Oct. 28.—The scarcity of pig iron has reached such an acute stage that some consumers will have to shutdown soon for lack of metal. It constantly is becoming more difficult to locate iron and although the furnaces in some cases are diverting iron from plants which have adequate stocks, they are unable entirely to relieve the situation in this way. Fancy prices are being paid in some cases for such iron as is to be had and this particularly is true of high silicon. No. 2X (2.25 to 2.75 silicon) for prompt shipment has been sold during the past few days at $33 eastern Pennsylvania, $34 Buffalo, $33 central Pennsylvania, $32 Virginia and $31 Pittsburgh. Buyers are reaching out in all directions for iron and attempts now are being made to locate tonnage in the district west for eastern users. No. 1X (2.75 to 3.25 silicon) has sold at $35 eastern Pennsylvania and $37 Buffalo. Some of the prices noted are exceptional and the regular market for this year still may be quoted at $32 to $33 eastern Pennsylvania furnace for No. 2X. All usual eastern sources now are sold up for this year, excepting Virginia and comparatively little Virginia iron is left. A Virginia company which was selling some high silicon and manganese iron has withdrawn from the market. Another Virginia maker who recently has been restricting sales to No. 2X now is oversold on this grade and is selling some No. 2 plain (1.75 to 2.25 silicon) for delivery in 30 to 60 days at $31 furnace. Another Virginia maker has a price of $30 furnace on No. 2 plain with regular differentials but has no No. 2 plain and very little No. 2X. It is selling mainly No. 1X and higher silicon. There is a little more interest in selling iron for first half. One eastern Pennsylvania furnace sold some first half No. 2X at $32 furnace. Another is asking $35 furnace for No. 2X for first half. The most interesting development, however, is the fact that a valley furnace is soliciting business here at $30.75 valley for No. 2 plain with regular differential for first half. Its freight rate here is $4.40. Several eastern consumers urgently want malleable but cannot get this grade. About 1500 tons of basic has been bought by a leading eastern consumer at around $28 delivered. Eastern users have bought 2000 tons of copper-bearing low phosphorus at $35. furnace and several hundred of standard iron have been sold at $37 eastern furnace.

Offer More Iron for 1920

Cincinnati, Oct. 27.—Both northern and southern furnaces are now more willing to take business for next year, although only one maker in the South has opened his books. This producer is taking business on a basis of $29, for 1.75 to 2.25 silicon, Birmingham, for first quarter shipment. A southern Ohio interest has been booking orders for either the first quarter or first half at $29, Ironton, and another large producer in the same district has set $29.75 as his minimum for that delivery. Malleable is very firm, but no new sales are reported as consumers have about filled their requirements for the next few months.

Demand for Basic Increases

St. Louis, Oct. 25.—Demand for all grades of pig iron is urgent and a large tonnage, made up of relatively small lots, has been sold. The largest lot for immediate delivery reported during the week was 1200 tons. Consumers, especially the iron foundries, have all the business they can handle, and in a number of cases new orders have been turned down

because of lack of capacity and inability to secure raw materials. Selling agencies report excellent inquiries, mainly for prompt shipment, though they have had numerous inquiries for iron for the first quarter. Selling into 1920 has been on an unusually small scale.

The National Enameling & Stamping Co. is reported to have purchased 25,000 tons of basic at Chicago for first quarter at $25.75, furnace. In addition this corporation recently has taken 6000 to 8000 tons for this year, the reported price being $25.75, southern Ohio furnace.

Southern Iron Selling Into 1920

Birmingham, Ala., Oct. 28.—Pig iron sales are being made by southern producers for 1920 delivery on a basis of $29 for No. 2 foundry (1.75 to 2.25 silicon), $30.15 for No. 1 foundry (2.25 to 2.75 silicon) and $31.40 for 2.75 to 3.25 silicon. Some of the furnace companies are out of the market, either on spot or 1920 iron, for the reason that the probable make for this year practically has been sold. Numerous orders are being received for 1920 delivery, and negotiations are under way for a large tonnage.

Ore Movement

Slowing Up—Season's Shipments to Approximate 48,000,000 Tons

Cleveland, Oct. 29.—The ore movement has slowed up perceptibly due principally to the inability of furnaces to take shipments, and in some instances to a shortage of cars. There is no market for ore at present, although one of the leading operators could place 60,000 more tons if it had the dock facilities for handling the ore until it could obtain cars for shipment to the furnace interest seeking the tonnage.

Little hope is now entertained for renewed activity in shipping before the close of the navigation season. Reports received by ore operators indicate that ore storage yards at furnaces are well filled up. This accounts in a measure for the fact that while more furnaces are going into blast they are unable to accept more ore at present. Some furnaces have the labor to unload the ore, but will have no place to put it until consumption has reduced stockpiles. One ore company reports that the interests which it serves have so far resumed production that they are able to take shipments up to the full extent of available cars.

Total shipments from the Lake Superior district for this season will be 20 per cent less than shipments in 1918. Shipments for the first 23 days of October, 1919, amounted to 4,765,000, and on a basis of current shipments the month's total will approximate 6,000,000 tons. It is estimated that the balance of the season's shipments will bring the total up to 48,000,000, approximately 13,000,000 tons less than the combined shipments of last year.

Vessel tonnage to move 1,000,000 tons of ore in 1920 from the Lake Superior district to Lake Erie ports already has been contracted for.

Strike Call Sends Up Coke

Prospect of Walkout of Coal Miners Makes Market Erratic—General Asking Price is $5.50—Foundry Coke Also Advances

Pittsburgh, Oct. 28.—Illustrative of the condition of the market for furnace coke, sales in the past few days have ranged from $4.75 to $6, ovens. The higher price represents purchases made by eastern interests, who, alarmed by the possibility of a tie-up of the soft coal mines, next Saturday, have made price a secondary consideration. That price also has been paid for about 4000 tons for export. On the other hand, a sale of 25 cars of standard furnace coke was made about four days ago at $4.75 and this week $5.25, ovens, appears to be as high as any of the furnaces have been obliged to pay on direct busness. The market today is quotable on direct sales from $5 to $5.25, with the general asking price of the oven operators, $5.50, ovens. The possiblity that the strike of the coal miners will not occur on Saturday has been strengthened by the President's message to the coal miners' union officials and inquiries this week have tapered down considerably. The situation, however, remains extremely uncertain and even though the strike order may be rescinded, it is possible there may be some dislocation of production due to the fact that miners in some parts of the country will go out Saturday. Although output of the beehive ovens recently showed a substantial gain, shipments against contracts absorb the increase and it is stated that the regions are bare of surplus supplies. It is reported that a round tonnage is on the market at $6 and the word from Connellsville today was that the car supply on the Monongahela division for tomorrow would be only 20 per cent as compared with 100 per cent during the past few weeks. Foundry coke also has been bringing better prices recently than it commanded a week or 10 days ago. Numerous small sales for immediate shipment are reported at $7, ovens, and $6.50, ovens, appears to be the minimum on brands of high reputation. The production of coke from the Connellsville region for the week ended Oct. 18, is estimated by *The Connellsville Courier* to have been 204,445, as compared with 153,764 tons in the previous week.

New England Placing Large Orders

Boston, Oct. 27.—As a result of the threatened coal strike foundries are placing heavy orders for coke. The Providence by-product producer which reported some weeks ago that it was sold up for this year now states that its product for first quarter also has been taken. Many of the large consumers have placed good orders during the week. A textile machinery manufacturer has purchased nearly all of its first-half requirements. Another concern has ordered a car a day in addition to the amount covered by its regular contract. All of the dealers report heavier spot orders taken than have been placed in many weeks. The price remains the same at $10.90 for this year and $11.90 for next, although it is expected that spot delivery prices will be raised the first of the month.

Spot Demand Pushes Up Price

New York, Oct. 27.—Due to the threat of the coal miners to strike Nov. 1, there has been a large demand for coke from consumers in this district. The spot demand has served to push up prices about 50 cents a ton. Standard beehive foundry coke for spot shipment now is held at $6.25 to $7, Connellsville. Demand for by-product foundry coke also is good, but prices are unchanged in this district. The northern New Jersey by-product maker continues to ask $6, Connellsville, or $9.10, delivered at Newark and other New Jersey points for this year, and $6.50, Connellsville, for next year. Some export business is being done.

Prices Advanced in All Districts

Cincinnati, Oct. 27.—Coke prices have advanced sharply in all districts. It is reported that some spot foundry coke in the Connellsville field recently brought $9, ovens, but the contract figures range from $6.50 to $7. Most coke producers are unwilling to take on much future business, and practically all contracts are so worded to protect producers in case coal should be advanced. Wise county oven operators have practically withdrawn from the market, except for such fuel as they can offer for November-December shipment. The same condition exists in the New River field, where practically no furnace or foundry coke is to be obtained.

Prices Advanced at St. Louis

St. Louis, Oct. 25.—An advance of about 50 cents on all grades of coke was recorded in the market here during the week. This restores the quotations obtaining here immediately prior to the steel strike. Banking of furnaces in the strike areas released a quantity of coke, which was placed at small concessions in this district, but now the furnaces are again operating. Connellsville 72-hour foundry is bringing from $6 to $6.75, ovens, for reasonably prompt shipment, and subject to car supply. The demand is described as active to urgent, and all industries are eagerly taking everything arriving. Many are seeking to stock up. Inquiries range from 300 to 1500 tons, and several orders have been refused because of inability to secure the desired tonnages at the ovens. The West and Southwest, which for a time were out of this market, are now figuring prominently in inquiries. This is explained by the fact that the South, which offers an attractive freight differential to many western and southwestern points is unable to furnish coke in the quantities desired. There has been some contracting into 1920, but less than usual.

Scrap Prices Moving Up

Foundry Grades Make the Best Showing—Some Steel Sold Higher in East—More Life Generally Shown

FOR COMPLETE SCRAP PRICES SEE PAGE 1226

Chicago, Oct. 28.—Considerably greater activity is present in the scrap iron and steel market at Chicago, and prices are moving upward most decidedly. Resumption by steel mills is good and affords an outlet for heavy melting steel and allied grades, while demand for bar iron is causing activity in rolling mill material. Cast scrap and other material which can be used in the cupola are decidedly active and prices are above the local quotation for pig iron. However, this figure is less than that asked for pig iron coming from outside sources and represents a medium course. The Chicago, Burlington & Quincy offers 4400 tons of scrap included in which is 600 tons of steel rails, the Chicago, Indianapolis & Louisville 700 tons of No. 1 steel rail and 40 tons of No. 2 steel rail, and the Chicago, Milwaukee & St. Paul 700 tons of assorted scrap.

Machinery Scrap Sells Readily

Boston, Oct. 27.—New England foundries continue to buy No. 1 machinery scrap almost as fast as it is offered, in fact it is often difficult to obtain this grade in as large lots as demanded. The price remains firm at $28 with occasional sales at $28.50 delivered to consumer. Inquiries in Boston from foundries at a considerable distance from Boston scrap yards, have been reported in unusual numbers. These have come from Vermont, Maine, and Connecticut and in the majority of cases have resulted in orders. Scrap dealers however point out that their principal business is in heavy melting and other grades used by steel makers and that in these lines the market is decidedly quiet. New England during the past month has been the source of great quantities of war department scrap and offerings are being made from the local ordnance office almost daily. Recent proposals cover 135 tons of round steel bars, smaller quantities of steel projectiles, steel edgings for helmets, and of complete 75-millimeter steel shells, also about 140 tons of malleable cast heads for trench mortar shells. The New England Bolt Co. was awarded 135 tons of bessemer screw stock at $1.61 per 100 pounds f.o.b. Orange, Mass.

Foundry Grades Are in Demand

Pittsburgh, Oct. 28.—Although the possibility of a coal strike Nov. 1 makes for conservatism in the matter of new purchases of scrap by the steel manufacturers, it is noted that practically all of them are issuing permits for the shipment of material due them on contracts. A Pittsburgh steel company, whose plant has been idle since early in the year for rebuilding, recently bought a round tonnage of heavy melting steel, for which it paid $21, delivered. This sale and the shipments on permits constitutes all of the recent business in steel plant scrap. Foundry scrap, however, has been in strong demand presumably because of the recent inability of the foundries to secure full shipments of pig iron against contracts and the lack of spot supplies of the latter except at substantial advances. No. 1 cupola cast has found a ready sale at $25 to $26, delivered, and on small tonnages even more has been obtained. It is doubtful if any of this grade could be bought today under $26, as dealers have been combing the country for supplies and have offered as much as $25. Railroad malleable also is in strong demand, and sells readily at full quotations. The Pennsylvania railroad, lines east, is offering 26,200 gross tons of scrap in its November list, the largest items of which are 3500 gross tons of No. 1 steel rails, 2200 gross tons of miscellaneous rails, 2000 gross tons of No. 1 heavy melting steel, 1800 gross tons of No. 2 railroad wrought, 1500 gross tons of destroyed steel cars, 1200 gross tons of couplers and knuckles and 1000 gross tons of No. 2 uncut structural and bridge steel.

Prices Advanced in New York

New York, Oct. 27.—Demand for borings and turnings and heavy melting steel continues. Eastern Pennsylvania consumers are covering on sizeable tonnages, and prices are tending upward. No change, however, has been made in heavy melting steel, quoted at $15.50 to $16, f.o.b. New York. Prices of clean cast borings have advanced to $14 and $14.50, and machine shop turnings to $11.50 and $12. On all other descriptions quotations are unchanged.

Eastern Market Shows Strength

Philadelphia, Oct. 28.—The scrap market in this district shows great strength. There has been some business in heavy melting steel at higher prices, and there would be more if it were not for the fact that dealers will not accept prices offered. There has been considerable buying of machine-shop turnings by blast furnaces, rolling mills and steel works, and also considerable buying of borings by rolling mills and steel works. Forge and bundled sheets are in demand for the charcoal iron industry. Demand for cast scrap is good.

Shipments Now Going Forward

Buffalo, Oct. 28.—Dealers are looking for a brisk market in scrap when steel mills operate on a normal basis. There is more life to the market today than there has been at any time since the strike began. Scrap is scarce, due perhaps to the fact that dealers may be holding back tonnages expecting higher prices, now that pig iron is on the rise. Shipments that were held up when the strike started are now going forward to mills outside the district. Heavy melting steel, turnings, borings, malleable and cast are in demand. There are no changes in prices.

Hold Scrap for Higher Prices

Cleveland, Oct. 29.—While signs of a better market for scrap iron and steel are unmistakable, the average dealer in this market is not optimistic. Mills in the valley are increasing operations, while cast and malleable continue in good demand in the Cleveland district proper. However, one of the largest consumers of turnings and melting steel is out of the market for the remainder of the year. Practically no cars are available for scrap. One dealer offers $20 for melting steel, and has been unable to get it. A bid of $11.60 for turnings proved too low. A Cleveland dealer, bidding on scrap produced by a Detroit interest, offered $11.10 for borings, $9.60 for turnings, $15.10 for short flashings and $15 for hydraulic compressed, and was too low on every item. The freight rate on scrap from Detroit is $2.40. Yards are holding their scrap, and are refusing offers slightly above published quotations.

Cars Lacking; Movement is Slow

Cincinnati, Oct. 27.—Urgent demand for gondola cars for coal has made it impossible for dealers to obtain the cars for scrap. Embargoes against Pittsburgh also are still in effect, and little scrap of any kind is moving. Local foundries are buying small quantities for delivery by truck. Dealers are buying scrap sparingly, and purchases made out of the city are to be held by the sellers until cars can be secured. The Portsmouth plant of the Whittaker-Glessner Co., is again in operation and the Andrews Steel Co., and Newport Rolling Mill Co., expect to start their plants Nov. 3. These will afford an outlet for considerable mill scrap. All prices are nominal, as transactions are too few on which to base definite values.

Rerolling Grades in Demand

St. Louis, Oct. 25. Orders and inquiries for scrap have been confined mostly to car lots or small tonnages for immediate use, although a few round tonnages are reported to have changed hands. The principal element of strength in the market is the limited supply. Virtually nothing is coming into this market. No railroad lists were out during the week, and the movement from the country is almost at a standstill. Among dealers and yard interests the opinion is general that when the steel strike is settled there will be a boom period. In this district, rolling mills are deluged with orders, and rerollers are in particularly strong demand, with few offered and the price advancing daily. Quotations have advanced to from $28 to $28.50. The leading local interest using rerolling rails is not in the market, but there are strong inquiries from Moline, Monroe, Chicago and Ohio. Relaying rails are also in demand, the inquiry coming principally from the

oil fields of the Southwest. Iron foundries continue busy and all grades suitable are firm. Steel mill grades are showing more activity.

More Activity in South

Birmingham, Ala., Oct. 28.—There is a little more activity in the southern scrap market, and if the threatened coal strike does not disturb the iron and steel industry considerable business will be noted before long. Heavy melting steel is not moving fast, as the dealers are holding for higher prices than consumers offer. Cast and stove plate are doing well, while the low grades, machine-shop turnings and cast-iron borings, also are in demand. Quotations have changed a little. Wrought, axles, rails and wheels are not much in demand. A little country scrap is coming in.

No Selling

In Wire Products Except Fence Wire —Export Demand Heavy

Pittsburgh, Oct. 28.—All makers of wire and wire products are out of the market as far as new business is concerned, except for fence wire, on which line they are accepting specifications from regular customers. The company here which recently had a moderate amount of barbed wire and galvanized wire in the heavier gages available for prompt shipment has become sold up and has withdrawn. Producers whose plants were suspended or crippled by the strike and which since have resumed, report steady gains both in operations and in production. Export demands for wire products, especially nails, continue heavy but are placed with extreme difficulty owing to the lack of surplus tonnage over the contract obligations of producers. The lower quotations on wire products now find basis only on shipments against orders placed some time ago.

Better Production Seen

Chicago, Oct. 28.—Conditions in the wire market have undergone no essential change during the past fortnight, but a gradual increase in production has taken place with consequent slightly increased shipments. This has not been sufficient however, to take the edge off the desire of consumers to receive more wire and nails. With production much curtailed and a large order book, selling is at a minimum.

Warehouse Prices to Go Up

New York, Oct. 27.—Although quotations in the local warehouse market remain unchanged, an advance in some descriptions is likely in the near future. The difficult position of the mills continues to be reflected by a good demand for practically all materials, and sheets appear especially strong. The strike situation has improved considerably, but so heavily are the majority of mills booked, that nearby deliveries are difficult to obtain, and consequently consumers are relying on warehouses. This is particularly true in regard to structurals.

Sheet Prices Are Higher

Limited Tonnage of Valley Material Available Moving at Several Dollars Advance—Supplies Scarce—Operations Steadily Improve

Youngstown, O., Oct. 28.—Sheet production at Mahoning valley mills continues low. Only two plants are running and at one of these operation is on a small scale. Makers are doing their best to look after their regular customers but conditions are beyond their control. It is not a question of price since a large tonnage of black sheets could have been sold at 4.75c last week by one maker, but one of demand due to the shortage of various grades.

Spot business is at a standstill. Any surplus, which in the past might have been piled on mill floors, has disappeared and it is questioned whether an appreciable amount of sheets remain in stock at any mill in this district. Any buyer will find it extremely difficult to get on the books for any reasonable amount for this or next months' delivery. He stands a fair chance, if well known, however, of getting a shipping date in December. Stocks perhaps never were as low nor rolling schedules so congested at valley mills as they are now. Buyers requiring No. 27 gage or lighter find it impossible to place orders, since mill books are occupied with more attractive rollings. The present demand, 14 to 20 gage, would be ample to keep the mills rolling for several weeks.

When mill books are thrown open again it is thought higher prices will prevail. At present all grades are commanding from $4 to $6 per ton more than last week's quotations, not only in the Mahoning valley but in nearby territories. The reason for this sudden increase is attributed to raw material conditions. Steelmakers are obliged to pay higher prices for scrap. Consumers of sheet bars are paying $45 and they show no surprise at the mention of $50 bars by 1920. With spelter around 7.60c galvanized makers state they cannot afford to make coated sheets at 5.70c. Any tonnages that can be had here now, are quoted as follows: Blue annealed, 3.65c to 3.75c; black, 4.40c to 4.60c; galvanized, 5.80c to 6.00c; and mill warmers, $22 to $25 per ton.

Operations Still Are Gaining

Pittsburgh, Oct. 28.—The American Sheet & Tin Plate Co., this week is operating more than 85 per cent of its sheet mills, while independents are running close to 60 per cent of their capacity. Approximately 80 per cent of the latter's mills which were in operation on the day of the steel strike are now operating. Some of the independent companies are none too well off in the matter of supplies of sheet bars but none of them has been obliged to suspend because of inability to secure semifinished steel. Production is larger at practically all plants, but deliveries are somewhat hampered at a number of them because of the shortage of common labor. Numerous demands are coming out for practically all kinds of sheets from consumers whose regular sources of supply are unable to make full shipments. Such inquiries get practically no attention as current production is 100 per cent pledged on contracts. The American Sheet & Tin Plate Co., has not yet opened its books for first quarter and first half of 1920 business, and the independent companies are waiting for that interest to take the first step in this direction.

Eastern Demand is Good

Philadelphia, Oct. 28.—Demand for sheets is good, but as many mills are idle few can take orders. The leading eastern maker continues shut down because of labor trouble. One consumer has bought two cars of galvanized sheets from a mill now active at $6.20, Pittsburgh base, which is premium of 50 cents per 100 pounds.

Small Supplies

Of Semifinished Steel Bring Higher Prices—Sheet Bars Scarce

Pittsburgh, Oct. 28.—Demands for sheet bars still are large and urgent, but actual sales are small due to the fact that leading producers in this district have no surplus beyond their own requirements and their contract obligations. One of the Pittsburgh steel companies which took about 4500 tons of sheet bars this week now has no surplus steel to market in this or any other form. Several of the makers of sheets and tin plate are in need of sheet bars owing to the fact that their regular sources of supply are crippled, if not entirely shut off. No trouble would be experienced, it is declared, in obtaining substantial premiums over the March 21 base of $42 from these buyers. Fair demand is noted for billets which are not so scarce as sheet bars, and while sales are reported as high as $40.50, business at premiums is not large. Open market demands for slabs are few and moderate, but makers of wire rods who have surplus tonnage have little trouble in disposing of it. Sale of 300 tons of soft wire rods are noted to a domestic consumer at $60.

Strip Production Rises

Pittsburgh, Oct. 28.—Some of the makers of strip steel in the district which was adversely affected by the walk-out of Sept. 22 gradually are increasing operations. General production is larger now than it has been since the strike started. The heaviest bookings come from the builders of automobiles and tractors and they are pressing for deliveries of material on these agreements.

The Cleveland-Akron Bag Co., Cleveland, will build a $1,000,000 factory at St. Joseph, Mo.

Can't Meet Bar Demands

Production Falls Behind Contract Obligations and Little New Selling is Done—Specifications Filed Promptly—Bar Iron Strong

Chicago, Oct. 28.—Inquiry for soft steel bars is on the increase as to number of inquirers, but most lots are small and practically everything is for prompt delivery. Mills cannot promise delivery and can only agree to roll the material within a certain period after the labor situation has allowed a return to normal conditions. At the same time mill operation is such that a fair tonnage is being produced and sent forward to consumers. Practically all users have come to the conclusion that specifications should be filed promptly to assure a favorable position on mill books.

Manufacturers of bar iron are booking business on an enlarged scale, largely dictated by inability to obtain soft steel bars. Railroads still are backward about placing orders and without this assistance, mills have not been able to accumulate a backlog, although the excess of orders over deliveries is gaining. The quotation is steady at 2.72c, Chicago mill.

Manufacturers of hard steel bars rerolled from rails are quoted at 2.65c, mill, and under the present circumstances of a heavy demand for bars and a light supply of rerolling rails, they have been forced to turn down about as much inquiry as they have been able to accept. The rule seems to be to take care first of regular trade, and let others seek their supplies elsewhere.

Production Still Behind Demand

Pittsburgh, Oct. 28.—Although more bar mills are in operation this week than before since the outbreak of the strike, production still is far behind contract obligations and new demands are almost impossible to fill except out of warehouse stocks and these have become pretty much depleted as the result of the recent demand. A few of the important companies have withdrawn all their quotations on bars until it is definitely known whether there will be a strike of the coal miners on Saturday. The Carnegie Steel Co. is holding at the March 21 base of 2.35, base Pittsburgh, and under present conditions this price refers only to shipments against old obligations. Buyers in need of smaller sizes of rounds for immediate shipment probably would have to pay substantial premiums. A shortage of iron bars for prompt delivery also is indicated. Makers of iron bars not only are getting good demand from regular sources but also are disposing of fair sized tonnages to take the place of soft steel bars. Iron bars are firm at 2.75c, Pittsburgh, for common merchant iron and at 3.00c for railroad.

Eastern Prices Tending Upward

New York, Oct. 28.—Quotations in the eastern bar iron market are tending upward, notwithstanding the fact that the market is dull. At least 25 per cent of the offerings appear to be made at the level of 2.75c, Pittsburgh. These higher offerings are due largely to operating costs. Export demand, which was in some evidence several weeks ago, has disappeared, and domestic buying is quiet.

Get Bars for Bolts

Chicago, Oct. 28.—Better deliveries of raw material for the manufacture of nuts and bolts have allowed some mills to reopen after being closed because of lack of iron and steel bars. This change has come about through the better production by steel mills affected by the strike, and in some measure gives an indication of increased operation now possible. Demand for bolts and nuts is excellent and mills have all the business they can accommodate.

New Orders Are Liberal

Pittsburgh, Oct. 28.—Makers of cold finished steel bars had a big volume of business before them and a number of new orders are coming along because of the inability of manufacturers in other districts to supply more contracts. Some of the non-integrated makers are suffering from the shortage of merchant steel bars, but shipments of the latter are somewhat better this week than they were recently, due to the fact that more merchant mills are in operation this week than before the strike began. The market on cold finished bars is firm at 3.60c base Pittsburgh.

Orders Are Piling Up

Pittsburgh, Oct. 28.—As operations of the hoop and band mills still are considerably below normal, production is falling behind specifications and a considerable amount of business is backing up. Few of the makers had any reserve tonnages when the labor trouble broke out and in trying to satisfy demands against old orders, they have practically no tonnage available for new demands. The situation in cotton ties is just the reverse of that in hoops and bands, as sufficient ties were rolled to meet the requirements of a much larger cotton crop than actually will be produced this year.

Tin Plate Sales

Made at $7 for Domestic, and $7.50 for Export Delivery in January

Pittsburgh, Oct. 28.—One of the Pittsburgh producers of tin plate which was not very heavily committed for December rollings is taking a limited amount of business for delivery in January at $7 per base box, Pittsburgh, for domestic accounts, and $7.50, Pittsburgh, on export orders. As a general rule makers of tin plate are committed at least to the end of this year and probably a little longer due to the dislocation of production and shipments resulting from the steel strike. Heavy export demands are noted and domestic consumers would be larger buyers if the tonnage was available. Production is gaining steadily as the American Sheet & Tin Plate Co. now has 60 per cent of its capacity in operation, and recent gains by the independents are being well maintained.

Limited Buying

Being Done in Ferroalloys—English Manganese at $100 Seaboard

Pittsburgh, Oct. 28.—A sale of 150 tons of ferromanganese constitutes the largest recent individual transaction in this market. This tonnage went to a Pittsburgh steel foundry. The material was imported, and the price was $100 c.i.f. Baltimore. All other demands have been small and comparatively few have resulted in sales. Domestic producers generally are holding 78 to 82 per cent material at $110, delivered, but it is intimated that they have shaded this price a few dollars. It is believed that a firm bid of $107.50, delivered, would not be refused by domestic producers. No demands of any consequence are noted for spiegeleisen in this market and only carload lots of 50 per cent ferrosilicon are being sought, and these in all cases are for immediate delivery. While a number of producers of the latter material are quoting $85 or higher, the more general basis of sales is around $80, delivered, Pittsburgh.

Not much interest is being taken in the lower grades of electrolytic ferrosilicon nor in that produced in blast furnaces. Production of bessemer ferrosilicon, however, is moderate and supplies are not such as to lead makers to sacrifice prices to stimulate demand. Domestic producers of ferrochrome have fairly strong price ideas, some of them quoting as high as 30 cents, while 25½ cents seems to be the minimum named recently by domestic producers. Quotations of 22 cents to 24 cents on this material are believed to refer to imported stock.

Will Pay $103 Seaboard

New York, Oct. 27.—Several consumers are said to be willing to buy English ferromanganese at $103, c.i.f. tidewater, but it appears that the metal is not obtainable at this figure, at least without first referring the bids to the English principals. Some English ferromanganese is offered at $105, c.i.f. but for shipment next year. The market on domestic metal still may be quoted at $110, delivered. One domestic maker is asking $115, delivered on ferromanganese for prompt shipment but has not yet sold at this figure.

Demand for spiegeleisen is quiet. The market still may be quoted at $33 to $35, furnace, for 18 to 22 per cent metal.

English Ferro is Reduced

Philadelphia, Oct. 28.—English makers recently reduced their domestic price on ferromanganese to a figure which considering exchange is equivalent to $100, tidewater. No offers

are being made here at present on English ferromanganese, however.

Pipe Advanced

By Foundries in East—Mill Sales Are Being Kept Down

New York, Oct. 27.—Prices have again advanced $2 in the eastern cast iron pipe market. Four-inch pipe is now $61.30, New York, and 6-inch and over, $58.30. These prices apply to class B pipe, while class A is $2 higher. The largest award during the past week involved 2000 tons for East Hartford, Conn., and went to the Warren Foundry & Machine Co. Public business has been negligible, and little of importance is in sight at the moment. Private buying continues to hold up well.

No Change in Situation

Pittsburgh, Oct. 28.—General conditions in the market for tubular goods are much as they have been during the past few weeks. Pittsburgh district manufacturers were less affected by the strike than those in other districts, but while they have not added to their obligations, the dislocation of production and distribution has much deferred the completion of the business they had on their books. The Jones & Laughlin Steel Co., has maintained normal operation of its pipe mills and the only plant of the National Tube Co., outside of that at Benwood, near Wheeling, W. Va., which was affected was the Pennsylvania works in this city. That plant now is running 50 per cent of capacity. Both these companies are making good shipments against contracts. The A. M. Byers Co., and Spang, Chalfant & Co., are recovering from the effects of the strike. A big shortage of all kinds of pipe is being built up because producers in the Wheeling district still are down, and Youngstown, O., manufacturers have not been able to increase production to substantial proportions.

Season Near End

Chicago, Oct. 28.—With weather suitable for excavation, laying of water mains almost at an end, inquiry and buying of cast iron pipe has almost disappeared. Occasional requests are received for carloads to be shipped promptly to fill out on jobs already under way, and in most cases delivery within 30 days is requested. Cities with contracts made earlier in the season are pressing for delivery and most shops are able to meet desires. While there is not sufficient backlog in most shops to assure operation through the winter, stocks have been drawn to a low point and it will be possible to operate for some time in replenishing these. Bids will be opened at Chadron, Neb., Nov. 3 on 1000 tons.

Offered Business for 1920

Birmingham, Ala., Oct. 28.—Cast-iron pipe plants in the Birmingham district are operating on full time with plenty of business in hand and more orders in sight. Business for 1920 is being offered.

Plates Feel Dock Strike

Heavy Export Deliveries are Held Up—Eastern Makers Sell at 2.65c Mill in West—Belgian Cars Call for 65,000 Tons

Philadelphia, Oct. 28.—The dock strike at New York is holding up the shipment of export plate orders and is having an embarrassing effect on eastern mills which have big backlog of foreign business. Domestic plate business reported as somewhat less active than any preceding week since the steel strike was called but is satisfactory. Among the leading eastern buyers at present are the Pennsylvania and Reading railroads which are taking good sized tonnages for car repairs, especially the former. The Chesapeake & Ohio has out an inquiry for a round tonnage of tank plates.

Export Plate Orders Plentiful

New York, Oct. 27.—Mills report that the majority of the plate orders which are offered here are from foreign sources, and chiefly from Japan. These are to be had at 2.65c, Pittsburgh, but the mills already are so well sold up that they do not care for this business, as a rule. There is some domestic demand for plates here but this demand is not as active as it has been of late in other sections of the country. At least one large lot has been let in this district during the past week, and another lot, 15,000 tons, is pending.

No Prompt Business Being Taken

Pittsburgh, Oct. 28.—One maker of plates in this district yesterday withdrew all quotations on plates because of the possibility of being unable to make shipments in the event of a strike by the coal miners. Little or no new business is being taken by makers here as they all became well sold up as a result of orders from consumers ordinarily served by other makers who were crippled by the steel strike. On all recent business 2.65c, Pittsburgh, has been obtained without any trouble, but no sales have been made at any higher price, although reports from the East have been to the effect that makers are getting as high as 2.75c, Pittsburgh.

Higher Prices Obtained

Cleveland, Oct. 28.—Plates are bringing higher prices in this territory and eastern mills are obtaining 2.65c mill, equivalent to 2.95c delivered Cleveland territory. Heretofore these makers have been equalizing the freight from Pittsburgh to this district, but now are adding the full freight from the mill. The Pittsburgh price of 2.65c is equivalent to 2.82c Cleveland.

Japs Take Small Lot

Chicago, Oct. 28.—The leading interest has booked 600 tons of plates for export to Japan for use by a shipbuilder, and a small lot of bars to be used in connection therewith. General plate demand is excellent and consumers feel it would be wise to place their specifications as early as possible to obtain position on rolling schedules. A Belgian inquiry for cars entails a requirement of 65,000 tons of steel chiefly plates.

No Rail Advance

Report Due to Misapprehension—Belgium Wants Many Cars

Pittsburgh, Oct. 28.—Recent rumors that the price of standard open hearth rails had been advanced to $49 Pittsburgh appear to be without foundation as the largest producer in this district still is holding at $47 and says that no attempt has been made to obtain any advance. The rail mills of the Edgar Thomson Works of the Carnegie Steel Co. resumed operations this week. As nothing has been heard recently relative to the rumored order for 200,000 tons of standard rails by the railroad administration, it is assumed that this business now will not go out until the railroads go back to private ownership. Good inquiries are in for light sections especially for export. The New York, New Haven & Hartford railway recently closed on 200 kegs of standard spikes and now is seeking 5000 kegs more. Outside of this business nothing important has been done in standard spikes. Sales of small spikes also are more moderate and makers have practically nothing available for this year.

Belgians Want 10,000 Cars

Chicago, Oct. 28.—An inquiry by the Belgian government for 10,000 four-wheel coal cars of 20-tons capacity is being entertained by builders in this country. This will require about 65,000 tons of plates, shapes and bars and 20,000 axles. It is understood one western builder is planning to send a representative to Belgium to assist in obtaining this contract. The Pullman Co. has taken a contract for 25 cars for the Arms Palace Horse Car Co. The American Car & Foundry Co. has taken orders for 280 tank cars for various users, 100 mine cars for the H. C. Frick Co. and 50 pit cars for the Holland Coal Co., Altoona, Pa. The Pennsylvania Tank Car Co. has taken orders for 424 tank cars for various users.

Railroads are figuring on their rail requirements for 1920, but are unable to get ahead with definiteness until their operating status after the first of the year has been decided more definitely. The western mill was started in operation this week after being down since the beginning of the present strike. Mills are full for the remainder of this year except for small emergency tonnages. Demand for light rails is increasing in spite of possibility of a strike, by miners. It is believed plans are being made for carrying forward extensive repairs during the period of idleness if the miners go out.

Large Jobs are Pending

10,000 and 7,000-Ton Hotels at Detroit and Cincinnati Up for Figures — New Awards of Fair Amount

Cleveland, Oct. 28.—Demand for structural shapes continues in fair volume in Ohio and some districts of Michigan, and fabricators report they have all the business they can handle at present. Standard shapes for smaller building enterprises especially are in good demand, while several large building projects in Cleveland, Cincinnati and Detroit are coming to a head, general contracts having been let. It is apparent that considerable business will be closed before the end of the season's building activities. One Cleveland engineering company is reported to have plans prepared for nearly 50 rubber factories in various cities in Ohio for different interests. While many of these enterprises are waiting to be financed in many instances the companies concerned are seeking to begin building operations before cold weather sets in. Strenuous efforts are being made by trade union leaders to unionize the Michigan fabricating shops, but thus far they have not succeeded in hampering output. The biggest jobs in sight are 10,000 tons for the Biltmore hotel, Detroit; 7000 tons for the Gibson hotel, Cincinnati, and 5000 tons for the General Motors Co., Saginaw, Mich.

New England Work Holding Up

Boston, Oct. 27.—Structural bookings are holding up despite the influence of the steel strike. A contract was let to the Stone & Webster Engineering Corp., for construction of a $2,000,000 office building for the First National Bank of Boston. Actual work on this structure will not start before spring, and the amount of steel required has not been announced, although it is estimated at 3000 tons. Other work let during the week includes a $250,000 concrete 7-story factory for the Ace High Chocolate Co., Boston, which will take approximately 125 tons of steel, and a $150,000 concrete factory for Ellis & Hussey, Haverhill, Mass. The Daynor Realty Co., Norwalk, Conn., is taking bids for a five-story concrete factory to cost $350,000. Bids are also being taken for a $200,000 apartment building, Cambridge, Mass., a $100,000 manufacturing building at Pawtucket, R. I., and a $200,000 school house at Newport, R. I.

Outlook Better in East

New York, Oct. 27.—Outstanding among awards in the eastern structural market is a lot of 5000 tons for a loft store building at Seventh avenue and Twenty-ninth street, this city, for the Regent Construction Co. This business went to the Hay Foundry & Iron Works, which also received a couple of other smaller contracts during the past few days for construction work on Manhattan. Another sizable contract noted in the East is one placed with the McClintic-Marshall Co. for a plant for the West Virginia Metal Products Co., Fairmont, W. Va., involving 1300 tons.

While the market in the East continues to be somewhat depressed by the steel strike, several good sized tonnages have come out of late and buying, as compared with the early part of the month, is improving. In fact, the effects of the labor trouble are more in evidence at the fabricating shops, where difficulty is being had in obtaining shipments from the mills. Virtually none of the eastern fabricating shops, however, is having labor trouble of its own. Prices on the general run of fabricated material have varied but little.

Volume is Slightly Smaller

Philadelphia, Oct. 28.—Eastern shape mills report the volume of business as slightly smaller than in preceding weeks, but it is still at a good rate. Fabricators who are taking good tonnages report they are bidding on an unusually large total of fabricated work. Many ship contracts are reported.

Prospective Business is Good

Pittsburgh, Oct. 28.—Although the steel fabricating interests in this district recently have made comparatively few important bookings, a large amount of business is reported as being in prospect and likely to be placed once the labor situation becomes more favorable. Operations of the fabricating shops are normal in this district, although in some instances slightly affected because of the inability of the makers of plain material to make full and prompt deliveries. Shape mills in this district are well provided with business as a result of demands from buyers who ordinarily secure supplies elsewhere.

Western Building Slack

Chicago, Oct. 28.—After a fairly active period, construction in the west has dwindled and much less is coming through than had been promised. The largest tonnage closed during the past week involves 2325 tons for the Winfield hotel, at Fort Worth, Tex., awarded to the Mosher Mfg. Co., Dallas, Tex., which will obtain the steel from the Bethlehem Steel Co. The Iowa State university has let a contract for a cattle barn at Des Moines, involving 525 tons, to a local contractor, who has not announced the source of his steel. Plain material prices are unchanged at 2.45c, Pittsburgh, and 2.72c, Chicago.

CONTRACTS AWARDED

Power house for Philadelphia Electric Co., 500 tons, to the Phoenix Bridge Co.

Plant for West Virginia Metal Products Co., Fairmont, W. Va., 1300 tons, to McClintic-Marshall Co.

Addition to office building, Broadway and Leonard streets, New York, 200 tons, to Hay Foundry & Iron Works.

Addition to building of United Dressed Beef Co., Forty-third street and First avenue, New York, 300 tons, to Hay Foundry & Iron Works.

Winfield hotel, Fort Worth, Tex., 2325 tons, to Mosher Mfg. Co., Dallas, Tex.

Column shafts and cast bases for building for the Fulton Market Cold Storage Co., Chicago, 749 tons, to Lackawanna Bridge Co.

Extension to the plant of the General Electric Co., Erie, Pa., 700 tons to the Jones & Laughlin Steel Co.

Merchant bar mill building, Interstate Iron & Steel Co., Chicago, 800 tons to the McClintic-Marshall Co.

Loft store building for Regent Construction Co., Seventh avenue and Twenty-ninth street, New York City, 5000 tons, to the Hay Foundry & Iron Works.

Plant building for the Compresed Steel Shafting Co., Readville, Mass., 200 tons, to New England Structural Steel Co.

Mill building for the Royal Mills, Providence, R. I., 500 tons, to Phoenix Bridge Co.

Theater buiding, South Boston, 200 tons, to New England Structural Steel Co.

Factory building at Springfield, O., 300 tons; to Bellefountaine Bridge & Steel Co.

Building for Chandler Motor Car Co., Cleveland, 200 tons; to National Iron & Wire Co.

Sinton hotel, Cincinnati, O., 400 tons; to American Bridge Co.

Extensions for Whitaker-Glessner Co., Portsmouth, O., tonnage indefinite; to Fort Pitt Bridge Works.

CONTRACTS PENDING

Apartment house at Baltimore, 500 tons, contract pending.

Addition to department store, Springfield, Mass., 1100 tons, contract pending.

Fertilizer plant for Armour & Co., Chicago Heights, Ill., 400 tons, contract pending.

Bridge for Norfolk & Western, Columbus, O., 500 tons, contract pending.

Y. M. C. A. building, Columbus, O., 400 tons, bids in.

Substructure Madison street bridge, Chicago, 275 tons, bids in.

Building for Hershey Chocolate Co., 600 tons, Hershey, Pa., bids being taken.

Two government hangars at Newdorp, Staten island, N. Y., 800 to 1000 tons, bids to close shortly.

Floating drydock at Baltimore, 1800 tons, pending.

Theater for Marcus Loew, Euclid and 101st st., Cleveland, 500 tons; bids being taken.

Theater for Marcus Loew, Euclid and 117th st., Cleveland, 850 tons; bids being taken.

Biltmore hotel, Detroit, 10,000 tons; general contract let to George A. Fuller Construction Co.

Building for General Motors Co., Saginaw, Mich., 5000 tons; general contract let to Wood & Co.

Ideal Tire & Rubber Co., Cleveland, 300 tons; inquiry out.

Gibson hotel, Cincinnati, O., 7000 tons; Gustav Drach, architect, taking bids.

Theater, Portsmouth, O., 200 tons; bids being taken.

To Build Auto Bodies

Chicago, Oct. 28.—The Pullman Co., which for many years was able to concentrate its entire energies on the construction of sperial equipment for passenger use, sleeping cars, dining cars, parlor cars and later branching out into the building of practically all sorts of railroad car equipment, has been forced recently to take on other lines of work to keep its organization together. The policy of the railroad administration has been such that the company has been unable to find sufficient business in its regular lines. For some time it has been building cabinets for phonographs in its woodworking department, and recently it took a contract from the Packard Motor Co. for building automobile bodies.

Premiums Paid on Export Goods

Independent Mills Enjoy Large Profits on Foreign Business Now Being Booked —Heavy Purchasers Striving to Keep Out of the Market for the Present — Orders are Closed for 1920 Delivery

NEW YORK, Oct. 27.—With the increase in difficulties of placing new orders with the mills, many export houses report that foreign purchasers are showing a tendency to hold off with their inquiries. As a result there has been a slight diminution in inquiries from some quarters, although it is declared by a few responsible firms that the export business being done today is extremely large. It is declared unanimously that many difficulties confront the placing of an order and mills do not desire to open their books to new business so long as present unsettled conditions continue. While the strike of the millworkers is practically broken, the longshoremen's strike drags along with a fair prospect of settlement. At present, however, the miners are threatening to go out and thereby cut off the fuel supply.

Notwithstanding the desire of some of the heaviest foreign purchasers to hold off the export demand is such as to necessitate the offering of premiums to bring forth the products. In some cases, it is declared, the exporter has been compelled to offer the mills a premium of 1, 2 or 3 cents per pound for the particular commodity, and in some cases mills have refused to accept orders on which the purchaser proposed to pay a premium of $2 to $3 a ton. One exporter reported that he had paid a premium of 20 cents per 100 pounds on galvanized sheets.

It was learned during the past week that some Oriental business has already been placed "at mills' convenience." In the contract signed for these goods, it was proposed to make delivery some time before July 1, 1920. This is the first instance disclosed of foreign sales being made for 1920 delivery. The particular sale involved 800 tons of structural shapes. The export house arranging the deal is hoping to be able to get delivery some time during February or March. Another Japanese order calls for 400 tons of galvanized sheets. The purchasers agreed to sign the order on the basis of a delivery at mills' convenience, but the export house will be protected by a letter of credit established in New York by the Japanese purchaser which will be limited to approximately three months.

The great increase in export business during the past month is probably represented on the books of independent mills. Both the largest export houses have been doing a business to the limit of their ability, however. According to reports current here the United States Steel Corp. contracted to sell 30,000 tons of steel to the Kawasaki Dock Yard Co., of Kobe, Japan. This is said to be shipbuilding material and the cost, it is reported, will approximate $2,700,000.

Another sale of ship material is reported to have been made by a Philadelphia house upon an agency basis, the ships to be built in Japan with the steel purchased from the steel company here. Many houses have accepted small orders for shipbuilding material from Japanese companies. Typical of the business being done by these export houses were orders reported from Japan for 600 tons of black sheets, 1200 tons of ship plates and 14,000 boxes of tin mill black plate.

A new Japanese inquiry is for 4500 tons of ship material for delivery during the first half of 1920. An order for approximately 200 tons of wire was booked for the Orient during the past week. The Orient also purchased 200 tons of light rails, and 30 tons of light sheets. Another house reported the sale of 2500 tons of light rails to the Orient. One order for 1000 tons of small steel plates, a small tonnage of tube steel and a smaller tonnage of bars was reported to have been received from China. China also is inquiring for 3000 tons of scrap and about 1500 tons of rails.

Some old orders for shipment of rails to the Dutch East Indies are reported held back because of the failure of the mills here to make deliveries. Considerable apprehension is indicated in cables from Dutch East Indies asking for immediate delivery of 3000 tons. An order for approximately 10,000 kegs of wire nails has been declined as a result of a dispute over the price.

The relay rail market in Cuba is active. One house has sold 270 tons of relays to Cuba. Cuba has also purchased 50 tons of light sheets. There is at present an opportunity to sell Cuba 4000 lengths of 4-inch soil pipe. Due to the demand not only from Latin and South America, but also from the Orient, some of the export houses declare they are flooded with inquiries for open-hearth and bessemer wire rods. It is practically impossible to obtain this product. Similar difficulties are being experienced in connection with tin plate. One house reported that tin plate orders for export have been refused at $7.25, Pittsburgh.

Sales of sheets to South America have been reported. South America is now inquiring for 4000 tons of new 60-pound rails. Heavy rails, however, are difficult to find. The American Locomotive Co. has received an order from the Central Railway of Brazil for five Consolidated type engines, and two Mallet type, from the United Verde Copper Co. Chile is inquiring for 50,000 tons of relaying rails.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Oct. 22	21.75	54.25	6.50	7.75	33.00	8.62½	41.00
Oct. 23	21.75	54.25	6.75	7.80	33.00	8.62½	41.00
Oct. 24	21.50	54.00	6.75	7.80	33.00	8.75	41.00
Oct. 27	21.25	53.75	6.75	7.75	33.00	8.62½	41.00
Oct. 28	21.25	53.75	6.75	7.70	33.00	8.62½	41.00

*Future shipment from Singapore.
† American Smelting & Refining Co.'s price.
‡Open market.

NEW YORK, Oct. 28.—Departure of the leading copper sellers from their long established price of 23.50c did not stimulate the copper market to any great extent. The leading sellers dropped their quotation to 22.00c and did some business at lower prices. Second hand dealers immediately dropped their prices from around 22.50c to 21.50c, then to 21.25c. Dealers evinced some interest, but consumers, having large supplies of copper and also having their attention on the serious labor troubles, have not been active buyers. Speculators purchased and sold first quarter electrolytic at prices ranging from 21.50c to 21.75c.

The zinc market has been strong, largely based on export buying. Great Britain, France, Belgium and Japan have been buyers. Dealers also have been active in the market and have replenished their holdings. Consumers, on the other hand, including both galvanizers and brass mills, have been buying very sparingly. The prime western zinc market advanced about 10 points net the past week, the price on Monday being 7.75c, New York, but it was off a little today, 7.60c to 7.65c. High grade zinc is held at 8.00c to 8.25c, New York.

The American Smelting & Refining Co. advanced its lead price ¼c a pound Oct. 23 to 6.75c, New York, which followed a similar advance Oct. 16. Outside interests have been steadily asking and obtaining premiums. Lead is unquestionably in short supply. The outside lead market is about 6.75c to 6.85c, New York; 6.60c to 6.70c, St. Louis.

The London tin market has declined. The New York market is lower also while the Singapore price remains high. November and December shipment Straits tin from London could be had Monday at 53.25c, New York, while the same shipment from the Straits was held at 53.75c, and 53.50c to 53.75c today. Spot tin ex warehouse sold as high as 57.00c, while tin on dock, not available for immediate delivery, was quoted 53.75c.

Operations Show Steady Gains

Pittsburgh District Reports Furnaces and Mills on 80 Per Cent Basis While Companies in Chicago District Have 75 Per Cent of Their Men Back—Little Change at Youngstown—Southern Furnaces Prepared for Coal Strike

THE MOST notable gains toward a resumption of normal operations in the iron and steel industry have been made in the Chicago and Pittsburgh district, although the sixth week of the strike finds operators in all districts in a much more advantageous position than at any time since the strike was declared. In an effort to bolster up the waning hopes of the strikers various committees of trades union leaders are talking of issuing food cards, while the number of men reporting for work is steadily increasing in most of the districts still affected.

In the Chicago district the plants of the Illinois Steel Co. have 75 per cent of their former force at work, while the same percentage is reported by the Inland Steel Co. Both of these companies have increased operations at their furnaces and mills.

In the Pittsburgh district general operations have increased to 80 per cent at least. The Carnegie Steel Co. now has 39 of its 49 blast furnaces in blast, and work at practically all of its plants is moving toward normal.

In Ohio the most notable development in the strike during the past week, aside from an increase in operations at Cleveland, was the suspension of the mayor of Canton, O., by Governor Cox, following a riot at the plant of the United Alloy Steel Co., Canton. Native Americans were attacked by a mob of foreign agitators and six of them were beaten, one seriously. The governor decided to take a hand to insure protection for loyal workers when local authorities failed to act, and 1000 militiamen were sent to Akron, O., nearby, ready for immediate despatch to Canton in the event of further disorder.

In Youngstown operating conditions have not changed much since last week, while in Cleveland some gains are reported by mills and furnaces. Five hundred men have now returned to the H-P nail works of the American Steel & Wire Co. and the company is operating its coke plant on a partial basis. The McKinney Steel Co. now has one-half of its open hearths in operation, while its blooming mill and one furnace started last week are continuing. The Otis Steel Co.'s Riverside plant now is operating at 100 per cent.

In the Buffalo district, the Donner Steel Co. reports the return of 1000 of its workmen, and, in addition to its other operations begun last week, a 14-inch bar mill is to be placed in operation this week. More men have returned to the plant of Rogers, Brown & Co., while 2500 men are now at work at the plant of the Lackawanna Steel Co. Other plants in the Buffalo district are operating at 100 per cent.

The situation in the East, New England and in the southern states has so far improved that the strike in those districts is considered at an end. The furnaces and mills in the Birmingham district are prepared for a strike of coal miners and it is said that the prospective strike will not interfere with their operations to any great extent unless it should be protracted. The Woodward Iron Co. has banked the Vanderbilt furnace to conserve fuel.

Workers Beaten; Ohio Mayor Suspended

CLEVELAND, Oct. 28.—Aside from outbreaks of violence at steel plants in Canton, O., which were quelled after Governor Cox ordered out 1000 state militiamen, strike conditions throughout Ohio have continued to improve steadily. More men have reported for work and many plants are reporting they are operating at almost normal capacity.

The calling out of the state troops by Govrnor Cox, followed the outbreak of lawlessness on the part of striking workmen at the plant of the United Alloys Steel Co., Canton, last Friday night and Saturday. At this plant, six workmen employed by the company, all native Americans, were beaten by a crowd when they left the plant, one of them being seriously injured. In the rioting which followed many shots were fired and for a time the situation got beyond the control of the municipal authorities. At a meeting in Governor Cox's office at Columbus, O., Monday, Mayor Poorman, of Canton, was suspended for 30 days, pending a hearing, because of his failure, according to the governor's charges, to do all in his power to provide adequate protection. Governor Cox has appointed an acting mayor and this official plans to increase the police force and furnish the mills in the district all the protection necessary. The militia encamped at Akron, O., ready for service if necessary at Canton.

At Cleveland operations are in progress at practically all plants. More than 500 men have returned to the H-P nails works of the American Steel & Wire Co. The company's coke plant is operating on a partial basis, but its other plants have not been reopened, although many men have reported for work. One furnace is in blast at the McKinney Steel Co.'s plant, while half of the company's open hearths and the blooming mills are operating. The Upson Nut Co. is oprating on a small scale, while one blast furnace of the Cleveland Furnace Co. is running. The Lakeside plant of the Otis Steel Co. is in partial operation, while the company's Riverside plant is working 100 per cent. General indications point to normal operations here soon. Operations at the plant of the National Tube Co., Lorain, O., have not been affected.

Operations at 80 Per Cent in Pittsburgh District

Pittsburgh, Oct. 28.—General operations in the iron and steel industry in the Pittsburgh district have increased to 80 per cent or more. Strikers are continuing to return in large numbers, except for the common laborers who are slow in getting back. The Carnegie Steel Co. has 39 out of 49 blast furnaces in operation. Its ingot capacity in Ohio and Pennsylvania is 70 per cent engaged. Its Homestead plant is operating at 85 per cent of capacity, while at its Ohio works five open hearths and six bar mills are in operation. Its McDonald, O., plant is down because of the lack of power. The Clairton by-product plant is operating normally,

and construction work has been resumed, including work on a retaining wall along the river. The Edgar Thompson works is operating at a better rate than at any time since the beginning of the strike. All its finishing mills are now in operation. The rail mill was started today. The Carnegie company also has started one bar mill at its Monessen works which is the first unit at the plant to resume since the strike. Much interest attaches to a meeting of steel company railroad employes scheduled for tonight in Pittsburgh.

Buffalo Furnaces and Mills Make Steady Gains

Buffalo, Oct. 28.—Despite claims of the union organizers that few skilled steel workers are returning to work, operating conditions of the mill and furnace in this district continue to improve. All operations begun at the plant of the Lackawanna Steel Co., including the blowing of a blast furnace and the operation of some open-hearth units have continued, and men are continually reporting for work. It is believed that more than 2500 men are working at this plant. The Donner Steel Co., reports the return of over 1000 of its men, and the continued operation of one blast furnace and certain other units. A 14-inch bar mill is expected to be placed in operation by Wednesday. The return of a number of men at the plant of the Roger-Brown Iron Co. is reported. Other furnace and mills in this district continue 100 per cent operation. The parade of strikers on Saturday night was a keen disappointment to strike leaders, while they claim 12,000 men merched the real figure is reported to have been nearer 3000.

Little Change Reported in Mahoning Valley

Youngstown, O., Oct. 28.—Little change in steel plant operating conditions throughout the Mahoning valley is in evidence this week. Two stacks of the Republic Iron & Steel Co.'s Haselton group of blast furnaces are supplying metal for four open-hearth units. This company plans to place several finishing departments under power this week. The Youngstown Sheet & Tube Co. has all departments, including six open hearths in operation.

The Carnegie Steel Co.'s bar mills at the McDonald plant and at the Lower Union works are rolling. At its Ohio works the company has one bessemer converter blowing and is tapping metal from one blast furnace and two open-hearth furnaces. The blooming mill at this plant also is running. The Brier Hill Steel Co. continues to operate one blast furnace, its coke ovens, five open hearths, its blooming mill and one plate mill.

Two sheet mills were started Tuesday afternoon by the Sharon Steel Hoop Co., members of the Amalgamated Association of Iron, Steel and Tin Workers returning to work in accordance with their contract.

At Niles, O., the situation is quiet. Not a roll is turning in any of the sheet mills and it is stated that the mill men, who are on a strike, have been instrumental in calling a sympathetic strike of the majority of the building-trade workers there. All construction work in Niles ceased last week and remains at a standstill.

Those following the strike situation in Youngstown state that the city is swarming with I. W. W.'s and anarchists who are making every effort to encourage strikers to hold out even though they have to resort to underhand tactics. They are said to have caused several disturbances last week such as the cutting of automobile tires in order to prevent workmen being hauled inside the works. Near the Brier Hill Steel Co.'s plant two houses which belonged to employes of that company were set on fire, the incendiaries having been shot by policemen. Many of the strike leaders operating in this district are noted agitators and it is believed if ample protection from rowdies and pickets was given, fully 90 per cent of the mill men would return to work immediately.

More Furnaces Active in Chicago District

Chicago, Oct. 27.—That the steel strike is ended in the Chicago district is a statement relatively true, although subject to some reservation. Plants of the Illinois Steel Co. are operating with an average of 75 per cent of their force and producing about 50 per cent of normal output. This discrepancy is due to the fact that reorganization of forces has not advanced sufficiently to give ordinary efficiency. At the Gary plant eight of 12 blast furnaces are producing iron, while at the South Works only five of 11; at Joliet one of four, and at Milwaukee one of two are active.

The Inland Steel Co.'s plant at Indiana Harbor now has about 75 per cent of its force back on the job and is blowing two of three blast furnaces. The third furnace is being relined.

The Gary plant has as many men as it can handle at present and will increase its force only as the men can be placed advantageously. A large number of former employes will not be taken back. They include those whom the government has found are active in spreading revolutionary doctrines.

Since troops have been maintaining order in Gary and Indiana Harbor, the return of workers has been rapid.

Some uneasiness is caused by the possibility of a sympathetic strike on the part of railroad men.

Alabama Furnaces Prepared for Coal Strike

Birmingham, Ala., Oct. 28.—While there is hope that the government will avert the coal strike, preparations are being made in the Birmingham district for emergencies. It is estimated that coal production in Alabama is not less than 80 per cent of capacity of the mines. Retail yards claim to have about a month's supply on hand. Steam coal is being shipped down the Warrior river for Mobile and New Orleans shipping interests, and it is said the mines along the river will not be affected by the strike, the men having promised to remain at work. The state has made preparations to maintain order, while the sheriffs of the coal counties are prepared for emergencies.

The banking of the Vanderbilt furnaces by the Woodward Iron Co. to economize on fuel is not considered particularly significant. Furnace companies of this district expect a minimum of trouble. Mine unions claim a membership of between 12,000 and 15,000, and leaders say that a large percentage of the remaining 25,000 employed in the coal industry in the district also will cease work Nov. 1. Operators do not believe that the union has more than 8000. Alabama's coal production now is about 325,000 tons a month.

Will Resume on Nov. 3

Cincinnati, Oct. 27.—A statement has been issued by officials of the Andrews Steel Co., and the Newport Rolling Mill Co., Newport, Ky., that they expect to resume operations in all departments Nov. 3. The plants have been idle several months on account of labor troubles.

Call Annual Meeting

The annual meeting of the National Founders' association will be held at the Hotel Astor, New York, Wednesday and Thursday, Nov. 19 and 20.

Minimum Effect

Of Steel Strike Shown by Steel Report—August High Mark

The minimum effect of the steel strike, which began Sept. 22, on steel earnings during the third quarter is indicated by the report of the United States Steel Corp., for the three months ended Sept. 30, which shows for the period the highest quarter earnings attained during the current year. Total earnings after operating expenses and federal taxes were $40,177,232, as compared with $42,961,589 for the corresponding quarter of 1918. The report does not disclose the sum charged off from earnings for estimated taxes.

The crippling force of the short period of the strike in the quarter was felt to some extent, however, as is indicated by the fact that September earnings represent a decline of 16 per cent from the high total reach for August.

The surplus for the quarter after regular dividends was $11,105,167, which compares with a surplus of $5,308,587 for the previous quarter and with $4,822,316 for the initial quarter of the year. The comparative income account for the 1919 and 1918 third quarters follows:

	1919	1918
July	$13,567,100	$15,261,107
August	14,444,881	14,037,613
September	12,165,251	13,612,896
Quarter earnings after operating expenses and federal taxes	40,177,232	42,961,589
Depreciation and sinking funds	11,065,803	10,892,197
Net income	29,111,429	32,069,392
Interest and bond premium	5,347,562	5,404,081
Balance	23,763,867	26,665,311
Preferred dividends	6,304,919	6,304,919
Common dividends	6,353,781	*16,520,031
Surplus for quarter	11,105,167	3,840,561

The August earnings established the highest record for that month since August of 1917 and the highest for any month since July of 1913, when the earnings were $15,261,107. The total net earnings for the quarters of 1919 to date follow:

First quarter	33,513,384	.....
Second quarter	34,331,301	.....
Third quarter	40,177,232	.....

Acquires Furnace Plant

The Iron Products Corp., which has recently acquired the Essex Foundry Co. and the Central Foundry Co., has purchased the properties of the Chattanooga Iron & Coal Corp., Chattanooga, Tenn., consisting of one modern skip-fed blast furnace and 20,000 acres of developed coal and ore lands tributary thereto. The Iron Products Corp. likewise owns and operates the Tuscaloosa furnace at Holt, Ala., with coal mines, Semet-Solvay by-product ovens and ore mines. The nine foundries of the company, located in the north and south, are thus amply protected for metal. The combined annual output of the furnaces is in the neighborhood of 200,000 tons. Any surplus metal will be offered for sale.

Replogle Steel to Take Wharton Property

The Replogle Steel Co. is being organized to take over the mines, ore fields and blast furnaces of the Wharton Steel Co., Wharton, N. J., and the Wharton & Northern railroad which leads from the company's mines to its plant. No official statement has been issued regarding the new company but it is stated that its formation will mean the eventual extension of its activities to embrace the manufacture of steel products on a broad scale. It also is understood that some 250,000 shares of no par value capital stock will be issued by the new company and that the issue has been underwritten by Kuhn, Loeb & Co., at $50 per share. It is expected that an offering of the stock in the neighborhood of $55 per share will be made sometime this week.

The Wharton properties were purchased three years ago by a syndicate headed by J. Leonard Replogle, who became head of the company, but retired temporarily while he served as director of steel supply for the war industries board. At the time of purchase much of the property was in a rundown condition. Since then, the J. Leonard Replogle mine has been developed and now is estimated to contain more than 100,000 tons of high grade iron ore.

To Erect New Stack

Chicago, Oct. 28.—The Steel & Tube Co. of America is taking bids for the construction of a blast furnace stack to be erected at once either at the plan of the Iroquois Iron Co., at South Chicago, or at the company's new plant at Indiana Harbor. This will be a merchant stack, of large capacity, and probably will follow closely the lines of the two stacks recently built by this interest, one at South Chicago and the other at Indiana Harbor. Construction will be started as early as possible. It is expected the new stack will be put into service the latter part of 1920.

More Production

Palmer Tells Massachusetts Manufacturers Will Solve Problems

Greater industrial production was the keynote of an address made by Atty. Gen. A. Mitchell Palmer, before the fourth annual meeting of the Massachusetts Associated Industries held at Boston, Oct. 24 and 25. The sessions brought together nearly 600 manufacturers of the state for the purpose of discussing industrial problems. Mr. Palmer who spoke on the subject, "Costs and Production," declared that the best means of reducing costs is by increasing production. "Americans can produce more in their mills and factories than any people on earth," he said, "and the one great thing which will bring back normal conditions to America is the utmost production of the normal American men and women. The question naturally asked is, how is this increased production to be brought about? One way is through education. We must advertise production necessity."

Speaking before one group of the session, Herbert O. Stetson said that arbitration cannot help but fail where demands are always on one side and concessions on the other, and that the best way out is to cultivate friendship with the fair and honest element in the labor unions. Charles F. Weed, vice president First National bank, Boston, talked on possibilities of trade in China. Collective bargaining which was the rock on which the Washington industrial conference split, was defined by Frank T. Dresser, general counsel for the organization.

Edgar J. Rich addressed the association on the subject of industrial transportation problems peculiar to New England. He pointed out the difference between the problem of New England industries, and that of industries in other parts of the country. He spoke of the threatened passage of a rigid long and short haul clause.

Hearings to Commence

Washington, Oct. 28.—The federal trade commission announced today that hearings on the steel price basing point controversy raised by the Western Association of Rolled Steel Consumers against the United States Steel Corp. and other producers, will begin at 10 o'clock Tuesday morning, Dec. 2. So far over 100 producers and consumers have expressed their views on the subject and with the commencement of hearings they will be given an opportunity to submit oral testimony.

Baltimore Plant Makes Steel for English Airplane Motors

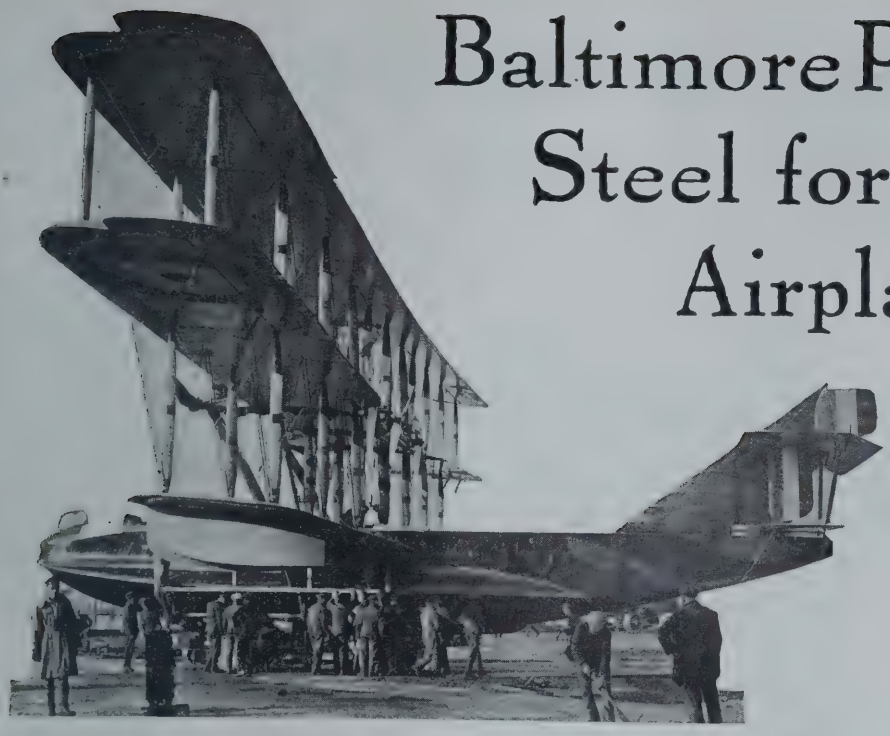


Fig. 1—Largest seaplane in world equipped with five 360-horsepower engines of type mentioned in accompanying article

Airplane Parts of Electric Steel Forged and Machined in United States and Assembled in England.

OUT of the vast destructiveness of war and its general setback to civilization, trade and industry have grown certain advantages resulting from the operation of the law of compensation. Success of arms depends to a large degree upon the genius of the peoples of the nations waging a conflict and this never was more true than in the case of the recent war. Chemists, metallurgists, manufacturers, engine builders, inventors—in fact all the representatives of the sciences, arts and crafts, were called upon to intensify their endeavors so as to product instruments that would be of aid to their respective countries to bring victory.

Because of the immense importance of steel and the great part it plays in war as one of the prime essentials, no greater responsibility rested with any line of producers during the conflict than with the manufacturers of steel. America having come into the struggle, her manufacturers were stimulated in their eagerness to serve their country and the associated powers.

While lines of specialization and high quality had been operating successfully in the United States before the war, when it came manufacturers learned that they were to be called upon for vastly increasing and new demands to supply vital parts of steel that must be absolutely dependable. This demand, strengthened by the war, continues to reflect great volume and the increased attention paid to the making of high quality steel marks a new turn in this branch of the iron and steel industry.

A splendid example of the demand for quality steel during the war, and which has developed in connection with pursuits of peace, is found in the requirements for special steels for airplane parts. It is generally conceded that in airplanes the design and construction of each part are subjected to the supreme test. American steelmakers were asked to and did produce material for such parts, not

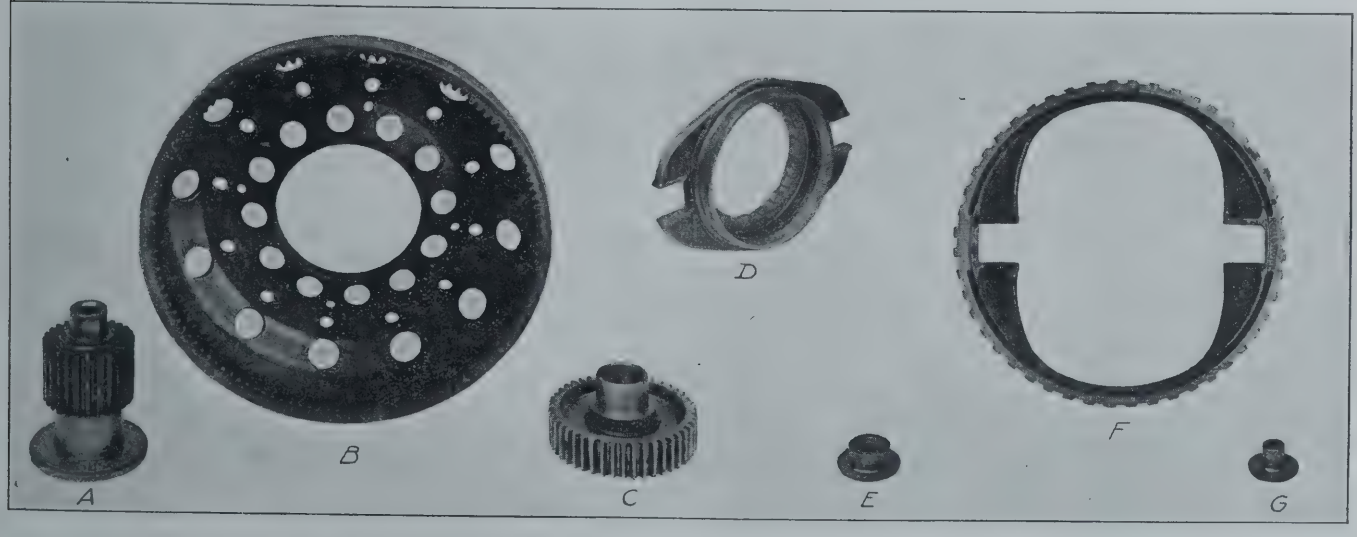


FIG. 2—PARTS FOR ENGLISH AIRPLANE MOTORS MADE FROM AMERICAN STEEL

A, *C*, Planet gears; *B*, Annulus gear which bolts to end of crankshaft; *D*, Sun wheel carrier; *E*, *G*, Planet wheel bushings; *F*, Anchor plate which permits adjustment for alignment

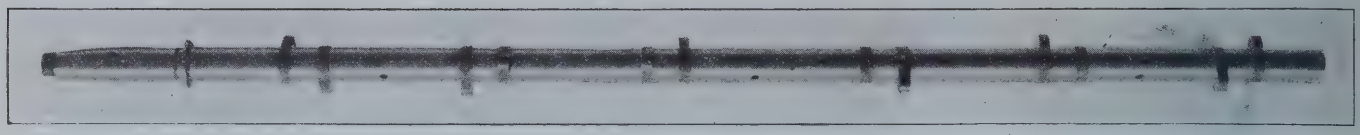


FIG. 3—COUNTERBORED CAMSHAFT FOR ROLLS-ROYCE AIRPLANE MOTOR

only for parts for American airplanes, but also for the well-known Rolls-Royce eagle motors. Moreover, the high-grade machining work for these parts was done in the United States. The manner in which United States interests were called upon to produce and machine steel for Rolls-Royce engines is a bit of war history that is not generally known. About two years ago representatives of Rolls-Royce, Ltd., England, came to the United States to look into the possibilities of getting certain parts of the Rolls-Royce engines made here. Among other steel sought was the 5 per cent case-hardening grade. A trial order was placed with the Hess Steel Corp., Baltimore. The steel was produced, given a thorough test, and met the severe requirements in every respect. It was then decided to give the Hess corporation orders for the manufacture in this country of all steel requiring the following analysis: Carbon, 0.08 to 0.14 per cent; silicon, 10 to 25 per cent; phosphorus and sulphur, under 0.03 per cent each; manganese, 20 to 35 per cent and nickel, 4.80 to 5.40 per cent. The steel was made for the manufacture of complete airplane parts for eagle motors which were installed in machines used for all military purposes such as bombing, fighting and scout work. With the signing of the armistice the interest in air transportation has been receiving unprecedented attention and the motors still are in great demand. Fig. 1 shows a seaplane, said to be the largest in the world, which is equipped with five 360-horsepower Rolls-Royce engines. The Hess corporation made the forging bars and finished machine bars for the airplane parts, while the forging was done by the J. H. Williams Co., Brooklyn. The Williams company shipped the forging to the other companies for the machine work. These latter were the H. H. Franklin Mfg. Co., Syracuse, N. Y.; the F. B. Stearns Co., Cleveland; the Taft-Pierce Co., Woonsocket, R. I., and others. The companies doing the machine work also did the heat treating and case hardening. The completed parts were then shipped to Derby, England, where the Rolls-Royce eagle engines were assembled and installed in the planes. The parts illustrated in Figs. 2 and 3 are typical of the forged and machined work turned out in these American plants during the war, and are used in engines varying from 280 to 360 horsepower, of the type illustrated in Fig. 4. The Hess Steel Corp. has six Heroult electric furnaces as illustrated in Fig. 5.

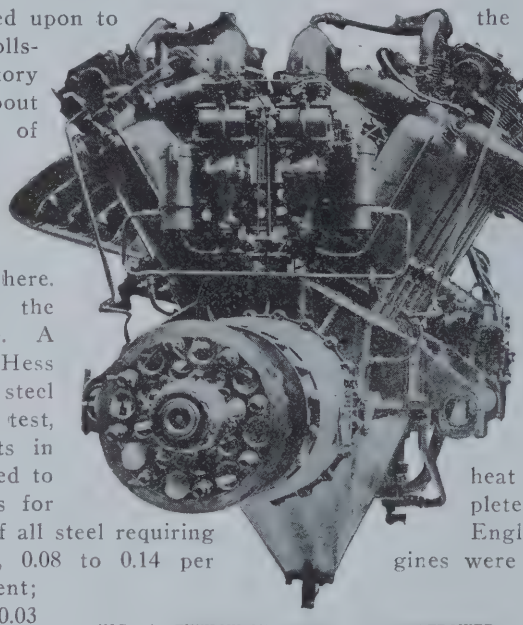


FIG. 4—TWELVE-CYLINDER 360-HORSEPOWER ROLLS-ROYCE AIRPLANE MOTOR

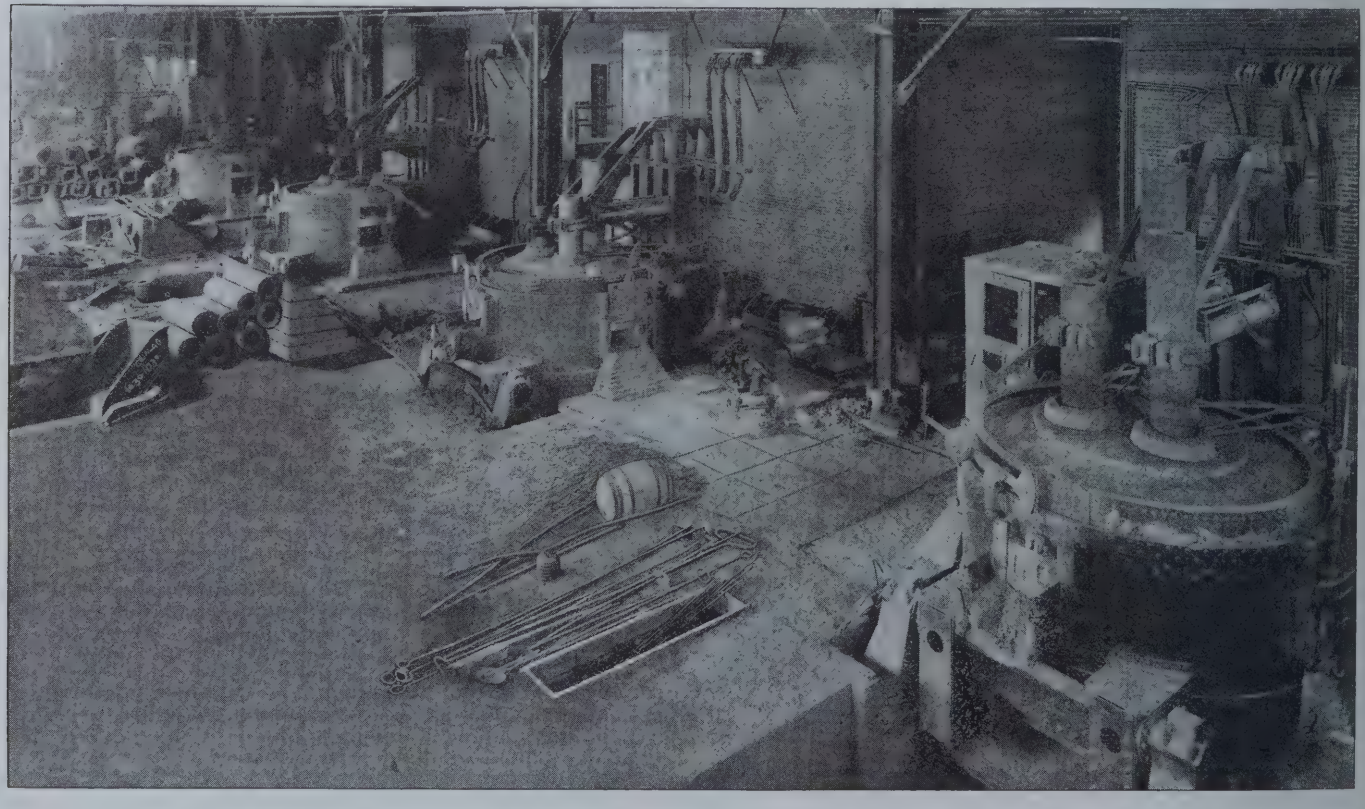


FIG. 5—BATTERY OF SIX HEROULT ELECTRIC FURNACES IN PLANT OF HESS STEEL CORP., BALTIMORE

Germany a Future Tool Factor

Will be Formidable Competitor in World's Machinery Markets—Manufacturers Now Harassed by High Taxes, Slacking Labor and Depreciated Currency—Best Features of American Tools Copied or Adopted

BY ALEXANDER LUCHARS

LAST May, the author of this article, Alexander Luchars, who is president of the Industrial Press, New York, publisher of Machinery was appointed by the department of commerce as special trade commissioner to acquire first hand information regarding the machine tool situation in Europe. His report on conditions in Great Britain, already has been published. This present report of conditions as he found them in Germany is published under his own signature, since he resigned as trade commissioner from the department of commerce on Oct. 1. The article is dated Oct. 8, although it was written in Berlin two months prior to that time. Mr. Luchar's report to the department of commerce, dealing with European markets for machine tools in a general way, has been published by that department under date of Oct. 11, although written in Paris on Sept. 8, 1919, while Mr. Luchars still was trade commissioner. It will be presented in a subsequent issue of THE IRON TRADE REVIEW.

DEFEAT has not changed Germany's characteristics, good or bad, but it has changed her opinions and ideals. If she breasts the winter of 1919-20 without another revolution, and the chances are she will, Germany will enjoy a period of gradually improving industrial conditions. Food will be more plentiful and therefore cheaper; the mark will be worth more; wages will not be lower but men will be more willing to work and production percentages gradually will increase. If this forecast is correct, Germany will, in a few years, become a formidable competitor in the machine tool markets of the world. At present, however, the exact opposite of the conditions outlined is true.

After carrying out the terms of the armistice as regards coal for France, Germany will have left for the winter of 1919-20, approximately 40 per cent of what she used last winter. The shortage will doubtless be increased further by the prevailing strikes and through loafing and slacking. This shortage will of course affect factories so that many will close down or operate on reduced time schedules. It is expected that full wages will be paid in such cases, part by the government, part by the employers; thus adding to the already crushing taxes.

Present taxes often work severe hardships. One maker of small tools, who had been in business 50 years, sold out for 1,000,000 marks. The new tax law took 800,000 marks and because the income on the remainder was not sufficient to live on, he went to work again at the bench in the shop he formerly owned. In addition to taxes on income and profits, those on principal or business capital range from 15 to 65 per cent, although payment can be made in 30 annual installments at 6 per cent interest.

Employers are harassed by labor's demands and restrictions; the difficulty of obtaining material; of disposing of their product when ready; depreciated currency; and many smaller factors, all in addition to the matter of taxes. But the future is not all gloomy. Some say that if the workmen will only work for whatever wages can be agreed upon, the other evils can be taken care of in time. Some believe labor is beginning to see that demoralization in fundamental conditions affects working people more than any other class, and that some reasonable working basis must be reached on which the employer and employe can stand.

A law has been introduced in the national assembly giving a representation in the management of each business to the workers, but many manufacturers do not think that such a representation would mean interference. Partial strikes in departments of vital importance to the works are a favorite resort; for in such cases the workers in the departments not on strike come to the shop and play at working, but produce almost nothing for lack of material, causing great loss to the management which must pay their wages. In the case of total strikes no wages are paid. One serious obstacle to industrial stability and progress is the lack of a recognized national executive.

Will Not Regain Former Place

No one with whom I talked believes that Germany will ever regain her former position. Conservative business men say that the return to normal economical conditions is not a question of months but of years; one, whose opinion has great weight with me, puts the time at 5 to 10 years. Food now controls the situation, and unless it becomes more abundant and cheaper during the coming winter, many expect another revolution. The supply of certain kinds of food fortunately is increasing, although meat and bread cards still are required. The former entitles the holder to two portions of meat and the latter to five slices of black bread daily.

Prices of all kinds of labor, metals and materials, and especially of machine tools, naturally have increased much more in proportion than in America. Prices have increased since the armistice, although the supply of labor should be greater.

A general comparison of wages paid to machinists and machine shop workers in 1914 and 1919 is given below:

	Wages per hour	
	1914	1919
Lathe hand	M. 0.60 to M. 0.75	M. 3.25 to M. 4.00
Milling machine hand	0.56 to 0.60	2.55 to 3.50
Planer hand	0.60 to 0.72	2.90 to 3.75
Assembler and fitter	0.56 to 0.70	2.70 to 3.60
Drilling hand	0.48 to 0.56	3.00 to 3.50
Blacksmith	0.95 to 1.15	3.50 to 4.00

On piece work the man must be guaranteed a minimum wage of about 25 per cent more than for day work. No large wages are earned at piece work, since the men will not produce more than an average amount of work under any conditions.

The above figures, however, do not afford an accurate comparison of labor costs on account of time lost loafing, talking and "slacking." In the machinery industry the average hourly product under the 8-hour day is about 50 per cent of what it was in 1913-14. In the Ludwig Loewe works I was told that the product per man per hour for the first six months of 1919 was 52 per cent of what it was in 1913-14. In some works it is much less.

Besides the increased wages and diminished output, manufacturers must reckon with extra bonuses or contributions in cash, up to M. 800 for each person or member of the organization such as foremen, draftsmen and superintendents, to enable them to pay their debts. The upper class employes have been giving more trouble lately than the workers.

All over Germany the 8-hour day

prevails, but the division of the day varies in different localities. In most Berlin machine shops the workers start at 7 o'clock, work until 12.10 p. m., take 20 minutes for lunch, and quit at 3 in the afternoon. On Saturday the quitting hour is 1, making 44½ hours a week.

Raw Material Prices Increase

The following figures give an idea of the increases in the prices of materials from 1914 to 1919. The heavy increases in the prices are due not to profiteering, but to greatly increased manufacturing, transportation and other costs. Foundry pig iron, which was quoted at M.74.50 in the second quarter of 1914, was quoted at M.215 in the first quarter of 1919, and M.356.50 in the second quarter of this year. Prices have now been lowered by M.52 to M.90 per ton, but the pig iron union states that the blast furnaces are working at a heavy loss.

The materials used in making pig iron have, of course, increased accordingly, coal briquettes having advanced from M. 13.75 to M. 66.10, and blast furnace coke from M. 17.00 to M. 88.85 per ton.

The advances of prices for raw and half-finished products are given in the following table; the prices given are marks per ton:

	Ingots	Billets
May, 1914	M. 82.50	M. 95.00
Jan. 1, 1919	285.00	300.00
March 1, 1919	385.00	400.00
May 1, 1919	405.00	475.00
	Sheet Billets	**Sections**
May, 1914	M. 97.50	M. 110.00
Jan. 1, 1919	305.00	320.00
March 1, 1919	405.00	420.00
May 1, 1919	480.00	520.00

Copper is now selling at M. 5125 a kilogram (official price). High speed steel sells for M. 27.50 per kilogram.

The following table, compiled by Prof. Schlesinger, an authority on the subject, gives the output of German machine tools from 1913 to 1918, and a comparison of prices as well:

Year	Production in Million Marks	Selling Price, Mark Per Kilogram	Production in Tons
1913	1060	1.00	1,060,000
1914	1045	1.10	950,000
1915	695	1.30	530,000
1916	660	2.00	330,000
1917	1720	2.50	680,000
1918	780	3.00	260,000

Many varying estimates have been made of the value of machine tools now in stock in Germany, but conservative authorities place the amount at between M. 200,000,000 and M. 300,000,000, which is a normal figure. This does not include tools owned by the government, but those are not expected to come on the market. The tools in private stocks are said to be second or third rate products; and this statement is supported by the fact that nearly all first-class German machine tool makers are behind in their deliveries, several claiming from six to nine months.

All German prices must be considered in relation to the impaired value of the mark, which is now quoted at about 17 to a dollar, as compared with 4¼ in 1914. Its effect on imports into Germany is evident, and establishes prohibitive prices for American-made machine tools. The price of German machine tools was advanced three times by the government during the war, 43½ per cent in 1917, and in 1918, 66 per cent over the 1917 prices. No further government advance was made, but manufacturers advanced prices from 20 per cent to 40 per cent at the end of 1918; and many prices have further advanced (except on war material tools) during 1919. Special machines for peace-work use advanced up to 200 per cent, and some small machine tools as much as 500 per cent over 1914 prices. But German tools of the best makes still sell for considerably less than similar American tools can be sold for according to the following 1919 prices for best makes of German machine tools furnished me by two well known German dealers:

Gap lathes, 12-inch, 3½ feet between centers	M. 3400
Gap lathes, 16-inch, 3½ feet between centers	4800
Gap lathes, 16-inch, 5 feet between centers	5100
Gap lathes, 18-inch, 3½ feet between centers	4500
Gap lathes, 20-inch, 5 feet between centers	7400
Gap lathes, 20-inch, 7 feet between centers	7750
Gap lathes, 26-inch, 7 feet between centers	10300
Engine lathes, with gap, lead-screw and feed rod, 16-inch, 5 feet between centers	7000
Engine lathes, with gap, lead-screw and feed rod, 18-inch, 3½ feet between centers	8000
Engine lathes, with gap, lead-screw and feed rod, 18-inch, 5 feet between centers	8500
Plain milling machines (according to size)	from M. 4000 to M. 9000
Universal milling machines (according to size)	from M. 7500 to M. 8500
Vertical milling machines	7200
Crank shapers, 14-inch	4200
Crank shapers, 18-inch	5000
Crank shapers, 22-inch	7000
Drilling machines, 20-inch	1300
Drilling machines, 22-inch power feed	2700
Four-spindle automatics, 1¾ and 2⅛-inch	M. 26,000 to M. 27,500

German Prices Lower

ON ACCOUNT of their greater accuracy, American-made machine tools of the best makes will sell for much better prices than German machines of the same type and size. No American machine tools have come into Germany for about three years except those that have been shipped through Holland and Sweden, hence no reliable comparisons can be made between 1914 selling prices and prices that would have to be received now. Judging from what former agents of American manufacturers have told me, however, the figures would range from four to seven times what they were in 1913-14 and from 50 to 75 per cent more than similar German tools sell for. One dealer estimated that an American 14-inch lathe, which sold for M.2000 in 1914, now would bring M.11,000 to M.12,000, while a German tool of the same kind would sell for M.6000 to M.7000. A Gleason bevel gear planer, which sold in 1914 for about M.9000, now would have to be sold for about M.60,000. (The German mark now is quoted at about 17 to the American dollar as compared with 4¼ in 1914.)—Mr. Luchars.

However, I believe that the above prices are lower than those for which first class machines can be bought. The following table gives a comparison of prices of German machine tools; all prices are subject to change from day to day many makers refusing to quote until tools are ready for delivery:

	1914	1919
High speed engine lathe, geared head, 18-inch, 3½ feet between centers	M. 2800	M. 9000
Tool room lathe, 14-inch, 3½ feet between centers	2400	8600
Milling machines, hand	230–280	950
Plain, three different sizes	800	2700
	2600	8100
	4400	13000 to 14000
Universal, including head	3500	10000 to 12000
Radial drilling machines, 3½ feet	2400	8000 to 10000
Radial drilling machines, 5 feet	4800	16000 to 18000

American Tools Are Copied

German manufacturers are turning out far better tools than they did in 1913-14. The designs of many well known American tools are followed, some are faithfully copied and others adapted. The list given below includes makers of characteristic types of American tools which had a ready sale in Germany before the war. General or standard machine tools, such as plain, vertical and lincoln type milling machines, sensitive and upright drilling machines, vertical slotting machines, planers, shapers, engine lathes, tool grinders and many other tools, which were manufactured more or less along American lines before the war, have been taken up in increasing quantities since 1914, by a considerable number of German makers. It is not the intention to include any of these in the following list of machines copied or adapted:

Acme Machine Tool Co., Cincinnati, O.; 2⅜-inch size geared head machine made by F. A. Scheu, G. m. b. H. Berlin.

Acme Machinery Co., Cleveland; bolt machinery made by Concordia Maschinenbau, Halle a. S. and August Meiselbach Nachf., Leipzig.

Baker Bros., Toledo, O.; two sizes of keyseaters made by A. H. Schutte, Koln-Deutz.

Bilgram Machine Works, Philadelphia; machines licensed to J. E. Reinecker, Chemnitz-Gablentz, are now also made by a firm in Leipzig.

Blanchard Machine Co., Cambridge, Mass.; grinder brought out by Schuchardt & Schutte, Berlin, with round and square table.

Brown & Sharpe Mfg. Co., Providence, R. I.; small screw machines, made in large lots and first-class workmanship by Samsonwerk, G. m. b. H., Berlin; while Ludwig Loewe & Co., Berlin, have also brought out another machine of this type; the No. 2 surface grinder also is made in large lots by Samsonwerk in Berlin and sold at the price of M. 5750; the same firm also makes the Brown & Sharpe No. 1 universal cylindrical grinder.

Bullard Machine Tool Co., Bridgeport, Conn.; while

the Deutsche Niles has made a vertical turret lathe along the Bullard lines, this competition seems to have died away as well as that of Sondermann & Stier, A. G. Chemnitz.

Cincinnati Bickford Tool Co., Cincinnati, O.; plain radial drilling machines of the latest Bickford type are built in quantities by Zimmerman-Werke, A. G., Chemnitz; and the smaller sizes of radial, 3 and 4 feet, are built by several firms in smaller lots. Upright drills of good design and workmanship are built by Gebr. Reinhold, Gera, as a specialty, and also by a number of other firms.

Cincinnati Milling Machine Co., Cincinnati, O.; No. 1 tool grinder made by Fritz Werner, A. G. Berlin; also Collet & Engelhard, Offenbach, A. M; Schuchardt & Schutte, Berlin; while A. H. Schutte, Koln-Deutz, makes the No. 1½ size.

Cleveland Automatic Machine Co., Cleveland; automatics built by Schubert & Salzer, A. G. Chemnitz; Gildemeister & Co., Bielefend; A. H. Schutte, Koln-Deutz; and Leipziger Werkzeug-Maschinenfabrik, A. G., Leipzig.

Fellows Gear Shaper Co., Springfield, Vt.; a machine very similar in working principle, using the same tools, is built by Max Rober & Co., G. m. b. H., Chemnitz; built in larger sizes.

Fitchburg Machine Works, Fitchburg, Mass.; automatic lathe made by Gildemeister & Co., Bielefeld; and by Heidenreich & Harbeck, Hamburg.

Gould & Eberhardt, Newark, N. J.; shapers with the same characteristic details are made by several firms; the Samsonwerk, Berlin, have a new design, "with very small openings in frame," brake, splash lubrication, etc., with some details patented.

Higley Machine Co., South Norwalk, Conn.; saws made by Ernst Krause & Co., Vienna, Otto Doring, Berlin; Irmischer & Co., Saalfeld, a. S.

International Machine Tool Co., Indianapolis; Libby turret lathe (geared head) made by Zimmermann-Werke, Chemnitz.

Jones & Lamson Machine Co., Springfield, Vt.; turret lathe advertised by C. G. Haubold, Jr. 1, G. m. b. H. Chemnitz; and F. A. Scheu, G. m. b. H., Berlin.

Landis Tool Co., Waynesboro, Pa.; grinding machines made by Fritz Werner, A. G. Berlin-Marienfilde; Schubert & Salzer, Chemnitz; A. H. Schutte, Koln-Deutz; Schuchardt & Schutte, Berlin, and several others.

J. N. Lapointe Co., New London, Conn.; broaching machines made by Dolze & Slotta, Coswig, Saxony.

R. K. LeBlond Machine Tool Co., Cincinnati, O.; tool grinder made by Zimmermann-Werke, Chemnitz, in large lots.

Mitts & Merrill, Saginaw, Mich.; keyseater made by Elbe-Werke, Dresden; and Mammutwerke, Nurnberg.

National Acme Co., Cleveland; multiple-spindle automatic machines made by A. H. Schutte, Koln-Deutz; Gildemeister & Co., A. G., Bielefeld; Leipziger Werkzeug-Maschinenfabrik, A. G., Leipzig; the single-spindle Gridley automatic machine is made by Heidenreich & Harbeck, Hamburg; Gebr. Bohringer, Goppingen; Hasse & Wrede, Berlin; de Fries & Cie., A. G., Dusseldorf.

New Britain Machine Co., New Britain, Conn.; automatic machines made by Gildemeister & Co., A. G., Bielefeld.

Norton Co., Worcester, Mass.; Ludwig Loewe & Co., Berlin, is licensed to make Norton grinding machines.

Potter & Johnston Machine Co., Pawtucket, R. I.; this type of machine made by Herm. Schroers, Crefeld; deFries & Cie., A. G., Dusseldorf; Magdeburger Werkzeugmasdhinen-Fabrik, Magdebrug; Leipzger Werkzeug-Maschinenfabrik, A. G., Leipzig; Zimmermann-Werke, Chemnitz.

Builds Tools of Many Types

Among the leading German manufacturers of machine tools should be included Schuchardt & Schutte and Alfred H. Schutte. The former firm has its own factories and also controls the output of several others, making Blanchard and Landis type grinding machines; Cincinnati type tool grinders; turret lathes up to 2⅜-inch size; medium-sized milling machines; lathes; drilling machines; engraving machines; woodworking machines; and special machines for various types of manufacture; measuring instruments and tools; several types of small tools; grinding wheels; furnaces, etc.

Alfred H. Schutte has four factories, at Cologne-Deutz, Cologne-Ehrenfeld, Berlin-Reptow and Siegen-Marienborn. At Mr. Schutte's Cologne works, which are modern in every respect and employ 600 workmen, I saw the new Schutte four-spindle automatic. This machine has a single pulley drive and geared head, a capacity for bars up to two inches in diameter, and is provided with all the means for rapid and accurate production found on various types of American multiple-spindle automatic machines, including spindles mounted in adjustable bearing boxes with end thrusts taken by ball bearings, an auxiliary tool head, a special arrangement for rapid drilling and ample provision for lubricating oil for the cutting tools. The price is M. 27,500. Nearly all the German machine tool builders made money during the war. Some made large fortunes, but these now find them diminishing rapidly through heavy taxation, increased costs and governmental requirements in regard to wage payments to men not employed. The decline in earnings began with many firms before the war closed and the earnings of Ludwig Loewe & Co., probably are typical of many. This company's net profits and dividends in 1915 totaled M. 4,338,000; in 1916, M. 3,773,000; 1917, M. 4,485,000, and in 1918, M. 2,584,000. It employed 4000 workers during the war, many of whom were women but now about 2500 workmen are engaged and a few women. Its new building, begun in 1914, is not yet fully equipped, about half of it being devoted to the manufacture of milling machines. Dr. Waldschmidt still is managing director, Mr. Bechstein occupying his former position, and Mr. Huhn being in charge of the mechanical department.

In 1917-18 the Siemens Works made a clear profit of M. 14,000,000; but as the increase in wages this year already amounts to M. 70,000,000, it is evident that the showing for 1919 will be quite different.

It is reported that the Krupps Works does not intend to take up the manufacture of machine tools, but is selling those in its equipment which it does not need. It also is stated that the manufacture of textile machinery, typewriters, calipers, gages, and measuring instruments is being considered.

Since virtually no American tools have been coming into Germany for three years, of course, no American machine tool dealers now are in Germany. Even those who believe in American tools and would prefer to handle them, have been obliged to sell German, Swiss and Swedish products. The firm of Heinrich Dreyer has been liquidated and its fine show room now is occupied by Zimmerman-Werke of Chemnitz. Thielicke & Co., formerly in Charlottenburg, have their salesroom and offices at Kaiser Wilhelmstrasse 2, just across from Dryer's old location. Both Thielicke brothers were in the army, but came through with slight wounds. Schuchardt & Schutte are in the same location in Spandauer strasse. Oscar Burghardt, formerly manager of the Petrograd branch makes his headquarters here. Ernst Muller, formerly manager of the New York office, still is at Berlin in the same location as in 1914. Victor Giraud still is manager of the business.

German Dealers Resume Activity

Alfred H. Schutte has moved his Berlin wareroom from its former location in Alt-Moabit to Kroner strasse, 52, near the business section. Adolph Siems is still manager. E. Sonnenthal Jr. has moved to Ross strasse, 22. In addition to an extensive dealer's business, this firm has taken up the manufacture of lathes. Ernst Krouse of Vienna has opened a wareroom at Friedrich strasse, 123, principally for the sale of the product of his Vienna factory. He recently has been employing 400 hands in his Vienna factory, making lathes, drilling machines, Higley saws, planers and shapers and turret lathes. Mr. Krause recently bought a planer plant at Cologne, which he will

(*Concluded on page* 1180)

American Ideas Copied

GERMAN designers have made few changes in machine tools and few new machines have been brought out. On account of the tendency to copy American machines or to use their new points, manufacturers are cautioned about accepting first orders for such machines. Before the war, the German Machine Tool Makers' association had 72 members. The membership now totals about 320. *The members apparently work together for much the same objects that are before the members of the American organization, except that the German manufacturers are free to regulate prices to any extent they choose. The members of the German association employed about* 70,000 *men and a large number of women in* 1917 *while in* 1918-19, *about* 60,000 *men and fewer women were engaged. Makers of engine lathes in the organization number* 90; *vertical boring mills,* 13; *cutting off machines,* 20; *horizontal boring mills,* 27; *gear cutting machines,* 19; *turret lathes, screw machines and automatics,* 37; *milling machines,* 83; *drilling machines,* 43; *planers, slotters and shapers,* 44; *and grinding machines,* 40.—*Mr. Luchars.*

Schneider's—An Industrial Pillar

Great French Iron and Steel Works, Founded by Cabinet Member in Reign of Napoleon III, Proves Giant of Strength in Liberty's Cause—Glimpse of Organization Whose Head is Visiting the United States

BY FRANCIS MILTOUN
French Correspondent of The Iron Trade Review

THE visit to the United States of Charles Eugene Schneider, head of Schneider & Co., Creusot, France, as chairman of the French delegation to the international trade conference in Atlantic City last week, serves to recall the notable service rendered by the company's great iron and steel plants to the cause of liberty. Monsieur Schneider, who is president of the Iron and Steel institute, an office to which he was elected at the first meeting of the institute in London after the war, in recognition of his work in behalf of the allies as well as his ability in metallurgical and engineering fields, also has received honors in the United States. This year he received the gold medal of the American Mining and Metallurgical society for distinguished service. In this article, THE IRON TRADE REVIEW'S *French correspondent gives a brief history of the Schneider establishment and the extent of its operations since its foundation, a summary which will serve to point out the importance of the work of the distinguished French industrial leader who is now touring this country.*

WHEN Charles Eugene Schneider the famous French ironmaster was elected president of the Iron and Steel institute, at its first after-the-war convention in London, popular opinion in regard to the versatility and broad-mindedness of this chief personage of the French metallurgical industry was confirmed.

Schneider's has been a name to conjure with in French metallurgy for over a century, the establishment having been founded by Joseph Engene Schneider, an ironmaster of Bazeilles, who was minister of the legislative corps in the reign of Napoleon III, and a member of the emperor's privy council.

The business developed rapidly and by the middle of the nineteenth century it passed to the son of the founder, Henri Schneider (1840-1898). The present head, the son of Henri, became a partner on his majority and became the ruling power in the company on the death of his father, whom he also succeeded as a member of the French parliament.

Plant Well Equipped as War Started

A century of labor found the Schneider plant fully equipped for the responsible part they were to play in the great war. The chief handicap at the beginning of its labors in behalf of *la patrie* was the fact that the enemy occupied the Briey basin, from which it obtained a large part of its raw material. Finding it impossible to receive high-phosphorus iron from its Briey plants the company increased its facilities at the Creusot works in order to produce bessemer steel, and by the middle of 1915 it had succeeded in experiments which enabled it to produce shells of bessemer steel in a most satisfactory manner. This then became the chief production at Creusot.

At the end of 1915 another large steel plant was erected at Le Breuil, nearby, originally intended to contain four open-hearth furnaces. The first unit began pouring in August, 1916. Finally six furnaces, each of 60 tons capacity were in operation and later two 30-ton furnaces were installed. By the end of 1917 more than 1000 tons of ingots were produced each day.

Because of the increased demand for pig iron, a new blast furnace was fired at Creusot in 1915 and another in 1916. By the end of 1917 production of guns and ammunition at Creusot had increased 1000 per cent over what it was at the end of the first year of the war.

At the beginning of the war, Schneider put all his formulas and processes at the disposal of the French government. These were particularly valuable in the production of shell steel. The company assisted other plants which never before had to contend with such problems as were thrust upon them, and loaned its technicians to enable them to increase production with the least possible delay.

The company at this time acquired a working interest in the Société des Hauts Fourneaux et Acieries de Caen, whose plant had been idle since the opening of hostilities, and the subsidiary Schneider company, the Société Normande de Metallurgie, obtained the necessary authority for completing and bringing into production the Caen plant.

A mission of the Schneider engineers visited the United States with a view to having produced shells in accordance with Schneider specifications, a task successfully undertaken by the United States Steel Corp., and the Lackawanna Steel Co.

Recently it was announced that the company has acquired a controlling interest in the famous Skoda Works, at Pilsen, employing 30,000 workmen. This plant, formerly under Austrian control, but now under the Czecho-Slav government, has made an agreement with the Creusot firm of Schneider's, and the capital of 72,000,000 crowns will be increased immediately to 144,000,000. The new council of administration will include three French representatives and six Czecho-Slav members. The new president is M. Simoneck, a Czecho-Slav, and the vice president, Monsieur Schneider. The other French directors are Col. Henri Viel, and Mons. Victor Champigneul, engineer.

The Creusot works proper consist of a colliery, blast furnaces, by-product coke ovens, open hearths and mills capable of converting the entire production of ingots into armor plates, sheets and shapes. They also include foundries for steel, iron, and nonferrous metals, shops for building turbines, locomotives and ordnance.

Plant Includes Coke Ovens

The Henri-Paul plant, named in honor of the eldest son of Monsieur Schneider, is at Montchanin-les-Mines in the department of the Saône et Loire, and includes a bronze foundry, now undergoing considerable development, and a battery of by-product coke ovens.

The Breuil works, near Creusot, is a high efficiency steel plant, with 60-ton ton 30-ton open-hearth furnaces in operation.

The Havre, Harfleur et Hoc plant includes engineering shops for the production of marine and diesel engines and gun-proving shops and ranges.

The Chalon-sur-Saône works specialize on the building of steel bridges and small naval craft, submarines, torpedo boats, etc. The great Alexander bridge at Paris, one of the products of this plant, is considered in France as the

most artistic and durable of all steel bridges.

The Champagne-sur-Seine works specialize in electrical machinery. At La Londe les Maures, on the Mediterranean in southern France, is a torpedo plant, producing small electric motors. At Paris are shops for producing gunsights and similar equipment, and at Bordeaux is a plant producing cartridges, and manufactures made of light alloys. The company at Creusot is directly interested in coal mines at Decize in the department of the Nièvre, the Chaillac iron mines in the department of the Indre, and the Droitaumont iron mines in the department of Meurthe-et-Moselle.

The following figures give an indication of the size of the parent concern: Area of ground owned, 17,300 acres; horsepower, 200,000; machine tools in use, 5000; locomotives, 100; freight cars, 6500; track length, 200 miles.

Handling Costs in a Steel Foundry

BY CLIFFORD E. LYNN

PROBABLY the most essential step in securing accurate production records in a foundry is to have a check on the molder's daily time distribution slips. If the timekeeper is required to visit each molder personally at the close of the day to ascertain what has been produced, a check of the molder's verbal statement should be made. The best method of accomplishing this task without arousing the molder's antagonism is to have the foundry production clerk secure daily from each molder a statement of what he intends making, securing check number, pattern number, number of molds or piles, stamp number and date. He then places this information on a ticket shown in Fig. 5 which he passes to the molder, who places the tickets on each pile which may constitute one or more molds, before the heat is poured.

The production clerk precedes the ladles, as the heat is being poured, collecting all tickets from molds or piles, which the ladleman informs him he intends pouring. From these tickets he compies a daily-pouring record showing the number of the heat, date made, pattern number,

Foundry Orders

Date Scheduled _____

Stock or Customer's Order No.					Stock or Customer's Order No.					Stock or Customer's Order No.					Stock or Customer's Order No.					Stock or Customer's Order No.				
Pattern No.	Pattern Name	No. on Order	Good	Bad	Pattern No.	Pattern Name	No on Order	Good	Bad	Pattern No.	Pattern Name	No. on Order	Good	Bad	Pattern No.	Pattern Name	No. on Order	Good	Bad	Pattern No.	Pattern Name	No. on Order	Good	Bad

①

Entry In Daily Production Book

Dep't _____ Date _____

LEFT STANDING					POURED					Reported Made	
Pattern No.	Molder's Chk. No.	No. Molds	Pcs. Per Mold	Total Pcs.	No. Molds	Pcs. Per Mold	Total Pcs.	Total Poured	Dates Poured	Day	Night

②

Pattern Order Ticket

Dep't _____ Date Ordered _____

Pattern Name	Pattern No.	Quantity Ordered	Cores Per Mold	Size or Weight	Order No.	Remarks

③

Heat Pouring Record

Heat No. _____ Fce. No. _____
Dep't _____ Serial No. _____
Date Poured _____ Started _____
Finished _____

Pattern No.	Molder's Check No.	Molder's Stamp No.	No. Molds	Pcs. Per Mold	Total No. Pcs.	Date Made	Broken	Slagged

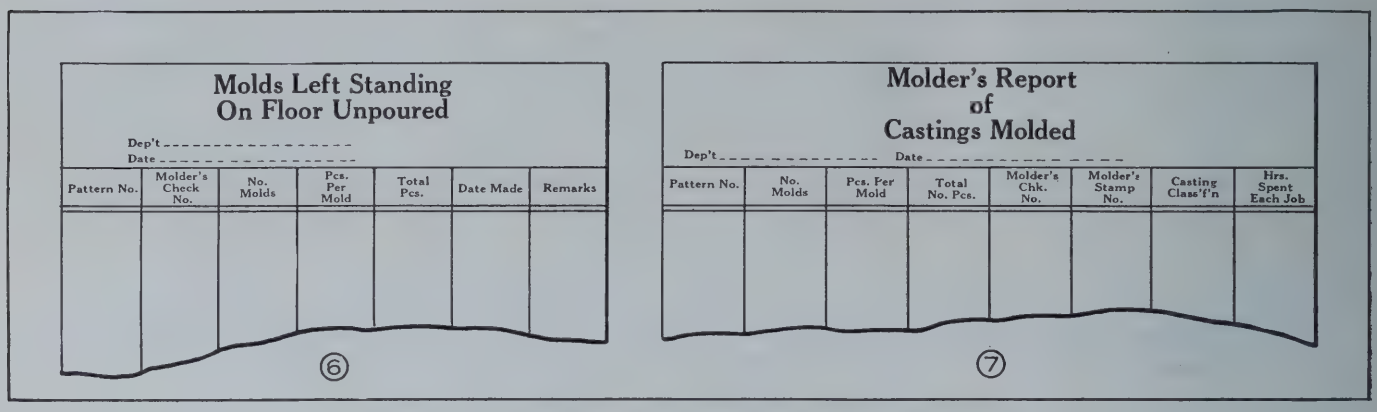
④

Mold Ticket

Pattern No. _____
Check No. _____
Stamp No. _____
Pc's Per Mold _____
Date _____

⑤

FIGS. 1 TO 6—VARIOUS FORMS USED IN FOUNDRY COST KEEPING



FIGS. 6 AND 7—TWO FORMS USED IN MAKING OUT FOUNDRY REPORTS

number of molds, pieces per mold, total number of pieces, stamp number and date of pouring. The form used for this record is shown in Fig. 4. At the end of each day he should visit each mold or pile, placing tickets on all left standing unpoured.

From a count of these molds or piles, a left-standing-on-the-floor record, shown in Fig. 6, should be made, showing date produced, molder's check number, pattern number, number of molds, pieces per mold and total number of pieces. The timekeeper or production clerk should enter on the form, shown in Fig. 2, in the production book daily the left-standing-on-the-floor record, heat pouring, and molder's report of castings produced, showing if any molds were broken in handling or slagged in pouring.

The daily left-standing and poured records should equal what the molder daily reports, as produced, minus molds broken or slagged. If it does not, the production clerk and timekeeper should investigate and correct any error made, before the daily production report, shown in Fig. 7, is made out and sent to the cost department.

The correct production is posted daily on time cards made out for the pay period and ruled to show date produced, pattern number, number of castings, molder's check and stamp numbers, molds broken, castings rejected by inspector, piece and day work, hours and rates per 100 pieces or hour. The productive and nonproductive hours are classified separately, showing hours spent on each job.

Classifications of castings, dividing bench, floor and machine, made with subdivisions are also recorded for benefit of the cost department. The scrap or open-hearth furnace charge is weighed, as is the finished casting, after it has been routed through the sand-blast department and inspected.

At the end of each month, which also is the end of the latter half pay period, an inventory of all molds left standing, poured and unpoured, or castings shaken out is taken by the production and time clerk, and marked old pay, so that the old and new pay are properly divided. It also is the duty of the timekeeper to record the time taken from clock cards, handle all transfers, employment slips, discharges and other matters effecting foundry employes. The production clerk issues requisitions on the store room for supplies and handles the foundry order book.

When an order is received from a customer, it is recorded by the order department and scheduled for production according to foundry conditions, priority, and date shipment is desired. When scheduled the order clerk orders the pattern for the foundry on the form shown in Fig. 3 and tags it with a number. He orders the quantity wanted, the size, etc., and sends a list of orders thus scheduled for stock or shipment to the foundry production clerk. The latter enters it in his order book on the form shown in Fig. 1, deducts the castings molded daily, adds the inspector's daily report of castings scrapped which have to be made over, and records castings passed as good. When the total of good castings made equal the quantity order, the order is considered completed.

Germany a Future Tool Factor

(*Concluded from page* 1177)

use for manufacturing machine tools. F. G. Kretschmer at Frankfurt-on-the-Main has been handling German tools during the war and has a large stock on hand. Both Mr. Koyemann and his associate, Mr. Huttner of Dusseldorf, were in the army during the most of the war, and are now re-establishing their business.

There are said to be some 60 automobile factories in Germany, but not more than a dozen are active, and only a few of those have been able to get sufficient material to turn out a normal product. Before the war few of these manufacturers produced cars as we do in the United States. It is said there were 190 different kinds of cars made. The financial outlook in Germany does not warrant large investments in the manufacture of either pleasure of business cars.

No definite policy has yet been decided on about the tariff, although it is said that a high protective duty will be placed on imports. The national assembly being only a provisional body, it is likely that this question will be left to its successor, but there is a marked tendency among those having authority, to arbitrarily shut out all American machine tools, except those types which are not made here.

There has been no change in the German patent law since 1909; and American manufacturers are advised to patent any improvements that are patentable, not only for their protection in Germany, but in other continental countries where German tools may be sold.

In what remains of Austria, the machine tool industry is on an uncertain footing, due to unsettled conditions and a debased currency. In Hungary, the new government is too young for anyone to venture an opinion about the future, except that any government must be an improvement over what Hungary has had lately. In Prague, business is said to be encouraging, and the Czecho-Slovak government apparently is growing in strength. Machinery dealers in Berlin also say they are doing a good business with Finland.

Everyone whom I saw in Germany was friendly and there is no animosity against Americans as individuals; but there is a strong feeling against us as a nation. The Germans say that if we had not come in they would have won the war, and they are not of the readily forgiving kind. This feeling will affect the sale of American machine tools and other products in the future.

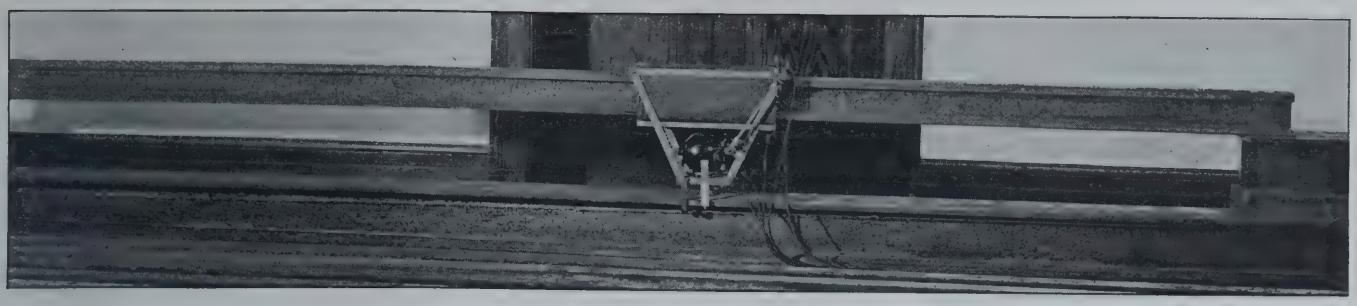


Fig. 1—Rail testing apparatus in laboratory of United States bureau of standards, Washington

Testing Steel by Magnetic Analysis

BY R. L. SANFORD

MAGNETIC analysis may be defined as the utilization of the magnetic methods for the study of the internal structure and mechanical condition of magnetic materials and in particular of iron and steel. It may be used to detect structural changes on heating or cooling or as an indication of mechanical properties. The results of magnetic analysis are to be interpreted in the light of the best available knowledge of the correlation between the magnetic and other properties of materials.

From a paper presented at the sixteenth general meeting of the American Iron and Steel institute, New York, Oct. 24. The author, R. L. Sanford, is associate physicist, United States bureau of standards, Washington, D. C.

Many physical and chemical methods for testing steel and steel products destroy the sample or render it unfit for the use for which it was originally intended. This fact has made necessary our present methods of vicarious testing. It is plainly evident, therefore, that any satisfactory nondestructive method which makes possible the comparison of each individual piece with one whose performance has been carefully determined and which thus serves as a standard of quality will have great commercial value.

The mechanical properties of steel are functions of its chemical composition and of its micro-structure and mechanical condition. The micro-structure and mechanical condition, such as internal strain, etc., are determined by the thermal history and the amount and kind of mechanical work that has been done on the piece. The magnetic properties of steel are likewise functions of the same variables and any change produced in one set of properties is accompanied by a corresponding, though not necessarily proportional, change in the other.

Fig. 3 shows graphically the relations between the quantities measured during the course of a complete magnetic test. If a magnetically neutral or demagnetized piece of steel is subjected to an increasing magnetizing force, the resulting induction

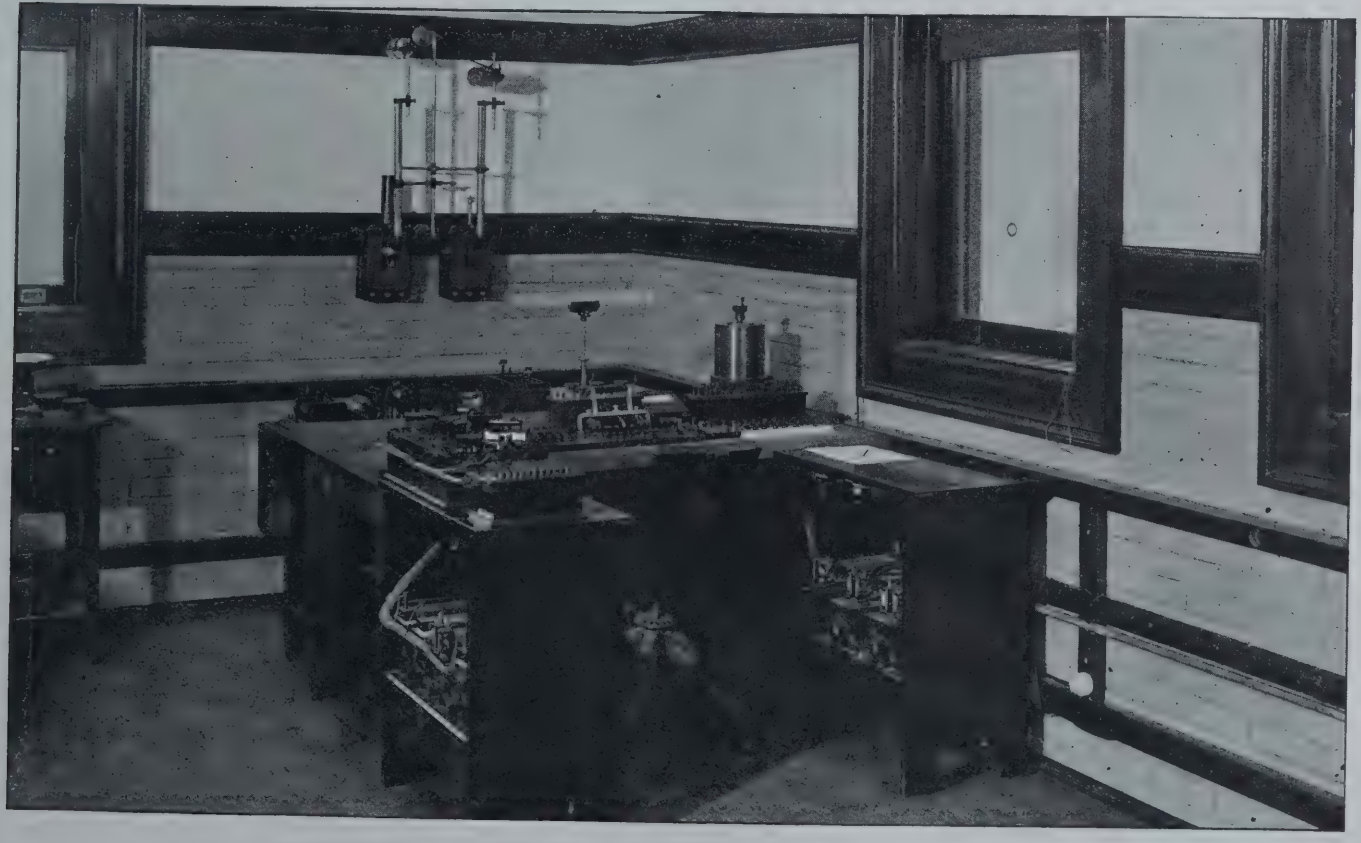


FIG. 2—PERMEAMETER APPARATUS USED IN CONNECTION WITH THE MAGNETIC ANALYSIS OF STEEL

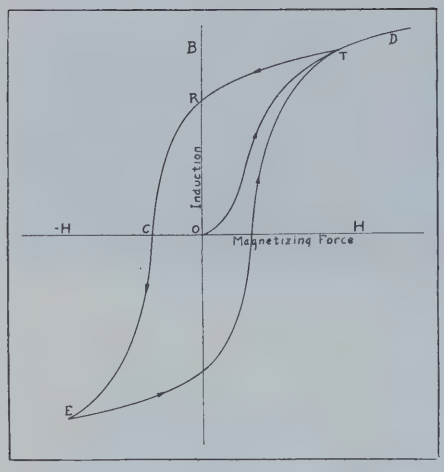


FIG. 3—SHOWING INDUCTION AND HYSTERESIS CURVES FOR STEEL

is indicated by the curve *OTD*. If the magnetizing force should only be brought up to the point *T* and afterward reduced, and then increased to the same value in the reverse direction, the curve *TRCE* is traced where values at the left of the axis represent magnetizing forces in the reverse direction. If the magnetizing force is again reversed, a closed loop is traced as shown. This loop is called the hysteresis loop and its area is proportional to the energy required to take the steel through a complete magnetic cycle. The value of induction corresponding to the point *R* is known as the residual induction and the value of reversed magnetizing force required to reduce the induction to zero, represented by the point *C*, is called the coercive force. The point *T* representing the maximum value of magnetizing force and induction for a given hysteresis loop is called the tip of the loop. The ratio of magnetic induction to the corresponding magnetizing force at any point on the curve *OTD* is called the magnetic permeability.

It is too long a story to present at this time in any detail the results of many experiments which have shown the existence of a close connection between the magnetic properties of steel and the factors determining its mechanical properties. We may consider three cases which are illustrative of the effect on the magnetic properties of chemical composition, hardening and tempering.

Fig. 6 shows the variation in permeability of annealed carbon steel with various carbon contents. It will be noted that the permeability varies through a rather wide range as the carbon content varies from 0.11 per cent to 1.8 per cent, decreasing as the percentage of carbon is increased.

The curves of Fig. 8 show the effect on the coercive force of drawing or reheating a 1 per cent carbon steel after quenching. Note the clear evidence of the cementite transformation in the case of the water-quenched steel which took place between 200 degrees and 300 degrees Cent. The transformation evidently took place during the quenching when oil was used as the quenching medium, due to the slower rate of cooling through the critical range.

While the evidence already at hand is sufficient to demonstrate that there is a very strict correspondence between the magnetic and mechanical properties of steel, these relationships are so complex, that up to the present time no definite laws have been worked out. Indeed it may prove extremely difficult, if not impossible, to completely define in terms of the magnetic properties of a substance all of its other physical properties. In spite of this apparently discouraging fact, we need not wait for the complete working out of all the correlations before applying magnetic analysis in a practical way.

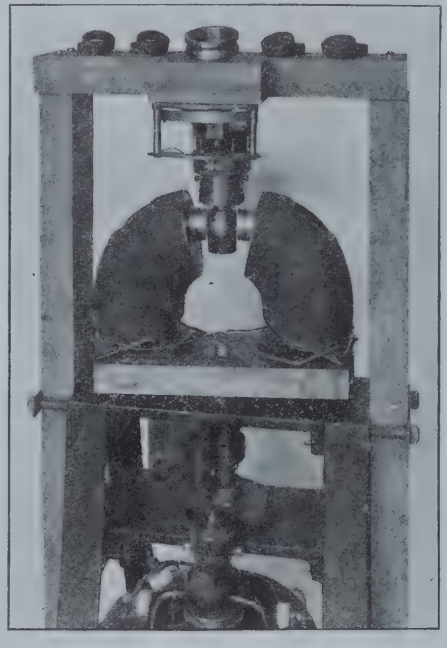


FIG. 4—EXPERIMENTAL APPARATUS FOR TESTING BALL BEARING RACES

The methods of magnetic analysis may be employed either by the investigator, as an aid to the solution of theoretical problems such as those arising in the study of the phenomena involved in the hardening of steel, or by the testing engineer, as a nondestructive method of test to supplement the methods already in use.

A laboratory such as that of the United States bureau of standards is admirably adapted to the study of this subject from the theoretical standpoint and the magnetic laboratory of the bureau is at present carrying on investigations of this nature.



FIG. 5—CRACKS IN BALL BEARING RACES DETECTED BY MAGNETIC ANALYSIS

This work is being done in co-operation with other divisions of the bureau and in particular with the division of metallurgy. This work is not yet sufficiently far advanced to present definite results, but they are very promising and indicate that the method may be expected to yield very valuable data which will serve not only to advance our theoretical knowledge, but also to provide a foundation on which practical applications may be based.

Fig. 2 shows a corner of the magnetic laboratory and the apparatus used for making standard tests of the magnetic properties of specimens of iron or steel.

For practical purposes, magnetic

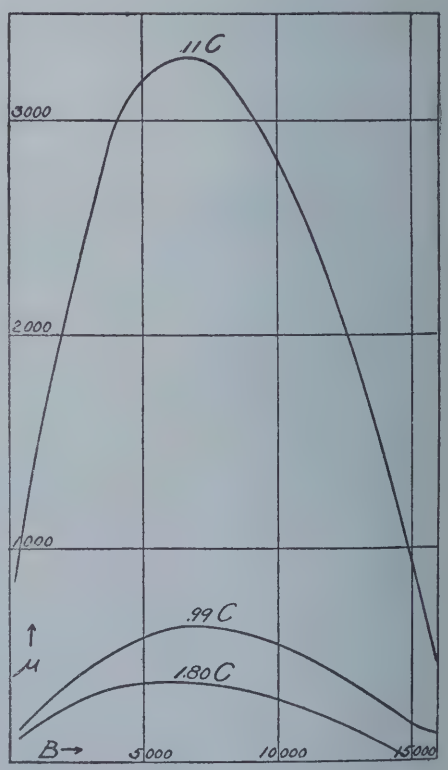


FIG. 6—VARIATION OF PERMEABILITY WITH INDUCTION FOR STEELS OF DIFFERENT CARBON CONTENTS

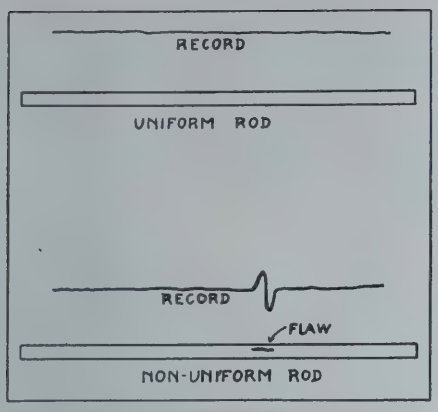


FIG. 7—TYPE OF PHOTOGRAPHIC RECORD SHOWING DEGREE OF MAGNETIC UNIFORMITY OF STEEL BARS

analysis has as its ultimate object the development of methods and instruments which can be used in the shop for the purpose of comparing the factory product with specimens which have been selected as standards of quality. At the present stage of development, each application must first be the subject of an individual investigation. The properties of the material must be studied, the magnetic criteria for quality must be determined upon and apparatus must be built for making the magnetic measurements quickly and accurately under shop conditions. After these steps have been completed, the final step is tried under actual service conditions to demonstrate that the method is sufficiently rapid, accurate and reliable to warrant its commercial use.

The magnetic laboratory has developed a method for determining the degree of magnetic uniformity along the length of a specimen of substantially uniform cross section. This method has been adapted to the study of steel rails. Part of the apparatus for testing rails is shown in Fig. 1. The test consists of surrounding the rail with a magnetizing solenoid which is run along the rail. A sensitive electrical instrument which is connected to a test coil carried with the solenoid indicates any change in magnetic permeability of the specimen as the coil moves along. The type of record obtained by photographic means is indicated in Fig. 7.

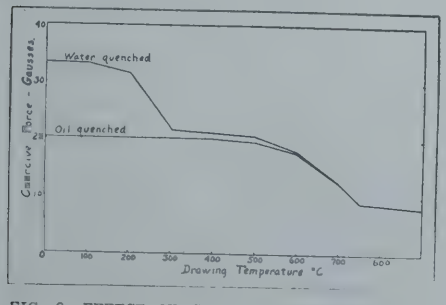


FIG. 8—EFFECT OF COERCIVE FORCE OF DRAWING 1.0 PER CENT CARBON STEEL AFTER QUENCHING

The greatest difficulty in this line of investigation lies in the interpretation of the results. This is due to the fact that there are many causes that may produce magnetic inhomogeneity, such as chemical segregation, strains, and flaws, and it is difficult to differentiate between them. The conclusions so far warranted are that a bar which is magnetically uniform along its length is also mechanically uniform, that a bar which is mechanically nonuniform along its length is also magnetically nonuniform and this nonuniformity will be surely indicated by the test; and finally that bars which are magnetically nonuniform may or may not be seriously defective from the mechanical point of view.

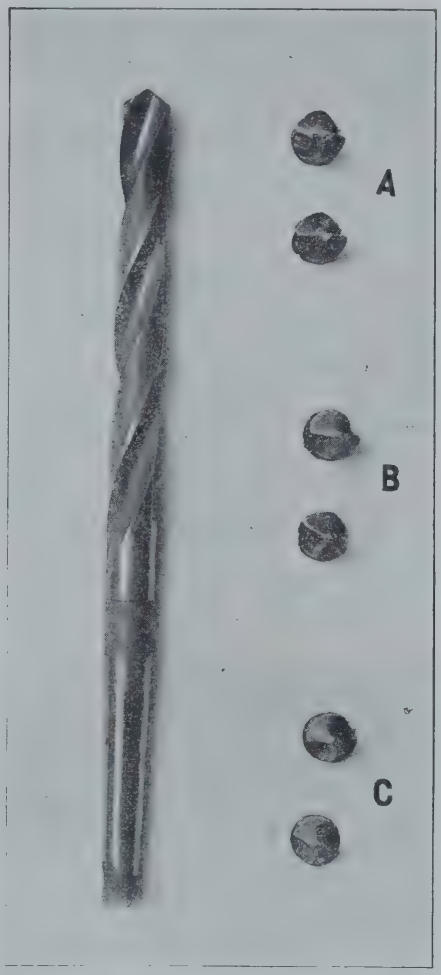


FIG. 9—RESULTS OF SERVICE TESTS ON TWIST DRILLS

This last conclusion points out the necessity for further investigation which is being carried out in cooperation with the ordnance department of the United States army.

A method is in process of development for the testing of ball bearing races. The work is not yet complete but it has been demonstrated that the apparatus is capable of detecting flaws, such as hardening cracks in the rings.

The apparatus used is shown in Fig. 4. The ring is mounted on a table free to rotate and magnetized between the poles of an electromagnet which also rotates. The rotation of the ring is opposed by a spiral spring. By means of a pointer and scale the torque exerted on the ring by reason of the rotation of the electromagnet can be measured. This torque is proportional to the energy required to carry the direction of magnetization of the ring through one complete revolution. It seems probable that this value may be used as an index in testing the rings. If the needle jumps during the rotation a crack or soft spot is indicated. The cracks shown in Fig. 5 were detected in this manner.

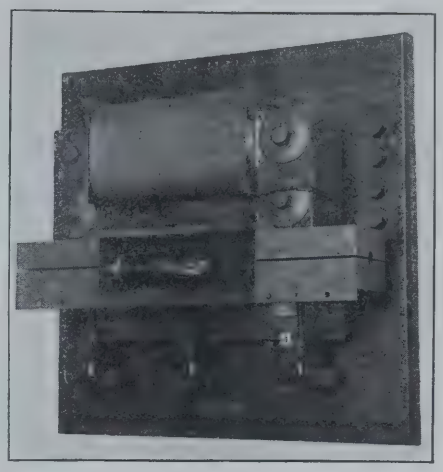


FIG. 10—EXPERIMENTAL APPARATUS FOR TESTING TWIST DRILLS

Fig. 10 shows apparatus used in preliminary experiments on twist drills. The drills shown in Fig. 9 were first given a magnetic examination and then drills *A* and *B* were subjected to identical service tests. The coercive forces for these drills were in the ratio of 3 to 2, the higher value indicating the better drill.

The work already done has furnished sufficient evidence of a very strict correspondence between the magnetic and mechanical properties of steel to warrant the conclusion that magnetic methods may be used to advantage in fundamental investigation and for nondestructive testing of steel products which obviously will have very great commercial value.

The future development of magnetic analysis must progress along the two lines of fundamental research and practical application since the proper interpretation of the results requires a full and complete knowledge of the existing relationships and this knowledge will have practical utility only as it is actually applied to the study and control of the structure of steel and the inspection of finished products.

Outlines Status of Electric Drive

Development of Electrically Driven Reversing Rolling Mills Has Been Rapid—Reversing Motor Has Been Used on All Types of Mills—Power Distribution is Economical and Flexible

BY WILFRED SYKES

WE ARE becoming so accustomed to the use of electric machinery in our daily life that sometimes the significance of the change from past practice is not appreciated. I believe this is true to some extent in regard to the electrically driven reversing rolling mill which has been quite extensively used in the last few years, and it is the object of this paper to review briefly the factors that led up to its development and to summarize the present state of the art.

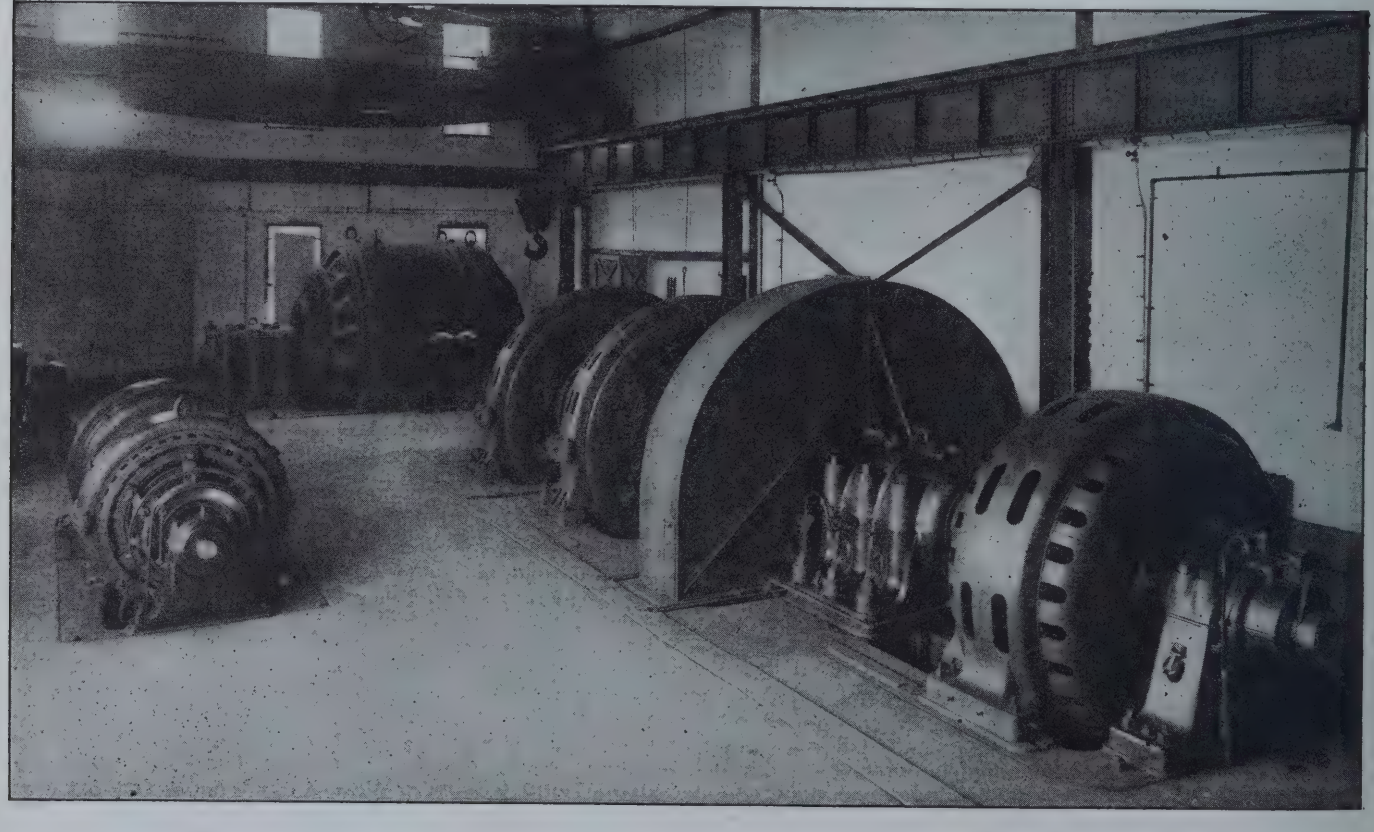
The idea to use electric motors for driving rolling mills was first exploited in Europe where a number of small equipments were installed, beginning about 20 years ago. These were all used for driving mills running in one direction, and the machines were of the types already developed for other purposes. The ease with which the extension of the plant could be cared for, and the freedom from restrictions as to distance from the boilers was quickly appreciated, even before the economical advantages of electrification were realized. About 15 years ago, the number of machines installed had grown considerably, and about this time, a start was made in this country when two 1500-horsepower motors were built for driving the No. 3 rail mill at the Edgar Thomson plant of the Carnegie Steel Co. The problems involved in the design of such plants as Gary required a radical change from past practice, and the advantages of electric drive having been more clearly developed in the meantime, it was natural that electricity should be the medium for transmitting the energy from the power plant to the wide spreading mills which could then be distributed solely with regard to the proper handling of the material. Since then the development has been rapid and the majority of new mills in the last 10 years have had electric drive.

Production carries with it all questions of reliability, ease of operation and the fitting of the characteristics of the drive to the requirements of the mill. Economy covers all items of cost such as fixed charges, power cost, labor, maintenance, stores, etc., so that an answer to these two questions satisfies the usual mill man.

There is one other factor not quite so tangible, but of the greatest importance in the development of a plant, and that is the question of layout. With the use of electricity, we suffer no practical restrictions so that our plants may be laid out with regard only to the facility for transportation of materials and although this does not show itself directly in costs, when the plant as a whole is taken and compared with others, very gratifying results are obtained.

The reversing motor has been used for all types of reversing mills and to date has not found its limitations. Blooming mills, billet mills, plate

From a paper presented at the sixteenth general meeting of the American Iron and Steel institute, New York, Oct. 24. The author, Wilfred Sykes, is with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.



REVERSING MOTOR AND FLYWHEEL MOTOR GENERATOR SET IN PLANT OF STEEL CO. OF CANADA, HAMILTON, ONT.

mills and structural mills have all been electrified with success. The first installation put in operation 12 years ago at the South works of the Illinois Steel Co. drove a 2-high universal plate mill, and I feel that it is only proper to pay a tribute to the foresight and courage of those responsible for the decision to make this initial experiment. It remained for steelmakers in Canada to carry out the first successful blooming mill drive, and credit is due Robert Hobson, of the Steel Co. of Canada, for taking the responsibility of tying up his new plant to the comparatively untried electric drive.

The principal part of an electrical reversing drive is, of course, the motor connected to the mill. These motors are direct current machines and differ little in general characteristics from those with which we have been long familiar. There are, however, many special features that play a most important part and that spell the difference between success and failure. Of first consideration must be the mechanical construction and this must be beyond question. We must make a closer study of the details of construction than is usual to insure there can be no relative movement of parts under the severe shocks that the motor has to stand, and prudence requires that all parts be so strong that in case something must break about the mill, it will not be the motor. Together with this, we must keep our design balanced so that the weights of our moving parts are not excessive, as an appreciable amount of energy is required to accelerate and retard the motor itself.

The motor is not supplied with energy direct from the power plant, but through a so-called flywheel motor generator set. The function of this set is to provide means for controlling the speed and direction of rotation of the motor, and of equalizing the load on the power plant. It would be, of course, very difficult to build any type of controlling equipment that would handle the large current involved in motors of this type, as will be readily appreciated when we think of the flashing and noise made by the controllers for the motors driving the tables, screwdown, etc., which seldom exceed 100 horsepower, whereas our main motor may carry loads 100 times as great. The speed of the motor is proportional to the voltage impressed on it, and its direction of rotation depends on the way the current flows through it. By having a special generator to supply the motor, we can through the excitation of this generator, vary the voltage and the direction of the main current, and we need handle only about one-half of 1 per cent of the current in the motor. This is, of course, easily done and the control of our 10,000 to 20,000 horsepower motors is actually better than the control of the table motors.

The second function of our flywheel set is to prevent the terrific peak loads from the mill from being thrown on the power plant. If this were not done, it would be necessary to have large generating capacity running at very low average load to carry the mill. Fortunately, we can equalize the load to a great extent by a properly controlled flywheel which will give up energy during periods of great demand and absorb it during the intervals. For this reason, suitable flywheels are connected to the generators supplying power to the reversing motor and through the aid of suitable controlling apparatus, they are utilized so that the load on the power plant is only about one-fourth of the peaks on the main motor.

For driving the generator and flywheel, some kind of motor is required, and the type is dependent on the power system. This motor is only large enough to carry the average load and is not concerned with the peaks of the mill motor. The remainder of the equipment is for the purpose of controlling these functions and providing means for measuring and recording the power used. The starting and the control of the speed of the motor driving the set is done by the slip regulator, which automatically slows down the flywheels during peak load, thus causing it to give up energy, and accelerates it during intervals, thereby absorbing energy.

In regard to production, it is sufficient to say that investigations we have made of records show that electric drive in all cases is able to hold its own with the best of past practice, and there is ample evidence to show that with the elimination of restrictions in the mill, better performance can be obtained.

No one questions that the most economical method of making any article is to specialize the plant, installing the best equipment and manufacturing in large quantities. With reasonable distribution costs, such an establishment will eventually supplant the isolated small manufacturer. The whole history of our industrial development bears this out. And so it is with power generation. For economy we must concentrate our power equipment so as to utilize the best that science provides us with. By using large units, the greatest economy is obtained, and the relative labor and other costs are reduced to a minimum. If we then connect to such a power generating station all our power consuming devices, we will find that the aggregate required is less than the sum of the loads on the individual consumers. It is the same as having a diversified market for our products, a dullness of one locality is compensated for by a demand from another, and in this way our average output is maintained approximately constant, which is obviously the most economical condition. If we had to support individual factories to supply all local demands, we would in the aggregate have a capacity out of proportion to our total output. Efficient distribution is the solution in the case of our manufactures, and with power electricity provides the economical means for transporting our power to the consuming devices. The ideal we must work to is to generate our power wholesale and distribute it efficiently. Electricity provides us with a means of using the most economical prime movers, and the consuming devices can be driven with machines that will transform our wholesale generated power to mechanical work with a loss of only a few per cent.

With the experience now available, it is beyond question that our power distribution in the future will be by means of electricity, and we should lay out our generating stations with units of such size and characteristics in relation to the ultimate requirements as to get the best economy, and with such a margin of capacity that the electrification of our plants can take place as opportunity offers, without having to consider each time we desire to add a motor whether the generating plant will not have to be extended. We can then modernize our mills as changes are required and ultimately convert our wasteful methods of power generation of the past to the best that we have at present knowledge of. Great force is given to this viewpoint with the rapid rise of fuel and labor costs, two of the principal factors in our power costs. It is wise in this respect to consider the possibilities of ultimately tying different generating stations together for the material benefit of those concerned. In this way, power may be interchanged at times to advantage and the stand by value of such interconnection reduces the amount of spare plant required with the consequent savings.

Making Ingots for Rolled Wheels

Practice of Using Multiple and Individual Ingots for Locomotive Tires and Rolled Wheels is Well Established in America—Choice of Two Depends Upon Local Manufacturing Conditions

BY LAWFORD H. FRY

ALTHOUGH the processes of manufacturing railroad tires and wheels differ in detail, both products require a ring of sound steel as their starting point. Table 1 shows the chemical specifications of steel wheels as adopted by the American Society for Testing Materials. Class *A* tires are usually used for the large diameter driving tires for passenger locomotives; class *B* tires for drivers for freight locomotives, for locomotive truck and tender wheels, and for car wheels; and class *C* for driving tires for switching service. The large majority of tires are made from acid open-hearth steel, while rolled wheels are made from both basic and acid open-hearth steel. In view of the exacting nature of the service clean dense steel is essential, but with care in the steel making good results can be obtained with acid or basic open-hearth, or with electric steel.

In manufacturing these products the first step is to select an ingot or a portion of an ingot of a weight to make the tire or wheel, and, after heating, to compress this in the direction of its longitudinal axis at the same time punching a hole through the center. The resultant piece, which is commonly known as a bloom, is generally similar for tires or wheels except that for wheels the hole is smaller in diameter and in some cases the hub is partly formed in this operation. In the succeeding operation the bloom is formed into a blank in which the shape of the finished product is roughly apparent. A subsequent rolling operation completes the manufacture of tire or wheel. As a necessary part of the manufacture of tires or rolled wheels, the central core of the ingot is punched out and discarded. This point is of importance in connection with the use of individual ingots.

Types of Ingots

Ingots for wheels or tires usually are classified as multiple ingots and individual ingots. The difference lies in the fact that the individual ingot is cast of a size to make a single tire or wheel, while a multiple ingot is sliced, at right angles to its long axis, into a number of blocks each of which is formed into a wheel or tire. This slicing was formerly done by heating the ingot and shearing under a press or hammer, but is now generally carried out cold on a slicing lathe with multiple tools.

Metallurgically considered, the two types of ingots are differentiated by the principles involved in the elimination of piping and segregation. Multiple ingots are designed to concentrate these defects in the upper quarter of the ingot which is discarded after slicing the lower portion into blocks. Individual ingots are designed to eliminate piping almost entirely, to reduce segregation to a minimum, and to place these defects so that they are completely removed by the punching operation in the first process of manufacture.

It should be noted that in one process of wheel manufacture the bloom is formed, not directly from an ingot, but from a bar 12 or 14 inches in diameter rolled from an ingot and sheared hot into slugs of the proper weight. The ingots used in this process are rectangular in cross section, measuring about 20 x 27 inches. Such ingots are related to the other ingots used for rolled bars, rather than to tire and wheel ingots proper.

Cross Section of Multiple Ingots

Multiple ingots usually have an eight or 12-sided cross section with concave sides. The dimensions of a series of 12-sided ingots used by one tire manufacturer are given in Table II. The mold has 12 slightly concave sides, and with a nominal diameter of 17 inches produces an ingot about 94 inches long, weighing about 64 pounds per inch of length. Ingots of this type are made with diameters of from 10 to 30 inches, according to the weight of piece to be made. It may be noted that wheel weights average about 950 pounds while tire weights may run from 300 to 2000 pounds. Both makers, whose practice is illustrated in Table I, use acid open-hearth steel, bottom pouring, and hot tops on the ingots. This is a bottom poured, flat sided, octagon ingot which has been sliced hot in blocks *A, B* and *C*, each of which will make one tire. The unlettered section is the discard necessary to do away with piping and segregation. The discard from the ingot amounts to approximately 20 per cent of the ingot weight. The amount of discard necessary can be reduced by using some forms of hot top by which the head of the ingot is kept hot and fluid until the greater part of the shrinkage in the body has taken place. The upper part of the ingots has been sectioned on the longitudinal axis. The ingots cast without hot top have a pipe extending throughout the upper 20 to 25 per cent of their length. Sometimes ingots have their upper portions protected from contact with the iron mold by a heat-insulating jacket, and, in addition, a layer of carbonaceous material was applied to the ingot top immediately after pouring. Piping has been eliminated and a discard of 10 per cent would be sufficient to remove all segregation and to leave only sound useable steel. In practice it is more convenient to keep the mold of uniform diameter and to insert a brick or sandhead to provide insulation, or to make up a sandhead in a cast-iron casing placed on the top of the mold.

While the use of multiple ingots is fairly well generalized, the use in America of the individual ingot for tires and wheels is confined at present to the Standard Steel Works Co. Ingots of this type are octagonal in section and are currently made with diameters of 12, 14, 16, 18, 20 and 22 inches across the flats. The heights poured in each diameter range from about 60 to 100 per cent of the diameter. This with the six previously mentioned diameters gives ingot weights ranging from 250 to 1900 pounds, each ingot being of a weight to produce a single tire or wheel.

Top Cropping is Eliminated

The distinguishing feature of the individual ingot is the fact that it does away with all top cropping, the only discard necessary being the central core removed in punching the bloom. This is less than 3 per cent of the weight of the ingot. This result is obtained by eliminating piping and concentrating segregation. The steel is practically solid throughout. This solidity is the result of maintaining the top of the ingot fluid so that it can follow all shrinkage as it takes place and prevent the formation of cavities. To se-

From a paper presented at the sixteenth general meeting of the American Iron and Steel institute, New York, Oct. 24. The author, Lawford H. Fry, is with the Standard Steel Works Co., Burnham, Pa.

cure satisfactory ingots it has been found necessary to have well-made, dead-melted steel; to have a properly designed mold, and to apply a suitable carbonaceous material to the top of the steel as soon as it is poured.

Improvements in Design

Since the introduction of the individual ingot further improvements in its design and manufacture have been made. The circular cone section has been replaced by an octagon cross section with a straight vertical side and the material now used to keep the top hot is a special compound described below. Many investigations of the short octagon ingots made with pipe eliminator have shown that the freedom from piping is typical and can be secured in regular practice. Segregation is also confined within satisfactory limits.

Individual ingots have been made with both acid and basic open-hearth steel, and could be made with electric steel if occasion arose. This is not equivalent however to saying that "any steel will do." It is essential that the steel be well made, properly deoxidized, and dead-melted, without any tendency to "wildness" or boiling. That is to say the evolution of gas by the steel in the mold must be reduced to a minimum. The ingots should be carefully inspected for piping, rough tops or other defects. In particular any ingots showing signs of having boiled or risen in the mold should be rejected as they will be honey-combed to a dangerous extent. If the open-hearth practice is kept up to the mark and care is taken with the pit practice, indvidual ingots can be made to pass the necessarily severe inspection with rejections well under 1 per cent.

In a good mold it is important to have the walls thick at the base and thin at the top so that the chill effect is greater at the base, and cooling progresses from bottom to top of the ingot. It is also essential that the height of the ingot should be in proper proportion to the diameter. If the ingot is too flat the segregated area will be wide compared with the punch diameter, while too high an ingot will tend to give excessive piping. It has been found desirable to keep the height between 60 and 100 per cent of the diameter of the octagon.

A satisfactory material has only been arrived at by a continuous process of trial and elimination. In the manufacture of multiple ingots with hot tops, it has long been a common practice to add powdered coke, charcoal or coal to the upper surface. In the case of such ingots where a considerable discard is made so as to reject recarburized metal, satisfactory results can be obtained with such materials. In the case of individual ingots, however, the problem is much harder. The work required of the material is complex and the difficulties encountered with other materials have been such as to narrow the choice to the compound, known as pipe eliminator.

The material used must keep the ingot top hot and at the same time leave it with a smooth uniform surface. It must also prevent a recarburization of the surface. It has been found that to give these results the pipe eliminator must be finely divided and must carry a small amount of volatile matter so that it will ignite rapidly on application to the steel. There must also be present sufficient inert material or ash, which, after ignition, forms a blanket between steel and eliminator preventing undue absorbtion of carbon by the steel. It is further necessary to have a considerable proportion of slow burning fixed carbon so that the top is maintained hot during the solidification of the ingot.

Open-Hearth Pit Practice

When the pouring conditions are considered it is obvious that there is a good deal of difference between the "set-up" for bottom-poured, multiple ingots weighing from 5000 to 12,000 pounds, and, individual top-poured ingots with an average weight of about 900 pounds. The grouping of the long, bottom-poured ingots is well known, but the arrangement of an open-hearth pit floor adopted for this practice may be of interest. The ladle of 50 tons capacity is carried on a gantry so as to just clear the ingot molds, which are set up on five lines of base plates. The height is kept as low as possible to avoid splash. The ladle has two stoppers spaced to correspond to the base plates, so that with two operators a brace of ingots can be poured at once.

Accurate Weight is Essential

The base plates are carefully inspected and any defective bottom bricks repaired or replaced; molds of the size ordered are set up and a chalk mark made on the inside of each to show the height to which the steel is to be poured to give the weight required; the steel is poured to the chalk mark, and a scoopful of pipe eliminator added; when the ingots have set, the molds are lifted off and as soon as the ingots are cold enough to be magnetic they are transferred by magnet to the classifying shed. Accuracy in the weights of the ingots is essential and with an average weight of about 900 pounds the tolerance allowed is 10 pounds under and 25 pounds over the ordered weight.

Table II

Sizes of 12-Sided Fluted Tire Ingots

Nominal Diameter Inches	Approx. Weight Pounds	Ingot body: Diameters: At top: Length Inches	At top: Across Hollows Inches	At top: Across Points Inches	At bottom: Across Hollows Inches	At bottom: Across Points Inches	Ingot top: Length Inches	Ingot top: Diameters: Top Inches	Ingot top: Diameters: Base Inches
16	5400	84.7	16.5	18.6	15.3	17.1	10	17	15
18	6800	84.7	18.5	20.4	17.3	19.3	10	19	17
20	8400	84.7	20.5	22.7	19.3	21.6	10	21	19
24	11000	84.7	23.5	25.7	21.9	24.5	10	25	23

Table I

Chemical Analyses of Tire and Wheel Steel

Product	Carbon per cent	Manganese per cent	Phosphorus per cent	Sulphur per cent	Silicon per cent
Tires Class A.....	0.50 to 0.70	not over 0.75	not over 0.05	not over 0.05	0.15 to 0.35
Tires Class B.....	0.60 to 0.80	not over 0.75	not over 0.05	not over 0.05	0.15 to 0.35
Tires Class C.....	0.70 to 0.85	not over 0.75	not over 0.05	not over 0.05	0.15 to 0.35
Rolled Wheels (Acid)	0.60 to 0.80	0.55 to 0.80	not over 0.05	not over 0.05	0.15 to 0.35
Rolled Wheels (Basic)	0.65 to 0.85	0.55 to 0.80	not over 0.05	not over 0.05	0.15 to 0.35

At the annual meeting of the Wright-Martin Aircraft Corp., President George H. Houston said that 47,644 shares of the 500,000 shares of preferred outstanding had been deposited in favor of the consolidation plan with the International Motor Truck Co., New York. Of the common stock 746,908 shares of the outstanding 897,000 have been deposited

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The Mercer Motors Co., a newly formed Delaware corporation, has purchased the plant of the Mercer Automobile Co., Trenton, N. J. Emlen S. Hare, of New York City, formerly vice president of the Packard Motor Car Co., of Detroit, is president of the new corporation. The new company has an authorized capitalization of 110,000 shares of common and no preferred stock. It will provide $1,000,000 additional capital for the expansion of the Mercer plant.

Applying X-Ray to Study of Steel

Practical Application of Metal Radiography in the Workshop is Limited to About 1½ Inches of Steel, But for Purely Research Purposes Greater Thicknesses are Possible of Examination

BY W. E. RUDER

IN 1915 Dr. W. P. Davey described his investigation of a steel casting by means of X-rays and showed that flaws of certain kinds, such as blow-holes or fair sized slag inclusions, were readily discernible. Since that time much interest has been shown, both in this country and abroad, in the practical application of this new tool.

What Are X-rays?

X-rays are ether waves or vibrations of very short length (.000,000,048—.000,000,036 millimeter) produced by the impact of cathode rays upon any substance. Cathode rays are streams of negatively charged electrons given off by the cathode under the action of high voltage and under conditions most favorable to ionization. These conditions may be that of a rarefied atmosphere (.006—.001 millimeter Mercury) or of a heated cathode in a very highly evacuated tube. Each electron in the cathode stream sets up a magnetic field perpendicular to its path, and the very rapid retardation of these electrons as they strike a substance (an X-ray target, for example) sets up electro-magnetic disturbances or other waves of short length, and consequently great penetrating power. These are called X-rays. Rays produced in this manner have the power of producing fluorescence from certain salts of the alkali and alkali-earth metals, of ionizing gases, of affecting the electric resistance of a selenium cell, of producing physiological effects in living tissue, and of affecting the photographic plate in much the same manner as visible light.

Waves of very short length are usually spoken of as "hard" and the longer ones as "soft." Hard rays have the greater penetration and for this reason high voltage is required when penetration is the primary consideration. In making a radiograph, however, not only is the penetration important, but the time of exposure is directly dependent upon the amount of X-rays that reach the emulsion. The intensity of radiation diminishes as in the case of visible light rays, with the square of the distance from the point of source to the surface of the object to be radiographed.

When visible light rays fall upon a transparent body, only a certain percentage of the rays pass through. Some are absorbed and others are reflected. Just so in the case of X-rays. Part of the impinging rays are reflected, that is, characteristic rays are produced, the incident rays setting up a secondary radiation characteristic of the substance upon which they fall. The second part is absorbed or scattered and so dissipated. Characteristic rays are produced only when the incident primary rays are more penetrating than the characteristic secondary radiation and their production is analygous to the production of fluorescent light.

Scattering is produced by deflection of the rays by internal structural surfaces in matter of any kind and increases with the thickness and atomic weight of the scattering medium. It corresponds to the scattering of visible light by fog. It is, then, this scattering and production of secondary radiation that puts such narrow limits upon the use of X-rays in examining substances, particularly those of high density, such as are encountered in radio-metallography.

Bearing in mind the foregoing brief survey of the underlying principles governing the application of X-rays, let us now consider their application to the study of metals.

Examinations Are Limited

Unfortunately we are, at present, limited in examining metals by means of a fluorescent screen, such as is used by physicians, to about 0.01 to 0.02 inch thickness of metal, and obviously, internal flaws in such thicknesses would be relatively unimportant. For the examination of a manufactured article, for the inspection of assembly, the screen has been successfully used. For most purposes, however, a photographic plate must be used so that the cumulative effect of time may be utilized.

The time of exposure is appreciably shortened by the use of an intensifying screen, a fluorescent surface placed close to the plate and which under the influence of X-radiation, emits visible light rays of a color which readily affect a photographic plate. In metal radiography the use of such a screen is a necessity, owing to the thickness and high atomic weight of most metals. Calcium tungstate, which emits a blue light under these conditions, is particularly suitable for the purpose. It must, however, be of very fine grain because this grain shows up in the negative.

What Radiographs Are

Radiographs are *detail shadowgraphs* and as the rays cannot be focused as in ordinary photography, the image will always be "life size" or larger. Moreover, the rays producing the shadows are not parallel but emanate from a point source. For this reason variations in intensity caused by differences in density in the object will be sharper when near the emergent side, and their sharpness will diminish and their size apparently increase as they are nearer to the incident side. This point-source distortion is diminished by increasing the distance of the tube from the object, at the same time, however, decreasing the intensity of the rays.

Most important, however, is the protection of the operator from the action of both the direct and secondary rays. Owing to the high penetrating power of the rays used, protection is even more important in metal radiography than in radio therapeutics. Too great care cannot be taken to guard against these rays. Complete protection should always be provided for.

A suitable arrangement for the making of radiographs consists of a camera which is merely a special plate holder, light-tight, of course, and carrying an intensifying screen. The object is placed on this camera directly. If the sides are not parallel, unsatisfactory results, due to unequal penetration, will result. In the case of curved surfaces, a film and flexible screen must be used.

The distance between the X-ray

From a paper presented at the sixteenth general meeting of the American Iron and Steel institute, New York, Oct. 24. The author, W. E. Ruder, is research metallurgist, General Electric Co., Schenectady, N. Y.

tube and the object is so regulated that a uniform effect may be obtained over the whole plate. For a 5 x 7-inch plate, this distance should be at least 15 inches.

The time of exposure is the most important consideration and has, unfortunately, been given little attention in previous publications. It is particularly desirable in investigating a new field, that all data be given. In this case, voltage, current, distance from plate to tube, time of exposure and kind of plate should be recorded.

Now it is evident that, provided the voltage is high enough to cause even a small amount of radiation to pass through the metal, a radiograph can be obtained if sufficient time is allowed. The time required is also a direct function of the intensity of the rays, that is, of the current passing through the tube. The exposure may then be referred to in terms of milliampere-minutes at a certain spark-gap (voltage). The limit of milliampere-minutes a tube will stand is determined by the temperature of the target and the heating of the bulb. Most tubes, unless special arrangement for cooling is provided, will carry only five or six milliamperes continuously, at the voltage required for this work.

M. H. Pilon describes an experiment in which he successfully radiographed 2.16 inches of steel by an exposure of 2 hours and 48 minutes, using a Coolidge tube operating at six milliamperes and 120,000 volts.

Davey, experimenting with 150,000 volts was able to detect defects $\frac{1}{64}$-inch thick in 1½ inches of steel with a 60 milliampere-minute exposure, while a 90 milliampere-minute with 130,000 volts was sensitive to not less than $\frac{1}{32}$-inch difference in the same total thickness.

With the best apparatus at present on the market, the metallurgist will be limited to the use of a 10-inch (100,000-volt) spark gap. This will require an exposure of about three hours at five milliamperes to radiograph 2 inches of metal. This represents the present practical limits of the process. Of course, for purely research work, much higher voltages are available and have been used, making the practical radiography of greater thicknesses of steel a thing to be reasonably looked forward to, but for the present, this is still in the hands of the X-ray tube engineer.

A difference of from 50 to 75 per cent in time of exposure may result from different density of the metal and from the character of the defects it is desired to show.

In developing an X-ray plate, a slow developer must be used, due to the fact that the emulsion, usually thick and carrying a high silver content, is affected all the way through. Too rapid developments would fog the surface and the negative would lose sharpness.

The relative depth of flaws may be determined either by radiography from two points and calculating the depth or by making a stereoscopic radiograph. Owing to the severe requirements in the matter of high voltage, currents and long continued operation, the hot cathode or high vacuum tube gives the most satisfactory results, in metal radiography.

The examination of forgings for flaws presents greater difficulties than castings because such flaws usually occur as hair line cracks or lines which, unless they happen to run almost parallel to the path of the rays and in a straight line, would not be visible on the negative. Even under these favorable circumstances, differences in density due to these defects are difficult to detect, for the radiograph does not enlarge and shows only such defects as would be visible if exposed to the naked eye.

In order to determine the thickness of the smallest air inclusion which could be distinguished radiographically, two plates of steel were machined and ground to flat surfaces. In one of these a slot was cut to give a wedge of air of varying thickness. Each plate when finished was $\frac{5}{8}$-inch thick. The two steel plates were then bolted together and radiographed at 15-inch gap. In this manner it was found that an air inclusion 0.021-inch could be detected in 1¼ inches of steel and an air inclusion 0.007-inch could be detected in a total thickness of $\frac{5}{8}$-inch of steel. This is, of course, under the most favorable conditions, when it was known beforehand that the inclusion existed and just where it was.

A similar experiment made with a radiograph. In this case a total thickness of ¾-inch was used, and we find that when the inclusion is near the plate a thickness of 0.014-inch may be distinguished when $\frac{1}{8}$-inch from the plate a slightly greater thickness is necessary and when on the side away from the plate the air inclusion must be at least 0.030-inch thick and be detected under the most favorable conditions.

X-Ray Supplements Magnetic Testing

BY HENRY M. HOWE

TWO distinct fields for magnetic testing was brought out by R. L. Sanford in his paper entitled "Testing Steel by Magnetic Analysis," which is found on page 1181. First, a magnetic comparison between rails, eye-bars or other products which we do not wish to destroy on one hand, and test pieces cut from crop ends which we do destroy by means of our tensile and impact tests. Each lot is accepted or rejected, as a whole, on the destructive test physical of coupons or other test pieces. Then each rail, eye-bar, etc., of the lot is tested magnetically and without injury in comparison with those test pieces. Any rail, which differs magnetically from the test piece, is either rejected or re-treated, or subjected to special scrutiny. This test should detect any deviations in the rails from the quality of the test piece, caused either by heat treatment, mechanical treatment, segregation or error in composition.

Second, a uniformity test, applicable most easily to pieces of uniform cross sections like rails, wire, cables, etc. These may be passed rather rapidly by the magnetic testing device, which should indicate all important flaws and inclusions. Any suspicious rails or parts can then be examined exhaustively, perhaps by X-rays, resonance tests, or by electrical resistance tests, and in extreme cases even by density tests.

To apply either of these magnetic tests to the forging, prior to machining, might save a great loss of time and money, by preventing the machining of defective forgings. Though such tests should be applied most easily to pieces of uniform cross section, they might easily be modified so as to apply to those of varying section. A single master piece, such as a gun forging, proved by exhaustive

(*Concluded on Page* 1191)

Discussion of R. L. Sanford's paper presented at the Sixteenth general meeting of the American Iron and Steel Institute, New York, Oct. 24. The author, Henry M. Howe, is professor emeritus, Columbia university, New York.

Experts Read Papers Before Institute



WILFRED SYKES
Westinghouse Elec. & Mfg. Co., East Pittsburgh

WILFRED SYKES, who presented a paper on the electrification of reversing steel mills, is in charge of the marine and steel-mill work of the general engineering department of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. He has been associated with the Westinghouse company since 1909, and is regarded as an authority on matters pertaining to electrical hoisting and the electrification of rolling mills, mines and similar lines of industry. He is a native of New Zealand and is a graduate of the Technical college of Melbourne, Australia. Before coming to this country he was associated with Knox, Schlapp & Co., Melbourne; Shoerker & Fischer, Melbourne, and the Allgemeine Elektricitate Gesellschaft, first at Melbourne and later at the Berlin office of that company. Recently Mr. Sykes has been doing extensive work in connection with electric ship propulsion.

* * *

RAYMOND L. SANFORD, who presented a paper on magnetic analyses of steel, is secretary of the committee on magnetic analysis of the American Society for Testing Materials, an associate physicist at the bureau of standards, Washington, and chief of the magnetic laboratory at the bureau. Mr. Sanford, who is 35 years of age, has been with the bureau since 1910, following two years as instructor in physics and electrical engineering at the University of Vermont from which he was graduated with the degree of bachelor of science in electrical engineering in 1907. His work in research and testing won for him position of chief of the magnetic laboratory on July 1, 1918. Mr. Sanford developed a method for determining the degree of magnetic uniformity along the length of a steel bar, the results of which were published by the bureau of standards in 1916.

* * *

HENRY MARION HOWE, who spoke on "The Open-hearth Furnace and Processes," is well known for his contributions to metallurgical literature, having been awarded the Bessemer gold medal by the Iron and Steel institute in 1890 for his standard work, "The Metallurgy of Steel." He was born in Boston in 1848, and was graduated from Harvard college in 1869 and from the Massachusetts Institute of Technology in 1871. He was appointed professor of metallurgy in Columbia university in 1892, and is now professor emeritus. In 1877 he went to Chili in connection with copper smelting works, and



RAYMOND L. SANFORD
Physicist, Bureau of Standards, Washington



DR. HENRY M. HOWE
Professor Emeritus, Columbia University

subsequently designed and built the works of the Orford Nickel & Copper Co., at Capelton and Eustis, Canada, and also those at Bergen, N. J.

* * *

GEORGE K. BURGES, who presented a paper entitled "Temperature Measurements in Steel Furnaces," is chief of the division of metallurgy, bureau of standards. Before becoming a metallurgist he was a physicist, and his early training has proved of inestimable value in his present work. Since the establishment of the metallurgist division in 1913, 10 years after he became connected with the bureau, Dr. Burgess has been endeavoring to find the foundation of physical principles in metallurgical problems. Before joining the staff of the bureau he devoted two years as instructor in physics in the University of California, and one year in the University of Michigan. He studied the subject for two years in Paris, and for two additional years in a post graduate course at the Massachusetts Institute of Technology. His research work is known to many steel manufacturers. He is endeavoring at present to obtain action by a committee of steel makers and consumers toward determining the phosphorous and sulphur limits in all grades of iron and steel.

Give Results of Their Research Work



W. F. RUDER
Research Metallurgist, General Electric Co.

W F. RUDER, who read a paper on X-ray examination of metals, is a specialist in the manufacture and heat treatment of sheet steel for magnetic purposes. He was born Dec. 22, 1886, in Stockdale, Pa., was graduated from the Pennsylvania state normal school in 1903, and from the Pennsylvania State college in 1907 with the degree of bachelor of science, in electrical engineering. Since 1907 he has been in charge of metallurgical research at the research laboratory of the General Electric Co., Schenectady, N. Y., and also is in charge of the development of magnetic materials, transformer department, General Electric Co., Pittsfield, Mass. He is a member of six metallurgical committees of the National Research council. His publications include "Grain Growth in Metals," "Metallurgy of Arc Welding" and "Colorizing of Metals."

* * *

LAWFORD H. FRY, who presented a paper on the manufacture of ingots for locomotive tires and rolled wheels, is associated with the Standard Steel Works Co., Burnham, Pa., and has had considerable experience in this department of the steel industry. He submitted some interesting data on tires and steel wheels and chemical analyses as shown by his experiments. The practice of using multiple and individual ingots for locomotive tires and rolled wheels is well established in America, he said, the choice of the two depending upon local manufacturing conditions.

* * *

VAN H. MANNING, director of the bureau of mines, described the work of the bureau in co-operation with the iron and steel and coal industries, his paper being in the nature of a summary of the work accomplished by the bureau since its establishment nine years ago. The purpose of the bureau is to conserve life and health and prevent unnecessary waste of the mineral wealth of the country, and



VAN H. MANNING
Director, Bureau of Mines, Washington

while some research work has been done along the line of preventing accidents at blast furnaces and in steel mills, the bureau has concentrated its efforts at mines, and especially at coal mines. Mr. Manning said the iron and steel industry itself is rendering an invaluable service in accident-prevention work. In its research work in the conservation of minerals, Mr. Manning said the bureau is hopeful that some means will be found for the beneficiation of low-grade iron ores, as it is estimated that the present supply of iron ore available for commercial use is sufficient only for 30 years.

X-Ray Supplements Magnetic Testing

(*Continued from page* 1189)

tests to be sound, and of the desired composition and thermal and mechanical treatment, would give a master curve in the comparison and uniformity tests. All duplicates of this forging should give curves like this master curve, and all which do not should be retreated, retested or rejected. Steel intended for surgeons' instruments, might well be tested magnetically.

I have in passing suggested the X-rays as supplementary to the magnetic tests. This would seem to be their proper function. The whole product of a mill could be tested magnetically with little cost, whereas the X-ray test is so tedious that it should be applied only to parts already shown by other means to be suspicious, and to pieces of such importance that every precaution should be taken to detect defects.

I found great interest in X-ray testing in England, where I attended a very enthusiastic meeting of the Faraday society, called by Sir Robert Hadfield and devoted wholly to this subject.

The X-rays thus far give nothing but a shadow test, which can detect small inclusions and flaws only in case they are in the immediate neighborhood of the photographic plate, and hence, only when they are near the surface of the piece. Large inclusions and flaws nearer the center of large pieces should be detected more readily by other means.

None of these tests promises to be able to detect alumina resulting from the use of aluminum, for this is likely to form thin discontinuous films, which in rolling and forging, become distributed rather evenly. Its infusibility prevents its coalescing into considerable masses. Should not its use in making important products on which life depends be forbidden with severe penalties?

Labor Seeks Union Domination

Open Shop is Focal Point of Labor Problem—Labor Group Would Abolish Workers' Organizations Not Affiliated With Federation—Unorganized Employers Must be Represented—Bolshevism Must Go

BY E. H. GARY

THE attention of the members of the American Iron and Steel institute has of late been focused on the attempt of leaders in the American Federation of Labor to unionize the iron and steel industry of this country.

The present campaign was started at St. Paul, June 13, 1918, by the adoption of a resolution introduced by delegate W. Z. Foster, couched in the following language:

"WHEREAS, The organization of the vast armies of wage earners employed in the steel industries is vitally necessary to the further spread of industrial democracy in America; and

WHEREAS, Organized labor can accomplish this great task only by putting forth a tremendous effort, therefore, be it

RESOLVED, That the executive officers of the American Federation of Labor stand instructed to call a conference, during this convention, of delegates of all international unions whose interests are involved in the steel industries, and of all the state federations and city central bodies in the steel districts, for the purpose of uniting all these organizations into one mighty drive to organize the steel plants of America."

The movement appears to have proceeded, under the general direction of Foster, without much result until June 13, 1919, when another resolution was adopted by the American Federation of Labor at a meeting held in Atlantic City, which reads as follows:

"WHEREAS, Every labor union in America, regardless of its trade or industry, has a direct and positive interest in the organization of the workers in the iron and steel industry, because the accomplishment of this vital task will greatly weaken the opposition of employers everywhere, to the extension of trade unionism and the establishment of decent conditions of work and wages; and

WHEREAS, The organizing force now in the field working upon this vast project is altogether inadequate in strength to carry on the work in the vigorous manner imperatively demanded by the situation; therefore, be it

RESOLVED, That President Gompers of the American Federation of Labor, and Chairman of the National Committee for Organizing Iron and Steel Workers, be authorized to call a conference, during the convention of the American Federation of Labor of all international unions affiliated with the A. F. of L., to the end that they make arrangements to lend their assistance to the organization of the iron and steel industry."

President Gompers thereupon named the heads of 24 affiliated organizations to act as a committee to develop and carry out plans for unionizing the iron and steel industry pursuant to the resolutions mentioned. You are familiar with what has occurred since that time and you are more or less acquainted with the history of the different union leaders who have been connected with the attempt to enlist the employes and to bring about a strike in the manufacturing works. The strike, which has been directed by the union labor leaders and was begun, so far as I am informed, without any request or authorization from the workmen themselves, has been conducted in the usual way. Immediately preceding the day fixed for ordering out the men, intimidating letters, large numbers of them being anonymous, were sent to the families of the workmen threatening physical injury to the father or husband, damage to or destruction of the home and kidnapping of the children unless the employe referred to should obey the order to strike. A number of the workmen, who had joined the unions voluntarily, accepted the order to strike and others remained away from the factories through fear. In many, if not most of the mills, the larger number of employes continued to work without interruption. At the beginning many of the workmen who attempted to continue their work and others who had remained at home through fear and attempted to return, were confronted in the public streets and elsewhere by strikers, or pickets, and importuned to engage in the strike; and many were assaulted and seriously injured. After protection was afforded by the police, sheriff's deputies, state constabulary and, in some cases, state or national troops, the numbers resuming work increased appreciably from day to day until in many places operations are about normal. Taken as a whole, the situation at present is good and steadily improving.

It will be observed that the strike is not the result of any claim by any workmen for higher wages or better treatment nor for any reason except the desire and effort on the part of union labor leaders to unionize the iron and steel industry. As stated in the first resolution, the action taken was "for the purpose of uniting all these organizations into one mighty drive to organize the steel plants of America."

Without discussing for the present the merit or demerit of labor unions it may be observed that union labor leaders openly state that they seek to unionize or, as they say "organize" the whole industry of this country. Those who do not contract or deal with unions, although they do not combat them, insist upon absolute freedom to both employer and employe in regard to employment and the management of the shops. The nonunion employers and employes both stand for the open shop. The unions argue for the closed shop or, as the leaders now insist, "the right of collective bargaining through labor union leaders." Every proposition contended for by

No Room for Anarchy

*CONSIDERABLE has been said in public of late concerning the attempt to spread the doctrine of bolshevism in this country. All of us have known for some time that this disease is persistent and that there has been some inoculation even in this best of countries. Still we deny that there is danger of serious trouble. There is only one way to treat this disease and that is to stamp it out, to meet it boldly wherever it can be found, to expose it and give it no chance for development. In this free country * * * * there is no room except in the prisons for the anarchist, the bolshevist or other individual who seeks to substitute the rule of force for the rule of law and reason.*—E. H. GARY.

Opening address delivered by President Gary before American Iron and Steel Institute, New York, Oct. 24.

the labor unions at the national industrial conference at Washington led to domination of the shops and of the men by the union labor leaders. Every position taken by the other side centered on the open shop. This is the great question confronting the American people and, in fact the world public. From 80 to 90 per cent or more of the labor in this country is nonunion. It is for them and the employers generally and the large class of men and women who are not, strictly speaking, employers or wage earners, to determine whether or not it is best for the whole community to have industry totally organized.

Fundamental Issue is Open Shop

I think the fundamental question submitted to the conference for recommendation to industries was the open shop. That question apparently could not be decided by majority vote for the reason that the conference was organized into three groups called labor, employers and public. No affirmative action under the constitution or adopted rules could be taken except by the unanimous vote of the three groups each of which voted by a majority of all its members.

The union labor advocates stand for collective bargaining through the unions. The others favor collective bargaining through representatives selected by the employes themselves from their own numbers.

The public group offered the following resolution:

"The right of wage earners in trade and labor unions to bargain collectively, to be represented by representatives of their own choosing in negotiations and adjustments with employers in respect to wages, hours of labor and relations and conditions of employment, is recognized.

"This must not be understood as limiting the right of any wage earner to refrain from joining any organization or to deal directly with his employer if he so chooses."

The public group voted in favor of this resolution. The employers group and the union labor group voted against it.

The union labor group finally offered the following resolution:

"The right of wage earners to organize without discrimination, to bargain collectively, to be represented by representatives of their own choosing in negotiations and adjustments with employers in respect to wages, hours of labor, and relations and conditions of employment is recognized."

It was stated by Mr. Fish of the employers group that "we cannot read this resolution without reference to the history of the last two weeks, and the events of yesterday. * * * * As the argument in this conference has developed, it has been perfectly clear that the sum and substance of the resolutions with reference to collective bargaining that have been presented heretofore, excepting the substitute from the employers' group, the Chadbourne resolution and the substitute offered for it by the employers' group, that these resolutions in substance meant this and nothing else, that this conference is asked to take action which will force, if possible the hundreds of thousands of employers in industries throughout this country to recognize the labor unions whether they will or will not, and to force their organizations to deal with the labor unions against their will. * * * * I shall personally feel obliged to oppose this resolution unless there is a plain definition as to what is meant by bargaining collectively."

The union labor group and the public group voted in favor of the resolution. The employers' group voted against it. Thereupon the union labor group retired from the conference.

All through the conference whenever the question of collective bargaining was discussed, it was apparent that the union labor leaders would not support any resolution in favor of collective bargaining except on the basis that collective bargaining meant bargaining through labor unions. For instance, on Tuesday when the two first resolutions above quoted were under discussion and ready for vote, Mr. Chadbourne for the public group spoke as follows:

"Mr. Chairman, I want to make a statement and to ask a question or two of Mr. Gompers with the chairman's permission." (Turning to Mr. Gompers.) "Mr. Gompers, the public group will retire and reconsider its vote, with the recommendation of its chairman, Mr. Baruch, if you and your group will do either one of two things: either add, 'or other organizations' after 'labor and trade unions' in the resolution, or give it as your group's interpretation upon this record equally as solemn as the vote that is taken upon the resolution, that it is the interpretation of the gentlemen in your group that it does not mean any other organization or any other association."

To this the union labor group would make no response.

As further evidence of the attitude of the union labor leaders it may be mentioned that in the 12 points published by the leaders who were conducting the strike they included and insisted upon the following:

"Abolition of company unions."

The unions claim that collective bargaining through different forms of shop organization, made up of the employes tends to limit the extension of unions by increasing their members. The nonunion employes and their employers insist that collective bargaining through labor unions means that employes are forced to join the unions as otherwise they could not be represented. So it is perfectly clear that the whole argument returns to the main proposition of open or closed shop.

And yet it would be unfortunate if we could not discover opportunities for further improvement; if we failed to read or to listen to the criticism of others; if we let pass the requests or suggestions of our workmen for changes which they believe would be proper concerning their employment; if we neglected to give our employes, individually or in groups, opportunities to discuss with the managers all questions of mutual interest; if we minimize in any degree the well recognized fact that the public good is of prime importance and that private interests must be subordinated.

Must Stamp Out Bolshevism

Considerable has been said in public of late concerning the attempt to spread the doctrine of bolshevism in this country. All of us have known for some time that this disease is persistent and that there has been some inoculation even in this best of countries. Still we deny that there is danger of serious trouble. There is only one way to treat this disease and that is to stamp it out, to meet it boldly wherever it can be found, to expose it and give it no chance for development. In this free country, with its reasonable laws wisely administered, its golden harvests, healthful climate, peace-loving inhabitants who are generous in contributions for relief and protection, schools, churches and hospitals, there is no room except in the prisons for the anarchist, the bolshevist or other individual who seeks to substitute the rule of force for the rule of law and reason. If there are slinking, desperate, murderous bolsheviki in this country, even in small numbers, I believe the secret service department of the government should detect and expose them and that the iron hand of justice should punish them as they deserve, and as I have faith in this country and in its institutions, I believe this will be done and done promptly. Any one who doubts the ability of the proper authorities to protect the persons and property of our people against bolshevism and other similar doctrines, fails to appreciate the courage of our citizens and the terrible force and strength of subdued calmness when they are surrounded by threatened danger.

Institute Indorses the Open Shop

Iron and Steel Manufacturers Give Judge Gary Great Ovation for His Stand Against Domination of Radical Unionism—King Albert is Honor Guest at Banquet—Meeting Makes Notable History

Steel Industry Solidly Backs Judge Gary's Stand

WHEREAS: Elbert H. Gary, president of the American Iron & Steel institute, has rendered to the American people and the American iron and steel industries a service of inestimable value by his course as a representative of the public in the industrial conference at Washington; therefore,

Be it resolved, That the American Iron and Steel institute, assembled in its semiannual meeting, hereby records its unqualified approval of Mr. Gary's firm stand against any infringement of the rights of the individual in labor or in business, rights fundamental to American industrial supremacy as well as to American liberty. That it admires the vision and courage enabling him to discern and effectively oppose the radicalism injected into trade unionism by unscrupulous leaders, an element especially dangerous under present conditions, when world-wide unrest has created an opportunity for agitation aimed at the perpetuity of institutions under which our country has achieved its strength and our industries attained their efficiency and prosperity.

MARKED by extraordinary events and conditions of a highly impressive and momentous character, the sixteenth general meeting of the American Iron and Steel institute at the Hotel Commodore, New York City, Friday, Oct. 24, contributed notably to the history of that organization.

Outstanding in its national significance in connection with the present exorbitant demands of the radical elements of union labor and the wide sweep of strikes in this country, was the full indorsement of the principle of the open shop as advocated by Judge Gary in the steel strike and before the industrial conference at Washington. Resolutions formally approving Judge Gary's stand were adopted with enthusiasm. Judge Gary himself was given probably the greatest ovation of his career both at the opening session and at the banquet in the evening.

The banquet in all respects, was without parallel in the long list of similar functions of the past. King Albert of Belgium attended as the guest of honor and gave a message of good will and of appreciation of the American iron and steel industry to the assembled manufacturers. The presence of Eugene Schneider, head of the Creusot works of France and president of the Iron and Steel institute and other European guests, gave the affair a decidedly international aspect. The attendance at the meeting was unusually large.

King Albert Given Warm Greeting at Banquet

SCENES unparalleled at any other similar function in former years made the banquet at the Commodore hotel Friday evening probably the most notable in the history of the American Iron and Steel institute. The dinner was graced by the presence of King Albert of Belgium and suite, by the king's son and heir, Prince Leopold, and by various other international figures of prominence, among which was Eugene Schneider, president of the Iron and Steel institute of Europe, and president of the Le Creusot steel works of France.

King Albert was given a highly cordial and truly American reception. His entrance brought the guests to their feet in a burst of prolonged cheering. Then with the banquet hall darkened, the spot lights were directed upon the Belgian and American flags and the national airs of the two countries were played in turn, by a concealed orchestra, while the 1300 present stood at respectful attention. There followed three cheers for King Albert and then a similar demonstration for Prince Leopold.

A toast was called and drunk to King Albert who responded by proposing a toast to the "President of the United States and a prompt recovery of his precious health."

"I thank very heartily Judge Gary for his very kind words. I thank you all for the especially warm manner in which you received his toast," the king continued.

"With his permission, I should like to call Judge Gary an old friend of Belgium. It is indeed for me a great pleasure and real privilege to address this assembly of the great men of one of the great industries of the world. Circumstances did not permit me to visit more than two of your big steel plants, but I know they are all unrivaled in the world for up-to-dateness and efficiency. There is much for my countrymen to be learned from you, especially under present conditions."

The international character of the occasion was further signified by the address of Monsieur Schneider, the French steel leader and president of the European Iron and Steel institute who is now in this country as the head of the French mission for the

international conference on trade matters. Monsieur Schneider stated that in view of his identification with the European institute and his having been made an honorary member of the American institute, the banquet might be considered as a symbol of international unity for peace and harmony in the future. He spoke of the generations of his family which have been connected with the development of the Creusot works and told of the part his father had taken in the establishment of the armor plate industry in the United States. He paid due recognition to the co-operation and aid supplied by the American iron and steel industry to France during the war and declared that out of this has come a close friendship which should be highly beneficial to both countries in future relations.

France's Dark Struggle Told

"I do not know whether in America you fully realize what the war meant to our steel industry, what a terrible blow the war struck it, and to what an almost superhuman test the industry was put," said Monsieur Schneider.

"Just remember that at the declaration of war most of our directors, engineers, foremen and workmen were mobilized. Sixty-seven per cent were called to arms. In August, 1914, the majority of our plants, even those situated farthest from the zone of war operations were obliged to close down. The unhappy outcome of the early battles served only to aggravate the situation. The largest steel plants in the east of France and our most productive coal fields either fell into the hands of the enemy or were in the theater of military operations. As early as October, 1914, France was deprived of the 20,000,000 tons of coal that the mines of the North and the Pas de Calais supplied.

"With one blow the steel industry lost 85 blast furnaces out of 156, 48 open-hearth furnaces out of 164 and 53 converters out of 100. Our means of production were reduced 81 per cent for pig iron and 63 per cent for steel, as compared with 1913. And it had to be just at this time, at the Battle of the Marne, that our government called upon us for a daily supply of 100,000 shells for 75 millimeter guns. We were not producing even 20,000.

"Gentlemen, I should not like anyone to pass through the hours through which we lived, the patriotic anguish that was strangling us, the fever that consumed us for long months. We got to work. We convinced public opinion that the army would have to return part of our staff. We appealed to the devotion of our women. For every woman employed in our metal industries before the war, we employed 390 in 1918. We raised to a maximum the output of the plants that we still retained. We built new ones. We toiled for four years day and night.

"In July, 1915, we had only 20 stacks at work. In January, 1916, we had 40 and January, 1918, 57. Before the armistice, in September, 1918, we had 59 in operation, 30 were down, and 13 in course of construction—a total of 102. Little by little we had made up for the enormous losses caused by the German invasion.

"In July, 1915, we had at our disposal 100 open-hearth furnaces, six down and 35 in course of construction. In September, 1918, we had 165 open-hearth furnaces in operation, 16 down and 44 in course of construction.

"In January, 1916, we had 1305 crucible furnaces. In September, 1918, we had 2459. In January, 1916, we had 21 electric furnaces; in September, 1918, we had 40.

"The result of this effort was that for every 100 rifles manufactured in 1914, there were 29,000 in 1918. For every 100 machine guns in 1914, we manufactured 7000 in 1918. At the beginning of the war we turned out each day 13,000 shells for the 75s and 200 for the 155s. In 1918, our production was 200,000 for the 75s and 45,000 for the 155s per day. In 1915, we manufactured only 2600 75-millimeter guns. Two years later, we manufactured 11,000. Our heavy artillery at the beginning of the war can hardly be said to have existed. Everyone knows that the surprise of the first battle of the war came chiefly from Germany's overwhelming superiority in heavy artillery. At the time of the armistice, we had 6500 heavy guns—3400 short 155s, 1100 long 155s together with other sizes up to 21 inches. France was thus enabled not only to meet her own needs, but was in a position to equip the entire Serbian army, to send considerable quantities of heavy artillery, rifles and machine guns to Russia, Roumania and Greece as well as to supply the American army with all the field artillery it needed and half the heavy artillery.

What Alsace-Lorraine Means

"As you know, the restitution of Alsace-Lorraine is of very great importance to the French steel industry. The resources of the iron ore beds are estimated at 1,832,000,000,000 tons, and the annual production of the Lorraine district which was formerly under German domination equaled 21,156,000 tons. This will double the ore production in France and will make her by far the largest ore producer in Europe.

"Alsace-Lorraine possesses 66 blast furnaces, producing 3,870,000 tons of iron, and 26 converters and 10 open-hearth steel furnaces that produce 2,286,000 tons. This additional production of pig iron and steel not only covers the present needs of France but leaves a surplus for export. Including the production of Alsace-Lorraine, France now stands second as an iron and steel producing country, excelled only by the United States.

The situation may be summarized as follows:

Iron Ore—
22,000,000 tons before the war.
43,000,000 tons after the war.

Pig Iron Over—
5,000,000 tons before the war.
10,000,000 tons after the war.

Steel—
5,000,000 tons before the war.
8,000,000 tons after the war.

Gaston Liebert, French consul general, took the occasion to thank Judge Gary for his stand towards bolshevism and spoke of the encouraging progress which France had made in combating radical tendencies of this character. He alluded to the proverbial thrift of the French people and the soundness of their investments. He emphasized therefore that should France ask for long credits from the United States it would be because they are needed and he assured American business men that they need have no hesitancy in granting these as a safe investment.

Taking up Monsieur Liebert's allusion to bolshevism, Judge Gary said: "Is bolshevism to be feared? It is in the sense that the bandit, the robber, the burglar or any other criminal who may plan to do wrong is to be feared. But in this country, where the citizens are loyal, patriotic and stubborn for the right, there is no danger from bolshevism, in the sense that it can threaten this nation's existence or civilization's."

Lewis Nixon, public service commissioner of New York, predicted that the rapid transit system of New York would be bankrupt by Jan. 1 unless quick assistance to it was forthcoming in the way of higher fares. He described the tremendous growth of the transportation requirements of the metropolis and foretold the future extensions of its rapid transit system, which would command the interest and attention of the engineering and steel industries. Mr. Nixon expressed the belief that the present opposition to granting increases to transportation companies would pass in time but perhaps not sufficiently soon to avert many bankruptcies.

Admiral S. S. Fletcher, who during the war was closely in touch with the iron and steel industry in supplying the nation's needs, paid a tribute to the manufacturers for their wholehearted response, and stated that the co-operation of the government and industry in that crisis had taught many things which would be of untold value to the country should any such future emergencies arise.

Gary Gets an Ovation

Judge Gary was accorded a great demonstration by the assembled iron and steel men as he entered the convention hall for the opening session Friday morning. The moment Judge Gary ap-

peared in the hall every man in the room sprang to his feet with cheers and applause. The ovation continued as Judge Gary proceeded down the long aisle to the speakers' platform and for several minutes thereafter. Judge Gary was visibly affected by the demonstration. "I recognize you have been whole heartedly applauding a principle that pertains to the very life of progressive industry. But I want you also to know that I fully appreciate and will always remember your personal kindness to me."

At this juncture, Willis L. King of the Jones & Laughlin Steel Co., took the chair and recognized Joseph G. Butler Jr., who presented a resolution expressing the recognition of the American iron and steel industry of Judge Gary's service in the industrial conference at Washington and of its full and unqualified approval of the position he had taken against the radical doctrines and demands of present-day trade unionism. "The American Iron and Steel institute owes a debt to Judge Gary, it owes a debt to itself, it owes a debt to the entire iron and steel industry of the United States. I may even go further, it owes a debt to the country, and perhaps still further, it owes a debt to the entire world. I am going to give you an opportunity to discharge this duty." Mr. Butler then presented his resolution which was seconded by E. A. S. Clarke, and was adopted without dissent amid great cheering.

Judge Gary, responding, said:

Gentlemen, I thank you. I would be less than fair and less than sincere if in this connection I failed to emphasize the thought that while circumstances have happened to place me in a position which has centered your thoughts and your words of approval upon me, yet there is not much strength in anyone who happens to be prominently connected with or the leader of a movement unless he has the necessary support. And therefore I want to share the very generous confidence which you have expressed in words with large numbers of others.

I would like to say that from the outset the positions which have been taken by your president, as expressed in words, has been without exception approved by the finance committee of the United States Steel Corp., by its board of directors, by its stockholders as stated in many letters and telegrams which have been received by the board of directors of this splendid institution, of which we are all proud, by the iron and steel industry generally of the United States and Canada, by thousands upon thousands of individuals, chambers of commerce, associations and organizations, including farmers' institutions, scattered all over this country, from north to south and east to west; and I am glad to say by the intelligent, influential, splendid press of this country.

And so you and I, all of us, cheerfully, emphatically extend the sentiments of the resolution which has been passed to all these groups of individuals to whom I have referred.

Judge Gary then proceeded to deliver his opening address in which he carefully explained and analyzed the deliberations of the industrial conference at Washington of which he was a member, condemned the arbitrary attitude of the union minority of labor, and called for the suppression of Bolshevism in whatever form it shall appear in this country, with the iron hand of the law. His address frequently was interrupted with cheers and at its close there was another stirring demonstration.

Mine Bureau's Work Described

Van H. Manning, director of the bureau of mines, in his address describing the work of the bureau indicated important research investigations which have been carried out as it was proposed to make in connection with the iron and steel industry:

"Coming now to the bureau's work in connection with the iron and steel industry, I must say at once that, in proportion to the industry's importance, relatively little has been done," said Mr. Manning. "Iron ore and pig iron represent one-quarter of the value of the total yearly production of mineral wealth in the United States, but of the published researches of the bureau less than a tenth deal directly with problems in the iron and steel industry, and only about one-fifth with subjects that are at all closely related and would aid in the solution of those problems. The work of the bureau on safety and health conditions around blast furnaces and steel plants is doubtless well known to you. Broadly speaking, the organic act establishing the bureau defines its work as (1) looking after the safety and health of the miner, and (2) the prevention of mineral waste. Thus, when the time came to consider the problems connected with the iron and steel industry, it was the safety side of the subject that first received attention. In 1915 a bill passed by congress authorized the establishment of ten mining experiment stations of the bureau in addition to those which had already been established. The first three were established in 1916, all of them in nonferrous mining districts. Of the second three which were established, one was located in the northwest, and to it was assigned the problem of the beneficiation of low-grade iron ores. As is well known to all of you here, it has been estimated that the iron ore reserves of the country will last about 30 years at the present rate of consumption. However, this estimate is based upon the utilization of those ores which at the present time can be treated profitably in blast furnaces. Likewise, as you also know, there is a tremendous tonnage of ores throughout the United States, and especially on the Mesabi range which are too low grade to permit of their being treated in a blast furnaces without having undergone some form of beneficiation.

"In addition to the field of work I have just outlined, the bureau is, of course, also interested in all those problems which are confronting the iron and steel industry in connection with present day metallurgical practice. For example: As is well known, the so-called bessemer ores have been largely depleted and the problem has arisen as to how it may be possible to convert nonbessemer ores into bessemer ores. Considerable progress has recently been made along this line by certain commercial concerns.

"Another problem is that of overcoming the ill effects of sulphur when high sulphur coals are used in steelmaking. The supply of low-sulphur coals is running low and the steel industry at the present time finds it necessary to use high-sulphur coals. Therefore, the problem presents itself of removing this sulphur from the coal or else adding to the steel after it is produced, some element which will neutralize the effects of the sulphur and at the same time in no way decrease the essential properties of the steel.

"There is also the problem of the alloy steels; that is, of the production of steels having peculiar properties by reason of the addition of rare elements. The bureau in connection with this work on rare metals has made an extensive study of the mining, treatment and utilization of these rare metals."

W. E. Ruder, chief metallurgist of the General Electric Co., Schenectady, described the "X-Ray Examination of Metals" and this paper was discussed by H. S. Rawdin of the bureau of standards, Washington. R. L. Sanford, physicist of the bureau of standards, presented the subject "Magnetic Analysis of Steel." Dr. Henry M. Howe presented a discussion covering both X-ray and magnetic examinations. At the afternoon session Wilford Sykes of Westinghouse Electric & Mfg. Co., presented the paper on "The Electrification of Reversing Steel Mills," which was discussed by D. B. Rushmore of the General Electric Co.; Dr. Henry M. Howe, "The Open Hearth Furnace and Processes;" G. K. Burgess, chief of the division of metallurgy of the bureau of standards, "Temperature Measurement in Steel Furnaces"; and Lawford H. Fry of the Standard Steel Works Co., Burnham, Pa., "The Manufacture of Ingots for Locomotive Tires and Rolled Wheels." G. Aertsen, assistant to the vice president of the Midvale Steel & Ordnance Co. at Nicetown, Pa., discussed Mr. Fry's paper.

The directors of the institute at their meeting during the luncheon hour elected to honorary membership Sir William Beardmore of William Beardmore & Co., Ltd., Glasgow, the retiring president of the iron and steel institute, and Monsieur Schneider, the present president of that body and head of the Creusot steel works in France, who was present at the meeting.

Little American Steel Is Needed

Requirements of European Reconstruction Made Known at International Conference at Atlantic City—Long-Term Credits and Increase of American Imports Essential to Restored Trade Equilibrium—International Organization Formed

EUROPE is not going to require as much of American materials for its reconstruction as most people in the United States have been led to believe. This fact was brought clearly before the manufacturers and business men who last week attended the international trade conference held at Atlantic City under the auspices of the chamber of commerce of the United States. Even before such requirements as actually may be purchased in this country are finally provided, means of financing this business and extending credits over possibly a long period of years must be found. How best to supply the necessary funds was fully discussed publicly and privately during the conference, but upon adjournment it was still an undetermined matter. Steps were taken at the conference for the recreation of an international trade organization for continued mutual assistance.

Representatives of France, Belgium, Italy and Great Britain met Americans during the conference, first discussing individual national and international needs in private in committees, then in addresses in the open sessions of the conference, and in private interviews. The foreign delegates made a very favorable impression upon the Americans in attendance and frankly stated the conditions of their respective countries. Great Britain, it was found, will not need much American assistance except as this country can relieve her of some of the burdens of caring for the other European nations while Great Britain is engaged in settling her own problems.

France, Italy and Belgium need American aid and need it badly, but, as was emphasized by not only the visiting speakers but by the American participants in the general program, this assistance is not the kind required by weak, characterless nations, but by nations of strength and ability suffering from the ravages and privations caused by the war with Germany. Help will be given these countries, it was declared, just how is not known, but help will be extended. This was made clear time and again in the addresses given by the business men of the United States.

Industrial Needs of Europe Outlined

STEEL, it was discovered, will not be needed in such vast quantities as was generally supposed. France in 1920 will be in the market for only 100,000 tons of ship plates. Italy, for a period of five years, needs but 580,000 tons of iron and steel annually. Of this 200,000 tons is foundry pig iron, 100,000 tons of scrap, 60,000 tons of plates and shapes, 215,000 tons of ingots and semifinished steel and rails, and 5000 tons of tin plate. Belgium's requirements of semifinished steel are limited to unstated estimates which, it was said, will be diminished as the restoration of the Belgian works and mills progresses. England will need nothing, it was stated.

The reason for this limited aggregate tonnage, in comparison with the large requirements generally believed to be needed, is due to the progress France, Belgium and Italy have made in rehabilitating themselves following the signing of the armistice. While the world has been sympathizing with these countries and wondering how they may be helped, they have been hard at work and have accomplished much, the conference was told. What has been done, of course, is only a small proportion of what must be done to restore the devastated regions to anything near normal, but the fact that the factories, mills and workshops of these nations are steadily being rebuilt or converted to peace needs accounts in a measure for the limited tonnages which are to be purchased.

Eugene Schneider, head of the famous Creusot Steel Works, of France, chief spokesman for the visitors as a group and for France individually, explained how that nation has risen from fourth place in the world's production of steel to a position second only to that maintained by the United States. Her expected maximum output of 8,000,000 tons of steel resulting from war expansion and from recovery of her former provinces, will enable France to export at least 2,000,000 tons, Mr. Schneider declared. This statement was made in explanation of why the demands upon the United States will not be as large as was expected.

Financing is Chief Problem

Finance is the crux of the entire international trade problem, it was shown, and the very thing around which depends the reduction of the enormous trade balance piling up in favor of the United States. Because of the lack of a settlement of this problem, and because of high ocean freight rates, the prices prevailing in this country, and other contributory causes, purchases will be made by the European countries where their money will go farthest. In order to bring conditions to normal, it was stated, the American exports must be reduced gradually and the imports increased. Only by payment of obligations to this country in the production of goods which the United States can use and by the extension of long-term credits may the trade balance be equalized.

Coal requirements of the European allies are heavy, Italy, of course, being most in need of fuel. Fuel oil, it developed, is to be used to a much greater degree and the increased use of available water power will be tried to solve this phase of the problem. France and Italy particularly are doing much in this line and expect to do more. Progress will stop, according to Mr. Schneider, at the point where electrification, as a result of the harnessing of this natural resource, would be a national liability in the case of any future armed invasion. For this reason, it is expected fuel and waterpower will be used to an equal degree with a considerable greater maximum either way in the case of national necessity.

Foodstuffs, of course, are required, as are chemicals, textiles, shipping, oil, coal, etc. Machinery in large quantities for practically all uses, machine tools, lumber and other recon-

struction materials are wanted and badly. While the restored factories of Europe are expected to furnish much of the materials needed, in order to get the shops and plants back on a completed and operating basis there are some things which must be purchased here. The personal contact of the foreign missions with the delegates to the conference from American business houses already has resulted in some transactions and the arrangement for others, depending upon the finance and credit situation and its developments.

Mr. Schneider was easily the outstanding figure of the allied representatives. It was he who, as the head of the French mission, made the response to the address of welcome by Homer L. Ferguson, president of the chamber of commerce of the United States. It was Mr. Schneider who made the address for all the allied groups in stating Europe's combined needs. It was he who stated France's individual requirements. The esteem in which he was held by his European colleagues was reflected in the reception his statements obtained from his hearers and in the impression of his personality upon them.

Secretary of Commerce Redfield delivered an address that was pronounced by many to be the best of the many he has made in his capacity as a cabinet officer. Norman H. Davis, president of the Trust Co. of Cuba, New York, as the representative of Secretary of the Treasury Glass, delivered what was pronounced an extremely level-headed view of the financial situation. Dwight W. Morrow of J. P. Morgan & Co., literally swept his audience off its feet when he made an earnest plea for the extension of loans to the European allies. The foreign representatives who discussed the financial and economic topics of the conference made profound impressions.

All in all the conference was generally recognized as the first concrete step toward a clear presentation of Europe's real requirements and gave the business men who attended perhaps the best view of conditions short of those obtained by them either first hand abroad or in personal contact with customers in this country. Out of the conference is expected to be reorganized the former international chamber of commerce or some kindred body. The need of constant intercourse commercially between the United States and foreign countries was recognized, and with steps under way to effect such a permanent organization and with the creation of a finance committee to continue the study of that problem, the conference adjourned, the foreign representatives to immediately begin a tour of the industrial centers of the United States.

Eugene Schneider, head of the mission and president of the Creusot Steel Works, in an address set forth the situation in the mining and steel industries of France. He said:

Rich in iron ore, but somewhat lacking in coal, France had, before the war, managed to build up an iron and steel industry, not only sufficient for her needs, but leaving a surplus for export.

The mining and steel industries have been severely hit during the war, but no sooner had the armistice been signed than work began again in the devastated regions, where our plants are rapidly coming back to life. Even though the restitution of Alsace-Lorraine does not improve our coal resources, it nearly doubles the production of iron ore, pig and steel, thus enabling France to build up a considerable export trade in this line, and to assume in the world's markets the place that is her due.

In 1913, the production of the French coal mines amounted to 40,000,000 tons. The total consumption was 63,000,000 tons, leaving a deficit of 23,000,000 tons, which came from Belgium, Great Britain and Germany. As regards coke, the prewar situation was also unfavorable, the imports amounting to 3,000,000 tons, about on a par with the French production. Even before the war, France was striving to develop her coal and coke industry; new coking plants had been erected and six new coal mines were to have been opened in the new Pas de Calais basin.

During the war, the production of the coal mines fell 50 per cent, the majority of the pits in the north and Pas de Calais being occupied by the enemy. They were actually the scene of the severest battles. Who does not remember the capture of the Vimy ridge and the battles of Lens?

As I have just said, the production of coal in France fell from 40,000,000 tons to less than 20,000,000, but the strenuous efforts of the mining companies and their men raised the production to 21,000,000 tons in 1916, and 28,000,000 in 1917. At the same time, France harnessed waterpower in order to save coal. France is one of the richest countries in that line. Before the war we had 700,000 horsepower available. Today the figure is 1,200,000 horsepower. Next year it will be 1,500,000 horsepower. Up to now $300,000,000 have been spent in developing waterpower; and during the war alone $120,000,000 were subscribed.

After the war, even with the utmost developments of waterpower we shall be short of coal. When the pits are again in order, the production of France will amount to 45,000,000 or 46,000,000 tons. Alsace-Lorraine produces about 3,000,000 tons, but as she consumes 11,000,000 tons, her return to France, instead of making the problem easier has made it more difficult. The home needs of the country will amount to about 88,000,000 tons. The Saar basin produces 13,000,-

What Allied Countries Want From America

A CONSOLIDATED suvey of the reconstruction needs from the United States, of Belgium, Italy, England and France was presented by the committee on reconstruction supplies. Its analyses of the situation in respective countries based upon reports of the different missions is as follows:

BELGIUM

The Belgians need from us, and principally, first of all, money, then tools, coal, coke, oil, mining machinery, railroad engines, lumber.

They state that because of the unfavorable rate of exchange and because of our higher prices, expensive freights and slower deliveries they probably will be obliged to purchase in Germany goods which they would much prefer to purchase from us.

ITALY

Italy's reconstruction problem is principally agricultural, due to the fact that about 90 per cent of her people are engaged in agriculture. They need agricultural machinery in considerable quantities, also machinery for ditch-digging and grainage work. They also need assistance in the rebuilding of the fisheries industry.

They need coal, oil and a wide variety of lines, in the providing of which the United States should be able to play a most important part. They also need extensive assistance in connection with harbor improvements.

ENGLAND

England, as stated by their reconstruction supplies committee, has no reconstruction problem which they are not fully qualified to take care of themselves.

The problem of housing British laborers was discussed considerably, but without leaving the impression that we were to have any part in its solution.

FRANCE

In general, the French situation as regards industry and commerce is far and away in advance of what is rather generally believed in this country to be the case.

The French committee stressed the importance of proceeding along reconstruction lines which will recognize sound economic principles.

They need, as do Belgium and Italy, money, lumber, machinery, automatic car couplers and railroad signal systems and other improvements in their transportation situation, and a number of lines which under other conditions we might be able to provide, but which as conditions are in most cases would be difficult and in many cases impossible, to purchase from us principally because of exchange difficulties and costly transportation.

000tons, which, deducting its own consumption, leaves a net surplus of 4,000,000 tons. Under the stipulation of the treaty of peace, Germany is obliged to send 20,000,000 tons every year to France to replace the production of the mines she destroyed; moreover, she must deliver to us an extra 7,000,000 tons, which was the average amount she sold to us yearly before the war.

Germany Fails to Deliver

Up to the present we have not even received one-half of the quantities promised to us from Germany, and England has very greatly reduced her coal exports. So we find ourselves faced by an actual shortage of about 20,000,000 tons.

The use of fuel oil must be extended. Before the war, the use in France of the products derived from crude petroleum was limited to gasoline and lubricating oils. Fuel oil we must use in large quantities in future. Large beds of shale exist in the vicinity of Autun. They may be exploited for the production of oil. Beside, Alsace-Lorraine brings back with her the Peschelbrom district with 50,000 tons of oil per year.

However, the old resources of France are insufficient for her needs, and we shall have to import. We are making the necessary preparations. In our ports, tanks have been built with a total storage capacity of 600,000 tons. We have 4000 railroad tank cars; we have under construction 10 tank steamers which will be added to the very small oil fleet we already possess and to the ships we hope to get from Germany.

As regards the production of iron ore, France occupied before the war the second place in the world, and her position in the steel industry was fourth.

The opening and development of the Lorraine district was due to the discovery of the Thomas process and the increase of production has been extremely rapid in the last few years. From 5,000,000 tons in 1910, it jumped to 21,000,000 tons in 1913. Besides, Algeria produces over 1,000,00 tons and Tunis half a million tons. This production left a surplus of 10,000,000 tons available for export.

As regards pig iron and steel, the development of the French industry had been rapid, the increase between 1900 and 1913 being 87 per cent for pig iron and 150 per cent for steel. The domestic consumption had increased in a similar manner, but there was a surplus left for export.

Early in the war, France was deprived of the whole Lorraine district. Eighty-three per cent of her total production of iron ore passed into occupied territory and 9 per cent into the battle zone. Production fell to 2½ per cent at the time of the first battle of the Marne, but rose afterwards to 7½ per cent in 1916 and to about 10 per cent in 1917.

The situation in the steel industry was similar; 81 per cent of the blast furnaces and 65 per cent of the steel works were in the invaded zone or actually under fire. However, the French industry got to work and, during the war, blast furnaces of an aggregate capacity of 620,000 tons, and converters or open-hearth furnaces of a capacity of over 1,500,000 tons were erected.

France, after the war, will take second place in the list of the world's steel countries, following immediately behind the United States. Her engineering industry will follow the lead of the steel industry and will get ready for export business. Plans have already been laid and steps are already being taken for capturing the markets which were formerly in the hands of her enemies. France does not want to compete with her allies in the foreign markets, but she wants to supersede Germany in the countries where German industry had the lead before the war.

A summary of the needs in this line by Belgium, France, Great Britain and Italy was presented by the committee on metals, of which E. A. S. Clarke, president of the Consolidated Steel Corp., was chairman. The report follows:

In general the reports showed a greater stability of labor conditions and less menace from social unrest than previous public information had indicated. These discussions also showed that the prospect for the complete re-establishment of industry in those countries is decidedly hopeful, provided supplies of raw materials and goods can be secured. So far as metals are concerned it was disclosed that the requirements for France for the ensuing year are estimated at 100,000 tons of ship plates and 90,000 to 100,000 tons of copper.

The estimates of their requirements submitted by the Italian committee included the following annual quantities over the next five years:

	Tons
Foundry pig iron	200,000
Plates and shapes	60,000
Ingots and semifinished steel and rails	215,000
Scrap iron	100,000
Tin plates	5,000
Copper	15,000
Various other metals	10,000
Total	605,000

There are under consideration in France and Italy plans for extensive electrification of railways, which if put into operation will require considerable additional supplies of copper over those stated.

The Belgian requirements are limited to semifinished steel and copper sheets, but the determination of approximate quantities needed is so dependent upon the rate of restoration of the Belgian works and the supply of necessary fuel as to prevent for the present the making of definite estimates.

The meeting with the British delegation developed the fact that no specific requirements have been formulated, and that Great Britain expects to be able to obtain all the supplies of raw materials necessary for her normal trade, without any special arrangements therefor. The British chairman stated that "the object of America and Great Britain ought to be how best to utilize their outputs for the benefit of the devastated areas. Great Britain has already sent considerable consignments to the continent in the way of metal goods for reconstruction purposes. We expect not only to be able to continue this, but also to increase the quantities."

Consideration of the situation presented by the French, Italian and Belgian committees disclosed the fact that the American industries either have, or are capable of producing surpluses adequate to meet these requirements, provided satisfactory and effective means of financing the transactions involved are arranged. While to a certain degree and in some lines the American industry would be able to take care of a part of these requirements in normal commercial transactions, the aggregate of these requirements involving long credits is so large that, in the opinion of the committee on metals, some special financial machinery must be arranged in order to enable the satisfactory fulfillment of these requirements. In view of the fact that filling these requirements presents a problem beyond the scope of the normal financial machinery, it is the judgment of the committee on metals that some emergency legislation such as is contemplated by the Edge-Ackerman bill now before the congress in Washington, should be enacted. The utilization of such emergency facilities for financing exports would enable the American metals industries to meet Belgian, French and Italian requirements with the greatest possible dispatch and so contribute to the most prompt restoration of normal conditions in Europe.

Belgium's Rehabilitation Sketched

M. Florimond Hanker of the Belgian mission described the reindustrial habilitation which has been brought about up to the present time in that country.

"The damage to steel and iron mills was on such an enormous scale that complete restoration will take a long time," said Monsieur Hanker. "But despite all difficulties, work is being resumed in nearly all remaining factories, plants are being rebuilt and our stolen machinery is being brought back from Germany, Belgian industrial leaders are determined to put their plants back into operation no matter what the cost. Steel production now is 27 per cent of normal and iron production 51 per cent. It would require several hours for me to tell you in detail of the destruction of factories at Liege, Hainaut, Ougree-Marihaye and other places.

"In the matter of coal mines, we suffered less than the French because the Germans preserved our coal deposits for themselves in anticipation of the time that never came when they believed they would have Belgium's seacoast and ports and be able to conquer England.

"Belgian railroads damaged or destroyed during the German occupation are being rapidly repaired and re-established and on many lines schedules are normal. When the armistice was signed 1500 kilometers of railroad had been destroyed. So rapid has been the work of restoration that there remain less than 55 kilometers of unimportant lines unrestored."

Discuss Remedies for Labor Ills

Engineers at Mid-West Meeting of American Society of Mechanical Engineers Believe Study of Workmen and Conditions May Lead to Industrial Peace—Problems of Research and Labor Unrest Discussed

INDUSTRIAL unrest, its causes, effects and suggested remedies, was the subject of much consideration at the joint meeting of the midwest sections of the American Society of Mechanical Engineers at the Claypool hotel, Indianapolis, Oct. 24 and 25. More than 200 members of the Birmingham, Chicago, Cincinnati, Cleveland, Detroit, Milwaukee, St. Louis and Indianapolis sections were in attendance.

The first session was opened Friday afternoon, Charles Russ Richards, dean of the school of engineering and director of the engineering experiment station, University of Illinois, presiding as chairman. In introducing the program, Dean Richards set forth the difficulties confronting American manufacturers today and emphasized the importance of the question to engineers. He said that in the past such problems had not greatly concerned engineers but that in the present day they cannot be ignored.

Maj. W. C. Rogers, vice president and manager of the Employers' association, St. Louis, who presented a paper entitled, "Industrial Unrest," stated that labor can be compared to the human body and, as the body is subject to certain ills and disturbances, likewise is labor. The discussion was opened with an analysis of causes of unrest resulting in the the strikes and lockouts which are lowering the production of the country. These causes may be summed up briefly as the high cost of living, the ostentatious use of wealth, the apparent success of radicalism in its aims elsewhere, class hatred, the influence of of unamericanized immigrants and pernicious Bolshevist propaganda.

Criticizes Present Day Unionism

Although admitting himself to be in favor of the proper type of organization, the speaker stated that he was not in favor of the present trade unionism which caused the recent steel strike and threatens a walkout of coal miners. Speaking of the faults of unions as at present constituted, he said, "I believe in organization and do not hesitate to say that trade unions have contributed in a large way to the welfare of the workers. My criticism of the unions, however, is that they are too faulty in their present organizations. They are antisocial in their attitude toward courts specifically, and in that they set themselves up to the public as a class. They limit production. They place the standard of wages on the low basis of inefficient workmen. They demand the closed shop, which is indefensible from the American standpoint. They habitually violate their agreements and their leaders are frequently untrustworthy, especially where radicals threaten to take control. It would seem that the radicals are threatening the control of all."

Criticizes Unions

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As a remedy for the situation, Major Rogers suggested six essentials to be obtained; the payment of adequate wages to all workers; adoption of the best measures possible for the health and safety of the workers, for proper housing and recreational conditions; the Americanization of foreigners; mediation and arbitration in all industrial disputes; democratization of industry by the establishment of shop committees, internally organized but not in any way connected with unions.

A paper prepared by C. F. Scribner, consulting engineer, Chicago, and entitled "Successful Methods for Improving Human Relations in Industry," was presented by Arthur L. Rice, managing editor of *Power Plant Engineering*. The labor problem is not a theoretical problem but an engineering, academic and economic one, according to Mr. Scribner. The shop should be placed on a piece work basis but only after proper standards of methods, operations and wages have been adopted so as to give the workman a fair living wage and an incentive for maximum production. The rates must be established by the collection of sufficient information to insure their fairness and must not be changed until the conditions under which the rates were first established have undergone some change.

Bonuses Must be Paid on Time

Mr. Scribner also suggested that wages and bonuses should be given the employe in separate envelopes. This offers an incentive for greater production and the man is able to see at once the increase in his earnings by his exerting a little more effort to his output. This payment of a bonus must be made at the due time if it is to have its full influence, for if delayed, some of the workmen may get the idea that the employer is stalling for time in which to doctor his books and decrease the bonus. A promptly paid bonus develops good faith between employer and employe.

"The Results of the Americanization Program Carried Out by the Commonwealth Edison Co.," was the subject of a paper read by A. D. Bailey, assistant chief engineer, Commonwealth Edison Co., Chicago. A short time ago this company undertook to Americanize some of its employes by instituting a school in cooperation with the Chicago board of education and the association of commerce. Although the results have not been remarkable compared to the large number of foreigners employed, the effort has been justified and it is believed that the few who did attend and receive some benefit will have sufficient influence on others to cause a growth in the classes in the future.

In connection with the recent problem of human engineering, Dr. J. A. Watkins, Cincinnati, presented a paper entitled "Industrial Medicine" in which he set forth the results to be accomplished by giving more attention to the physical well being and living and working conditions of employes. He stated that production

can be increased through the efforts of a physician who is employed to study the physical side of labor conditions in the shop, to study sanitary conditions, and further to study living and sanitary conditions in the homes of the employes.

University Gives Important Course

"Training of Students in Industrial Management," a paper prepared by Prof. B. W. Benedict, manager of the shop laboratories of the University of Illinois, received considerable attention. Professor Benedict explained how college students can be taught to manufacture a marketable product while receiving training. The students make 8-horsepower gasoline engines complete in every detail and attempt to produce them on a quantity basis. Each department of the shop, including the machine shop, foundry and the pattern shop is equipped with small offices, tool rooms and production boards as is the commercial shop.

Each student receives training in the details of each operation from the instructor and other students so that as his turn comes, he is able to take up the work in a satisfactory manner. Every operation is timed by a stop watch and his efficiency is calculated as the ratio of the time required for the operation to the standard time set by the department.

The brief discussion after the Friday afternoon session brought out the point that much more attention must be paid to human engineering or, in other words, the workman must be studied more carefully and his work so arranged that he can accomplish the maximum of work without physical strain. J. R. Bibbins, engineer with Blon J. Arnold, Chicago, said he believed a solution of the labor question could be solved by giving more attention and action to housing, transportation and human engineering.

Prof. F. C. Wagner, Rose Polytechnic institute, Terre Haute, Ind., in a brief discussion said that labor has the feeling that it is being exploited by capital and this feeling is due to the fact that labor cannot compute costs. He said further that labor must be educated to figure approximately the costs of finished products in order that they may know that they are receiving justice from the employer. Professor Wagner added that he chooses to define capital as someone else's labor.

Research was the subject of the technical session held on Saturday morning with Prof. A. M. Greene Jr., Rensselaer Polytechnic institute, Troy, N. Y., as chairman. Professor Greene is chairman of the research committee of the society and president of the Society for the Promotion of Engineering Education. The first paper given by Lt. Col. C. F. Hirshfield, director of the research department of the Detroit Edison Co., Detroit, was entitled "General Consideration of Present Status of Research in the Industrial Life of the Country."

R. E. Carpenter, head of the laboratory of the Aluminum Castings Co., Cleveland, in his paper, "Industrial Research, Its Function and Administration," took exception to a paper presented before a Canadian engineering society recently, which maintained that research men should not be taken from that work and placed in other lines of work, otherwise industry would decay. Mr. Carpenter believes that the placing of research men in other lines is advantageous to industry and further recommends that it is desirable to secure as many young men as possible for that kind of work as they frequently possess more enthusiasm than the older men.

Recommends a Central Laboratory

A paper by Louis G. Robinson, Louis G. Robinson Laboratory, Cincinnati, described how a single central laboratory can be made to serve several industrial concerns.

"Present Status of Fatigue of Metals Phenomena" was the title of a paper presented by Prof. H. F. Moore, University of Illinois, who has been devoting much time to the study of this subject. Professor Moore showed a moving picture of microphotographic film of specimens of metal placed in a fatigue or bending machine. This method makes it possible to see the contraction and expansion of the metal as the machine is operated. The development of small cracks and fractures which take place may be traced. Tests have showed that the metal fails from a so-called center of failure. Steel structures have many incomputable stresses and cracks may start from minute scratches on the surface. While cold rolled steel is statically stronger than hot rolled, it has been found that the former stands up no better under the fatigue test. As chairman of the committee on stresses of the national research council, Professor Moore has been given $15,000 to conduct further research along this line.

A new tractor testing plant, constructed at Purdue university, was described briefly in a paper prepared by Dean C. H. Benjamin and Prof. G. C. King and presented by Dean Benjamin. The apparatus, which operates on the treadmill principle, consists of three main parts; the treadmill, a draw bar dynamometer, and a brake or electrical control. The treadmill has been designed so that it is possible to shift the load on the front or rear axles so that conditions similar to service conditions are obtained. Two classes of tests are made with this outfit, one the consumers' test, made in connection with the agricultural experiment station for performance of the tractor, and the other the manufacturers' test which is made in a study of the mechanical construction of the machine.

A paper prepared by George S. Hessenbruch, consulting engineer, St. Louis, and presented by L. C. Nordmeyer, Tait & Nordmeyer Engineering Co., St. Louis, shows how waste material is utilized in St. Louis.

Because of lack of time, Dean J. R. Allen, director of research for the American Society Heating and Ventilating Engineers, gave a brief abstract of his paper which had to do with the experimental work being conducted in heating and ventilating in several laboratories in the country.

At a meeting of the council of the society on Friday morning before the meetings were opened, an appropriation of $20,000 was authorized for the extension and improvement of the society's publication, *Mechanical Engineering.*

Social features of the meeting included a fraternizing luncheon on Friday, a theater party for the ladies during the afternoon, a banquet in the evening and a luncheon at the Indianapolis Athletic and Canoe club on Saturday followed by an automobile trip to the Indianapolis motor speedway to inspect the motor repair depot and to witness airplane demonstrations.

Gives True American Talk

At the banquet W. H. Insley, Insley Mfg. Co., Indianapolis, served as toastmaster. Charles F. Coffin, president of the chamber of commerce, welcomed the society to Indianapolis. The response to the welcome was given by Dean M. E. Cooley, dean of engineering of the University of Michigan and president of the society. The speaker of the evening was Dr. Willis A. Moore, Cleveland, chairman of the national industrial speakers' bureau, who spoke on "Doing the Impossible." Dr. Moore made a plea for more good will in industry and increased production to lower present day costs. Special inspection trips were made Friday and Saturday to a number of industrial plants including those of E. C. Atkins & Co., the Nordyke & Marmon Co., Rockwood Mfg. Co. and the Diamond Chain Co.

Prepare Report on Steel Strike

Senate Committee Will Not Recommend Federal Action Except to Exclude Alien Agitators and Educate Foreign-Born Workers—Pittsburgh Sheriff and Army Intelligence Officer Testify

WASHINGTON, Oct. 28.—A report on the investigation of the steel strike by the senate committee on education and labor will be submitted soon to the senate, the investigation having been concluded last Saturday with the testimony of William S. Haddock, sheriff of Pittsburgh.

Actual results of the investigation in a legislative way are reflected in the Americanization bill which the committee has reported out, and the introduction of measures to deport or punish alien agitators and to make it a crime to advocate sedition. So far as the purpose of the Kenyon resolution calling for the investigation is concerned nothing can be accomplished by the committee. The resolution was designed to determine if federal action in regard to the strike is necssary.

The plans of Americanization and of handling agitators and radicals, whose activities in the strike have developed startling facts, however, promise to bear fruit. The investigation also has given the senate committee a better view of both sides of the case. While it is conceivable the employers may be criticized for certain things, such as the alleged failure to Americanize the workmen, and perhaps for long hours of work in some departments, it is not believed there will be much censure. In view of the testimony of Sheriff Haddock, it seems less likely that there will be harsh criticism of the Pennsylvania state constabularly and other authorities. While some members of the committee recognize thoroughly that many employes prefer to work long hours for extra pay certain ones appear to think the flat 8-hour shift should be put into effect in all departments. It is altogether likely that if the committee took this position, it would be only by way of recommendation and not an attempt to legislate on the subject. It is manifest that the 8-hour day could not be urged in the steel industry without also being made applicable to all industries engaged in interstate commerce.

Would Eliminate Illiteracy

With regard to criticism of strikers, it is believed the committee will vigorously assail some of the leaders and agitators and their radical views, and give strong support of legislation proposed to deal with them. It is thought by some that general deportation might be suggested for aliens, and punishment of native-born agitators. There also is likelihood, it is said, of the recommendation of more comprehensive legislation on immigration to prevent further influx of undesirables to the United States. At the same time, some senators think there already are sufficient laws to handle the entire situation but that they are not being enforced. Evidence given before the committee last Friday appears to support this view.

The committee has reported an Americanization bill designed to eliminate foreign tongues and illiteracy in the United States. This measure, reported by Chairman Kenyon of the committee, has been offered at this time as the result of the investigation of the strike which brought to the attention of the committee the fact that a large number of steel workers are unable to speak English. Senator Kenyon hopes to have the measure enacted at the present session of congress, but it is not certain that this can be done.

Only 5000 Striking in Allegheny County

WASHINGTON, Oct. 28.—Not more than 5000 men are "actually on strike in Allegheny county" and good order is being maintained, the senate committee on education and labor was told last Saturday by Sheriff William S. Haddock, of Pittsburgh, in the course of his testimony concerning the steel strike. Vigorous defense was made by him of his policy of preserving order and denial was made of reports that he had enforced unnecessary restrictions for the suppression of freedom of speech and public assemblage. He presented a formal statement to the committee, which was prepared with the assistance of George J. Campbell, of Pittsburgh, who accompanied him to Washington. Explanation was made by the sheriff of his policy with respect to the prohibition of public assemblages and he declared that restrictions placed on free speech were necessary to preserve peace and welfare of the community.

Bringing copies of official proclamations and correspondence on the subject of the strike and other documents bearing on the death of Fannie Snellings at Brackenridge, Pa., the sheriff told the committee that propaganda is being promoted by strike leaders to discredit the authorities charged with keeping the peace. He exploded the theory of the labor agitators that the death of the woman was due to the steel strike. He defended strongly the state constabulary and his deputies, saying they had adhered and are adhering strictly to the law, and he said charges against both the state constabulary and the deputies were unfounded and should be discredited in every respect.

After outlining the procedure of organization of his forces preparatory to the strike, the sheriff told of the publishing and posting on the night of Sept. 20, two days before the strike began, of a proclamation commanding all local peace officers throughout the county to be on their guard and perform their official duties. Notice was given in populous districts to disperse groups of three or more persons. Care was taken to state that the rights and liberties of the people were not to be interfered with.

"In addition to this I verbally announced that the sheriff would not overrule the local authorities as to public meetings, except that no public meetings were to be permitted or conducted in any foreign tongue," he said. "My reason for this order is that my observation has been in this and other troubles that practically 90 per cent of the offenders against law in matters of this kind are either aliens or naturalized citizens of foreign extraction, who are easily led into attacks upon our government."

Sheriff Haddock said there are in

Allegheny county over 40 members of the Pennsylvania constabulary cooperating with him.

"One of the greatest causes of unrest such as now exists by reason of this steel strike," he said, "is the circulation of wild, anarchistic and unfounded rumors and stories concerning the conduct of the state constabulary, and the deputy sheriff and what happens to those lawless persons who offend and are arrested."

Up to the present, he said, good order has been maintained with but one or two small and unimportant outbreaks, due possibly to relaxation of vigilance on the part of local officers because normal conditions semed to be restored. He attributed this peaceful situation entirely to the earnest co-operation of all peace officers from the policemen to the mayors.

"Yet there is a condition of unrest and uncertainty because of the efforts to enlist men actually at work in the cause of the strikers," he stated. "The agitators are very active and stage every incident they can, such as lawsuits, meeting when permitted, etc., to attract the workingman's attention, but in all the plants of Allegheny county it is doubtful if more than 5000 men are actually on strike. Most all of these are foreign and unskilled labor."

Anarchists at Gary Members of A. F. of L.

WASHINGTON, Oct. 28.—Progermanism, I. W. W.ism, anarchism, socialism, bolshevism, and other nostrums that are hateful to Americanism have been found to thrive in Gary, Ind., Chicago and surrounding territory in connection with the steel strike. Many of those affiliated with the exponents of unamericanism belong to the American Federation of Labor, although not consciously encouraged by the latter organization. Testimony to this effect was given last Friday before the senate committee on education and labor by Lieutenant Donald C. Van Buren, an intelligence officer of the staff of Maj. Gen. Leonard Wood, in command of troops in Gary. Numerous pamphlets, circulars and propaganda tracts, together with statements of men arrested at the beginning of military occupation, were read and submitted to the committee by the witness.

Tons of I. W. W. literature have been found in Gary, he said. Eighteen members of a new local radical body there, Hungarian I. W. W.'s, were rounded up in one night, all of them common laborers who are on strike, and every one of whom belonged to the American Federation of Labor. Some were warned and released and others were recommended for deportation, but immigration officials in Chicago, it was stated, either have refused, because of "lack of conclusive evidence," to have warrants sworn out for them or have taken no action whatsoever. In the case of Ivanhoff and DeGeorge, anarchist leaders, a report was made to the department of justice, which so far has begun no prosecution, the committee was told. Both men, Russians or Austrians, have left Gary. DeGeorge was said to be a chemist who, it was learned, was operating near the Aetna explosive works, near Gary, where guncotton was available from wastes outside of the mills.

"The bible of the 'red,' the anarchist and bolshevist," said Lieutenant Van Buren, "is the manifesto of the communist party of Russia, put out at what is known as the third international meeting at Moscow in March. Many thousand copies of this were in Gary."

Printed by German Publishing House

Lieutenant Van Buren read extracts from this booklet and from other radical literature urging workers to revolt and overthrow the "capitalists" and the government.

"All of the radicals of the country are centering on the propaganda of Lenine and Trotsky," he said. "I call to your attention that fact that the literature was printed in Chicago by the Arbiter Zeitung Publishing Co., which is significant."

Speaking of the Hungarian I. W. W. union, the intelligence officer said many of the members burned their membership cards when troops went to Gary. For the most part, he said, they were ignorant and it is his view that they have been exploited by dangerous leaders. The I. W. W., he said, is sending propaganda to Gary either by courier or by express disguised as merchandise in order to escape the postal laws. The bulk of the literature was said to be printed in either Hungarian or Russian.

The lieutenant told of the socalled Saxon club in Gary, "a German outfit." In this club a sergeant found on the wall a huge, fine German flag, with two small American flags below and at either side of it to make them look ridiculous, the witness said.

"Did the sergeant haul down the German flag?" asked Senator Sterling.

"You may be assured that he did, sir," replied Lieutenant Van Buren. "The German who was in charge protested that the sergeant should also take down the American flags, but the sergeant told him if he opened his mouth again he would run him through with the bayonet. The German kept still."

This club, said the lieutenant, was a branch of the Germanamerican Citizens' league, spelled as here indicated, without hyphen or capital "A" for American. This league, it was said, is headed by a Dr. Gerhardt in Chicago, who was authority for the statement that it has a membership of between 7000 and 8000 in Chicago.

"Its purpose," said the lieutenant, "is to perpetuate German 'kultur' in the United States." It was stated that since the armistice the league has raised its head and is flourishing throughout the Middle West at present. All of its officers, it was stated, were mixed up with the German-American alliance, which congress forced to disband. The German league was said to be conducting a tremendous propaganda. Much of the socialist literature, according to Lieutenant Van Buren, is printed in German and is being distributed and is advocating antimilitarism. The German league, it was declared, will do anything to promote anti-Americanism and is taking advantage of the steel strike to do this.

The intelligence offices said the name of Oscar E. Anderson, who was present at the hearing, headed the list of a Hungarian socialist organization in Gary, and that an I. W. W. official was heard to say that Anderson was the most active I. W. W. worker in Gary. Anderson, born in Chicago, subsequently took the stand and denied his connection with any radical organization, saying he belonged only to the Amalgamated Association of Iron, Steel and Tin Workers, and was on strike. Formerly he belonged to the socialist party, he said, but withdrew from it about one year ago. Anderson served in the United States navy for four years, and his statement to the committee appeared to be entirely straightforward and to disprove suspicions against him. Anderson said that there are not

more than 250 or 300 reds among the 75,000 people in Gary. He asserted that "they don't count."

The intelligence offices said that not one leader of the radicals was American-born, while virtually all of the radicals were declared to be aliens, although some have taken out their first naturalization papers.

The Russian bolshevists, said Lieutenant Van Buren, were more clever than the Hungarians and had started a movement in Gary to organize a Russian red guard army "to overthrow the government," endeavoring to gather recruits from exservice men.

"If 10 per cent of these radicals were wiped out and deported, would it have a wholesome effect?" asked Senator Smith.

"Absolutely, sir," replied Lieutenant Van Buren. "Most of them are so ignorant they are easy prey for exploitation. We would then have the job of making Americans out of those remaining."

"C. E. Ruthenburg, of the communist party of America, out under bond of $20,000, still is spreading red propaganda," he said. "If men like him, Martens, 'bolshevist ambassador,' and Bill Heywood were handled the whole thing would be settled."

Announce New Freight Rates to Germany

Washington, Oct. 28.—New freight rates from North Atlantic ports to Hamburg, Bremen and Danzig, effective Oct. 20, have been announced by the shipping board. The rates on general iron and steel articles are $1.25 per 100 pounds to Hamburg and Bremen, and $1.50 per 100 pounds to Danzig. These include boiler tubes, bolts and nuts, car wheels, wire nails, iron pipe fittings, pipe, 4 inches or less, outside measurement; screws, staples and barbed wire. Other iron and steel and related articles and rates follow, the smaller sums representing those to Hamburg and Bremen, and the larger those to Danzig: Wire netting, 70 cents and 80 cents a cubic foot; hand agricultural implements and agricultural machinery, including tractors, by weight or measurement; aluminum ingots, $1.50 and $1.80 per 100 pounds; ball bearings, $1.50 and $1.80; benzol, special; coke in bags, special; copper bars and sheets, copper ingots, copper wire, rods and coil, $1.50 and $1.80; ferrosilicon, $3.75 and $4.50; lead billets, special; machinery, up to two tons, weight or measurement; monel metal, $1.40 and $1.70 per cubic foot; nickel, $2 and $3; pig lead, special; scrap brass and copper, and silica in bags, $1.50 and $1.80; spelter, special; tin and tin plate, special; vanadium, $1.50 or 1½ per cent ad valorem and $1.80 or 1½ per cent ad valorem; zinc sheets and slabs, special.

Find Constitution Forbids Free Port Zones

Washington, Oct. 28.—Representative Fordney, of Michigan, chairman of the house committee on ways and means, declares constitutional objections stand in the way of legislation to establish free ports for foreign trade in the United States. As a result a number of bills which were introduced to establish zones have been discarded, although hearings already had been held and were proceeding.

The only chance for any such legislation, according to Fordney, is to make all ports free, instead of only a few, as intended. He said the committee had its attention directed to Section 9 of the constitution which provides that "no preference shall be given by any regulation of commerce or revenue to the ports of one state over those of another; nor shall vessels bound to or from one state be obliged to enter, clear or pay duties in another."

Form New Steel and Wire Company in New York

Under the laws of New York state, the Eastern Steel & Wire Co., Inc., has been incorporated with a capital stock of $1,250,000. Fiscal offices have been established at 45 West Thirty-fourth street, New York, and general offices are located at 120 Broadway.

Plans practically have been completed for the erection of a wire mill at Newark, N. J., for the manufacture of special grades of wire, including high carbon spring, nail, annealed, bright, tinned, and coppered market, tinned broom and mattress, and fine weaving wires. Capacity will be approximately 75 tons per day. Plans and specifications covering wire-drawing machinery, motors, nail machinery and other required equipment will be completed within the next 30 days. In the meantime, the company has taken over the plant of the Atlantic Nail & Wire Co., Inc., Newark, N. J., a successfully operating company.

Officers and directors of the Eastern Steel & Wire Co., Inc., are as follows: President, Maxim Karminski, formerly president of the Carbolite Chemical Co., subsidiary of the Tennessee Copper Co., and now president of the Steel Producers' Export Corp., New York; vice president, Thompson W. Decker, treasurer of the Sheffield Farms Co., Inc.; secretary and treasurer, H. Leslie Skinner, formerly director of Shibakawa & Co., Inc.; general manager, E. A. Henry, formerly manager of the steel department of the Vulcan Steel Products Co., New York, and vice president and general manager of the Seneca Wire Mfg. Co., Fostoria, O. Frederick A. Wallis, general agent of the Fidelity Mutual Life Insurance Co., and Arno Geiser, director and secretary of the Max Oscher Co., investment bankers, also are interested.

Limit Orders

In Sulphate of Ammonia Because of Supply—Government Sells Phenol

New York, Oct. 27.—Despite considerable foreign demand for sulphate of ammonia, especially from the Orient, sellers have been forced to restrict new business to relatively narrow limits. This has been due to the great scarcity of supplies, which has developed particularly in recent weeks as a result of the steel strike. At present, sellers are devoting much of their attention to a careful allocation of supplies among contract customers. Prices on sulphate have been tending upward. On export business, $4 to $4.25 eastern seaboard, is quoted. On domestic business, future orders are being figured at around $3.40 to $3.50 producers' plants, and spot at $3.50 to $3.75.

All other coal by-products are unchanged. The demand for benzol at present is not of the volume of a few weeks ago, but the continued curtailment of output has developed a marked shortage of supplies.

The government stocks of phenol, estimated at 30,000,000 pounds a couple of months ago, continue to be marketed at 12 cents, f.o.b. eastern stores. Outside stocks of similar grades are being offered near this figure. Naphthalin is being sold in good quantities.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.50 to 3.75

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.40 to 3.50

Wilson Studies New Labor Plans

Failure of National Industrial Conference Leads to Suggestion by Public Group That Whitley System be Adopted—Another Conference May be Organized—Gompers Calls All Union Chiefs to Discuss "Battle" Measures

WASHINGTON, Oct. 28.—Obstinacy of the labor group disrupted the industrial conference last Wednesday. Despite the appeal of President Wilson, written from his sick bed, this group refused to show the slightest signs of compromise. Efforts of President Samuel Gompers, of the American Federation of Labor, a delegate of the labor group, to establish a case in behalf of labor failed.

When Gompers' final resolution concerning collective bargaining was voted down by the employers' group he gave notice in a dramatic speech that the labor group could go no further and would withdraw from the conference. This it did, refusing even to wait and hear proposals from John Spargo, of the public group, in a last effort to maintain the conference intact.

Secretary of the Interior Lane, chairman of the conference, after communicating with President Wilson, asked on behalf of the President that the public group remain in session in an effort to formulate a program to bring capital and labor together. The group remained until Friday night and then disbanded after failing to accomplish anything. In a report to the President, signed by its chairman, Bernard M. Baruch, the group suggested that a commission be appointed to evolve a system of conciliation and arbitration boards, similar to the Whitley system in England.

"In the recognition of the right of organized workers to be represented by delegates of their own choosing," the group stated, "difficulties will from time to time arise. We believe that it would be possible for properly constituted arbitral authority to adjust such differences with justice and fairness to all parties concerned."

The report recommended that a bureau in the department of labor be created to study all forms of arbitration in their practical application and to make report on them.

"We do not believe this group can at this time with advantage further proceed with the discussion of the great questions with which we have been dealing," concluded the report.

Wilson May Take Further Action

It is understood the administration will be urged to take immediate action in the direction of creating an agency which will at least offer federal arbitration to employers and employes. Secretary of Labor Wilson presented a plan to the industrial conference which is said to be under consideration and which met with favor among delegates of the conference. It provides for boards of employers and employes in each industry, with a general board of appeals.

Secretary Lane said that he believed the President would organize a new conference, which would endeavor to bring about a basis for industrial peace. Reports are heard that a new commission on industrial relations may be selected. The old one is held to have done more harm than good, although some claim it was due largely to its personnel, which included some radical organized labor advocates, and was not due to the principles it aimed to develop.

Meanwhile plans of organized labor are proceeding to stage the greatest industrial battle in the history of the country. This is forecast by announcement of Gompers that a conference of the heads of 112 international unions affiliated with the American Federation of Labor would be held in Washington in the "near future" to discuss present and impending disputes. The steel strike undoubtedly will share prominently in the "discussions."

Railroad brotherhoods, farmers' organizations and Canadian laboring organizations will be asked to participate in the conference.

Gompers Sings Swan Song as Closed Shop Fails

WASHINGTON, Oct. 28.—The national industrial conference really broke up because it would not yield to the wish of the labor group that it arbitrate the steel strike. It voted down a resolution to this effect, after E. H. Gary, chairman of the United States Steel Corp., had reiterated with emphasis, as a delegate of the public group, that he would not vote to arbitrate the strike. Then the labor group turned to another device which was meant to bring about arbitration of the strike, as well as to establish principles which it has been upholding since labor became organized in this country. This related to collective bargaining. But it would not support the collective bargaining resolution of either the public or the employers' group. The upshot of the matter was the introduction on last Wednesday afternoon of a collective bargaining resolution by Mr. Gompers reading as follows:

"The right of wage earners to organize without discrimination, to bargain collectively, to be represented by representatives of their own choosing in negotiations and adjustments with employers in respect to wages, hours of labor, and relations and conditions of employment is recognized."

Resolution Was Ambiguous

The public group voted for this resolution. The day previous it had voted against an almost identical resolution. This left only the employers' group voting against the resolution. This defeated it, inasmuch as the unanimous vote of all three groups was necessary to carry a resolution. Delegates of the public group vigorously assailed the attitude of the employers' group and said there could be no harm in adopting the Gompers resolution. But the employers' group maintained that the resolution, in addition to being ambiguous, was in effect the same as the one brought in the day before and voted down both by it and the public group, and which in substance said the right of employes to organize in trade and labor unions is recognized. The employers saw in it an attempt to unionize industry generally regardless of the wishes of the great mass of employes.

Obviously, adoption of this resolution would have given the greatest

moral support to the steel workers committee to bargain with the employers.

It is understood that only one member of the public group voted against the resolution, all of the others who were present voting for it. Judge Gary was not present, having been called to New York. In the employers' group, four members voted for the resolution, insufficient to make a majority, 10 having voted against it.

Tried to Becloud the Issue

Frederick P. Fish, of the employers' group, said that the matter of collective bargaining was interjected into the affairs of the conference to take the place of the resolution on the arbitration of the steel strike for a purpose, and that purpose had clouded the conference throughout.

A. A. Landon, public group, of the American Radiator Co., created a stir when in supporting the resolution, he attacked both the United States Steel Corp., and the steel strike leaders as being public nuisances which should be suppressed. Mr. Gompers then arose and sang his swan song, as he called it.

"The declaration which we have proposed," said Mr. Gompers, "is rejected by the employing group. They want shop organizations, the employers' union. If they can get away with it, why, that is their job. But they are building on quicksand." He said that some day representatives of employers will meet again with representatives of labor, and when they do "the employers will be glad to talk collective bargaining."

Chairman H. A. Wheeler, of the employers' group, making the last speech before adjournment, said the record of that group was before the conference and he proposed to stand by it. The employers' group, he asserted, could not yield on its policy as to collective bargaining without being cowards and cravens. He said the employers' group was ready to continue with the conference and that it refused to take the responsibility for its dissolution.

Employers Explain Results

The following statement was issued by the employers' group after the conference was declared adjourned:

"The adjournment of the national industrial conference, as originally constituted, brings up the question whether the weeks of the controversy over one phase only of industrial relations leaves the situation without a single gain. The employers' group, soberly reviewing the work of the conference, discovers three definite gains:

"1—It has been demonstrated that failure is inevitable where preliminary organization of the elements composing such a conference is absent and where no preparation is made for the orderly presentation of a program which shall include all of the known factors on which industrial relations are based.

"2—Collective bargaining, an accepted and desirable policy in industry, has been brought more prominently before the country and will influence a sincere effort on the part of innumerable manfacturers to find an acceptable medium through which this collective relationship may be secured and maintained in the industrial establishment.

"3—Collective bargaining as a policy or principle, cannot be safely used in the broad and general sense with which the public has been acustomed to express it, but must be defined clearly as to its applicability to the varying conditions of industry and the varying relations that exist between wage earner and the employer.

"Fundamental to the whole question of collective bargaining is the responsibility of those who bargain, and this is directed quite as much at the employer as at the wage earner or the organization of which the wage earner is a member. Only where there is a definite duel responsibility lived up to as scrupulously as is required in other contractual relations can collective bargaining, in any form or under any interpretation, be successful.

"Then it must be remembered that the industrial life of the country in its employment relations divides definitely along certain lines. No one will deny the right of the individual wage earner and his employer to negotiate terms of employment for industrial relations acceptable to both, but aside from this there is the dealing between the employer and his employes by means of the shop industrial council, dealing through a trade or a labor union, and all of these methods are acknowledged and practiced by employers.

"It may be charged that the employers' group in defeating the Gompers' resolution, denied the right of organization and of collective bargaining.

"The purpose of the resolution through cunning phrases coined to carry double meaning was to commit the conference to support the only brand of collective bargaining ever offered by the group presenting it, and the employers were bound to resist to the end.

"The employers' group could not deny the right that it so freely and fully conceded in its own sub-resolution which the conference defeated and it stands today, with the adjournment of the conference, on the record of its substitute and its interpretation, confident that the sober judgment of the American people will come to understand that the position taken was in the defense of the open shop, an American institution that shall not be undermined and destroyed by any organized combination seeking to threaten its life.

"Our social and industrial fabric is not in danger. Employer and wage earner will live and work together, but the conference has demonstrated that the right of the employer to deny representation unworthily sought shall not be abridged; nor shall the right of the wage earner collectively to place before his own employer his needs and his aspirations and his interest in the establishment be abridged.

"We are leaving on the record of the conference this declaration of true American principles and on this declaration the employers' group and the employers of the nation will stand in fair dealing with the wage earner through the critical days of readjustment just ahead."

Union May be Stopped From Soliciting Employes

An employer and an employe may make an agreement that the employe refrain from joining a trades union during the time of his employment, and agents of trades unions may be enjoined from soliciting the employe to join a union, according to a decision of the Supreme Court of the United States. The decision which is of particular interest at this time was handed down Dec. 10, 1917, and may be found on page 229 of volume 245 of the court's decisions. Attention of employers is called to the decision in a letter written by H. W. Flagg, commissioner for the Employing Printers of America. The letter follows:

"The following decision handed down by the Supreme Court, in the case of Hitchman Coal & Coke Co. vs. Mitchell, is of interest to the printing fraternity as well as all other manufacturing businesses:

"It was held that the employer who conducts his business on the nonunion basis may have an understanding or agreement with his employes that they are nonunion and will so continue while in his employment, and that officers and agents of labor unions, having knowledge of such arrangement, may be enjoined from soliciting such employes for membership in the union and from interfering with such arrangement. In other words, an employer has the right to employ only those who are nonunion and who agree to continue nonunion while in his employment, and the employer is entitled in a proper case to have union interference with this arrangement enjoined.

"To secure the benefit of this decision, the employer should have his employes sign cards indicating their clear understanding that the shop is operated nonunion, etc. In the event that the union interferes with this nonunion arrangement, the employer should serve notice of the arrangement upon those union officials, agents and agitators who are interfering with the arrangement between him and his employes. If such interference continues, the employer may ask that it be enjoined under the authority of the above decision without waiting until his place is picketed and until his employes and applicants for employment are intimidated."

Directors of the Taylor-Wharton Iron & Steel Co. have declared the regular quarterly dividend of 1¾ per cent, payable Nov. 1 to stock of record Oct. 24.

Extending Plant

Of Dominion Steel Corp. on Large Scale—To Build Furnaces

Toronto, Ont., Oct. 25.—President Mark Workman, of the Dominion Steel Corp., has announced that plans are being completed for continuing a policy of expansion on a comprehensive scale. The plate mill, now almost completed, is a natural step toward the building of Canadian ships, and he predicted that the time is not far distant when the largest ocean-going vessels will be built in Nova Scotia.

The company has spent nearly $1,500,000 in Newfoundland to increase the output of its mines and quarries, in accordance with the increased requirements of the Sydney plant. New submarine coal mining operations will be immediately undertaken at Bonar Point, on the north side of Sydney harbor. The object is to obtain high-grade metallurgical coal required for the manufacture of the steel to be used in the plate mill. Plans prepared for the new workings involve the expenditure of approximately $2,000,000 and provide for the most modern equipment obtainable.

With the plate mill in operation, the present furnaces will be unable to supply the necessary steel for all purposes, and consequently several new large open-hearth furnaces are to be constructed immediately, having a capacity of about 70 tons each. The present cast house is being enlarged and extended to provide for future needs in this department, in which improved methods will be introduced for pouring the steel into the molds to prevent too quick cooling.

The Dominion Bridge Co., of Montreal, following its decision to manufacture papermaking machinery, has closed a large contract with the Laurentide Paper Co., for an entire set of papermaking machines. This branch of the company's operations will be carried on at its plant at Lachine.

British Columbia mining men believe that they have found a phenomenally large area of exposed iron ore, near the Whitewater river in that province. In the opinion of James A. Hawthornthwaite, of the British Columbia legislature, the discovery of the vast limonite resources in that district has assured British Columbia blast furnaces, rolling mills, and all other accessory enterprises essential to the operation of a great steel plant.

The P. Lyall & Sons Construction Co., Montreal, which some time before the signing of the armistice installed an experimental department to provide against the time when the making of munitions would no longer form a part of its manufacturing activity, is planning to manufacture automobiles.

Pig Iron From $26.25 to $32 in France

Lorraine pig iron containing more than 3.25 per cent of silicon was quoted in France Oct. 5 at approximately $32.50. Pig iron containing from 2.25 to 3.25 per cent of silicon was quoted from $30 to $31.25 and grades containing less than 2.25 per cent were quoted from $26.25 to $29.38. Dollar exchange fluctuated during the week from 7 francs, 80 centimes, to 8 francs, 50 centimes, making it difficult to present exact values, but the average on which the quotations are based was 8 francs.

Hematite was quoted at $48.75 to $51.25 in France, while in Belgium it was quoted at $56.25, the rate of exchange for the Belgian franc being practically the same. Other quotations in France and Belgium follow, the prices being for 100 kilos, or 220 pounds:

	France	Belgium
Shapes	$7.50	$8.50
Rails	8.10	7.81
Sheets, three millimeters	8.75	10.31
Sheets, five millimeters	8.50	.....
Sheets, two millimeters	9.75	.....
Blooms and billets	5.60	.....
Merchant steel	7.50	.....
Galvanized sheets	....	23.12 to 31.25
Steel castings	....	18.75 to 21.25

Obituaries

BERNHARD THEODORE BURCHARDI, vice president of the American Machine & Foundry Co., Brooklyn, N. Y., died Oct. 22, at his home in that city, aged 70. Mr. Burchardi came to this country from Germany nearly 50 years ago. He built the great ocean pier at Palm Beach, Fla., and later constructed the Florida East coast and the Florida West railroad and also the Gulf stream road. Mr. Burchardi became general manager of the American Machine & Foundry Co. in 1902 and designed the building occupied by that company. He likewise was president of the Wahlstrom Tool Co. and was interested in other corporations.

Horace Hudders, secretary, treasurer and purchasing agent of the Aldrich Pump Co., Allentown, Pa., died recently in that city.

Fred A. Larkin, mechanical engineer, and formerly representative of the Allis-Chalmers Mfg. Co., Milwaukee, died Oct. 19, at his home in Brooklyn.

Thomas A. Cain, forman of the die department of the Wiley & Russell division of the Greenfield Tap & Die Corp., Greenfield, Mass., died suddenly in the factory, Oct. 6, aged 63 years. Mr. Cain had worked at the plant 47 years.

James Laughlin Jr., director and member of the executive committee of the Jones & Laughlin Steel Co., Pittsburgh, died Oct. 5, at his home in Zellwood, Fla. He had retired from active participation in the management of the company several years ago and had made his home in Florida for several years.

John H. Tinkham, traffic manager of the Hendee Mfg. Co., Springfield, Mass., died of heart failure at his home in that city, Oct. 11, aged 49 years. Mr. Tinkham had been in the employ of the company for more than 14 years.

W. P. Sparks, who for the past year has been representative at Indianapolis for the Cleveland Milling Machine Co., Cleveland, died Oct. 10. Mr. Sparks was held in high esteem by his friends, members of his firm and by the trade generally.

Alfred Osgodd Blaisdell, designer of the propelling machinery for the monitors used in the Civil war and on the first span of the Brooklyn bridge to cross the East river, died Oct. 22, at his home in Brooklyn, N. Y., aged 87.

Thaddeus F. Woodman, who for the past 30 years has been a director of the Ohio Iron & Steel Co., Youngstown, O., died in that city on Oct. 24, at the age of 72. For 50 years, Mr. Woodman has been identified in business and industrial circles in the Mahoning valley.

Col. Francis J. Regan, president of the J. J. Regan Mfg. Co., Rockville, Conn., one of the foremost citizens and among the most prominent in industrial and financial life in Rockville, died at his home in that city, Oct. 10, aged 58 years. He was quartermaster general on the staff of Gov. Marcus H. Holcomb.

Strike Cripples British Furnaces

Majority in Every District of United Kingdom Blown Out as a Result of Walkout of Trainmen—Mills Also Affected, Although Wages of Iron and Steel Workers Are Increased—Dealing in Pig Iron Suspended for a Time

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation Street,
Birmingham, Eng., Oct. 3.

THE iron and steel trades have been reduced by the reckless and selfish acts of the railwaymen to a worse state than existed in any trade during the war. A sham notice was given 24 hours before the strike, making precautions impossible and the strike had scarcely commenced before blast furnaces in all districts of the kingdom began damping down or blowing out.

The effect of the strike will be felt long after its termination. In the South Staffordshire district only a few isolated furnaces are in operation at this date. In all instances where the furnaces are out, the opportunity will be taken to make repairs, and this will mean a fairly long period of idleness, and a short supply of pig iron, limiting operations of finishing iron and steel works. When it is remembered that before the strike the supply of pig iron was insufficient, it will be realized that any extension of the industry to cope with the great demand is out of the question for the present. In the ore mines of Yorkshire 9000 men were thrown out of employment Sept. 29, and an additional 12,000 men in the Cleveland district, 40,000 men at the Tees side steel works, 40,000 in South Wales, 10,000 in Sheffield, and at least 10,000 in the South Staffordshire district. North Staffordshire is particularly affected, as the works there are laid out almost wholly for railroad service. In every district the majority of the blast furnaces are blown out.

The furnaces in South Staffordshire are to some extent assisted in their coal supply by the canals; but this is useless as far as coke is concerned, because all the blast furnaces are dependent on the supply of coke from the North of England, which has to be brought by rail, while the same is true of ore. This accounted for the stoppage of Hickman's great blast furnaces and steel works at Bilston, South Staffordshire, which are fed with ore almost exclusively from the new ore field in Oxfordshire.

There is neither buying nor selling of pig iron at present. Finished iron and steel works are generally stopped, but the South Staffordshire district is a little more fortunate than some others owing to its alternative system of transport by means of canals. Birmingham has a network of canals, served by horsedrawn barges, often scoffed at as obsolete but now of some use. Scores of Birmingham works have been kept going, while the South Staffordshire iron and steel works, especially those which were able to accumulate small stocks of pig iron, kept their forges and mills in operation longer than many of their competitors elsewhere.

Another difficulty at present is due to the impossibility of storing large quantities of finished material, most iron works warehouses being little more than loading wharves. One of the few steel works still in practically full operation is the works of Lord Dudley, at Round Oak, as it is nearly self-contained.

While stopping production, the strike also has arrested the supply of imported semifinished material. A great deal of American steel has arrived at ports, where it must remain until railroad cars can be found to convey it to its destination. Before the strike some finishing mills were in great difficulties for raw steel, and these have been the first to cease operations for lack of material. At present no British steel works is willing to negotiate business for the supply of steel for rerolling purposes, so that the winter outlook is not promising.

The strike is particularly hard on the iron and steel workers whose wages boards have the most elaborate arrangements for discussion and negotiation, in fact, prohibiting stoppage of work. The arrangements have worked so well that for several decades no strike of any importance has occurred.

The bimonthly price ascertainment of selling prices under the Midland iron and steel wages board for July and August has been issued. It provides for an increase of 10 per cent in wages for all classes of iron workers, effective Oct. 5. This is an onerous burden to lay on an industry whose costs of production were increased by a wage advance of 27½ per cent two months ago. It is understood that the ironmasters will not consider any increase in selling prices to compensate them for additional cost, as they consider the trade already is crippled for competition by high prices. They prefer to bear the loss themselves, especially as under the sliding scale they would merely widen the circle of rising prices and wages which for the past two years has proved a handicap to the industry. It is likely that at many iron works a fairly long rest will be taken, whatever be the result of the strike in order that a good start may be made under new conditions.

The railroad strike has completely overshadowed the molders' strike, which still drags on, crippling the engineering works. A great deal of attractive and urgent business is being held up for want of castings. There is no prospect of a settlement, as the molders have not abandoned their claim for increased wages and their employers are more determined than ever to insist that they abide by the agreement under which the wages question was to be submitted this month to the arbitration court in connection with the Engineering and Employers' federation.

Another strike is threatened in South Wales. A number of the men engaged in the tinplate trade have not received the 12½ per cent war bonus and at a recent meeting of the joint industrial committee at Swansea the employers agreed to extend this to the whole of the trade. It is hoped that this may have the effect of averting the strike.

Birmingham tinplate warehouses have been besieged by customers anxious to obtain supplies. Merchants have been taking care of their stock and there has been no difficulty in meeting all demands. Buying is fairly active at the iron warehouses.

British Works Merge

An amalgamation has been effected between Messrs. Cammell Laird & Co., Ltd., and the Midland Railway Carriage & Wagon Co. Ltd., the latter a well known Birmingham wagon building company, according to a British correspondence to THE IRON TRADE REVIEW. It is planned to develop very largely the manufacture of steel railway wagons in connection with which the Midland company has established a large factory in Nottingham, in addition to its concern at Birmingham.

Refractories

Still Moving Slowly, Although Production is Being Kept Up

Pittsburgh, Oct. 28.—The movement of refractories is still extremely limited, as the iron and steel interests are specifying only against such requirements as they must have. Although the steel plant strike is nearly ended in most districts, the gain in working forces has been greatest among skilled workmen and common labor such as used in the unloading and piling of refractories still is scarce. The railroad administration maintains embargoes against the iron and steel works in its efforts to prevent car shortages, and the reason for this policy is said to be the shortage of common labor.

Though obliged to pile output quite freely, refractories manufacturers are not cutting down production, which still averages about 60 per cent of capacity. This course is dictated by the belief that present conditions cannot last indefinitely and the possibility of enforced curtailment of output in the event of a strike of the coal miners on Nov. 1 is another factor in the maintenance of production. Prices are unchanged, but are largely nominal in the lack of new business of any account.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 41.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent	$ 40.00 base
76 per cent	100.00 base

Leslie E. Freeman, according to announcement by the American Chamber of Commerce of Brazil, 37 Liberty street, New York, has arrived in this country to open trade relations between the United States and Brazil. Mr. Freeman is equipped with data concerning the markets of Brazil and will supply this information as requested to manufacturers. The chamber is affiliated with the Rio de Janeiro chamber and plans are being made for the publication of a Brazilian-American trade review which is to be printed in this country every month.

Trade Convention Plans Special Features

One of the important features of the Seventh National Foreign Trade convention, to be held at San Francisco, May 15-20, 1920, will be the world conference of American foreign traders, according to preliminary announcements just mailed to American firms represented at previous conventions, who are requested to have their representatives, living or traveling abroad, time their visits to this country so as to take advantage of the valuable opportunities afforded by this convention.

Three special steamers, chartered for the accommodation of delegates from abroad, will be provided for the ports on the Pacific ocean. Another steamer starting from New York, will go by way of the Panama canal.

Information regarding steamer routes, days of sailing and the program of the 1920 convention, is being furnished by O. K. Davis, secretary, National Foreign Trade council, No. 1 Hanover square, New York.

Addresses Foundrymen

H. D. Gates, of the Pangborn Corp., Hagerstown, Md., was the speaker at the regular monthly meeting of the Pittsburgh Foundrymen's association which was held at the Chatham hotel, Pittsburgh, Oct. 20. Mr. Gates' talk which was illustrated by lantern slides, was on "Application of the Sand Blast in General Foundry Work." Carleton S. Koch, president of the Fort Pitt Steel Castings Co., McKeesport, Pa., recently elected president of the American Foundrymen's association, talked briefly on the affairs of the American Foundrymen's association, its problems and aims. He intimated that there was some possibility of the next convention being held in Pittsburgh, provided an exhibition hall of sufficient size could be secured. Seven new applications for membership were presented.

Portable Furnace Burns Kerosene

The device shown in the accompanying illustration is a portable furnace designed to burn kerosene for heating rivets, tools, etc., giving a quick, hot flame. The furnace, which is a product of the Champion Kerosene-Burner Co., Kenton, O., is a self-contained unit with the fuel tank carried on the lower platform of the stand. These tanks are of various sizes, depending on the use to which the furnace is to be put.

Compressed air at a pressure of 90 pounds per square inch forces the fuel to the burner, which is located above the hearth. The fuel is transformed into a gas just previous to being ignited. Air for driving the fuel to the burner is forced into the tank by an air pressure hose or by a pump in cases where an air line is not available. The pressure is recorded by a gage located on the top of the tank.



NEW HEATING FURNACE

It is claimed that the furnace is economical as regards fuel consumption. Tests which were conducted for over a year indicated that with the furnace operating to maximum capacity, the fuel consumed did not exceed ¾ gallon per hour. These tests also showed that the flame gives a heat ranging from 2500 to 3000 degrees, Fahr., burning without any traces of hydrogen. This results in a nonoxidizing flame, which it is stated permits work to be left in the furnace for an indefinite period without danger of its burning up.

As no pipe connections from the furnace to a fuel supply source need be installed, the furnace with the flame in operation, can be lifted by a crane and deposited on another job in close proximity to the work that is waiting.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

WITH $50,000 preferred and $100,000 common stock, the Bossard Railway Signal Corp., Troy, N. Y., has been incorporated to manufacture railway signal equipment of all kinds. It has an exclusive license to market a system of signaling invented by two railroad engineers, Gisbert L. Bossard who is president and general manager of the company, and Rudolf Zaugg, who is its advisory signal engineer and serves on its board of directors. Other officers follow: W. Edward Hamilton, vice president; M. J. O'Sullivan, treasurer; John L. Lehman, secretary. Guy F. Swinnerton is a director and is the company's legal advisor. Mr. Bossard is a graduate in electrical engineering and has been connected with the railway signal equipment and allied industries for about 10 years in an engineering and sales capacity. Mr. Zaugg is in charge of the engineering department of the Federal railroads in Switzerland. Mr. Lehman is a graduate from Union college, Schenectady, N. Y., and until recently was senior inspector of metals at the United States arsenal at Watervliet, N. Y. The company intends to erect its own plant and desires to obtain trade information, catalogs, etc., regarding equipment. Its executive offices are located in the Frear building, Cannon place, Troy, N. Y. Negotiations for representation in England, France and Belgium now are under way. It is reported that over 300 miles of railroad in Europe utilize the signaling system invented by Messrs. Bossard and Zaugg and the company now is preparing plans for the installation of the system on a New York railroad with the object of submitting the system to tests by the interstate commerce commission, safety division.

* * *

ORDERS for complete tinning units for tin plate have been received from France and Japan by the Aetna Foundry & Machine Co., Warren, O.

* * *

COMPLETION of the largest contract in its history recently was achieved by the Weatherly Steel Co., Weatherly, Pa. The contract covered four steel barges for the United States government at a cost of $100,000.

* * *

CONTRACTS from Lacheze et Fils, Dijon and C. Markham & Co., Ltd., Chesterfield, England, for electric furnace installations, have been closed by the Electric Furnace Construction Co., Finance building, Philadelphia.

* * *

THE U. S. Fuel Co. will install a new steel head frame and screening plant, hoisting engine, engine house, concrete boiler stack, boiler room and power house at its Little Vermillion mine near Georgetown, Ill., at a cost of $100,000.

* * *

IN ORDER to care for its increasing Ohio business the J. W. Murray Mfg. Co., of Detroit, producer of auto parts, will establish an assembly plant in Cleveland. The expectation is that this plant will be in operation in about six weeks.

* * *

FOUNDED in 1832, the business of the Charles Parker Co., Meriden, Conn., manufacturer of screws, has grown rapidly. Its latest expansion comprises a 3-story, 50 x 200-foot, concrete addition to its plant. The contract for the construction already has been let.

* * *

THE Hills, McCanna Co., 153 West Kinzie street, Chicago, manufacturer of brass and aluminum castings, recently has acquired a plant at 2025 Elston avenue, Chicago. This plant affords ample space for the expansion of the company's machine shop and foundry.

* * *

IMPROVEMENTS to cost about $200,000 are under way at the north works of the American Steel & Wire Co. in Worcester, Mass. They include erection of an annealing plant, with 16 new annealing outfits, and alterations and additions to other buildings.

* * *

WHEN the Milton Iron Furnace Co., Wellston, O., resumes operation, it will be fully equipped and the plant will be thoroughly repaired. It is erecting a new draft stack, 150 feet high. A new stove also is being added to the blast furnace which will be 85 feet high, its present stove being 75 feet.

* * *

THE National Machine Co., Hartford, Conn., builder of presses and surface grinders, is to purchase the idle brick 2-story factory owned by the F. W. Robbins estate and formerly occupied by the Elmer Tool Co. in Wethersfield, Conn., and will open it within a few weeks, giving employment to 100 persons.

* * *

MACHINE tool specialties will be manufactured by the Sprague-Hayes Mfg. Co., 40-42-44 Leonard street east, Detroit, which recently was incorporated with $10,000 capital. At present the company does not contemplate the erection of a plant. Officers of the company are: President, E. W. Sprague; vice president, Fred Heal, and secretary, R. F. Hayes.

* * *

ON OCT. 6 and 7, 30 representatives from the different offices of the John F. Byers Machine Co., Ravenna, O., held their second annual sales conference at Ravenna. Matters pertinent to the manufacture and sale of the company's auto-crane were discussed and plans for 1920 were formulated. A new model of the crane was demonstrated.

* * *

AS CONTEMPLATED by the A. Garrison Foundry Co., Pittsburgh, its old foundry shortly will be entirely replaced by a new one which will be modern in every respect. One section 95 x 100 feet already is in operation and a section 95 x 120 feet is being added. When the second unit is complete, a third similar to the second will be added, after the remaining portion of the old building is demolished. While the improvements are being made, no loss in production is suffered. Arrangements are expected to be made for a new roll turning shop with twice the capacity of the company's present shop and an extension to its machine shop, likewise is being considered.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

GROUND has been broken at Watervliet, N. Y., for a new plant for the Troy Foundry & Machine Co., Inc., Troy, N. Y., successor to the West Side Foundry Co. The plant will be located on a 25-acre site, opposite the plant of the Troy Malleable Iron Co., which land was purchased by the Troy Foundry & Machine Co. about four years ago. The new building is expected to cost $100,000 and the company purposes to have it completed by Jan. 1, 1920. John T. Starkweather is vice president and general works engineer and will have charge of the construction. Charles A. Sleicher is president and general manager and through his aggressive administration the business has grown so rapidly that this expansion became necessary. Among the large contracts closed recently by the Troy company are one from the Gilbert & Barker Mfg. Co., Springfield, Mass., maker of automatic gasoline tanks, and one from the Sprague Electric Co., Bloomfield, N. J.

* * *

TO CONDUCT a general coal and coke jobbing business as well as to mine coal, the Continental Fuel Corp., Fayette Title & Trust building, Uniontown, Pa., has been incorporated at $25,000. So far the construction of the company's plant has not commenced. The officers follow: President, Frank E. Tuit; vice president, Charles A. Tuit; secretary and treasurer, Paul B. Hickman.

* * *

ACCORDING to an announcement by Vice President and General Manager H. M. Steel, of the Newton Steel Co., Newton Falls, O., the new plant rapidly is nearing completion. It is expected that production of steel will commence by April 1, 1920, and possibly before. It is the intention of the company to employ 600 or 700 men at first and gradually to increase that number.

* * *

AFTER Charles Sorenson, M. L. Bricker, C. R. Brubaker and O. A. Anderson, of the Ford Motor Co., Detroit, had inspected the Ford tractor plant at Hamilton, O., Mr. Sorenson announced that the installation of $1,500,000 worth of machinery is to commence at once and that by the first of next February the plant would be placed in operation, giving employment to 600 men.

* * *

TO PERMIT the better handling of its increased business in high speed steel, carbon tool steel, spring steel, music wire, drill rods, alloy steels, shafting, etc., the Aborn Steel Co., Inc., New York City, has completed its new warehouse and office at 22-24 Clarke street. Other warehouses and offices are located in Boston, Buffalo, Philadelphia, Pittsburgh, Rochester, N. Y., and San Francisco.

* * *

WITH an authorized capital stock of $200,000 the Hudson Mfg. Co., Janesville, Wis., has been organized by Frank B. Strickler and J. C. Strickler, owners of the Strickler Hay Tool Co., and J. E. Cox, also of Janesville. The new concern virtually is a reorganization. The line of hay tools will be enlarged to include farm machinery, barn equipment, etc. Additions to the present Strickler plant will be made at once.

* * *

ARTICLES for religious purposes will be manufactured entirely from metal by the O. N. J. Novelty Mfg. Co., New York, which recently was incorporated with $25,000 capital. The company was chartered by John Jacobs, M. S. Ornstein and A. Ornstein. According to advices from A. Ornstein, who owns the controlling interest in the firm, the company will manufacture its products from a metal of its own composition.

* * *

THE International Earth Boring Machine Co., of Chicago, manufacturer of an appliance designed to be used when mounted on motor trucks for making post holes for transmission lines, fences, etc., has purchased a site for its plant adjacent to the works of the Winther Motor Truck Co., at Kenosha, Wis. This is being done to facilitate the execution of a large order for combination trucks and digging appliances which has been placed by the American Telephone & Telegraph Co., it is reported. The site embraces 17 acres. Details of buildings to be erected have not been issued. Initial construction and plant equipment work is estimated to cost at least $250,000.

* * *

PURCHASED from Oscar Baur by the Fitzsimons Steel & Iron Co., Chicago, manufacturer of cold-drawn steel, etc., 17 acres on Kedzie avenue, between the south branch of the Chicago river and the Chicago & Illinois Western railway at Thirty-third street, will furnish space for expansion. The tract fronts over 700 feet on Kedzie avenue and has a depth of 1300 feet on the railway. It will become the site for a large manufacturing plant equipped with electric cranes, etc., as well as other labor-saving machinery.

* * *

CONSTRUCTION of a new plant for the Sterling Mfg. Co., Cleveland, manufacturer of ammeters and voltmeters, is nearing completion, and is expected to be ready for occupancy within three weeks. The building, which is of reinforced concrete construction, is two stories, 65 x 100 feet, and provision has been made for the erection of another story, if such should be found necessary. In addition to this structure, the company now is planning to erect an office building, 60 x 75 feet, and expects to start construction shortly.

* * *

FOR the purpose of making truck bodies and cabs for selling to the leading truck manufacturers, the Fitz-John-Erwin Mfg. Co., Muskegon, Mich., has been incorporated with $100,000 capital. The company's engineers now are at work on special designs and at present is making commercial bodies and cabs according to specifications furnished by the truck manufacturers. A woodworking plant with about 25,000 square feet of floor space and a site of six acres have been obtained. President H. A. Fitz John formerly was production manager of the Continental Motors Corp., and later, directed the purchases of the Dayton Wright Airplane Co. W. C. Powell is vice president; L. B. Erwin, secretary, and T. H. Hume, treasurer.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

TRUSTON P. DRAPER, who has been appointed general superintendent in charge of operations in all of the properties of the Sharon Steel Hoop Co., Sharon, Pa., succeeds George W. Short, who recently resigned. Mr. Draper is an operator of broad and general experience. He was graduated from Yale university in 1903 and immediately entered the steel business in Youngstown, O., being for some years with the Republic Iron & Steel Co. in various capacities in its blast furnaces, steel plants and rolling mills. In 1906 Mr. Draper became affiliated with the Inland Steel Co., at Indiana Harbor, as assistant general superintendent. He then returned to the Youngstown district as assistant superintendent of blast furnace and steel departments of the Youngstown Sheet & Tube Co., where he spent a number of years. Until recently, for about two years past, he has been identified with the Trumbull Steel Co., Warren, O.

Edward O. Werba has become affiliated with the Meriden Iron Co., Hibbing, Minn.

W. H. Schoen recently was elected president of the Pittsburgh Knife & Forge Co., Pittsburgh, succeeding P. A. McBride.

Maurice Kenyon has resumed his duties as purchasing agent for the New Departure Mfg. Co., Bristol, Conn.

K. K. Hood of the American Zinc Lead & Smelting Co., has been transferred to the American Zinc Co., of Tennessee, at Mascot, Tenn.

Charles H. Schmalz who recently resigned from the Hanna Engineering Works, Chicago, has become assistant factory manager of the Holt Mfg. Co., Peoria, Ill.

C. W. Cross, has been appointed by the Chicago Pneumatic Tool Co., Chicago, as manager of western railroad sales with head quarters at Fisher building, Chicago.

H. G. Hilton, who has been identified with the United Furnace Co., Canton, O., now is connected with the Steel Co., of Canada, Hamilton, Ont.

Phillip L. Getzinger, formerly with Edgar Allen & Co., recently was made manager of the Chicago branch of the Vulcan Crucible Steel Co., with offices at 16-18 South Clinton street, Chicago.

J. B. Throckmorton has been appointed to have charge of the New England district for the Lyon Metallic Mfg. Co., Aurora, Ill. His headquarters will be in the new branch sales office established at 161 Devonshire street, Boston.

B. F. Harper, formerly connected with the sales organizations of the Republic Iron & Steel Co. and the Ft. Wayne Rolling Mill Corp., Fort Wayne, Ind., has associated himself with Roland T. Meacham, Guardian building, Cleveland, investment broker.

Hugo Ritter Von Wessely, vice president and treasurer of the Rowe Calk & Chain Co., Plantsville, Conn., has resigned and will return to Austria, where his mother resides. Mr. Von Wessely has been with the company eight years and was in charge of its western sales office in Chicago.

S. W. C. Fitts, for the past two years superintendent of the Worcester Stamped Metal Co., Worcester, Mass., has resigned to accept a similar position in Los Angeles. He is succeeded by Victor Carlstrom, who comes from the Wire Wheel Co. of America, Buffalo.

Harry E. Figgie recently became sales manager for the Perfection Spring division of the Standard Parts Co., Cleveland, succeeding W. P. Culver, resigned. For the past few years, he has been sales engineer at that plant, prior to which he was assistant superintendent.

F. J. Buller resigned recently as treasurer of the Canadian National railways to accept the position of vice president and manager of the Canadian Steel Tire & Wheel Co., which will establish a large plant for the manufacture of locomotive and passenger car wheels at Montreal, Que.

Joseph H. S. Lynde, for the past 20 months supervising and safety service engineer for the Worcester Pressed Steel Co., Worcester, Mass., has resigned to accept a position of greater responsibility with the American Tube & Stamping Co., Bridgeport, Conn., Mr. Lynde formerly was a district engineer for the Westinghouse Machine Co., Pittsburgh.

George W. Goethals, builder of the Panama canal, has been elected president of the American Ship & Commerce Corp., New York, which recently was organized as a combination of the Wm. Cramp & Sons Ship & Engine Building Co., and the Kerr Steamship Co. Kermit Roosevelt, son of the late ex-president Theodore Roosevelt, is secretary for the corporation.

F. M. English has been appointed district sales manager in charge of the sales office recently established in Pittsburgh by the Reading Iron Co., Reading, Pa. R. A. Griffin is district sales manager in charge of the new Chicago branch sales office. Craig Geddis has been appointed advertising manager for the company and W. E. Dunham is production manager.

E. C. Morse, former assistant director of sales of the war department, Washington, has been made director of sales following the resignation from the latter office of C. W. Hare. Mr. Hare also was assistant director of munitions, but no successor to the latter office will be named. It was announced by Secretary of War Baker that the resignation of Mr. Hare was due to an indisposition which prevented his personal participation in the activities of his offices.

George S. Hewins, who has been general manager in the construction of ships for the United States shipping board at the yard of L. H. Shattuck, Inc., Portsmouth, N. H., since the United States entered the war has become general engineer in charge of construction of the system of the New England Power Co., with headquarters in Worcester, Mass. He succeeds Col. George W. Bunnell, who was president of the Power Construction Co., a subsidiary and who resigned last month to go to Santo Domingo, West Indies, as general manager of the Barahoma Co. At the outbreak of the war Mr. Hewins was engaged as chief engineer for the British Chemical Co., Trenton, Ont.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

GUY E. TRIPP, chairman of the Westinghouse Electric & Mfg. Co., East Pittsburgh, has been elected a director of the American International Corp., succeeding J. Ogden Armour. Mr. Tripp was one of the original directors of the American International Corp., but resigned upon entering the ordnance department of the army. He has been chairman of the Westinghouse Electric & Mfg. Co. for more than seven years.

H. W. Ross has been elected vice president of Templeton Kenly & Co., Ltd., Chicago, manufacturers of jacks.

L. A. Muttart has been made manager of the Chicago railroad sales department of the Western Electric Co., Inc., Chicago.

Edgar Reed, president of the Reed & Prentice Mfg. Co., Worcester, Mass., who has been on a three months' business trip to Europe, sailed for home Oct. 16.

Carl F. Dietz, sales manager of the Norton Co., Worcester, Mass., has left for Europe to look after the personnel and sales methods in France, Belgium, Germany and England.

William H. Savage, builder of machine tools, and Everett E. Wilbar, assistant treasurer of the Union Foundry Co., both of Fitchburg, Mass., are among the incorporators of the People's Trust Co., of that city.

Olof Ostlin, superintendent of the Bolinger Co., Ltd., Stockholm, Sweden, builder of crude oil engines, accompanied by P. Kindberg, a mechanical engineer of Stockholm, are in this country buying machinery.

James A. Carr, president of the American Seeding Machine Co., has been made a chevelier of the Legion of Honor of France for his services as business manager of the allied purchasing committee in Washington during the world war.

J. H. Deppeler, of the Metal & Thermit Corp., has been elected a vice president of the American Welding society, and P. F. Willis, president of the Henderson-Willis Welding & Cutting Co., has been elected a director of the society.

R. M. Dravo, of the Dravo-Doyle Co., Pittsburgh, and who was chief of the Pittsburgh district ordnance office during the war, received the distinguished service order medal from the war department last Friday in Washington.

Walter McCrum, who recently resigned as assistant manager of the Clark Electric Mfg. Co., Middletown, Conn., has accepted a position with the Haytian American Corp., which controls the electrical output of the island of Hayti, West Indies, and has left to take up his new duties.

Col. W. A. Starrett, who served throughout the war as chairman of the emergency construction committee of the war industries board in Washington, has been elected a vice president and director of the George A. Fuller Co., general contractor, New York, Boston and elsewhere.

R. Sanford Riley, president of the Sanford Riley Stoker Co., Ltd., Worcester, Mass., arrived in New York, Oct. 17, on the ADRIATIC after a two months' European trip in the interests of his own company and also the Norton Co., Worcester, of which he is a director. He returned to Worcester this week.

Arthur E. Barr has been appointed employment manager of the Heald Machine Co., Worcester, Mass., to succeed Harry W. Cobb, resigned. Frank Greiner, who has been with the Heald company for three years, has resigned as chief service engineer. L. C. Kenyon, who has been handling its New England territory for the past two years is to be transferred to Chicago to assist G. A. Pabst. He will be succeeded by M. F. McCormick, formerly with the Sperritt & Stoer Co., Philadelphia.

Albert H. Zimmerman, who for 14 years has been affiliated with the Continental Motor Co., Detroit, recently was made vice president, treasurer and general manager of the Supreme Motors Co., Warren, O. Mr. Zimmerman is 36 years old and began his business career as auditor and factory accountant for the Continental company. At that time the factory output was about 100 motors annually and this since has grown to 160,000. In 1912 he was made secretary and treasurer and a member of the board of directors as well as of the executive committee. He resigned in 1918 to take a much needed rest.

George H. McDade recently became affiliated with the Pratt & Whitney Co., Hartford, Conn., maker of machine tools and small tools, etc., in its main office. He has had a wide experience along mechanical lines and as a shop executive. He served as an apprentice and journeyman first with the Allentown Foundry & Machine Co., Allentown, Pa., and the Allentown Wire Co. Later he was chief inspector in charge of the time setting for the Bethlehem Steel Co., and became superintendent of the crane department at Philadelphia for the Niles, Bement, Pond Co., serving from 1901 until 1906. Special work for the Westinghouse Electric & Mfg. Co. took up the next four years and he then in turn became superintendent of the automobile department of the Flint Wagon Works; master mechanic of the engine department of the Buick Motor Co.; engine shop superintendent with the Hudson Motor Car Co., Detroit; factory manager with the Northway Motor & Mfg. Co., that city, and then back to Flint, Mich., to do some special work for the Buick company.

Charles W. Forcier, who for the past three years has been purchasing agent of Mackintosh, Hemphill & Co., Pittsburgh, recently resigned and has opened offices in the Union Arcade building as a sales engineer, in which capacity he will represent in western Pennsylvania, West Virginia and eastern Ohio, the Crucible Steel Forge Co., Cleveland, and the Exeter Machine Works, Inc., with a plant at Pittston, Pa., and executive offices at 30 Church street, New York. Before becoming identified with Mackintosh, Hemphill & Co., Mr. Forcier was with the Pittsburgh Railways Co. in the capacity of storekeeper. He has been treasurer of the Purchasing Agents' association of Pittsburgh for the past two years and will retain this position until the annual meeting of the association next month. Frederick K. Acker, who has been assistant purchasing agent of Mackintosh, Hemphill & Co., Pittsburgh, has been promoted to the position of purchasing agent, succeeding Mr. Forcier.

U.S. Exports Excess Is Dwindling

September Foreign Trade Figures Show Unprecedented Imports and Slightly Smaller Exports—Shipments to Nonallied Europe Up 400 Per Cent and to Allies But 6 Per Cent, Records Show—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

EXPRESSIONS of sentiment at the international trade conference at Atlantic City last week and the Manufacturers' Export association in session in New York the week before, that a restored equilibrium for world trade and upset foreign exchange depended upon increased imports and diminished exports for the United States, were echoed in the report of September exports and imports given out by the bureau of foreign and domestic commerce.

In it, American shipments abroad were seen to have declined 8 per cent while imports increased 28 per cent. Exports for September were valued at $593,000,000, a drop of $53,000,000 from the August total and of $335,000,000 from the June high record. In September of 1918 the exports were $550,000,000. It is interesting to note in this connection that England's exports for the same month exceeded those in August by $131,000,000 and those in September of last year by $304,000,000, all of which indicates the success that is attending the herculean efforts Great Britain is putting forth to recapture her foreign markets. Of the $1,009,000,000 increase in British exports for the nine months of the year, however, only $168,000,000 have come to the United States, the remainder representing sales to other parts of the world.

The fact that the September excess of exports for the United States was $158,000,000, which is smaller than any September since 1915 and less than any export monthly export balance since that date but two, is due to the advance in imports rather than the fall of exports the record shows. Imports last month attained the unparalleled figure of $435,000,000. This is $92,000,000 higher than the previous record established in June of the present year. The high level before the war was $184,000,000 for June, 1913. Only a portion of the increase over this figure can be accounted for by inflated prices.

How normal laws are working steadily toward the end of reducing this country's excess of exports and bringing the current foreign trade situation more into balance, with a consequent recovery in the exchange rates, is revealed in monthly record of trade balances for the year. The excess of exports for September of $158,000,000 is at the rate of $1,896,000,000 annually, as compared with the excess for January of $409,560,000 or at the annual rate of $4,908,000,000. How the excess is being hammered down, more by greater imports than by smaller exports, is disclosed in the following table, the last 000 being omitted from the figures:

	Exports	Imports	Excess exports
September	$593,000	$435,000	$158,000
August	646,258	307,331	338,917
July	570,082	343,999	226,083
June	918,252	293,069	625,183
May	604,896	328,927	275,969
April	714,513	272,956	441,557
March	604,912	267,588	337,324
February	585,097	235,171	349,926
January	622,552	212,992	409,560

Although it may seem strange that the exports remain so high despite the drastic exchange rates, a study of the destination of shipments clearly shows the effect of depressed exchange. Increased sales to Europe have gone to neutrals and to the central powers, rather than to England, France and Italy where especially in respect to the last two the exchange premium is next to prohibitive. Exports to the neutrals have increased approximately 400 per cent, or from $206,000,000 to $1,009,000,000 for the first eight months of the year while those to the allies have advanced but 6 per cent or from $2,329,000,000 to $2,488,000,000. For all of Europe exports have increased 41 per cent during the period and for the rest of the world 28 per cent.

How exchange rates are affecting exports to Italy where the premium on the dollar is 48 per cent is seen in the 21 and 31 per cent drop in imports from America for July and August respectively, while in France where the premium is 40 per cent the decrease was 37 and 28 per cent, respectivly, for the same months. Sales of 57,000,000 have been made to the Teutonic allies this year.

It is certain that the allies will not buy any thing but indispensable material in this country but even this will amount to a huge total, according to estimates made at the trade conference last week. Much steel and other materials will be needed to the extent, it is computed, of $2,750,000,000 before next summer. Secretary Redfield, at the conference, advocated the formation of a $500,000,000 foreign financing corporation to extend the credits necessary to make the exports possible.

The importance of keeping additional credits at a minimum and of pushing export trade in other parts of the world outside of allied Europe is made apparent when it is realized that the ultimate debt Europe will owe this country will probably reach $14,500,000,000, of which more than $10,000,000,000 will represent government advances and the remainder private loans previously extended together with those to be made to finance reconstruction.

Reporting out by the house committee last week of the Edge bill recently passed by the senate, brings the financing corporation project one step nearer. The first big foreign financing move since the armistice was made last week by J. P. Morgan & Co. in offering $250,000,000 British loan. Although foreign representatives at the Atlantic City conference were pledged the financial support in reconstruction, the success the British loan meets at the hands of investors will be the real index to future plans in this direction.

Great activity of the stock market characterized by advances of steel shares last week attracted much attention. On one day Republic Iron & Steel gained over 16 points. A part at least of the advance was believed due to the belief that the Supreme court would decide that stock dividends are not income and not taxable as such in the Towne case now before it. Arguments have been presented and the decision is due within a few weeks. A number of steel companies are known to have stock dividend declarations under contemplation and, provided the case is decided satisfactorily, distributions will be made.

Bethlehem Buys Elkins Coal & Coke Co.

Directors of the Bethlehem Steel Corp. at their meeting Oct. 23, an-

nounced the purchase of the Elkins Coal & Coke Co., a West Virginia corporation, owned and operated by the heirs of the late Senator Stephen B. Elkins. With respect to the purchase, the Bethlehem Steel Corp. announces:

"The property consists of 46,000 acres of coal land in West Virginia, with coal reserves of more than 150,000,000 tons. The property is equipped and developed for an annual output of 1,500,000 tons of coal, which will be increased to 3,000,000. Acquiring of the Elkins company by the Bethlehem interest, in conjunction with their present sources of supply, provides the corporation with its full requirements for coking, heating and steam coal.

"The shipbuilding plants of the corporation are operating at full capacity with no diminishing of orders on hand. New business is being booked at a rate in excess of billings.

"The steel plants, other than the rail mills, are running at full capacity, with an increasing volume of new business offering. The railroad buying is still below normal, but general commercial lines are rapidly filling the capacity usually operating on railroad orders.

"The corporation is continuing its program of extensions and additions to plants, having spent to date this year over $15,000,000 for new construction. A number of new plants are just now coming into operation and over the next five months a material increase in capacity will become available."

Pullman Earnings Under U. S. Control Less

Net profits of $12,730,057 were earned by the Pullman Co. during the year ended July 31, as compared with $13,402,205 for the previous, the annual report of the company shows. The operations of the company were under government control during the period and provisions for depreciation is missing from the income account. It is explained that this item accrues under the contract with the director-general. The company's compensation under federal operations has dropped off enormously. The financial position, however, is strong, with quick assets of $59,392,837 and net working capital of $30,844,743 against a net working capital of $21,169,743 in 1918.

The balance sheet of the corporation shows a loss of 94 cars and equipment, but the valuation was listed only $107,450 less. Securities held increased $600,000, while bills and accounts receivable grew from $3,629,577 last year to $10,423,721 in 1919. Accounts payable, however, expanded from $2,946,925 to $5,017,506. Total assets showed a gain of around $11,000,000 to the total of $171,254,870. Following is the comparative consolidated income account:

	1919	1918
Rev. from cars		*23,287,251
Fed. comp.	$11,750,000	†6,854,166
Ret. from mfg. inter., etc.	3,689,935	3,216,761
Gross income	$15,439,935	$33,358,178
Expenses and taxes	2,709,878	‡17,348,081
Depreciation	§	2,607,891
Balance	$12,730,057	$13,402,206
Dividends	9,599,792	9,599,792
Surplus	$3,130,265	$3,802,414

*Revenues from earnings of cars for five months ended Dec. 31, 1917.

†Federal compensation, seven months ended July 31, 1918.

§Provisions for depreciation during federal control accrues under the contract with director-general of railroads, and does not appear under expenses in income account.

‡Includes operating expenses, repairs of cars, taxes, and insurance for five months, amounting to net balance $13,646,027, and corporate expenses and taxes for seven months ended July 31, 1918, amounting to $3,664,666. the latter amount also including items of expense and taxes prior to Jan. 1, 1918.

Form New Export Concern

A statement just filed with the federal trade commission gives the details of the organization of the Namusa South American Corp., under the Webb Pomerene law for the purpose of exporting chemicals, agricultural implements, construction materials, hardware, machinery, machine goods, mill supplies, scientific and industrial implements, silverware and metal goods, etc. The plan of organization provides for $50,000 common stock par value $100, of which $3900 has been issued; 500 shares no par value authorized, issued at $100 a share, and a capital of $2500 to begin with.

Officers of the company are: President, R. H. Fullerton; vice president and treasurer, O. P. Hollander; secretary, E. F. Tompkins. Among the directors listed as W. H. Cowdery, chairman of the board, who is also president of the American Fork & Hoe Co., Cleveland; Albert C. Lehman, president of the Blaw-Knox Co., Pittsburgh; H. Read, president of the Read Machinery Co., Inc., York, Pa.; and Dr. Edward Weston, president of the Western Electrical Instrument Co., Newark, N. J.

Among the companies holding one or more shares of stock are the American Fork & Hoe Co., Cleveland; Bethlehem Fabricators, Inc., Bethlehem, Pa.; Blaw-Knox Co., Pittsburgh; Excelsior Hardware Co., Stamford, Conn., Read Machinery Co., Inc., New York; Rowe Calk & Chain Co., Plantsville, Conn.; Urschel Valve Mfg. Co., Toledo, O.; and the Western Electrical Instrument Co., Newark, N. J.

Curtiss Assets Decline

Total assets of $16,072,220 are reported by the Curtiss Aeroplane & Motor Corp. in its annual statement for the year ended June 30. This represents a shrinkage from the total of $24,343,054 at the end of 1918. A reduction from $6,484,600 to $610,540 is reported for the inventory account. Accounts and notes payable are reduced from $4,907,873 to $254,229.

Cash on hand compares $2,858,390 with $669,238 last year, while accounts and notes receivable show a falling off from $7,503,404 to $2,740,744. The reserve for taxes is $700,000 less, at $500,000. The profit and loss surplus stands at $2,271,020, against $681,095 at the close of 1918.

The company is retiring 5369 shares of its preferred stock at 110 and the accrued dividend, in accordance with sinking fund provisions, and it has extinguished its funded debt of $4,788,235. The company owes $4,000,000 to the United States government on account of advances on war contracts, but this will be liquidated when these contracts are settled. A bill has been introduced in congress to settle the government's contracts with the company at $6,114,126 and purchase the Buffalo plant of the corporation.

Financial Crop Ends

THE Spicer Mfg. Co., South Plainfield, N. J., has purchased the Parrish Mfg. Corp., with plants at Detroit and Reading, Pa., makers of automobiles, trucks, frames, and the Sheldon Axle & Spring Co., Wilkes-Barre, Pa. The authorized capital will be $2,000,000 preferred stock; $5,000,000 common stock; $3,000,000 surplus and $3,000,000 one to five year serial 6 per cent notes which have been purchased by the company's bankers.

* * *

A favorable vote to increase the capital stock from $1,500,000 to $2,000,000 has been taken by the stockholders of the North & Judd Mfg. Co., New Britain, Conn. The proceeds will finance the W. & E. T. Fitch Co., New Britain, which the company recently acquired.

* * *

A new organization which it is said will include 90 per cent of the safety razor business of the world, has just been affected in Boston. The consolidation involves the Gem, the Ever-Ready, and the Star Safety Razor companies. The new company will be known as the American Safety Razor Co., with an authorized capital of $20,000,000.

Prospective Tool Business Large

Closings at Present Represent Many Small Tools and Much Light Equipment—Large List Out From General Electric, American Car and Foundry and Chevrolet Motor Companies—Sizable Crane Business Pending

MUCH space is being taken up in order books of machine tool and equipment sellers today, although the aggregate value is not surprisingly large. This is by reason of the fact that most of the sales made are for light equipment or for small numbers of small tools. Answers to the numerous inquiries being received are taking much of the dealers' time and in some cases mean working after regular hours. This prospective business looms large, however, and presages well for the late fall and winter months. While it is probable that a coal strike will affect the machinery market somewhat, the fact that the steel strike practically has fallen through promises to produce much equipment business at an early date.

Sizable orders at times interrupt the continuity of the smaller ones in practically all districts. Lists issued by the General Electric Co., Schenectady, N. Y.; American Car & Foundry Co., New York City, for shops at Depew, N. Y., Buffalo and Chicago; Chevrolet Motor Co., Bay City, Mich., aggregate about $100,000 worth each. A large list is expected from the Willys Corp., which is enlarging its Elizabeth, N. J., plants, involving an expenditure for buildings and equipment of about $4,000,000. Much special machinery will be bought. The company recently purchased 10 special machines. Other buyers, prospective and actual, include the J. H. Williams Co., Brooklyn, N. Y., manufacturer of drop forgings; S. P. Townsend & Co., Orange, N. J., manufacturer of lawn mowers, etc.; Empire Axle Co., Dunkirk, N. Y.; American Motors Co., Plainfield, N. J.; E. W. Bliss Co., Brooklyn, N. Y., for Hastings, Mich.; Ellis Motor Car Co., Newark, N. J.; H. H. Franklin Co., Syracuse, N. Y.; Nash Motors Co., Milwaukee, Wis.; Samson Tractor Co., Janesville, Wis.; the Stromberg Motor Devices Co., Chicago, and a large number of automobile manufacturers in Detroit, including Dodge, Hudson, Ford, Cadillac and Packard.

Railroad purchases of machinery requirements slowly are taking form and further legislation looking toward the return of the railroads to private ownership seems an early possibility. Against such action railroad purchasing agents are lining up their 1920 requirements. The Santa Fe railroad has made some minor purchases already but most of the inquiries are tentative. These include some from the Pennsylvania lines west and the New York Central. The Stark, O., shops of the former road are said to be ready for machinery but many purchases yet have to be made. One steel fabricator in the Chicago territory bought $12,000 worth of tools. In that district there seems to be a large demand for sheet metalworking machinery with a consequent lack of punch presses.

Some slight stir exists in the eastern crane market. The American Car & Foundry Co. wants five cranes for Chicago and three for Buffalo. The Kennedy-Van Saun Mfg. Co., New York, wants seven cranes of various sizes. The Newton Machine Tool Works, Inc., Philadelphia, wants electric cranes, as does the Empire Axle Co., Dunkirk, N. Y. The Harley Co., Springfield, Mass., wants four and the Midvale Steel & Ordnance Co. is reported to be in the market for a like number for Johnstown, Pa. Three cranes are wanted by the Leffel Mfg. Co., Springfield, O. The American Tube & Stamping Co., Bridgeport, Conn., wants a traveling crane and a gantry crane is wanted by A. Bentley & Son, Toledo, O.

Past Month Has Been Active for Eastern Sellers

OCTOBER, now closing, is regarded by the eastern machine tool trade as one of the most satisfactory months so far this year. Inquiry has been well in excess of several of the preceding months, and buying has been of good volume, for in addition to several sizable orders, there has been considerable small miscellaneous business. Possibly the most significant development has been the interest displayed by the automotive and allied industries. This has been manifested in the Middle West for sometime past, but not until recently has it been in evidence in the East. The biggest inquiry, however, to come out from these sources, that of the New Departure Mfg. Co., Bristol, Conn., continues pending.

Other branches of industry are also represented by sizable inquiries. The General Electric Co., with the addition of a list just issued, is in the market for approximately $100,000 worth of equipment for its Schenectady, N. Y., plant, and is expected to bring out another list within the next few days. Another large inquiry is that of the American Car & Foundry Co., 165 Broadway, New York. Machine tools aggregating a similar amount are desired for its plants at Buffalo, Depew, N. Y., and Chicago, in addition to considerable fabricating equipment. The E. W. Bliss Co., Brooklyn, N. Y., continues in the market for machine tools for its plant at Hastings, Mich., already having placed some business. The J. H. Williams Co, manufacturer of drop forgings, also of Brooklyn, N. Y., has been a buyer of the past week.

A large list is expected shortly for the Elizabeth, N. J., plant of the Willys Corp. Plans have been completed



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for additions, estimated to cost, equipped, around $4,000,000. It is believed that purchases will involve much special machinery. The company recently bought 10 special machines. The Ellis Motor Car Co., Newark, N. J., will require a few tools for a repair shop. The H. H. Franklin Mfg. Co., Syracuse, N. Y., has taken a long term lease on a building which it will convert for manufacturing purposes.

Possibly the largest inquiry to come out recently in the eastern crane market is that of the American Car & Foundry Co., calling for two 5-ton and three 10-ton overhead cranes, with spans of 50 and 90 feet respectively, for Chicago; and one 10-ton crane, with 100-foot span, and two 10-ton cranes, with 90-foot span, for Buffalo. It is understood this list absorbs the 10-ton crane with 90-foot span, recently inquired for. Another sizable list now pending in the East is that of the Kennedy-Van Saun Mfg. Co., 120 Broadway, New York, manufacturer of crushers. This list involves one 5-ton, one 10-ton, three 20-ton, and two 30-ton cranes. The spans involved are 24 and 60 feet.

Although no award has been announced, it is reported that bids on a 10-ton overhead crane, with 75-foot span, for the Stanley Works, New Britain, Conn., have been closed. The Harley Co., Springfield, Mass., has bought two Shepard and two Curtis cranes. The cranes were of two tons capacity, with spans of 24 feet. The Leffel Mfg. Co. is reported to have placed one each, 5, 10 and 20-ton overhead cranes for its plant at Springfield, O., with the Case Crane Co. An unconfirmed report of interest to the trade is to the effect that the Midvale Steel & Ordnance Co. has placed four 10-ton overhead cranes for its plant at Johnstown, Pa., with the Alliance Machine Works, Alliance, O. The Midvale company also has been inquiring for a 75-ton ladle crane, with 47-foot span, and two heavy ladle trolleys.

The American Tube & Stamping Co., Bridgeport, Conn., continues in the market for a 5-ton traveling crane with 25-foot span. A. Bentley & Son, Toledo, O., contractors, are inquiring for a gantry crane.

Labor Troubles Make Buyers Withhold Orders

ACTIVITY in machinery and tools in the Pittsburgh district continues more prospective than actual. With a strike of the coal miners coming on just as the steel strike was considered to be practically broken, hopes do not run particularly strong that much of the prospective business will materialize in the immediate future. Numerous inquiries for cranes are out, but few if any of them are being closed because of the labor situation. Dealers in tools report a fair amount of sales from the floors, but no new inquiries of any account. The Pennsylvania railroad, lines west, is putting out tool inquiries almost daily, but is closing on few if any of them. It is said that the Stark, O., car shops of this railroad is practically completed and ready for the installation of equipment but that most of it still is to be ordered.

Prospects for Winter Trade Good

BUYING of machine tools in the Chicago market continues excellent with prospects for winter trade being heavy. As has been the case for some time, most buying is of single tools or a small number but in addition to this several large consumers are covering their requirements by a series of orders. The Nash Motors Co. is preparing its first installment of requirements for the new plant being built at Milwaukee, and figures will be considered shortly. This is not expected to cover more than a small part of its eventual purchase. The Samsom Tractor Co., of the General Motors Corp., at Janesville, Wis., continues to spread its business, which has run into a large sum. The Santa Fe railroad recently placed an order for two shapers, one of the few recent purchases by railroads.

A fabricating concern recently placed an order for a heavy punch which represented an outlay of about $12,000. Another sale recently made was of a 60-inch planer with reverse motor, which also involved a large expenditure. Much demand is being made for heavy sheet metal-working machinery so much so that punch presses are almost unobtainable. Demand for soft drinks has stimulated activities of soda fountain supply manufacturers and the Liquid Carbonic Co. recently bought a large quantity of equipment for making holders for gas and charged water. This represented lathes, drills and other machinery for working copper, brass and steel. The Stromberg Motor Devices Co., Chicago, recently closed for considerable equipment.

Machine Tool Sellers Active in Cleveland

TRADING among Cleveland machine tool sellers at present consists mainly of small equipment and lighter tool sales. Despite great activity the aggregate value of orders placed seemingly is not commensurate with the energy expended. Much business, however, is prospective. Inquiries are numerous, so much so for one dealer that notwithstanding the combined effort of his clerical force, some of Friday and Saturday's voluminous mail had to be held over until Monday of this week. Action by purchasers on many of these inquiries will be delayed until the labor situation becomes definitely more settled. It is thought that if the impending coal strike becomes an actuality and is extended, its effect will be noted in decreased sales of equipment.

Larger inquiries come from the Detroit automotive field. About $100,000 worth of equipment is being inquired for and ordered by the Chevrolet Motor Co., Bay City, Mich. Dodge Bros., Detroit, has been a recent purchaser and an addition in course of erection will require more machinery. The Packard Motor Car Co., and the Paige-Detroit Motor Car Co., as well as the Ford Motor Co., and the Hudson Motor Car Co., Detroit, continue to figure among the larger purchasers of machine tools, etc. It is understood that the Ford tractor plant at Hamilton, O., now is ready for the installation of $1,500,000 worth of machinery. Much of this is on order but it is reported that a considerable amount still has to be specified. Machine shops for the Detroit Motor Car Co., Detroit, 275 x 528 feet; Escanaba Motor Car Co., Escanaba, Mich., 100 x 120 feet, and the Novo Engine Co., Lansing, Mich., 130 x 160 feet, all are about to issue lists of equipment requirements or have already done so. The National Spring & Wire Co., Grand Rapids, Mich., is installing machinery in its new plant. Presses, etc., will probably be required by the Jackson Stove & Stamping Co., Jackson, Mich., recently incorporated by Walter V. Sherwood and others at $200,000. The Gilmore Marine Motor Corp., 404 Twenty-fourth street, Detroit, is to increase its output of marine motors and this will necessitate the addition of considerable equipment. The Lemnar Mfg. Co., Saginaw, Mich., paper-baling machinery, is erecting an addition, quadrupling its capitalization to $200,000.

From outside of what is known as the Cleveland-Detroit territory, come a few inquiries which are of interest to dealers. Present equipment of S. P. Townsend & Co., Orange, N. J., manufacturer of lawn mowers, ball bearing mowers, etc., is to be doubled. A new building

FARRELL-CHEEK

Steel Castings



THE CONSULTATION

Between expert Engineer and Metallurgist is the real beginning of a Farrell-Cheek Steel Casting.

Here the tensile strength, thicknesses, pattern, etc—are discussed—and the alloys and ingredients determined.

From the time the blue prints and specifications leave their experienced hands until the casting is finished and examined for the last time—the same skilled care is given to each detail with the result of uniform smooth castings, specially suited to the particular needs.

Isn't *that* the casting you want?

Farrell-Cheek Steel Foundry Co.

Makers of Steel Castings that are a little better than the next best.

Sandusky, Ohio., U. S. A.

MEMBER OF

providing 70,000 additional square feet of floor space is being erected and a formal list of equipment requirements is expected soon. A fair sized list is issued by the Empire Axle Co., Dunkirk, N. Y., which is to double its present output of worm drive axles. Machinery, machine tools, electric cranes, power apparatus, etc., all will be purchased. Considerable equipment will be purchased by the American Motors Corp., 141 Broadway, New York City, which is building an addition to its plant in Plainfield, N. J., 60 x 280 feet. One forging furnace, one 13-inch lathe, one 16-inch shaper or crank planer, three or four presses, an automatic wire straightening and cutting machine, a welding machine, and a bench drill, motors, etc., will be purchased by the Kunehelm Mfg. Co., Gardner, Mass., manufacturer of children's vehicles.

Numerous smaller inquiries from the immediate vicinity of Cleveland are before sellers. The Post Tractor Co., Cleveland, is asking for a 2-spindle drilling and tapping machine among other tools. The Ohio Heating & Pipe Bending Co., 1063 West Eleventh street, Cleveland, is in the market for power apparatus, two lathes, etc., having increased its capital to $250,000 in order to erect a new plant. The Automatic Products Co., Cleveland, has been in the market for some equipment and has placed some orders, as has the National Screw Products Co., Detroit. The Wheeling Radiator & Mfg. Co., Cleveland, is understood to have filled its requirements of grinding machinery. The Lang Body Co., Cleveland, is making tentative inquiry for its equipment requirements for its enlarged plant. The Minerva Engine Co., Cleveland, is looking toward its new machine shop requirements. It is expected that some of the requirements of the Springfield Advance Machine Co., Springfield, O., incorporated by H. S. Bradley and others with $50,000, will be placed in Cleveland. When the F. R. Fortune Tool & Mfg. Co., Wooster, O., moves the business of the H. R. Lewis Tool Co., Detroit, which it has purchased, to the former town after the new plant is built, it will doubtless issue a list of machine tool needs.

Increased activity on the part of the railroads is noted. Inquiries are being received from the Pennsylvania lines west, as well as from the New York Central railroad, as referred to last week. Railroads consider that the outlook has improved for remedial legislation which will allow for a return of the railroads to private operation early next year. It is against that time that the railroad purchasing agents now are lining up shop requirements.

Further information about the proposed $50,000,000 steel car plant at Chillicothe, O., is unobtainable. Dealers and manufacturers representatives who went to Columbus, O., to see the engineer, W. H. Monahan Jr., reported to have charge of awarding 35 cranes, returned without being successful in communicating with the latter. Another effort is being made this week.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

BOSTON.—The Massachusetts Electric Dredge Co. has been incorporated with $50,000 capital by Charles E. Fay, Fred C. Fernald and Forrest H. Abbott, Quincy, Mass.

CHARLESTOWN, MASS.—The Crosby Steam Gauge & Valve Co., Boston, contemplates a foundry extension and office addition.

EAST CAMBRIDGE, MASS.—The H. B. Smith Co., Westfield, Mass., heating apparatus, is taking bids for a 1-story, 100 x 200-foot storehouse to cost $50,000.

EAST PROVIDENCE, R. I.—The Standard Oil Co. is having plans made for a 2-story and basement, 42 x 62-foot with a wing 32 x 30-foot laboratory and a 2-story and basement garage to include a 32 x 100-foot boiler room to cost $500,000.

MANSFIELD, MASS.—A large warehouse will be erected here by the Union Warehouse Corp.

MARLBORO, MASS.—The Koehler Mfg. Co. has let a contract for a 2-story, 50 x 250-foot plant.

SPRINGFIELD, MASS.—The Oliver Mfg. & Sales Co. has been incorporated to make a vehicle brake with $100,000 capital, by Oliver Patterson, Abraham Ratner and Max Rabinovitz.

SPRINGFIELD, MASS.—The Russell Electric Co. has been incorporated to make appliances with $10,000 capital, by Matthew Russell, Harold P. Litchfield, Newton, Mass., and Willmot Nash, Wollaston, Mass.

SPRINGFIELD, MASS.—The Eldridge Electric Mfg. Co. has been incorporated to make tools, appliances and hardware specialties, with $25,000 capital, by Arthur C. Wright, Norman B. Ellison, Holyoke, Mass., and R. A. Wright.

WATERTOWN, MASS.—C. M. Leach, Boston, has been awarded a contract to erect a 1-story, 67 x 75-foot building at the United States arsenal.

PAWTUCKET, R. I.—The Collyer Insulated Wire Co. will build a 60 x 110-foot plant addition at an estimated cost of $100,000.

PROVIDENCE, R. I.—The Crompton & Knowles Loom Works will build an addition to its foundry, 83 x 222 feet.

PROVIDENCE, R. I.—The Mueller Metal Co., 288 Dyer street, contemplates a plant, 2-stories, 50 x 100 feet, to cost $33,000.

BRIDGEPORT, CONN.—The Bridgeport Brass Co. has awarded a contract for an addition to its foundry, 120 x 220 feet, to cost $150,000.

RBIDGEPORT, CONN.—The Columbia Graphophone Co. will erect two 6-story and 4-story plants, which will be equipped with machinery for the manufacture of records.

BRIDGEPORT, CONN.—The O. K. Spring & Machine Co., Inc., has been incorporated with $5500 capital by A. F. Brown, Alex Langfelder and Ignatz Czeisler, both of New York.

BRIDGEPORT, CONN.—The Motive Products Corp. has been incorporated to make roller bearings, etc., with $300,000 capital, by Jonathan Grout, Fairfield, Conn., Louis C. Held and L. E. Disbrow.

CAMBRIDGE, MASS.—Bids closed Oct. 29 for a 4-story, 74 x 90-foot addition to the Cambridge Rubber Co.

EAST BERLIN, CONN.—The Connecticut Metal & Chemical Co. has started work on a plant addition, 1-story, 115 x 321 feet.

EAST HARTFORD, CONN.—Property has been purchased by the Atlantic Refining Co. for a new plant.

EAST NORWALK, CONN.—Plans are being drawn for a 5-story, 60 x 300-foot plant addition and a 2-story, 60 x 150-foot power house for the Crofut & Knapp Co.

HARTFORD, CONN.—The Hartford Rubber Works Co. contemplates spending several hundred thousand dollars on plant additions.

HARTFORD, CONN.—The Hartford Electric Welding Co. has been incorporated with $25,000 capital by George F. Smart, Harry A. Wilcox and S. W. Wilcox.

HARTFORD, CONN.—The Hanson-Whitney Mfg. Co. machine tools, has let the contract for a 4-story 60 x 120-foot plant, which with equipment will cost about $100,000.

HOLYOKE, MASS.—The Walsh's Holyoke Steam Boiler Works will build a 1-story erecting shop, at an estimated cost of $10,000.

MERIDEN, CONN.—The Charles Parker Co., maker of guns, screws and hardware, has let the contract for the erection of a 3-story, 50 x 200-foot plant addition.

MILFORD, CONN.—The Milford Machine & Tool Co. has been incorporated with $10,000 capital by

An Open Letter About Wood Block Floors

By P. C. REILLY

President Republic Creosoting Company, Manufacturers of Kreodone Wood Floor Blocks

EVERY man who is going to put a wood block floor in his factory should give most serious consideration to just what a wood block floor must be and what it must do for him.

If he orders "a wood block floor," without *knowing* the ins and outs and the whys and wherefores, he runs a pretty good chance of buying a costly disappointment.

The advantages and economy of wood block floors have been demonstrated and established beyond question, even before creosoted lumber was used.

The early decay and absorption of moisture by untreated blocks was overcome as soon as the antiseptic and sealing properties of creosote oil were established, and we developed the first creosoted wood block floor manufactured, using, then as now, a pure creosote oil as the preservative.

So it went on, step by step, until at last Kreodone Wood Floor Blocks were evolved. These perfect blocks are preserved with a creosote oil so pure and of such a high grade that we call it Kreodone Oil in order to avoid confusion with the general term of "creosote oil," which is indiscriminately applied to creosote oil of almost every grade.

Kreodone Oil is *not* an adulterated creosote oil; that is no tar or petroleum products are added to cheapen its cost and reduce its efficiency. Kreodone is a refined creosote oil; it is a creosote that has the volatile elements removed and only the constant, efficient elements of creosote left.

A wood block floor depends for its life and wear upon two things—the quality of the wood and the quality of the preservative oil used.

Kreodone Wood Floor Blocks are made of long-leaf yellow pine of the finest quality. This wood is given our own special treatment with our own Kreodone Oil. This antiseptic oil stays there permanently. It keeps out moisture; it prevents the action of decay. It increases the wearing resistance of the block.

You will know a Kreodone block by its *light brown* color. Split the block and you will see that this color characterizes the inside as well as the outside.

Now, when a poor grade of creosote oil is used, tar in some quantity is present. Such a block will be very dark, often black. After it is laid, the tar will exude, making the surface of the block sticky. That is annoying, but the real evil is that this poor oil is volatile. It *evaporates*. The tar coloring may remain, but the preservative is gone, and although the block may last for a few years—just as any wooden floor will—decay will eventually set in and the floor must be replaced.

These are important points for you to know. Installing a wood block floor is an investment of some consequence, not so much by reason of the money involved as because of the *service* you can and *should* receive from such a floor.

Our engineers will be glad to go into this matter fully with you. We can show you proof of the superior quality of Kreodone Blocks, and from a technical standpoint we can make it clear to the layman just why he should accept nothing less than Kreodone Wood Floor Blocks.

Write to us, telling us the space you have to cover and we will either send a representative to see you or write you exactly what in our judgment is the best way for you to get the full benefit of Kreodone Floor Blocks.

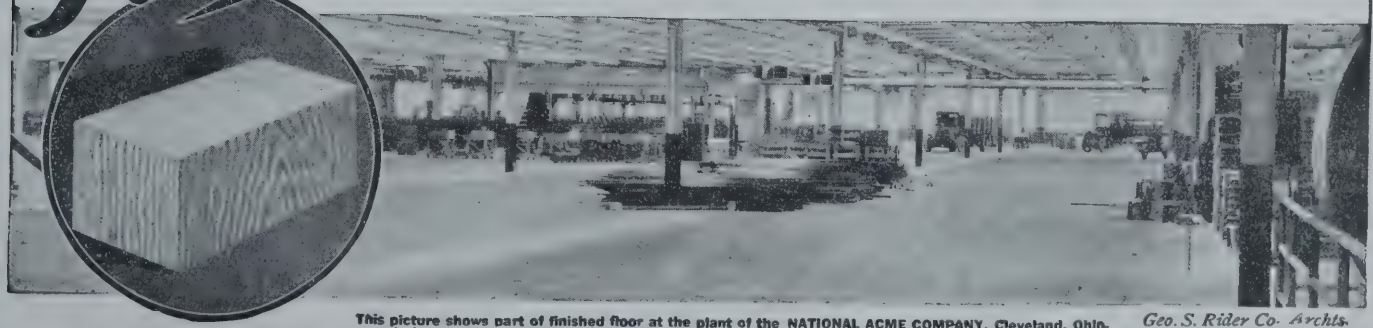
Kreodone EVERLASTING WOOD BLOCK FLOORS

Republic Creosoting Company

INDIANAPOLIS, INDIANA

Plants:

Indianapolis Minneapolis Mobile Seattle Norfolk



This picture shows part of finished floor at the plant of the NATIONAL ACME COMPANY, Cleveland, Ohio, before machinery was installed. This floor covers a space of 7 1-2 acres—300,000 square feet. *Geo. S. Rider Co. Archts.*

W. A. Leonard, G. E. Closson, A. L. Montague and J. B. Dillon, Shelton, Conn.

NEW BRITAIN.—Work has been started by the Stanley Steel Works, on its new plant in this city. The main building will be 300 x 700 feet.

NEW BRITAIN, CONN.—The American Hardware Corp. has awarded a contract for a foundry addition, 2-stories, 62 x 264 feet, to cost $125,000.

NEW BRITAIN, CONN.—The Knebel Mfg. Co. has been incorporated to make steel, brass and other metals, with $50,000 capital by Richard Knebel, Herman G. Markie and William C. Betz.

NEW HAVEN, CONN.—The Wengraf Auto Hoist Co. has been incorporated with $10,000 capital by Jacob Sharpe, Frank Wengraf and S. C. Rosenberg.

NEW HAVEN, CONN.—The New England Iron Works has been incorporated with $250,000 capital by S. Z. Poli, Edward Poli, Abraham Natkin, James A. Natkin, Matthew A. Natkin, Benjamin A. Natkin, Harry L. Brooks and Walter M. Sheehan.

PLANTSVILLE, CONN.—A 50 x 240-foot forge shop will be erected by the Atwater Mfg. Co.

SOUTHINGTON, CONN.—Peck, Stow & Wilcox are progressing rapidly with a new plant addition, and equipment will be installed shortly.

TORRINGTON, CONN.—Plans are being drawn for a 3-story, 60 x 150-foot factory to cost $65,000 for the Torrington Mfg. Co., builder of machinery.

WATERBURY, CONN.—The Waterbury Farrel Foundry & Machine Co. has let a contract for a 72 x 102-foot machine shop and a 1-story hardening room. A foundry building will be erected later.

WORCESTER, MASS.—The Norton Co. has let the contract for a 1-story, 30 x 140-foot warehouse.

North Atlantic States

BROOKLYN, N. Y.—William E. Taylor & Co., Inc., contemplates making elaborate improvements to its plant.

BUFFALO.—The Contractors Ornamental Steel Co. recently was incorporated with $10,000 capital, by H. W. Meyer, J. H. Wilting and W. F. Schuets.

CORTLAND, N. Y.—The Cortland Sweeper Co., street sweepers, plows and harrows, has been incorporated with $25,000 capital, by F. L. Tichenor, G. F. Beaudry and E. W. Smith.

LONG ISLAND CITY, N. Y.—The Connelley Iron Sponge & Governor Co. has purchased a site on which it plans to erect a modern plant.

LONG ISLAND CITY, N. Y.—The Leeds Phonograph Record Co., Record and Review streets, contemplates a boiler house, 1-story, 28 x 49 feet, to cost $5000.

MINEOLA, N. Y.—The Allied Automotive Corp. has been incorporated with $250,000 capital, by J. F. Egan, W. E. Kisselburg and E. E. Gilman, 149 Broadway.

NEW YORK.—The Perth Amboy Dry Dock Co. is having plans drawn for a shipbuilding plant.

NEW YORK.—The Aeolian Co., 29 West Forty-second street, plans a warehouse and a boiler house.

NEW YORK.—The Liberty Auto Ignition Co. has been incorporated with $150,000 capital, by H. Eissenbach, L. Kretzer and L. Baskin, 1121 Tinton avenue.

NEW YORK.—The Geyser Electric Washing Machine Co. has been incorporated with $20,000 capital, by F. H. Butehorn, E. S. Hawley and R. S. Baker, 37 Wall street.

NEW YORK.—The Overland Caterpillar Chain Co. has been incorporated with $500,000 capital, by G. D. Proctor, J. J. Hegan and J. J. Krauss, 1213 Wheeler avenue.

NEW YORK.—Emilio Bracchi, machinery and metals, has been incorporated with $10,000 capital, by E. Bracchi, G. J. Giudici and N. Greenberg, 3 West 112th street.

NEW YORK.—The Vitreous Enameling & Stamping Co. has been incorporated with $300,000 capital, by H. Bruckner, W. J. Flynn and G. P. Morrell, 1632 University avenue.

NEW YORK.—The Utility Products Corp., electrical machinery and devices, has been incorporated with $100,000 capital, by G. Tiernan, 64 Wall street, G. H. Parcell and others.

NEW YORK.—The Gairas Mfg. Co. has been incorporated to make and repair machinery with $25,000 capital, by J. A. Poytras, G. F. Geiszler, and J. A. Lyons, 319 East 159th street.

NEW YORK.—The Utility Products Corp., machinery and electrical supplies, has been incorporated with $100,000 capital, by F. H. Parcell, G. Tiernan and J. B. Parcell, 64 Wall street.

NIAGARA FALLS, N. Y.—The Republic Carbon Co. is taking bids for a large plant addition and a new office building, to cost $175,000.

NORTH TONAWANDA, N. Y.—The Horschell Spillman Co., 102 Sweeney street, has awarded a contract for a motor building addition, 64 x 114 feet.

ROCHESTER, N. Y.—The American Laundry Machinery Co. has had plans drawn for a machine shop addition.

SYRACUSE, N. Y.—The Vulcan Die Casting Corp. recently was incorporated with $150,000 capital, by C. M. Kessler, E. B. Frost and A. L. Wellhoefer.

SYRACUSE, N. Y.—The Whiting-Graser Co. has been incorporated to operate a machine shop with $25,000 capital, by J. T. Whiting, T. T. Graser and E. L. Wildman.

SYRACUSE, N. Y.—The C. W. Leed Mfg. Co. has been incorporated with $100,000 capital to manufacture hardware specialties in addition to a ball-bearing lubricating device.

ALLENTOWN, PA.—George H. Hardner has a permit to erect a machine shop, 75 x 85 feet, for James and Benjamin Eastwood.

CHAMBERSBURG, PA.—The Southwark Foundry & Machine Co., Philadelphia, has leased the plant of the Quincy Engine Co.

LANCASTER, PA.—The Lancaster Foundry Works has been incorporated with $150,000 capital, by Charles E. Long and others.

PHILADELPHIA.—The Pennsylvania Forge Co. has awarded a contract for a forge shop, 100 x 200 feet.

PHILADELPHIA.—Max Haupt has awarded a contract to the Standard Construction Co. for a forge shop addition.

PHILADELPHIA.—Plans are under way for a power house at the Frankford arsenal. The building will be 1-story, 135 x 139 feet.

PHILADELPHIA.—The Philadelphia Dyeing Machine Co. has awarded a contract for a plant, 1-story, 64 x 108 feet, to cost $22,000.

WASHINGTON, PA.—The Washington Molding Foundry & Machine Co. is reported planning a new foundry and cupola.

ELIZABETH, N. J.—The property of Runkel Bros., Inc., adjoining the plant of the Duesenburg Motors Corp., has been purchased by the Willys Corp.

JERSEY CITY, N. J.—The A. R. Burnette Corp. has been incorporated to manufacture tools, etc., by C. A. Cole, R. A. Van Vorhis and A. R. Oakley.

NEWARK, N. J.—A proposed plant costing $10,000 will be expended by the Ellis Motor Car Co. on a new garage 268 x 339 feet.

PATERSON, N. J.—The Paterson Vehicle Co. has had plans drawn for a body building, 1-story, 45 x 190 feet.

PATERSON, N. J.—The Citizens Iron & Metal Corp. recently was incorporated with $5000 capital, by Leo Rosenkopf, A. Glick and Morris Poritz.

TRENTON, N. J.—William B. and David Barber, iron and steel jobbers, have purchased the plant of the New Jersey Wheel Co.

TRENTON, N. J.—The Safety Lock Co., 411 Broad street, recently was incorporated with $100,000 capital to manufacture locks, etc.

TRENTON, N. J.—The Ceramic Equipment Co. has been incorporated with $100,000 capital and is equipping a plant for the manufacture of dryer machinery. Harry D. Leavitt, Donald M. Miller and Joseph L. Buckley are the incorporators.

Central States Activity

ALGOMA, WIS.—The Algoma Panel & Veneer Co. will erect a 2-story plant addition, 56 x 224 feet.

BARABOO, WIS.—C. H. Crubb, manufacturer of steel barn equipment and farm specialties, will build a 3-story addition, 30 x 50 feet, at a cost of $15,000.

CHILI, WIS.—The Lynn-Chili Electric Co. has been organized by H. C. Portz, William Wagner, Oscar F. Franke and others, with $35,000 capital.

DE PERE, WIS.—Work has started by the Western Steel & Iron Co. on a 2-story shop addition, 34 x 163 feet, to cost $40,000.

EAU CLAIRE, WIS.—The Dependable Tractor & Truck Co., recently incorporated in Delaware with $750,000 capital, is establishing a plant here.

EDGERTON, WIS.—E. J. Rechord & Sons are having plans made for a 2-story garage and machine shop, 40 x 90 feet, to cost $20,000.

FT. ATKINSON, WIS.—The James Mfg. Co. has awarded contracts for a new foundry unit, 400 x 600 feet, to cost $250,000 with equipment.

KEWASKUM, WIS.—The Kewaskum Aluminum Co., a $150,000 corporation, contemplates erecting a plant, two stories, 60 x 200 feet.

KEWASKUM, WIS.—The Remmel Mfg. Co. has been organized with $50,000 capital to succeed the machine shop and foundry business of Nicholas Remmel. Additions to both foundry and machine shop are contemplated.

MADISON, WIS.—The Burgess Battery Co. has started work on a 1-story plant addition, 140 x 240 feet, to cost $200,000.

MANITOWOC, WIS.—The Frank Kerscher Co., sheet metal products, plans a 1-story warehouse addition, 60 x 120 feet.

MENOMONEE FALLS, WIS.—The Wisconsin Mfg. Co. has been founded to manufacture electrical accessories and supplies. Henry Storm is president and general manager. Additional machinery is reported being purchased.

MILWAUKEE.—The Milwaukee hospital is having plans prepared for a power plant and a boiler house addition to cost $25,000.

MILWAUKEE.—The Balance Valve Motor Co. has

been organized with $1,000,000 capital, by W. M. Baumheckel, George Rusco and others.

MILWAUKEE.—The Metals Forms Corp., 1440 Booth street, will erect a 1-story plant addition, 41 x 64 feet, at an estimated cost of $20,000.

MILWAUKEE.—The Atlas Foundry Co., Thirty-eighth and Burnham streets, will erect a shop addition, 80 x 88 feet, to be used as a core room.

MILWAUKEE.—The Badger Screw Products Co. has been incorporated with $25,000 capital, by Harry H. Minnicar, J. Jaeckle and Walter A. John.

MILWAUKEE.—The Advance Boiler & Tank Co. recently was incorporated with $5000 capital, by William R. Andrae, C. A. Zacher and Emil J. Lepinsky.

MILWAUKEE.—Articles of incorporation have been filed by the Autolife Tire Chain Co. with $25,000 capital. Inrorporators are Fred A. Noya, Jacob Best and Henry J. Keller.

MILWAUKEE.—The Standard Light Fixture Co., organized with $25,000 capital, has leased a building at 448 East Water street, and is making alterations and installing machinery.

MILWAUKEE.—The Allis Mfg. Co. recently was incorporated to manufacture brass and bronze castings with $50,000 capital, by Paul M. Kuder, Otto J. Juttner and John Garvey.

MILWAUKEE.—The Milwaukee Engineering & Tool Co. has been organized by John B. Pimm, Arthur R. Podlesky and J. Jaeckle to manufacture and deal in machinery. The company is capitalized at $25,000.

MILWAUKEE.—The Superior Brass Foundry Co., a new $50,000 corporation organized by Philip Leeher, Frank Schedler and H. H. Wheeler, has taken over the shop building at 282 Lapham street, and is converting it into a brass and bronze casting shop.

OSHKOSH, WIS.—The Doman Mfg. Co., which has acquired the assets of the Oshkosh Washing Machine Co., will build a 1-story plant addition, 40 x 200 feet, and enlarge its power plant. H. C. Doman is general manager.

RACINE, WIS.—The Walker Mfg. Co. is erecting a gray iron foundry, 80 x 120 feet.

RACINE, WIS.—The Hamilton-Beach Mfg. Co. has started work on a new foundry building, 80 x 200 feet.

RACINE, WIS.—The J. I. Case Threshing Machine Co. has awarded contracts for a 1-story plant addition, 75 x 125 feet.

RACINE, WIS.—The Standard Foundry Co. has increased its capital from $50,000 to $100,000. The new issue of stock will be used for development of facilities.

RACINE, WIS.—The Ajax Auto Parts Co. has let the contract for a 1-story plant addition, 64 x 130 feet. Erection of another addition, 85 x 120 feet, is also contemplated.

STANLEY, WIS.—The Stanley Toy Works, organized with $85,000 capital, has awarded contracts for a plant, two stories, 75 x 180 feet, to cost $50,000.

TOMAHAWK, WIS.—Plans are being prepared for improvements to the municipal waterworks.

TWIN LAKE, WIS.—Charles Rademacher plans a public garage and machine shop, 65 x 155 feet, to cost $20,000.

TWO RIVERS, WIS.—Sam Schwartz & Son have broken ground for a smelting and refining plant, 60 x 150 feet. Machinery and equipment is being purchased.

WAUSAU, WIS.—Articles of incorporation have been filed by the Star Mfg. Co., which is capitalized at $1,000,000. The company will manufacture milking machines and automatic farm appliances. John L. Sell is secretary.

DETROIT.—The Gear Grinding Machine Co. has awarded a contract for a plant, 180 x 215 feet.

DETROIT.—The Detroit Motor Car Co., McKinstry street, is taking bids on a machine shop, 275 x 523 feet.

ESCANABA, MICH.—The Escanaba Motor Car Co. will build a service building including a machine shop, 100 x 120 feet, costing $45,000.

GRAND RAPIDS, MICH.—The Keeler Brass Works is building an addition, 75 x 100 feet, costing $25,000.

GRAND RAPIDS, MICH.—The Kent Steel Co., fabricators and erectors, has purchased a site on which it plans a plant.

JACKSON, MICH.—The Jackson Steel Products Co. has awarded a contract for a plant addition, to cost $70,000.

LANSING, MICH.—The Novo Engine Co. will bul'd a plant including a machine shop, one story, 130 x 160 feet.

CHICAGO.—The Hamler Boiler & Tank Co., 3906 South Halstead street, plans a power plant, 1-story.

CHICAGO.—The plant of the Wright Machine Works, 1150 South Washtenaw avenue, recently was damaged by fire.

CHICAGO.—Fred C. Dickow, 1857 West Lake street, will build a machine shop, 77 x 100 feet, costing $20,000.

CHICAGO.—The William R. Johnston Mfg. Co., 359 East Ohio street, will build a 1-story plant, 120 x 450 feet.

CHICAGO.—The Walker Vehicle Co., Thirty-ninth and Wallace streets, is taking bids for a plant, 202 x 528 feet.

CHICAGO.—The Powell Steel Kitchen Co., 219 Loomis street, plans a plant, 1-story, 96 x 144 feet, to cost $25,000.

CHICAGO.—The Chicago Insulated Wire & Cable Co. is taking bids on an addition, 100 x 100 feet, to cost $22,000.

CHICAGO.—The National Machine Works, 936 Weed street, plans a machine shop, 2-stories, 39 x 108 feet, to cost $10,000.

CHICAGO.—The International Lubricants Co., 325 North Clark street, contemplates a 2-story plant, 40 x 104 feet, to cost $25,000.

CHICAGO.—The Fitzsimons Steel & Iron Co., manufacturers of cold-darwn steel, has bought a site on which it plans to build a plant.

CHICAGO.—The Ursus Motor Co., manufacturer of automobiles, 6601 Grand avenue, will build a one and 2-story plant, 120 x 150 feet, costing $50,000.

CHICAGO.—The Arthur Jones Electrical Co., Arthur Jones president, 2837 South State street, is preparing to build a 2-story plant, 125 x 125 feet, costing $60,000.

CHICAGO.—The Chicago Shoe Machine Co., 12 North Desplaines street, capitalized at $50,000, has been chartered by A. H. Lyckenback, R. H. Rudolph and Charles Friedman.

CHICAGO.—The Chicago & Alton railroad, Henry T. Douglas chief engineer, has started work on the first of two freight house units in Chicago, 155 x 460 feet. The two units will cost approximately $1,000,000.

CICERO, ILL.—The Bodine Electric Co. is taking bids for a plant addition, 95 x 129 feet, to cost $45,000.

GALESBURG, ILL.—The Lowe Mfg. Co. has awarded a contract for a plant, 1-story, 140 x 150 feet, to cost $125,000.

ANDERSON, IND.—The Anderson Foundry & Machine Works, W. N. Durkin president, is planning a 2-story p'ant, 80 x 200 feet, to cost $75,000.

INDIANAPOLIS.—The National Metal Products Co. recently was organized with $100,000 capital. E. E. Gates is president of the company.

CINCINNATI.—The Pfan Mfg. Co. plans a foundry, 60 x 225 feet, to cost $45,000.

CLEVELAND.—The Grant Lees Gear Co. has awarded a contract for a plant, 3-stories, 68 x 120 feet, to cost $200,000.

CLEVELAND.—The Auto Screw Products Co. has awarded a contract for a plant, 1-story, 89 x 149 feet, to cost $50,000.

COLUMBUS, O.—The American Zinc, Lead & Smelting Co. is reported contemplating new buildings here.

COLUMBUS, O.—The Columbus Wire Fence Co. has been incorporated with $50,000 by G. W. Moore, L. F. Stricklin, Charles H. Wilkins, Ellis R. Hays and Henry I. Donnelly.

ELYRIA, O.—The Elyria Iron & Steel Co. has awarded a contract for an addition, 2-stories, 80 x 160 feet, to cost $60,000.

Business in Canada

ST. BONIFACE, MAN.—The Western Steel & Foundries Co., a subsidiary of the Dominion Wheel & Foundries, Ltd., will establish a manufacturing plant here for the manufacture of car wheels, etc.

WINNIPEG, MAN.—The power commission will extend its power plant at Minnedosa, Man.

MONTREAL, QUE.—The National Iron & Steel, Ltd., has been incorporated to manufacture iron, etc., with $100,000 capital, by William L. Scott, George D. Kelley, Allan J. Fraser and others.

MONTREAL, QUE.—The Thermos Heating Systems, Ltd., has been incorporated by Frank B. Common, Francis G. Bush, Herbert W. Jackson and others, with $600,000 capital to manufacture stoves, heaters, machinery, heating and insulating apparatus, etc.

MONTREAL, QUE.—The Economical Refrigerator Mfg. Co., Ltd., has been incorporated to manufacture refrigerators, etc., with $100,000 capital by Onesime Readman and Louis A. Octeau both of Montreal; Joseph Cazeau and Francois A. Readman both of Grand Mere, Que.

WATERLOO, QUE.—The Roxton Mill & Chair Mfg. Co. will build an addition to cost $10,000.

NIAGARA FALLS, ONT.—The Carbon Alloy Co. has let the general contract for a plant here to cost $80,000.

TORONTO, ONT.—The Bishop-Barker Co., Ltd., has been incorporated with $40,000 capital to manufacture aeroplanes, motors, engines, etc., by William J. Beattie, 44 King street west, Howard A. Harrison and others.

TORONTO, ONT.—M. A. Cumming & Co., Ltd., has been incorporated to make machinery, hatters' tools, etc., with $40,000 capital, by Wilfred Field, 157 Bay street, George M. Orr, 1253 King street west, and others.

TORONTO, ONT.—The Chase Tractor Corp., Ltd., care of architect A. H. Harkness, Conferation Life building, has awarded the general contract for alterations and the erection of an addition to its plant here to cost $40,000.

TORONTO, ONT.—The Dolomite Products Co., Ltd., has been incorporated to manufacture and refine metals, etc., with $100,000 capital, by John A. W. Archer, 35 Melbourne avenue, Melville B. R. Gordon, Arthur R. Nesbitt and others.

TORONTO, ONT.—The Canadian John Wood Mfg. Co., Ltd., has been incorporated to manufacture tanks, etc., with $200,000 capital, by Thomas Phelan, 550 Kingston road, John M. Godfrey, room 225, 76 Adelaide street west, and others.

TORONTO, ONT.—The Steel Burial Vaults, Ltd., has been incorporated with $100,000 capital to manufacture steel burial vaults, etc., by George H. Sedgewick, room 1007, 36 Toronto street, John W. Pickup, 255 Glenlake avenue and others.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	6.15c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.50c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 0c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.

Lengths—72-84-96-120 and 144 inches.

Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛ and ¼-inch	29½	2½
⅜-inch	30½	3½
½-inch	34½	16½
¾ to 1½-inch	39½	23½
Lap Weld		
2-inch	32½	18½
2½ to 6-inch	34½	21½
7 to 12-inch	31½	18½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼, ⅜-inch	28½	11½
½-inch	33½	20½
¾ to 1½-inch	39½	24½
Lap Weld		
2-inch	33½	20½
2½ to 4-inch	35½	23½
4½ to 6-inch	34½	22½
7 and 8-inch	26½	14½
9 and 12-inch	21½	9½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	20½	8½
¾ to 1½-inch	25½	13½
Lap Weld		
2-inch	20½	8½
2½ to 4-inch	22½	13½
4½ to 6-inch	21½	12½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

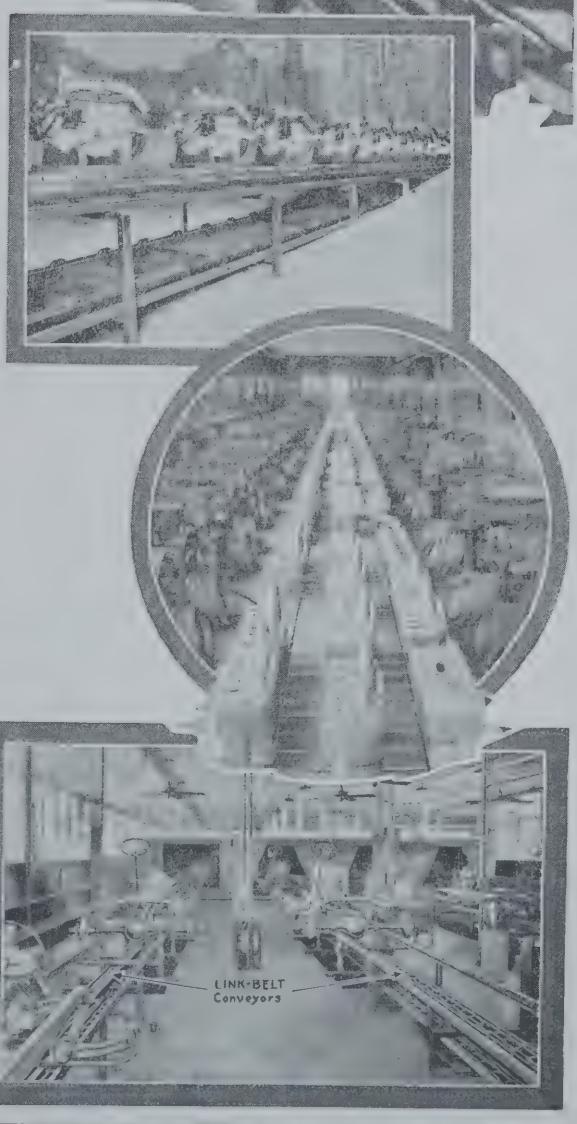


LINK-BELT
LABOR-SAVING CONVEYORS

THESE illustrations show some of the Link-Belt Assembling Conveyors designed and built by us for the Willys-Overland Company, Toledo, Ohio.

The high increase in production of automobiles by the several prominent American Manufacturers was made possible only by the use of such time-and-labor-saving equipment and today these concerns are practically dependent upon modern and efficient labor-saving conveyors.

Let our experienced engineers look over your methods of production, and find out if there is a better way to handle your products. The present-day scarcity of labor makes it necessary for the progressive manager to select the simplest methods of production. Link-Belt Conveyors can be found today in some of the smallest as well as the very largest plants in the country. Write today.



LINK-BELT COMPANY 374

PHILADELPHIA	CHICAGO	INDIANAPOLIS
New York - - - - - - 299 Broadway	Seattle - - - - - 576 First Ave. S.	
Boston - - - - - - - 49 Federal St.	Portland, Ore. - - - - First and Stark Sts.	
Pittsburgh - - - - - 1501 Park Bldg.	San Francisco - - - - - 582 Market St.	
St. Louis - - - Central Nat'l Bank Bldg.	Los Angeles - - - - 163 N. Los Angeles St.	
Buffalo - - - - 547 Ellicott Square	Toronto, Can. - Canadian Link-Belt Company, Ltd.	
Wilkes-Barre - - - 2d Nat. Bank Bldg.	Denver - Lindrooth, Shubart & Co., Boston Bldg.	
Huntington, W. Va. Robson Prichard Bldg.	Louisville, Ky. - Frederick Wehle, Starks Bldg.	
Cleveland - - - 429 Rockefeller Bldg.	New Orleans - - C. O. Hinz, Hibernia Bank Bldg.	
Detroit - - - - 932 Dime Bank Bldg.	Birmingham, Ala., S. L. Morrow,	
Minneapolis - - - - 418 S. Third St.	720 Brown-Marx Bldg.	
Kansas City, Mo. - 306 Elmhurst Bldg.		

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$20.00 to 21.00
Chicago	19.50 to 20.00
Eastern Pennsylvania	20.00 to 22.50
Cleveland	19.50 to 20.00
St. Louis	18.50 to 19.00
Buffalo	19.00 to 20.00
New York (dealers)	15.50 to 16.00
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Valleys	19.50 to 20.00
Boston (dealers)	15.50 to 16.50

BUNDLED SHEETS

Pittsburgh	15.00 to 15.50
Eastern Pennsylvania	16.00 to 17.00
Cleveland	13.00 to 13.50
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	11.00 to 12.50

STEEL RAILS, SHORT

Chicago	$22.00 to 22.50
Boston (dealers)	15.50 to 16.00
Cleveland	17.00 to 17.50
St. Louis	22.50 to 23.00
Birmingham	19.00 to 21.00
Cincinnati	20.50 to 21.00

STOVE PLATE

Pittsburgh	$19.00 to 20.00
Chicago	25.25 to 25.75
Eastern Pennsylvania	21.00 to 22.00
Cleveland	19.25 to 20.25
St. Louis	22.00 to 22.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	16.50 to 17.00
Birmingham	21.00 to 22.00
Boston	19.00 to 20.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$18.50 to 19.00
St. Louis	17.50 to 18.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.00 to 21.50
Chicago	22.00 to 22.50
St. Louis	20.50 to 21.00

BALED SHEETS

Pittsburgh	17.00 to 17.50
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	19.50 to 20.00
St. Louis	19.00 to 19.50
Eastern Pennsylvania	20.00 to 22.50

BOILER PLATE, CUT

Chicago, No. 1	$15.50 to 16.00
St. Louis	14.50 to 15.00

ANGLE BARS—STEEL

Chicago	$21.50 to 22.50
St. Louis	19.00 to 19.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$23.00 to 24.00
Pittsburgh, No. 2	21.00 to 21.50
Chicago, No. 1	22.50 to 23.00
Chicago, No. 2	21.25 to 21.50
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	23.25 to 23.75
St. Louis, No. 1	20.50 to 21.00
St. Louis, No. 2	19.50 to 20.00
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	17.00 to 18.00
New York, No. 1 (dealers)	24.00
Boston (dealers)	18.50 to 19.00

WROUGHT PIPE

Eastern Pennsylvania	$18.00 to 19.00
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	14.00 to 14.50

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers)	19.00 to 19.50

BUSHELING

Chicago, No. 1	$19.50 to 20.00
Chicago, No. 2	13.00 to 14.00
Cleveland, No. 1	17.00 to 17.50
Cleveland, No. 2	14.50 to 15.00
St. Louis, No. 1	18.50 to 19.00
Buffalo, No. 1	16.50 to 17.50
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$12.50 to 13.00
Chicago	9.50 to 10.00
Eastern Pennsylvania	15.50 to 16.50
Eastern Pennsylvania (blast furn.)	14.00 to 15.00
Eastern Pennsylvania (chemical)	18.50 to 19.50
Cleveland	9.00 to 9.50
Buffalo	12.00 to 12.50
New York (dealers)	11.50 to 12.00
St. Louis	12.00 to 12.50
Cincinnati	7.50 to 8.00
Birmingham	11.00 to 13.00
Valleys	11.00 to 11.50
Boston (dealers)	10.50 to 11.00
Boston (blast furnace) (dealers)	10.50 to 11.00

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	11.50 to 12.00
Eastern Pennsylvania	16.00 to 17.00
Eastern Pennsylvania (chemical)	19.00 to 20.00
Cleveland	13.00 to 13.50
St. Louis	12.00 to 12.50
Buffalo	13.50 to 14.00
New York (dealers' price)	14.00 to 14.50
Cincinnati	9.00 to 9.50
Birmingham	11.00 to 13.00
Valleys	14.25 to 14.75
Boston (dealers)	14.00 to 14.50
Boston (blast furnace) (dealers)	12.00 to 12.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	33.00 to 34.00
Eastern Pennsylvania	35.00
Cleveland	35.00 ao 36.00
St. Louis	33.00 to 33.50
Buffalo	28.00 to 29.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	25.00 to 25.50
Cleveland	27.00 to 28.00
St. Louis	23.50 to 24.00
Buffalo	24.00 to 25.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	17.50 to 18.00
Cleveland	16.25 to 16.75
St. Louis	17.00 to 17.50
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$22.50 to 23.00
Cleveland	21.00 to 21.50
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	20.00 to 21.00

FORGE FLASHINGS

Cleveland, large	$13.00 to 13.50
Cleveland, small	16.25 to 16.25
Chicago, small	15.00 to 15.50
Boston (dealers)	12.00 to 12.50

FORGE SCRAP

Chicago	$21.00 to 21.50
Eastern Pennsylvania, No. 1	16.00 to 17.00
Boston	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago	28.00 to 28.50
St. Louis	24.00 to 24.50

ANGLE BARS—IRON

Chicago	$26.50 to 27.00
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
St. Louis	13.00 to 13.50
Cleveland	17.00 to 17.50
Buffalo	16.00 to 17.00
Chicago	14.50 to 15.00

STEEL CAR AXLES

Pittsburgh	$27.00 to 28.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	29.00 to 29.50
Buffalo	28.00 to 29.00
Chicago	27.50 to 28.00
New York (dealers)	24.00 to 25.00
Birmingham	21.00 to 22.00
Boston (dealers)	24.50 to 25.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.00 to 28.50
New York (dealers)	24.00
Chicago	28.50 to 29.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$24.00 to 24.50
Pittsburgh, steel	21.50 to 22.00
Chicago, iron	26.00 to 26.50
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, iron	23.00 to 24.00
St. Louis, iron	23.50 to 24.00
Buffalo iron	22.50 to 23.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	19.00 to 20.00
Boston	23.00 to 24.00
Cincinnati	21.00 to 21.50

NO. 1 CAST SCRAP

Pittsburgh, cupola	$25.00 to 26.00
Chicago, cupola	29.50 to 30.00
Eastern Pennsylvania, cupola	25.00 to 26.00
Cleveland, cupola	25.50 to 26.00
New York, cupola (dealers)	22.50 to 23.00
Cincinnati No. 1 cupola	21.50 to 22.00
Birmingham, cupola	23.00 to 24.00
St. Louis, railroad	27.50 to 28.00
St. Louis, agricultural	26.50 to 27.00
Buffalo	24.50 to 25.00
Boston	28.00 to 28.50
Valleys	25.00 to 25.50

HEAVY CAST

New York (dealers)	22.00 to 22.50
Buffalo	21.00 to 22.00
Pittsburgh	22.00 to 23.00
Cleveland	18.50 to 19.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$24.00 to 25.00
Pittsburgh, agricultural	20.00 to 21.00
Chicago, railroad	22.50 to 23.00
Chicago, agricultural	22.50 to 23.00
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	20.50 to 21.00
Cleveland, agricultural	17.75 to 18.50
St. Louis, railroad	18.50 to 19.00
St. Louis, agricultural	16.50 to 17.00
Cincinnati, railroad	15.00 to 15.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	19.00 to 20.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	29.50 to 30.00
Eastern Pennsylvania	Nominal
Cleveland	26.00 to 27.00
St. Louis	26.50 to 28.00
Birmingham	23.00 to 24.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	21.00 to 21.50
St. Louis	19.00 to 19.50

BOILER PUNCHINGS

Chicago	$24.00 to 25.00
Eastern Pennsylvania	23.00 to 24.00

Shipments from Stock ——

—— Government material at prices ~~lower~~ under present card quotations.

1500 tons Billets $7\frac{29}{32}$

2000 " Shell 3" - $4\frac{1}{2}$" - 6" - 9"

1000 " Tie Bars $\frac{5}{8}$ + 3"

800 " Ingots for 9" Shell

100 " C.R. Bessemer Rounds $1\frac{9}{32}$

Ask for prices on these, also let us know what other grades you need, or have for sale.

The James D. Miller Co.
McCormick Bldg
Chicago.

New Trade Publications

AIR HOISTS.—The Northern Engineering Works, Detroit, has published catalog No. 35, in which it describes and illustrates several types of vertical and horizontal air hoists. One type is equipped with a double beam socket bearing trolley, for use on cranes where head room is limited. Air jacks and air operated elevators are also described and illustrated in the booklet.

STRUCTURAL STEEL.—A 24-page illustrated booklet has been issued by the Truscon Steel Co., Youngstown, O., in which the use of structural pressed steel for floors, roofs, walls, partitions, etc., is described and illustrated. A number of the illustrations are of buildings in the process of construction, showing how pressed steel beams and reinforced concrete beams are used.

TURBINE BLADING.—A thorough description, accompanied by numerous illustrations, of steam turbine blading, is given in a 26-page booklet recently published by the Allis-Chalmers Mfg. Co., Milwaukee. The various methods of manufacture are described at length. The booklet contains a description of the manner in which the modern steam turbine attained its present status in industry. The booklet is interesting and contains much valuable information.

FORGINGS.—An 18-page booklet is being circulated by the Allis-Chalmers Mfg. Co., Milwaukee, which contains a number of illustrations showing the various equipment in the forging department of that company. The heating an annealing equipment is oil fired and equipped, and the plant is modernly equipped with chemical and physical laboratories. The illustrations indicate the wide range of work done in the plant.

ELECTRIC HOISTS.—The Northern Engineering Works, Detroit, has published a 16-page booklet in which electric hoists are described and illustrated. In these hoists, the gearing is of forged steel, annealed. Gears are enclosed. All hoists are equipped with two brakes and a limit stop automatically stops the hook at the top of the lift. The bearings are of phosphor bronze and are automatically lubricated. Other data and numerous illustrations are given.

OIL-BURNING EQUIPMENT.—The General Combustion Co., Chicago, has issued three bulletins, Nos. 52, 53 and 54, in which oil burning equipment is described and illustrated. Bulletin 52 gives general data pertaining to the equipment. It contains a number of illustrations. A rivet forge, 16 x 21 inches and weighing 180 pounds, is described and illustrated in bulletin 53. Continuous forge furnaces are described in detail in bulletin 54. This bulletin contains a number of excellent illustrations including several line drawings.

GRAPHIC RECORDS.—A circular entitled "Typical Graphic Records," is being distributed by the Esterline Co., Indianapolis, in which curves showing the power consumption of machines are reproduced and explained. The booklet points out the valuable use of records in comparing the amount of power used by various machines, and which results in the detection of faulty practice. A number of records were described in the Oct. 23 issue of THE IRON TRADE REVIEW. The booklet also contains a number of charts which show the power consumed in the operation of furnaces, shears, electric elevators, etc.

FANS.—A unique booklet entitled "A Dance, A Fan and The Girl," has been issued by the Clarage Fan Co., Kalamazoo, Mich. This booklet is a novel departure from the usual trade literature. It contains a story of how an assistant foundry superintendent had to call off an engagement when a fan at the foundry got out of order. Years later the incident is called to his mind when the purchasing agent of the plant of which he is general manager, buys a fan which can be fixed in a fraction of the time it took him to repair the fan years before. The story is interesting and various points of the fans manufactured by the Clarage Co. are brought out in a pleasing way.

FLEXIBLE SHAFTING.—Bulletin No. 104 issued by the Stow Mfg. Co., Inc., Binghampton, N. Y., describes and illustrates flexible shafting. This shafting consists of an inner core constructed of built-up wire coils and a protecting casting with bearings and suitable fittings, for the transmission of power from some source such as an electric motor, countershafting or engine, to the desired tool. The core is brazed or soldered into end fittings, asembled into a reinforced leather or metal casing, which supports the bearings, and is held in the case in such a way that when the shaft is bent no strain will come on the core longitudinally. Various data pertaining to this shafting is given, as well as a number of illustrations showing its use with various tools and in various operation.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A company in India desires to purchase iron and steel goods, hardware, heavy industrial chemicals, etc. Opportunity No. 30880.

A firm in Spain desires to purchase machinery for mixing, kneading and stamping names on biscuits. Opportunity No. 30924.

A newspaper in France desires to purchase labor-saving machinery, particularly rapid rotary presses, flat-bed presses, punching machines, wire-stitching machines, cutters and folding, mailing, molding, typesetting and autoplate machines, etc. Correspondence should be in French. Opportunity No. 30931.

An engineer in Italy desires to secure an agency for the sale of mechanical and electrical goods. Opportunity No. 30932.

A list of inquiries for American merchandise, such as oil refining machinery, metal goods, chemicals, surgical apparatus, rubber goods, etc., has been received from the American consul at Valencia, Spain. Firms interested in this trade may secure copies of these lists upon application to the bureau or its district offices. Opportunity No. 30944.

A list of inquiries for American merchandise, such as oil refining machinery, metal goods, chemicals, etc., have been received from the American consul at Valencia, Spain. Firms interested in this trade may secure copies of these lists upon application to the bureau. Opportunity No. 30944.

A business man in North Africa desires an agency for the sale of steel products, such as steel bars, galvanized sheet iron, annealed steel wire, etc. Opportunity No. 30949.

A business man in North Africa desires an agency for the sale of steel products, such as steel bars, galvanized sheet iron, annealed steel wire, etc. Opportunity No. 30949.

A Russian civil engineer desires to represent in Latvia American manufacturers of automobiles, typewriters, elevators, engineering supplies, concrete machines, machine tools, etc. Opportunity No. 30964.

The purchase of motors, 3-phase, 40 cycles, 220 volts, controllers, starters, transmission equipment, railroad equipment, centrifugal pumps, steel cables steel balls, office equipment, etc., is desired by a manufacturing company in Belgium. Opportunity No 30966.

A firm in Spain desires to be placed in touch with manufacturers and exporters of metals, timber, chemicals, etc. Opportunity No. 30967.

An American firm is authorized by its main office in China to purchase complete machinery and equipment for the refining of crude camphor. Opportunity No. 30974.

A Frenchman, who has been in this country for some time and is about to return to France, desires to secure an agency for the sale in that country and in Belgium, of textile machinery, etc. Opportunity No. 30978.

Laundry machinery, including washing machines of alternating movement, dryers, pressers, etc., are needed by a firm in France. Correspondence should be in French. Opportunity No. 30980.

A Swiss wholesale merchant of steel and metal products desires to enter into direct business relations with steel works, copper and brass smelting houses, and wire-drawing concerns, as well as firms which can supply dynamo sheet iron, transformer sheet iron and motor sheet iron. Opportunity No. 30983.

An agency is desired by a firm in Spain for the sale of wrought-iron tubes and metallic fittings. Opportunity No. 30984.

A representative of an Australian house importing machinery, now in this country, desires agencies for the sale of windmills, small refrigerating machinery, motor trucks, oil and gasoline engines and lighting plants. Opportunity No. 30985.

A man in Australia desires to be placed in communication with manufacturers of canning machinery. Opportunity No. 30988.

An agency is desired by a man in South Africa for the sale of small suction gas engines, iron piping, barbed wire, iron standards, etc. Opportunity No. 30989.

An agency is desired by a firm in Italy for the sale of heavy motor trucks, motor cranes, agricultural machinery, etc. Correspondence should be in Italian. Opportunity No. 30990.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, November 6, 1919 No. 19

Coal Strike Has Slight Effect

Iron and Steel Producers Comfortably Supplied For Limited Period—Connellsville Region Operating at Increased Rate—Pig Iron Production Being Restored With 54 Stacks Gained in October—Prices Still Advancing Steadily

IRON and steel production as yet has escaped any appreciable effects from the coal strike. A prolongation of the present curtailment of the country's basic fuel output, however, is bound to be expressed in operating difficulties on an ascending scale. The Connellsville coal and coke region, the key point of supply for a large fraction of the blast furnaces of the country is nonunion and production this week is greater than usual. A number of idle ovens in fact has been lighted. Should the government decide to commandeer coal from this district for the railroads, this situation is likely to be considerably complicated. By-product coke plants scattered throughout the industry are reasonably well stocked with coal, sufficient in most cases for a month or more of operations. As a contributing factor to the steel strike now in its last stage, the walkout of the coal miners at this time at least, promises to be slight.

Loss of production recently sustained by the mills and furnaces, however, continues to exert a pronounced market influence. Early supplies of finished steel are almost unobtainable and premium prices are general. The Steel corporation continues to name former prices for shipment at mill convenience and some of the independent companies are doing likewise but on definite orders the prevailing tendency is to ask higher figures. Nuts, bolts and rivets have been advanced and bar iron is up $5 a ton at Pittsburgh. A large maker of wrought iron pipe has raised his schedule $8 to $10 a ton. Warehouses are almost bare of sheets and bars and jobbers are advancing these products. Semifinished material has been definitely established $2 to $5 higher by settlements on round tonnages under term contracts at $40.50 on large billets, $44 on small billets, $43 on slabs and $45 on sheet bars.

Famine in Spot Iron

Something approaching a famine condition obtains in pig iron for spot delivery. Buyers are willing to pay almost any price asked for the exceedingly scant supply available, and small sales at fancy figures are being made in various districts. Buffalo No. 2X has been sold up to $35.25. Pig iron prices continue to advance all along the line for deliveries through the first half. A western Pennsylvania interest has converted into open-price contracts 100,000 tons of tentative orders for foundry iron for first half. The 1920 demand for iron is heavy. A leading inquiry calls for 15,000 to 20,000 tons of foundry and malleable grades for the General Motors Corp.

Iron Output Recovering

Pig iron production is coming back rapidly after having been severely reduced by the strike through the banking of many stacks. The number of furnaces in blast on Oct. 31 was 217 against 163 on Sept. 30. Of the 54 stacks gained, 41 were steelworks units. October's output incorporates the main loss sustained from the strike, this amounting to 502,272 tons over September and 763,863 tons over August. October production was 1,978,218 tons against 2,480,790 tons in September and 2,742,081 tons in August.

Coke prices have received the natural impetus from the coal strike. Spot furnace fuel is selling at $5.50 and spot foundry coke at $7.00, Connellsville, with considerably higher done in instances. Two 1920 furnace coke contracts have been negotiated at $5.50 and $5.60, Connellsville.

Lake Superior ore shipments for the season are now closely defined around 48,000,000 tons against 62,836,082 tons in 1918. Ore interests figure that because of the interrupted pig iron production, there will be several million tons more of ore on docks or in furnace yards May 1, 1920, than May 1, 1919.

Railroads in the Market

As the expected restoration of private control draws nearer, railroad buying is becoming more prominent. Rails especially are active. The Pennsylvania lines east are asking for 200,000 tons with the proviso that the orders are cancellable should government operation continue. Uncertainty over this latter point makes the mills reluctant to close contracts and 100,000 tons remain pending at Chicago. The railroad administration has placed with the Bethlehem Steel Corp. 41,000 tons for eastern roads as part of the 200,000 tons on which bids were taken several months ago.

NOVEMBER 6, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Public Sentiment Takes a Hand

IF FURTHER demonstration were necessary to reveal to the country at large the dominating note of class before mass which has seized upon the leadership of organized labor in this country with almost a frenzy that proof has been abundantly supplied by the coal strike now in progress. Absolute disregard for the rights of and their obligations toward the general public has been shown by those in authority in the coal strike and in a way that has menaced the comfort, wellbeing and even the lives of the everyday citizen. And for what? For the exaction of a set of demands which to the average man seem so extreme and preposterous that they border almost on industrial insanity. To those familiar with the special and difficult conditions which surround the labor of mining coal and the possible rate of production where effort is honestly applied, a reduced basic work-week might have some justice, were it not for the suspicion that it constitutes simply a maneuvering point for higher wages. Too often union labor has made claims of humanity and health in behalf of a lower basic day, only to have them turn out to be mere pretexts for the gouging of an increase of pay. It is pretty difficult for the general public to accept a 30-hour week as a reasonable proposition under any circumstances when it contrasts its own individual conditions and hours of employment. Especially is this so when the familiar and crying need of the hour of increased rather than restricted production is brought to mind. But when it comes to a 60 per cent increase in wages demanded by the union, there can be no division of opinion among sane and sensible people. Added to this, the clear fact that the union is attempting on a purely technical question where the weight of reason is against it, to evade its contract entered into under government auspices, and the insulting not to say unamerican demeanor of its leaders toward the President and governmental authority, there could be no doubt as to the side where the overwhelming opinion of the public rests. Without being necessarily pro-operator it is vigorously and determinedly anti-union.

The coal strike represents in a way more direct and more easily discernible to the average individual, the same effort at union dictation and the same vicious thrust at democracy and equality in this country that has been involved in the steel strike. Both are aimed at the advancement of class against the dictates of all logic, reason and fair play and as such are a menace to fundamental government. The steel strike has been lost because of its radical leadership. The same outcome must result in the coal strike because public sentiment, the determining factor, has grasped the dangerous character of these disputes.

In the present unhappy and disturbed condition of the country with two major strikes in progress and threats of a third filling the air, the hopeful and encouraging thing is the militant display of Americansim at Washington. Congress especially by its attitude in recent weeks has shorn itself of any suspicion of undue consideration for the demands of organized labor, based on political expediency which have marked many of its actions in the past. Much the same thing might be said of the executive arm of the government. But congress now is giving the country a wholesome demonstration of character, of patriotism and of clear-sighted appreciation of the dangerous currents that traverse the national life. And its inspiration for this is to be found in the strong and definite crystallization of public opinion. Out of this situation it is not too much to hope that positive and definite legislation governing the intemperat and destructive acts of organized labor of which the country long has been in need, will emerge.

Expect New Data on Open Hearth

ALL PERSONS who are familiar with the information on the construction and operation of blast furnaces contributed to iron and steel literature during the past decade thoroughly ap-

preciate the importance of the papers dealing with that subject presented at the various meetings of the American Iron & Steel institute. Among the notable papers published during the past four years are those written by A. E. Maccoun, Ambrose N. Diehl, Arthur J. Boynton, George W. Vreeland, Walker Mathesius, James E. West and Jacob A. Mohr. These authors contributed valuable data on recent progress made in the design and operation of blast furnaces, modern methods of burning blast furnace gas, progress in hot blast stove design, distributing raw materials in the blast furnace, chemical reaction of iron smelting and recent changes in blast furnace lines. These papers collectively form what is certainly the most comprehensive and probably the most valuable treatise ever written on the subject of the modern blast furnace.

In view of the success attending the series of blast furnace papers, the announcement that the American Iron & Steel institute will inaugurate a series of papers dealing with the design, construction and operation of open-hearth furnaces will be greeted with the hearty approval of all who are interested in that subject. Dr. Henry M. Howe, in the first paper of the series, has ably set forth an outline of the problems confronting engineers in further developing the open-hearth. The outline, which appears elsewhere in this issue indicates the probable trend toward improvement in the construction and operation of open-hearth furnaces. Judging from the past performances of engineers, executives and metallurgists associated with the American iron and steel industry, we may be sure that a number of notable contributions to the literature on open-hearth practice may be expected which will serve their purpose in promoting an advanced scientific standard for the American steel industry.

Clean Out the Scum

ORGANIZED labor, casting aside all semblance of conservatism, has turned radical and is doing its best to abet and strengthen the hands of those who desire to bring about a social and industrial revolution in the United States. Its autocratic demands know no bounds. This attitude has been sharply manifested in the steel strike. It has been greatly emphasized in the coal strike.

But with the government taking more drastic steps, at least firmer steps than it has been wont to take during the past few years, confidence is felt that organized labor is riding for a severe fall, probably the worst in its career. Perhaps it may be a fatal fall. That can be determined only by organized labor itself, which, if it regains sanity may proceed as an important factor in industrial life. Or it may be determined by the government, if it compels organized labor to recognize authority and the rule of the majority.

But even after organized labor either voluntarily comes back within the law, or is compelled to do so, there still will remain the disturbing agitators, including the so-called reds. Some of this renegade crew are native born—not many, fortunately. Laws exist to take care of these and they should be enforced to the limit. This leaves the foreign disturbers to be dealt with. They include a heterogeneous and vicious group. They must be rounded up and deported.

Attorney General Palmer has asked for the enactment of a law to deport interned alien enemies providing for the permanent exclusion of anarchists and it is about to be passed by congress. The request of the attorney general should be heeded quickly. And the passage of this law should be followed by similar action on the bill of Senator Sterling to imprison and then deport all aliens who in any way advocate sedition. Apparently laws now on the statute books do not cover such cases.

With the country rid of undesirables, much progress can be made toward restoring sane conditions.

Germany Trades Without Money

THE demoralized state of the German mark in the exchanges of the world is compelling that nation to resort to various resourceful strategems in order to obtain urgently required necessities of life from other countries without, at the same time, paying the enormous premiums which cash money dealings would entail. Among the most successful of these plans is a reversion to the primeval method of "barter and exchange" of commodities. Another is what might be termed "percentage manufacturing."

Business interests in England, Holland and other countries are sending raw material to Germany to be manufactured by German factories. For example, Germany is devoid of raw hides for making shoes and an order for hides is placed in a country where there is a supply. German tanneries will finish the stock and German shoe manufacturers will make shoes. Then the shoes are sent back to the country supplying the hides with a certain amount deducted.

By the return to primitive trading methods Germany is enabled to sell its products and to purchase those of which it is in the most need without the exchange of a cent of money.

Germany thus is able to put to effective use her large manufacturing capacity without a comparable outlay of working capital. An arrangement by France with Germany to convert some of the former's excessive supply of iron ore would not be a surprising outcome of the present trade relations which the allied nations are resuming with their erstwhile enemy.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1296 AND 1298

Pig Iron

Bessemer, valley	$27.95 to 28.95
Bessemer, Pittsburgh	29.35 to 30.35
Basic, valley	26.75
Basic, Pittsburgh	28.15
Basic, delivered, eastern Pa.	28.00
Basic, Buffalo, furnace	26.75
Malleable, Pittsburgh	29.90 to 30.40
Malleable, Chicago, furnace	30.50
Malleable, Buffalo, furnace	32.00 to 33.00
Malleable, delivered eastern Pa.	33.10 to 34.10

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$35.10 to 36.10
No. 1X, Buffalo	34.00 to 35.00
No. 1 foundry, Chicago furnace	30.25
No. 2 foundry, valley, Pittsburgh	30.90 to 31.40
No. 2 foundry, Buffalo	30.00 to 32.00
No. 2 Northern, Boston	33.90 to 34.90
No. 2 foundry, Chicago furnace	30.00
No. 2 foundry, Ironton furnace	29.00 to 29.75
No. 2 foundry, Chicago furnace	28.75
No. 2X, eastern del., Phila.	34.10 to 34.60
No. 2X, eastern, N. J. tidewater	34.10 to 34.60
No. 2X, eastern, Boston	34.90 to 36.90
No. 2X foundry, Buffalo furnace	32.25 to 33.25
No. 2 foundry, del., Philadelphia	33.10
No. 2 foundry, N. J. tidewater	33.10
No. 2 southern, Birmingham	29.00
No. 2 southern, Cincinnati	31.60 to 32.60
No. 2 southern, Chicago	33.00 to 34.00
No. 2 southern, Phila.	34.50 to 35.50
No. 2 southern, Cleveland	33.00 to 34.00
No. 2 southern, Boston	36.00 to 37.00
No. 2 southern, St. Louis	32.25 to 33.25
Virginia, No. 2X, furnace	32.25
Virginia, No. 2X, Philadelphia	36.35
Virginia, No. 2X, Jersey City	36.65
Virginia, No. 2X, Boston	36.95
Gray forge, valley, Pittsburgh	30.40
Gray forge, Buffalo	29.00 to 30.00
Gray forge, eastern Pa.	31.50
Silveries, 8%, furnace	43.25 to 45.25
Ohio Silveries, 8%, Chicago	46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	41.50 to 42.00
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	35.50 to 38.00
Charcoal, Superior, Chicago first quarter 1920	35.50 to 37.50

Coke

(At the ovens)

Connellsville furnace	$5.25 to 5.60
Connellsville foundry	6.50 to 7.00
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	9.00 to 10.00
New River furnace, nominal	8.00 to 9.00
Wise county furnace, nominal	7.00 to 7.50
Wise county foundry, nominal	8.00 to 9.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	100.00
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.20 to 1.30
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	22 to 24 cents
Ferrovanadium, 35 to 40 per cent, per pound contained, according to analysis	$5.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	54.75
Bessemer, ferrosilicon, 11 per cent	58.05
Bessemer, ferrosilicon, 12 per cent	61.35

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	40.50
Open-hearth, Philadelphia	47.50
Open-hearth, Youngstown	40.50
Bessemer, Pittsburgh	40.50
Bessemer, Youngstown	40.50
Forging, Pittsburgh	51.00 to 53.00
Forging, Philadelphia	60.00

SHEET BARS

Open-hearth, Pittsburgh	$45.00
Open-hearth, Youngstown	45.00
Bessemer, Pittsburgh	45.00
Bessemer, Youngstown	45.00

SLABS

Pittsburgh and Youngstown	43.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00 to 60.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c
Bars, soft steel, Philadelphia	2.595c
Bar iron, common, Phila.	2.745c to 2.995c
Bar iron, common, Chicago	2.72c
Bar iron, common, Cleveland	2.75c to 3.00c
Bar iron, common, New York	2.77c to 3.02c
Bar iron, common, Pittsburgh	3.00c
Hard steel bars, Chicago	2.65c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 46.00
Relaying rails, Pittsburgh	39.00 to 41.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c
Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c

Full sheet schedule page 1296.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	34½	18½

Full pipe schedule page 1296.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$62.80
Six-inch and over, Chicago	59.80
Four-inch, New York	61.30
Six-inch and over, New York	58.30
Four-inch, Birmingham	56.00
Six-inch and over, Birmingham	53.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.79½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.77½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c to 4.15c
Boiler rivets, Pittsburgh	4.00c to 4.25c
Rivets ⅞ in. and smaller Pitts.	60 to 60–5 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50 to 50–10 off
Cut thread	45 to 50 off
Larger and longer	35–5 to 40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled therad	50–10 to 60 off
Cut thread	50 to 50–10 off
Larger and longer	40–10 to 45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	75–5 off
Gimlet and cone point lag screws	50–10–10 to 60 off

NUTS

Hot pressed, square blank	2.70c to 3.10c off
Hot pressed, square tapped	2.45c to 2.85c off
Hot pressed, hexagon blank	2.70c to 3.10c off
Hot pressed, hexagon tapped	2.45c to 2.85c off
Cold pressed, square tapped	2.45c to 2.85c off
Cold pressed, square blank	2.70c to 3.10c off
Cold pressed, hexagon blank	2.70c to 3.10c off
Cold pressed, hexagon tapped	2.45c to 2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Nov. 5, 1919	Average prices Oct., 1919	Aug., 1919	Nov., 1918
Bessemer, valley, del., Pittsburgh	$30.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	28.15	27.15	27.15	34.40
*No. 2 Foundry, Pittsburgh	30.40	28.85	28.15	35.40
*No. 2 Foundry, Chicago, furnace	30.00	27.55	26.75	34.60
Lake Superior charcoal, Chicago	35.50	33.15	32.75	38.70
Malleable, valley	29.00	29.15	28.65	35.90
Malleable, Chicago	30.50	28.00	27.25	34.50
*Southern, No. 2, Birmingham	29.00	27.45	26.75	35.25
*Southern Ohio, No. 2, Ironton	29.75	28.80	26.75	34.00
Basic, eastern del., eastern Pa	28.00	27 90	27.00	36 90
**No. 2X, Virginia, furnace	32.25	30.35	28.25	38.00
*No. 2X, eastern del., Philadelphia	34.10	32.00	29.60	39.15
Gray forge, valley del., Pittsburgh	28.40	27.65	27.15	34.40
Ferromanganese, 80 per cent, delivered	110.00	110.00	110.00	250.00†
Bessemer billets, Pittsburgh	40.50	39.30	38.50	47.50
Bessemer sheet bars, Pittsburgh	45.00	43.20	42 00	51 00
Open-hearth sheet bars, Pittsburgh	45.00	43.20	42.00	51.00
Open-hearth billets, Pittsburgh	40.50	39.30	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.55	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.745	2.745	2.595	3.74

	Prices Nov. 5, 1919	Average prices Oct., 1919	Aug., 1919	Nov., 1918
Iron bars, Cleveland	$2.75	$2.75	$2.52	$3.64
Iron bars, Chicago mill	2.72	2.68	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.24
Tank plates, Pittsburgh	2.65c	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2,895	2.895	2.895	3.49
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.70	5.70	6.25
Wire nails, Pittsburgh	3.25	3.25	3.25	3.50
Connellsville furnace coke	5.25	4.15	4.30	6.00
Connellsville foundy coke	7.00	5.60	5.10	7.00
Heavy melting steel, Pittsburgh	21.00	20.00	21.25	28.75
Heavy melting steel, eastern Pa	20.25	19.55	19.60	28.00
Heavy melting steel, Chicago	20.50	18 80	20.75	26.50
No. 1 wrought, eastern Pennsylvania	27.00	27.00	27.25	34.00
No. 1 wrought, Chicago	25.50	22.00	23.25	29 65
Rerolling rails, Chicago	30.50	26.80	29.00	30.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Pig Iron Prices Still Advancing

Virtually Famine Condition Exists In Spot Iron And Buyers Pay Large Premiums Without Hesitation—Western Pennsylvania Producer Books 100,000 Tons of Foundry Iron—General Metals Corp. Wants 15,000 to 20,000 Tons

Pittsburgh, Nov. 4.—Although the prices have not yet been made, merchant furnace interests with three stacks operating in western Pennsylvania recently have converted into contracts inquiry involving more than 100,000 tons of foundry pig iron for shipment over the first half of 1920. This producer now has comparatively little free iron for first half. Generally those who have any foundry iron for shipment between now and Jan. 1, are quoting a basis of $30 furnace for No. 2 (1.75 to 2.25 silicon). Single carloads have been done at this price and in some instances more. No dimunation is noted in the demand for malleable of which 2000 tons recently were sold for this year at $30 valley furnace, and on 1000 tons for first quarter delivery, close to $31 furnace is said to have been obtained. Nothing recently had been done in gray forge but it is held at a higher price in keeping in advance of foundry grade, now being rated normally at $29 furnace. Purchases of 500 tons of southern foundry iron running 2.25 to 2.75 silicon is noted by the Standard Sanitary Mfg. Co. for its Louisville, Ky. plant. This iron was sold at $29 furnace for No. 2 grade, plus 4 per cent for the half point higher silicon, or $30.16. This now is the method of quoting employed by southern furnaces. An unverified report is that 2000 tons of basic iron recently was sold for prompt shipment of $28 by a valley furnace interest but makers of this grade generally report inquiries few and small, and actual sales higher than the old nominal base of $25.75 furnace are lacking. The N. & G. Taylor Co., Cumberland, Md., recently put out an inquiry for 3600 tons of basic for first quarter 1920 delivery, but as yet this inquiry has brought few quotations. A sale of 500 tons of standard bessemer is noted at $28.95 furnace for prompt shipment to an eastern consumer, or $1 ton advance over recent prices. Most sales of this grade, however, have been in lots of 150 to 200 tons and carry the old quotation of $27.95 furnace. W. T. Snyder & Co. report the average sales prices of valley iron for Octo-

Scarcity Leads to Higher Prices

New York, Nov. 4.—In view of the scarcity the continued demand for pig iron in the east continues to push up prices. Eastern Pennsylvania foundry iron for this year, which is almost impossible to obtain, has been sold during the past week at $33, furnace, for 2.25 to 2.75 silicon, and this is the present minimum. Central Pennsylvania foundry of this grade has been sold during the week at $35, furnace, for November shipment. Foundry iron containing 1.75 to 2.25 silicon also is scarce but not as much so as 2.25 to 2.75 silicon, and the former grade still may be quoted at $31 to $32, eastern Pennsylvania furnace. Some Virginia foundry, containing 1.75 to 2.25 silicon, continues obtainable for the next 30 to 60 days, at $31 furnace. Very little Virginia 2.25 to 2.75 silicon is to be had, so that the market on this grade is nominal at $32. The price view of a leading Virginia interest, which, however, is out of the market at this time, is $34.25 for this grade. Virginia high silicon iron is commanding big premiums. Some foundry iron containing around 4 per cent silicon, has brought $38, furnace.

There is more inquiry for low phosphorus iron. One sale of 1500 tons of copper-bearing iron has been made at $36, furnace, and higher prices in some cases are being quoted. Inquiry for malleable iron is active. Some off-malleable has been sold at $30, eastern Pennsylvania furnace, but no standard malleable is to be had. About 1000 tons of low phosphorus basic have been sold in this district at around $28.25, about $1.25 higher than the figure at which standard basic recently has been selling.

Famine Prices Prevail

Cleveland, Nov. 4.—A famine condition in spot pig iron continues and buyers are paying practically any price that is asked. Southern Ohio, 1.75 to 2.25 silicon, iron for quick shipment in small lots and off in sulphur has been sold at $32 furnace or $34.40, Cleveland. A small lot of 2.25 to 2.75 silicon Pensylvania iron for December delivery was placed locally at $33 furnace or $36.30 delivered. Buyers are going far out of their geographical zone to obtain iron as is shown by sales of approximately 1500 tons of malleable to Michigan point at $29, valley furnace, and a small lot of off-basic for eastern shipment at $26 northern Ohio furnace. Cleveland malleable for next year has been sold at $30, furace, and 1.75 to 2.75 foundry iron now is held on that basis. Sellers in this district have a heavy inquiry for next year but only a small part of this is for the Cleveland district. Some of the motor car builders are figuring on heavy tonnages, the most important of which is 15,000 to 20,000 tons of foundry and malleable for first half for the General Motors Co. One interest which is not quoting at present now has accumulated about 50,000 tons of inquiry from its regular customers and is expected to name its

price for next year soon. The Westinghouse Electric & Mfg. Co. which has had an indefinite inquiry for its local plant of next year has done nothing with this. Local production is increasing but only a limited amount of merchant iron is being shipped since most of the output is for connected steel works use. The car situation is less troublesome than a week ago. Some southern Ohio makers of silveries now are quoting $45.25 for 8 per cent.

Foundry Inquiry Falls Off

Cincinnati, Nov. 4.—Inquiry for first half foundry iron has fallen off. This is considered natural after a heavy buying movement of the past two weeks. The first part of last week a considerable tonnage of both northern and southern iron was taken by local and nearby melters. As a result the majority of producers in southern Ohio and the South have withdrawn from the market, or have made sharp advances. It is understood that the bulk of the 1.75 to 2.25 silicon iron bought recently went at $29 to $29.50, Birmingham, and at $29 to $29.75, Ironton. Prompt shipment quotations in both districts are hard to obtain as melters have been willing to pay premiums to obtain spot metal. The South seems to be fairly well cleaned up as far as this year is concerned, with the exception of some off iron or odd lots of high silicon.

Good Demand at St. Louis

St. Louis, Nov. 1.—Demand for pig iron is urgent, and selling agencies report the most general and brisk inquiry for foundry grades noted since the armistice. In the aggregate large tonnages have been disposed of during the past week or 10 days, individual sales ranging from 200 to 1000 tons. Most of the transactions have been for prompt shipment, though fair tonnages have been sold in the South for delivery through the first quarter. A number of the latter sales were made at an advance of $1 over this year's figure. A feature of the most recent business has been the large number of sales to the North, including Iowa and Nebraska. One melter has placed an order for 1200 tons of No. 2 foundry (1.75 to 2.25 silicon), with the local agent of a leading Birmingham furnace interest.

Coal Situation Stimulates Sales

Boston, Nov. 3.—Not until the eve of the coal strike did New England pig iron consumers awake to the far reaching possibilities of any prolonged shortage of coal. Then however there was a scramble after any iron offered and prices were almost overlooked in the excitement. Iron which advanced $3 in one day was sold without difficulty and the meager supplies available were rapidly depleted until the first of this week finds scarcely a pound of 2X Northern iron for 1920 delivery to be had anywhere for shipment to New England. The Sullivan Machinery Co., Claremont, N. H., is asking for 300 tons of 3.25 to 3.75 silicon iron for delivery over the first quarter and so far has received no offers whatever. An urgent demand for spot malleable has found no reply even though the inquiry was sent as far west as Cleveland and other points west.

This unusual demand has caused some iron to come into the market for resale and prices of $39 and $40 delivered have been asked. Eastern Pennsylvania iron has been sold at $33 at the furnace for 2X eastern (2.25 to 2.75 silicon) for spot shipment.

In the Virginia field low silicon iron and special manganese iron is available and sales have been comparatively heavy. Spot iron of 1.75 silicon has sold for $36 delivered. One textile machinery foundry which has previously bought up to the end of the first half is now inquiring for 1000 tons for first quarter. The sales among local dealers have been light because of the absence of iron.

Buffalo Prices Advancing

Buffalo, Nov. 4.—Scarcity of iron in this district is driving the prices steadily upward. Three producers are out of the market, one by reason of the strike, while the fourth is booking very little iron, and that at an advance in price. This interest is selling iron at the following prices: No. 2 foundry (1.75 to 2.25 silicon) $34; No. 2X (2.25 to 2.75 silicon) $35.25; No. 1X (2.75 to 3.25 silicon) $37. A considerable tonnage for prompt delivery was sold at these figures. Another maker which may have some prompt shipment iron in a limited quantity before the first of the year, states that the price will not be less than $35 for 1X grade. That these prices will not prevail for the first half is partially indicated by the fact that one interest announces that when it goes into the market for first half iron, which may be within two weeks, its schedule will be $31 for No. 2; $34 for 1X and $32.25 for 2X. Malleable iron is scarce and offers of $32 to $34 have failed to bring any out. It is estimated that the total amount of inquiry in this district for the past week has been close to 50,000 tons.

Iron for 1920 Selling Readily

Birmingham, Ala., Nov. 4.—Southern furnaces which are still in the market are having no difficulty in selling iron for 1920. Three companies continue out of the market, waiting to see what effect the coal miners strike will have. Quotations are around $28 for spot, No. 2 foundry (1.75 to 2.25 silicon), while the same grade of iron for first quarter delivery is quoted at $29. Banking of fires in the Vanderbilt furnaces of the Woodward Iron Co. will not affect the output materially. Inquiries for iron are being received in this district from sections where the steel strike effects have been more serious.

Advance is General

Chicago, Nov. 4.—Higher prices for pig iron are being asked by practically all producers, especially for 1920 delivery, and most makers find their output for first half going so fast they must use every effort to limit selling to absolute necessities. As a result buying is becoming increasingly difficult. Severe loss of production during the steel strike and the present menace of the coal strike conspired to make the situation uncertain and to limite free selling. Local producers are almost out of the market until the situation clears. Iron is being received from other producing centers, but at advanced figures. Sloss iron has been advanced to $30, Birmingham, for 1.75 to 2.25 silicon with 4 per cent added for each 50 points of silicon. This company formerly was selling prompt iron at $28, Birmingham. Woodward is out of the market. Prompt iron on cars is sold as soon as offered. A Wisconsin melter recently took 1500 tons of malleable at $31, valley furnace. The American Radiator Co. bought some iron recently and is now seeking 2000 tons for this year. The Crane Co., Chicago, is inquiring for about 500 tons for last quarter. A northern Illinois user desires 1500 tons of foundry iron for first quarter and several Michigan melters are inquiring for about 2000 tons each of foundry for first half. High phosphorus iron is in demand to mix with northern iron deficient in that element. All producers of silveries are practically out of the market and this grade is almost impossible to obtain at present. A Tennessee stack which has been selling for 1919 delivery has not yet opened its books for 1920. Lake Superior charcoal iron is not being quoted openly in this market, but quotations furnished on specific inquiries range from $33 to $35, furnace, for 1.50 silicon.

Prices Rising Steadily

Philadelphia, Nov. 4.—While pig iron demand is not large in this district it is insistent and the effect of the scarcity is to put up prices steadily. Eastern Pennsylvania No. 2X (2.25 to 2.75 silicon) $33 is the ruling price and $34 is asked. Eastern Pennsylvania No. 2 plain (1.75 to 2.25 silicon) has been sold at $32 furnace and this now is minimum. Central Pennsylvania No. 2X has been sold at $33.50 furnace. No. 1X (2.75 to 3.25 silicon) is $1 to $1.50 higher than No. 2X. Buffalo iron is selling at $32.25 furnace for No. 2X for November-December-January, with No. 2 plain at $31 and No. 1X at $34. Virginia No. 2 plain is selling at $31 furnace, No. 2X at $32.25 and No. 1X at $34. One Virginia furnace has asked $37 on No. 1X for next year. There is little disposition to sell for next year and this is being done only in exceptional instances. Malleable is exceedingly difficult to get and one eastern consumer bought a round tonnage at $32.25, Ohio furnace, plus $5.10 freight and some iron was sold in New York state at the same Ohio furnace price. In this case, however, a certain analysis was wanted and the price done does not represent eastern malleable market. Although no basic was sold in the past week it is said that considerably higher than the last price of $28 delivered now would have to be paid. The N. G. Taylor Co., Cumberland, Md., is inquiring for 3600 tons of basic for next year. About 3000 tons of standard low phosphorus iron was sold at $38 eastern furnace and 2500 tons of copper-bearing at $35 furnace. A round tonnage of gray forge was sold at $31.50 delivered eastern Pennsylvania. The coal strike has not had time to affect furnace operations. It is estimated that if coke shipments were com-

pletely cut off, it would take about a week for most eastern furnaces to go out of blast.

Ore Supplies

Will Be Plentiful at Furnaces During Rest of the Year

Cleveland, Nov. 4.—As the season for shipping ore from the Lake Superior district draws to a close it becomes apparent that furnaces will have a plentiful supply of ore for operations during the remainder of 1919, and that they will have available on May 1, 1920, fully as much, if not more than they had on the same day this year. Difficulties encountered in shipping ore from the Lake Superior district during the past season have been offset by the strike in the iron and steel industry which has served to reduce consumption.

On May 1, 1919, the tonnage on docks at lower lake ports amounted to 5,686,000, and furnaces had a balance of 15,000,000 tons in stock, the total tonnage of Lake Superior ores available on that date amounting to 20,686,000. This season's shipments will amount to about 48,000,000 tons.

The total production of pig iron in the United States from May 1 up to Nov. 1 was 19,847,058 tons, and in this comparison allowance is made for a total make of 28,000,000 up to May 1, 1920.

Of this total approximately 85 per cent will have been made with ores from the Lake Superior district, and on a basis of 1.85 tons of ore for a ton of pig iron, consumption of Lake Superior ore will amount to 44,050,000 tons. This deducted from the total amount of ore available for the period indicates a balance of 24,650,000 tons available May 1, 1920. An element of uncertainty in the calculation is the output of pig iron before May 1, 1920. With a return of normal labor conditions production may proceed apace, but making allowances for good output, there still would be available at least 20,000,000 tons. The United States Steel Corp.'s shipments up to Oct. 1 last year were 42 per cent of the total, and this year 47, so the comparison applies with nearly equal significance to both the corporation and independents.

The car shortage is not deterring shipments to furnaces at present so much as the shortage of labor to unload cars at the furnaces. In a number of instances loaded cars have been returned to the shippers. Despite this situation, however, a leading interest estimates that its deferred shipments to furnaces, due to the strike, amount to but between 2.50 and 3 per cent of the season's business.

There is an entire absence of the usual fall buying movement, and a large number of boats are being taken out of the ore trade.

Shipments of ore in October amounted to 6,201,883 tons, which was 2,339,710 tons less than shipments in October, 1918. Combined shipments for the season up to Nov. 1 were 43,978,414, a decrease of 12,892,457 from the shipments up to the same day last year.

Contract for 1920 Coke

Two Large Lots Placed Around $5.50 and $5.60—Spot Furnace Grades Quotable at $5.25—Market Unsettled

Pittsburgh, Nov. 4.—At least two good sized contracts for first half of 1920 foundry coke have been concluded in the past few days. One of these is for 10,000 tons a month and was placed by an Ohio maker of silvery iron of $5.60, ovens. The other contract is to run for the entire year beginning Jan. 1 and for the first six months carries a price of around $5.50. The buyer is a valley interest operating a furnace, which at this time is a merchant producer. Several other contracts are understood to be under negotiation but there seems to be no particular anxiety on the part of either producers or consumers to close the business. As nearly as can be determined from the business that has been placed for first half, the contract market is quotable from $5.50 to $5.75, ovens. The higher quotation, however, is more of an asking than a selling price, as consumers generally believe that they will be able to cover at $5.50. Some coke oven operators are not much inclined to book for 1920 until the coal strike is ended and they have a better line on costs. Although most spot sales of furnace coke still are reported as high as $6, ovens, and among the sales at this figure was one involving 2000 cars for immediate shipment to a Pittsburgh district steel company, the market is not quotable at higher than $5.25 to $5.50 on direct business to regular consumers. As a matter of fact, brokers have been covering most of such inquiries as they have had recently at around $5.25. Sales above $5.50 represent an emergency demand and are hardly typical. The whole coke situation is somewhat beclouded at the moment by the coal strike and opinion as to the immediate course of the market is somewhat divided. On the one hand, it is figured that the price of $5 a ton or better for coke, with unregulated shipment, is much more profitable than $2.35 for mine-run coal, which price has been re-established as a maximum by the fuel administration. Already, it is stated, a number of ovens have been lighted preparatory to going in for coke production. Sales of spot foundry coke still are heard of as high as $7.50 and $8, ovens, but this is about $1 above what the largest producers are quoting on demand from their regular customers. The production of coke in the Connellsville region for the week ended Oct. 25 is estimated by *The Connellsville Courier* to have been 203,130 tons as compared with 204,445 tons the previous week.

$10.90 to Govern Sales

Boston, Nov. 3.—The foundry coke market has followed coal and pig iron in the general scramble during the last few days. The Everett, Mass., by-product producer has announced a price of $10.90 to govern November sales under the sliding contract schedule. This price is also in effect for the flat rate contracts covering balance of the year but higher prices for spot delivery are expected almost any day. Sales have been exceptionally heavy, one dealer alone reporting 12,000 tons of new business.

Strike Scare Forces Buying

New York, Nov. 1.—Foundries in this district, alarmed by the coal strike threat, have been heavy buyers of quick shipment coke during the past week. Thousands of tons of beehive foundry fuel have been sold for spot delivery at $6.50, $6.75, and in some cases, $7 Connellsville, for standard brands. Large tonnages of by-product foundry coke also have been sold. On this fuel, the northern New Jersey by-product producer, continues to quote $6, Connellsville, or $9.10 delivered at Newark and other northern New Jersey points for shipment this year, but it is likely that this price will be adjusted shortly to accord with the present Connellsville market. In addition to the spot business, there also has been considerable first half buying. For this period, the northern New Jersey by-product maker is selling at $6.50, Connellsville, and there also has been considerable beehive foundry coke sold for first half at this price.

Export business continues a factor. Two lots of foundry coke aggregating 5000 tons, were sold to South American buyers during the week at about the regular market. Both lots were sold by the northern New Jersey by-product maker.

Spot furnace coke was sold in the east during the past few days at $6.50, Connellsville.

Coke Growing Scarcer

Cincinnati, Nov. 3.—Much pressure is being brought to bear on producers to rush forward shipments of both furnace and foundry coke. While foundries are slowly accumulating supplies they are not yet sufficiently large. In the Connellsville district foundry coke is around $6.50 to $7, and operators are somewhat slow in accepting future business at even the higher figure. Wise county foundry coke is scarcer, although occasional odd lots may be had for this year's shipment. The price ranges from $8 to $9, ovens. New River foundry is also scarce and is bringing from $9 to $10, ovens. Practically none can be had for either prompt or forward shipment.

Scramble for Fuel at St. Louis

St. Louis, Nov. 1.—Demand for foundry coke is urgent, and there is a scramble for every available car. Prices are advancing, 72 hour Connellsville being quoted at $6.75 to $7, and it would be easy to sell heavy tonnages at the latter figure if deliveries could be guaranteed. Furnace grades are needed in the St. Louis district and in the West and Southwest.

Cast Scrap Is Bid Up

Scarcity of Pig Iron Causes Strong Demand For Cupola Material—Steel Tonnage Taken In East—Market Firmer

FOR COMPLETE SCRAP PRICES SEE PAGE 1298

Pittsburgh, Nov. 4.—A large and insistent demand still is observed here for No. 1 cupola cast and prices have been further advanced. Sale of 500 tons of this grade is noted at $28, delivered, and it is doubtful if any tonnages could be bought for less today, while dealers generally are talking $30. Supplies are extremely limited while consumers are eager to secure tonnages to make up the deficiency in shipments of pig iron. Wrought and malleable scrap also are in good demand while another active grade is rerolling rails, in which business is reported at considerably above the quotations. Demand for the latter grade is accounted for by the fact that a good market exists for light sections rolled from old rails and also for concrete reinforcing bars. While demands for the purely steel-plant grades still are limited, consumers are issuing permits freely against tonnages due them on contracts. It is believed that with the clearing up of the labor situation an active buying movement will start, and already this expectation is finding some reflection in sellers' views. While no business of any account has been done in heavy melting steel higher than $21, delivered, recently, a bid of that price today would get practically no consideration. Some business in low phosphorus is noted at $25. Not much interest yet is apparent in bundled and baled sheet scrap.

Boston Market is Active

Boston, Nov. 3.—The scrap iron and steel market is again active. Pennsylvania furnaces have been buying large tonnages here during the week and an exceptionally strong demand exists from New England consumers. Blast furnaces in Pennsylvania have been particularly urgent buyers and a sale of 1000 tons at the going market figure is reported for one such furnace. Many grades have advanced in price and No. 1 machinery is particularly active and hard to obtain. Cast iron borings have sold at $16 and turnings and foundry scrap have also jumped up in price. The district ordnance office continues to offer steel and brass scrap. An award of 125 tons of round steel bars was recently made by this office to the Garden City Plating & Mfg. Co. at $42.50 per net ton.

Cast Scrap in Demand

New York, Nov. 3.—The growing shortage of pig iron has resulted in a heavy demand for cast scrap in the local market. Consumers generally throughout the east are active, and a particularly good tonnage is now moving into New England. Reflecting this demand, prices are moving rapidly upward. No. 1 heavy cast is holding at $23.50 to $24, f.o.b. New York, an advance of $1, and No. 1 machinery cast at $24 to $25, a gain of approximately $1.25. Large tonnages of heavy melting steel and borings and turnings continue to move at advancing prices. Heavy melting steel is quoted at $15.75 to $16.50, and a similar gain of about $1 is noted in offers for machine shop turnings and clean cast borings. Other descriptions are not in such heavy demand, although an improvement is in evidence all along the line.

Buys Tonnage of Steel

Philadelphia, Nov. 3.—The Lukens Steel Co. which did not participate in the buying movement in scrap here a few weeks ago has bought 15,000 tons of heavy melting steel the past week. It is understood around $20 delivered was paid for most of this tonnage but it is said that practically all the tonnage was cleaned up that was obtainable at this figure. Other grades of scrap are in good demand particularly cast scrap, forge and bundled sheets and all borings and turnings. Blast furnaces have bought round tonnages of machine shop and blast furnace turnings and rolling mills and steel works have bought good tonnages of machine shop turnings and cast borings. The biggest buyer was the Central Iron & Steel Co. which sent out a letter offering $18 delivered for clean cast borings.

Buffalo Market is Strong

Buffalo, Nov. 4.—Mills are again coming into the scrap market, and some of those in the Buffalo district are buying extensively. There is a steady demand from outside districts. The preference seems to be for heavy melting steel, car wheels, malleable, cast scrap and cast borings. The market is strong and dealers say that if it were not for the coal strike, the market would be in a very satisfactory condition.

Market Tone is Strong

Cleveland, Nov. 4.—Scrap iron and steel dealers here are expressing a great deal more activity than they have been the past few weeks, but are doing practically no more trading. Bids are being asked and given on a great many lots, while some efforts have been made to locate shipments for use "after the strike ends." But no actual trading has occurred so far. Some of the foundry grades have been pushed up 25 to 50 cents during the week. The tone of the entire market is strong, and quite a flourishing business is looked for once the coal and steel strikes are ended.

Chicago Demand is Good

Chicago, Nov. 4.—Consumers of iron and steel scrap are taking good tonnages of practically all grades, although heavy melting steel and similar descriptions are not quite as active as others. There is considerable scarcity of cast scrap, stove plate and rerolling rails, and recently No. 1 wrought has been difficult to obtain. The Chicago & Northwestern is offering 4000 tons of scrap, including 1000 tons of No. 1 rails and 300 tons of malleable scrap, the Chicago, St. Paul, Minneapolis & Omaha, 1050 tons, and the Chicago, Burlington & Quincy, 300 tons.

Car Supply Still Short

Cincinnati, Nov. 3.—With the exception of cast borings, which are a trifle firmer and are now quoted around $10.50, there are no changes in scrap prices. The car supply is still deficient and business under way is limited. There is a better demand for heavy melting steel from the outside, but cars cannot be obtained. Dealers see no prospect for improvement until labor troubles are settled.

St. Louis Prices Advanced

St. Louis, Nov. 1.—Prices of practically all grades of scrap have advanced, and the trend continues upward. The strength is based chiefly on speculative activity. Dealers and yard interests are bullish and are unwilling to sell at current quotations. Industries are buying only when absolutely necessary, and many are covered by contracts. Rolling mill grades are particularly strong, although no large sales are reported. Little cast scrap is to be had and inquiries bring out prohibitive prices. Rerollers are much in demand, with none coming out, and the inquiry from the oil regions of the Southwest is insistant. Even busheling and horseshoes have advanced, the latter going up $1 to $21 to $21.50. The country is sending in nothing and no railroad lists have been issued, though several are looked for.

Quotations Tending Upward

Birmingham, Ala., Nov. 4.—Scrap iron and steel quotations in the South are tending upward, as the market begins to show some life. Dealers say consumers are showing evidence of needing old material. No. 1 cast is now up to $24 to $25, stove plate is selling at $22.50, while heavy melting stel is held at $20.

Prices Increased

By Another Maker of Wrought Iron Pipe—Production Behind

Pittsburgh, Nov. 4.—The A. M. Byers Co. has announced an advance of $8 a ton in lapweld and $10 a ton in buttweld pipe, making the base discount on ¾ to 1½-inch buttweld 34½ per cent on black, and 18½ per cent on galvanized, while the base discount on lapweld, 2½ to 6-inch, is 30½ per cent on black, and 17½ per cent on galvanized. The Wheeling Steel & Iron Co. some time ago raised its prices on steel pipe. With these exceptions, however, makers of tubular goods are holding to the March 21 prices and are making no attempt to obtain higher prices. Although general production is much behind the demand and supplies, especially of oil country goods, are so urgently needed

by some buyers that they would be willing to pay premiums, manufacturers are giving little consideration to new business except to take on limited tonnages from regular customers. Wheeling manufacturers still are down and the recovery from the effects of the strike in Youngstown, O., is rather slow, although it is probable that with the order of the Amalgamated Association of Iron, Steel and Tin Workers that its members resume work with companies which had signed the scale, the Girard, O., plant of the A. M. Byers Co. will resume shortly. The National Tube Co. maintains normal operations at all of its plants except Benwood, W. Va., which is down, and the Pennsylvania works in Pittsburgh. At the latter an additional furnace has been put on this week, bringing operations to 80 per cent of normal and 67 per cent of the total. The Jones & Laughlin Steel Co. is running its pipe mills at Woodlawn, Pa., 100 per cent, but is neither quoting nor taking new business at present.

Mills Flooded

By Demand for Wire Products—Offer High for Nails

Pittsburgh, Nov. 4.—It is extremely difficult if not impossible for buyers to place orders for wire or wire products at present, for while production is gaining steadily the output is under contract. One company had a little available tonnage for shipment this year, but fearing that present obligations might become a liability in 1920 in the event the coal strike interferes with shipments, it withdrew. Other makers are filling old orders to the best of their ability. Prices are of minor consideration with buyers who need wire nails, it being reported that they have offered as high as $4, Pittsburgh. It also is said that $4.25 and even $4.50 have been offered by foreign buyers. Pittsburgh district plants of the American Steel & Wire Co. are doing better than at any time since the strike began. At the Donora works the company has the blooming mill on double turn, and is operating six open-hearth furnaces, one blast furnace and two rod mills, while all of the finishing mills and the zinc works are operating, though far from full. At Braddock and Rankin, the rod mills are working double turns and all finishing capacity is running. The Jones & Laughlin Steel Co. is running normally, but the Cambria Steel Co. has not yet resumed and valley plants are gaining slowly.

Mills Are Buried

Chicago, Nov. 4.—Demand for wire and wire products continues much heavier than mills can accommodate and much care is being exercised in accepting further business. Operating conditions continue much disturbed as a result of the strike of steel workers, although production is gaining steadily. Shipments are much under normal and mills are refraining from bidding on much of the inquiry which comes to them. Only regular customers are able now to place business.

Sheet Production

Shows Further Improvement — Mill Operations on the Increase

Pittsburgh, Nov. 4.—The position of sheetmakers both in the matter of active capacity and in production shows further improvement. The American Sheet & Tin Plate Co. today has 88 per cent of its sheet mills in operation and has brought production up considerably in the past week because more men have returned. Independent mill operations also have been increased due to the resumption yesterday of the Newport Rolling Mills, Newport, Ky., which suspended operations before Sept. 22. All makers are running rather light in their galvanizing departments which were manned largely by foreigners, comparatively few of whom have come back. Some difficulty also is being experienced in getting production of highly finished sheets up to the requirements of consumers, but the situation in this direction is better than recently. It is reported that some of the independent companies are obtaining premiums over the March 21 bases for prompt shipment, but as practically all of the current production is needed to meet contract obligations, little business can be accepted except at the expense of old obligations. Makers generally are inclined to satisfy these demands before giving consideration to new orders. About all the tonnage available for early shipment is from warehouses or manufacturers' stocks.

Pay Premiums for Sheets

Philadelphia, Nov. 4.—The leading eastern sheetmaker continues out of the market because of a strike in the sheet mill, and most of the other makers are not selling. Sheets are very hard to get, and premiums of from $10 to $15 a ton have been paid during the past week.

No Tonnage is Available

Youngstown, O., Nov. 4.—Consumers of sheets who look to Mahoning valley mills for their supply are encountering much trouble because practically no tonnage of any grade is available. This weeks' mails contained many heavy orders which the active mills declined to accept on account of their sold-up condition. Makers whose mills are idle are not entertaining any further business. Buyers particularly are anxious for No. 26 gage and lighter in both black and galvanized. Little encouragement, however, is held out to buyers of these gages so far as valley shipments are concerned. Only two sheet-mill plants are rolling and these are booked solidly for the balance of the year. Two additional plants are making every effort to get under way this week. Notwithstanding the heavy demand for sheets, no effort is being made to obtain higher prices.

In order to obtain any grade of sheets, jobbers and dealers are obliged to go out of this territory. They are successful in locating small tonnages at times but are compelled to pay substantial premiums for firm business. They experience no trouble in disposing of 50 or 100 tons of black or galvanized, and can get almost any figure they set on spot shipments.

Higher Prices

Of from $2 to $5 Definitely Established on Semifinished Material

Cleveland, Nov. 4.—Semifinished steel is on a definitely higher price basis of from $2 to $4 per ton. Settlements of large tonnages under term contracts have been made by mutual agreement between buyers and sellers on the basis of $40.50 Pittsburgh and Youngstown for 4 x 4-inch billets, $44 for small billets, $43 for slabs and $45 for sheet bars. Local makers are receiving heavy inquiries for sheet bars but are unable to accept any of this business on account of their reduced output and contract obligations. The local maker of semifinished steel now is operating at two-thirds capacity.

Billets Quiet in East

Philadelphia, Nov. 4.—While billets are quiet, some slab tonnage has been sold in the East at higher than $45, delivered.

Sheet Bar Shortage Still Acute

Pittsburgh, Nov. 4.—Although the Carnegie Steel Co. now is operating more than 70 per cent of its ingot capacity, other producers, especially in the Youngstown and Wheeling districts, have made only moderate recovery toward normal production of steel. Shortage of sheet bars is especially marked and makers having any tonnage available for the open market have no trouble in obtaining premiums of $3 a ton or more over the March 21 base. At the same time few sheet or tin plate mills are down as a result of the scarcity of steel. A recent sale by a valley producer of 250 tons of standard bessemer billets for shipment east was made at $42, or $3.50 above the old base. The scarcity of billets, however, is far less pronounced than that of sheet bars, due to the fact that more sheet and tin plate capacity is active today than is the case with merchant mills and others rolling billets. Wire rods are in demand from both domestic and foreign sources. One maker reports having turned down an export order from South America for 6000 tons.

Strip Production Lags

Pittsburgh, Nov. 4.—Although makers of strip steel in this district are operating fairly well, production in the country is considerably behind requirements, and since the demand is chiefly from automobile manufacturers anxious to keep up car output, the makers whose plants are operating are being pressed for delivery on old orders. The West Leechburg Steel Co., West Leechburg, Pa., still is crippled as a result of the strike, but the Superior Steel Corp. has its plant at Carnegie, Pa., running practically full and practically normal conditions also prevail at the plant of the Weirton Steel Co., Weirton, W. Va.

Steel Bars Are Scarce

Many Mills Out of Market—Production Gains in Valley and Chicago—Bar Iron, Rivets and Nuts Advanced

Chicago, Nov. 4.—With mill operation increasing steadily, the situation as to soft steel bars is growing better each week and demand is more than keeping pace. However, much care is being used in shipments in an effort to keep consumers as well supplied as possible. Mill operation under present circumstances is not efficient and less steel is being shipped than would be indicated by the percentage of men employed. However, the men are fitting in to their places better and the percentage of production is being increased markedly. A recent inquiry from Canada asks about 1800 tons of bars and shapes for the fabrication of 985 transmission towers.

Demand for bar iron continues strong and orders on books are increasing faster than shipments are made, giving something of a backlog, a thing which has been lacking in this product for many months. Railroads continue to remain out of this market except for a few small tonnages. The quotation is unchanged at 2.72c, Chicago mill.

Demand for hard steel bars rerolled from rails continues strong and most mills are now sold up for their production to the end of the year. The quotation is unchanged at 2.65c, mill.

Bars Scarce; Nuts Advanced

Philadelphia, Nov. 4.—Steel bars are hard to get. The Cambria Steel Co. is not yet quoting, while Jones & Laughlin Steel Co. and the Bethlehem Steel Co. are out of the market. Orders can be placed only by scouring the market thoroughly. Mills that are operating are doing all they can to take care of customers. Iron bars are quoted at 2.50c to 2.75c, Pittsburgh, most makers naming the latter figure. Nuts have been advanced 40 cents per 100 pounds. Blank nuts were quoted at 3.10c off list, Pittsburgh, but are now 2.70c off. Tapped nuts were 2.85c off, and now are 2.45c off. The Hog island shipyards have placed orders for 1350 kegs of bolts, and other shipyards have placed good orders. The Emergency Fleet corporation is in market for 500 kegs.

Exporters Pay Premiums

New York, Nov. 4.—So scarce are steel bars, that interests wanting to buy them for export have been forced to offer substantial premiums in order to interest the makers. One exporter has placed an order for 250 tons of steel bars at 4.00c, Pittsburgh. Another exporter says that the best price that he is able to get on 2000 tons of steel bars for abroad is 4.50c, Pittsburgh.

Production is Smaller

Pittsburgh, Nov. 4.—Scarcity of merchant steel bars finally has affected the operations of makers of cold-finished steel bars. Those companies depending upon valley steel plants for their steel or bars have not been getting shipments recently and have practically exhausted their reserve stocks. Automobile and tractor production is threatened by this decline in production. Great difficulty is being experienced in securing full shipments of highly finished sheets such as are required for automobile construction and makers of steel springs for cushions also are much behind in their deliveries. On top of these conditions comes the decline in the output of cold-finished steel bars and makers of automobile accessories are hard put through their inability to secure sufficient supplies of screw stock. Makers are holding to 2.60c base Pittsburgh although demands are urgent and if they were so disposed they might obtain premiums.

Special Extras Are Named

Cleveland, Nov. 4.—Manufacturing consumers are inquiring actively for bars and other form of steel for first quarter delivery, in order to protect themselves on programs and estimating work which they have before them. Some of the automobile accessories manufacturers are among this number. Certain of the leading steel makers still are unwilling to quote for that period. Others while disinclined to ask advances on base prices, in cases are quoting special extras; in one instance a $3 per ton charge for chipping blooms was named on an inquiry for rounds. Bars for early shipment are scarce and usually can only be obtained from warehouse stock.

Iron Bars Are Higher

Pittsburgh, Nov. 4.—Leading makers of iron bars in this district have made an increase of $5 a ton since a week ago and now are quoting common merchant iron at 3.00c base, Pittsburgh, and refined at 3.25c base Pittsburgh. Demand is reported to be heavy, partly because of the shortage of soft steel bars. Another reason for the advance is that raw material costs are tending higher. The situation as far as operation and production are concerned in merchant steel bars is somewhat better this week than it was last, due to the fact that the Youngstown, O., district bar mills gradually are coming back. Three of the four bar mills of the McDonald plant of the Carnegie Steel Co. at Youngstown started up this week after being shut down since the first day of the strike due to the cutting off of the power which this plant obtained from the Ohio works of the same company. One additional bar mill was put on at the Upper and Lower Union Mills of the Carnegie Steel Co. at Youngstown, making a total of eight out of 12 mills now in operation. The Carnegie Steel Co. is still 2.35c base, Pittsburgh, for steel bars but is taking no early delivery orders. Some of the larger independent companies are neither quoting or accepting business in bars. In the smaller sizes makers are extremely heavily committed and prompt shipment practically is unavailable.

Bolt Quotations Higher

Chicago, Nov. 4.—Under strong demand for nuts and bolts, which exceed the ability of makers to meet, some sellers are quoting 10 per cent over the prevailing schedule. However, this is not general and most bids are at the schedule. Under present conditions of pressure, most makers are able to take new business only from regular customers.

Prices Tend Upward

Pittsburgh, Nov. 4.—Stronger tendencies are noted in prices of nuts, bolts, and rivets as a result of a good demand and the fact that good production is more or less affected by the scarcity of rods and bars. Some makers now are quoting 4.15c for structural rivets and 4.25c for boiler rivets. Smaller rivets are quoted as high as 15 per cent off list. Both carriage and machine bolts are quoted higher and few makers of nuts are quoting less than 2.70c off on blank nuts and 2.45 off on tapped.

Orders Backing Up

Pittsburgh, Nov. 4.—Considerable backing up of orders for hoops and bands is noted by makers in this district as production remains considerably behind contract obligations. Automobile manufacturers were heavy buyers of band steel earlier in the year and in their efforts to keep up production are pressing makers for deliveries. The situation in cotton ties is relatively easy. Makers have sufficient stock to accommodate all specifications. The November price of ties is $1.77½ a bundle of 45 pounds in lots of 3000 bundles or more.

Spot Ferro

Sells at $115 and English Metal at $100—Ferrosilicon Higher

New York, Nov. 4.—Spot ferromanganese has been scarce of late with the result that some of this metal has been bought during the past few days at $115, delivered, for 80 per cent, an advance of $5 over the previous quotable market. The amount of business done was small. In fact, demand is very quiet. The market now may be quoted at $110 to $115, delivered. Recently, some 70 per cent metal changed hands at $90 to $100 per ton delivered. No English ferromanganese now is being offered. One English maker, which recently authorized its agent here to sell at $100, c.i.f. tide-water, has withdrawn this authorization and is out of the American market for this year. It is understood considerable domestic buying of ferromanganese has been done in England as a result of the recent reduction in prices there.

A stronger tone is noted in spiegeleisen, and sales of 500 to 1000 tons of 19 to 21 per cent metal have been made during the past few days at $35 furnace.

Offerings of imported ferrochrome now appear to have been absorbed

and the low prices recently quoted have disappeared. The supplies of foreign material involved a considerable tonnage in the aggregate and were disposed of at prices ranging from 16 to 24 cents, delivered. American makers are quoting 27 cents and upward, per pound contained, for alloy containing 4 to 6 per cent carbon. It is understood an increasing quantity of alloy containing 6 to 8 per cent carbon now is being marketed, at prices about 1 cent a pound below the price for alloy containing 4 to 6 per cent carbon. Alloy containing 2 to 4 per cent carbon is quoted 34 cents a pound contained and less than 1 per cent carbon is quoted about 70 cents a pound contained.

Makers of standard ferrotungsten are holding at $1.25 a pound contained, but business has been done in imported alloy down to $1.10 a pound contained.

Ferrosilicon remains quiet. Sales of 50 per cent ferrosilicon are reported at less than $80, delivered Pittsburgh district. Several manufacturers who have ceased to operate but who have stocks of alloy have been unloading at the best price.

English Ferro Sold at $100

Philadelphia, Nov. 4.—Eastern consumers have bought several hundred tons of English ferromanganese for the first quarter at $100, tidewater, on offers outstanding for some weeks. No English metal now is being offered. The demand for ferromanganese is better, and several sales of domestic metal for nearby delivery have been made at $110, delivered.

Sell Spiegeleisen for First Half

Pittsburgh, Nov. 4.—Sales of spiegeleisen for delivery over the first half of 1920 comprise the most recent development of interest in the ferroalloys market here. Sales of at least 2000 tons have been made to Pittsburgh district consumers and it is understood that a deal is pending for 1000 tons more. This business was done at about $35, furnace, for 18 to 22 per cent material.

Not much activity is noted in ferromanganese, but the market shows a stronger tendency in domestic material than it did recently as some uncertainty has arisen as to the ability of English producers to make deliveries. As a result, American manufacturers are no longer inclined to shade their asking price of $110, delivered, for 80 per cent.

Sales of 50 per cent ferrosilicon still are in small lots, around $80, delivered Pittsburgh. Domestic makers generally are asking $85 or more, but Canadian makers are quoting $80, and in some cases less, and are getting most of the business.

Bessemer Ferrosilicon Advanced

Cleveland, Nov. 4.—Ohio makers have advanced bessemer ferrosilicon for first half $5 a ton to $54.75 furnace for 10 per cent, $58.05 for 11 per cent and $61.35 for 12 per cent. About 2500 tons of this metal chiefly 10 per cent recently have been placed in this district at several dollars under the schedule and this is ascribed either to resale offerings which in some cases were met by the producers.

Want Many Ship Plates

Chicago Has 30,000-Ton and Pittsburgh 25,000-Ton Inquiries—Eastern Contracts Take 30,000 to 35,000 Tons—22,000 Tons Placed

Chicago, Nov. 4.—Numerous factors are giving the plate market great strength and demand for this form of finished steel is increasing steadily. An inquiry has been received from a shipbuilder on the Pacific coast for 30,000 tons of ship material, of which about two-thirds is plates. Another inquiry asks for 2500 tons of plates, shapes and bars for five coast guard cutters. Most of this material is plates. Carbuilders have been taking contracts for repair of rolling stock, the railroad administration making efforts to put equipment in shape before the roads are turned back to their owners. One interest in Chicago has received inquiries recently for about 15,000 tons of steel, mostly plates, for this purpose. Plates are steady on the basis of 2.94c Chicago.

Boats Let—Export Demand Active

New York, Nov. 1.—A big demand for plates continues to come out in this market from export sources and the mills say that they are having no difficulty in obtaining 2.65c, Pittsburgh, for all the tonnage they will take. These orders run into hundreds of tons daily. Present export orders are running to the lighter gages and a great many of the orders being booked involve ⅛ and 3/16-inch material. The eight tankers which tentatively were placed by the Atlantic Gulf & West Indies Steamship Co. finally have been closed. Two 14,800-ton tankers were placed with the Newport News Shipbuilding & Drydock Co., four 12,600-ton with the Bethlehem Shipbuilding Corp. and two 10,600-ton with the Sun Shipbuilding Co. These vessels require 30,000 to 35,000 tons of plates and shapes. Many additional boats for various buyers are expected to be placed with eastern yards shortly.

Large Orders Placed in East

Philadelphia, Nov. 4.—A brisk demand for plates continues in the east and one leading mill reports it is quoting 2.75c, Pittsburgh, in some cases to hold off orders. Numerous orders were placed during the past week involving several thousand tons each, including several good orders from shipyards. The Bath Iron Works has bought 3500 tons of steel plates for two boats for the Crowell & Thurlow Co., Boston. It is reported here that a contract for 10 boats has been let on the Pacific coast, but the details are not known. An eastern mill has been given 22,000 tons of plates covering ship work recently placed.

Again Offering Tonnage

Cleveland, Nov. 4.—Some independent steel makers which a week ago withdrew from the market have resumed offering of plates for shipment at the maker's convenience at 2.65c Pittsburgh. Local shipbuilders who have been bidding on small boats requiring about 2500 tons, did not obtain this business. They have since sought protection on 1000 tons for similar work. Local plate production is on the increase.

Light-Gage Orders Heavy

Pittsburgh, Nov. 4.—Platemakers in this district have all the business they can fill during the next 60 days with bookings especially heavy in the lighter gages. As has been the case for several months, the principal demand is from the makers of tanks and the fabricating interests, but recently some good sized export inquiries have been noted for ship plates. One inquiry calls for 25,000 tons of plates in addition to 10,000 tons of shapes and 5000 tons of bars, the inquiry coming from France. Although new demands are frequent and urgent, and some buyers probably would be willing to pay more money for prompt deliveries, the Carnegie Steel Co. is holding at the March 21 base of 2.65c, Pittsburgh, and other makers are not making much effort to boost prices.

Tin Plate Output

Steadily Increasing—Heavy Demands Coming From Domestic Consumers

Pittsburgh, Nov. 4.—Tin plate mill operations have made a further gain with the American Sheet & Tin Plate Co. now operating more than 60 per cent of its mills. The McKeesport Tin Plate Co., has 24 of its 44 mills operating and will increase the number as it is able to work off the heavy accumulation of tin mill black sheets. The Standard Tin Plate Co., at Canonsburg, Pa., is somewhat hampered by a shortage of steel, but the Canonsburg Steel & Iron Works and the Washington Tin Plate Co., are reported to be operating practically normal. The American Sheet & Tin Plate Co. has 10 of its mills at Elwood, Ind., in operation, a gain of four over a week ago, and is maintaining the gains made elsewhere in the past fortnight. This company has 14 of its sheet and tin plate mills running 100 per cent. Heavy demands still are coming out for tin plate from domestic consumers for early delivery, but they are having considerable trouble in interesting makers. Some of the latter are neither quoting nor accepting business fearing to become obligated too far ahead in the event that the coal strike interferes with shipments. Sales of stock tin plate are being made at the full market price of $7 per base box, Pittsburgh, and this material is understood to be moving to consumers as high as $7.50.

Directors of the Packard Motor Car Co., Detroit, have voted to decrease the par value of the common shares from $100 to $10.

Export Shapes Placed

Various Countries Buyers of Sizable Lots of Eastern Mills—20,000-Ton Order For India Closed—Domestic Contracts Numerous

Philadelphia, Nov. 4.—Demand for shapes is active, and mills cannot promise delivery of some sections before two or three months. A considerable tonnage of shapes for ships was placed here recently. The past week's business includes numerous export tonnages, of which 1500 are for Japan, 1000 for South America and 700 for the Dutch East Indies. There are export orders for from 5000 to 10,000 tons pending. A considerable tonnage will be required for large plant extensions for the Willys Corp., Elizabeth, N. J., the general contract for which has been let. There is some talk among eastern shape makers of quoting higher prices to keep business away, as it is coming in too fast in some cases to be handled. Costs are said to be very high.

Ask Bids for Many Buildings

Boston, Nov. 3.—An increased number of buildings open to bids during the week has brought an easier feeling among construction circles here. The awards for steel construction outside of the new First National bank building have fallen off slightly, however, below the total of the previous week. The First National bank building which was awarded to Stone & Webster Engineering Corp., Boston, will require about 3000 tons of structural steel although definite figures have not been given.

October Awards Are Less

New York, Nov. 3.—Although no definite figures are available, it is generally believed that structural lettings in October aggregated less than in the preceding month. Tonnage was placed somewhat freely during the latter half, but it was not sufficient to make for the lull in the early part according to usually well informed interests. During the past few days new inquiry has been small, few sizable tonnages coming out. However, there has been a fair amount of buying.

Large Foreign Contract Let

Pittsburgh, Nov. 4.—The contract for the steel plant building of the Tata Iron & Steel Co., Sakchi, India, has just been let to the McClintic-Marshall Co., and comprises the largest structural award announced for sometime. The business includes the steel for practically all of the buildings of the plant, about 20,000 tons. A large number of structural projects are in prospect, but investors are inclined to move slowly in placing them pending a clearing of the labor situation.

Vote on Many Building Projects

Cleveland, Nov. 4.—Elections throughout Ohio today on the issuance of many millions of dollars in school bonds are expected to bring forth new building projects for figuring during the slack winter months. Cleveland already has a $5,000,000 school building program mapped out, while Cincinnati also has decided to go ahead with building projects calling for the expenditure of several million dollars.

The Fort Pitt Bridge Works is understood to have obtained one of the largest contracts recently let in Cleveland. This is for 5000 tons of structural shapes for the Buckley building, a combination theater, garage and office building. Several smaller jobs were let during the week. New jobs are being figured, there apparently being no let up in work coming out.

About 3000 to 4000 tons of bridge work for the Pennsylvania, Hocking valley and other railroads have been let to the Mt. Vernon Bridge Co.

Many Projects Closed

Chicago, Nov. 4.—After a fairly quiet season covering the past few weeks, a number of important structural projects have been closed in the west. The John Crerar library at Chicago, requiring 1450 tons, and the Farmers & Mechanics bank building, at Fort Worth, Tex., 1700 tons, have been awarded. Bids will be opened Nov. 15 on 15,000 to 20,000 tons of steel for the Union station, Chicago. This tonnage has been up in previous years, but various interruptions have prevented its being placed.

CONTRACTS AWARDED

Ambassador hotel, Atlantic City, 2000 tons to Heddon Iron Construction Co.

Art museum, Philadelphia, 875 tons to independent shop.

Farmers & Mechanics bank building, Fort Worth, Tex., 1700 tons, to Decatur Bridge Co.

John Crerar library, Chicago, 1450 tons, to American Bridge Co.

Cattle barn and sale ring for department of agriculture, state of Iowa, at Des Moines, 525 tons, to Pittsburgh-Des Moines Steel Co.

Foundry building for Bridge & Beach Mfg. Co., St. Louis, 397 tons, to Christopher & Simpson.

Scottish Rite temple for Bloomington consistory, Bloomington, Ill., 320 tons, to Decatur Bridge Co.

Building for East St. Louis plant, for St. Louis Pressed Steel Co., East St. Louis, Ill., 220 tons, to Stupp Bros.

Viaduct for the city of Twin Falls, Idaho, 209 tons, to Missouri Valley Bridge & Iron Co.

Addition to Plymouth mills, Lawrence, Mass., 250 tons, let to American Bridge Co.

Addition to International Boiler Works, Straussburg, Pa., 600 tons, let to independent.

Art museum, Philadelphia, 875 tons, let to independent.

Apartment house, Philadelphia, 400 tons, let to Phoenix Bridge Co.

New Ambassador hotel, Atlantic City, 2000 tons, let to the Hedden Iron Construction Co.

Government hangars, Newdorp, Staten island, approximately 650 tons, general contract let to Smith, Hauser & McIsaac.

Building for First National bank, Boston, approximately 300 tons; to Stone & Webster Engineering Corp.

Building for New England Tel. & Tel. Co., 800 tons, to New England Structural Co.

Steel plant building for the Tata Iron and Steel Co., Sakehi, India, 20,000 tons to the McClintic-Marshall Co.

Building for the American Steel Foundries, Alliance, O., 450 tons to the McClintic-Marshall Co.

Wheel shop extension for the Hockensmith Steel & Iron Co. and Wheel and Mine Car Co., Penn State Pa., 150 tons to the McClintic-Marshall Co.

Additions and improvements to the plant of the Union Shipbuilding Co., Baltimore, 5000 tons to the McClintic-Marshall Co.

Buckley building, Cleveland, 5000 tons; let to Fort Pitt Bridge Works.

Building for Walker Motor Co., Cleveland, 250 tons; let to Forest City Steel & Iron Co.

School building, Troy, O., 100 tons; let to Fred S. Fravel Co., Columbus, O.

School building, Fletcher, O., 100 tons; let to Fred S. Fravel Co.

School building, Cleveland Heights, O., 60 tons; let to Republic Structural Iron Co.

Cleveland avenue viaduct, Columbus, for Pennsylvania railroad, to Mt. Vernon Bridge Co.

Miscellaneous railroad bridge work, 3000 to 3500 tons to Mt. Vernon Bridge Co.

Building for Stevens-Duryea Co., Holyoke, Mass., 350 tons, to Phoenix Iron Co.

Building for Worth Steel Co., Claymont, Del., 1500 tons, to Phoenix Iron Co.

CONTRACTS PENDING

Union station, Chicago, 15,000 to 20,000 tons, bids to be taken Nov. 15.

Addition for American Steel Foundries, Detroit, 600 tons, bids asked.

Theater for Panacea Theater Co., Chicago, 300 tons, bids asked.

Building for Guide Motor Co., Cleveland, 250 tons; general contract let to Crowell & Little, Cleveland.

Building for *Cleveland Plain Dealer*, Cleveland, 200 tons; general contract let to Crowell & Little.

Building for National Electric Lamp association of the General Electric Co., St. Louis, 500 tons; bids being taken.

Bank and office building for Steubenville Bank & Trust Co., Steubenville, O., tonnage indefinite, bids being taken.

Factory for Portage Rubber Co., Barberton, O., tonnage indefinite; bids being taken.

Building for Republic Brass Co., Cleveland, 200 tons; general contract let to Sam W. Emerson Co.

Plant extensions for Willys Corp., Elizabeth, N. J., tonnage indefinite; general contract let to Warren Moore & Co., Philadelphia.

Rail Tonnages

Becoming More Active—Pennsy Asks 200,000 Tons—41,000 Tons Placed

Philadelphia, Nov. 4.—An inquiry for 200,000 tons of rails for next year's delivery has been issued by the Pennsylvania lines east. It is provided in connection with this inquiry that if the orders are placed, they are subject to cancellation in the event government control continues. Eastern makers are not inclined to quote because they do not know what their costs will be.

Administration Buys 41,000 Tons

Washington, Nov. 4.—An award of approximately 41,000 tons of open hearth rails has been made to the Bethlehem Steel Corp. by the railroad administration at $47 mill for delivery beginning at once and to be completed by Jan. 1. This is the only portion to be placed of the 200,000 tons upon which bids were taken several months ago. It represents the absolutely necessary tonnage for the upkeep of eastern roads which can take delivery from the Bethlehem mills. No indications are given as to when the remainder of the original inquiry may be placed.

Roads Looking Ahead

Chicago, Nov. 4.—Considerable inquiry for standard steel rails for 1920 delivery is being put out by western roads. This is of a tentative character, however, as the railroads do not appear to be certain of their ground, although it is expected the government will relinquish its hold at the end of this year. Under present circumstances it is not possible for contracts to be made but the preliminary inquiry is coming out and about 100,000 tons of rails are involved. Practically the same condition is true of track fastenings, which are in strong inquiry, but comparatively little buying is actually being done.

Exports Temporarily Checked

Higher Prices Fail to Cut Off Foreign Purchases of Light Steel Goods, However, Failure of Transportation Offers the Greatest Hindrance to Business—Big Order for Structural Steel Placed for India

NEW YORK, Nov. 3.—Export trade still is being hampered by the strike situation. Although mill production has picked up considerably and many export houses have not been frustrated entirely in their efforts in placing foreign orders, the tie-up in transportation is a serious detriment. The port of New York has been embargoed for practically four weeks. The railroads have rescinded their orders for issuing g. o. c. permits and such products intended for loading on board ships as have been successful in escaping the embargo have been diverted into other ports. The effort of the railroad administration to move all coal possible before the miners' strike caused a diversion of gondola cars. It is absolutely necessary to ship certain iron and steel products in gondola cars. Since only box cars have been available in certain sections of the country the export trade has been blocked likewise in this way.

The ingenuity of the export house to obtain the goods desired by the foreign purchaser is at the moment a precious asset. An unusually large number of ships have been tied up at the docks in the harbor of New York due to the trouble with the longshoremen. This has resulted in removing much available tonnage from the field temporarily. Yet ocean rates have not advanced. The shipping board has, on the other hand, put into effect new schedules reducing the rates. The rates to North Africa, Red Sea and Levant were reduced 10 per cent. The steamship operations are preparing for further reductions in ocean rates after the first of the year.

All of this only goes to show that while it is difficult at present to ship out of the country, the tendency is in favor of exporting. On the other hand the orders and inquiries from abroad have decreased perceptibly, but it is believed this also is but a temporary condition. Two months ago the volume of foreign inquiries in the market gave cause for greatest optimism. But the foreign purchasers have for one reason or another failed to place orders, and today they are holding off until they are assured that industrial conditions in the United States are tending once more to the normal.

Prices now being paid for exportable goods are so fluctuating that it is difficult to gage the market. The continuation of the unsettled industrial conditions makes this situation more confusing. The export demand for light steel goods, such as sheets, bars and wire products, is reported as very heavy. There is little in the way of immediate business on account of the oversold condition of the plants and the tendency toward higher prices.

Exporters generally are shopping around for the various materials that have a market abroad. One dealer who is accustomed to receive approximately 30 carloads a week at his warehouse said that now he is getting only about one, and in addition the mills are shipping him only small sizes and extremely large sizes, for which the demand is exceptional rather than common. Prices quoted on those commodities which are difficult to find are much higher than they were three weeks ago. One exporter buying 250 tons of bars was compelled to pay the mill 4.00c, Pittsburgh. The best quotation another exporter could get on 2000 tons of steel bars was 4.50c, Pittsburgh.

Despite this situation the market shows extreme activity, which undoubtedly is due to the necessity of expending more effort to find the commodity One of the big deals which went through recently was an order for 20,000 tons of fabricated plates and shapes for making extensions to the plant of the Tata Iron & Steel Co., at Jamshedpur, India. This order was placed with the McClintic-Marshall Co.

Oriental business appears to hold up fairly well. One company has contracted to erect two ice plants in China These will have a capacity of 20 tons each. An order has also been placed for the erection of a drag line cableway excavator in Singapore. A firm which has an order for bars for India was compelled to transship the goods and send them through Philadelphia.

A sale of 300 tons of light rails to Java was reported during the past week. Japan has sent in orders for 100 tons of shovel steel and 1250 tons of pipe. Japan is also in the market for 2000 boxes of tin plate. The inquirer has offered to pay $9 c.i.f., Kobe, but the domestic makers have been holding out for a higher price.

Among the sales reported made to South America was 100 tons of tire steel. Brazil has purchased a small tonnage of boiler tubes. Exporters have experienced great difficulty in getting their orders shipped from the mill. One house reported that it had a fair tonnage of heavy pipe, finished and held at the mills because no cars for moving were available. In another instance the exporter, who had sold a fair tonnage of pipe to Mexico was compelled to re-ship and send the tonnage through the port of New Orleans. Such shifting in the transportation plans is costly and another excuse for levying extra charges on foreign purchasers. Porto Rico has placed an order for a small tonnage of pipe.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Oct. 29	21.25	53.75	6.75	7.55	33.00	8.62½	41.00
Oct. 30	21.25	53.50	6.75	7.50	33.00	8.62½	41.00
Oct. 31	21.25	53.25	6.75	7.45	33.00	8.75	41.00
Nov. 3	21.00	53.00	6.75	7.55	33.00	8.87½	41.00
No. 4	Holiday in New York						

*Future shipment from Singapore.
† American Smelting & Refining Co.'s price.
‡Open market.

NEW YORK, Nov. 3.—Additional uncertainty was injected into the nonferrous metal markets the past week by the calling of the coal strike, which further discouraged consumers from committing themselves for future requirements.

The copper market declined under pressure of offerings from second hand sellers together with active participation in the market by leading producers, while demand was poor. Electrolytic copper for delivery this year sold down to 21.00c, New York. Producers, however, so far as known, did not shade 21.25c. There was some further buying of copper for export but this business remains low. Casting copper sold down to 20c, and lake copper sold down to 21.50c.

Active export inquiry for zinc was the feature of the zinc market. France, England, and Japan continued to show interest, while Germany also asked for prices on a large tonnage. Prime western sold down to 7.45c, last week, but on Monday recovered to 7.55c, East St. Louis basis. Demand from galvanizers and brass mills remains extremely slow, although some galvanizers, who several weeks ago asked that shipments on their contracts be held up, have resumed operations in some of their mills and soon will require shipment. High grade zinc sold at 8.37½c, to 8.50c, New York.

The lead market reflected further the strong statistical position of this metal. An active demand was experienced for spot supplies in the east, while outside sellers were able to obtain a premium over the quotation of the leading producer who maintained a price of 6.75c New York, 6.60c, East St. Louis. Early shipment lead sold by outside producers at 6.90c to 6.95c, New York.

The return of some of the striking longshoremen improved the situation as regards spot tin supplies slightly early this week, but the situation remains acute. Upwards of 8000 tons of tin of value of around $9,000,000 are tied up in the port. Straits tin for shipment from Singapore in November and December, was obtainable the past week at around 53.50c, f.o.b. New York, and for shipment the same months from London at the same figure. Spot Straits tin ex-store, was quoted 55.50c, to 56.00c, whereas tin on dock was quoted around 53.00c to 53.50c. Ninety-nine per cent tin was quoted about ¼c below the price of Straits tin.

Aluminum prices remain steady. Some imported Virgin ingot was offering at 32.50c, as against the producers' price of 33c. No. 12 alloy was firm at 30.50c. A number of foundries in the Middle West who have received requests to hold up shipments of aluminum castings from automobile builders and others, who in turn have been experiencing or anticipating a shortage in the supply of steel, have requested shipments of aluminum be held up. Demand for aluminum sheets is brisk, some mills being sold up for six months.

Coal Strike Having Little Effect

Iron and Steel Industry Has Supplies of Coke and Coal Sufficient for Four to Six Weeks—Walkout of Miners Fails to Complicate Steel Strike—Amalgamated Association Practically Withdraws Its Support

LATEST reports regarding the coal strike are to the effect that the strike will not interfere with or at least interrupt furnace and mill operations, unless it is continued beyond all expectations. With union officials enjoined from directing the strike and with the government striving in every way to force an early settlement, the general opinion is that the strike will be short lived. On the other hand, supplies of coke and coal at furnaces and mills are said to be ample for normal production for from four to six weeks, and in some instances, even for a longer period. Coke operators declare there is no cause for worry on the part of furnace interests, while the railroad and fuel administrations have released some of the coal seized at the outset of the strike, indicating that the government does not fear a serious shortage.

The coal strike has had no effect on the steel strike. Steel workers are returning in increasing numbers, despite the moral support the leaders may have hoped to obtain from the walkout in the coal regions. Mill interests have sought to reach a clear understanding with the Amalgamated Association of Iron, Steel and Tin Workers as to whether it purposes to honor its agreements, and the issue has been presented to the association in such a way as to leave no loophole. The association has practically withdrawn from the strike; more of its members showing a willingness to work. In the Pittsburgh district the strike has "simmered down to one involving only common labor."

Employes of three mill departments of the Bethlehem Steel Co., at South Bethlehem, Pa., have voted in favor of a 10-hour shift, instead of an 8-hour, and if a majority in the other departments concur the company will put it in effect.

Furnaces and mills in the Cleveland district which have been the slowest in making headway show the most gains of the week, while operations in the Youngstown and Chicago districts also have improved.

Association Withdrawing From Strike

PITTSBURGH, Nov. 4.—The steel strike has simmered down to one where only common labor is involved. Skilled workmen, most of whom were out because of intimidation, practically all have gone back to work in this district and much the same is the case in all other districts, with the exception of Wheeling. Perhaps the most significant development in connection with the strike has been the practical withdrawal of the Amalgamated Association of Iron, Steel and Tin Workers from the organizations which were responsible for the walkout.

This organization went into the movement against the best judgment of its officials, who were influenced by the fact they could not very well go contrary to the vote passed at the convention of the American Federation of Labor, with which it is affiliated, in St. Paul, Minn., in June last year, and also by the assurances that the strike would not involve the plants of the manufacturers who have signed agreements with it. Developments in the strike were contrary to the unions' expectations and plants operated under an amalgamated agreement went down with the others. This has been a matter of some concern to the Amalgamated officials and they have been busy lately in an effort to restore the contracts which were in serious danger of becoming void. This has resulted in undoing much of the work of the strike officers.

Outside of the shortage of common labor all manufacturers in the Pittsburgh district have more men back at work and more capacity in operation than since the first few days of the strike. Production also has made some gains, although it still is considerably behind what should be expected from the capacity which now is manned.

The coal strike finds most of the steel companies fairly well fortified by reserve supplies, although if the strike should be protracted a shortage certainly would develop. For operations of both boilers and by-product plants the companies in the Pittsburgh district may be said to have at least a month's normal supply of coal. The impression is quite general that the strike will be of short duration and that it will be practically over by next Monday. This belief is based on the expectation that the injunction secured by the government at Indianapolis last week will be made permanent on Saturday.

In this event it is figured that it will be but a step for the strike call to be rescinded, and this is expected, since only after the return of the strikers will the government act in the matter of setting up a court of arbitration to hear the case. The serious side of the present situation is contained in the railroad and fuel administrations' orders which make it extremely difficult for steel plants to secure fresh supplies of coal, since they are not included in the preference list of consumers. Union mines quite generally suspended operations on Saturday, but the nonunion mines are practically unaffected.

Bethlehem Employes Vote For 10-Hour Shift

New York, Nov. 4.—The Bethlehem Steel Co. Saturday received petitions signed by all employes of three departments of its South Bethlehem plants asking for a 10-hour basic day. The men said strikes and radicalism have gone far enough, and that the country is suffering for lack of production. They declared they know prevailing high prices are due to under-production, and they proposed to increase production to aid in getting the country back on a normal basis. They asked simply for 10 hours' pay for 10 hours' work.

The management has decided to put the question up to the entire works, and if the men desire to adopt the suggestion of the three departments they will be put on 10-hour shifts.

The Trenton plant of the John A. Roebling's Sons Co. is shut down for lack of coal, but operations are expected to be resumed as coal will be brought from the plant at Roebling, N. J.

Production of by-product coke in this district can be continued for three weeks with the supply of coal now on hand. The Seaboard By-Products

Coke Co., the leading producer in this territory, in addition to its stock, has 30,000 tons of coal enroute, but this coal is being confiscated right and left, so there is no certainty as to how much will be delivered. The Seaboard interest produces 1700 tons of coke per day and is an important source of supply for the foundries of New Jersey, New York, New England and eastern Pennsylvania. While the Camden Coke Co., Camden, N. J., produces 625 tons per day, a rather small percentage of it is used as foundry fuel. The Semet-Solvay Co., Syracuse, N. Y., produces about 100 tons per day.

More Mills in Valley on Productive Basis

Youngstown, O., Nov. 4.—Further improvement in steel-plant operation throughout the Mahoning valley is shown this week. Additional mills were placed on a productive basis Monday, which gives operators considerable encouragement. At the Ohio works of the Carnegie Steel Co., five open-hearth furnaces, which is two more than was reported last week, are making steel. One blast furnace, a bessemer converter and the blooming mill also are in operation at this works.

A 10-inch bar mill at the Upper Union works of the same company started rolling Monday. With the resumption of this unit, the company now has eight bar mills out of 12 in operation at this particular plant. At the McDonald plant further up the valley, two bar mills were placed under power and it is expected that additional units at this works will get under way before the end of the week.

Eight sheet mills at the Youngstown Sheet & Tube Co.'s plant were rolling today. Present orders warrant continued operation in this department throughout the week on a three-shift basis. Three stacks at this plant are blowing and expectations are that the fourth will be placed in blast this week. Operations in the bessemer and pipe-making departments show a decided increase. This company at its East Youngstown plant has every department, except its puddling mills, in operation.

Not much change is noted in operating conditions at the plants of the Brier Hill Steel Co., except that the car dumper and ore bridge again are handling ore. One blast furnace, five open hearths, the coke ovens and the blooming mill at its Brier Hill plant and one plate mill at its Mosier plant are working.

Several bar mills at the Brown-Bonnell plant of the Republic Iron & Steel Co. would have begun rolling and an additional open-hearth furnace would have been charged last Monday had it not been for the shortage of fuel. The company, however, continues to operate two blast furnaces and four open-hearth units with the fifth ready for charging. The DeForest group of sheet mills of the Republic company at Niles, O., is still idle. Structural iron workers employed in assembling the frame work for the new sheet-mill buildings of the Falcon Steel Co. there, recently were called off their jobs due to efforts of local steel plant strikers. Construction work at this plant is at a standstill.

The A. M. Byers Co., Girard, O., was successful Monday in starting 27 of its 88 puddle furnaces. The men who returned are affiliated with the Amalgamated Association of Iron, Steel and Tin Plate Workers and their action was sanctioned by M. F. Tighe, their national president. In general, however, more

No interruption of steel-plant operation due to the present coal strike is expected at valley mills for several weeks, most plants having a sufficient supply of fuel to carry them well into 1920 under present conditions.

Connellsville Miners Are Increasing Output

Uniontown, Pa., Nov. 4.—Coal production in the Connellsville district is increasing, due to the fact that the miners started a six-day week beginning Monday. The district is unaffected by the strike either at the mines or at the ovens, the United Mine Workers having failed in their efforts to organize the workers. While the miners in other districts walked out, those in the Connellsville district, who had been working but five days a week, carried out their intention to work six days. The general attitude was one of indifference as to what course is taken by the union miners in other districts, local conditions being satisfactory. In Washington county, where practically all of the mines are organized, about 20,000 men are out. Mines suspended include the Vesta mines of the Jones & Laughlin Steel Co., and three of the Pittsburgh Coal Co.

Operations of Cleveland Plants Increasing

Cleveland, Nov. 4.—Resumption of operations at least on a partial basis is reported by practically every iron and steel company in this district. One of the larger companies reports operations on practically a 100 per cent basis, while others report they would be operating at nearly normal capacity if repairs which are being made to their plants did not interfere.

Unless the coal strike lasts a greater length of time than is generally expected, blast furnace operators will not be handicapped by a lack of coal, as they have limited but sufficient supplies on hand to last for a while. Finishing mills report they have supplies of coal which were shipped in during the early part of the steel strike and which stood on track, due to the refusal of the men to unload them. These cars are now being unloaded.

About 40 per cent of the employes of the Lake Erie Bolt & Nut Co. have returned to work, and the bolt and nut departments are working on a partial basis. The blast furnace of the Upson Nut Co. is in operation, as are three out of five open-hearth furnaces. Officers of this company report enough men have returned to operate the finishing mills, but these departments have not been opened because of repairs now being made.

Two of the four blast furnaces of the McKinney Steel Co. are running. Two of four batteries of by-product coke ovens are operating, while eight of 14 open-hearth furnaces are operating and two others have been lighted. The blooming mill is rolling. This company has about 30 days' or more supply of coal on hand.

The Otis Steel Co. reports its Riverside plant operating on a 100 per cent basis, while more men are reporting daily at its Riverside plant. One furnace of the Cleveland Furnace Co. is in blast. Conditions have remained about the same during the week at the plants of the American Steel & Wire Co., subsidiary of the Steel corporation, though one of the central group of furnaces is going.

The return of men to work in large numbers on Monday at the plants of the Berger Mfg. Co. and the United Alloy Steel Corp., at Canton, O., is reported. In that city the Stark Rolling Mill is reported operating 16 of its 28 mills. Conditions at Massillon, O., also has materially improved.

Chicago Cokemakers Have Large Coal Supplies

CHICAGO, Nov. 3.—Production of by-product coke by steel plants and by companies manufacturing coke for the market is not expected to be affected disastrously in the Chicago district by the present coal strike, as a surplus stock of coal is always accumulated during the summer. The accumulation at present is somewhat larger than usual. The Inland Steel Co. and the By-products Coke Corp. ship the major portion of their supply by water during the summer, supplementing this stock by rail shipments during the winter. The Illinois Steel Co. receives its coal principally by rail, but uses Pocahontas, the field in which this is produced not being affected by the strike.

To all intents and purposes the steel strike is ended in the Chicago district.

Relight 54 Stacks In October

More Than Half of Furnaces Blown Out In September Have Resumed—Iron Production Drops But Large Gains Have Been Made in Past Few Weeks

ALTHOUGH the output of coke and anthracite pig iron in October was less than that produced in September, present conditions in the industry reveal that by the end of the present month production will be on a normal basis. Since the steel strike did not occur until late in September, production for that month was not seriously affected, so that it remained for October to show the greater part of the loss. At the same time, most of the improvement and recuperation took place during the latter part of that month and this gain will not be noticed until the November records are compiled.

MONTHLY PRODUCTION

	1919	1918	1917
January	3,306,279	2,403,227	3,159,839
February	2,947,555	2,318,242	2,649,935
March	3,088,023	3,209,996	3,255,813
April	2,474,374	3,273,355	3,328,061
May	2,107,729	3,451,884	3,413,677
June	2,114,028	3,316,148	3,260,234
Total 1st half.	16,037,988	17,972,852	19,067,559
July	2,424,212	3,408,584	3,337,442
August	2,742,081	3,378,479	3,238,970
September	2,480,790	3,413,223	3,140,742
October	1,978,218	3,482,392	3,296,286
Total 10 months	25,499,131	31,655,530	32,080,999
November	.....	3,347,844	3,198,597
December	.....	3,434,114	2,885,380
Total 2d half..	.....	20,464,636	19,097,417
Grand total..	25,499,131	38,437,488	38,164,976

Total production in October was 1,978,218 tons, a decrease of 502,572 tons from the September figure of 2,480,790 tons. On a daily basis, this total represents an output of 63,813 tons per day, an average 18,879 tons less than that of the previous month when the average was 82,692 tons. With this figure for daily production, October sets the lowest record since February, 1915, when the average was 59,521 tons. The loss in output over September represents a drop of 22.8 per cent compared to the fall of 6.5 per cent of September over August.

Nonmerchant or steel works stacks produced 1,393,283 tons compared to 1,891,418 tons during the previous month. This is a loss of 498,135 tons. These figures represent an average daily production of 44,944 tons for October and of 63,047 tons for September, the loss being 18,103 tons or 28.8 per cent. Merchant iron production totaled 564,697 tons compared to 567,608 tons in September, a decrease of 2911 tons. In average daily production these figures represented 18,216 tons for October and 18,920 tons for the preceding month. The loss, therefore, was only 704 tons or 3.72 per cent. September's merchant iron production was a decided improvement over that of August and the October output is well above the August figure. It is of significance to note that throughout the entire country, merchant furnaces, which were in blast during both September and October, showed increased production during the latter month.

Active stacks on Oct. 31, numbered 217 compared to 163 on the last day of September. This is a gain of 54 stacks. In other words, 54 or over half of the 103 stacks blown out on account of the strike in September, were relighted within a month. Of the 54 stacks placed in blast, 41 were steel works stacks. Sixteen merchant stacks were blown in and three blown out making a net gain of 13 stacks.

AVERAGE DAILY PRODUCTION

	1919	1918	1917	1916	1915
Jan.	106,654	77,523	101,930	102,319	51,323
Feb.	105,270	82,794	94,641	106,157	59,521
March	99,614	103,548	105,026	107,343	66,009
April	82,479	109,112	110,936	107,517	70,484
May	67,991	111,351	110,119	108,535	72,747
June	70,467	110,538	108,675	107,127	78,998
July	78,200	109,954	107,659	103,907	82,687
Aug.	88,453	108,983	104,483	103,156	89,510
Sept.	82,692	113,774	104,691	106,935	94,478
Oct.	63,813	112,335	106,332	113,167	100,656
Nov.	.....	111,595	106,620	110,593	101,174
Dec.	.....	110,602	93,077	102,715	103,278
Av.	84,301	105,293	104,562	106,610	81,022

No steel works stacks were blown out during October.

Spiegeleisen production increased from 155 tons in September to 5074 tons in October, a gain of 4919 tons. The output of ferro also increased, the October figure of 15,164 tons being an increase of 14,594 tons over the September figure of 570 tons.

Will Build Sheet Mill

While options on three different sites are held by the Superior Steel Co., Canton, O., for its new sheet mill, it is believed that the Canton site will have the preference. This company has been organized with a capital stock of $2,000,000 and is headed by Henry A. Roemer, former assistant general manager of the Canton Sheet Steel Co. Other incorporators include D. A. Williams, until a week ago general superintendent of the Canton Sheet Steel Co.; P. L. Howenstine, production manager, and Thomas H. Heacock, master mechanic of the same company.

The new plant will be electrically driven throughout and will embody the most improved equipment. It will include cold-rolling, annealing and galvanizing departments. When complete, its eight mills will have an output of 50,000 tons of sheet steel annually. While the company will do a general steel business, its chief products, initially, will be black and galvanized sheets.

OCTOBER PIG IRON

States	No. of Stacks	No. in blast last day of month: Oct.	Sept.	Total tonnage made: Merchant	Nonmerchant	Totals: Oct.	Sept.
Pennsylvania	160	98	81	193,497	766,144	959,641	986,688
Ohio	79	33	19	73,867	182,786	256,653	558,667
Alabama	45	25	27	132,591	76,202	208,793	195,252
Virginia	19	6	6	21,572	.....	21,572	20,652
New York	28	13	7	58,641	37,371	96,012	149,264
New Jersey	5	1	1	5,340	.....	5,340	4,893
Illinois	25	11	4	2,501	85,289	87,790	203,032
Colorado	6	0	0				
Indiana	16	12	4	24,777	221,676	246,453	246,453
Maryland	4	3	2				
Wisconsin	6	3	2				
Kentucky	7	3	3				
Tennessee	16	5	3	34,688	8,075	42,763	59,162
West Virginia	5	1	1				
Washington	1	0	0				
Georgia	2	0	0				
Texas	1	0	0				
Minnesota	3	2	2	17,223	15,740	32,963	32,963
Michigan	3	1	1				
Missouri	1	0	0				
Spiegel—All states	..	..	..	.....	.....	5,074	4,656
Ferro—All states	..	..	..	.....	.....	15,164	17,108
Totals	132	217	163	564,697	1,393,283	1,978,218	2,480,790

Build Foundry for Motor Industry

In New Saginaw Plant a Systematic Arrangement of Equipment and Study of Factors Entering into Production Have Been Made to Obtain Large Tonnage of Duplicate Parts

IN A comparatively short time, motors and motor cars have become the principal product of Michigan industries. Immense plants have been erected in various parts of the state and in spite of their large output they cannot keep pace with the demand. Large foundries are operated in connection with nearly all of these plants.

One of the finest and most modern of these foundries has been built recently in Saginaw, Mich., at a cost of $3,000,000 for the Saginaw Products Co., a subsidiary of the General Motors Corp. The foundry was designed by Frank D. Chase, Inc., industrial engineers, Chicago, and built under their supervision. The property set aside for foundry use comprises 65 acres and the foundry which has been erected covers about one-third of that area. It is the intention of the company to eventually erect two similar units adjacent to the first and thus utilize the entire property.

The group of buildings, which forms a complete unit, consists of a foundry building, 165 x 490 feet; a coreroom, 101 x 390 feet; a cupola room, 60 x 80 feet; two cleaning rooms, one 40 x 165 feet, and the other 110 x 281 feet; an L-shaped boiler house, 87 x 93 feet; a pattern shop, 100 x 158 feet; and, a building, 80 x 280 feet, containing locker and bath rooms, a cafeteria and foundry office.

Steam Condensation Avoided

The buildings are of steel-frame construction, the walls of brick and concrete and the roof of gypsum tile. The latter is porous and eliminates all danger of steam condensing and dropping back to the floor in the shape of drops of water. An A-frame construction on the roof of the coreroom and also the cleaning room, and a modified Pond truss on the roof of the foundry together with an almost continuous window sash in the walls, insures an adequate supply of light on all the floors thus affording better working conditions.

The cupola installation and facing-sand mixing machinery occupy one end of the foundry building and the preliminary cleaning room the other, leaving an available foundry floor, 164 x 380 feet. This in turn is divided into four bays each 41 feet wide. A center aisle, 23 feet wide, extends an equal distance on each side of the center row of columns. The aisle serves as a roadway for the electric trucks which carry the cores to the molding floors and also as a dumping place for the castings before they are hauled away to the cleaning room. A pouring gangway, 9 feet wide, runs under the monorail which is mounted on the two outside rows of columns; while an aisle or gangway 17 feet 7 inches wide extends along each side next to the wall. The four molding floors are each 24 feet

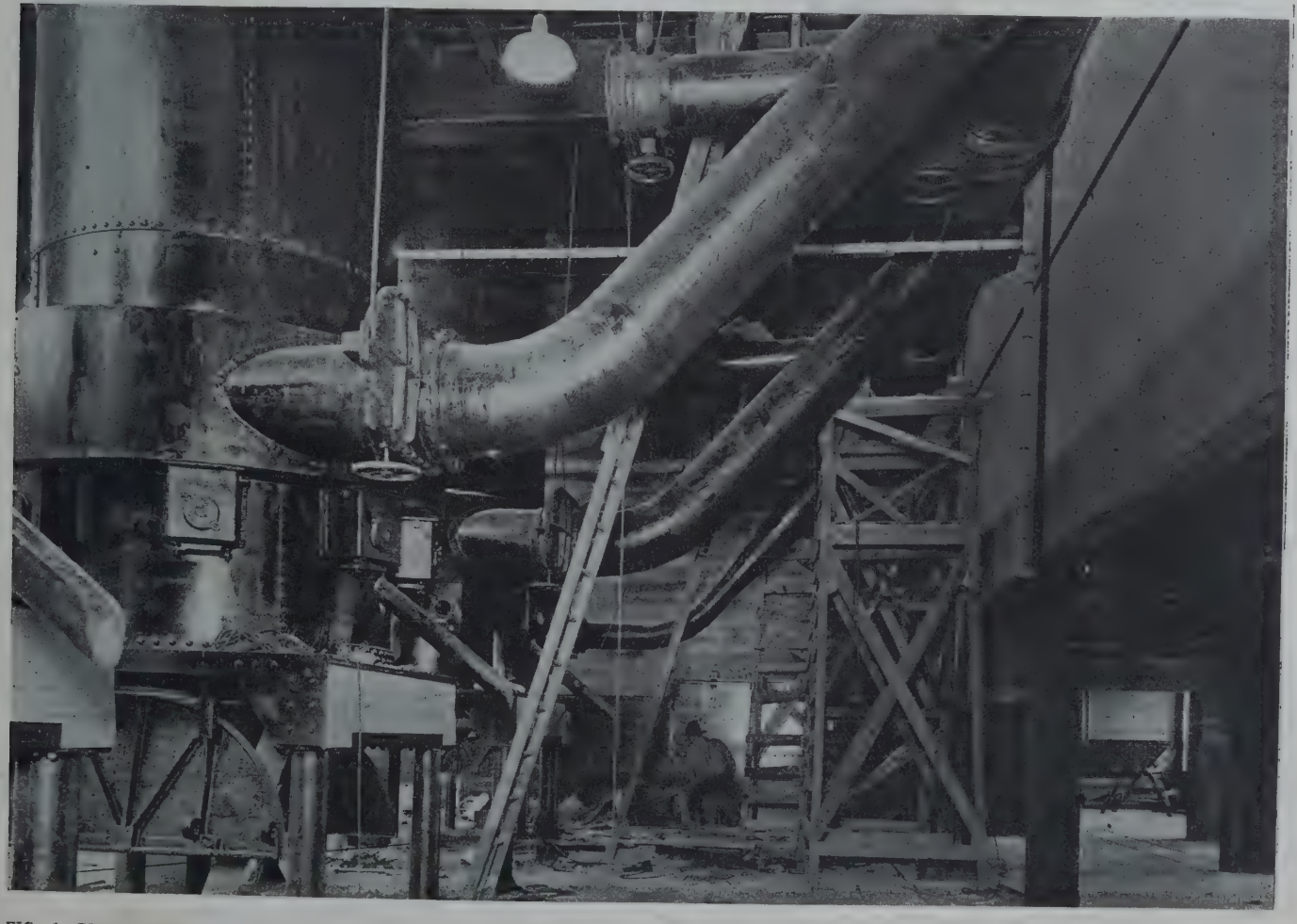


FIG. 1—BLAST GATES ARE PROVIDED IN THE HEADER BETWEEN EACH FURNACE AND ALSO NEAR THE JUNCTION OF EACH PIPE WITH THE WINDBOX

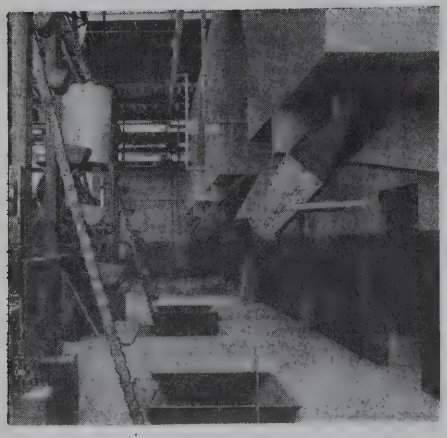


FIG. 2—HOPPERS AND CORE-SAND MIXING MACHINERY

wide and extend the full length of the interior of the building. These floors supply considerable room for mold makeup.

A 4-inch pipe line in the center and extending the full length of each floor has 2-inch connections at 8-foot intervals. Air, water and electric current connections are available at every other column. Two 3-ton cranes built by the Pawling & Harnischfeger Co., Milwaukee, and several 1-ton air hoists made by the W. W. Sly Mfg. Co., Cleveland, comprise the lifting equipment. The floors are laid with wooden blocks and the gangways paved with concrete.

When the foundry is placed in operation it is expected to furnish employment for 900 men and to produce 200 tons of cleaned castings daily. The melting equipment includes three 65-inch and one 40-inch cupolas built by the Whiting Foundry Equipment Co., Harvey, Ill., the blast for which is supplied by three positive-pressure blowers. The latter were built by P. H. & M. F. Roots Co., Connersville, Ind. Each blower is driven by an individual, 75-horsepower motor manufactured by the General Electric Co., Schenectady, N. Y. The three blowers discharge into a 36-inch header. The blast from the latter passes into the large cupolas through 26-inch pipes and into the small one through a 10-inch pipe.

Blast gates operated by a rack and pinion are situated between each furnace on the header and also on each pipe near its junction with the windbox. A 10-ton Pawling & Harnischfeger crane which has a 70-foot span and is equipped with a 62-inch magnet, lifts the iron from the yard to the charging floor. The gates, sprues and shop scrap are loaded in boxes and hoisted by means of an elevator to an upper charging floor, 12 feet above the first one.



FIG. 4—CORE OVENS WITH FAN FOR INDUCED DRAFT

Coke is stored in a room having a capacity of 1000 tons. This room is adjacent to and on a level with the main charging floor.

The machinery for mixing the facing sand is situated between the cupola room and the three storage bins each of which is 22 x 40 feet. It consists of two specially-designed revolving screens, two pan mixers, built by the National Engineering Co., Chicago, and two centrifugal sand mixers made by William Sellers & Co., Philadelphia.

The foundry is separated from the

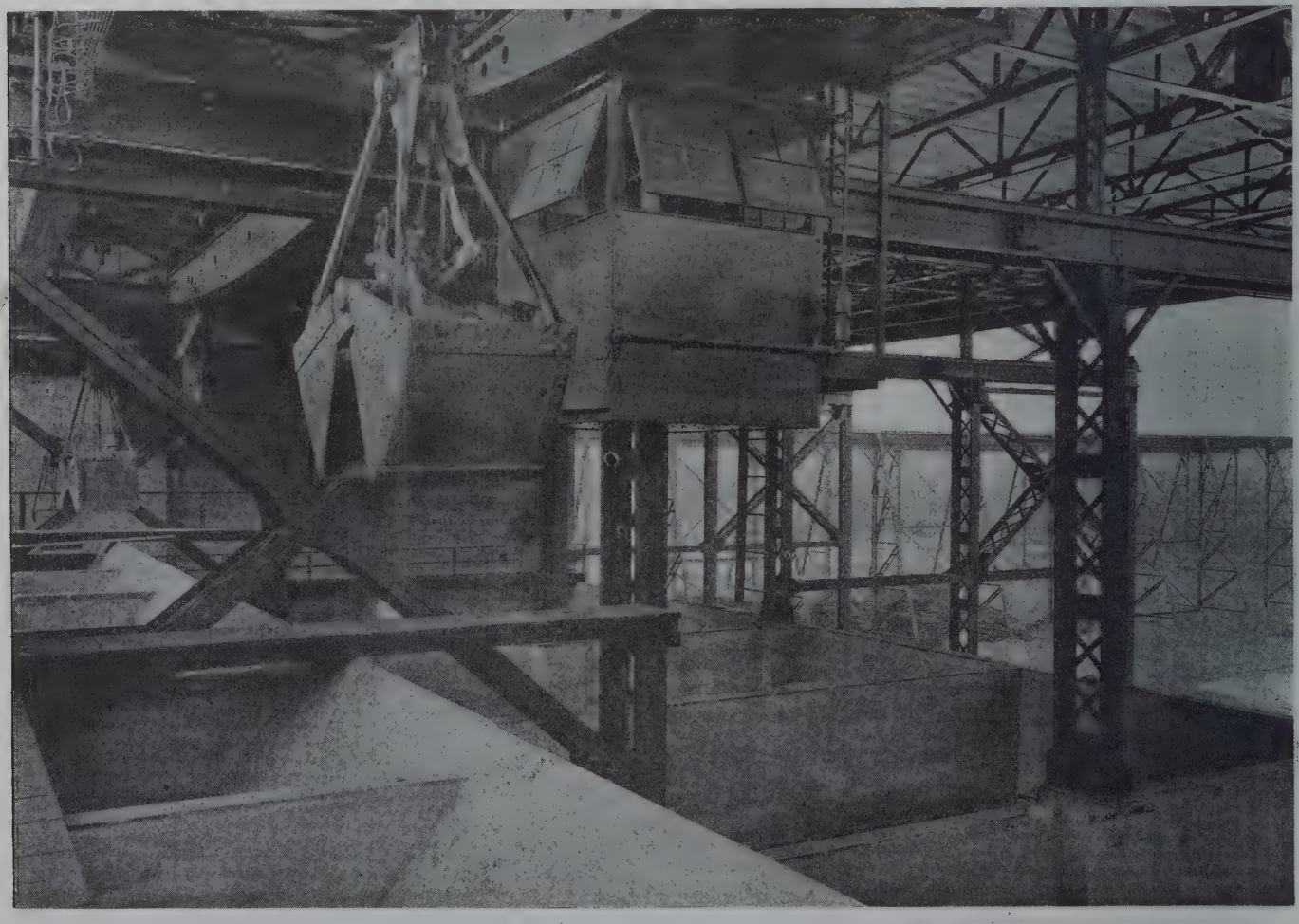


FIG. 3—CORE-SAND BINS WITH A COMBINED CAPACITY OF 8000 TONS. SAND IS HANDLED BY CRANE AND GRAB BUCKET

coreroom by a court, 40 feet wide, which facilitates the lighting of these buildings Core sand is stored in four bins located at the same end of the building as the molding-sand is kept. The bins have a combined capacity of 8000 tons. The sand is transferred from the cars by three 3-ton cranes. From the bins the core sand is removed by means of grab buckets and dropped into hoppers which lead to mixing machines in the coreroom. Two 27-foot mixers, which were built by the Standard Sand & Machine Co., Cleveland, and one manufactured by the National Engineering Co., Chicago, are used in preparing the core sand.

The 32 core ovens, each 6½ x 7 x 12 feet, were built by Holcroft & Co., Detroit. They are arranged in batteries of 16 and are built back to back in rows of eight to a side. The firing room is in the basement, both forced and induced draft being used to expedite the heating of the ovens. Provision has been made for doubling the number of ovens if necessary.

Two cleaning rooms have been provided. The first is intended for cylinders and other cored castings, and, is equipped with two sandblast units built by the Pangborn Corp., Hagerstown, Md. Four hopper-shaped openings in the floor lead to a moving belt which carries all the waste and burned sand outside the building. Here the sand is deposited in cars which in turn carry it to the dump. The second cleaning room contains 36 tumbling mills, built by the W. W. Sly Mfg. Co., Cleveland; one sandblast unit built by the Pangborn Corp., Hagerstown, Md., and, a surface grinder and 12 double-wheel grinders built by the Norton Co., Worcester, Mass. Individual dust pipes lead from each machine to mains, 42 and 36 inches in diameter respectively; the mains in turn, terminate in one twin and two-single dust arresters, each 40 feet long. Suction is supplied by two double exhausters, each driven by an individual 100-horsepower motor. A counting and a platform scale are used to record the weight of the castings on their way to the shipping platform on the west side of the cleaning room.

Electric current, which is supplied by outside interests, enters the plant at 2200 volts, 3-phase 60-cycle and is stepped down in two sets of transformers.



FIG. 5—CRANE RUNWAY AND STOCK YARD. THE CRANE HAS A SPAN OF 70 FEET AND OPERATES ON A TRACK 300 FEET LONG

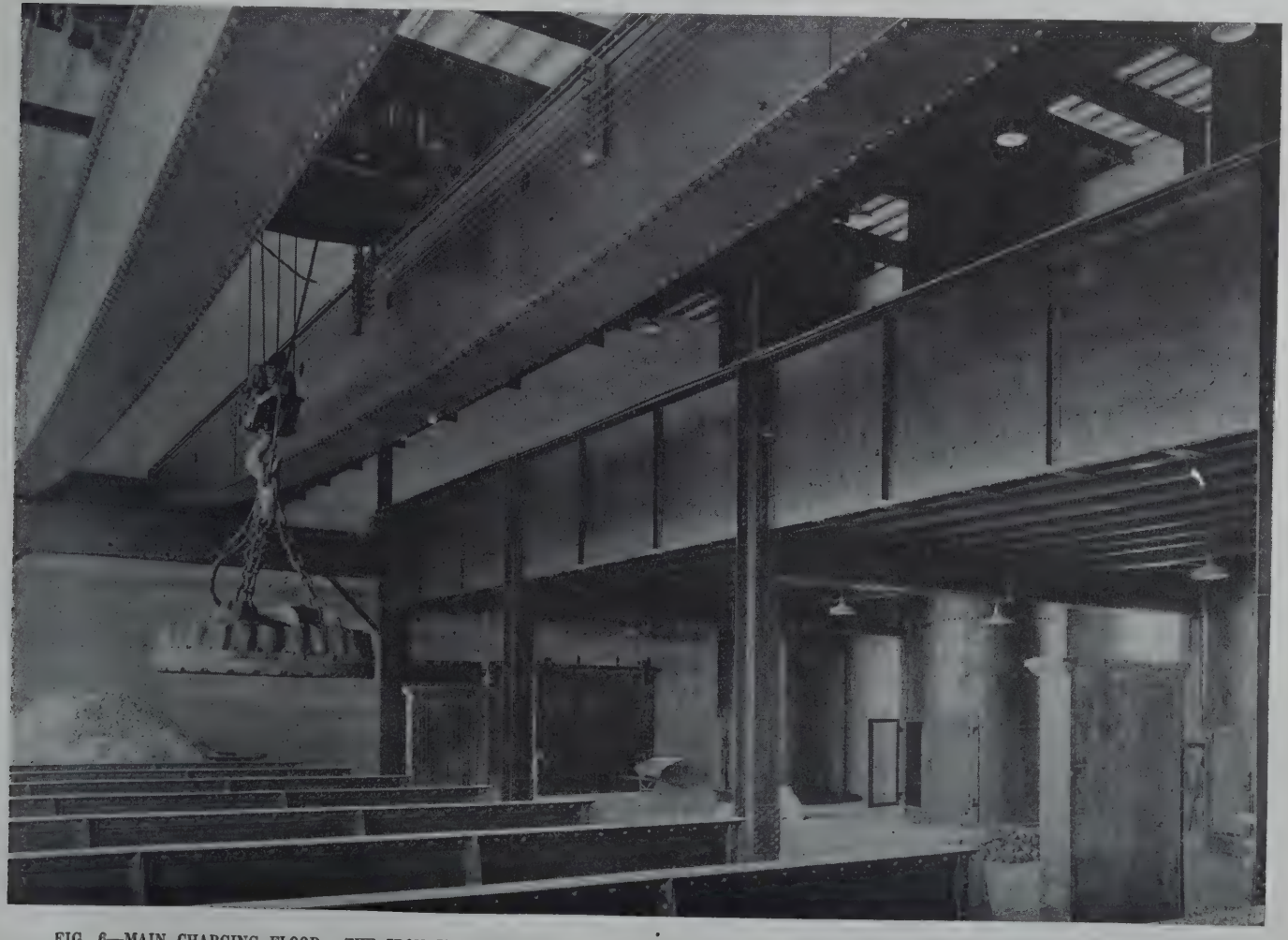


FIG. 6—MAIN CHARGING FLOOR. THE IRON IS LIFTED FROM THE STOCK YARD BY MEANS OF A MAGNET SUSPENDED FROM THE CRANE

Measuring Furnace Temperature

Solution of Pyrometer Problems Depends Upon Co-operation of Steelmaker, Scientific Man in Research Laboratory and the Instrument Maker — Intensity of Radiation is Governed by Many Factors

BY GEORGE K. BURGESS

THAT every steelmaker is convinced of the importance of adequately defining quantitatively the role of temperature in the various stages of steel manufacture is readily conceded. However, is it not also true that no steel manufacturer can state for liquid steel, other than in vague terms if at all, the relation of temperature at each stage of the process of melting, refining and casting, to any of the other factors influencing his product?

It was reserved to an American, E. F. Morse, to invent in 1902, the most convenient type of pyrometer for use in measuring the temperatures of liquid steel and other incandescent and inaccessible objects. This pyrometer has since been simplified and improved by others. The steel industry itself furnished the basis for this invention, which was an improvement of a method invented by Messrs. Taylor and White for use in controlling the temperature of certain hardening baths at the plant of the Bethlehem Steel Co.

Need Steelmaker, Scientist and Instrument Maker

In the portable form with tripod, or in that in which no tripod is required, the brightness of a small incandescent lamp at the focus of a telescope is matched in brightness against the incandescent background of the liquid steel or other hot object. The electric current taken by the lamp gives a measure of its temperature and thus also of the steel if certain very important conditions are also fulfilled. For the solution of problems of this kind, there is generally required the co-operation of the steelmaker, who best knows his problem; the scientific man in the research laboratory, who can bring the application of abstract principles and methods of measurement to bear on the problem; and the instrument maker who can put in concrete and sufficiently robust form the ideas of the scientific man that best meet the needs of practice.

As illustration of the role played by the research laboratory in this problem of temperatures of liquid steel, let us take the determination of the corrections to be applied to the optical pyrometer readings to give true readings. The need of such correction arises from the well known fact that the intensity of total and also of monochromatic radiation of any substance, not enclosed within a furnace uniformly heated, depends not alone upon its temperature but also upon the nature and character of the radiating surface. It then becomes necessary in the case of liquid iron, steel, oxides, and slags, to find their emissivity or specific radiation for the colored light used with the pyrometer. This can best be done in the research laboratory and not in the steel plant. This fact needs emphasizing as it has sometimes been said, the research laboratory of a steel plant should be the steel plant itself.

We spent considerable time in various steel plants trying to determine the radiation characteristics of liquid steel but with unsatisfactory results. The actual determinations were made in the laboratory with an instrument we have devised which is identical in principle with the optical pyrometer above mentioned except that it was a microscope instead of a telescope, and the masses of steel operated upon, instead of being 50 ton heats, were of the order of a few thousandths of a milligram. With the micropyrometer, as we call it, we were able to show that the emissivity of pure iron is 0.37 with light of wave length, $\lambda=0.65\ \mu$. In other words for red light used with the pyrometer, a free surface of iron radiates only 37 per cent of the same light from a furnace at the same temperature as the iron. Furthermore, this quantity ($e=0.37$), remains constant over the whole temperature range of steel manufacture and is not altered by the presence of any of the elements which may be present in steel and iron, and is also nearly identical with the emissivity of nickel and even, as very recent measurements show, of monel metal and other alloys of iron or nickel so long as they show no change in color caused by alloying. Similar measurements were made for iron oxides in liquid and solid states and of slags. It was then a simple matter to construct correction tables for the pyrometer when sighted on any of the substances. In steel manufacturing practice it was found advisable to adopt the value of 0.40 rather than 0.37 for iron and steel and the correction tables are based on the $e=0.40$ for $\lambda=0.65\ \mu$, for reasons explained in the United States bureau of standards *Technologic Paper* 91, published 1917.

The question of measuring accurately, most conveniently, and practically instantaneously, or to better than 5 degrees at 1500 degrees Cent. in intervals of 5 to 10 seconds, the temperature of running streams of liquid steel, as in tapping a furnace or teeming ingots, may be said to have been solved some time ago by the use of the optical pyrometer of the modified Morse type, to the readings of which corrections are to be applied based on $e=0.40$ for $\lambda=0.65\mu$ when sighting on iron or steel, with similar corrections for liquid iron oxide ($e=0.53$) and slags ($e=0.65$ or thereabouts depending somewhat on the nature of the slag). This does not mean that other pyrometers cannot be used successfully for this purpose, for they have been, including other types of optical pyrometer and various total radiation instruments.

It has been demonstrated also that the arch or dome of an open-hearth furnace may be watched and its temperature controlled by the same pyrometer, although here no corrections appear to be necessary to the observed temperatures.

Similarly, the temperature of the surface of the slag in an electric or open-hearth furnace may be observed through peep holes with doors shut if care is taken to avoid flames and smoke; and the progress of the heat as related to slag temperatures may be followed with considerable accuracy at least for open hearth furnaces.

Temperatures of Metal Bath

The most difficult and most important problem is to determine, for any instant of time and condition of bath, the temperature of the metal bath itself. There is, perhaps, some comfort in appreciating that, in general, this difficulty is offset in part by the fact of non-uniformity of temperature within the metal unless the bath is well and frequently stirred. These differences within the bath, as have been shown from a series of observations of tapping temperatures, may reach under certain methods of operating, 200 degrees Fahr. or more and are evidently within the control of the melter.

Considering the apparently crude

From a paper presented at the sixteenth general meeting of the American Iron and Steel Institute, New York, Oct. 24. The author, George K. Burgess, is chief of division of metallurgy, United States bureau of standards, Washington, D. C.

methods in use, it is a source of wonder to anyone who has had occasion to check the temperatures of steel, as cast, to note the marvelous uniformity attained from one heat to another by the furnace men. For example, the method of timing the appearance of crust in the chill test as often used appears to have no necessary relation to the bath temperature; nevertheless, this remarkable uniformity in casting temperatures extends over the whole steel industry in this country.

The question of following electric furnace temperatures is complicated by the presence of the electrodes but the practice of changing slags gives opportunity for intermittent temperature observations of a satisfactory nature by various methods as shown by Mr. Bash in a paper presented at the recent meeting of the American Institute of Mining and Metallurgical Engineers, Chicago. The technique of electric furnace temperatures, however, needs considerable additional study. From a comparison of casting temperatures of several electric and open-hearth furnaces in normal operations Mr. Bash concludes that electric furnaces are not tapped at higher temperatures than are open-hearth furnaces, as is often held.

It would appear that, heretofore, most of the determinations of furnace temperatures have been made by representatives of the research laboratory or instrument maker, and nearly all the published observations were so taken, although there is undoubtedly in existence considerable data and experience accumulated by steelmakers themselves. It is evident that discontinuous observations taken somewhat casually by outside parties, although they may serve excellently for demonstration purposes, can nevertheless by no means replace the continuously carried out observations made by representatives of the steelmaker himself over long periods of time and under the incessantly changing conditions of practice. In this way alone can the problems of temperature conditions, control and interpretation be solved in the interest of steelmakers.

Producing Multiple Ingots for Tires

BY GUILLIAEM AERTSEN

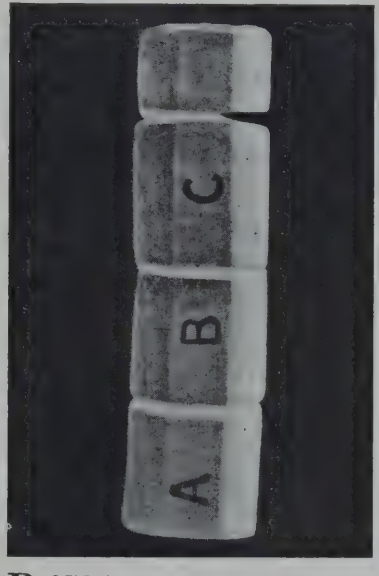
INDIVIDUAL ingots were used for tires by the first tire maker in this country in 1867 and the practice was almost universal for about 30 years thereafter, the principal exception being that of a tire maker who did not make his own steel, but bought long ingots from steelmakers, cut them into blocks at a steam hammer and afterwards proceeded as described by Mr. Fry.

Until about the year 1900 the majority of tires made in this country were made from individual ingots, and these ingots were cast in a great variety of molds. Many types were used, including top cast, bottom cast, open top, closed top, with and without head boxes, sink heads, etc., in a constant effort to improve quality and avoid the difficulties and dangers which beset attempts to cast a large number of small ingots of exact weights from the same open-hearth heat.

The adoption of multiple ingots was postponed because of the expense for equipment and of the extra cost of manufacture. It was the concensus of opinion among tire makers that the cheaper individual ingot was probably good enough. Little, if any, trouble was ever traceable to pipe, either eliminated by the punching or concentrated near the bore of the tire where it was never exposed by wear, but it was never contended that the multiple ingot, from which the piped and defective top was fully cropped and discarded, was not better.

Thus the use of individual ingots remained standard practice until about the year 1896, when bottom poured multiple ingots began to be adopted and are still used with hot tops or refractory head boxes, in which it is common practice to cover the top of the freshly poured metal with material similar to what Mr. Fry describes as pipe eliminator.

Multiple Tire Ingot



BOTTOM-POURED, flat sided octagon ingot which has been sliced hot in blocks A, B and C, each of which will make one tire. The unlettered section is the discard necessary to do away with piping and segregation.—From paper presented by LAWFORD H. FRY.

Mr. Fry shows a variation in analyses at different points of the same ingot which would not be expected nor accepted in blocks cut from a multiple ingot. In both, the punching removes a small problematical part of the center of the ingot where pipe and segregation may be expected. This punched-out piece, about 6 to 10 inches in diameter by 1 or 2 inches thick, is not produced until the ingot or block has been upset and its diameter increased about 50 per cent. With this exception, in the individual ingot all the pipe and top surface defects remain in the resultant bloom and tire. There they are, regardless of whether or not they are harmful. In the multiple ingot, the pipe and top surface defects are discarded at the beginning.

Mr. Fry refers incidentally to the use of multiple ingots of large cross section, approximately 4 square feet, rolled to from 12 to 14 inches in diameter, then sliced into slugs or blocks, upset and punched. These have been used for rolled wheels, but not, so far as the writer knows, for tires. It would be of interest to know the effect of this method upon the physical properties of tires, remembering that in a tire the strain is transverse to the longitudinal axis of the ingot and of the bar or billet rolled therefrom.

The open-hearth pit organization responsible for the operation which Mr. Fry describes cannot be too highly complimented. Its accomplishment is to be appreciated only by those who have struggled with similar problems. To regularly and successfully get from 80 to 100 "shut-offs" from each of two nozzles in the same ladle, one keeping step with the other, is a feat.

The blast furnace of the Cranberry Furnace Co., Johnson City, Tenn., which has been out of blast for repairs, now is ready to operate, and is expected to go in blast probably by the middle of this month.

A discussion of the paper entitled, "Manufacture of Ingots for Locomotive Tires and Rolled Wheels," by Lawford H. Fry, presented at the sixteenth general meeting of the American Iron and Steel institute, New York, Oct. 24. The author, Guilliaem Aertsen, is assistant to vice president, Midvale Steel & Ordnance Co., Philadelphia.

What is Future of Open-Hearth?

Opportunity for Development of Furnace and Steelmaking Processes Exists in Design and Construction of Equipment and in Every Phase of Operation — Present Methods Should be Compared

BY HENRY M. HOWE

IN SPITE of the rapid strides made in the development of the open-hearth furnace and steelmaking processes, there are numerous opportunities for further improvements. In many cases, where existing practice is known to be faulty, the conditions affecting it should be studied with a view of correcting the defects. In other instances, particularly where doubt exists as to which of two or more methods is most satisfactory, extensive research should be inaugurated to determine what plan should be followed.

Taking up the furnace construction, we may ask our mechanical engineers whether they cannot design the tilting furnace so as to reduce the cost of its upkeep till it no longer is a serious consideration in deciding between the tilting and the stationary furnace. And we should discuss the real saving in time and the other advantages of tilting and the conditions under which it is most useful.

The efficiency of the open-hearth furnace depends in large part on that of the regenerators regarded as heat filters. The present ones seem very crude, having for instance, about the same construction in their upper as in their lower parts, though the heat conditions differ so enormously from top to bottom. We may well ask whether the passages should not be larger above, where the gases are so greatly expanded, than below. Further, whether the bricks themselves may not be improved. They catch and emit the heat at their surfaces only, but store it in their interiors. Hence, their surfaces should be extensive and their material should transmit heat readily from surface to interior and back. This transfer calls for a dense, and perhaps even a semi-glazed state. A hard brick of great conductivity, even if too fusible for the upper part of the checkers, might well be used in the lower part. Again, the extent of surface might be increased by making the bricks very thin and by ribbing their sides with vertical ribs that would not catch the dust.

The efficiency of the furnace depends further on the accurate retention of the shape of certain parts, for instance, the ports and valves. It may be well to inquire carefully in what parts of the furnace the advantage of accurate retention of shape by means of water cooling outweighs the loss of heat involved. For moving the incoming and escaping gases, how does the profit from using fans compare with the cost of their installation and operation? Their use thus far is promising. I introduced them for both purposes in 1874.

We may ask what the useful limit of size of the furnace itself is, the limit where the disadvantages of irregularity of temperature and composition and of excessively great units for soaking and rolling outweigh the advantage of saving of fuel, labor, and installation per unit of product. This limiting size will be greater for quantity than for quality practice.

How should the pitch of the ports be related to the length of the furnace, to the kind of fuel, and to the stock? Flatter ports might be needed for charges rich in scrap, which have to be protected from oxidation during melting, than for molten pig iron which has to be oxidized vigorously.

How deep should the bath be at its deepest point so that it may work as fast as is consistent with thorough control, and that the economy of large charges may be gained?

Turning now to the open-hearth process itself, we find many matters pressing for attention. Perhaps the greatest need is to impress on operators the extreme importance of controlling the composition of the slag, and especially of lowering its iron oxide. Precise maxima of iron oxide premissable for various processes and grades of steel should be established, and should be incorporated in all important contracts, quite as rigorously as the permissable sulphur and phosphorus contents of the steel itself.

The methods of lessening the quantity and harmfulness of inclusions need great improvement. Two essentials seem to be: First, ample time for the inclusions to rise by gravity in furnace, ladle, and perhaps mold; and second, fusibility of the oxides formed by the final deoxidizing additions, so that they may readily coalesce into particles large enough to rise rapidly. As a step toward this last we should determine systematically the melting points of the combinations of oxides which it is practicable to form with these additions.

The quiet which results from thorough deoxidation of metal and slag may be held to have two simultaneous but opposite effects. It facilitates the rising of inclusions of given size, but it does not favor the coalescence of particles into masses large enough to rise fast, as rapid movement does. Witness churning for butter.

How far is the objection to the use of ore justified? We object reasonable to the use of rusty scrap because of the irregularity in the quantity of oxygen which this causes. In treating charges containing any considerable quantity of pig, much oxidation has to be done. Some very competent men would have this done wholly by the furnace gases and object to the use of ore, apparently on the ground that the resulting local over-oxidation is not readily overcome. They would have the oxidation superficial, brought about by the slag rather than by iron ore submerged in the bath itself. The evidence should be examined with care. We should not be led away by unsupported theories, however plausible. Certainly the excellence of the acid open-hearth steel made with moderate use of ore

New Technical Series

A FEW years ago a general paper on the blast furnace was presented at a meeting of the American Iron and Steel institute. It was followed by many papers each dealing with some specific phase of blast furnace practice or construction. According to Dr. Howe, these collectively form the most comprehensive and probably the most valuable treatise ever written on this subject.

The institute proposes a similar treatment of the open-hearth furnace and steelmaking processes. With the aid of Messrs. Walker and Gray, Dr. Howe has outlined the probable course of development in the accompanying article, which is from the paper presented at the sixteenth general meeting of the institute, New York, Oct. 24. The first paper of the open-hearth series, by Lawford H. Fry, appeared in last week's issue of THE IRON TRADE REVIEW.

sets up something of a prima facie case for oring.

Should residual manganese be insisted on in making fine steel, and in general that on which human life depends? The demand for it rests on the belief that oxidation by means of manganese, acting as a carrier of oxygen, is beneficial in that it does not lead even to the temporary formation of iron oxide within the metal. This should be tested more thoroughly. If true, then the benefit of this treatment should cause some special merit in the product in the way of a specially high combination, for instance of elastic limit and ductility or shock resistance, and the specifications might be amended so as to reject steels which lack it. I refer, of course, to steels for important purposes, failure in which would endanger life.

The relative merits of the basic and acid open-hearth processes should be established more firmly. The comparison should be made between the two as practiced under truly comparable conditions, for instance with nearly equal strength of deoxidizing conditions, and not between basic with 80 per cent of pig iron and acid with only 25 per cent.

The advantages of the dominant pool of the Talbot process should be evaluated, so that they may be weighed against the disadvantage of having to make the steel in the ladle. Do we really gain enough time by leaving part of the charge in the furnace to overcome the objection to ladle steelmaking, with its irregularity of composition?

Is Low Casting Temperature Preferable?

We should satisfy ourselves that our American practice of using a low casting temperature for fine steel instead of the high temperature used in continental Europe is right, and ask searchingly whether its advantages of giving freedom from surface cracks and of restraining both axial segregation and the coarseness of the columnar crystallization really outweigh its disadvantage of giving less opportunity for the inclusions to escape in the ladle.

The relative advantages of limestone and lime should be weighed. Limestone is a cheaper material than ore for bringing on a boil, and with it we avoid introducing iron oxide into the molten metal as ore does, thus substituting superficial or slag oxidation for internal or submerged oxidation by the immersed ore. On the other hand, it is derided as using the costly heat of the open-hearth to do the work of the cheap heat of the lime-kiln. How does the extra cost of this heat compare with the alleged advantages?

Turning now to the compound processes, included the duplex, triplex, Bertrand Thiel and others, we may divide each into a roughing and a finishing phase. The chief reason for their existence is to separate the silica formed by the oxidation of the silicon of the pig iron from at least the last part of the dephosphorization and desulphurization. Hence they seem applicable primarily when an abundant pig iron needing dephosphorization or desulphurization is to be treated.

Among their additional advantages are: *First,* their power of concentrating the phosphoric acid in a relatively small quantity of slag, which may be useful as a fertilizer even when the stock contains relatively little phosphorus; *second,* their use for making alloy steels directly and relatively cheaply from molten open-hearth or conceivably bessemer metal; and *third,* their improving the quality of molten blown bessemer metal by treating it directly and cheaply in the open-hearth or electric furnace, thus getting part of the cheapness and rapidity of the bessemer process together with a quality at least approaching that of open-hearth steel.

These advantages are to be weighed against the inevitable serious loss of heat in transferring from one furnace to another, and the total loss of the initial manganese in the roughing phase, compelling us to replace it in the finishing phase if we are to have the benefit of residual manganese.

For the roughing phase the bessemer converter, both acid and basic, the basic open-hearth, and the basic lined mixer are applicable; for the finishing phase, the basic open-hearth and the basic electric furnace.

Here we should study the relative advantages of the three roughing furnaces. In using the bessemer process for roughing we usually blow about two-thirds of the pig iron very full and the remaining third, or "kicker," only half way, to the end that the carbon left in the kicker, about 1.75 per cent, may react vigorously on the iron oxide stored up in the full-blown metal, and bring on a boil. This full blowing wastes iron, time, and steam, so that the resulting oxide is extremely expensive. We should satisfy ourselves whether its convenience justifies its use in place of iron ore or scale. Beyond this costliness, we may ask whether here, as in bessemer practice in general, we do not sacrifice quality unduly to the convenience of having a clear signal for ending the blow, remembering how the Swedish bessemer steel caught on the way down compares in reputation with our full-blown product.

We should ask further how far the damage to quality due to bessemerizing is remedied in the finishing process, and how this finishing must be done to make this remedy effective. If this damage represents simply imperfect deoxidation of the iron and imperfect removal of inclusions, the general direction of the remedy seems clear. Of the two other roughing furnaces, the basic open-hearth seems to commend itself best when the pig iron contains relatively little silicon, and the mixed when it contains much, because of the greater trouble which silica gives in the open-hearth than in the mixer. We should seek a clearer definition of the conditions appropriate to each of these two furnaces, and should ask what advantages the open-hearth has over the mixed to compensate for its higher operating cost, due to its smaller scale of working and its more intricate construction.

Again we should ask how far it may be possible to reduce the disadvantage of the bessemer, its loss of iron, while retaining its advantage of rapidity and cheapness, and thus to invade with it the field now occupied by the basic open-hearth furnace and mixer as roughing tools.

To Study Iron Deposits

It is announced by the department of industry, commerce and labor of the Mexican government that especial attention is to be given to the development of the iron ore resources of the country. With this purpose in view Luis G. Espinosa, chief of the bureau of mines of that department has been directed to make a complete survey of the iron ore deposits, particularly of the west coast region, and to make recommendations as to the available localities for the establishment of iron and steel plants. It has long been known that one of the largest iron ore bodies so far discovered in Mexico is situated on the Pacific coast, not far from the port of Acapulco, in the state of Guerrero. It is stated that this mountain of iron towers to some height on the very verge of the Pacific ocean and that its ore could be easily mined and placed upon ships. Another large bed of iron ore is situated in the state of Jalisco and has been operated in a small way for many years. It is from the famous Iron Mountain, situated on the outskirts of the city of Durango, in the state of Durango, that the Monterey Iron and Steel Co. for several years past has been obtaining much of its ore supply for its plant at Monterey. The company owns also beds of iron ore in the states of Tamaulipas and Coahuila, situated near the Rio Grande. It is planned by the government authorities to encourage the development of the coal deposits of the country and the manufacture of coke, along with the building up of the iron and steel industry, it is stated.

Belgians Spurn German Offers

Cockerill Company Needs $13,000,000 Worth of Equipment, but Declares it Will Never Make Purchases from the Despoiler—Three Years Needed to Get Great Iron and Steel Plant into Normal Production

BY FRANCIS MILTOUN
French Correspondent of The Iron Trade Review

PERHAPS the most beautiful river valley of Europe is that of the Meuse as it courses down from its cradle in the mountains of the Vosges through the French and Belgian Ardennes. For its entire length through Belgium it also is one of the most industrial, work-a-day rivers of all the world, although navigable only for barges and canal boats coming from the waterways tributary thereto.

The crown gem of this diadem of riches is that district along the river 50 miles in either direction from Liege. Five great steel works with all their accessory industries shoot their great stacks into the air. It is comparable only to Pittsburgh, the Allegheny and Monongahela. Of all of these plants the largest and most famous is that of the Société John Cockerill, at Seraing, founded by a Scotchman, the son of an immigrant who in 1817 acquired from the king of Holland, then the possessor, the ancient chateau of the Prince-Bishops of Liege. The same edifice is today the administrative building, and the residence of the director-general, M. Leon Greiner, who controls the destinies of this great industrial enterprise, together with its branch plants and *comptoirs* throughout the world.

John Cockerill died in 1840, and a new company was formed under the control of M. Gustave Pastor, a nephew of the founder. Great developments have occurred since then, among them the establishment of a shipbuilding yard at Hoboken, on the Scheldt, above Antwerp, the purchase of a part of the Esperence coal mining property and of the mineral deposits at Somorrosto, and various other mining concessions in the neighboring grand duchy of Luxemburg and in the French department of Meurthe et Moselle. A new forge plant was established in 1885, and a modernized steel plant and an armament plant were built in 1906. More recently a tube mill was established at Sclessin, near Liege.

The area covered by the Seraing plant at the beginning of the war was over 370 acres, of which 105 were under cover. Seraing is a city of 40,000 inhabitants, a few miles below Liege, the metropolis of the region, on the banks of the Meuse.



LEON GREINER

THE director-general of the Societe John Cockerill, Seraing, Belgium, is a "working director," being described by THE IRON TRADE REVIEW'S *Paris correspondent as the most active force in the administrative and operating departments of the organization.*

"In the old palace of the prince-bishops of Liege are installed the offices of the great Cockerill establishment, one of the largest of the European steel plants," writes the correspondent. "In the old Episcopal palace, too, is installed the residence of the director general. He lives and works in the halls where once sat in royal robes of purple the prince-bishops, governors of the province, in the middle ages. He has an overseeing eye and hand on all the ramifications of this plant which is not only contiguous to the administration building, but spreads out afar, to the ship yards on tidewater and the ore fields across the French border."

The Cockerill plant was one of the first prizes of war coveted by the Germans as they marched on the forts of Liege in August, 1914. The plant was a dangerous rival of the great German industries in the valley of the Ruhr, and the Germans sought it especially to increase their resources in the event the war was prolonged. For this reason they came through quickly in this direction, and at awful cost. The object was to ruin as much Belgian competitive industry as possible, and to make use of its equipment and resources. They swept down upon the smiling, smoke-plumed valley of the Belgian Meuse and succeeded only too well in their work of devastation.

It is estimated by the directors of the Cockerill organization that the number of machines and various parts of equipment either destroyed or stolen was so large that it will be at least three years before a normal regime of labor and production will be possible.

The policy of the Cockerill company is to buy nothing from Germany that might be needed, notwithstanding attractive prices German manufacturers are already making, and the advantage of buying German machines at the present debased price of the German mark. The organization prefers to rebuild with its own resources, or by acquiring equipment elsewhere as it might be found, but it is declared that Germany will never have a cent of profit from the establishment. It might mean that the company will be handicapped for years, but it is prepared to accept these conditions rather than call upon Germany for anything, except the return of stolen machinery, identified by the Belgian reconstitution committee.

The plant at Seraing was bereft of everything which could be used in production after the German retreat. Today certain furnaces, less damaged than others, are being put into order. Generators and machines are being repaired for use until such time as the plant can be outfitted anew.

Cockerill workmen had tempting offers from Germany during the occupation to go across the border to German steel mills. Some of them did so, but

This is the third article of a series describing the iron and steel industry of Belgium and its reconstruction plans, written by THE IRON TRADE REVIEW'S Paris correspondent.



"COURAGE TO THE LAST," THE MOTTO ON THE COCKERILL COAT-OF-ARMS, FITTINGLY DESCRIBES THE SPIRIT OF THE GREAT BELGIAN IRON AND STEEL COMPANY IN RECUPERATING FROM THE BLOW DEALT ITS PLANT BY THE GERMANS. A NUMBER OF MACHINES STOLEN FROM THE COCKERILL PLANT HAVE BEEN IDENTIFIED AT THE GERMAN ARSENAL AT SPANDAU

by far the greater number disappeared in other ways during the war. The company now is only beginning to recruit an adequate staff for preliminary needs, which to a large extent consist of clearing away debris and rebuilding as much as possible on the old foundations. The value of equipment lacking is estimated at 65,000,000 francs ($13,000,000) based on valuation before the war. Today it would cost double, or triple in many instances to replace. One thousand machine tools of all sorts were dismounted and transported to Germany. All the portable parts of blast furnaces, converters and coke ovens were also removed. What the Germans did not take away they destroyed. Nothing remained of this vast and well-equipped plant but what was broken into bits. Rolling mills and their foundations were scrapped, gas generators were dismounted and parts taken away. The electric installations without exception were removed, and the considerable rolling stock, locomotives and freight cars went the same way, as did kilometers of laid rails, 65 gantry cranes and 40 turntables. For more than four years the immense halls and *hangars* were as silent as the tomb. At present there is a semblance of the former activity, and 2000 workmen are employed throughout the plant in laying down the lines of new production. The number is expected to be increased to 5000 by the end of the year. In the great German arsenal at Spandau, which turned out many of the famous "77" cannon, a number of the Cockerill machines have been identified and some have even been brought back and set up on their old emplacements. The first blast furnace was relighted in mid-summer and others are planned for productive service before the end of the year. A view of the Cockerill plant, "stripped bare to the bone," gives weight to the words of President Wilson, spoken on his voyage to Belgium, just before he sailed to America. He said:

"The tasks of Belgium are the tasks which are incumbent upon its people. They depend largely upon Belgium getting a priority in the acquisition of raw material and the plant necessary to again get into productiveness. Shipping is also a great question upon which depends the prosperity of the Belgium of the future. Ship masters can do no better than to steer their ships toward Belgian ports."

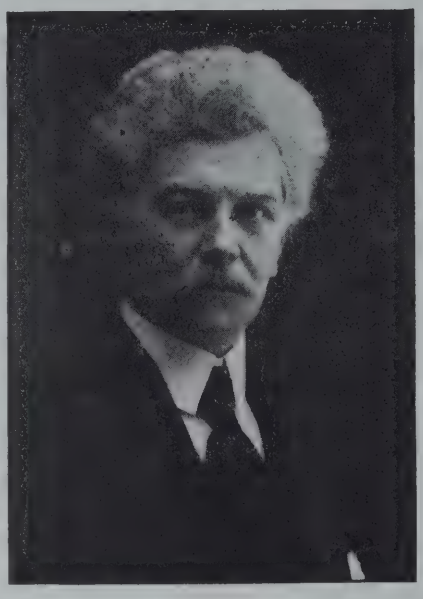
The Société Cockerill has played an important part in the prosperity of the town of Seraing, where in the public square is a magnificent monument to the founder of the enterprise. The wages and salaries it paid out each week were enormous, as shown by the accompanying chart, which shows that up to two years before

Summarizes Belgium's Industrial Progress

ECONOMIC conditions in Belgium were summarized by Monsieur Jaspar, minister of economic affairs, during a discussion of the budget in the Belgian parliament.

"The country's coal mines are already in production to the extent of 86.8 per cent of that before the war," he said, in felicitating the country on superb effort made to re-establish industries. "This is due to employers of labor and to labor alike.

"Coke furnaces are producing 43 per cent of the output of before the war. Unemployed labor has decreased from 800,000 in February, 1919 to 200,000. Our general exports are but 25 per cent of what they were before the war, but whereas it is estimated that Europe as a whole is producing but 35 per cent of its prewar output of necessities, Belgium's production is in no way behind this figure, and it is improving day by day. Belgium has earned the admiration of all strangers who may have crossed its frontiers since the armistice.



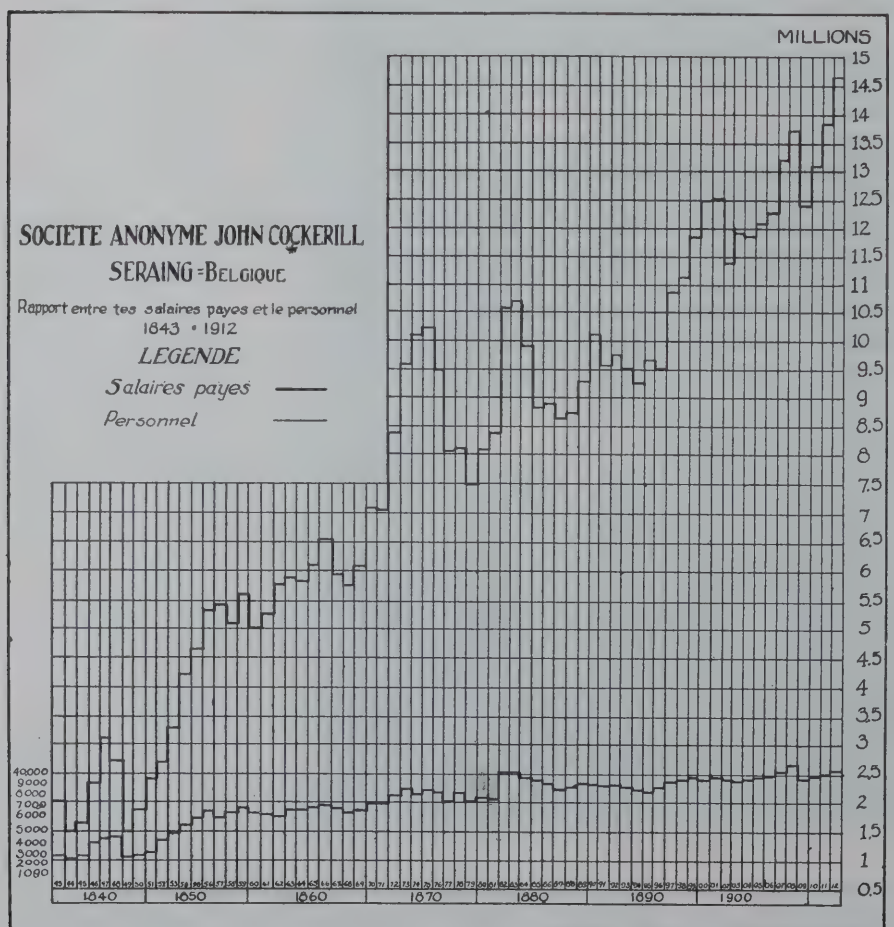
MONSIEUR JASPAR
Belgian minister of economic affairs

"Monsieur Hoover, from the United States, and Monsieur Loucher, the French minister of reconstruction, alike have expressed themselves in wonder at the magnificent effort which we have made and which we must continue to make, one and all, employers and laborers, without exception.

"Belgium may well have confidence in the future. By her own effort she is now to come to her own again and this in spite of many seemingly insuperable difficulties. Her future should be more brilliant than ever, more prosperous even than in the past."

the war wages reached a total of nearly 15,000,000 francs ($3,000,000) and salaries 2,500,000 francs ($500,000). The company maintains an industrial college in Seraing, and also contributes to the maintenance of the naval school at Hoboken. Other educational and technical institutions have much to thank the company for, notably the mining school of Seraing, and the polyglotte circle, intended to give its employes a knowledge of various languages. Various scholarships are endowed from the Cockerill fund which was given by Henri Cockerill, of Aix la Chapelle, a nephew of the founder of the plant, and by the Greiner fund, established by Adolphe Greiner, the father of Leon, on the twenty-fifth anniversary of his taking the helm as director general of the company. A hospital and alms house at Seraing also receive assistance from the company.

A savings bank founded by the company had to the credit of its employes in 1912 over 7,500,000 francs ($1,500,000). The company has given many millions to its pensioned workmen. Mine workers are entitled to a pension at the age of 60 years and other workmen at the age of 65.



STEADY PROGRESSION OF THE SOCIETE JOHN COCKERILL IS SHOWN BY THE COMPANY'S CHART OF WAGES AND PERSONNEL

Steel Links for Stokers

Ordinary cast iron links in chain-gate stokers were found to be comparatively short lived, some 3000 to 4000 hours, on account of the inferior dry coal available during the war, according to *Zeitschrift für das gesamte Turbinenwesen.* Experiments were made with links of rolled steel. These soon

proved superior, as they did not break, or expand sufficiently to obstruct the air spaces between the links. Upon examination after 7800 working hours they were found in a satisfactory condition. It was also found possible to use driving links ¾-inch thick only, which permitted a more uniform fire and decreased the weight of the grate.

The fire-bridge and dumping bars at the end of the chain grate were found to deteriorate quickly, and recourse was had to water-cooled metal fire bridges, together with dumping bars suspended as pendulums and provided with air spaces and cooling ribs.

Air is Preheated

The air entering at this point is heated by passing over the ashes, and assists combustion without damaging the pendulum bars. It is possible to utilize the grate as far as the pendulum bars, which is not the case with ordinary dumping bars. Consequently less skill is required by the attendants and a fuller use is made of the grate surface, resulting in greater efficiency as evidenced by a higher percentage of carbon dioxide in the flue-gases.

It has been found economical to fit adjustable forced draft under the chain grates as a saving of 15 per cent in coal consumption was thereby obtained in continuous working. The draft is regulated automatically by the steam acting on a gage tube, and the boiler pressure remains constant to within 1½ to 3 pounds even when burning ordinary small coal mixed with 30 per cent of coke breeze.

Outline Americanization in Industry

AN INTERESTING symposium on Americanization, its methods and its meaning to industry, was presented at the eighth annual congress of the National Safety council, Cleveland, Oct. 3.

"Industry occupies a strategic position relative to the foreign-born," said H. T. Waller, formerly educational director, B. F. Goodrich Co., Akron, O. "Industry has needed the man with the pick and shovel, the man with brawn, the man eager to make good, the man willing to work under all conditions and at all times. The industrial progress of this nation has its foundation built by the supply of immigrant labor. Industry, however, during the later years has come to recognize a much greater potential force in its unskilled labor than heretofore. It has come to recognize a terrific loss due to misunderstanding; it has realized also that only as understanding is created between employe and employer can best results be secured.

"Industry can and should supply within its organization a person or persons charged with definite responsibility for developing the best interests of the foreign-speaking employes in the plant No outside agency can come in and do what this agency from within can do. It is necessary that industry shall stick to its job of production and any work that is done must be so conducted as not to interfere with production, but this has a vital influence upon production. Therefore, find a man or men with high purpose, social vision, and practical common sense, who will work together with the foreman, assistant foreman, and American workers of industry. The result will be an established point of contact with the foreigner that is bound to be of tremendous value.

"The men responsible for Americanization in industry must be men of community vision, not men who are simply creating a department and a job for themselves.

"When it comes to the question of instruction of the employes in the knowledge of English, the ideal is the educational leadership of the community, namely, the board of education and the point of coupling the public educational forces to the industrial power is a delicate one and calls for splendid leadership on both sides.

"Industry can do more for the promotion of Americanization than any other single agency. In fact, industry must do more, for it is to the best interests of industry that it should be done. The type of community in which a man lives determines more than we now realize the type of production that he turns out. There is, therefore, a compelling economic force which determines industry's place in this great problem."

Hans Rieg, chief of the foreign language division, United States treasury department, said:

"Any government which will attempt to nationalize its subjects of various racial origins by forcible or arbitrary method will ultimately come to harm. This is not idle theory, but established historical fact.

"There are in the United States of America more than 15,000,000 born in foreign countries; over 14,000,000 more are the children of foreign born. Of these 29,000,000, more than 50 per cent speak and read either exclusively or preferably the tongue of the country of their origin. In the aggregate, they converse in at least 47 different tongues. They read 1394 publications printed in 35 different languages. The combined circulation of these publications is about 14,000,000, and more than 8,000,000 individuals read nothing else, because they can't.

"All the sources of Americanization, with their 57 varieties, lacking centralization and co-ordination, beget duplication, wasted energy and scattered effort. I am of the firm conviction that headway can be made only if we centralize plans of Americanization under United States government control and supervision, backed up by proper, special, and badly needed legislation.

"We can then get the effective cooperation of state and municipal authorities together with that absolute essential, co-operation of nationality and racial group leaders, such as pastors, priests, and presidents of existing organizations among our foreign-born.

"To become a citizen of the United States and a full-fledged member of our nation, is the fundamental, though often dormant, desire of almost every foreigner in our midst. The thing to do is to arouse and to intensify this desire to such extent that the individual of his or her own account will seek the opportunities to fulfill this desire. Don't drive them, beckon to them, and lead them!

"Don't expect them to change habit and character, language and custom, from the day unto the morrow, and bear in mind, that he can be a very good and most desirable American who will still retain a heart interest in his native land, his mother tongue, and the interests of his ancestry, relatives, childhood memories and racial dispositions.

"Americanism is not a mere matter of habit, dress or language but of sentiment and heart. Advocate the possession, through earning power of mental or physical effort, of land or improved property, of a home and the attractions that accompany it. Advocate the partnership, formed by being owners of securities in the United States, be they governmental or private. The more the foreigner puts into the United States, the more he will soon realize he gets out of it. The longer and the more he applies his energies to his own selfish pursuits, the deeper grows his interest, with the result that he becomes naturally subservient to exact and proper suggestions not only to be permanently of our country, but as much as possible of our kind."

"Americanization of the immigrant involves merely the application to him of the principles of American democracy," said Allen T. Burns, of Study of Methods of Americanization, New York.

"He should have these things which we also want, and to this end he should be invited to participate in his own Americanization. If this succeeds, it means that democracy is still a practical working scheme of social organization and control. It means that what we succeed in doing for the Americanization of the immigrant will at the same time constitute a contribution to democracy. If it fails it means that so far as the immigrant is concerned democracy is no longer a practical social and political device."

German Machine Tool Prices Low

While Keen Competition From Germany is Faced by American Manufacturers in French, Italian, Holland and Switzerland Markets, in Many Cases Superiority of Design and Workmanship Assure Sales

BY ALEXANDER LUCHARS

PARIS, France, Sept. 8.—When the contract was signed recently by the American liquidation commission to sell for $400,000,000 to the French government about three-quarters of the war material in France belonging to the United States government, an important transaction was completed. The material sold, which cost about $1,300,000,000, included all the machine tools which had been sent to France by the United States war department, besides enormous quantities of all kinds of machinery and supplies.

As is usually the case, dealers and others interested, differ widely in their estimates of the value and amount of the machine tools, placing the value at 100,000,000 to 400,000,000 francs. (The French franc, now selling at about 12.5 cents United States currency, normally is worth 19.3 cents.)

Some of these tools now are being sold by the French government to manufacturers in the devastated areas, and some are being used for adjustments in government plants. So far these sales have not materially affected the market for American tools here, these being in good demand, and many dealers say their volume of sales for 1919 exceeds that of the corresponding period of 1918.

Duty Based on Weight

Although an added burden, dealers say the increased duty on machine tools will not greatly affect the sales of the American products, if the exchange handicap can be removed. As the duty is based on weight, it will have more effect on the sales of heavy tools and machinery, most of which was supplied by England and Germany before the war.

The fear of German sales at prices based on the depreciated value of the mark also overhangs the French market.

The enormous expansion in the use of machine tools during the war has caused a surprisingly small increase in the number of French machine tool builders. The following is a list of firms of interest to American manufacturers:

H. Ernault, 46 Rue Ledru-Rollin, Ivry, Paris. Built a new factory just before the beginning of war; makes lathes (single pulley drive) and double spindle horizontal boring machines; far behind in deliveries. The design of the lathes is criticised by some machine tool experts, but the workmanship is excellent.

Cazeneuve, La Plaine Saint-Denis (Seine). Small factory; makes lathes and small tool grinders, for which there was a large sale during the war.

S. O. M. U. A. (Societe d'Outillage Mecanique et d'Usinage d'Artillerie), 19 Avenue de la Gare, St. Ouen. Formerly Societe Francaise de Machines-Outils, then bought by Bouhey, now owned by Schneider; capital, 32,000,000 francs; makes lathes, planers, milling machines, slotting machines, and heavy machines, such as horizontal boring machines; have a good demand for their product and are now sold out many months ahead. The product of this company is said to compare favorably with the best American tools.

P. Hure, warerooms, 218 Rue Lafayette, Paris; works at Pantin (Seine). Makes milling machines, which were bought because of the scarcity of American machines; did not make much progress during war.

Bariquand & Marre, 127 Rue Oberkampf, Paris. Make milling machines and operation lathes, also hair clippers, micrometers, Vernier calipers, screws, taps, dies, gauges, and special drilling machines; very old firm, but their products are not of much importance as competitors of American machines.

Rouchant & Lamassiaude, Limoges. Manufacture vertical milling machines similar to Becker No. 2-A, well built, and price about one-third lower than Becker's agents' price for 2-A; now building No. 4 vertical, copied largely from Cincinnati design; during the war also built shell lathes and shell-centering machines; product before the war was machinery for porcelain industry.

Guilliet Fils, Auxerre. Makers of woodworking machines; have built a large number of lathes for shell work will continue building woodworking machinery, which is in active demand, but will also build vertical boring mills.

Leflaive & Cie., St. Etienne. Are building some large machines, such as boring mills, lathes, and planers.

Guillemin, Sergot & Pegard, Albert (Somme) and at Perigeux (Dordogne). Manufacture engine lathes and shapers.

Jost & Cie., 103-105 Rue Villiers, Paris. Manufacture drill presses.

Cuttal & Cie., 53 Rue Servan, Paris. Manufacture screw machines.

Societe des Usines Curial, 31 Rue Curial, Paris. Has begun to manufacture small tools and expects to develop a large business, having ample financial backing.

With the exception of the Associated British Machine Tool Makers, Ltd., there are no important additions to the number of French machine tool dealers since 1914. Nearly all the dealers have made money during the past five years. Most of them say that business is good, especially in the northern and northeastern parts of France; but even in those sections which suffered most from the German invasion some French manufacturers are buying heavy German tools rather than American, on account of the difference in price. The exchange rate with France, as with other allies, is very favorable to the Germans in selling, 45 francs equalling 100 marks. With the Swiss franc there is even more difference, 100 Swiss francs being worth 141 French francs. The large number of American tools used in France during the war, most of which were creditable examples of American products, have been a great help in educating French manufacturers still further in the use of tools of the best quality.

French Labor Situation Improves

The French labor situation is improving, and the thrifty habits of the French working people are being resumed. The legal working day is eight hours, and the week is 48 hours; the time is made up for Saturday half holiday. In small factories the employes often voluntarily work 9 and 10 hours a day at a proportionate increase in pay.

Prices established for labor during the war have shown no tendency to recede. The prevailing wages in and around Paris and in other manufacturing centers where labor is in good demand, compared with prewar wages, are as follows:

	1919	1914
	——Francs——	
Lathe hands	3.75	0.95 to 1.25
Assemblers	3.80	0.95 to 1.90
Toolsmiths	4 to 5	1.25 to 1.90
Helpers	2	0.80 to 1.05

The industrial outlook in Italy is uncertain. The lack of coal and other natural resources is a heavy handicap to any nation that seeks to thrive from manufacturing, although in Italy this lack is partly made up by the development of water power, the sources of which abound in the northern part of the country. Near Bellagio, in the Como district,

ANTEDATING the article published in the Oct. 30 issue of THE IRON TRADE REVIEW, *by about one month, the accompanying report by Alexander Luchars, president of the Industrial Press, New York, publisher of Machinery, was written by him to the department of commerce while he still was special trade commissioner to Europe from that body. It was published by that organization under date of Oct.* 11, *and deals with the situation in various European countries as it relates to American-made machine tools and possible markets for them abroad. Mr. Luchars resigned from the department of commerce under date of Oct.* 1.

where coal is selling at $70 a ton, 5000 men have been working for months on a hydraulic plant to generate about 4000 horsepower for the railways.

Agents for American machine tools in Italy are not of one opinion as to the future for these goods, but are looking forward hopefully now that import restrictions have been removed. On certain lines, especially heavy machines and the cheaper grades of machine tools, there probably will be serious German competition, and American manufacturers will have difficulty in meeting this competition unless German manufacturers are further handicapped by labor and material costs. On heavy presses and forging machines, large radials and milling machines, planers, and special tools for metal products American firms will be unable to compete with German prices on machines delivered in Italy; and the cheaper grades of standard machine tools, of which there are so many German makers, will appeal to many Italian manufacturers who are not educated to paying the difference between the best American tools and German products at 25 to 33 per cent less.

The demand for high priced labor-saving tools will come from such concerns as Ansaldo and Fiat, but it is probable that the small manufacturers will be content with the cheaper and inferior tools. Ansaldo continues the policy of general expansion followed before the war, having no less than 27 different establishments and six associated concerns and employing 50,000 workers. The Fiat Works made a considerable number of machine tools for its own use during the war and will continue to make lathes for the market.

Italian Industry Grows

According to the president of the Association of Machine Tool and Small Tool Importers and Merchants, during the war there were in Italy less than a dozen factories producing machine tools exclusively, employing a total of 1500 workers. There were also about 30 plants producing machine tools as a side line. Of all these factories, only three or four of the smallest specialized on a single type of machine, the others building varied lines in the old-fashioned way. Now there are about a dozen, employing about 2000 workers, which produce very good lathes, shapers, small milling machines, drilling machines and a variety of special tools for metal sundries. The value of the annual production of machine tools before the war was about 30,000,000 lire at present prices (a lira is now worth between 9 and 10 cents United States currency; normal value, 19.3 cents). This rose during the war to 90,000,000 lire and now is estimated at less than 10,000,000 lire. Although there are a few Italian machine tool makers who produce machines of excellent quality, it is not probable that Italy soon will become an important factor in the production of these tools.

The Swiss machine tool market is small. For American tools of high reputation the demand will continue as Swiss mechanics appreciate tools of quality. The Swiss franc is worth more than the French franc, so that German tools sell for correspondingly less, and buyers institute comparisons between the American and German prices that are sometimes difficult to meet. On large tools this difference is striking; for instance, a 24-inch turret lathe costing approximately 25,000 Swiss francs at New York, with transportation 5000 francs, would cost 30,000 francs in Switzerland, as against 13,000 francs for a German machine of similar type. Only the high reputation and sterling quality of American machines will enable foreign dealers to sell them in the face of such price competition.

Before the war there were only two machine tool concerns of any importance in Switzerland—the Oerlikon Works, at Oerlikon, near Zurich, and Fritz Wunderli, at Uster. During the war a number of machine builders produced radials, boring mills, tool grinders, screw machines, small plain milling machines, small lathes and other light tools. Oerlikon, which is the oldest machine tool concern in Switzerland, and has a reputation for good work, builds engine lathes, horizontal and vertical milling machines, No. 3 horizontal boring machines, floor and table types, and radial drills; it also has under construction a No. 2 milling machine, a type popular in both Switzerland and France, and a high-speed lathe, geared head with hardened and ground gears made by Maag, of Zurich, and said to be quite a departure in that line. Fritz Wunderli produces small universal grinders in two sizes, wet-tool grinders, and surface grinders, which will bear comparison with American machines. During the war he built many small plain milling machines for England. Now, there are a number of other smaller makers, including the following:

Kellenberger & Co., St. Gall, tool grinder.
Schaufelberger & Co., Zurich, a radial drilling machine with single pulley drive, lathes, milling machines, turret lathes, and horizontal boring mills.
G. Betz Fils & Co., Basel, shapers.
H. & J. Graa, LeLocle, precision lathes.
Buhlmann & Simonet, Solothurn, precision lathes.
Fabrique de Machines Essaime, Tavannes, presses, lathes, shapers, drilling machines, screw machines, and gages.
Max Thum, Geneva, small grinders.
O. Seeberger & Co., Brougg, a line of planers.
Henri Levy, Rorschach, universal milling machines of the column-and-knee type.
Benninger, Uzwil, lathes of geared-head and cone-pulley types.
Sarbach, Geneva, cylindrical grinders and surface grinders of the vertical-spindle type.
Petermann, Moutier, screw machines.
Schroter & Jenny, Schaffhausen, gear hobber, Pfauter type, but following the Eberhardt design, also a line of engine and turret lathes.

Holland Has German Tools

The Netherlands is an agricultural and a trading rather than a manufacturing country, but the increase in manufacturing is distinctly noticeable.

When the blockade became effective Dutch manufacturers and dealers were entirely cut off from American supplies. Only since July have orders been coming through. One large shipbuilding company then began receiving deliveries on a steel order placed in 1916. Shipbuilding, which is one of the most important Dutch

(*Concluded on Page* 1260)

French Make Autos

FRENCH producers of automobiles really are makers instead of manufacturers. All the high priced French automobiles include special features that appeal to the French buyers; in the American product these features usually are sacrified for increased output. While of course there is no such market for automobiles in France as exists in America, still the principal demand for machine tools at present comes from the automobile manufacturers, all of whom are busily preparing for 1920. *Several makers are trying for the low priced field. Some of the more important manufacturers of automobiles are as follows:*

Renault, Billancourt (Seine), who employed about 27,000 hands when the armistice was signed.
Panhard-Levassor, 17 Avenue d'Ivry, Paris.
Delaunnay-Belleville, St. Denis (Seine).
Saurer, Puteaux (Seine), motor trucks.
Unic, Quai du General Gallieni, Puteaux (Seine).
Auto De Dion Bouton, Quai National, Puteaux (Seine).
Lorraine-Dietrich, Argenteuil (Seine et Oise).
Clement-Bayard, Quai Michelet, Levallois-Perret (Seine).
Hispano-Suiza, Rue de la Reunion, Bois Colombes (Seine).
Peugeot Rue Dantan, Levallois-Perret (Seine).
Brasier, 2 Rue Galilee, Ivry-Port (Seine).
Hotchkiss, Route de Gonesse, St. Denis (Seine).
Citroen, 31 Quai de Grenelle, Paris.
Berliet, 239 Avenue Berthelot, Lyon.
Rochet-Schneider, Chemin Feuillat, Lyon.
Zenith, Chemin Feuillat, Lyon.
Cottin-Desgouttes, Place du Bachut, Lyon-Monplaisir.
La Buire, Place de la Buire, Lyon.—Luchars Report.

Builds Carriers for Foreign Ore

New Bulk Freighters for Bringing Iron Ore From Chile and Cuba Have Unusually Large Hatches and are Designed to Facilitate Quick Loading —Normal Load is 11,500 Gross Tons

BY V. G. IDEN

TO TRANSPORT iron ore from its deposits owned in Cuba and Chile, the Bethlehem Steel Corp. is building a fleet of cargo carriers which show some decided advances in the art of marine architecture. This corporation has already built five vessels of the type that will be used in the Cuban trade, and contemplates constructing eight more for that service. Due to the limitations of the Cuban ports, it was not possible to construct vessels of the size that can be used in bringing ore from Chile. The first boats are known as the Cubore type, since the first to be built was named CUBORE. They are 11,669 deadweight tons each, equipped with geared turbines capable of 2400 shaft horsepower. They have three boilers and bunkers fitted for coal or oil fuel. A smaller steamer, the MANGORE, of 6140 tons deadweight capacity of the same type is also in service to the ports that will not accommodate the larger vessels.

The three sister vessels now in operation are the FELTORE, SANTORE and FIRMORE. The CUBORE was placed in commission in September, 1917. She was diverted to the army service by the government in June, 1918, and was torpedoed on Aug. 15, 1919, while in that service. The other four vessels have since been returned to the owning and operating company, the Ore Steamship Corp., and are now in service transporting ore from Cuba to Sparrows Point, Md.

Import Ore Under Difficulties

Bringing ore from a foreign country to a plant in the United States is a different proposition from transporting ore on the Great Lakes where the movement is entirely domestic. The Ore Steamship Corp. vessels must have foreign clearance papers and comply with all the regulations of the customs authorities at home and abroad which considerably retards the operations. In Cuba they are not able to dock at night and they are subjected to different weather conditions than prevail on the Great Lakes. Despite the handicaps incidental to the trade of these vessels, carrying approximately 11,300 tons of ore per trip, one will make the round trip between Cuba and Baltimore in 12 days, delivering 25,000 tons of ore per month.

Naturally these vessels, being designed for ocean service, are not as long as the ore carriers of the lakes. While the Cubore type is capable of carrying a cargo as great as the largest of the lake carriers, it is intended further to reduce the cost of operation by increasing the size of the vessels to be used in the Chilean trade. It was impossible to build the Cuban ore boats any larger because of the limit of the harbor facilities, but this will not operate against the ships to be sent to Chile. The company intends to construct vessels of approximately 20,000 deadweight tons for this trade. The plans for the latter are now being drafted and the program of the corporation calls for a fleet of 15 to 20 vessels of that size when the building is completed.

Although built primarily for the Cuban and Chilean ore trades, these vessels have successfully carried, in the transatlantic service coal, grain and general cargoes. One of the prime features of their design was the direct inspiration for probably the

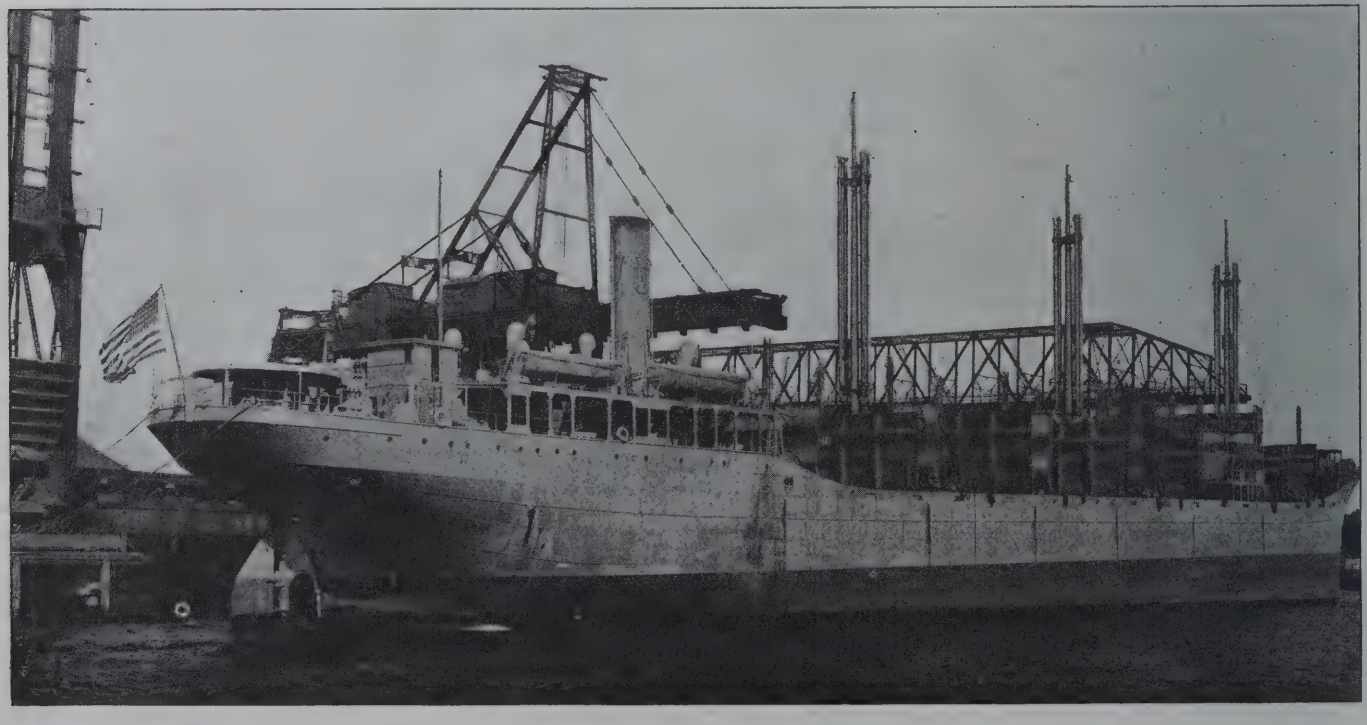


FIG. 1—ORE VESSEL MOORED AT SPARROWS POINT WITH HATCHES OPENED READY FOR UNLOADING—MACHINERY IS INSTALLED AFT TO GIVE AN UNOBSTRUCTED HOLD



FIG. 2—DECK VIEW SHOWING THE HATCH COVERS AND TACKLE FOR RAISING

greatest transportation feat accomplished by the army during the recent war. The vessels were built with hatches of extreme size. The hatch covers are made of corrugated steel plates in two sections which open up like a door and lay back upon a framed superstructure on the deck. There are no obstructions in the hatches and no stanchions in the holds. This arrangement gave the inspiration to the transportation service to ship completely set-up locomotives and tenders to France. They were loaded into the holds without necessitating the least alteration to the vessel. The success attained in this instance resulted in considerable saving of time for the army in placing such equipment in service in France.

The Cubore type ship is 469 feet long over all, with a molded beam of 57 feet and molded depth to upper deck of 37 feet. Hatch No. 1 is 26 x 33 feet, Nos. 2, 3 and 6 are 33 x 37 feet, Nos. 4 and 5 are 37 x 39 feet. This leaves a free deck but 10 feet wide at either side of the principal hatches and on this deck space are placed cargo winches which serve to open and close the hatch covers and to handle cargo whenever necessary. The hatches have steel coaming and hinged corrugated steel covers in two parts.

Quick Loading and Unloading

All the cargo hatches can be opened and shut within an hour. The Cubore type loads 11,500 tons of ore within 5½ hours with the improved loading machinery installed in Cuba. The unloading facilities at Sparrows Point are to be improved. At present 5-ton buckets are being used but these are to be replaced with 15-ton buckets. It now requires about 18 hours to unload whereas it is expected to be able to unload within five hours with the new equipment. At Daiquiri, Cuba, the vessel lays offshore about 215 feet and is moored to 10 buoys under a cantilever. Ore is delivered by a belt conveyor. At Felton, in Nipe bay, Cuba, the boat goes up to a dock and ore is delivered over two ore bridges. When laying up at these ports, the vessel will draw about 27¾ feet mean of water, and will draw nearly 29 feet aft when leaving loaded.

The vessels have averaged 10 to 10½ knots when loaded and 11 to 12 knots when in ballast. Other bulk carriers have been designed for ocean service, but this particular type of boat was built to meet a particular condition and to cope with a competition that is extremely aggressive, the cheapness of ore transportation on the Great Lakes.

They are single-screw built of steel on the Isherwood system, and meet the specifications of American bureau of shipping and Lloyd' register classification insofar as concerns design and construction of the hull, deck equipment, engines, boilers and shafting and the installation of bilge and ballast system. There are three cargo holds with six hatches, two to each hold. The vessel has four watertight bulkheads, one nonwatertight bulkhead and two oiltight bulkheads. She has three masts, 12 booms, 6 winches, one windlass, one capstan and one steering engine. Accommodations are provided for 46 officers and crew.

The single screw is run by a geared turbine. The vessel has three Scotch boilers with all necessary auxiliaries. The building specifications required that the vessel be capable of carrying about 11,300 tons, of 2250 pounds, including cargo, 6000 gallons of fresh water, fuel, stores, feed water and extra spares over what is required by the classification societies, but excluding water in boilers and condensers on a maximum mean draft of 27 feet in salt water. The deadweight requirements were exceeded, however, by the Sparrows Point plant of the Bethlehem Shipbuilding Corp. where the vessels were built.

Other Modern Fixtures

The ship is steam heated and electrically lighted. A cross bunker for fuel oil or coal is located forward of the boiler room. It has a steel oiltight center line bulkhead, fitted fore and aft, also necessary webs and swash plates. The bunker extends from the double bottom to the upper deck. Bolted places on channel frame are made oiltight to fit over openings to the fireroom when used for oil



FIG. 3—TYPE OF ORE BRIDGE USED FOR LOADING AT FELTON, NIPE BAY, CUBA

fuel. Side bunkers for coal are located on the port and starboard sides of the engine and oiler spaces between upper and lower decks.

The vessel is fitted with a turbine engine and a high and low speed reduction gear. The engine is designed to have a maximum efficiency when delivering 2400 shaft horsepower at 90 revolutions per minute, but to be capable of delivering a maximum shaft horsepower of 3000. The boilers have a working pressure of 200 pounds per square inch. The turbines are so arranged that the ahead turbine and the reversing turbine are carried on one shaft and in the same shell.

Make Transformer Cases of Sheet Steel

Distribution transformers in which it is claimed a reduction in weight of over one-third has been attained by substituting welded sheet steel cases for those of cast iron, are now manufactured by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. No change has been made in the coil construction and insulation, but an improvement has been effected in the tank construction. The new 10, 15 and 50-kilovolt-ampere transformers are about the same weight as the old 5, 7½ and 25-kilovolt-ampere transformers, respectively. The desirability of reducing the weight of the transformer suggested the use of the sheet metal cases and end frames. In order to weather-proof the cases, they are first sand blasted, a coat of priming paint is applied and baked, and a finishing coat, heavy in oil and designed to withstand the wear of the elements, is applied.

A complete transformer case is made from five different parts. The rim and base of the tank are drawn and cut from a single piece of sheet steel. The tank wall is formed from two sides which are drawn and welded and the rim and base are welded to the tank wall. Thus, four parts complete the tank and one part the cover.

German Machine Tool Prices Low

(*Continued from page* 1257)

industries, was almost suspended for lack of material. German material manufacturers refused to sell the Dutch unless the latter executed an agreement that the ships built therewith should not be used by any of the allies for a period of five years; and similar restrictions were insisted on by British material manufacturers against the central powers.

Many Dutch machine tool dealers, being unable to get American tools, turned to German makers, not only to keep their business going, but also because German tools were offered at bargain prices, especially during the last six months of the war, consequently the Dutch market is overstocked. It is estimated that these stocks can be worked off by 1920 or 1921, if shipbuilding and the other industries requiring them continue to be prosperous. The German tools I saw in the Netherlands, built during the last months of the war, were mostly of inferior quality and finish to those now produced by the best German makers, and if those in the warehouses are no better there will be great difficulty in disposing of them, even at bargain prices. Swiss tools cost about the same as American in Holland.

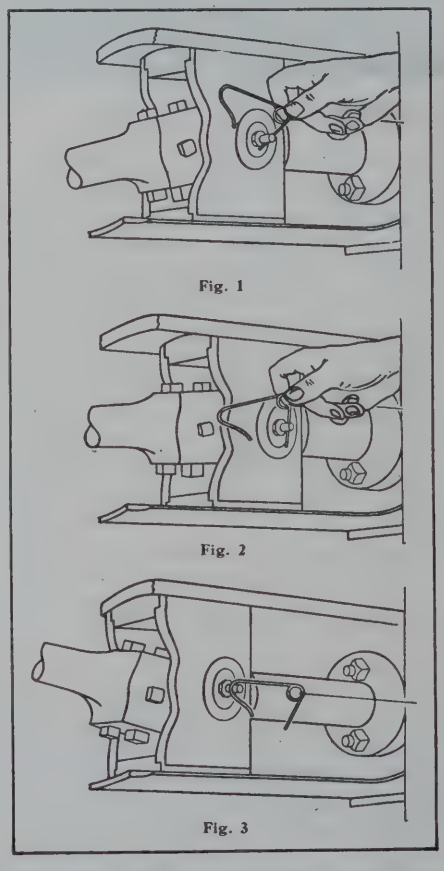


Fig. 1

Fig. 2

Fig. 3

METHOD OF ATTACHING INDICATOR CORD HOOK

German commercial travelers canvass Holland thoroughly, and up-to-date German catalogs and price lists, evidently prepared and printed since the armistice, have been sent out broadcast. Many of these have been produced almost regardless of cost, creating an impression of productive ability in striking contrast with the actual conditions to be found in Germany.

The Germans show great ingenuity in converting war material into articles for use in peace times; these are offered at very attractive prices. One German manufacturer of structural and bridge material, cranes, etc., is offering such material at about one-half what it can be produced for, as they say their government has already paid them a large proportion of the contract price. For this class of American products, in Holland and elsewhere in Europe, there is a limited market, on account of the heavy freight charges. Neither the German nor the Scandinavian product that I saw equals the best American machine tools in design and workmanship, and there will be a market for American tools in spite of the present large stocks of German machines. How American manufacturers can compete against the better quality of German tools that now are being turned out by the best makers is another question, however.

Hook Aids in Attaching Indicator Cord

A simple and ingenious indicator cord hook designed to enable the engineer to connect the indicator cord with the cross-head of a high speed engine as easily and quickly as with a low-speed engine has been developed and patented by the Trill Indicator Co., Cory, Pa. Connecting the ordinary indicator cord to the standard on a cross-head involves unusual difficulties, especially on high speed engines. Not only does the engineer risk his life, but there is danger that the indicator may be wrecked.

The accompanying illustrations clearly show how the hook is attached while the engine is running. The loop of the hook is held between the thumb and the finger as indicated in Fig. 1, in such a position as to allow the pin on the standard to strike the straight part of the hook when the standard is within about one inch of the end of its travel. The hook swings about the thumb and finger as a pivot, as shown in Fig. 2, the hook moving downward as the piston reaches the end of its stroke. On the return stroke, the pin on the standard engages the hook, as illustrated in Fig. 3, and the attachment is complete.

The International Motor Co., Allentown, Pa., and Plainfield, N. J., recently acquired substantial holdings in the Wright-Martin Co., Brunswick, N. J.

New Lifting Magnets are Rectangular

Lifting magnets, rectangular in shape, are now being manufactured by the Cutler-Hammer Mfg. Co., Milwaukee, for handling regular shapes in iron and steel including sheets, bars, billets, ingots and pipes. It is claimed that the advantages of the rectangular magnet for this class of work are maximum lifting capacity for the given weight of magnet and greater speed in handling material.

Fig. 2 shows one of the magnets lifting five lengths of round bars. Where long lengths of material must be handled, two or three of these magnets may be mounted on a spreader bar supported by the crane. Fig. 1 shows two of the magnets so mounted and lifting two plates. The body of each magnet is a single electric steel box-shaped casting containing the magnetic coil and having a projection in the center which forms the inner pole, while the outward walls of the casting form the outer pole. The ends of the body are reinforced with heavy ribs to withstand the blows to which this part of the magnet is subjected.

A drum master switch and magnetic switch panel compose the controller, with three positions, on, off and drop. In the drop postion, a small reverse current is sent through the magnet coil which quickly overcomes the permanent magnetism and permits the load to be dropped instantly.



FIG. 1—TWO RECTANGULAR MAGNETS ON SPREADER BAR HANDLING TWO HEAVY PLATES

To Build Open Hearths

Included in the equipment of the proposed plant of the Western Rolling Mill Corp. which is to erect a steel plant at Seattle are three open-hearth furnaces of 50 tons capacity each, two continuous furnaces and probably an experimental electric furnace. It is probable that Wellman-Seaver-Morgan Co., Cleveland, will install the entire equipment. Warner & Porter, Seattle, are handling the finances of the project. As heretofore announced, the first installation will include 9-inch and 22-inch mills for turning out bars, both rounds and flats and angles. J. Johnson, with offices at 401-403 Pacific building, Seattle, is president of the company.

Switch Protects Motor and Operator

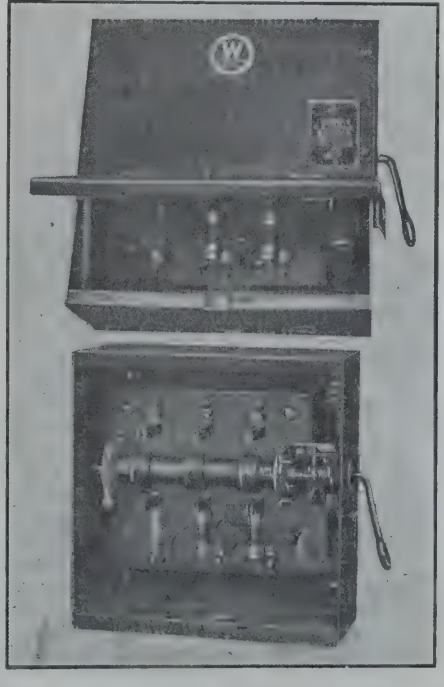
For connecting single or polyphase alternating-current motors of from 1 to 10 horsepower, 250 and 550 volts, directly to the line without the use of autotransformers or resistance, the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has designed a starting switch to provide protection to both the operator and the motor. As shown in the accompanying illustration, all of the mechanism with the exception of the operating handle is enclosed in a steel box.

A door in the cover gives access to the interior but this door cannot be opened while the switch is closed nor can the current be switched on while the door is open. When the door is open all reachable parts of the switch are dead, thus making it impossible to receive injury from contact with live parts when operating. The upper part of the cover is held in place by screws which can be removed without difficulty by authorized persons to permit inspection of the complete mechanism.

Upon the failure of voltage, a magnetic release automatically opens the switch. In case of overload, protection is provided by means of relays resembling cartridge fuses in appearance, each of which contains a contact connected in series with the release magnet. Momentary overloads do not affect the relays but extended overloads cause the relay contacts to open the magnetic circuit and consequently the switch. Even though the handle is held in the on position, the switch will not remain closed on no-voltage or overload. The mechanism is mounted on a slate base and is protected by the steel case.



FIG. 2—CLOSE-UP VIEW OF RECTANGULAR MAGNET LIFTING FIVE LENGTHS OF 6-INCH ROUNDS

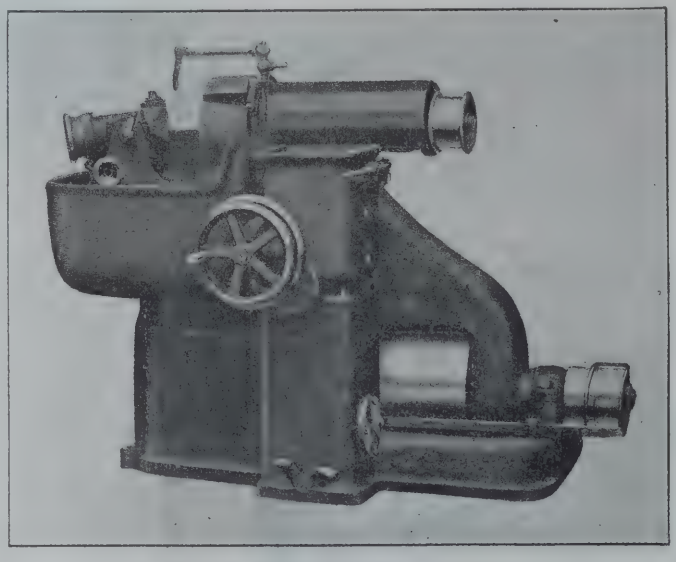


THE DOOR CANNOT BE OPENED WHILE SWITCH IS CLOSED

New Machine Forms Tools By Grinding

For forming cutting tools by the grinding method, Alfred Herbert, Ltd., 54 Dey street, New York, has developed a new oscillating tool grinder equipped with dust exhaust, centralized control and water supply. In this machine, as shown in the accompanying illustration, the grinding wheel oscillates rapidly past the tool by power, thereby reducing exertion of the operator. With the tool always in full view the operator may devote his attention to setting the tool to the required angles and to apply the cut. It is stated that tools of any required shape or angle may be made without the use of loose fixtures, templates or formersers. The wheel spindle, self-contained countershaft, loose pulley, and all shafts in the gear box except the eccentric shaft, run on ball bearings. By means of two handwheels which are both on the same axis and directly under the workman's hand when operating, the wheel can be moved sideways and forward or away from the work without stopping the oscillating movement. A lever controlling the amount of oscillation is situated close to the workman's hands, while the pedal for starting and stopping the machine is placed conveniently near his feet.

Grinding is performed without water, but a powerful fan connected to a streamline duct in the base of the toolholder draws all dust and chips away. When formed tools are ground after hardening, an adequate water supply is available. The toolholder is universally adjustable for all tools other than those bent to a right angle. A fixture for holding the latter, and for holding the tools while being ground on the base, is the only loose part used in connection with the grinder.



MACHINE FORMS TOOLS BY GRINDING

The grinding of duplicate tools can be facilitated by using the adjustable stops provided to each movement of the toolholder.

To Co-Operate on Piers

To co-operate with the committee of the Society of Terminal Engineers in taking up the question of the size and structural design of 12 piers which New York City proposes to erect on Staten island, the following committee has been appointed by the Material Handling Machinery Manufacturers' association, 35 West Thirty-ninth street, New York:

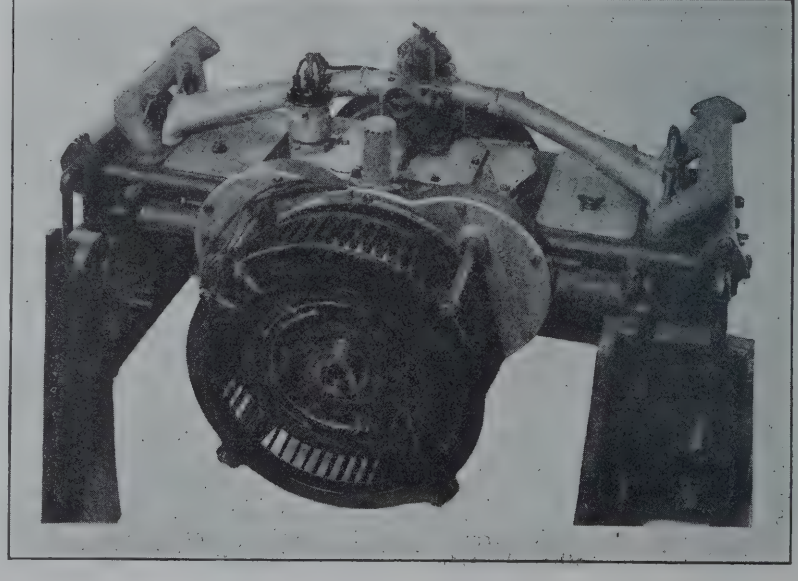
W. J. L. Banham, general traffic manager, the Otis Elevator Co., New York, chairman.
S. H. Libby, design engineer, the Sprague Electric Works, New York.
Lucien C. Brown, treasurer, Ellwell Parker Electric Co., New York.

A resolution recently was passed by the Society of Terminal Engineers, recommending that the piers which are to be 1100 feet long, should be wider than 125 feet and that the pier sheds should be initially designed to have sufficient strength to permit the installation at a later date of modern cargo-handling machinery, if the city does not propose to provide for such equipment when the piers are constructed. In this the Material Handling Machinery Manufacturers' association thoroughly concurs.

The Chisholm Steel Shovel Works, Cleveland, for 40 years under the management of Henry A. Chisholm, has been reorganized. Mr. Chisholm and A. E. Cook, secretary and treasurer, are to retire and the company will be operated under the management of A. T. Chisholm, formerly vice president of the company, as president. E. B. Greene, of the Cleveland Trust Co., is the new vice president, and H. A. Hauxhurst, attorney, the new secretary. The concern is capitalized at $200,000.

Tests New Gasoline Motor

DESIGNED by Henry Ford and said to weigh only half as much as an electric motor of corresponding power, the gasoline street car motor shown in the accompanying illustration recently was subjected to a trial block test and apparently proved satisfactory to its designer. The new power plant combines in a single unit an engine, air compressor, electric generator and heating and lighting equipment. The engine is of the double opposed type and generates its own electricity for ignition and lighting. Opposing pistons are linked to the same throw by a new type of link. Air for the brakes is compressed by the same power which moves the car and a fan, bolted to the front end of the starter, draws air through the housing of the engine, where it is heated and then exhausted through pipes to warm the car.



Coal Preference Again in Force

War-Time Regulations Re-established With Revival of Fuel Administration's Duties by President Wilson—Steel Industry to be Supplied After Railroad, Government and Public Requirements Are Provided for

WASHINGTON, Nov. 4.—The steel industry will be supplied with coal as far as practicable after the railroad, government and public requirements have been fulfilled, according to orders issued last week by Dr. H. A. Garfield, whose duties as fuel administrator have been revived, and by Director General Hines, of the railroad administration, who has been delegated by Dr. Garfield to exercise certain of the administrator's functions. Both officials are acting on authority of the President who, in an executive order, re-established the fuel administration and refixed prices on bituminous and lignite coal at the level which prevailed at the time of the fuel administration's suspension last February. Under Dr. Garfield's order, steel plants are included in "manufacturing plants on war industries board's preference list."

Director General Hines' last week made the following announcement:

"Having been informed of the issuance of the following order by the United States fuel administrator, the director general has issued instructions through the regional directors to place in effect immediately the provisions of this order:

"'Acting under authority conferred on me by the President of the United States under and by virtue of authority conferred upon him by the act of congress approved Aug. 10, 1917, I hereby revoke the order of the United States fuel administrator issued Jan. 31, 1919, insofar as it suspended the order of the United States fuel administrator of Jan. 14, 1918, effective 7 o'clock a .m., Jan. 15, 1918, and the portion of the order of the United States fuel administrator of May 25, 1918, setting up preference lists, and I hereby restore the said order of Jan. 14, 1918, and said portion of the order of May 25, 1918, to like effect as if they had not been suspended; and I designate the director general of railroads and his representatives to carry into effect the said order of Jan. 14, 1918, and to make such diversions of coal which the railroads under his direction may as common carriers have in their possession, as may be necessary in the present emergency to provide for the requirements of the country in order of priority set out in the preference list included in the order of the United States fuel administrator of May 25, 1918, as follows:

"'(a) Railroads; (b) army and navy, together with other departments of the federal government; (c) state and county departments and institutions; (d) public utilities; (e) retail dealers; (f) manufacturing plants on war industries board's preference list; (g) manufacturing plants not on war industries board's preference list; (h) jobbers; (i) lake; (j) tidewater. This order to be effective at once.'"

Diversion of Coal Provided for

The order of Jan. 14 was as follows:

"All shipments of coal, whether f.o.b. mines or otherwise, and all shipments of coke f.o.b. ovens, or at place of storage or otherwise, shall be made subject to the diversion of such coal or coke by the United States fuel administrator or any persons acting under his authority, to any persons or consumers, and for any of the purposes heretofore or hereafter authorized by him. The title of the purchaser, consignee, or consumer, in the case of any such shipments of coal or coke, which by custom or law might become vested at the time and place of such shipment, shall from and after the effective date hereof be subject to the condition that the coal or coke so shipped may be diverted as aforesaid, and that in case of any such diversion, the title and interest of such purchaser, consignee, or consumer with respect to any coal or coke so diverted shall be completely divested and terminated, and his liability to pay therefor shall cease.

"The person or consumer to whom any such coal or coke is diverted shall become liable as of the time of such diversion to pay to the shipper thereof the price in force at the date of shipment as fixed therefor by or under authority of the President of the United States, plus transportation charges thereon and plus a handling charge of 15 cents a net ton to cover costs of rebilling, collection, and replacement. If such handling charge is made, no jobber's commission shall be added to the mine's price. If the coal or coke so diverted was shipped under a valid and enforcible contract, the quantity thereof so diverted shall not be charged against the amount to which the contract applied."

Before Dr. Garfield had acted, the director general issued the following statement:

"In order to interfere as little as possible with the normal course of coal traffic, the railroad administration up to the present time has permitted coal to go to the designated consignees. For the last two weeks open top equipment has been devoted to coal loading to the exclusion of other classes of traffic, and the movement of such equipment has been expedited so as to facilitate the maximum production of coal. The result has been an exceptionally heavy coal production.

"It having become necessary, however, to be prepared to insure against all temporary contingencies that the transportation service be protected, regional directors have now been instructed to see that each railroad shall accumulate a necessary reserve of coal when it is not already on hand, purchasing such coal if possible, and otherwise holding coal in transit.

"The practice thus resorted to is a practice which railroads have always employed in emergencies, whether under private or public control, and has been recognized as indispensable to the maintenance of an essential public service.

"In holding such coal, exceptions will be made as far as possible of coal destined to certain classes of consignees in the following order of priority, which is the basis of priority adopted during the war by the fuel administration:

"1—Steam railroads; inland and coastwise vessels.

"2—Domestic, including hotels, hospitals and asylums.

"3—Navy and army.

"4—Public utilities, including plants and such portions of plants as supply light, heat and water for public use.

"5—Producers and manufacturers of food, including refrigeration.

"6—National, state, county and municipal government emergency requirements.

"7—Bunkers and other marine emergency requirements not specified above.

"8—Producers of news print paper and plants necessary to the printing and publication of daily newspapers.

"Coal held in transit is not to be unloaded in storage nor used until actually needed, so that if its use is later found unnecessary, it can be forwarded to destination whenever practicable.

"Instructions issued provide that there will be as little disturbance as possible in the distribution of coal but at the same time protecting the necessities of the railroads, which have a public duty to perform."

President Wilson's executive order was as follows:

"WHEREAS, the United States fuel administrator acting under the authority of an executive order issued by me dated the twenty-third of August, 1917, appointing the said fuel administrator and of subsequent executive orders, and in furtherance of the purpose of said orders and of the act of congress therein referred to and approved Aug. 10, 1917, did on Jan. 31, 1919, and on Feb. 20, 1919, execute and issue orders suspending, until

further order by the President certain rules, regulations, orders and proclamations theretofore promulgated relating to the fixing of prices, the production, sale, shipment, distribution, apportionment, storage and use of coal, and whereas it is necessary to restore and maintain during the war certain of said rules, regulations, orders and proclamations:

"Now, Therefore, I, Woodrow Wilson, President of the United States of America, acting under authority of the aforesaid act of congress, approved Aug. 10, 1917, do hereby revoke and annul said orders of Jan. 31, 1919, and Feb. 20, 1919, to the extent necessary to restore all of the said rules, regulations, orders and proclamations therein suspended concerning: (a) Fixing prices of bituminous and lignite coal at the mines; (b) fixing or regulating commissions of persons and agencies performing the functions of middlemen dealing in bituminous and lignite coal; (c) fixing or regulating gross margins or prices of wholesale and retail dealers in bituminous and lignite coal; and do hereby restore all of said rules, regulations and proclamations, to the extent herein provided, to full force and effect, as if they had not been suspended.

"Inasmuch as it is contemplated that it may be necessary from time to time to revoke other portions of said orders of Jan. 31, 1919, and Feb. 20, 1919, and to restore to full force and effect rules, regulations, orders and proclamations, or portions thereof, regulating the production, sale, shipment, distribution, apportionment, storage or use of bituminous and lignite coal, the fuel administrator shall, as occassion arises, restore, change or make such rules or regulations relating to the production, sale, shipment, distribution, apportionment, storage or use of bituminous and lignite coal as in his judgment may be necessary."

Preparing Fabrication-in-Transit Order

WASHINGTON, Nov. 4.—Hearings before various district freight traffic committees apparently having resulted favorably to the shipbuilders and other interests seeking extension of the fabrication-in-transit privilege to include steel for other than buildings, bridges and tunnels, action now is awaited from the railroad administration by which the benefits of this privilege will actually be conferred. As far as can be learned, about the only task confronting the administration is the consolidation of the not widely divergent suggestions of the various committees and the final drafting of a uniform fabrication tariff applicable throughout the United States.

Before the tariff is finally issued, however, there may be a meeting here or in New York of shippers' representatives who will go over the proposed extension order. The original tariff proposed by the administration, after months of effort on the part of shipbuilders particularly to have the subject considered for action, has been amended in one form or another by the various district committees and the changes in the main are said to be agreeable to the interests seeking the privilege. It is the consolidation of the amended forms of the tariff into one applicable order around which interest now centers.

Amendment Adds to Operations

One of the amendments adds "straightening, threading and tapping" to the fabrication operations to which all steel shipped under the tariff may be subject to. The original list of operations included bending, bolting, boring, counter sinking, cutting, drilling, painting, planing, punching, reaming, riveting, sawing, shearing and welding. Efforts were also made to strike out the following paragraph and while not altogether successful before some committess, succeeded in eliminating the words "the" and "of building or bridge": "If the outbound material consists of completed parts or of a completed article, no transit privilege will be allowed. See note." The note was as follows: "Under this provision iron and steel partially assembled, same entering into the frame work or section of building or bridge, will not be considered as completed parts or as a completed article." To the list of steel commodities to which the privilege would be extended, washers and trussels were added.

Rule Opposed by Shippers

In rule 4-A, the proposed tariff covering tariff plants reached by two or more routes, the following conditions were proposed:

"That these transit privileges will not apply on freight received at the transit point over the line of the carrier and forwarded therefrom over the line of another, except where the carrier bringing the freight to the transit point does not participate from the transit point, in the through rate from original point of shipment to final destination. Note—This clause does not apply in the event the inbound carrier has no route over its own lines to final destination of shipment."

This section was opposed by the shippers and amendments were offered to allow transit plants to cross bill tonnage, one carrier against another, in case of inability to comply with this provision due to embargo applying on one line, shortage of car supply, or a physical impossibility of the carrier to perform the balance of the transportation service due to washout, wreck or other misfortune beyond the shipper's control. These are provisions now contained in the so-called salvation clauses in most transit tariffs.

Section B of rule 4 also was vigorously attacked. It provides: "The transit privilege will not be permitted on any traffic unless the through rate from original point of shipment to final destination is applicable through the transit point and applying on an entire route of the shipment." This would destroy the fabrication privilege to fabricating shops other than those on the main line of the railroad intermediate between the points of origin and destination. It was said this would seriously injure the fabrication industry.

An amendment was proposed for a flat fabrication fee plus a mileage scale to be worked out in tariffs and published as a composite fabrication fee not to exceed ½ cent per each 50 miles or fraction, back haul. The administration had proposed a rate of 2½ cents per 100 pounds, but this was suggested to be 1½ cents, for the fabrication privilege, with the back haul scale to be worked out and published as a composite charge.

402,122 Tons of War Iron and Steel Offered

Washington, Nov. 4.—Announcement has been made by the director of sales, war department, that approximately 402,122 tons of iron and steel were held as surplus on Oct. 16. This tonnage includes raw material, semifinished and finished steel, scrap and alloys, and it is being offered for sale, either by negotiations or under sealed bids. The ordnance department holds 391,617 tons. The surplus scrap consists of 200,031 tons; raw material, including ferro-silicon and spiegeleisen principally, 7547 tons; ingots, blooms and billets, 127,530 tons; sheets, plates, rods, pipe, hot and cold-rolled bars and tubing, 65,476

tons; manganese steel, chrome steel, chrome-nickel steel and nickel steel, 1539 tons.

The surplus stocks are widely scattered throughout the country, the larger tonnages being located east of the Mississippi at those plants which were engaged during the war in the manufacture of munitions.

Inquiries relative to these surplus stocks should give specifications of the materials desired, and should be addressed to the chairman, ordnance salvage board, ordnance department, Munitions building, Washington, or to the nearest of the district ordnance offices located throughout the country.

Institute's Allocations Not Binding

WASHINGTON, Nov. 4.—The board of contract adjustment in the war department has held that the allocation notices from the American Iron and Steel institute and its subcommittees, which co-operated with the war industries board during the war, were not orders and did not obligate the government, but were merely the means of bringing together producers and consumers. When this was done, the ruling continues, "the parties were left to perfect the transaction in the ordinary commercial manner."

The decision of the contract board was made in the case of the Mississippi Valley Iron Co., St. Louis, which claimed refusal of the Scullin Steel Co., St. Louis, to enter into a contract for or accept 6000 tons of northern basic iron after the armistice was signed, although the allocation notice had been sent and the iron made prior to the armistice, had resulted in the loss of $129,000 to the Mississippi Valley company, the difference on the aggregate being between $36.90 per ton, the market price at the time, and $15.40, the average price covering a period of three prewar years.

Personal testimony of J. Leonard Replogle, director of steel supply for the war industries board; Maj. W. M. MacCleary, the war department's steel purchasing officer, and W. J. Gruss, assistant to H. G. Dalton, chairman of the institute's committee on pig iron, iron ore and lake transportation, together with that of E. F. Goltra, president of the Mississippi Valley Co., and records of the war department, the war industries board and the institute, gave the contract adjustment board the basis for its finding. The opinion, written by Lieut. Col. Robert H. Carruth, and concurred in by all members present, says:

"The evidence clearly establishes the fact that the American Iron and Steel Institute and its subcommittees were not government agencies and had no authority to make contracts or agreements, implied or otherwise, that would obligate the government. The institute and its committees were, primarily, organized for the benefit of the manufacturers of steel. Their purpose was to co-ordinate the industry and to assist in the prosecution of the war.

"An allocation notice from a committee was not an order nor did it have in any way the effect of obligating the government but was merely a means of bringing together the manufacturers desiring certain materials and the manufacturers possessing the materials desired and when this was done the parties were left to perfect the transaction in the ordinary commercial manner."

The only responsibility, it was found, which the government had in the dealings of pig iron producers with steel manufacturers was that of seeing that a source of supply had been arranged. This was done upon request of the steel manufacturer through the government department with which he had a contract, the department in turn, through the pig iron section of the steel division, war industries board, which depended upon the institute's pig iron committee to find the furnace which could supply the iron.

The iron in question was a portion of 45,000 tons required by the Scullin company to manufacture cast steel slugs for projectiles.

Demands Labor be Bound by Antitrust Laws

Washington, Nov. 4.—Senator Edge, New Jersey, has announced that he soon will introduce a bill to repeal provisions in the deficiency appropriation act by which labor and farmers' organizations are exempt from investigation or prosecution under the antitrust laws.

"When labor imposes unwarranted wages on capital, through threats or coercion, it does not wring such wages from capital, but from the people," said Senator Edge. He pointed out that the senate recently, with scarcely more than a majority present, with little debate and apparently still less consideration as to its effect, defeated by a vote of 31 to 28 a proposed amendment to the deficiency bill preventing exemption of labor unions and agricultural organizations from the provisions of the antitrust laws.

"To the rank and file of the people I believe it will seem strange that at the very time when labor was squaring off, in some cases, I fear, taking the law into its own hands, the United States senate should pass legislation exempting it from punishment if it violate the antitrust law, or statutes prohibiting combinations in restraint of trade," the senator declared.

Free-Trade Zone Bill is Again Introduced

Washington, Nov. 4.—A revision of his former bill providing for the establishment of free-trade zones has been introduced by Representative Nolan, of California, which he says he proposes to press for favorable action in the committee on ways and means regardless of the opposition of Chairman Fordney, who has rejected free zones bills on the ground that they are unconstitutional.

"When the tariff commission began its investigation into the subject of free zones," said Mr. Nolan, "the constitutional question was raised, and since the introduction of the free-trade zone bills at this session it has been raised again by men unfamiliar with the question. The tariff commission recommended the establishment of free-trade zones after making an exhaustive study of this question, submitting to congress a brief which conclusively demonstrates that such zones would not transgress the constitution."

To Roll Bar Iron

A building, 80 x 300 feet, which will house the new merchant mills of the Capital City Iron & Steel Co., Harrisburg, Pa., is now under construction on a two-acre site located on the outskirts of that city. The new mills will roll small rounds, squares, hexagons and special shapes and will be driven by a 650-horsepower Westinghouse motor. It is expected to have the mills in operation by Jan. 15, 1920.

Arrange for Basing Point Hearing

Commissioner Huston Thompson Assigned Case But Likely Whole Trade Commission May Sit on Question of Jurisdiction—Exact Proceeding Yet to be Determined—More Declarations on Subject Are Presented

WASHINGTON, Nov. 4.—While the federal trade commission has decided to begin hearing on the Pittsburgh basing point case on Dec. 2, no decision has been made as to how the proceedings will be conducted. Commissioner Huston Thompson has been assigned the case, but it is likely the entire commission will sit at the commencement of the hearing to determine the matter of jurisdiction and also the extent of the public's interest in the question.

Letters are beginning to reach the commission signifying the intention of manufacturers, associations, their representatives, and others to attend the hearings. In this connection the Southern Association of Steel Fabricators, the Birmingham Civic association and the Birmingham Steel Base bureau, all opposed to the Pittsburgh basing point, have consolidated into the Southern Association of Rolled Steel Consumers, an organization similar to the Western Association of Rolled Steel Consumers which originated the case before the commission.

Although the order of appearance has not been determined and may not until the day of the hearing, it is likely the western association will be given the first opportunity to be heard, first in a general statement and then through questions asked by the commissioners of witnesses called by the association, the proceedings taking the form of congressional investigations. Any and all views will be accepted by the commission, it is believed, until it has decided whether to issue a formal complaint.

Additional views in writing are being received by the commission, chiefly from consumers and associations opposed to the basing point custom. The commission is publishing all views and opinions on the question in book form and will issue supplements of all those received after the original copy was sent to the printer. The book will be for distribution.

Various additional declarations in favor of and opposed to the retention of the Pittsburgh base which have been filed with the federal trade commission are given below.

Endless Confusion Would Follow Change of Base

BY G. E. FREDERICK, SECRETARY AND MANAGER,
Kokomo Steel & Wire Co., Kokomo, Ind.

THE steel industry has grown up around Pittsburgh as the pioneer in the development of this industry. Large plants controlling the larger part of the production of steel in the United States have grown up around this point, based upon an extended trade to all parts of the country. To establish several basing points at different sections of the United States say Birmingham, Ala., Chicago and Pueblo, Colo., without taking into consideration the freight rates from Pittsburgh to these various basing centers, would deprive these large plants at Pittsburgh of a market, which they have enjoyed since the establishment of the steel industry in our country. In fact I know of no company owning plants in Pittsburgh or the valley that would not suffer a marked loss of trade, unless it would be such a company as the Steel corporation, which owns plants, not only in the Pittsburgh district, but in Chicago, Duluth and Birmingham. The existing steel companies located in Pittsburgh, with their large production, would be forced to abandon a large percentage of their trade to the West, or else move their plants to the basing centers, in order that they may be in a position to meet competition of those companies who happen to have plants located in the various basing centers, which we presume would be those mentioned above. They must either do this or depend entirely upon the export trade to consume the surplus, which they have been sending west, unless they desired to continue to send it west at a considerable loss; the result of abandoning the Pittsburgh base as the one controlling basing center for the steel industry in the United States. Temporarily at least if a reasonable profit only is to prevail in steel, the changed basing points would result in a shortage of the supply of steel to the various sections of the country, which are now depending upon Pittsburgh to supply them with this material, for Chicago, Duluth and Birmingham, would not be adequate on a basis of their present production of steel to supply Pittsburgh's quota, should this steel be withdrawn from the market on account of the change in basing points. But even should Pittsburgh continue to ship steel, it would be considerably handicapped, and the tendency of the other basing points would be, on account of their advantage, to increase their capacity until they were able to meet the demand in the zone which they control. The result of this, as you will readily see would be to greatly increase the production of steel at the new basing points and the languishing of the steel industry in Pittsburgh and the valley.

Would Concentrate Steel Production

Again to have more than one basing point would be to concentrate the production of steel at two or three points or centers in the country and a plant located half way between Chicago and Pittsburgh could never expect to be a large producer of steel because it would be at a marked disadvantage with steel mills located at the basing center, with the result that we would have steel works gathered in a few centers in the country and not distributed through the various states promiscuously as at the present time, with a greatly increased possibility of severe strikes and labor troubles, which would be disadvantageous to the industry as well as the general public.

As an illustration, take a plant located as our own between Pittsburgh and Chicago. If Chicago is a basing point, we will be handicapped on shipments west of the Mississippi about $3.40 a ton, this on a year's output of 120,000 tons, on the theory that all of our business went west of the Mississippi would be in the neighborhood of $400,000 handicap against Chicago as a basing point, the net result will be that of necessity we will have to move our plant to the basing point, for no business concern would consider an annual handicap of what would constitute an excellent profit for each year, for it would be impossible for us, in the limited zone between Pittsburgh and Chicago as basing points, to market our production, we could only cover a small portion of the state in which we are located on a par with either of these basing points, and certainly the territory in which we would have an advantage, because of our geographical location, would be confined to a very few counties. In fact we would destroy that condition, which is one of national security, and we so found it during the war. Large bodies of men, concentrated at any point engaged in the same industry are a menace to a certain degree, to continuous operation of plants, because strikes and labor troubles of every

sort are liable to occur, which interferes with the nation's business and development.

Better With Industry Distributed

The country would be much better off with the steel industry distributed over the United States, as they exist today; their location being based upon a study of the business condition, freight rates, supply of raw material and labor, rather than have this natural condition supplanted by an enforced artificial arrangement brought about by an arbitrary fixing of basing points, for if this proposed change is made, endless confusion will result; cities which are flourishing and which were pioneers in the industry, some of them will languish. The East will be handicapped and with its tremendous industry, will have as its zone only a small strip of territory along the Atlantic ocean; to advance beyond the central portion of Ohio into western Ohio or Indiana it will have to assume a handicap in the form of an excessive freight rate charge.

For a number of years it was practically the only steel producing center in the United States and wherever steel was used, the consumer or buyer of it had to look to Pittsburgh. Pittsburgh was built upon the basis, not of a part but of the entire trade in steel of the country. Endless confusion in prices will result; communities that are in a flourishing condition, their prosperity being based upon the fact that they were built around a steel plant, will lose their chief industry and the community will languish because many of them will have to either go out of business or move their plants to new steel producing basing points, and as stated above, no company existing, will be exempt from the radical changes that will occur except the Steel corporation who have plants in all of the basing centers, and which will because of that, practically have a monopoly of the market, and be the only concern that would not suffer a handicap.

Single Basing Point Best

Personally I believe that the present arrangement of having the single basing point, is the best arrangement, because it will allow the development of the steel industry in anv city or in any state in the Union that enjoys an advantageous position, with regard to fuel, raw material or labor, and this after all is the economic result sought to be attained. Few vicinities have all of the raw materials, in fact none, and while Duluth may have iron ore, she has no coal, while Indiana has plenty of coal and no iron ore, and is the center of population. The situation should be left as near the present arrangement as possible, if the general distribution of the demands for raw material and labor is to be the most uniform throughout our country, and if we are to preserve and leave open the door of opportunity to each and every community in our country to develop its industrial life. I cannot feel that we would serve our country best, by forcing the great army of laborers, who work in our steel plants into the congested area of a few great cities and their vicinity. The proposed change could result in nothing else but creating a few great steel producing centers around which all of the steel plants of the United States would be centered.

One Base Spurs Competition

BY W. H. DONNER, PRESIDENT,
Donner Steel Co., Inc.

REGARDING the question of selling rolled steel on a Pittsburgh basing point basis, we mention various reasons why in our opinion this practice should be continued for the best interests of all concerned.

(a) Buyers and sellers have been educated along this line for some time past and the practice is thoroughly established and understood.

(b) The Pittsburgh district is the largest steel producing district in the United States, and being centrally situated reflects at all times the actual steel market better than any other location. The valleys and other nearby points should be considered as forming a part of the "Pittsburgh district" in considering the tonnage, although rates vary slightly.

(c) The custom conforms to good commercial practice both from the standpoint of buyer and seller. This is true especially from the buyer's standpoint, for it enables him to determine instantly the lowest quotation which he has received from several districts, as he immediately looks for the lowest quotation "Pittsburgh basis." To establish various basing points, therefore, would complicate the situation exceedingly as it would be necessary for the buyer, upon receipt of quotations from various producing points, to determine the freight rates from such producing points to his point of consumption in order to arrive at the lowest quotation which he would then have in hand.

(d) There is no steel producing point which can supply at all times the demand of a given district, and as a consequence buyers of that district are at certain periods forced into other markets, and they naturally look to the greatest producing district—Pittsburgh.

(d) For example, under ordinary conditions we enjoy a good share of the business placed in Buffalo and vicinity, but there are times when our order book may become such that we cannot meet the demand, and buyers of this vicinity consequently are forced into other districts.

(e) The practice certainly encourages legitimate competition and in this respect is of considerable moment to the buyer who is always interested in securing competitive bids. There is, however, a certain condition always to be considered, and that is the fact that buyers usually place their business at a time most convenient to their needs, while on the other hand the seller's order book changes frequently, thereby developing a situation which would prove serious to the buyer were it not possible for him to go into other districts to secure his requirements. For example, Buffalo mills may be able to meet the demand in this vicinity today, but Buffalo buyers may not be placing orders, and the result is that mills fill up with business from other sections, and when buyers are ready to place orders they find the mills of their district sold up and are forced to place their orders elsewhere.

We have given the question considerable thought both from the buyer's and sellers standpoint, and cannot see any reason why Chicago should be established as a basing point any more than Buffalo, Youngstown, Bethlehem, etc. In fact, we are satisfied that any deviation from the present practice will accomplish no particular good for either buyer or seller, but on the other hand will seriously complicate the situation for all concerned.

Present System Is Logical One

BY JOHN BINDLEY, PRESIDENT,
Pittsburgh Steel Co.

SO far as we can determine, our customers are not desirous of a Chicago basing point on our products, nor would we care to sell on a Chicago basis. To us it seems purely a commercial question. To meet the competition of mills in Chicago or other places, such as Worcester, Mass., Bethlehem, Pa., Johnstown, Pa., Buffalo, N. Y., Cleveland, O., Youngstown, O., Ironton, O., Pueblo, Colo., Atlanta, Ga., and Brmingham, Ala., we must give to our customers such prices, terms and conditions as will make our goods cost them no more than our competitor's prices, terms and conditions laid down at destination.

The practice of quoting on f.o.b. Pittsburgh basis, is a simple and convenient means of comparing prices, for both the buyer and the seller, and has prevailed for many years. The buyer and the seller would be greatly confused, annoyed and inconvenienced and in no way benefited if an additional basing point were made. The establishment of one new basing point would, in our opinion, inevitably lead to many more, until eventually every place where steel is produced would have its own basing point.

We are strongly in favor of the present method of making quotations not alone by virtue of its long standing usage, but because it is most logical, sensible and convenient. We believe that the establishement of a Chicago basing point would in the long run benefit neither buyer nor seller. This was once tried and abandoned. The movement of commodities and prices will follow the supply and the demand. The basing point does not determine the price of the commodity; it is only a means or rule by which to measure the price.

For these reasons we favor the retention of Pittsburgh as the sole basing point for prices on steel products and enter our protest against the establishment of any additional basing point.

Works Council Standing the Test

Experience of 225 Concerns With Representation Plans Has Been Favorable, Although Too Brief to Warrant Final Conclusions—Strikes Not Abolished, but Their Number and Severity Minimized—Results Summed Up

BASED on reports embracing 225 works councils in operation in 176 different industrial concerns in the United States, the national industrial conference board, Boston, declares that the experience of employers with employe representation "has thus far on the whole been favorable." The board concludes, however, that the experience with the works council movement has been too brief to warrant final conclusions, and states that nothing might be gained by the establishment of works councils in those plants where harmonious industrial relations already exist. In the term "works councils" the board includes the two broad types, the "governmental system," following the lines of the national government, and the definitely organized committee system, but does not consider occasional meetings of employers with committees or deputations of employes. The eport states:

"While a choice between the 'governmental' and the 'committee' types of organization is largely a matter of personal preference, experience indicates that the 'committee' type in general is the more desirable because of its greater flexibility. In large establishments, in particular, the 'governmental' type has the disadvantage, that in order to be properly representative of the employes it must necessarily be so large as to be unwieldy. Also all questions, however trivial or local, arising in any part of the plant must be referred to the house or senate, and thereby become the concern of the whole plant. These difficulties are avoidable in the 'committee' type of organization, since it permits of the development of divisional committees in the smaller units of the plant.

"In about half of the establishments covered a single works council handles all matters coming up for adjustment. In numerous large establishments, however, in order that all interests may be effectively represented, it has been found advisable to have, in addition, divisional committees such as departmental, shop, or craft committees. Sometimes, moreover, it has been found desirable to create an executive committee or to develop subcommittees."

In a majority of establishments the workers have their own committee which meets in joint session with a committee or other representatives of the management. In some plants, however, the council is a joint body composed equally of representatives of the management and employes. The report inclines to the view that the latter form has certain advantages over separate committees.

Ultimate settlement of matters failing of adjustment by the works council is provided for by compulsory arbitration in only a small minority of establishments. A smaller number of plans, effective, however, in over twice as many establishments, provide for final submission to arbitration if the parties at the time agree thereto. Ultimate power of settlement rests with officials or the board of directors of the company in relatively few cases. The plans in a majority of establishments make no provision for further reference after the works council has failed to reach an agreement. As a matter of fact, in experience with works councils thus far, matters have seldom reached a deadlock.

Seem to Be of Some Benefit

In most cases, works councils are reported as having produced favorable results, although in a number of instances, chiefly of committees organized by direction of the national war labor board, they have apparently accomplished little or no good. In a few cases their introduction has tended even to aggravate labor difficulties. But on the whole they appear to have produced some benefit.

The beneficial result most frequently reported is an increase in good will and in co-operative spirit between employer and employes. A considerable number of employers reported specifically that labor difficulties were reduced because of the introduction of works councils. In several instances the works council was the means whereby strikes were prevented in individual establishments when strikes were general in the same industry or locality. It is true that labor disturbances have at times occurred in establishments where works councils have been introduced. Against this unsatisfactory experience, however, is to be placed the statements of the managements of several of these establishments that, in their judgment, the works council had modified the severity of the disturbance, and that they still regarded the councils as of decided value.

In several cases the works council was reported as influential in reducing labor turnover. Difficult questions involved in the execution of awards of the national war labor board often have been satisfactorily handled by works councils.

With respect to productive efficiency, evidences of positive benefit resulting from works councils are comparatively few, although in some establishments marked increases in output were attributed, in part at least, to the existence of such organizations. In a few instances efforts have been made by works councils to reduce absenteeism and tardiness and to develop improved working methods, but the sum total of accomplishment along these lines is small.

Employers generally reported that a relatively high type of employe has been elected to membership in works councils. Further evidence of this is found in the decided preference shown for men long in the service of the establishment as council members. Instances of radicalism or unreasonableness on the part of employe members of works councils are conspicuously few.

Experience thus far is so varied that no definite relationship between works councils and trade unionism can be said to have developed.

"The works council is not," states the report, "in its essence a substitute or an alternative for labor union organization. In recognition of this fact, some notable plants of employe representation expressly provide that employes shall not be discriminated against because of labor union membership. While the works council tends to restrict the activity of the labor union in matters purely local to the individual establishment the union may still be potent in settling problems common to the entire craft, industry, or locality."

The report concludes as follows:

"In view of the conflict of experience, it is as yet too early to measure definitely the permanent value of the works councils movement. Approximately three-fourths of the employers having works councils from whom an expression of opinion was secured declared themselves in favor of this

form of industrial organization or that their experience had been favorable. Although further experience may lead to a revision of judgment in some cases, the results thus far obtained with works councils indicate that they are worthy of unprejudiced consideration on the part of American industry."

Bills to Curb Aliens Are Recommended

WASHINGTON, Nov. 4.—Arising from investigation made by the senate committee on education into the steel strike, two bills have been reported favorably to the senate, the enactment of which supporters think would prevent the recurrence of such a strike and would punish seditious acts against the government. One measure is the Americanization bill introduced by Senator Kenyon, chairman of the committee on education and labor. While Americanization bills have been before congress for some time, the one reported favorably through Senator Kenyon consists of parts of the various bills that were before his committee and he is urging quick action on it.

The other bill was reported favorably from the senate committee on judiciary by Senator Sterling, a member of that committee, as well as of the committee on education and labor. Senator Sterling has been aroused by the seditious utterances and threats which have been made by agitators in connection with the steel strike and expects his bill, if enacted, to prove an effective curb on them.

The purpose of the Americanization bill is to consider a program of Americanizing illiterates and those unable to speak, read or write the English language. The committee report says:

"The theory of the bill is the process of stimulating the states to adopt compulsory teaching of English to illiterates and to that great body of those in this country who cannot speak, read or write the English language. The money appropriated is apportioned by the secretary of the interior among the several states in the ratio provided by the bill, but it is not turned over to any state unless the state provides for the teaching of English at least 200 hours per annum to all residents who are citizens of the United States 16 years of age or over and under 21, and all residents of more than six months who are aliens 16 years of age or over and under 45. When we realize that there are practically 8,000,000 persons in this country above 10 years of age who cannot speak our language the seriousness of this problem is apparent. This will be the first step in correcting the situation."

The bill appropriates $5,000,000 for the fiscal year ending June 30, 1920, and $12,500,000 annually until the end of the fiscal year, June 30, 1923, and an additional sum equal to the balance unexpended of the appropriation for the last preceding fiscal year. Penalty for refusal to submit to the compulsory education is left to the several states to fix.

Would Bar Red Literature From Mails

The bill of Senator Sterling makes it unlawful to advocate in any way the overthrow of the government, and would close the mails against all literature with that object in view. The bill also makes it unlawful to display at any gathering or parade any flag, banner, or emblem which means to symbolize the overthrow of the government of the United States.

Use of the mails for the transmission of the class of literature that is barred is punishable by a fine of $5000 or imprisonment for not more than five years or both, and in the case of an alien he shall upon the expiration of his sentence be deported from the United States and forever barred from re-entering it.

Both the house and the senate have adopted the conference report on the administration bill to exclude radical immigrants by extending federal power to limit the issuance of passports.

The senate committee on immigration also has ordered a favorable report on the house bill providing for the deportation and permanent exclusion from the United States of alien anarchists. At the request of Attorney General Palmer the senate is expected to enact this bill soon. It calls for the deportation of aliens interned during the war in addition to anarchists and also those convicted of violating the espionage, draft, explosives and other laws. Aliens making threats against the President also would be subject to the bill's provisions, which would make final any deportation decision of the secretary of labor. The bill affects four women and about 500 men interned as dangerous aliens.

Puddling Rate Unchanged

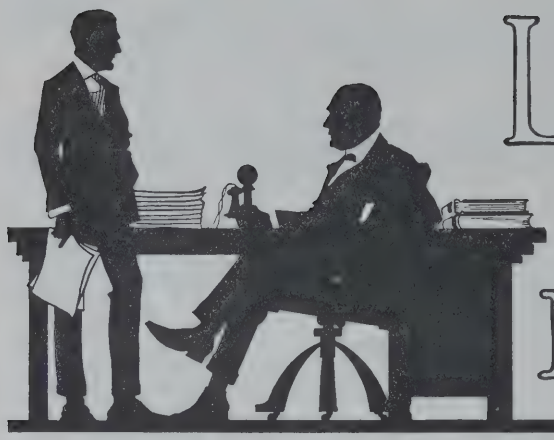
No change was made in the puddling rate as a result of the bimonthly wage settlement made Oct. 30 by representatives of the middle western bar iron manufacturers and the Amalgamated Association of Iron, Steel and Tin Workers at their meeting in Youngstown, O. The adjustsame as in the case of the past three settlements. Following is the averment price was 2.50c which entitles the puddlers to $12.38 a ton, the age price of bar iron on which wage settlements have been based during the past three years:

	1919	1918	1917
January-February	3.10c	3.10c	2.35c
March-April	2.75c	3.30c	2.45c
May-June	2.50c	3.35c	2.65c
July-August	2.50c	3.40c	2.75c
September-October	2.50c	3.45c	2.85c
November-December	2.50c	3.45c	2.95c
Yearly average	2.64c	3.34c	2.65c

Union Admits Union Shop Means Closed Shop

The Master Pattern Makers' association of Boston and vicinity, 70 of whose members are on strike, has informed the jobbing pattern manufacturers that, in addition to the demands originally made, if the strikers win all nonunion workers in the 12 shops affected will be required to join the union within 10 days or be discharged. The manufacturers consider this statement as in direct conflict with the position taken by Samuel Gompers, president of the American Federation of Labor, that a union shop is not necessarily a closed shop, a point which he sought to impress on the senate committee which investigated the steel strike, and later on, the national industrial conference. The original demands were made in August and included an 8-hour day for five days, and four hours for Saturday; double time for overtime, and a minimum wage of $1 an hour. The shops are running with reduced forces and the employers are being assisted by the Employers' Association of Eastern Massachusetts, and the Boston branch of the National Metal Trades association.

The Jeffrey Mfg. Co., Columbus, O., has taken out group life insurance with The Travelers, effective Oct. 25, covering its 2200 employes. The plan of insurance is unique. The increment of the insurance is $100 a year up to and including the fourth year when an amount of $800 is attained. For the fifth year the amount jumps to $2000 and then increases $100 per year to an amount of $4000. The whole plan is retroactive.



Little Stories of Business Life



On Common Ground

NO DOUBT can exist that Chairman E. H. Gary of the United States Steel Corp. is greatly interested in the government suit to dissolve it, arguments on which were made before the Supreme Court recently. Nor can it be doubted that Assistant District Attorney C. B. Ames is as greatly interested, but each has decidedly opposing views on the matter. But they have one thing in common in which they seemed to be more interested—baseball. Both showed themselves during the suit to be ardent fans, and, what is more, if any one thought Judge Gary was neutral as between the Reds of Cincinnati and the White Sox of Chicago, in the championship series then in progress, that doubt was dissolved emphatically, one dissolution Judge Gary did not oppose. He was for Chicago, perhaps because of past associations with that city, but at any rate, he showed himself to be consistently against the Cincinnati reds.

It was immediately after the court had adjourned that Judge Gary, who had listened to arguments presented in behalf of the corporation by General Counsel R. V. Lindabury, went up to and was talking to him about the case. Judge Ames, who stood several feet away, soon was handed a sheet of paper. It then turned out that the sheet of paper was the score of the game in the world series for that day.

"I am sure Judge Gary would be more interested in this than in the suit," said Judge Ames to a court attache after reading the score, as he handed it to the latter with the request that the same be shown to Judge Gary.

"Great!" exclaimed Judge Gary as he looked at the score and smashed his right fist into the open palm of his open palm of his left hand and turned to Judge Ames.

It showed the score in the sixth inning was 4 to 1 in favor of Chicago, and later proved to be final.



Cutting it Short

WILLIAM L. SAUNDERS, presiding at the welcome home dinner given by the Society of Mining and Metallurgical Engineers to Herbert Hoover at the Waldorf Astoria hotel in New York, Sept. 16, recalled this amusing incident at a dinner of a mining institute in Michigan:

"A speaker, looking over a familiar audience, began by saying: 'Now you know what I am going to say.' A large part of the audience cried out: 'Yes.' Whereupon the speaker said: 'Well, as you know what I am going to say, I shall not take your time by saying it.' He then sat down. Called to his feet again he repeated his statement: 'You know what I am going to say.' There were loud cries of 'no'. He then said: 'Well those people in the audience who know what I am going to say please tell those who do not and save time for the next speaker.'"

Mr. Saunders continued to say that the logical thing for him to do was to follow the advice of his Michigan friend, inasmuch as Mr. Hoover was the next speaker on the program. The committee in charge of the dinner would not listen to such an argument, and Mr. Saunders proceeded to pay Mr. Hoover a compliment for his work in behalf of humanity.



The Utopian Union

SOMETHING new in labor organization recently was called to the attention of Secretary of Commerce Redfield, when he received a telegram from the Loyal Legion of Loggers and Lumbermen, Portland, Ore. According to the telegram to the association, which includes 40,000 members, "is the first attempt to bring an entire industry under the advanced idea of labor and capital having an equal voice in all matters involving questions of hours, wages, living conditions, etc." It seems the employers and employes have equal representation on all boards and committees, and expenses of the organization are equally divided between the two groups.

The telegram asked the secretary to see that the organization is represented in his council. Mr. Redfield was somewhat puzzled over the object sought, but concluded the legion meant to ask representation in the conference President Wilson called for Oct. 6 when representatives of capital, labor, manufacturers, farmers, etc., meet in Washington to help solve labor problems. Secretary Redfield congratulated the legion on the success it has had in the eight months of its existence—the claim was made that no strike had taken place in the camps and mills since the organization was formed—and urged the members to ask the President for a chance to be heard at the conference.



Apples From Nails

PROBABLY the demand for old fashioned wrought-iron cut nails may be revived as a result of experiments which have been conducted by fruit growers in the Pacific northwest. A prominent grower in the panhandle of Idaho finds that he is able to increase the yield from his Siberian crab-apple trees nearly 1000 pounds per tree by driving cut nails into the trunk. Steel nails do not seem to achieve the same results. It is well known that there is some iron in apples and apparently this variety of tree has the ability to dissolve some the metal from the nails

driven through the bark, forming iron compounds which are utilized in producing the fruit.



A Safe Investment

A RECENT letter addressed to the *New York Tribune* and signed "Member of the Public" suggests a counter proposal to the railroad brotherhood's proposition that the public go into its pocket for 20 billion dollars at 4 per cent, buy the railroads and give them as a present to the trainmen.

Since the trainmen assert that they can operate the roads to advantage and can put a nice piece of profit in their pockets, let the trainmen buy the railroads and then make that profit on their own investment, says the correspondent. They number two million men and if each man puts up $10,000 either in cash or credit, the sum is 20 billion dollars and the railroads are theirs. Four per cent on $10,000 is $400 a year. It will take only $400 from each brother, yearly, to make his group the owner of the railroads. They assert that under their management the profits would be so great that when they were divided half and half with the public the trainmen would each receive from $600 to $900 bonus for his skill. This $600 bonus yearly would pay the $400 interest bill that each man has assumed. If his bonus reaches $900, it would pay the interest and principal in about 15 years.

In other words, if the figures offered by the trainmen are correct, the trainmen could buy the railroads on credit and pay for them out of the property's earnings. The railroads would be theirs in 15 or 20 years without costing the men a penny. That is about as cheap as anything is purchased these days. If they don't take up this proposition, it shows they don't believe in it themselves, at least not the extent of risking $400 on it. And if the trainmen are too "foxy" to risk a few dollars on their own scheme, why should the public come in to the tune of 20 billion dollars, asks the writer.



One Trooper Enough

AS UPHOLDERS of law and order, it is doubtful if there exists anywhere in the world a body of policemen who have less acquaintanceship with the word "fear" than the Pennsylvania state constabulary. They do not lack confidence in themselves either, as may be gathered from a little incident in connection with the steel plant strike.

It seems that the constabulary are stationed in groups of about half a dozen at certain strategic points in the troublesome areas in charge of a sergeant and keep in touch with various parts of the district by telephone.

The sergeant of one of these groups received a call one day recently telling him that a riot had started at a certain point. He answered, "I'll send a trooper over right away."

"One trooper?" came back the voice on the telephone, "I said there was a riot over here."

"I know you did," replied the sergeant, "but you said there was only one riot."



Coal Becomes Coin

MANY mediums for barter and exchange have been used ever since man began to pay for life's necessities; everything from glass beads to metals. It is left, however, to the coal miners of Germany to make use of coal to pay for butter which Denmark is furnishing to them So-called "butter divisions" have been inaugurated in some of the coal mines in the Rhur district of Germany and 60,000 laborers have indicated their willingness to work overtime to produce sufficient coal to meet Denmark's butter bills. In several the overtime gangs work 12 hours out of the 24 instead of eight as heretofore.



Just Killed

YES, Americanization of the foreign element in steel mills would be a good thing," said a man connected with a large steel company one day during the recent steel strike in Washington when senators commented on the large number of nonenglish speaking men working in the mills. "As it is, many of them do not understand much English and most of that consists of cuss words. It makes me think of a story I heard not long ago, which may or may not be true.

"A 'Hunkie' had been run over and killed by a dinky engine in a steel mill yard. The coroner was holding an inquest and the witness was another 'Hunkie' who was nearby when the accident happened.

"'How did it happen?' inquired the coroner of the 'Hunkie.'

"He gave his version of the affair as follows:

"'No ding-ding; no choo-choo; no "dam it, get out of the way." Heem just killed.'"



Union Meant Everything

WHILE not lacking a humorous side, little stories are in circulation in the Pittsburgh district in connection with the steel strike that furnish grounds for serious thought among some employers of labor whose "heads have been up in the clouds" with regard to such of their unskilled employes as have had neither the good fortune to have been born in this country or to have enjoyed its educational advantages. Neglected to a large extent by those giving them employment, they naturally have fallen easy prey to the deceptive doctrines preached by the I. W. W. and bolshevist agitators. The need of a strong Americanization movement among foreign workmen is forcibly brought home by the story of a Tarentum, Pa. physician, published recently in the *Pittsburgh Gazette-Times.*

This doctor asked a striking foreigner what he expected to do when his money ran out. The striker replied, as he produced a union card:

"Me catch 'em union card—go to grocery store—show union card; get on train—show Mr. Conductor union card."

Interrogated as to where he received the information he might use his union card in these ways, the foreigner is alleged to have said, "Mr. Union Boss, he tell me that."

In the Shenango valley, some of the foreign strikers, picketing a plant which was able to retain a sufficient number of men to keep going, were asked what they wanted and why they were hanging around. They replied they did not know what they were doing, but had been ordered to stay around the plant in question from midnight until 6 o'clock in the morning by the union boss. And so it goes. All the onerous tasks are imposed on the ignorant foreigner, fed up on utopian doctrines, while the English-speaking organizer sits safely at union headquarters.

Seek National Industrial Court

Society of Industrial Engineers in National Convention Urge President to Establish Agency With Powers to Enforce Decisions—Business Leaders and Experts on Human Relations Give Views on Labor Situation

AFTER discussing American and international labor conditions for three days, the Society of Industrial Engineers in convention in Cleveland last week wired a declaration to President Wilson urging the establishment of a governmental agency for the adjudication of industrial disputes, with power to enforce its decisions. The declaration stated that "labor disputes must be made justiciable," that is, liable to trial, and subject to decision beyond appeal, which would give the governmental agency supreme authority.

Further, the industrial engineers declared that "industrial unrest will be done away with only when a national purpose backs a proper remedy." Speaking at the concluding session of the convention Friday night, Rowland B. Mahany, assistant to the secretary of labor, stated that paragraph was the crux of the entire situation.

Tells Why Conference Failed

The engineers said the President's industrial conference failed because it limited discussion to methods instead of considering fundamental principles. The President was asked to appoint on the new conference members of the industrial engineering profession.

"The workingman reads and is told of vast accumulations in the hands of a few," said George E. Roberts, vice president, the National City bank, of New York, in speaking on "The Causes Underlying Industrial Unrest." "It is said that 2 or 3 per cent of the people own most of the wealth. He hears of personal incomes that are far beyond the needs of any man or family, and he thinks of these as meaning deprivation to the wage-earning class. The right way to measure the distribution of wealth is not by ownership or income but by consumption. It is only as an individual consumes wealth or uses it exclusively that he deprives other people of it.

"We talk about capital and income in terms of money, but money is only the medium of transfer. Wealth actually exists in the form of tangible property and in discussing distribution it is better to think of it as people use it. And right here is where nine-tenths of the misunderstanding over the distribution of wealth arises. The right place to measure the distribution is not at the point of ownership, or production, but at the point of consumption. The great consuming public is the chief beneficiary from increasing production.

"And when you come to measure distribution in this manner you get a result very different from the representations commonly made. Two or 3 per cent of the population do not consume most of the food supply, or wear most of the clothing, or burn most of the coal, or occupy most of the houseroom, or do most of the riding on the railroads, or even own most of the automobiles. The vast commerce of this country and traffic upon the railroads is not in supplying the wants of 2 or 3 per cent of the population. It is no small section of the population that is behind the great trade going on all over this country today.

"The whole theory that a comparatively few people enjoy most of the benefits of existing wealth breaks down completely under examination. The fact is that, in proportion to the total social product the share consumed by the rich is insignificant. The large incomes go back into industry to increase production for the public market, and the benefits inure mainly to the public."

Industrial Engineers Propose Remedy

WE, THE Society of Industrial Engineers, assembled in national conference and representing this profession in the United States, after thorough analysis and discussion, believe that we are by training, experience, ability and industrial relations justified in making the following declaration in regard to the present industrial situation:

1. *We declare industrial unrest will be done away with only when a national purpose backs a proper remedy.*

2. *We declare that the President's industrial conference just closed failed because it did not consider fundamentals and principles but discussed methods and mechanism.*

3. *We declare that labor disputes must be made justiciable, and governmental legal machinery set up to adjudicate such disputes with full authority to enforce its decisions.*

4. *We regret no industrial engineers were appointed on the President's industrial conference just closed, and we respectfully request that industrial engineers be appointed on the second President's industrial conference about to be called together.*

Feiss Critisizes Miners

Paul L. Feiss, president, Cleveland chamber of commerce, and a delegate to the national industrial conference, condemned the action of the coal miners' leaders in failing to heed President Wilson's request to delay the strike until an impartial tribunal could make an inquiry. He said:

"We have heard a great deal in this country about people being pro-British, pro-French, or pro-German but the real trouble is we are getting to be too pro-Russian. The men of the coal industry have taken a stand and adopted a policy in line with the triple alliance of workers in England, which is a form of extreme socialism and spells bolshevism. Such disturbances are born of the idea fostered in England during the war that the limiting of output is of benefit to the workers.

"I grant that one of our greatest duties is Americanization, but it seems to me that we are indicting ourselves, when after two years during which there has been practically no immigration we must still differentiate between workers by referring to some as foreigners and to others as Americans. We have not attained the proper degree of speed in assimilation, and by this I do not mean the teaching of the foreigner to speak English and to live in accordance with American customs but in giving him a sound knowledge of American principles. We need the backing of every municipality and state in addition to the federal government in this important work.

L. W. Wallace, president of the society, and who is general manager of the Red Cross Institute for the Blind, Baltimore, engaged in training the blind in industrial pursuits, read a paper entitled "The Industrial Engineers' Opportunity Through Contact with Labor."

"Some form of industrial democracy on one hand and a league of nations on the other unquestionably will be agencies of great value and influence, but those agencies within and of themselves will not eliminate labor troubles nor make future wars impossible," he said.

"In recent weeks we have heard much about the efficacy of industrial democracy, of shop committees, of the senate-and-house plan and of collective bargaining as panaceas for

labor problems. During the same period we have had striking examples of the inadequacy of all of these plans. Industrial democracy is a misnomer unless fairly and honestly applied. Collective bargaining is a great danger if wrongly applied and is used as an instrument of autocratic power.

"The problem before the American public is to evolve those plans and to inaugurate those principles that will make arbitrary and autocratic power a grave offense against the community and to make it impossible for any such arbitrary power to evoke its wrath against the will and welfare of the masses. Such plans should provide severe and just punishment for the autocratic employer or autocratic labor leader who wilfully violates the principles of honesty, fairness and justice and by such violations bring hardships, despair and heartaches upon the masses. One is just as guilty as the other; we have had glaring examples of the evils of the financial trust and of the labor trust. Both are equally culpable and both should be dealt with in like manner."

Dorr E. Felt, president of the Illinois Manufacturers' association, who was a member of the commission which investigated labor conditions in Europe in the spring of 1919 for the United States department of labor, described those labor conditions. The radical labor leaders in England for some time past have painted lurid pictures of impending revolution "provided the employers do not yield to the demands of labor," according to Mr. Felt. They have told the public that they, as the leaders of labor, alone could prevent the threatened disasters. Then they have made a pretense of "saving the nation," and by adroit political methods have won the applause of the people for their "patriotism."

"The failure of employers to understand what labor wants is what creates a labor problem," said Meyer Bloomfield, of Boston, a writer on labor subjects. "If you agree with that then we come to the great obstacle in solving the labor problem, which is the getting of facts, the truth of the situation. The executive, removed from his men, out of touch with their wants and thoughts, depends on his representatives, the little bosses, for his facts. Until the little boses are given more intelligence the men who work in your employ must go elsewhere for sympathy and understanding. If based on the truth humanities will take care of themselves."

Cannot Deal With Masses

"What we need in America today is: First, less untruthful publicity in regard to the labor situation; second, more truthful publicity, and third, a realization that we cannot deal with workmen as a mass," declared W. A. Grieves, assistant secretary, The Jeffrey Mfg. Co., Columbus, O.

"When we realize that the individual is the important factor in industry we will have gone a long way toward the solution of industrial problems.

"When we consider the small percentage of our industries which are involved in labor troubles we must appreciate the fact that the agitators cannot undermine our institutions or overthrow our fundamental ideas of government.

Mr. Grieves referred to the steel strike saying: "The wages in the iron and steel industry are high compared with those in other industries. There was no trouble except what the agitators attempted to bring about."

Women "Outstripping" Men

D. G. Stanbrough, general superintendent, Packard Motor Car Co., told of some of the methods used by the Packard company to meet the shortage of labor. Shop trade schools were established to train employes, classes were established for foremen, and women were given an opportunity to learn trades.

"We were hard up for stripers; and there were just 35 of them in Detroit, or at least we thought so," he said. "It took a striper eight hours to stripe a car. We started to train women; found we could train them to do the work in 10 days, and since then we have found the women can do the same work as the men in four hours."

The restriction of immigration, he declared, would do the industries of this country much harm.

H. C. Parmelee, editor, *Chemical and Metallurgical Engineering,* who recently returned from an engineering and industrial investigation in England and France, gave an interesting description of industrial conditions in those countries. Incidentally, he mentioned the fact that a Belgian lace factory, seeking to rehabilitate itself, found it could not get into production short of six or eight months if it imported its machinery from the United States, but that it could obtain the machinery from Germany within two months. Germany obtained the order. He ventured the opinion that the Germans under their new form of government will outstrip "the other countries" in industry and commerce. He reviewed the immigration situation and said that it was up to the United States "to clean house" of European malcontents.

W. H. Lough, president, Business Training Corp., New York, made an address on "Developing Teamwork Through Developing Team Leaders," while W. S. Warfield, Kansas City, Mo., president, Order of Sleeping Car Conductors, presented a paper on "Increased Efficiency, a Prime Factor in Higher Wages." Joseph W. Roe, secretary, Railway Car Manufacturers' association, read a paper on "College Training for Executives."

While the society concentrated its attention on the labor situation it heard several speakers who are experts on engineering problems related to industrial management.

Vladimir Karapetoff, professor of electric engineering, Cornell university, spoke on "Audible Signals in Factory an Aid to Efficiency." Professor Karapetoff is a talented musician in addition to being an expert on electric engineering, and he told how his "ear" for music helped him in experimental work. He demonstrated how in a factory where piercing noises predominate, a low-toned, sonorous and musical note will arrest attention, and where the noise is deep and thunderous, a shrill, piercing note will be heard. Various kinds of signals may be used in different departments of works, all connected with a central switchboard.

Ward Harrison, engineer associated with the National Lamp Works of the General Electric Co., spoke on "Lighting for Production." From an actual shop test a firm increased its production 27 per cent with an increase of only 5 per cent of its payroll. The spoilage due to poor lighting in Wisconsin alone is estimated at $500,000 annually. Twenty-four per cent of 91,000 accidents analyzed by the National Safety council were due wholly or in part to poor lighting.

Industrial Expert Speaks

Major Frank B. Gilbreth, Providence, R. I., spoke on "Unnecessary Fatigue, the Multibillion Enemy of America." He is a consulting expert on industrial problems who served the government during the war and who is now engaged by a number of large industrial concerns. He demonstrated how a multiplicity of physical strains incidental to everyday work may be easily abolished, making for speed, accuracy and general efficiency of the workers. He said the elimination of unnecessary fatigue would save 20 cents a day per worker, and that on a basis of 35,000,000 workers for 300 days a year, $2,100,000,000 could be saved annually.

Some of these papers will be presented more fully in subsequent issues of The Iron Trade Review.

Nearly 1000 were registered for the convention, and the delegates visited a number of the large industrial establishments in Cleveland. A feature of the convention was an exhibition of labor-saving and efficiency devices.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Rochester Forge, Inc., Rochester, N. Y., organized last spring, has completed and has in operation its new plant, located in the northwestern part of that city on a siding of the New York Central railroad. The plant is housed in a building 50 x 80 feet, which is of steel construction, with metal sidings. The tract is of ample size to permit of considerable additions to the present building, as the business of the company may demand.

The company specializes in rings, disks, die blocks, spindle forgings and other such products as come within the classification of steam hammer work. Initial equipment of the plant consists of one 3500-pound double leg, and one 1500-pound single leg hammer, furnished by the Chambersburg Engineering Co., Chambersburg, Pa., power for which is provided by a 250 horsepower waste heat type vertical boiler, furnished by the Wickes Bros. Co., Saginaw, Mich. The furnace equipment comprises two heating furnaces and a heat treating plant built by Tate, Jones & Co., Inc., Pittsburgh, which also did the engineering work in connection with the layout of the boiler and furnaces. This equipment is coal fired, but has auxiliary equipment for oil fuel.

Officials of the company are: President, W. H. Kline; general manager, E. O. Jenkins; sales manager, E. E. Guntert. They are backed with a working organization of men who have had wide experience in the production of steam hammer forgings.

* * *

ORGANIZED to take over the manufacturing interests of the Barber-Foster Engineering Co., Friendship, N. Y., the American Crane Co., Inc., will build and market cranes, developed by the company first named. Barber-Foster company, 602-603 Swetland building, Cleveland.

* * *

ERECTION of a 1-story plant addition is progressing for the Cogsdill Mfg. Co., 818-820 West Warren avenue, Detroit, according to S. A. Cogsdill, president. This building is the outgrowth of a new combined center drill and reamer, which was recently developed by the company's engineers. According to Mr. Cogsdill, this tool is ground after hardening, with radial relief cutting edges.

* * *

WITH stock issued and outstanding of $78,750, the Edoscope Mfg. Co., Plainfield, N. J., is a new $200,000 corporation that is occupying part of a plant at 34 Somerset street. It manufactures and sells an automatic stereopticon and at present utilizes a small amount of equipment.

* * *

UNDER the firm name of Jenkins & Knowles, H. E. Jenkins, Hartford, Conn., and Elmer J. Knowles, Worcester, Mass., have opened an office and shop at 34 Wells street, Hartford, specializing in power installation in factories and power plants. They also will do a general electrical business.

* * *

FOR the purpose of increasing its output of marine motors, of the 2-cycle type from two to 10-horsepower, and 4-cycle type up to 30-horsepower, the Gilmore Marine Motor Corp., Detroit, recently filed articles of incorporation. The firm has added a brass and iron foundry to its plant.

* * *

DEPARTMENT of chemical research conducted by the Connecticut Metal & Chemical Co., at present located in New Britain, Conn., is to be transferred to a new plant in East Berlin, Conn., as soon as work is completed remodeling several factory buildings. Some of the buildings now are being equipped with machinery. A new 300-foot building also is being erected to house the chemical research department.

* * *

ERECTION of a new plant for the Phenix Tube Co., Brooklyn, N. Y., at Warren, O., will be started shortly, but contrary to a general report, the completion of this building does not mean the removal of the entire plant from Brooklyn, A. J. Burden, vice president, states. When the new buildings at Warren are completed, the manufacture of oxyacetylene welded steel tubing will be discontinued at the Brooklyn plant, and this product will be manufactured exclusively at Warren. At the Brooklyn plant the manufacture of iron-lined, lock-joint brass tubing, used principally in the manufacture of brass beds, will be continued.

* * *

CONTRACTS for varying tonnages of its special reinforcing steel bars have recently been closed by the Paul J. Kalman Co., St. Paul and Chicago, as follows: 1500 tons for blast furnace for the Ford Motor Co., Detroit; 660 tons, for grain elevator, Southwestern Milling Co., Kansas City, Kans.; 300 tons for building, American Brake Co., St. Louis; 275 tons each for building, Central Bag Co., Chicago, and for Plaisance hotel, Math. Rauen Co., Chicago; 200 tons each for school building, Buehl, Minn., and hotel and theater building, Hamm, Finkelstein & Ruben, St. Paul; 125 tons for warehouse, the Carton Co., Battle Creek, Mich.; 114¼ tons for warehouse and garage, Pence Auto Co., Fargo, N. Dak.; and 100 tons for school building, Kinney, Minn.

* * *

CAPITALIZED at $5,000,000, the Gottschau Steam Motors Co., Chicago, recently was incorporated in Delaware and is now completing plans for active operations in the production of steam automobiles. The company has leased a factory on Western avenue, Chicago, which will be used as an assembling building until a manufacturing plant can be built and equipped. The Stanley Carriage Co. has entered into a contract with the new firm, whereby it can manufacture cars of the same design as turned out by the Stanley company. A contract also has been entered into with the Residum Burner Co. which grants the new firm the use of the Residum burner for all automotive purposes. The incorporators of the company are: Christian M. Gottschau, J. H. Nash, superintendent of the Motive Power Illinois railroad; Otto Rabe, president of the Kelsey Foundry Co., Chicago; E. H. Lehr, president of the Investors Securities Co., Denver, and Mason R. McKinstry, secretary-treasurer of the Investors Securities Co. The principal offices of the company are at 1770 Berteau avenue, Chicago.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

FULL payment for the H. R. Lewis Tool Co., Detroit, has been made by F. R. Fortune, Wooster, O., and the property is being removed to that city. A new company has been incorporated for $200,000, known as the F. R. Fortune Tool & Mfg. Co., and the business will be conducted on a larger scale than formerly was the case. A 195 x 286-foot site has been donated to the company by the Wooster board of trade, which also will pay the company a bonus. A 1-story building, 60 x 180 feet, is to be built immediately and other units added. It is expected that the new plant will be ready for occupancy by Jan. 1 and in the meantime the Detroit plant will continue in full operation. A contract to build a railroad switch to serve the Wooster plant soon will be let. R. K. Evans, formerly works manager of the Lewis company is to continue in a similar capacity for the Fortune company. Joseph Lowenstein, who has been a toolmaker for 35 years, will have charge of the latter company's development work. The products of the plant will consist of machinists' and toolmakers' tools, automobile tools, etc.

* * *

ROST, ANGSTMAN & GRIESS, INC., 1778 Broadway, New York, will act as selling agents and sales engineers in the automotive field, handling engines for pleasure boats, commercial boats and their auxiliaries, as well as passenger car and auto truck parts. The company recently was incorporated with $50,000 capital. N. G. Rost is president.

* * *

COMPLETE new drop forging equipment, including modern machinery for die sinking and forging has been installed by the Bacon & Matheson Forge Co., successor to the Westerman Iron Works, Whatcom avenue and West Lander street, Seattle. So far as the company knows it is the first drop forge plant on the Pacific coast. C. H. Bacon is president.

* * *

THE American Instrument Works, Pittsburgh, incorporated July 10 last, has succeeded to the business of the Pittsburgh Instrument Co. The works of the company, which is under the management of Earnest A. Schurk, are located at 18 Lacock street, north side Pittsburgh, and manufactures tools, jigs, dies, machine parts and scientific instruments.

* * *

PRESENT capacity of the plant of the Empire Axle Co., Dunkirk, N. Y., will be nearly doubled by the erection of an extension. The addition will be equipped with modern machinery and tools as well as electric cranes and other labor saving equipment. The present power house of the company also will be enlarged. R. W. Foley is sales manager.

* * *

CAPITALIZED at $10,000, the Sprague-Hayes Mfg. Co., 40-42-44 Larned street east, Detroit, recently was incorporated to engage in the manufacture of machine tool specialties. According to advices from the company, it does not contemplate the erection of a plant at this time. Officers are: President, E. W. Sprague; vice president, Fred Heal, and secretary-treasurer, R. F. Hayes.

* * *

LITTLE evidence of the strike is apparent at the Woodlawn, Pa., works of the Jones & Laughlin Steel Co. In fact, the plant is setting up records. On one day recently, 1756 tons of steel passed through the blooming mill in a 12-hour turn, which is record for this mill and is believed to be the greatest tonnage ever broken down in one turn of any mill in the country.

* * *

THE Columbia Tinware Co., Inc., 82-90 Scholes street, Brooklyn, N. Y., which was recently incorporated with $20,000 capital, according to advices from Samuel Antoville, secretary, is now actively engaged in the manufacture of tinware, galvanized and japanned ware. Officers are: President, Julius Levett; treasurer, Joseph Manoff, and secretary, Samuel Antoville.

* * *

INCORPORATION of the Donoghue Machine Co., New York, recently was effected and the company will engage in the manufacture of pistons, piston rings, piston pins and do general crankshaft grinding. Officers of the company are: President, Joseph Donoghue; treasurer, Joseph Donoghue; secretary and general manager, Herman Koch, and mechanical engineer, Edgar N. Zorn. The office of the company is at 239 West Sixty-eighth street, New York.

* * *

CONTRACTS have just been closed by C. F. Herington, district manager at Chicago for the Bonnot Co., Canton, O., to furnish the preparing and distributing pulverized coal system, built by that company to the following companies: The Marion Malleable Iron Works, Marion, Ind.; Grand Rapids Malleable Iron Works, Grand Rapids, Mich., and the Franklin Steel Works, Franklin, Pa.; the latter contract includes the installation of 1700 horsepower boilers.

* * *

THE Rockrange Iron Works, Inc., Suffern, N. Y., recently was organized to engage in the fabrication and erection of structural steel and ornamental iron work. The company has purchased a site, 50x205 feet, which is improved with a 2-story building. New machinery has been purchased and is now in transit. Operation of the plant is expected to be started about Dec. 1. The company, which is capitalized at $50,000, was incorporated by W. H. Pavitt, A. Gruenwald and M. Hineser.

* * *

EXPORT orders for complete tinning machines, which include tin pots, conveyors, and branning and polishing units, have been received by the Aetna Foundry & Machine Co., Warren, O. Part of this equipment was ordered through New York dealers for French interests and part through San Francisco dealers for shipment to Japan. So far as is known, these tinning machines are the first American-made units to be shipped to foreign tin plate makers since before the war. Important inquiries from French and Japanese sheetmakers for galvanizing machines also are before the officials of the Aetna company.

British Output Declines Sharply

Multiplicity of Strikes Affecting Iron and Steel Industry Brings Threat From Government to Call a Halt—American Steel Imported at Higher Figure Than Domestic Cost to Meet Urgent Needs—Germany and Belgium Making Inquiries

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation Street,
Birmingham, Eng., Oct. 7.

Rate of Exchange 4.17

LARGE importations of finished iron and steel from America are beginning to have their sequel in British returns, as the September figures include 10,000 tons of American billets with 5150 tons of finished steel. The billets cost nearly £14 ($58.38) per ton, c.i.f. This figure is rather significant, since at this price, with the prevailing rate of exchange American steel cannot be competitive with British, and the purchases must be to meet urgent needs, practically regardless of cost.

The severe blow inflicted by the railroad strike on the iron and steel industry is becoming more apparent. The chief trouble is still on the railroads. Rolling stock is chronically deficient; breakdowns are frequent and it is clear that many of the engines ought to be scrapped. Many of the mills were only kept going by storing their output and some of the accumulations were enormous. It is impossible now to get cars with the requisite promptness.

Railroad traffic seems to be unmanagable, while there are rumors that some of the railroad men are accepting substantial gratuities to give certain establishments preference in the supply of cars. Apparently railroad disorganization will be a serious obstacle to business for many months. The iron and steel industry in the Birmingham district is in a better position than works elsewhere, as much of the Black country output is for Birmingham requirements, and the Midland city is linked up to the works with canals, or can be served with iron by motor trucks. In the Sheffield district business is nearly paralyzed by the deficiency of cars.

In the Black country, although mills were kept going with few exceptions during the strike, output continues deficient. Hope of wage concessions from the men to assist the manufacturers to meet foreign competition has now disappeared. Although in the early days of the war the employers frequently anticipated the upward movements of the sliding scale by voluntary wage advances, there is an entire absence of any inclination to reciprocate now that the employers' turn has come to ask for relief. There is still a good demand for iron, almost wholly for home consumption. For the time being the foreign trade in iron is dead.

Galvanized Sheets Advanced

The only advance recorded this week is in galvanized sheets, which have been put up to £33 ($137.61), admittedly a high figure. Makers in the Birmingham district could sell twice as much, if they had the skilled workmen to restart the idle mills. The trade continues to be crippled by the operation of the 8-hour system, which not only reduces the output per shift, but wastes enormous quantities of coal in the intervals between day and night operations.

Steels are firmer with an increasing demand. Fairly good sales of billets have been made at £15 5s ($63.59), but steelmakers generally restrict their sales to small tonnages. A number of merchants have received circulars this week putting up steel prices 10s ($2.80) per ton, and it is thought likely that this advance has become general.

There is a remarkable disappearance for the time being of foreign importations of steel. The few lots from Lorraine proved rather unsatisfactory, as they were too hard for most British requirements and repeat orders are unlikely. But there is some evidence that this steel was sold with the object of getting ready money, and that it was more urgently needed at home. The same is equally true of Belgium, and this is confirmed by a Belgian inquiry this week addressed to a Birmingham merchant for supplies of billets over several months at the rate of 15,000 tons per month.

Another steel strike has begun, with its center in Scotland, where the bricklayers at the Clyde steel works are out, stopping or very largely restricting operations, with the result that the Clyde shipbuilders are faced with a prospective stoppage of steel supplies much needed for shipbuilding.

Less business is passing in Welsh tin plates, chiefly because nearly all the mills are booked months ahead. Inquiries from the Continent are enormous and among earnest purchasers are Germans who would take large quantities if credit could be arranged. Makers of iron and sheet bars in that district are fully booked to the end of the year.

The pig iron industry is far from normal, and practically defies any sort of forecast. A number of furnaces are still out, some definitely stopped for repairs, and others damped down. Smelters are not in a hurry to restart, in view of the indifferent prospects as to obtaining fuel, and the extreme uncertainty as to business.

Demand for the better grade pig iron has been greatly reduced by the molders' strike, which has stopped a great many of the largest foundries in the kingdom. The first ballot of the molders to decide the question of returning shows a majority opposed. The great engineering shops are gradually becoming affected, as reserve castings are used up, increasing unemployment. The strike has been in progress for nearly a month.

Some foundries are buying as usual, glad of the opportunity of stocking iron. Prices are unaffected, reduced output being balanced to some extent by a falling off in demand. Under the new conditions of sale, which involve conditional clauses passing on to the consumer any additional costs of production, buyers do not see any particular advantage in speculating on contracts, so that they merely contract to secure a reserve of iron to cover needs for a week or two. This helps to steady prices.

The extensive stoppage in Middlesborough has removed any prospect of iron made in that district going into Northamptonshire and Derbyshire, so that eventually the prices in the latter districts may be hardened a little. In the West coast district all but two furnaces damped down during the strike of coal miners and railroad men have been put into commission again, but demands for low phosphorus iron have decreased considerably, almost wholly in consequence of the molders' strike. Hardly any business is going on in spiegeleisen or ferromanganese, and the two furnaces at Workington usually employed in this business are idle.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ISAAC W. FRANK, president of the United Engineering & Foundry Co., Pittsburgh, since its organization in 1901, retired from that position with the company at the annual meeting held at the company's offices last week. Mr. Frank, however, is not severing his connection with the company, which he will continue to serve in the capacity of chairman of the executive board. Florence C. Biggert Jr., for several years past chief engineer and second vice president of the company, succeeds Mr. Frank as president and K. C. Gardner, former manager of sales of the rolls department, has been chosen to succeed Mr. Biggert as second vice president. Charles H. Booth, of the Lloyd-Booth Co. department, Youngstown, O., retired from the board of directors of the United company, his place being filled by the election of John Quinn, manager of the American Roll & Foundry Co. department, Canton, O. Other officers and directors of the company were re-elected.

Mr. Frank's retirement from active participation in the affairs of the United Engineering & Foundry Co., is merely the fulfillment of an oft-repeated intention, founded upon a desire for more leisure and an opportunity for travel to which the next year will be devoted. Mr. Frank was one of the organizers of the United company, having been previously part owner of the Frank-Kneeland Machine Co., now one of the United constituent companies. He was elected president of the company at its organization, on July 1, 1901, and served in that position continuously until his retirement. He is a graduate of the Renssalaer Polytechnic institute, Troy, N. Y.; has been active in business and civic affairs in Pittsburgh and also was president of the National Founders association and prominent in the affairs of the National Metal Trades association. He is a member of the American Iron and Steel institute as well as a member of many clubs and organizations.

John E. Cushing, who has been assistant director, succeeds J. H. Rosseter who resigned, effective Nov. 1, as director of operations of the shipping board. Mr. Rosseter has retired to resume his work with the International Mercantile Marine and W. R. Grace & Co., with which companies he was associated for many years.

C. K. Sheridan on Nov. 1 became purchasing agent at Cleveland for M. A. Hanna & Co., Leader-News building, Cleveland, sales agent for iron ore, pig iron, coal and coke. He succeeds T. F. Cadden.

A. W. Mellon, of the Mellon National bank, Pittsburgh, and Eversley Childs, chairman of the Barrett Co., New York, recently were elected directors of the Crucible Steel Co. of America, Pittsburgh.



ISAAC W. FRANK

J. F. Paige, general manager of the Port Arthur Shipbuilding Co., has resigned to take charge of the Halifax Shipyards and will assume his new duties in November. He formerly was associated with the Fore River Shipbuilding Co., Fore River, Mass.

M. L. Murray has resigned as branch office manager for the Waterbury Co., 15 Murray street, New York City, and has been elected vice president and general sales manager of the Alloy Metal Wire Co., which has established temporary offices at 146 West Ninety-ninth street, New York City. The wire mills of the latter company are at Yonkers, N. Y.

Harry P. Reichard has been elected secretary of the Aetna Iron & Steel Co., Gary, Ind., recently incorporated at $3,000,000. He formerly was identified with the United States Steel Corp., that city, prior to which time he was located in Columbus, O.

W. H. Farrell has been named to represent the Wykoff Drawn Steel Co., Pittsburgh, in New York and New England. Mr. Farrell is a brother of James A. Farrell, president of the United States Steel Corp. and a pioneer in the wire drawing business.

George M. Thompson, formerly vice president of the Clinton-Wright Wire Co., Worcester, Mass., was elected president and general manager at a special meeting of the directorate, held Oct. 27. He succeeds Evan F. Jones, resigned. John Wheeldon, formerly of Cleveland, was made general superintendent. For the past year, Mr. Wheeldon has been with the Spencer Wire Co.

L. Sevier, vice president of the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., who will be succeeded on Nov. 1 by Hugh Morrow, prominent attorney, has been elected president of the Alabama Manufacturers and Operators association. He will give his entire time and effort to the association. He will make special effort to handle some of the export business that is looming up for the Alabama producers.

Lewis P. Smith has been placed in charge of the new office established in New York City by Matthew Addy & Co., Cincinnati. He formerly was in the Philadelphia and Cincinnati offices of the company and during the war served in the pig iron division of the war industries board. Mr. Smith will handle the sale of pig iron, coal, coke, ferroalloys, fluor spar, etc., in the New York and New England territories. He has established temporary quarters at 27 William street, New York, but shortly will open a permanent office at another address.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

FLORENCE C. BIGGERT JR., who succeeds Isaac W. Frank as president of the United Engineering & Foundry Co., Pittsburgh, was born in Crafton, Pa., about 43 years ago. He was graduated from the University of Pittsburgh with the degree of mechanical engineer in 1899 and that fall entered the employ of the United Engineering & Foundry Co., as a draftsman and subsequently rose to the position of assistant chief engineer. He succeeded Frank I. Ellis as chief engineer when the latter resigned to accept another position. For the past few years he has been second vice president of the company. He took a prominent part in the designing and building of the rail and billet mills at Gary, Ind., has been active in developing steel plant equipment and is widely known for his original ideas in this line of work. He is a member of the American Society of Mechanical Engineers, the Engineers' Society of Western Pennsylvania, the American Iron and Steel institute, and the Union club, Pittsburgh.

F. J. Page has been placed in charge of the Chicago office of the Milwaukee Electric Crane & Mfg. Co., 604 Fisher building.

Milton O. Dean, assistant agent of the Pepperell Mfg. Co., Biddeford, Me., has resigned to become agent of the Edward Mfg. Co., Augusta, Me.

Joseph G. Butler Jr., Youngstown, O., vice president of the Brier Hill Steel Co., has opened his art museum on Wick avenue, that city, in which he has housed his beautiful art treastures, including 81 large canvasses.

C. W. Knox, who for several years has been associated with the United States Steel Products Co., Seattle, has resigned to accept a position with the Continental Pipe Mfg. Co., of that city. Mr. Knox will be in charge of sales for the latter company.

W. A. Gatward, engineer of the Hoskin Mfg. Co. ,Detroit, presented a paper on "Industrial Application of Nickel Chromium Alloys," at the bimonthly meeting of the metallurgical and mining section of the Engineers' Society of Western Pennsylvania at the Union Arcade auditorium, Pittsburgh, last Tuesday evening.

B. H. Gardner, for the past two years manager of the New Britain district of the Connecticut Light & Power Co. has been promoted to be sales manager of the commercial department of the company with headquarters in Waterbury, Conn. N. S. Franklin, assistant superintendent, has been promoted to succeed Mr. Gardner.

Lewis Marshall Ream, Thompson, Conn., who for several years has been



FLORENCE C. BIGGERT JR.

learning the wire business at the Worcester, Mass., works of the American Steel & Wire Co., has gone to Cape Town, South Africa, to represent the United States Steel Corp. in a sales capacity. Mr. Ream is a son of the late Norman B. Ream, Chicago, who was a director of the Steel corporation.

W. J. Clucas has been appointed manager of the Detroit office of the Lancaster Steel Products Co., Lancaster, Pa. Increased demand and the opening of the Detroit office made necessary the appointment. Mr. Clucas was connected with the Standard Parts Co., Cleveland, many years. The Lancaster company will also increase its Detroit facilities by establishing a warehouse.

Robert L. Wilkinson has been appointed sales manager of the Klaxon Co., Newark, N. J., to succeed Walter P. Coghlan, who recently resigned to go to Baltimore. Mr. Wilkinson has been with the Klaxon organization for 10 years. In Chicago he handled jobber interests. Later he went to Indianapolis in charge of the motor equipment business for that section, and then to Chicago with an enlarged territory. When the Klaxon industrial division was organized with headquarters in the Metropolitan tower, New York, Mr. Wilkinson was transferred to New York, where he has been identified with the organization until his latest promotion to sales manager. He will be located at Newark.

John W. Higgins, president and treasurer of the Worcester Pressed Steel Co., Worcester, Mass., was re-elected a vice president and member of the executive committee of the Associated Industries of Massachusetts at its fourth annual meeting in Boston last week. Winslow Blanchard, of the Blanchard Machine Co., Cambridge, Mass., was re-elected assistant treasurer and a member of the executive committee. In addition the following were elected members of the executive committee: Charles L. Allen, president and general manager of the Norton Co., Worcester, Mass.; George Bausman, National Equipment Co., Springfield, Mass.; Lewis E. Bellows, Walden-Worcester, Inc., Worcester, Mass.; Howard Coonley, Walworth Mfg. Co., Boston; James H. Drury, Union Twist Drill Co., Athol, Mass.; Adolph W. Gilbert, Chapman Valve Mfg. Co., Indian Orchard, Mass.; S. Harold Greene, Lockwood, Greene & Co., Boston; Eben S. S. Keith, Keith Car & Mfg. Co., Sagamore, Mass.; Fred T. Ley, Fred T. Ley & Co., Inc., Springfield, Mass.; Frederick H. Payne, the Greenfield Tap & Die Corp., Greenfield, Mass.; Richard H. Rice, the General Electric Co., Lynn, Mass.; E. Kent Swift, the Whitin Machine Works, Whitinsville, Mass.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

ALBERT H. MITCHEL, who formerly was affiliated with the Taft-Pierce Mfg. Co., Woonsocket, R. I., has become vice president and general sales manager for H. W. Cotton, Inc., Woolworth building, New York City, manufacturer of precision and automatic machinery, and designer and builder of jigs, tools with a plant at 34 Thirty-fifth street, Brooklyn, N. Y. His headquarters will be in the Woolworth building, New York City. For nine years, Mr. Mitchel was in the engineering department of the Taft-Pierce company at Woonsocket and then entered the sales department as Chicago representative. For the last five years, he has been district sales manager at its New York office.

Edward R. Abbott has become identified with the sales force of H. W. Cotton, Inc., Brooklyn, N. Y. He will have charge of western business but for the present will have his headquarters in the Woolworth building, New York City. He later will remove to Cleveland. Mr. Abbott formerly was a member of the sales force in New York for the Taft-Pierce Mfg. Co., Woonsocket, R. I., for several years.

Gustaf A. Granlund has been made superintendent of the Van Norman Machine Tool Co., Springfield, Mass.

Arthur L. Humphrey, president of the Westinghouse Airbrake Co., Pittsburgh, has been elected a director of the Western National bank, Pittsburgh.

William F. Dautrich, who has been with the Standard Co., a division of the Torrington Co., Torrington, Conn., several years has become general manager of the Borgeson Mfg. Co., Torrington.

George Roemer Woods, who recently resigned from the Allied Machinery Co. of America, New York, has been appointed manager of the New York office of R. S. Stokvi & Zonen, Ltd., Rotterdam, Holland. He has been touring Europe, visiting the various offices of the company at Paris, Brussels, Petrograd, etc., and has made a study of industrial and economic conditions. Early in November he will take up his duties at 17 Battery place, New York City.

R. W. Wolf, a New York engineer, will speak on the "Human Relation in Industry" at a meeting of the Worcester section, American Society of Mechanical Engineers, in Worcester, Mass., Nov. 20.

Howard R. Bemis, president and treasurer of the Bemis & Call Hardware & Tool Co., Springfield, Mass., has been elected a director of the Hendee Mfg. Co. of that city in place of C. O. Hedstrom, resigned.

H. L. Mode has been placed in charge of the New York office in the Woolworth building, established by the Chesapeake Iron Works, Baltimore, manufacturer of electric traveling cranes.

John B. Anderson, assistant manager of the Brockton Gas Light Co., Brockton, Mass., has resigned to engage in business in Worcester, Mass. He is president of the Brockton chamber of commerce.

Allen F. Smith, who has been with the Carlton Engraving Co., Worcester, Mass., several years and is the secretary of the Advertising club of Worcester, has become advertising manager of Walden-Worcester, Inc., maker of wrenches, of that city.

F. O. Wells, president of the Greenfield Tap & Die Corp., Greenfield, Mass., who recently returned from Europe, gave an illustrated talk on the battlefields which he visited, before the Engineering club of the corporation, Oct. 27.

Capt. H. L. Wyman, U. S. N., assistant industrial manager at the Portsmouth navy yard, Portsmouth, N. H., for the past three years, is to be detached from duty at that station this month, and will be succeeded by Capt. Charles P. Snyder.

Frank G. Phegley has resigned his position with Warren Webster & Co., Camden, N. J., manufacturer of water heaters, steam specialties, etc., after nine years as manager of its Cleveland office, 706 Rose building. Hereafter it will be under the direct management of the home office but Clyde W. Colby has been appointed Cleveland district manager and he will have associated with him as assistant district manager, William Roebuck Jr., who has been identified with the company's home office organization for the past nine years.

Herman Fleischer, one of the factory managers of the Stanley Works, New Britain, Conn., completed 50 years of service in the factory, Oct. 29, and was presented with a gold watch and $50 in gold by his associates. He is the oldest man, in point of service, in the factory.

Harry E. Penfield, who has been manager of the Worcester Machine Screw Co., Worcester, Mass., a branch of the Standard Screw Co., since last December, has been transferred to the Hartford Machine Screw Co., Hartford, Conn., another branch of the Standard Screw Co., effective Nov. 1.

Fred P. Gates, who has resigned from the Arrow Electric Co., Hartford, Conn., to go with the Hart Mfg. Co., maker of electrical switches, in that city, was given a farewell dinner, Oct. 31 by the Foremen's club, of which he was president, and presented with a watch, suitably inscribed.

Frederick G. Hausmann has been appointed production manager of the P. & F. Corbin division of the American Hardware Corp., New Britain, Conn., to succeed James R. Fletcher, who died recently. Walter J. Sorrow, superintendent of the plant department of the Winchester Repeating Arms Co., New Haven, Conn., will take entire charge of the mechanical end of the division.

George D. Munson, Wallingford, Conn., has been elected first vice president of the International Silver Co., Meriden, Conn., to fill the vacancy caused by the recent death of George H. Edwards, Bridgeport, Conn. I. W. Copefair and L. B. Hall, both of New York, have been elected second and third vice presidents, respectively. Roy C. Wilcox has been elected a director in place of Mr. Edwards and C. R. Gardiner has been elected a member of the executive committee.

To "Squeeze" Out War Inflation

Federal Reserve System Will Raise Rates For Rediscounting on "War Paper" to Level of Commercial Paper Rates—Hope to Bring About Deflation of Huge War Expansion—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

EXPECTED announcement by the federal reserve banks within a very short time that the rates for rediscounting member bank bills on "war paper" collateral are to be raised to the level of commercial paper discount rates, will constitute the first official postwar step to reduce the tremendous volume of war-created inflation of bank credits in the United States.

This credit expansion, as described by Governor Harding of the federal reserve board, "is equal to the difference between the total war expenditures of the government, on the one hand, and on the other, the total amounts raised by the government through taxation and by the sale of its obligations so far as paid out of savings." He adds that no reliable estimate can be made of this difference, which must be gradually absorbed through future savings for the reason that banks are lending and will always lend freely on government bonds as collateral.

An estimate of the government obligations held by the banks of the country as security for loans places the total at between $6,000,000,000 and $7,000,000,000. In view of the preference that has been granted "war paper" borrowings by the federal reserve banks speculation has been rife respecting the future policy of the system at the expiration of the period of one year, tacitly agreed upon at the time of the Fourth Liberty loan campaign. At that time it was found necessary to urge investors to "borrow and buy," the banks undertaking to carry such loans for customers for four 90-day renewals at the coupon rate. For the Victory loan the banks were to carry loans for the period of six months.

The four 90-day renewal period for Liberty bonds has expired and for additional renewals of loans by customers, banks are charging an increased rate of 5 per cent instead of the lower coupon rate. The Victory loan period expires Nov. 11. The federal reserve system has been standing behind the member banks by rediscounting their notes based on "war paper" collateral at 4 per cent for 15-day maturities and 4¼ per cent for 90-day maturities.

The opening of the gates of the federal reserve system to the flood of "war paper" was in direct violation of the fundamental principles upon which the system was built. Its operations were designed to be confined to self-liquidating paper, such as acceptances, commercial paper, etc. Only the exigencies of the war and the imperative need for facilitating the huge financing program of the government caused the system to be changed to admit such long term securities as government obligations as a basis for rediscounting.

To Eliminate War Paper

Bankers are convinced that until all of the "war paper" is squeezed out of the system and it reverts to its proper peacetime function, the country's financial position will not be completely sound. At a meeting of the officials of the 12 regional banks in Washington last week it is understood that decision was reached to raise the rediscount rates on "war paper." How effective this action will be in "squeezing" out the war inflation from the banking situation is problematical.

The effect, of course, will be to push such collateral out of the reserve system itself, but the member banks will likely be compelled to make loans to customers on their bonds for a long time to come. There is no doubt but that the ease of obtaining loans from banks on bonds and the low rate has encouraged such borrowing by bond holders, and the stiffening of the rates doubtless will inject a healthy element of restraint and discouragement into the situation. Inflation is being caused not only by borrowing to pay for undigested bonds, but by borrowing on bonds already paid for by the investor. As most bonds have by now been practically digested the latter factor is the most serious.

The result of wholesale borrowing on bonds has been extravagance and the bidding up of prices in countless lines. Some economists contend that the circulating credit of the country has been increased to the extent of the bonds outstanding, and it is indisputable that most bond holders think of their bonds as assets rather than a debt which they and all the people must some day pay. The speculative wave has been due to the war inflation in a large measure.

The peace burden on the federal reserve banks has been more severe than that of the war. Last week's statement of the reserve board shows that discounts of bills secured by government war obligations were $1,666,055,000 as compared with $1,092,417,000 for the corresponding date one year ago. The ratio of total reserves to net deposit and federal reserve note liabilities combined, last week stood at 48.7 per cent as compared with 54.6 per cent one year before. This is but 8.7 per cent above the legal minimum ratio. The currency situation has shown some tendency toward deflation, however. Total money in circulation had decreased from $5,129,985,000 of Dec. 1, 1918, to $4,796,890,000 Aug. 1, 1919. The per capita circulation had fallen between those dates from $48.13 to $45.16, a decrease of $2.97 per capita.

Carbon Steel Plans to Enter New Fields

New equipment installed and improvements made by the Carbon Steel Co., Pittsburgh, within the last year will permit the company to enter new fields using sheets bars and forgings, according to the statement of President Charles McKnight, in the annual report for the year ended Sept. 30. The company during the year spent for permanent improvements, extensions and replacements, $1,198,561 of which $621,319 has been charged to property accounts and the balance to reserves made to cover the cost of extraordinary war facilities. In addition, $207,751 has been charged off for depreciation.

The report states that the $507,264 spent during the year to maintain the physical condition of the plant has been charged to operating expenses. Principle improvements include a forge department for the

manufacture of both light and heavy forgings; a 32-inch jobbing mill; five new Sterling boilers; and machines for cutting auto axles.

Referring to the labor situation the report asserts that operations were swiftly regaining prewar proportions when the present strike became effective. Pointing out that in the past, efforts had been concentrated upon improving working conditions and that no demands have ever been made as to grievances, it is concluded that the walkout was agitated entirely by outsiders.

The report states that the bonus plan for the benefit of officers and employes of the company, inaugurated in 1917, was continued during the year just ended. The comparative income account follows:

	1919	1918
Net profits	$5,193,345	$3,767,063
Adjustments	166,783	.....
Depreciation	207,651	192,845
Dividends	730.000	880,000
Taxes	3,225,000	2,081,029
Premium and charity	17,650	21,100
Extensions	.....	100,000
Surplus	846,261	492,088

The balance sheet shows cash on hand amounting to $3,030,273 and accounts and bills receivable of $1,099,186. Inventories as of Sept. 30 were $1,134,092. Real estate, plant and equipment totals $6,810,864.

Allis-Chalmers Net Falls

The Allis-Chalmers Mfg. Co., Milwaukee, earned net profits after federal taxes of $916,309 for the third quarter ended Sept. 30. This compares with net profits of $926,945 in the preceding quarter and $1,170,296 in the corresponding quarter of 1918. Unfilled orders on hand Sept. 30 amounted to $14,542,704 as against $32,382,335 one year before. The comparative statement follows:

	1919	1918	1917
Sales billed	$7,557,683	$6,212,290	$6,287,064
Net profits	*916,309	*1,170,296	†919,404

*After deduction of federal taxes. †Before federal taxes.

Takes British Loan

The United States Steel Corp. has purchased $10,000,000 of the new 5½ per cent United Kingdom loan of $250,000,000. It also will become a participant in the underwriting with the banking interests to the extent of another $10,000,000. This action follows the adoption of a similar course by a number of large corporations at the time of the Anglo-French loan in 1915. The United States Steel Corp. was a heavy subscriber and the Bethlehem Steel Corp. subscribed to $25,000,000. The present subscription by the Steel corporation brings the value of Liberty bonds and other securities it holds to a total value of nearly $300,000,000. Chairman Gary, of the Steel corporation, in announcing the present subscription said:

"We believe these securities will be first class in every respect and a desirable investment. Also, we think it is decidedly to the interest of the United States as well as Great Britain that purchases of this character be made by Americans at this particular time. This should have a marked influence toward the restoration of normal rates of exchange and the bettering of the financial and commercial relations between the two countries, and therefore of advantage to the entire business situation."

National Acme Net Less

Net profits available for dividends of the National Acme Co., Cleveland, for the third quarter were $858,161, as against $1,514,333 for the corresponding quarter one year before. The company is paying dividends of 6 per cent or $3 per share on the $25,000,000 stock and at the rate of last quarter's profits, the earnings were on an annual basis of 13.7 per cent per share. The comparative statement follows:

	1919	1918
Net sales	$3,533,390	$3,928,560
Net profits	858,161	1,514,333
Dividends paid	375,000	375,000
Surplus for quarter	483,161	1,139,333

Foreigners Selling U. S. Steel Stock

Investment holdings of United States Steel Corp. common shares are increasing according to the latest report which shows 2,972,511 shares in the hands of investors as of Sept. 30, as compared with 2,920,860 three months before. Brokers' holdings aggregated 2,110,514 as against 2,162,165 shares at the end of the second quarter of 1919. Brokers' holdings of preferred stock also showed a decrease in the third quarter, falling from 325,646 to 316,235 shares; investment ownership showing a corresponding gain for this class of stock. On Sept. 30 brokers held 8.78 per cent of the aggregate preferred and 41.52 per cent of the total outstanding common stock.

Foreign liquidation of American stock is indicated by the further decline of foreign holdings shown in the report. On Sept. 30 foreigners held 394,543 shares of common of 7.76 per cent of the total, as compared with 465,474 shares or 9.15 per cent three months ago. On June 30, 1914, the foreign holdings of the common totaled 25.07 per cent of the whole. Largest holdings abroad are in England where there are 169,175 shares. At the end of the second quarter Holland held 210,525 shares but at the end of the third this had dwindled to 145,858 shares.

Steady Prices

Are Ruling in Coal By-Products—Ammonium Sulphate is Scarce

New York, Nov. 3.—Although supplies of some descriptions are scarce, prices in the coal tar products market remain steady. Pure benzol is holding at 24 to 29 cents and 90 per cent material at 22 to 24 cents. The heavy buying noted during the summer months, has subsided, although spot supplies are scarce. Demand for toluol and solvent naphtha also is somewhat slower; nevertheless, with production at a reduced rate, stocks are not accumulating. Toluol is quoted at 26 to 30 cents on spot and contract, and solvent naphtha at 22 to 27 cents.

Activity by drug merchants in covering their next season's requirements continues to feature the naphthalin market. The dye industry is also a factor in the present activity. Naphthalin in flakes is holding at 6½ to 7½ cents, and naphthalin in balls at 8½ to 9½ cents.

The scarcity of sulphate of ammonia is causing some hardship among buyers seeking nearby deliveries. This has resulted in relatively high prices being paid in some instances. However, the market still may be quoted for domestic business at $3.40 to $3.50 products' plants, and $3.50 to $3.75 on spot. Export business is quoted at $4 to $4.25, eastern seaboard. The latter are more or less nominal.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.50 to 3.75

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds Producers' Plants

Sulphate of ammonia	3.40 to 3.50

Eastern Tool Dealers Form Association

Definite form has been assumed by the association of some of the machine tool dealers in the east, the title of which is the Machine Tool Dealers' association of New York City. Officers have not as yet been selected but C. O. Dowding temporarily has been appointed chairman and his headquarters are located at 151 Lafayette street, New York City. The following are charter members: Manning, Maxwell & Moore, Inc., 119 West Fortieth street; Vandyck Churchill Co., 85 Liberty street; The Fairbanks Co., 416 Broome street; Dale-Brewster Co., Inc., 54 Lafayette street; Hill, Clarke & Co., Inc., 136 Cedar street; Barbour, Love & Woodward, Singer building; Frevert Machinery Co., 38 Vesey street, and Patterson, Gottfried & Hunter, Inc., 211 Centre street, all in New York City. Other machinery dealers are to be invited to become members.

To Build Sheet Plant

Chicago, Nov. 3.—The Aetna Iron & Steel Co., headed by C. E. Wirt, vice president of the National Bank of America, Gary, Ind., has bought 400 acres at Gary, Ind., formerly occupied by the Aetna Explosives Co. Preparations are under way for the erection of a sheet mill, 312 x 552 feet, in which will be installed six sheet mills with furnaces and a galvanizing department. The buildings are designed to add six more mills within a short time and further additions as circumstances warrant.

The plant will require two 30-ton cranes of 84-foot span, and one 10-ton crane of 40-foot span. A contract for the building is expected to be let within the next few days.

Announce New Plant

Official announcement has been made by the Follansbee Bros. Co. that Toronto, O., where the company has acquired 15 acres, will be the site of its new sheet and tin plate mill, to cost $3,000,000. Construction is stated to begin immediately.

The new plant will duplicate the present plant of the company at Follansbee, W. Va., except that it will be electrically driven throughout. It will consist of four 40-ton open-hearth furnaces, four side door ingot furnaces, one 1500 tons hydraulic press, one 30-inch reversing bar mill, while the finishing department will include four 50-inch, four 44-inch and two 40-inch sheet mills, each mill to have one stand of roughing rolls, 10 cold mills and 12 double anncaling furnaces.

The company has secured sufficient coal lands adjoining the mill site to provide sufficient coal for its operation. A realty company, a subsidiary of the Follansbee Bros. Co., will build 300 new houses for the employes of the new plant. These houses will be on a site just south of Toronto, in a section known as Jeddo. A model town will be laid out there and it is expected later will be incorporated with Toronto. Joseph Breslove, Oliver building, Pittsburgh, is consulting engineer in connection with the new plant.

Will Cast Cutting Tools

The United States High Speed Steel & Tool Corp., recently incorporated in New York with a capital stock of 150,000 shares, no par value, will manufacture high speed cutting tools of all kinds by a process of casting. The company has acquired all the assets and business of the High Speed Tools Corp., Toledo, O., and has also taken over a plant at Albany, N. Y., which will begin to operate shortly. The Toledo company had been turning out tools for about two years. The officers of the company are as follows: President, D. H. Friedman, president of the United Iron & Steel Co., Albany, and vice president of the Cohoes Rolling Mills, Cohoes, N. Y.; first vice president, V. V. Wolkerstein, formerly president of the High Speed Tools Corp.; vice president and plant manager, L. J. Ollesheimer, also formerly of the Toledo company; treasurer, Frank A. McNamee, a business man of Albany; and secretary, Robert C. Proskanzer, attorney; the foregoing, with Frank E. Howe, president of the Manufacturers National bank of Troy, N. Y., comprise the board of directors.

To Meet in St. Louis

The twenty-second annual convention of the American Mining congress will be held at St. Louis, Nov. 17-22, 1919. An effort will be made during this meeting to create a closer understanding between the employers and employes. Among the speakers already scheduled are: Francis S. Peabody, Chicago; R. Dawson Hall, managing editor, *Coal Age;* Senator Albert B. Cummins, author of the Cummins railroad bill; Dr. Van H. Manning, director, bureau of mines, Washington; Dr. George Otis Smith, director, United States geological survey; and Andrew Duffy, director of the safety division, United States railway administration.

Obituaries

FREDERICK W. WALLACE, general manager and treasurer of the Waclark Wire Co., Elizabeth, N. J., died on Oct. 30, at his home in Plainfield, N. J. He was ill but a few days, death resulting from pneumonia. Mr. Wallace was a graduate of Yale university, in the class as 1888, and was a member of the Scroll & Keys and the Plainfield, N. J., country club.

Charles N. McFarland, who has been general manager of the Jaxon Steel Products division of the General Motors Corp., Jackson, Mich., for some time, died in that city on Nov. 1, following an operation for appendicitis.

Peter J. Hamler, aged 51 years, founder and president of the Hamler Boiler & Tank Co., 3906 South Halsted street, Chicago, died Oct. 25 at his home. He is survived by his son, Jerome Hamler, who was associated with him in business.

George H. Noble, mechanic and inventor, employed for more than 50 years by the Brown & Sharpe Mfg. Co., Providence, R. I., died at his home in that city, Oct. 23, aged 78.

Fred W. Wallace, general manager and president of the Waclark Wire Co., Bayway, N. J., died Oct. 30 at his home in Plainfield, N. J., aged 55. He was a member of the class of 1888 at Yale university.

George Thomson Coppins, for 30 years secretary of the Walworth Mfg. Co., Boston, until his retirement several years ago, died at his home in Newton, Mass., Oct. 22, aged 74 years. He was a veteran of the Civil war.

Tool Market Survives Strike

General Iron and Steel Disturbance Interferes but Slightly With October Business of Machinery Sellers — Eastern Automotive Industry's Tool Demands Large—Crane Sales Numerous Despite Labor Troubles

BAROMETRIC as is the machine tool industry, it is significant that throughout the month of October, it was but little affected by the strike in the iron and steel industry. Some holding back of orders was done by certain manufacturers who were influenced by the uncertainty but on the whole, it can be said that sellers of machinery successfully have survived the first five or six weeks of the interference with general industry. At certain times in the month more orders were received than inquiries, but usually the reverse was true. Striking machinists in Akron, O., and elsewhere returned late in October and some equipment orders then were promptly released; some are yet to be issued. Unrest in Paterson, N. J., Bridgeport, Conn., and other toolmaking centers had its affect upon the market but this largely was nominal. While much of the month's business consisted of light equipment, sales of heavier tools were fairly numerous. The establishment of their own machine shops by various manufacturers in the Chicago territory, made for increased machine tool business for dealers.

Government-owned Machinery Sold Abroad

OFFERS of new and used machinery by the government and various companies formerly engaged on war work have made themselves more or less felt in the east during the past 30 days. Sellers believe however that the sooner this equipment is cleared away, the more healthy will the market become. The war department reported the sale of approximately 2500 machine tools to La Construction Metallique, a co-operative society of 500 industrial concerns of Belgium. This practice if continued will remove a large factor from the domestic market. Because of this sale abroad, it is stated that the Moline Plow Co., Moline, Ill., experienced some difficulty in obtaining its full requirements out of government-owned stocks, to replace the equipment damaged by fire of several weeks ago. The Remington Typewriter Co., Ilion, N. Y., however, bought 50 government-owned tools, it is stated, without difficulty.

Automotive Demand Spreads Eastward

MIDDLE WESTERN sellers of machinery have found a ready market in the automotive and allied industries for many months. This continues. It was noted during October, however, that this automotive demand is becoming stronger in the east. Purchases by the Willys Corp., Elizabeth, N. J., for the Duesenberg plant where it is building its new 6-cylinder car, include 10 special machines, 10 Norton grinders and 14 Newton slab millers. Since its announced expansion program contemplates the expenditure of $4,000,000, other large purchases are scheduled for early closing. The New Departure Mfg. Co., Bristol, Conn., is to buy $1,000,000 worth of tools. The North American Motors Co., Pottstown, Pa., bought $300,000 worth of machinery, and the International Motors Co., Allentown, Pa., will require a large amount for its $1,000,000 plant. The General Electric Co., Schenectady, N. Y., issued a list of 53 tools and the Parish Mfg. Co., Reading, Pa., bought a considerable number.

Unslaked demand for equipment continues among the automobile builders in the Cleveland and Detroit territories. The largest project is the new plant for the Fisher Body Ohio Co., Cleveland, which has been incorporated at $10,000,000. The Templar Motors Corp., Cleveland, is about to issue a list of $300,000 worth of machinery for contemplated buildings, and the Chandler and Cleveland Motor Car companies also are to make some heavy expenditures for buildings and equipment.

Miscellaneous Requests Are Heavy

VARIOUS lines of manufacturing effort again were heavily represented in the miscellaneous buying of the past month. Perhaps the largest inquiry was circulated by the American Car & Foundry Co., for its Depew, N. Y., Buffalo and Chicago plants, covering $100,000 worth of equipment. A. Bentley & Son, Toledo, O., issued a huge list of tools, approximating $1,500,000 in value for what is said to be a shipyard project. The E. W. Bliss Co., Brooklyn, N. Y., bought considerable heavy equipment, as did the Youngstown Pressed Steel Co., Youngstown, O. The Wehrle Co., Newark, O., stove manufacturer, issued a list of 26 tools and bought several. The Detroit Lubricator Co., Detroit, bought 19 lathes and screw machines in Cleveland. The Ohio Collieries Co., Toledo, O., asked for prices on five tools while the Stevens Motor branch at Freeport, Ill., of the Moline Plow Co., bought $6000 worth.

Longshoremen's Strike Lowers Exports

EXPORTERS of machinery report splendid business in the Straits Settlements, Dutch East Indies and other territories in the Far East. The longshoremen's strike, however, is holding back many shipments abroad. Data supplied during October, showed a continued falling off in August of machinery exports of $591,676 to $3,849,143, which was a little less than 50 per cent of the high level for June. C. H. Coulier, 25 Church street, New York City, issued a list of 125 tools for locomotive and car repair shops in South America. Shibakawa & Co., 120 Broadway, New York City, asked for prices on 100 tools for an automobile plant in Japan.

Many Cranes Sold Despite Steel Strike

BUILDERS of cranes while not affected from the manufacturing end, suffered from the sales end of their business from the steel strike. Most of their customers are found among the various iron and steel plants of the country. However, some sizable sales were made; seven went to the Firestone Steel Products Co., Akron, O., and a like number to the Kennedy Van Saun Mfg. Co., New York. McIntosch & Seymour, Auburn, N. Y., and the Harley Co., Springfield, Mass., each closed on four and the Leffel Mfg. Co., Springfield, O., bought three. Several firms bought two cranes each.

Inquiries not yet closed include one for 59 chain hoists from ½ to 20 tons for shipment to Japan, issued by the Trans-Continental Merchants, Inc., New York; one for eight cranes for export to South America by C. H. Coulier, New York; one for five cranes for the Hugh Nawn Contracting Co., that city, and one for several overhead cranes for M. W. Kellogg & Co., Jersey City.

Tool Buyers Revive Inquiries

Effects of Steel Strike Wearing Off—Coal Strike Influence Not Noted as Yet—Dodge Bros., Perfection Heater and Firestone Tire & Rubber Issue Large Lists—Single Crane Inquiries Fairly Numerous

PARAMOUNT as is the coal strike among economic influences of the hour, machine tool sellers believe they will weather this storm as successfully as they have the steel strike, which now is crumbling steadily. Those manufacturers who because of uncertainties, held up equipment purchases, now are making urgent efforts to place orders for prompt delivery. A tendency to close quickly when requirements are located, now is noted. This is true in the Middle West especially.

While buying in the east is not especially active, many inquiries are out. The American Car & Foundry Co., New York, and the H. H. Franklin Mfg. Co., Syracuse, N. Y., both are large buyers. Dodge Bros., Detroit, have issued a comprehensive list; the Perfection Heater Co., Cleveland, is asking for about 20 tools, and the Firestone Tire & Rubber Co., Akron, O., has issued a list of 36 machines. Most sales are for smaller numbers of tools however, and inquiries asking for one, two or three machines especially are numerous at this time both in Cleveland and in Chicago. In the latter city, the Chicago, Burlington & Quincy railroad has revived its inquiry for 50 tools; the Samson Tractor Co., Janesville, Wis., continues to place orders as does the Nash Motors Co., Milwaukee. The International Harvester Co., Chicago, purchased four 21-inch turret lathes for its tractor plant. The F. B. Stearns Co., Torbensen Axle Co., Perfection Heater Co., Cleveland, all made purchases in their home town. The B. F. Goodrich Co., Akron, O., and the Goodyear Tire & Rubber Co., that city, have revived their inquiries as have a number of other companies, who held up purchases subsequent to the calling of the steel strike.

Reports from Canada indicate that a gradual improvement is taking place in the equipment industry, contributed largely by the automotive industries. The Chase Tractors Corp., Toronto, is expected to issue a fair sized list shortly. A new company has asked for 21 tools through the Chapman Ball Bearing Co., Toronto. The St. Lawrence Welding Co., Montreal, wants plate-working machine and garage equipment is desired by Wm. Munson, Tara, Ont. Machinery and equipment for a new factory is desired by the Acme Roofing Co., Walkerville, Ont.

Cranes are moving slowly, although practically all the activity in Pittsburgh is in connection with this class of equipment. The Blaw-Knox Co., Hoboken, Pa., bought three; the American Sheet & Tin Plate Co., and the American Steel Co., Ellwood City, Pa., each bought one. Further east crane inquiries mainly call for one each. They come from the Ellwood City Forge Co., Ellwood City, N. J.; Michigan Stamping Co., Detroit; Erie Foundry Co., Erie, Pa.; Commercial Steel Castings Co., Marion, O.; Weirton Steel Co., Weirton, W. Va.; Cleveland Rubber Mold Foundry & Machine Co., Cleveland; Elyria Steel Products Co., Elyria, O.; Standard Oil Co., New Orleans, La.; Viele Blackwell & Buck, New York; Atlas Portland Cement Co., Northampton, Pa. The Cerro de Pasco Copper Corp., New York is asking for two.

Lull Exists in Eastern Tool and Crane Market

WHILE considerable inquiry is out, buying in the eastern machine tool market is not especially active. Little is being done at the moment on the larger lists pending, and the placing of scattered business appears to be somewhat smaller. In some quarters, this disposition among buyers to hold off is regarded as the natural result of the acute labor situation now prevailing; in others, however, such influence is regarded lightly and the present lull is considered as being without much particular significance. That sentiment continues strong is reflected by advances of 10 and 20 per cent by one manufacturer on certain types of sensitive drills. No other advances have been noted during the past week, but some are expected.

Although some railroad buying has been reported in other sections of the country, the eastern market continues to be little affected. A small list has been recently closed by the Pennsylvania railroad, but other than this only an occasional tool has been purchased. The export situation remains largely unchanged, there being but little foreign business booked. One large buyer to begin closing on its list is the American Car & Foundry Co., which during the past few days has placed an order for eight radial drills. The H. H. Franklin Mfg. Co., Syracuse, N. Y., is also buying machine tools at this time.

New inquiry for cranes has been light, and awards have not been large. One contract calls for a 15-ton overhead crane, with 50-foot span, for the Ellwood City Forge Co., Ellwood City, N. J. It went to the Champion Engineering Co. This builder has also received recently contracts for a 10-ton electric crane, with 75-foot span, for the Michigan Stamping Co., Detroit; a 50-ton crane, with 10-ton auxiliary and 36-foot span, for the Erie Foundry Co., Erie, Pa.; a 10-ton crane, with 58-foot span,

Used by the Majority

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LUDLUM STEEL CONSISTENTLY UNIFORM

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High Speed Steel

Albany
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It is *not* just a coincidence that all these tool experts prefer *Ludlum Steels.* There is something much stronger than that behind it—there is the knowledge that, right in their own experience, Ludlum Steels have far outserviced everything else for the purpose. *That* is why Ludlum Steels are selected by the majority of tool experts.

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Say you saw it in THE IRON TRADE REVIEW

for the Commercial Steel Castings Co., Marion, O.; a 15-ton crane, with 29-foot span, for the Weirton Steel Co., Weirton, W. Va.; a 5-ton crane, 46-foot span, for the Cleveland Rubber Mold Foundry & Machine Co., Cleveland; and a 5-ton crane, with 38-foot span, for the Elyria Steel Products Co., Elyria, O. The Cuba Railway Co. has purchased a 15-ton traveling crane for Cuba from the Whiting Foundry & Equipment Co.

Included in recent awards in the locomotive crane market is a 25-ton Browning crane for Viele, Blackwell & Buck, 49 Wall street, New York City. The crane is for domestic use. The Standard Oil Co. has bought a 15-ton oil burning locomotive crane for New Orleans. The Atlas Portland Cement Co., with purchasing offices at 30 Broad street, New York City, has purchased a 15-ton Brown Hoist crane for Northampton, Pa. The McLean Contracting Co., Baltimore, has bought a 25-ton used Ohio crane.

The Cerro de Pasco Copper Corp., 15 Broad street, New York., has placed two 20-ton overhead cranes with the Pawling & Harnischfeger Co. This order follows the recent award of two 10-ton and two 15-ton cranes to this company. The Cerro de Pasco company remains in the market for a special ladle crane of seven tons capacity. The King Paper Co., Kalamazoo, Mich., is inquiring for a monorail overhead system.

Splendid Tool Business Current in Canada

CANADIAN machinery and tool dealers report that business gradually is showing improvement and that the inquiry for several lines is brisk. The demand for tools for automobile plants heads the list and even greater activity in this line of equipment is anticipated. With this increasing demand, some deliveries are impossible this side of three to six weeks. The Chase Tractors Corp., Ltd., 28 Atlantic avenue, Toronto, Ont., will issue a list for its new addition. It is going over its present equipment, sorting out what can be made use of, the remainder of which will be sold. A new concern which is locating in Canada has asked the Chapman Ball Bearing Co., 347 Sorauren avenue, Toronto, to put it in touch with firms who are in a position to supply the following equipment: One each No. 0 and No. 2 Brown & Sharpe plain milling machine, 10 No. 00, four No. 0 and five No. 2 Brown & Sharpe automatic screw machines. The St. Lawrence Welding Co., 138 Inspector street, Montreal, Que., is in the market for power punch and shear to work ½-inch plate; also a set of power rolls, 10 to 12 feet long to roll ½-inch plate. William Munson, Tara, Ont., is in the market for equipment for a garage. The Acme Roofing Co., Walker road, Walkerville, Ont., is receiving prices on machinery and equipment for a new factory to be erected at once. Wm. Bonter & Sons, Mormora, Ont., is in the market for flour mill and grist mill machinery and equipment to be installed in mills to be erected immediately. Jules Caron, 69 St. Francois Xavier street, Three Rivers, is receiving prices on elevator equipment including one 45-horsepower electric motor; one 100-horsepower electric motor; grain separator and crusher, etc.

Small Sales Mean Fair Sized Aggregate Value

MOST of the new business in the Chicago machinery market continues to come in small lots, one important seller stating that his largest sale during the past week covered three pieces of equipment. At present prices, it does not require a heavy selling movement to bring the total to a high mark, measured in dollars. While railroads are not showing much interest in tools, an occasional indication is given that buying from this source may be expected when the railroads have been returned to private owners. The Chicago, Burlington & Quincy railroad is active now and has asked new bids on a list issued several months ago, covering about 50 tools. Whether this indicates a real desire to buy or simply to obtain an insight into the present market is not known.

The Samson Tractor Co., at Janesville, Wis., continues to add to its equipment and Nash Motors Co. is about to close for its new plant at Milwaukee. The International Harvester Co. recently purchased four 21-inch turret lathes for its tractor plant at Chicago. No particular change is taking place in prices, although an occasional advance of 10 to 15 per cent is made here and there. Deliveries are growing gradually more remote as new business exceeds production.

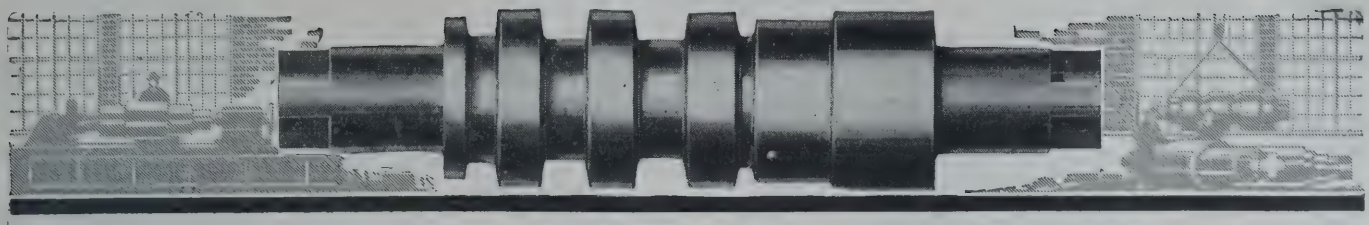
Several Crane Orders Taken in Pittsburgh

A FEW orders for cranes have been closed recently in the Pittsburgh district, but as a general proposition, machinery and tool business in that district has continued to be better in prospect than in actuality. Buyers generally are hesitant owing to the extremely unsettled labor situation and only such projects as cannot be put off are being closed. The Cleveland Crane & Engineering Co., Wickliffe, O., through its Pittsburgh office, recently closed with the Blaw-Knox Co., Hoboken, Pa., for two 10-ton, and one 20-ton 70-foot span, cranes. The Alliance Machine Co. Alliance, O., has been awarded a 15-ton trolley crane by the American Sheet & Tin Plate Co., but the plant of the latter company for which this crane is intended is not announced. The American Steel Co., Pittsburgh, has placed a 5-ton crane for its Ellwood City, Pa., plant with the Whiting Foundry Equipment Co., Harvey, Ill.

Although the Cambria works of the Midvale Steel & Ordnance Co. still are down as a result of the steel strike, a citizens' committee is making an effort to get the men to go back. If this move is successful, plant improvements involving expenditures of more than $10,000,000 will be resumed and this probably will be followed by a closing on equipment inquiries put out some time ago.

Three Fair Sized Lists Out in Cleveland

REVIVAL of old inquiries which were held up because of the steel strike as well as the issuance of several new lists are engaging the interest of machine tool sellers in the Cleveland district. Three of the latter class come from the Perfection Heater Co., Cleveland; the Firestone Tire & Rubber Co., Akron, O., and Dodge Bros., Detroit. The former company is equipping itself to manufacture its own parts instead of purchasing them for assembling and issued a list of about 20 machines, including Garvin duplex millers; multiple spindle drills; various drill presses and drills; Pratt & Whitney profiling machines; cutter grinders, etc. It has purchased a number of these. The Firestone Tire & Rubber Co. is asking for four 36-inch drill presses, back-geared, power feed with tapping attachments; three sensitive drill presses, ⅛-inch capacity drill; one spline miller equal to a 4-inch Pratt & Whitney; one 20-inch drill press, circular table, power feed with tapping attachment; one vertical tapper, ⅝-inch capacity; four 16-inch x 10-foot lathes with taper attachment and two without taper attachment; two No. 3 universal milling machines; two 24-inch shapers; one 6 x 6-inch power hack saw; one No. 6 screw machine, ⅝-inch capacity, belt driven; three wet grinders, 16-inch x





Say, Fella's—

I find there aint sich a H__ of a difference between men an' metal after all. The less there is in 'em, the more kick an' fuss they kin make, an' the better they are the easier to git along with. Take those HUBBARD ROLLS—good all the way through. Ya never hear a squeak or squawk out of 'em.

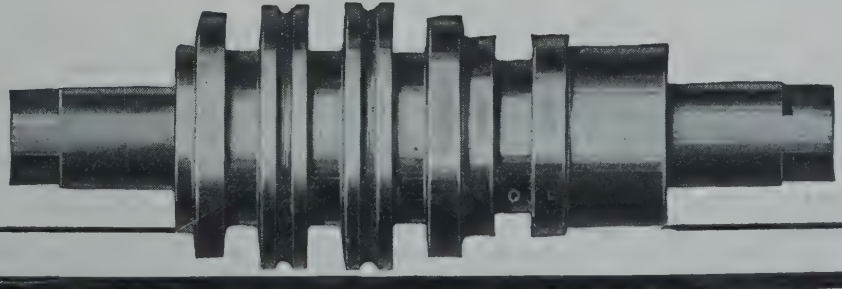
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



1½-inch wheels; 200-ton forging press; one 24-inch x 18-foot and one 30-inch x 20-foot lathe with taper attachment; one 8-spindle multiple drill press, ⅝-inch capacity; two 14-inch x 10-foot lathes with taper attachment, constant speed motor; two No. 4 plain milling machines; one 10-inch slotter; on 84-inch gear cutter; one 6-inch centering machine. Dodge Bros. are taking quotations on one 28-inch W. F. Barnes sliding head, one 23-inch Rockford stationary, one used 24-inch Cincinnati back-geared stationery head drilling machine; one used 16-inch x 6-foot Reed, two new 16-inch x 6-foot South Bend, one used 16-inch x 6-foot Leblond and one 14-inch x 6-foot Hendey lathe; two new Kempton No. 3 universal, one used No. 3 Brown & Sharpe, four No. 3 Kempsmith and one No. 3 Cincinnati universal milling machines; one 36 x 36-inch x 8-foot Gray planer; four No. 57 and four No. 666 Toledo power presses; one No. 2, four No. 4 and one No. 6 used and nine No. 2 new Warner & Swasey hand screw machines and one 24-inch Gould & Eberhardt shaper.

Smaller inquiries are so plentiful that dealers contrary to their usual custom find it unnecessary to go outside the immediate territory. The Goodyear Tire & Rubber Co., Akron, O., has revived its inquiry for about a dozen tools. The B. F. Goodrich Co., that city, still is looking for a boring mill and now is in the market for an 18-inch shaper. The Post Tractor Co., Cleveland, is asking for a horizontal boring mill. The P. A. Geier Co., Cleveland, is looking for an open side planer. The Urban Machine & Tool Co., Cleveland, which succeeds the Ohio Tool & Machine Co., and which is to specialize on a bench lathe, has bought a No. 3 plain milling machine and is in the market for a lathe. The Benedict Mfg. Co., East Syracuse, N. Y., is in the market for a 3½-inch stroke, 4000-pound punch press. The F. B. Stearns Co., Cleveland, has closed on the hammer it asked for recently. The Peerless Nut Co., that city, bought two nut tappers and the Torbensen Axle Co., that city, bought a drill press, and considerable government equipment and is understood to be in the market for some special machinery. Turner, Vaughn & Taylor, Cuyahoga Falls, O., want a planer.

An announcement of interest to equipment sellers is made by the Marsh Motor Car Co., W. T. Marsh, president, which is a reorganization of the Sterling Motor Car Co., Brockton, Mass. The new company has bought 100 acres in Cleveland, and construction has been started on the first unit of the plant, 200 x 500 feet, to cost $250,000.

Detroit dealers are informed that the Pressed Steel Co. of Canada, Ltd., Toronto, Ont., has started work on its Port Huron, Mich., factory and is making overtures for machine tools, as is the Wills-Lee Co., Marysville, Mich., which is building an automobile plant. Machine tools and other equipment are yet to be ordered by the Republic Carbon Co., Niagara Falls, N. Y., and a few drills, presses, etc., are required by the Western Steel & Iron Works, DePere, Wis., for its new 2-story building, 44 x 110 feet. Approximately $80,000 worth of machinery for its new 4-story building to be completed in the spring of 1920, is to be bought by the Reliance Motor Truck Co., Appleton, Wis., and possibly a similar amount will be required by the Acme Motor Truck Co., Cadillac, Mich., which is doubling its capacity. A new $500,000 building now being erected will double the output of the Bucyrus Steam Shovel Co., Evansville, Ind. The Davenport Machine Tool Co., Inc., Rochester, N. Y., bought a plant recently which was partly equipped; additional machine tools must be purchased.

Other building projects which give rise to expectations that equipment soon will be asked for are: Addition to plant, Fairmont Mining & Machinery Co., Fairmont, W. Va.; new plant, Huckabee Tractor Co., Texarkana, Ark.; 90 x 300-foot addition for the Franklin Tractor Co., Franklin, O.; 2-story, 80 x 200-foot plant, Anderson Foundry & Machine Works, Anderson, Ind.; plant, 180 x 215 feet, Gear Grinding Machine Co., Detroit; $70,000 addition for the Jackson Steel Products Co., Jackson, Mich.; 1-story, 168 x 290-foot addition for the Hamp Motor Car Corp., 1049 East Milwaukee avenue, Detroit.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

BOSTON.—The Beacon Rectifier Co., Inc., has been incorporated with $10,000 capital to make machinery, heating supplies, etc., by George Y. Young, William J. Henderson, Hyde Park, Mass., and M. L. Henderson.

CAMBRIDGE, MASS.—Penniman & James, 414 Main street, have awarded contracts for a manufacturing building and a machine shop, to cost $35,000.

HAVERHILL, MASS.—Plans are being prepared for a 5-story, 45 x 150-foot plant and a 1-story, 18 x 30-foot boiler house to cost $70,000 for the New England Wood Screw Co.

LAWRENCE, MASS.—The Mills Machine Co. has begun work on a machine shop, to cost $50,000.

LYNN, MASS.—The Whitcomb Pattern Co. has been incorporated with $10,000 capital, by Fred L. Foster, Albert E. Simpson and John T. Garner.

LOWELL, MASS.—The Gillespie Mfg. Co. has let a contract for a 2-story, 60 x 300-foot plant, to cost $50,000.

SPRINGFIELD, MASS.—The Tidewater Oil Co., New York, has let a contract for a plant to cost $40,000.

WARREN, MASS.—The Warren Steam Pump Co. has started work on plant additions, 1-story, 85 x 200 feet and 1-story, 40 x 60 feet.

WORCESTER, MASS.—The Clarke-Emerson Mfg. Co. has been incorporated to build machines with $50,000 capital, by F. F. Phillips Jr., C. H. Billings and Harold F. Reed, Brookline, Mass.

PAWTUCKET, R. I.—The Hale Braiding Machine Co. has been incorporated to build textile machinery with $100,000 capital, by J. B. Hale, Arthur B. Edwards and W. Harold Balkcom.

PAWTUCKET, R. I.—The Potter & Johnston Machine Co. will build a 1-story, 112 x 273-foot machine shop addition.

PAWTUCKET, R. I.—The Tamarack Co. has let the contract for a 4-story, 114 x 174-foot addition, a 3-story, 48 x 114-foot office addition and a 40 x 75-foot power house addition, to cost $300,000.

PROVIDENCE, R. I.—The General Utilities Co. has been incorporated to make wrenches, machines, gas water heaters, etc., with $60,000 capital, by Fred B. Wemple, Richard J. Reeves and Herbert J. A. Skipp, East Providence, R. I.

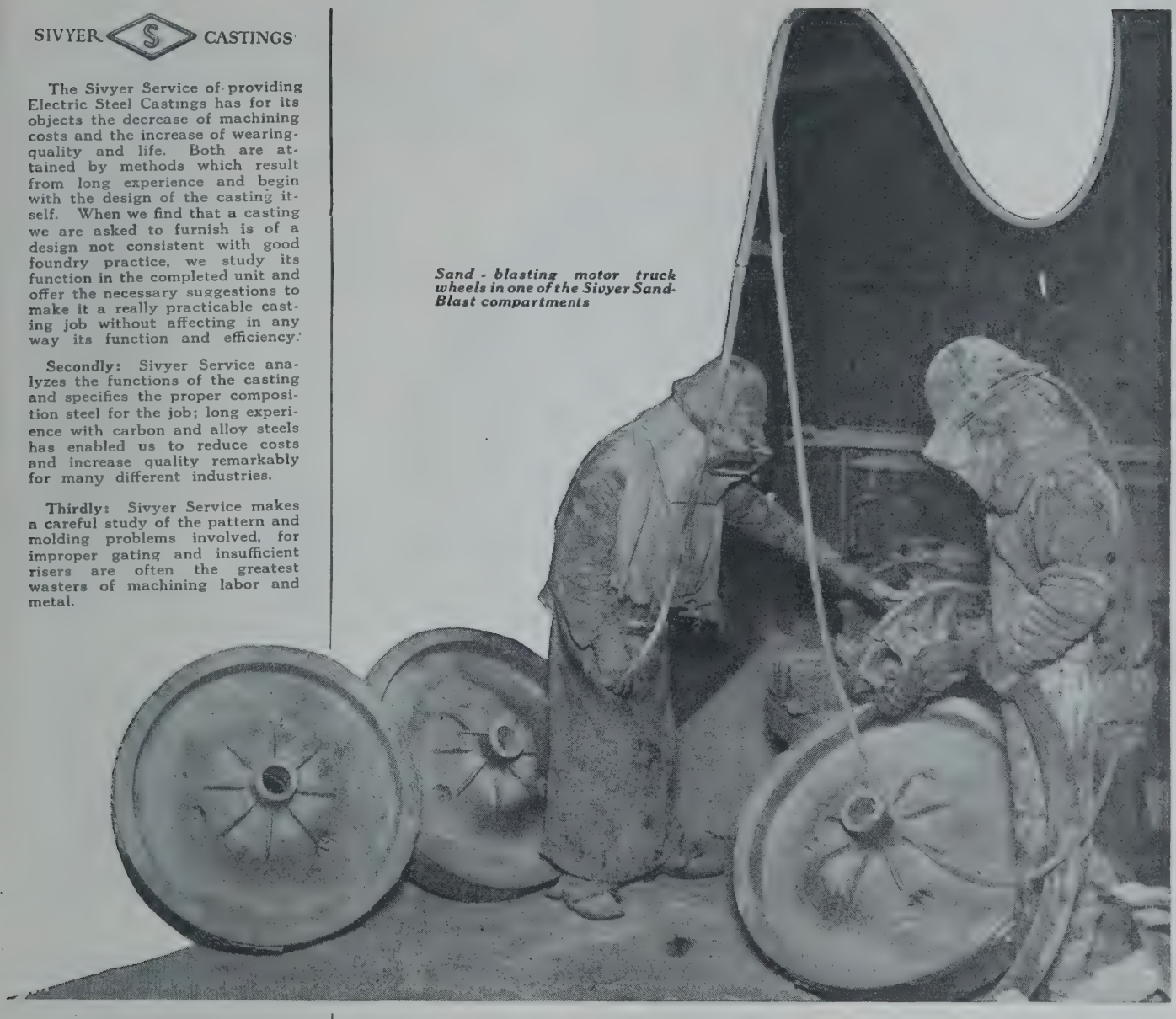
PROVIDENCE, R. I.—The Oakes Aircraft Corp.

SIVYER CASTINGS

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly: Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly: Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.



Sand - blasting motor truck wheels in one of the Sivyer Sand-Blast compartments

Fourthly: Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

SPECIAL sand-blasting equipment had to be designed in order to satisfy the Sivyer standards for finished castings. The Sivyer men who use the equipment are with few exceptions veterans who have for years done the careful work necessary to satisfy the Sivyer inspection. Although sand-blasting and tumbling are only minor processes, the thoroughness and care exercised in carrying them out in the Sivyer way are typical of effort necessary to create and maintain the superior quality that has won for Sivyer castings their national market.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

has been incorporated to build airplanes and motor-propelled vehicles with $100,000 capital, by Nathan P. Oakes, Darius Goff, Edward E. Leonard, Earl L. Miller and William H. Peters.

BRIDGEPORT, CONN.—The Edisonia Heater Co. recently was incorporated with $200,000 capital, by Harry Mesard, Solomon Badesch and F. J. Breen.

BRISTOL, CONN.—The New Departure Mfg. Co. has let the contract for two, 3-story, 82 x 302-foot and two 1-story, 67 x 312-foot plants, to cost $1,500,000.

HARTFORD, CONN.—The Hartford Tube Products Co. has been incorporated with $200,000 capital by H. K. Herbison, P. S. Ripley and Arthur Perkins.

HARTFORD, CONN.—Max M. Slabkin, manufacturer of bicycles, etc., has taken title from the Savage Arms Corp. to several factory buildings.

HARTFORD, CONN.—The Hartford Rubber Co. has awarded contracts for an 8-story storage building, 100 x 300 feet and a garage, 100 x 150 feet.

MERIDEN, CONN.—Edward Miller & Co. have let a contract for two 1-story plant additions.

MERIDEN, CONN.—The New Departure Mfg. Co. has placed a contract with Aberthaw Construction Co., Boston, for the construction of four factory buildings, at a cost of about $1,500,000. The contract calls for two 3-story buildings, 82 x 302 feet, and two 1-story buildings, 67 x 312 feet.

MIDDLETOWN, CONN.—The Russell Mfg. Co. has started work on a factory and power house, to cost $50,000.

NEW BRITAIN, CONN.—Plans are being prepared for a 6-story, 80 x 160-foot plant addition for Landers, Frary & Clark.

NEW BRITAIN, CONN.—The New Britain Machine Co. will build a 50 x 360-foot wing to the former government arsenal shop on its land.

North Atlantic States

ALBANY, N. Y.—The United States High Speed Steel & Tool Corp. will erect a new plant in this city. D. H. Friedman, of this city, has been elected president.

BROOKLYN, N. Y.—The Metal Hose & Tubing Co., 253 Tillary street, has had plans drawn for a plant, 3-stories, 48 x 102 feet, to cost $75,000.

BROOKLYN, N. Y.—The C. & D. Metal Bed Co. recently was incorporated with $10,000 capital, by M. Reiche, L. Polansky and H. Rotman, 709 Lafayette avenue.

BROOKLYN, N. Y.—The Pan American Smelting Works has been incorporated with $75,000 capital, by I. W. Weingart, B. Michaels and S. Schlosberg, 745 Driggs avenue.

BROOKLYN, N. Y.—The Forbes Tubular Products Corp., metal products, has been incorporated with $30,000 capital, by S. H. Roberts, P. J. and R. S. Forbes, 562 Second street.

BUFFALO.—The Frontier Machine & Tool Co. will make improvements to its factory.

BUFFALO.—The Jewell Steel Co. is considering an addition to its foundry.

BUFFALO.—The Frentier Machine & Tool Co., 132 Lakeview avenue, has had plans drawn for a plant.

BUFFALO.—The Swit Automotive Corp. has been incorporated with $50,000 capital, by W. Hershaft, J. J. Akston and L. L. Lewis Jr.

LOCKPORT, N. Y.—The Lockport Foundries Corp. recently was incorporated with $210,000 active capital, by G. B. Stockwell, W. W. Campbell and J. W. Townsend.

NEW YORK.—The Rubber & Celluloid Products Co. is having plans drawn for a boiler house, 1-story, 20 x 52 feet.

NEW YORK.—The Accurate Brass Casting Co. has been incorporated with $50,000 capital, by A. J. Gutmuller, L. J. Schukel and M. G. Knorr, 1116 Wyckoff avenue.

NEW YORK.—The Universal Superheater Corp. has been incorporated with $100,000 capital, by P. McGregor, J. S. Milne and J. T. Crane, 2 Rector street.

NEW YORK.—The W. E. Nichols Corp., contracting and electrical works, has been incorporated with $50,000 capital, by R. S. King, O. A. Schramm and K. M. Nichols, 882 Eighth avenue.

NEW YORK.—The Mechanics' Tools Engineering Co. has been incorporated with $10,000 capital, by T. M. Hill, G. Warner and A. Janes, 21 East Eighty-ninth street.

NEW YORK.—Riggi Bros., 1216 Lexington avenue, has had plans drawn for a boiler room addition, 1-story, 25 x 60 feet.

ROCHESTER, N. Y.—The Co-Operative Foundry Co. has awarded contracts for a plant addition, to cost $20,000.

ROCHESTER, N. Y.—The Rochester Motors Co., Inc., 609 Driving Park avenue, has awarded a contract for a machine shop addition, 1-story, 100 x 390 feet.

ROCHESTER, N. Y.—The Inter-State Machine Products Co., auto parts and factory supplies, has been incorporated with $50,000 capital, by M. C. Armstrong, J. and F. C. Buckley.

SYRACUSE, N. Y.—The C. W. Meade Corp. has been organized to manufacture hardware and machine attachments with $100,000 capital.

UTICA, N. Y.—The Utica General Jobbing Foundry, Inc., has been incorporated with $25,000 capital, by F. Longo, G. Buccolo and J. Tomaino.

WALTON, N. Y.—The Archibald-Barnhart Co., agricultural implements, recently was incorporated with $20,000 capital, by S. M. Barnhart, S. H. Marvin and R. Archibald.

HARRISBURG, PA.—The Boll Bros. Mfg. Co. is erecting an addition to its plant, 50 x 100 feet.

PITTSBURGH.—The Superior Motor Parts Co. has been incorporated with $25,000 capital, by W. A. Wilson, G. M. Metz and W. T. Hughes.

READING, PA.—The Carpenter Steel Co. has a permit to erect a $120,000 plant addition, 147 x 280 feet.

JERSEY CITY, N. J.—The White Metal Mfg. Co. recently was incorporated with $500,000 capital, by Theodore Rurode, T. H. Smith and D. F. Edwards.

TRENTON, N. J.—The Runkles Machinery Co. has purchased a factory site and will erect a modern plant for the manufacture of machinery.

BALTIMORE.—The Standard File & Rasp Co. recently was incorporated with $150,000 capital, by W. J. Barrett, Edward Roseman and E. R. Lipman.

RICHMOND, VA.—The American Auto Accessories Corp. has been chartered with $25,000 capital, by H. R. Ansell and others.

Goverment Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts:

Hoisting and rotating equipment and cranes, 4938, Norfolk, Brooklyn and Mare Island, Nov. 21.
Two drill presses, 4939, Newport, Nov. 7.
Eight bench grinders, 4944, Newport, Nov. 7.
Three internal grinders, 4952, Newport, Nov. 7.
One cutting off machine, 4953, Newport, Nov. 7.
One polishing and buffing machine, 4954, Newport, Nov. 7.
Eleven vertical boring bills, 4990, Washington, Nov. 25.
One traveling head slotter, 4991, Washington, Nov. 25.
One shaping machine, 4994, Washington, Nov. 25.
Four surface grinding machines, 5008, Washington, Nov. 28.
Four milling machines, 5009, Washington, Nov. 28.
Two shaping machines, 5010, Washington, Nov. 28.
Two overhead trolley hoists, 5011, Newport, Nov. 28.
One drilling, milling and boring machine, 5016, Washington, Nov. 28.

Schedule numbers, places of delivery and dates of opening follow the specifications of the tools.

Central States Activity

CLINTON, WIS.—The Clinton Mfg. Co., maker of creamery and dairy machinery and appliances, plans to erect a shop addition.

CYLON, WIS.—The Cylon-Forest Electric Co. has been organized with a capital stock of $25,000 to operate a steam generating plant at Cylon.

GRAND RAPIDS, WIS.—The Prentiss-Wabers Mfg. Co. has been reincorporated as the Prentiss-Wabers Stove Co., with a capital stock of $60,000.

JANESVILLE, WIS.—J. A. Drummond, 223 East Milwaukee avenue, will build a 2-story machine shop addition, 60 x 85 feet, costing $20,000 with equipment.

MANITOWOC, WIS.—The board of education expects to be ready for bids about Dec. 1 for the construction of a high school estimated to cost $750,000 to $850,000. The plans embrace a manual training department.

MILWAUKEE.—The Progressive Metal & Refining Co., 444 Barclay street, sustained an estimated loss of $5000 by fire.

MILWAUKEE.—The plant of the Doelger & Kersten Machine Co., 505 Cedar street, recently was damaged by fire.

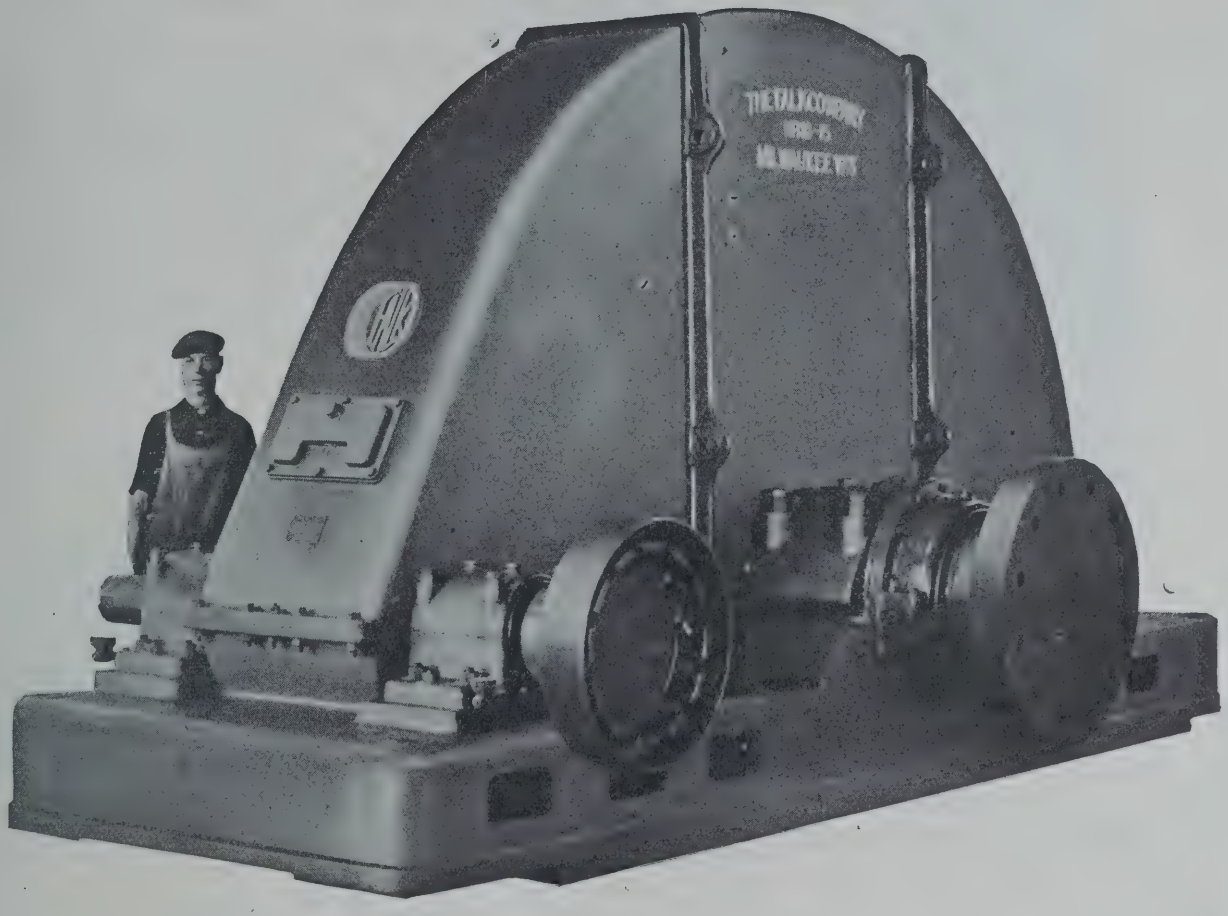
MILWAUKEE.—The Milwaukee Reliance Boiler Works is building a 1-story shop addition, 40 x 90 feet. John E. Sharp is president.

MILWAUKEE.—Articles of incorporation have been filed in behalf of the Autolife Tire Chain Co., $25,000 capital. The incorporators are Jacob Best, Henry J. Keller and Fred A. Hoya.

RACINE, WIS.—The Racine Auto Tire Co. has purchased the former Fish Bros. Wagon Co. factory. It will be reconstructed.

SHEBOYGAN, WIS.—The Globe Foundry Co., incorporated recently, has increased its capital stock from $100,000 to $200,000 because of the enlargement of its new plant construction program. Plans

Herringbone Gears Units



Large steel mills have accorded FALK Herringbone Gears universal recognition for their electric drives, and heavy shaft line drives.

They have found that these gears are absolutely dependable and eliminate all shock, noise and vibration. They reduce upkeep and consumption of power.

Steel Castings

From 1 Pound to 100,000 Pounds

WRITE FOR FALK LITERATURE

The Falk Company, Milwaukee, Wis.

REPRESENTATIVES:

PITTSBURGH—W. O. Beyer, 1007 Park Building
NEW YORK—M. P. Fillingham, 50 Church Street
SAN FRANCISCO—F. W. Grimwood, Rialto Building
DENVER, COLO.—Denver Engineering Works
WILKES-BARRE, PENNA.—Vulcan Iron Works

for a main shop, 100 x 128 feet, and a cupola building, 70 x 150 feet, which will cost about $90,000, are being prepared.

WAUPACA, WIS.—The Wisconsin Veterans' home, a state institution, will build a power house, 50 x 70 feet.

ADRIAN, MICH.—The Andrix Lock Nut Co. has been organized with $500,000 capital, by Harry Andrix and others.

CADILLAC, MICH.—The Acme Motor Truck Co. is doubling its capacity by four plant units, each 65 x 144 feet.

DETROIT.—The Atlas Iron Works plans a plant addition.

DETROIT.—The Fisher Body Co. plans a power plant.

DETROIT.—The Detroit Vapor Stove Co. plans a 1-story plant addition.

DETROIT.—The Detroit Steel Products Co. plans an addition.

DETROIT.—The Mutual Electric & Machine Co. is erecting a 2-story building.

DETROIT.—The Lancaster Steel Co. will build a warehouse here.

DETROIT.—The Wadsworth Mfg. Co., automobile bodies, is having plans prepared for a 6-story building.

DETROIT.—The American Bridge Co. has the contract to erect the steel work for the additions to the Stroh Castings Co.

DETROIT.—The Packard Motor Car Co. is reported planning to build a $250,000 service and machine shop in Omaha, Nebr.

DETROIT.—The Knight Metal Products Co. has been chartered with $500,000 capital, by Harry W. Knight, 52 Playter boulevard, Toronto, and others.

DETROIT.—The Federal Tool Co. has been incorporated with $72,000 capital, by W. L. Howarth, 65 Ash street, and others.

DETROIT.—The Detroit Gear & Machine Co., 127 Franklin street, has awarded a contract for a plant addition.

DETROIT.—The Hamp Motor Car Corp., 1049 East Milwaukee avenue, is taking bids for a plant addition, 1-story, 168 x 290 feet.

DETROIT.—Architect O. H. Kavieff, 712 Empire building, is preparing plans for a foundry, 62 x 106 feet, to cost $30,000. The name of the owner is withheld.

DETROIT.—The Welles Mfg. Co. has been organized with $20,000 capital to manufacture machinery, etc., by H. V. Welles, 309 West Grand boulevard, and others.

DETROIT.—The Contractors Equipment Co. has been chartered with $75,000 capital to engage in a general machine shop business, by Albert Beattie, 192 Fifteenth street, and others.

DETROIT.—The A. J. Detlaff Co. has purchased 39 acres as a site for a new plant, which will include a gray iron foundry and a malleable castings plant.

FLINT, MICH.—The Buick Motor Co. contemplates a 1-story power plant.

GRAND RAPIDS, MICH.—The Era Spring & Specialty Co. contemplates a plant, 1-story, 100 x 200 feet.

IRONWOOD, MICH.—The Cole-Goudrie Shovel Co. has been incorporated with $10,000 capital to manufacture pneumatic and steam shovels, by William Cole and others.

JACKSON, MICH.—The Williard Multitool Mfg. Co. has been chartered with $100,000 capital to make farm implements, by R. L. Smith and others.

LANSING, MICH.—The Lansing Fuel & Gas Co. contemplates a boiler house to cost $20,000.

MANISTIQUE, MICH.—The Charcoal Iron Co. is preparing to rebuild its plant.

MUSKEGON, MICH.—The Muskegon Aluminum Foundry has been chartered with $75,000 capital, by Axel E. Johnson and others.

SAGINAW, MICH.—The Lockwood Mfg. Co. has been incorporated with $100,000 capital to manufacture automobile bodies, by C. J. Sullivan and others.

SAGINAW, MICH.—The Michigan Crank Shaft Co. will erect a $600,000 plant.

TRENTON, MICH.—The Purdy Boat Co. has awarded contracts for a plant, 1-story, 150 x 225 feet.

YPSILANTI, MICH.—The Apex Motor Co. has started the first unit of a motor truck plant. It will be 50 x 200 feet.

CHICAGO.—The Chicago Electric Mfg. Co., George Knouff president, 2811 South Halsted street, will build a 2-story plant, 100 x 133 feet, costing $60,000.

CHICAGO.—Bids will be received until Nov. 5 by the commissioner of public works, 406 city hall, for complete electric equipment for a double deck bascule bridge.

CHICAGO.—The Tuthill Spring Co., 760 Polk street, plans a plant and office building, 2-stories, 212 x 418 feet, to cost $200,000.

CHICAGO.—The Birdman Electric Co., 1422 West Randolph street, contemplates a plant, 3-stories, 86 x 126 feet, to cost $125,000.

CHICAGO.—The Chicago Electric Mfg. Co., 2811 South Halsted street, contemplates a plant, 2-stories, 100 x 133 feet, to cost $60,000.

CHICAGO.—The Pacific Flush Tank Co., L. E. Rein secretary, 4241 Ravenswood avenue, is having plans made for a 2-story plant.

PANA, ILL.—The Pana Engine & Mfg. Co., capitalized at $60,000, has been chartered to manu-

Business Changes Recently Announced

WHEN G. T. Eames decided to remove his business to Evansville, Ind., from Kalamazoo, Mich., he changed his company's name from the Kalamazoo Arbor Press Co. to the Evansville Arbor Press Co. It manufactures quadruple compound mandrel presses as well as twist drill grinders. At Evansville a stock company was formed with $50,000 capital; Mr. Eames is president; William P. Rus, vice president, and J. J. Reinhard, secretary and treasurer. A factory, 68 x 150 feet, has been established at 112 Pine street and considerable new equipment has been installed to supplement the machinery brought from Kalamazoo. Others interested in the company are: W. H. McCurdy of the Hercules Co., J. B. Graham of the Graham Glass Co., and John O. Daves, president of the Old State National bank.

* * *

The name of the Canton Engineering & Electric Co., Canton, O., has been changed to the Moock Electric Supply Co., and capital increased from $150,000 to $500,000.

* * *

The H. R. Lewis Tool Co., Detroit, has been sold to the F. R. Fortune Tool & Mfg. Co., Wooster, O., to which town the Detroit plant will be moved when a new factory is ready.

* * *

The American Instrument Works, Pittsburgh, incorporated July 10, last, has succeeded to the business of the Pittsburgh Instrument Co. The company, which is under the management of Earnest A. Schurk, is located at 18 Lacock street, north side, Pittsburgh, and manufactures tools, jigs, dies, machine parts and scientific instruments.

* * *

The Bucyrus Co., South Milwaukee, Wis., has transferred its southern sales offices from New Orleans to Birmingham, Ala.

* * *

The Steel Sales Corp., Chicago, has opened an office at Detroit, in charge of J. P. Mumford, assisted by C. B. Peterson. The office is at 403 Book building, and a full line of steel products handled by this concern will be available.

The National Trading Co. now represents the Colonial Iron Co., Riddleburg, Pa., in the sale of low phosphorus pig iron in the Pittsburgh district.

* * *

The Egbert-Hancock Co., Chattanooga, Tenn., has succeeded the W. S. Taylor Co. and will continue to sell a complete line of iron and steel products, representing a number of large manufacturers.

* * *

The Lyon Metallic Mfg. Co., Aurora, Ill., maker of steel shelving, lockers, boxes, cabinets, etc., has opened a branch sales office to serve the New England district, at 161 Devonshire street, with J. B. Throckmorton in charge.

* * *

The Liess Iron & Metal Co., Neenah, Wis., has acquired the business of the A. Krone Iron & Metal Co. of Appleton, Wis., which were consolidated with headquarters at Neenah on Nov. 1. M. Liess is president, and H. Gazerwitz secreary and treasurer.

* * *

The American Piercing Saw Co., Providence, R. I., has changed its name to the Chadbourne Optical Co.

* * *

The Schroeder Headlight & Generating Co., Evansville, Ind., has changed its name to the Sunbeam Electric Mfg. Co.

Comfort and Safety---

This *Scfety First Working Shoe* is a durable, stylish shoe, that will afford protection to the foot and give multiple service. No matter how often it gets wet it will always dry soft and flexible, without treatment. It has a half bellows tongue which prevents foreign matter from entering.

Made in all half sizes from 5 to 11.

Note the specifications on illustration.

No. 3033 B Safety First Working Shoe





Our No. 863 B Molders Shoe—safe, economical, dressy. Sole is so soft it can be almost doubled up. Top is as soft as Vici Kid, but much more durable. Genuine Goodyear Welt Fastened.

The "SAFETY FIRST" WORKING SHOE is exceptionally comfortable. The sole is flexible and the top very soft. It is Genuine Goodyear Welt Fastened.

Safety First Shoes are *not* handled through dealers. They are sold *direct* to business concerns that are desirous of supplying their employes with high quality shoes at *"H.C.L."-busting prices.*

You'll do well to let us send you samples.

SAFETY FIRST SHOE CO.

General Office: P. O. BOX 1164

PROVIDENCE, R. I.

facture steam engines by Phillip L. McKee, H. L. Putnam and Clarence A. Andrews.

QUINCY, ILL.—The Dalt Mfg. Co., 514 South Fifth street, capitalized at $15,000, has been chartered to manufacture icemaking machines by Phillip Fischbacher, E. F. Dorkinwald and Emil C. Koempen.

ROCKFORD, ILL.—The Solem Machine Co., 109 West State street, capitalized at $50,000, has been chartered by Levin Faust, E. S. Epsterom and Peter A. Solem.

ROCKFORD, ILL.—The Van Barriger Metal Specialty Co., 534 Division street, capitalized at $30,000, has been chartered by Floy Van Barriger, Edgar M. Van Barriger and William C. Van Barriger.

SPRINGFIELD, ILL.—The Racine-Sattley Co. will build an addition which, with equipment, will cost $850,000.

EVANSVILLE, IND.—The Valsen Plow Co., 101 Lower First street, has awarded a contract for a plant, 4-stories, 100 x 140 feet.

FT. WAYNE, IND.—Bids will be received until Nov. 10 by the board of public works for furnishing and installing a 750-horsepower horizontal water tube boiler.

INDIANAPOLIS.—The Imperial Drop Forge Co., Harding avenue, contemplates a drop forge plant and a boiler house addition, to cost $200,000.

INDIANAPOLIS.—The National Metal Products Co., capitalized at $100,000, has been chartered to manufacture steel clamps and vises by E. E. Gates, John G. Wood and George H. Buckley.

LAFAYETTE, IND.—The Wabash Tractor Co. contemplates a tractor plant, 2-stories, 100 x 200 feet, to cost $100,000.

MICHIGAN CITY, IND.—The Perfection Machine & Castings Co., capitalized at $60,000, has been chartered to operate a foundry by Adolph Sorge Edward M. Phillips and George A. Giles.

SOUTH BEND, IND.—The Standard Metals Refining Corp., capitalized at $50,000, has been chartered to manufacture refined metals by Clarence C. Walters, Benjamin L. Frank and Maurice L. Hurwich

WABASH, IND.—The Wabash Foundry Co. contemplates a foundry addition, to cost $50,000.

CINCINNATI.—The Randall Machinery Co. has awarded contracts for a 2-story plant addition, 50 x 60 feet.

CINCINNATI.—The Cincinnati Steel Castings Co., 1218 Queen City avenue, has had plans drawn for a foundry addition, 47 x 90 feet.

CLEVELAND.—The Forest City Machine & Forge Co. has been incorporated with $830,000 capital, by Alonzo M. Snyder, R. E. Roehm and others.

CLEVELAND.—The Northern Bronze & Castings Co. recently was incorporated with $10,000 capital, by S. Schwartz and A. V. Tablett.

CLEVELAND.—Construction has started on a huge automobile manufacturing plant here for the Marsh Motor Car Co., which is a reorganization of the Sterling Motor Car Co. of Brockton, Mass. The first unit will be 200 x 500 feet. W. T. Marsh is president.

COLUMBUS, O.—The Columbus Machine & Engineering Co. has been incorporated with $100,000 capital, by Charles M. Wagner, F. L. Keiser, Charles G. Schenck and others.

CUYAHOGA FALLS, O.—The Taplin Rice Clerkin Co., Akron, O., plans a foundry, 80 x 300 feet, here.

DAYTON, O.—The Lincoln Tool Co. has been incorporated with $10,000 capital, by A. V. Dickerson, M. M. Hedding and others.

FRANKLIN, O.—George Hills, general manager of the Franklin Tractor Co., has plans under way for a plant addition, 90 x 300 feet.

LEBANON, O.—This city contemplates a municipal electric power plant.

LIMA, O.—The Lima Sheet Metal Products Co., 308 East Wayne street, plans plant extensions.

NORWOOD, O.—The Allis-Chalmers Mfg. Co. has awarded a contract for a plant addition, to cost $100,000.

RAVENNA, O.—The Jones Bros. Structural Steel Co. has been incorporated with $75,000 capital, by J. A. Jones, B. F. Jones, V. W. Filiatrault and others.

STEUBENVILLE, O.—The United States Tool & Supply Co. recently was incorporated with $35,000 capital, by L. Ginsberg, J. M. Kaufman and others.

STRYKER, O.—The Stryker Urban Power & Light Co. has been incorporated with $25,000 capital, by E. S. Johnston, W. S. Ufer, Robert Johnston and others.

COVINGTON, KY.—The Williard Mfg. Co., machine tools, plans a 1-story, 63 x 160-foot building.

LOUISVILLE, KY.—The Illinois Malleable Iron Co., Chicago, has purchased a site here for its proposed malleable foundry.

MADISONVILLE, KY.—The Kentucky Tire Pump Co. has been incorporated with $150,000 capital, by Walter J. Ruby, H. H. Coil and others.

OWENSBORO, KY.—The Owensboro Ditcher & Grader Co., road machinery, plans a 1-story, 25 x 120-foot addition and a 50 x 50-foot office building.

WELCH, W. VA.—The Welch Armature Co. contemplates a building, 3-stories, 63 x 63 feet.

WEST UNION, W. VA.—The Columbian Carbon Co. will build a gasoline plant.

WHEELING, W. VA.—The Wheeling Office Equipment Co. has been incorporated with $5000 capital, by W. F. Sharbaugh, Clara H. Houston, George S. Houston and others.

Throughout the West

DULUTH.—The Clyde Iron Works has awarded a contract for a plant addition, 1-story, 30 x 150 feet, to cost $30,000.

MAQUOKETA, IOWA.—Bids will be received until Nov. 19 by D. T. Bauman, city clerk, for a municipal electric light plant.

ATCHISON, MO.—A new foundry building, 120 x 130 feet, will be erected by the Copper Foundry Co., which recently increased its capital from $50,000 to $175,000.

KANSAS CITY, MO.—The Hope Fan & Blower Co., Seventy-third and Lydia streets, plans a plant addition, 1-story, 25 x 75 feet.

KOSHKONONG, MO.—The Missouri Iron & Steel Corp., St. Louis, is reported planning hydroelectric development here.

ST. JOSEPH, MO.—The King Foundry Co. plans an addition to its plant. O. M. King is president.

ST. LOUIS.—The Union Electric Light & Power Co. plans plant additions.

ST. LOUIS.—The Bridge & Beach Mfg. Co., Second and Valentine streets, manufacturer of stoves, contemplates a 2-story plant.

ST. LOUIS.—The Bayer Steam Soot Blower Co., 2828 South LaSalle street, is having plans drawn for a foundry, to cost $40,000.

WEBB CITY, MO.—Bonds for $300,000 have been voted for a new municipal water system.

HAVANA, ARK.—The Havana Electric Co. recently was organized and is reported planning an electric lighting plant.

TEXARKANA, ARK.—The Huckabee Tractor Co will erect a plant at an estimated cost of $50,000, the first unit to be 78 x 200 feet.

DALLAS, TEX.—The Limacon Pump & Motor Co., A. Ayers, manager, 207 Gaston building, is reported planning a plant.

DEVINE, TEX.—The Devine Electric & Ice Co. plans a plant to cost $32,000.

FT. WORTH, TEX.—The Bullard-Martin Electric Co. plans a plant at an estimated cost of $100,000.

FT. WORTH, TEX.—The Texas Power & Light Co. plans improvements to its plant, including a boiler house. About $135,000 will be expended.

GALVESTON, TEX.—This city contemplates an electric light plant.

GALVESTON, TEX.—The Texas Gulf Sulphur Co. will build a belt conveyor loading plant at shipsides between piers 35 and 36, at a cost of $50,000.

HOUSTON, TEX.—The Houston, Richmond & San Antonio Traction Co. plans a power station.

PORT ARTHUR, TEX.—The Eastern Texas Electric Co. contemplates an electric generating station extension.

RALLS, TEX.—The Continental Stamping & Mfg. Co. contemplates two plant additions, to cost $100,000.

RANGER, TEX.—The Ureka Tool Co., capitalized at $80,000, has been chartered to manufacture oil well tools by C. A. Towns, D. H. Gruver and John Korp.

WICHITA FALLS, TEX.—The Wichita Falls Electric Co. plans additions and improvements to its plant and equipment.

ARDMORE, OKLA.—The Jones-Everett Machine Co. recently was incorporated with $75,000 capital, by M. W. Jones and others.

BIGHEART, OKLA.—The Universal Machine & Tool Co. has been incorporated with $50,000 capital, by W. H. Derby, Walter Curtis and J. R. McCoy.

COLGATE, OKLA.—The Positive Lock Nut Co., capitalized at $100,000, has been chartered in Delaware to manufacture lock nuts by F. F. Green and others.

HOBART, OKLA.—This city contemplates an electric light plant.

OKLAHOMA CITY, OKLA.—The Tibbs-Dorsey Mfg. Co., 1006 West Washington street, will start work shortly on a planing mill, 2-stories, 151 x 275 feet, to cost $50,000.

OKMULGEE, OKLA.—The Algyre-Gilmore Tool Co. has been incorporated with $75,000 capital, by C. W. Wangerien and others.

TULSA, OKLA.—The Oklahoma Iron Works has increased its capital and is reported planning to enlarge its capacity.

VINITA, OKLA.—The Ezy Auto Rims Co., has been incorporated with $350,000 capital by Preston S. Davis and others.

BEATRICE, NEBR.—The Consolidated Electric Co. has been organized with $10,000 capital, by J. S. Dell and others.

LINCOLN, NEBR.—An election will be held Nov. 4 to issue $500,000 in bonds to extend the waterworks and electric light plants. C. M. Lambeth is engineer.

OMAHA, NEBR.—The Central Steelock & Nut Corp. contemplates a plant.

OMAHA, NEBR.—The U. S. Carburetor Co. has plans for a foundry, 60 x 80 feet, to cost $10,000.

ONIDA, S. DAK.—Bonds for $30,000 have been voted to build a municipal electric light and water plant.

SIOUX FALLS, S. D.—The Sioux Falls Metal Culvert Co. has had plans drawn for a plant addition, 1-story, 40 x 130 feet.

Business in Canada

WINNIPEG, MAN.—C. J. Brown, city clerk, is receiving bids for the installation in the city power house, Point du Bois, of three transformers with oil and accessories complete.

KAMSACK, SASK.—The municipal council plans an addition to its electric light plant to cost $20,000.

REGINA, SASK.—The Ford Motor Co. of Canada, Ltd., proposes to build an assembling plant here.

HARBOR GRACE, N. F.—The Harbor Grace Shipbuilding Co. will erect a shipbuilding plant here.

GLACE, BAY, N. S.—The Dominion Coal Co. is planning to utilize all its exhaust steam to drive low pressure turbines, in turn driving generators, to supply the power at its new mines.

DARTMOUTH, N. S.—The Dartmouth Ferry commission has let the contract to A. M. Stuart, 59 Granville street, Halifax, N. S., for a machine shop.

HALIFAX, N. S.—Hills & Sons, Hollis street, are having plans prepared for a foundry to cost $25,000.

MONTREAL, QUE.—The Steel Co. of Canada, 1272 Notre Dame street west, has awarded the contract for an addition to cost $150,000.

MONTREAL, QUE.—Samuel Osborne (Canada), Ltd., 145 St. James street, manufacturers of iron and steel products, etc., awarded the general contract for a factory building to cost $35,000.

MONTREAL, QUE.—The Yeates Machinery & Supply Co., Ltd., has been incorporated to manufacture machinery, hardware, tools, supplies, etc., with $100,000 capital, by John W. Cook, Allan A. Magee, Theodore B. Heney and others.

MONTREAL, QUE.—Peacock Bros., Ltd., have been incorporated to carry on business as engineers, contractors, manufacturers of iron, steel, metals, machinery, etc., with $300,000 capital, by Francis T. Peacock, Frederick A. Peacock, John Bryson and others.

GALT, ONT.—The Perfect Machine Co. is asking the town for a loan of $20,000 for the purpose of building an addition.

GUELPH, ONT.—The E. A. Lowry Power Equipment Co., Ltd., has been incorporated to manufacture power equipment, etc., with $50,000 capital, by Ernest A. Lowry, Matthew Kelly, George E. Lowry and others.

HAMILTON, ONT.—The British American Oil Co. will build a refinery to cost $100,000.

HAMILTON, ONT.—The Bull Dog Lacer Co., of Canada, Ltd., has been incorporated to manufacture machinery, etc., with $50,000 capital, by Arthur B. Turner, William Haxell, George A. Young and others.

LINDSAY, ONT.—McLennans, Ltd., has been incorporated to manufacture machinery, etc., with $40,000 capital, by Henry G. Gregory of Havana, Cuba; Arthur K. Gregory, Frank W. Gregory and others.

RENFREW, ONT.—The Renfrew Machinery Co. will start work in 1920 on an addition.

SARNIA, ONT.—The Seagrave-Loughead Co., Ltd., has been incorporated to manufacture automobiles, etc., with $300,000 capital by Warren E. Seagrave, Windsor, Ont.; Harry W. Loughead, William J. Thomson and others.

TORONTO, ONT.—The Canadian Allis-Chalmers, Ltd., 212 King street west, have awarded the general contract for a manufacturing building.

TORONTO, ONT.—The General Electric Supply Co., Ltd., has been incorporated to manufacture electrical equipment, etc., with $150,000 capital, by James W. Curry, 26 Queen street east, Elmer E. Wallace, 205 Jarvis street, and others.

TORONTO, ONT.—The Canadian Consolidated Corp., Ltd., has been incorporated to manufacture electric lamps, machinery, tools, equipment, electrical goods, etc., with $110,000 capital, by George N. Sieger, Harry Shortt, Gordon L. Sherk and others.

TORONTO, ONT.—The Dominion Dehydrator Co., Ltd., has been incorporated to manufacture dehydrating machinery, etc., with $150,000 capital, by Henry J. Martin, 6 Adelaide street east, Thomas N. Poole, Mount Dennis, Ont., and others.

TORONTO, ONT.—The K. & S. Tire & Rubber Goods, Ltd., has been incorporated to manufacture tires, etc., with $3,500,000 capital, by Wilbur H. Hodgins, 1501 Queen street west; Wendell H. Osborne, 44 King street west, and others.

TORONTO, ONT.—The Atlas Engineering & Machine Co., Ltd., has been incorporated with $40,000 capital to manufacture machinery, etc., by Archibald C. Macnaughton, room 511, 19 Melinda street, Archibald G. Campbell, 69 Yonge street, and others.

TORONTO, ONT.—The Kerr Bros. File Works, Ltd., have been taken over by new interests and will be known as the Kerr File & Tool Co., with head office at 39 Richmond street east. It is the intention of the new owners to greatly increase the present output and they are erecting a large manufacturing plant here.

TORONTO, ONT.—The Dodge Mfg. Co. of Canada, Ltd., has been incorporated to manufacture machinery, etc., with $300,000 capital, by James S. Lovell, 25 King street west, William Bain, 189 College street, and others.

TORONTO, ONT.—The Canadian Edison Appliance Co., Ltd., has been incorporated with $1,000,000 capital to manufacture electrical equipment, by William A. J. Case, room 801, Dominion Bank building, James B. Taylor, 78 Belhaven road, and others.

TORONTO, ONT.—The Stromberg Time Recorder Co. of Canada, Ltd., has been incorporated by Clarence W. A. Woodburne and John M. Poorman both of Chicago; Charles Evans-Lewis of Toronto, Ont., and others, to manufacture electric and other types of time recorders, machinery, tools, etc.

TRENTON, ONT.—Plans are being prepared for a plant here for the Chemical Products Corp., Excelsior Life building, Toronto, Ont., to cost $1,000,000.

WALKERVILLE, ONT.—The Acme Roofing Co., Walker road, will start building operations in the near future on a factory. The company is asking for prices on machinery and equipment.

WESTON, ONT.—B. H. Prack, Lumsden building, Toronto, Ont., is engineer for an addition to the Canada Cycle & Motor Co. here to cost $30,000.

Business Changes Recently Announced

ANNOUNCEMENT recently was made in Hartford, Conn., that under the reorganization of the Marlin-Rockwell Corp. and allied properties, the name will be changed to the Standard Steel & Bearings Co., Inc. The plants which the new corporation will operate are: Standard Roller Bearing Co., Philadelphia; Braeburn Steel Co., Pittsburgh; Rockwell-Drake Corp., Plainville, Conn.; Norwich division of Marlin-Rockwell Corp., Norwich, Conn., and Willow street and Hamden divisions of Marlin-Rockwell Corp., New Haven, Conn.

* * *

The Atlantic Steel Co., Atlanta, Ga., has appointed Baird & Martin, Inc., as its New York representative. The office is located at 120 Liberty street.

* * *

Temporary quarters have been established at 27 William street, New York City, by Matthew Addy & Co., Cincinnati. Lewis R. Smith will have charge of the sale of pig iron, coke, coal, ferroalloys, fluor spar, etc., in the New York and New England territories. Permanent headquarters will be established later.

* * *

C. L. Jahn, 940-44 Front street, New York City, has been appointed a representative of the Pennsylvania Steel Export Co., 109 Broad street, Philadelphia.

* * *

The Urban Machine & Tool Co., Cleveland, has succeeded the Ohio Tool & Machine Co.

* * *

The Republic Creosoting Co., Indianapolis, has found it necessary to obtain larger quarters at Philadelphia and has removed to 834 Real Estate Trust building. H. G. Stephens is in charge.

* * *

The removal of the headquarters of the Black & Decker Mfg. Co., from 105 South Calvert street, Baltimore, to Towson Heights, Baltimore, was completed Oct. 18.

* * *

The Sterling Blower Co., Hartford, Conn., has opened a branch office at 1505 Poplar street, Philadelphia. It also has branches in New York, Rochester and Boston.

* * *

The Chesapeake Iron Works, Baltimore, manufacturer of electric traveling cranes, has established an office in the Woolworth building, New York City, in charge of H. L. Mode.

* * *

Hunt & Dyer, Philadelphia, have removed their offices from 225 Commercial Trust building, to 418 Stock Exchange building.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.38c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	6.15c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.50c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 0c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.

Lengths—72-84-96-120 and 144 inches.

Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛-inch	1	+14
¼-inch	24½	+ 2½
⅜-inch	25½	+ 1½
½-inch	29½	11½
¾ to 1½-inch	34½	18½
Lap Weld		
2-inch	28½	14½
2½ to 6-inch	30½	17½
7 to 12-inch	27½	14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼-inch	+21	+36
⅜-inch	23½	6½
½-inch	28½	15½
¾ to 1½-inch	34½	19½
Lap Weld		
2-inch	29½	16½
2½ to 4-inch	31½	19½
4½ to 6-inch	30½	18½
7 and 8-inch	22½	10½
9 and 12-inch	17½	5½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black.	Galv.
½-inch	15½	3½
¾ to 1½-inch	20½	8½
Lap Weld		
2-inch	16½	4½
2½ to 4-inch	18½	9½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

Storing Coal Economically with Link-Belt Cranes



THIS illustration shows a birdseye view of the enormous coal storage plant at the Kinnickinnic yards of The Milwaukee Electric Railway & Light Co., Milwaukee, Wis. Here three Link-Belt Locomotive Cranes are employed for continuous and dependable service. Now is the time for you to store coal, and prepare for the coming winter. Let us show you how economically a Link-Belt Crane can store and reclaim your coal. Our systems cover all sizes of storage—from the smallest to the largest. **Write for our Locomotive Crane Catalog No. 370**

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LINK-BELT COMPANY

PHILADELPHIA		CHICAGO		INDIANAPOLIS
New York, 299 Broadway	Huntington, W. Va., Robson-Prichard Bldg.	San Francisco, 552 Market St.
Boston, 49 Federal St.	Cleveland, 428 Rockefeller Bldg.	Los Angeles, 163 N. Los Angeles St.
Pittsburgh, 1501 Park Bldg.	Detroit, 912 Dime Bank Bldg.	Toronto, Can., Canadian Link-Belt Co., Ltd.
St. Louis, Central Nat'l Bank Bldg.	Kansas City, Mo., 316 Elmhurst Bldg.	Denver, Lindrooth, Shumarr & Co., Boston Bldg.
Buffalo, 547 Ellicott Square	Seattle, 576 First Ave., S.	Louisville, Ky., Frederick Wehle, Starks Bldg.
Wilkes-Barre, 2d Nat'l Bank Bldg.	Portland, Ore., First and Stark Sts.	New Orleans, C. O. Hinz, Hibernia Bank Bldg.
Birmingham, Ala., S. L. Morrow, 720 Brown-Marx Bldg.		

We Also Make

- ☐ Elevators and Conveyors
- ☐ Link-Belt and Sprockets
- ☐ Silent Chain Drives
- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Locomotive Cranes
- ☐ Wagon Loaders
- ☐ Coal and Ashes Systems

Write for Catalogs
Place X in Square

LINK-BELT
LOCOMOTIVE CRANES

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$21.00
Chicago	20.50 to 21.00
Eastern Pennsylvania	20.00 to 22.50
Cleveland	19.50 to 20.00
St. Louis	18.50 to 19.00
Buffalo	19.00 to 20.00
New York (dealers)	15.75 to 16.50
Cincinnati	16.50 to 17.00
Birmingham	20.00 to 21.00
Valleys	20.00 to 20.50
Boston (dealers)	15.00 to 16.00

BUNDLED SHEETS

Pittsburgh	15.00 to 15.50
Eastern Pennsylvania	16.50 to 17.00
Cleveland	13.00 to 13.50
Buffalo	14.50 to 15.00
Cincinnati	12.50 to 13.00
St. Louis	12.00 to 12.50

STEEL RAILS, SHORT

Chicago	$23.00 to 24.00
Boston (dealers)	15.50 to 16.00
Cleveland	17.50 to 18.00
St. Louis	23.50 to 24.00
Birmingham	19.00 to 21.00
Cincinnati	20.50 to 21.00

STOVE PLATE

Pittsburgh	$19.00 to 20.00
Chicago	25.75 to 26.25
Eastern Pennsylvania	21.00 to 22.00
Cleveland	22.00 to 22.50
St. Louis	23.00 to 23.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	16.50 to 17.00
Birmingham	22.50 to 23.00
Boston	19.00 to 20.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$24.00 to 25.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$20.00 to 20.50
St. Louis	17.50 to 18.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$21.50 to 22.00
Chicago	22.00 to 22.50
St. Louis	21.50 to 22.00

BALED SHEETS

Pittsburgh	17.00 to 17.50
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	20.50 to 21.00
St. Louis	19.50 to 20.00
Eastern Pennsylvania	20.00 to 22.50

BOILER PLATE, CUT

Chicago, No. 1	$17.50 to 18.00
St. Louis	15.00 to 15.50

ANGLE BARS—STEEL

Chicago	$23.50 to 24.00
St. Louis	20.00 to 20.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$23.00 to 24.00
Pittsburgh, No. 2	21.00 to 21.50
Chicago, No. 1	25.50 to 26.00
Chicago, No. 2	23.50 to 24.00
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	23.25 to 23.75
St. Louis, No. 1	21.00 to 21.50
St. Louis, No. 2	20.00 to 20.50
Buffalo	23.00 to 23.50
Cincinnati, No. 1	19.50 to 20.00
Birmingham, No. 1	17.00 to 18.00
New York, No. 1 (dealers)	25.00
Boston (dealers)	20.00 to 21.00

WROUGHT PIPE

Eastern Pennsylvania	$18.00 to 19.00
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	14.00 to 14.50

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers)	20.00 to 21.00

BUSHELING

Chicago, No. 1	$20.50 to 21.00
Chicago, No. 2	14.50 to 15.00
Cleveland, No. 1	17.00 to 17.50
Cleveland, No. 2	14.50 to 15.00
St. Louis, No. 1	19.00 to 19.50
Buffalo, No. 1	16.50 to 17.50
Cincinnati, No. 1	14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$12.50 to 13.00
Chicago	11.00 to 11.50
Eastern Pennsylvania	16.00 to 17.00
Eastern Pennsylvania (blast furn.)	15.00 to 16.00
Eastern Pennsylvania (chemical)	18.50 to 19.50
Cleveland	11.50 to 12.00
Buffalo	12.00 to 12.50
New York (dealers)	12.50 to 13.00
St. Louis	13.00 to 13.50
Cincinnati	7.50 to 8.00
Birmingham	13.00 to 14.00
Valleys	11.00 to 11.50
Boston (dealers)	10.50 to 11.00
Boston (blast furnace) (dealers)	10.50 to 11.00

CAST IRON BORINGS

Pittsburgh	$15.50 to 16.00
Chicago	11.50 to 12.00
Eastern Pennsylvania	18.00 to 19.00
Eastern Pennsylvania (chemical)	20.00 to 21.00
Cleveland	13.25 to 13.75
St. Louis	12.50 to 13.00
Buffalo	15.50 to 16.00
New York (dealers' price)	15.00 to 16.00
Cincinnati	10.50 to 11.00
Birmingham	13.00 to 14.00
Valleys	14.75 to 15.00
Boston (dealers)	13.75 to 14.25
Boston (blast furnace) (dealers)	12.00 to 12.50

IRON AXLES

Pittsburgh	$34.00 to 35.00
Chicago	33.00 to 34.00
Eastern Pennsylvania	35.00
Cleveland	35.00 to 36.00
St. Louis	34.00 to 34.50
Buffalo	28.00 to 29.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	25.00 to 25.50
Cleveland	27.00 to 28.00
St. Louis	23.50 to 24.00
Buffalo	24.00 to 25.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	18.50 to 19.00
Cleveland	16.25 to 16.75
St. Louis	17.50 to 18.00
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$24.75 to 25.25
Cleveland	22.00 to 23.00
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	20.00 to 21.00

FORGE FLASHINGS

Cleveland, large	$13.00 to 13.50
Cleveland, small	16.25 to 16.25
Chicago, small	15.50 to 16.00
Boston (dealers)	12.00 to 12.50

FORGE SCRAP

Chicago	$23.00 to 23.50
Eastern Pennsylvania, No. 1	16.50 to 17.00
Boston	11.00 to 11.50

ARCH BARS AND TRANSOMS

Chicago	29.50 to 30.00
St. Louis	26.00 to 26.50

ANGLE BARS—IRON

Chicago	$28.00 to 28.50
St. Louis	22.00 to 22.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$16.00 to 17.00
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
St. Louis	13.50 to 14.00
Cleveland	17.00 to 17.50
Buffalo	16.00 to 17.00
Chicago	15.50 to 16.00

STEEL CAR AXLES

Pittsburgh	$27.00 to 28.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	31.00 to 31.50
Buffalo	28.00 to 29.00
Chicago	31.00 to 32.00
New York (dealers)	25.00
Birmingham	21.00 to 22.00
Boston (dealers)	22.50 to 23.50

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	28.50 to 29.00
New York (dealers)	24.00
Chicago	29.50 to 30.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$24.00 to 24.50
Pittsburgh, steel	21.50 to 22.00
Chicago, iron	28.00 to 28.50
Eastern Pennsylvania, iron	24.50 to 25.00
Cleveland, iron	24.50 to 25.00
St. Louis, iron	24.50 to 25.00
Buffalo iron	25.50 to 26.00
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	19.00 to 20.00
Boston	23.00 to 24.00
Cincinnati	21.00 to 21.50

NO. 1 CAST SCRAP

Pittsburgh, cupola	$27.00 to 28.00
Chicago, cupola	29.50 to 30.00
Eastern Pennsylvania, cupola	26.00 to 27.00
Cleveland, cupola	27.00 to 28.00
New York, cupola (dealers)	24.00 to 25.00
Cincinnati, No. 1 cupola	21.50 to 22.00
Birmingham, cupola	23.00 to 24.00
St. Louis, railroad	28.00 to 28.50
St. Louis, agricultural	27.50 to 28.00
Buffalo	25.50 to 26.50
Boston	28.00 to 28.50
Valleys	26.50 to 28.00

HEAVY CAST

New York (dealers)	23.50 to 24.00
Buffalo	21.00 to 22.00
Pittsburgh	22.00 to 23.00
Cleveland	19.50 to 20.00
Boston	19.00 to 19.50

MALLEABLE

Pittsburgh, railroad	$24.00 to 25.00
Pittsburgh, agricultural	20.00 to 21.00
Chicago, railroad	24.00 to 24.50
Chicago, agricultural	24.00 to 24.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	21.00 to 22.00
Cleveland agricultural	17.75 to 18.50
St. Louis, railroad	19.50 to 20.00
St. Louis, agricultural	18.50 to 19.00
Cincinnati, railroad	18.00 to 18.50
Cincinnati, agricultural	14.50 to 15.00
Boston	19.50 to 20.50
Buffalo	21.50 to 22.50

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$25.00 to 26.00
Chicago	30.50 to 31.00
Eastern Pennsylvania	Nominal
Cleveland	27.00 to 28.00
St. Louis	28.00 to 28.50
Birmingham	23.00 to 24.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	22.00 to 22.50
St. Louis	19.50 to 20.00

BOILER PUNCHINGS

Chicago	$25.00 to 26.00
Eastern Pennsylvania	23.00 to 24.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

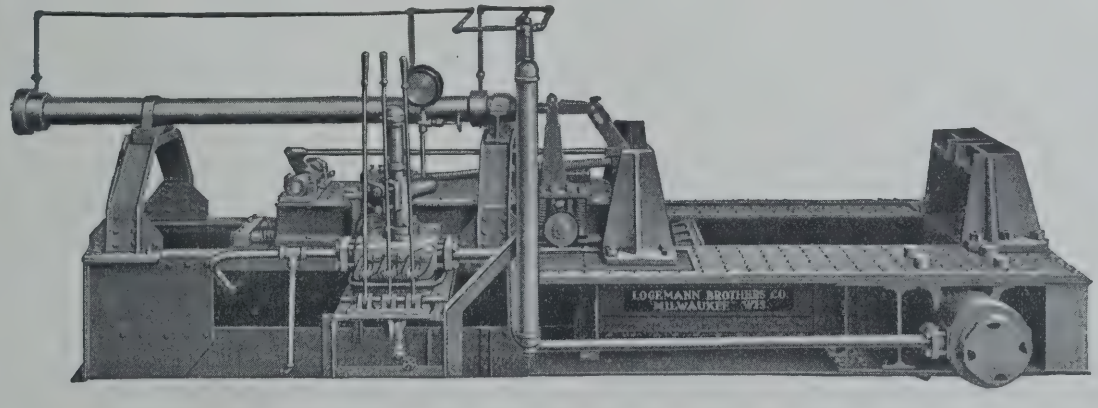
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

PUNCHES.—A booklet entitled, "The Cleveland System," containing descriptions and line drawings of sheet and plate punches and dies, has been published by the Cleveland Punch & Shear Works Co., Cleveland. Specifications and other data are given.

SAND-BLAST.—A booklet entitled "A Magazine of Progress," containing frivolous and serious side lights on business topics, and also a general description of a sand-blast cabinet, has been published by the W. W. Sly Mfg. Co., Cleveland. The cabinet is illustrated.

STEEL.—A booklet entitled "The Birth of A Steel," is being distributed by the Century Steel Co. of America, Poughkeepsie, N. Y. The booklet contains a story, told in autobiographical form, of the development of steel manufactured by the Century company. An analysis of the steel is given.

BELT CONVEYORS.—Catalog No. 3, issued by the Barber-Greene Co., Aurora, Ill., describes and illustrates portable and stationary conveyors and self-feeding bucket loaders. Several types are described and fully illustrated. Some of the illustrations show the equipment in actual service.

CRANES.—The Northern Engineering Works, Detroit, has published catalog No. 28, in which electric cranes, hand power cranes, electric hoists and air hoists are fully described and illustrated. The booklet contains condensed descriptions of the various equipment all of which are fully described.

WELDING AND CUTTING.—Oxyacetylene welding and cutting apparatus is described and illustrated in a leaflet being circulated by the Alexander Millburn Co., Baltimore. Brief descriptions of the equipment are given which are accompanied by illustrations. The leaflet contains a pressure chart and other data.

POWER EQUIPMENT.—Catalog 44-A issued by the Ohio Blower Co., Cleveland, contains illustrations and descriptions of steam power plant equipment, including steam traps, separators, exhaust heads, feed water heaters, flanges, gasoline oil separators, water level control valves and various steam specialties. All equipment is fully described, including specifications, and are illustrated.

HANDLING EQUIPMENT.—Mechanical handling equipment of all kinds is described and illustrated in a booklet recently published by the Ohio Equipment Co., Cleveland. The equipment described includes, lift trucks, steel truck platforms, shop mules, overhead carrying equipment, conveyors, tiering machines, crane scales, bundle tying machinery, etc. All are fully described and illustrated.

RECTANGULAR MAGNETS.—The Cutler-Hammer Mfg. Co., Milwaukee, recently published booklet *J*, in which it describes and illustrates rectangular lifting magnets, designed for handling regular shapes in iron and steel, such as sheets, bars, billets, ingots, pipes, etc. The booklet contains a description of these magnets as to their construction, etc., and contains illustrations showing them in actual use.

HEAT-TREATMENT CHART.—An interesting contribution to trade literature is a cardboard steel heat-treatment chart which has been published by the W. S. Rockwell Co., New York. Besides the chart, a conversion table showing corresponding temperatures on the centigrade and fahrenheit scales, data on specific heats and melting points, conversion table of power equivalents, heat equivalents, etc., are given.

WELDING REPAIRS.—An illustrated booklet of 16 pages showing how the damaged German ships, which were taken over by the government, were repaired by the use of electric welding, recently was published by the Wilson Welding Repair Co., Ltd., New York. The illustrations are interesting and show workmen engaged in repairing the damaged boilers, cylinders, steam engines, etc.

LUBRICATING DEVICES.—An illustrated booklet of 20 pages has been published by the Hills-McCanna Co., Chicago, in which force feed lubricators, high pressure gage cocks, low water alarms, boiler compound feeders and boiler test pumps are described and illustrated. A brief outline of each device is given, giving specifications, etc. The illustrations give the reader a comprehensive idea of the devices.

VENTILATORS.—The Ohio Blower Co., Cleveland, has published the sixth edition of a booklet, devoted to describing and illustrating metal ventilators. The booklet is replete with illustrations of this equipment, showing a number of actual installations and the descriptions contain data showing the ventilation requirements of plants and structures of all kinds. Specifications, etc., are given. The booklet is entitled, "The Gospel of Fresh Air."

PREHEATER.—A 14-page loose leaf booklet has been issued by the Geist Mfg. Co., Atlantic City, N. J., in which a general continuous metal preheater is described and illustrated. The preheater is square in shape with a large flat table-like surface. The top consist of heavy metal grating between the bars of which is placed a special heat-absorbing element, which absorbs the heat furnished by a series of burners. These burners are placed in rows, running from the sides to the center and each is controlled by its own valve. A cooling oven is located beneath the burners. This oven retains a heat ranging downward from 500 degrees Fahr. and is designed to be free of all draught, and to reduce the heat of the finished piece with a slow even contraction. Other parts of the preheater are described.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A firm in Norway desires an agency for the sale of automobiles and supplies, engineering and building materials, heating furnaces, electric fixtures, elevators and hoisting machinery, brewing machinery, etc. Opportunity No. 30992.

An agency on a commission basis is desired by a man in Spain for the sale of everything in the line of builders' supplies, such as iron in round bars and special forms for reinforced concrete construction. Opportunity No. 30998.

An agency is desired by a man in Belgium for the sale of material for building construction, such as beams, girders, reinforcing steel, hardware and locks. Correspondence and catalogs should be in French. Opportunity No. 31002.

A firm in France desires to be placed in communication with manufacturers with a view to purchasing machinery for making wooden cart and barrow wheels; 1-spindle shapers with tilting table for curved surfaces, etc. Opportunity No. 31007.

A firm in Switzerland desires to purchase articles for sale in the iron trade, principally tools, planes, saws, axes, chisels, screwdrivers, etc. Correspondence should be in French. Opportunity No. 31012.

The secretary of a power-boat club in the British West Indies desires catalogs and price lists of American power-boat engines of from 10 to 35 horsepower. Opportunity No. 31013.

A manufacturer's agent in Australia desires catalogs and price lists with a view to securing an agency from manufacturers of enameled kitchen ware. Opportunity No. 31017.

A firm in Brazil desires to purchase machinery for grinding wheat. Correspondence should be in Portuguese. Opportunity No. 31020.

An agency is desired by a party in Italy for the sale of electrical materials, agricultural implements, machines, tools, etc. Correspondence should be in Italian. Opportunity No. 31023.

A merchant in Spain desires an agency on a commission basis for the sale of steel cables for fishing trawlers, etc. Correspondence should be in Spanish. Opportunity No. 31029.

A firm in Italy desires to secure an agency for the sale of telephonic, telegraphic apparatus and electrical supplies. Opportunity No. 31133.

Catalogs of tractors and farm implements are desired by rubber plantations in the Dutch East Indies. Opportunity No. 31073.

An agency on a commission basis is desired by a commercial agent in Spain for the sale of hardware, tools and similar articles. Correspondence should be in Spanish. Opportunity No. 31104.

A traveling man in Belgium desires an agency for the sale in France and Belgium and surrounding countries, of hardware, small tools, technical specialties, etc. Opportunity No. 31105.

A firm of merchants in England desires to purchase an agency for a machine for making tin or thin sheet metal elbows. Opportunity No. 31109.

A commercial agency firm in France desires to secure the representation of manufacturers for the sale of machine tools, oil motors, compressors, pumps, turbines, lathes, drilling machines, etc. Opportunity No. 31129.

An agency is desired by an American citizen established in France for the sale of farm implements and sewing machines. Opportunity No. 31130.

Representation of American firms is desired by a company in France for the sale of hardware, especially tools and articles used in the locksmith trade. Opportunity No. 31131.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, November 13, 1919 *No. 20*

Problem of Supply is Paramount

Though Strikes No Longer Are Large Factor, Loss of Production Causes Backing Up of Huge Unfilled Tonnage for Mills—New Business is Discouraged —Prices Are Buoyant and Some Advances Continue

WITH the coal strike officially terminated and the steel strike in its last stage of dissolution, the factor of labor unrest has assumed secondary importance for iron and steel manufacturers. The chief problem at this time is how to handle the large tonnage of unfilled orders on which deliveries are past due and to accommodate the insistent demands of consumers for further materials. Little progress has been made in reducing deferred obligations which have been piling up by reason of the loss of production during the past seven weeks; in fact specifications still are pouring in upon the producers in a volume that offsets the increasing output. It is certain large tonnages of undelivered 1919 orders must be carried over by the mills into 1920. One independent interest is credited with an order book of 150,000 tons in bars alone.

In view of this condition, producers are almost a unit in declining or discouraging the placing by buyers of new contracts for the first quarter. Nevertheless there is much pressure on the part of consumers largely to obtain an assured place on mill books. It is quite possible, therefore, that the bars may be let down partially on this business, especially in those lines where the recovery of production has been more rapid. The leading sheet and tin plate interest has not opened its books for 1920 contracts but is expected to do so soon. Independent makers will follow quickly. An oil interest is trying to place 100,000 boxes of tin plate for first quarter.

Price Action Awaited

Much interest centers upon the price schedules that eventually will be announced by the majority of producers on next year's business. While former levels remain in force these in the absence of a disposition to sell, largely are nominal. Here and there where producers are offering material, advances are being readily obtained. An eastern plate mill has withdrawn its price of 2.65c and is naming 2.75c, mill or Pittsburgh, on next year's business. Pittsburgh makers here adopted a second advance of $2 per ton in bar iron. Small rivets, nuts and bolts again have been raised. Some sizes of chain have been advanced. Independent sheet producers show a disposition to ask higher prices for first quarter.

Rail Market is Active

The rail market continues to show much activity as the roads are looking forward to restored private control. At Chicago, western lines virtually are closing orders for 1920 delivery totaling 150,000 to 200,000 tons. The New York Central system is about to come out for a large tonnage in the East where the Erie railroad is figuring on 20,000 to 30,000 tons and the Pennsylvania lines east continue to negotiate for 200,000 tons. Belgium has placed 20,000 tons of open-hearth rails with the Steel corporation for first quarter at a reported $5 advance. Car repairs for domestic roads placed at Chicago call for about 35,000 tons of steel. The American Car & Foundry Co. has bought 15,000 tons of plates in the East. The Union Tank Car Co. has ordered 4000 tank cars.

Scrap prices now are advancing all along the line. Some grades are scarce, particularly borings and turnings of which eastern consumers with a demand of 90,000 tons monthly have been able to obtain only about 30,000 tons. A Chicago dealer has purchased 171,000 tons of shell steel from this country and Canada.

Iron Prices Still Rise

Pig iron prices are keeping up their steady advance as the demand exceeds the supply. A level of $32 for 1.75 to 2.25 silicon foundry iron now is well established in the valleys, at Cleveland, Buffalo and other nothern points. In the East and in Virginia 2.25 to 2.75 silicon iron ranges from $33.25 to $35, furnace. Alabama makers are up to $30 for the base grade. Basic iron which has been lagging behind other grades has been sold in fair tonnages at from $27.25 to $27.70, valley, and these transactions definitely fix the hitherto unsettled market. Smaller sales have been made at $29, furnace. In the East basic has taken an upward spurt of $6 a ton and about 35,000 tons have been sold at $33, furnace. Bessemer has been sold up to $29.50, valley.

NOVEMBER 13, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - York St. and Western Ave.
NEW YORK - - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Report Shows Steel Strike Folly

THE report of the senate committee which investigated the steel strike must be recognized as a sincere effort on the part of intelligent men holding a position of trust, and having due regard for the interests of the public, employers and employes, to fairly analyze the situation and to make suggestions of a constructive character.

The committee finds that the real cause of the strike was the effort of the American Federation of Labor to organize the workers in the industry; it finds that the "business manager" of the strike, William Z. Foster, is a man whose views and influence are highly detrimental to the best interests of the workers and to the country in general. It criticizes President Gompers, Fitzpatrick and Tighe for sanctioning the strike in opposition to the desire of President Wilson. It declares that wages paid to the workers are satisfactory. It finds that the extreme radicals within the American federation were aided by the worst elements in America.

The committee states that Judge Gary could hardly be blamed for refusing to receive such a man as Foster. It says that Judge Gary might have received a delegation representing the union workers. But it makes it clear that Judge Gary was not at fault in view of the fact that Foster was the active head of that committee.

The committee's recommendation in regard to the 8-hour day is a matter for serious consideration by the employers. It is the only point in the entire list of 12 strike claims on which the committee could find cause for grievance. It is probable due weight was not attached to the difficulties encountered in the operation of three shifts and to the fact that thousands of workers desire to work more than eight hours because of the extra pay they receive. However, the question of an 8-hour day involves the desires of the workmen themselves, removed from the influence of those disturbers who are seeking to act for them. In a number of instances, large groups of men in the steel industry have voted for a 10-hour day. What is the will of the majority when all circumstances are understood?

The report should quickly wipe out the last traces of the strike. The strikers have lost, and now they know why they have lost. In some other way, and from time to time working conditions in the iron and steel industry will be improved, as they will be improved in all other lines of activity, but they will not be improved by the workers placing their trust in the Fosters and the Fitzpatricks. If the report of the senate committee convinces them of that fact it will have accomplished great good.

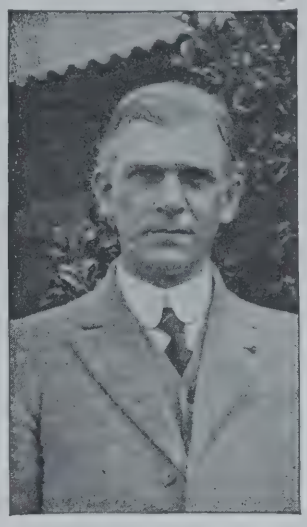
Pig Iron Output Recuperates

THAT the back of the steel strike is broken is shown conclusively by blast furnace statistics for October. Of 103 stacks forced to bank or blown out in September because of labor trouble, 54 were able to resume operations in October. Ninety-one of the 103 stacks were steelworks units, while the remaining 12 were merchant furnaces. October's figures show a net gain of 41 steelworks stacks, and a net gain of 13 merchant stacks, with the result that the number of merchant furnaces in blast Oct. 31 was one more than on Aug. 31, the most productive month since last March. Merchant iron production in September, 567,608 tons, represented a gain of 19,183 tons over August with 548,425 tons, and although the October tonnage, 564,697, showed a loss of 2911 tons in comparison with September, the total still was a gain of 16,272 tons over that of August.

Production was not severely affected during September since the strike occurred late in the month. Consequently the real cutting off of output was not registered until October. However, the number of stacks relighted showed a decided improvement late in October.

It remains for November to show the extent of the recuperation in October. It undoubtedly will reflect a further satisfactory recovery.

The Iron Trade Review, an International Authority



F. M. MANSFIELD

FOUR years of war have internationalized the vision and plans of American business as no other period in history. From choice or destiny, the international perspective today dominates the thoughts and aspirations of its leadership. With these greater opportunities for enterprise and initiative have come new responsibilities. In no field is this obligation more direct and certain than with the business press. Today continuing and accurate business information of overseas markets takes rank with ships or exchange, goods or credit, in the success of international enterprise.

Keeping step with the new conditions and mindful of its duty toward the great industry which it represents, THE IRON TRADE REVIEW has completed its plans more definitely to internationalize its scope and influence. Although for years possessed of a superior foreign news representation through resident correspondents, the new program calls for a notable expansion of these facilities and their operation under American management. A special European division of THE IRON TRADE REVIEW and its affiliated publications of The Penton Publishing Co., has been created. Commodious and specially equipped offices have been established at Dorland House, 16 Regent street S. W. I., London, which will be the centering point for all European business and editorial activities. From there the work of correspondents in England, France, Belgium, Germany and other industrial countries of Europe will be directed. In this way a system of close editorial supervision in accordance with American standards and interests will be provided. THE IRON TRADE REVIEW thereby will be afforded a European representation superior to any publication in its line and unexcelled by that of any other trade paper in this country. It will be able to present international market reports on iron and steel and nonferrous metals, technical developments, industrial news and other editorial matter of a business character with the same completeness and authority which has marked its treatment of these subjects in this country.



H. COLE ESTEP

H. Cole Estep, who has been made manager of the European division, has been prominently identified with the staff of THE IRON TRADE REVIEW since 1908. His experience has included many years of study and of close contact with both the commercial and technical branches of the American iron and steel and metalmaking industries. A graduate engineer, he has filled for many years the post of engineering editor of THE IRON TRADE REVIEW and is especially fitted to present and interpret the development of European production and manufacturing practice in the reconstruction period. Mr. Estep, , who has been editorial director of The Penton Publishing Co., will devote his sole attention to foreign development. He is now in England arranging for the opening of the new division headquarters.



JOSEPH HORTON

Joseph Horton, of Birmingham, England, remains as British correspondent, a post so capably filled for many years. Mr. Horton's iron and steel market reports and articles long have been accepted as authoritative.

Francis Miltoun Mansfield, whose numerous articles on French, Belgian, Italian and German industrial conditions appearing in THE IRON TRADE REVIEW for several years past under the authorship of Francis Miltoun, have attracted wide and favorable attention, will continue as French representative. Mr. Mansfield is an American thoroughly familiar with European industrial conditions.

Various additions to the European editorial staff are to be made from resident correspondents in Great Britain and on the Continent, so that the activities of every great industrial country and section each week will be brought completely and comprehensively before the readers of THE IRON TRADE REVIEW.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1358 AND 1360

Pig Iron

Bessemer, valley	$28.50 to 29.50
Bessemer, Pittsburgh	29.90 to 30.90
Basic, valley	27.25 to 27.70
Basic, Pittsburgh	28.65 to 29.10
Basic, delivered, eastern Pa.	34.00
Malleable, Pittsburgh	32.40 to 33.40
Malleable, Chicago, furnace	30.50
Malleable, Buffalo, furnace	32.00 to 33.00
Malleable, delivered eastern Pa.	nominal

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$37.10
No. 1X, Buffalo	34.00 to 36.00
No. 1 foundry, Chicago furnace	30.25
No. 2 foundry, valley, Pittsburgh	33.40
No. 2 foundry, Buffalo	32.00 to 33.00
No. 2 Northern, Boston	33.90 to 34.90
No. 2 foundry Chicago furnace	30.00
No. 2 foundry, Ironton furnace	32.75
No. 2 foundry, Cleveland furnace	32.00
No. 2X, eastern del., Phila.	36.10
No. 2X, eastern, N. J. tidewater	36.10
No. 2X, eastern, Boston	38.90
No. 2X foundry, Buffalo furnace	33.00 to 34.00
No. 2 foundry, del., Philadelphia	35.00
No. 2 foundry, N. J. tidewater	35.00
No. 2 southern, Birmingham	30.00
No. 2 southern, Cincinnati	33.60
No. 2 southern, Chicago	35.00
No. 2 southern, Phila.	36.50
No. 2 southern, Cleveland	35.00
No. 2 southern, Boston	38.00
No. 2 southern, St. Louis	34.25
Virginia, No. 2X, furnace	33.25
Virginia, No. 2X, Philadelphia	37.35
Virginia, No. 2X, Jersey City	37.65
Virginia, No. 2X, Boston	37.95
Gray forge, valley, Pittsburgh	32.40
Gray forge, Buffalo	29.00 to 30.00
Gray forge eastern Pa.	31.50
Silveries, 8%, furnace	45.25
Ohio Silveries, 8%, Chicago	46.80
Tennessee Silveries 8% Chicago	48.65
Low phos. standard, Phila.	42.50 to 43.00
Low phos. Lebanon, furnace	35.00
Low phos. standard, Pittsburgh	39.00 to 40.00
Charcoal, Superior, Chicago	35.50 to 38.00
Charcoal, Superior, Chicago first quarter 1920	35.50 to 37.50

Coke

(At the ovens)

Connellsville furnace	$5.50 to 6.00
Connellsville foundry	6.50 to 7.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	10.50 to 11.00
New River furnace, nominal	8.00 to 9.00
Wise county furnace, nominal	7.00 to 7.50
Wise county foundry, nominal	8.00 to 9.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	nominal
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.15 to 1.25
Ferrochrome, 60 to 70 per cent chromium, 4 to 6 per cent carbon, per pound contained, maker's plant	27c to 29c
Ferrovanadium, 35 to 40 per cent, per pound contained, according to analysis	$5.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	54.75
Bessemer, ferrosilicon, 11 per cent	58.05
Bessemer, ferrosilicon, 12 per cent	61.35

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	40.50
Open-hearth, Philadelphia	45.00 to 47.50
Open-hearth, Youngstown	40.50
Bessemer, Pittsburgh	40.50
Bessemer, Youngstown	40.50
Forging, Pittsburgh	51.00 to 53.00
Forging, Philadelphia	55.00 to 60.00

SHEET BARS

Open-hearth, Pittsburgh	$45.00
Open-hearth, Youngstown	45.00
Bessemer, Pittsburgh	45.00
Bessemer, Youngstown	45.00

SLABS

Pittsburgh and Youngstown	43.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00 to 60.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c
Tank plates, New York	2.92c
Bars, soft steel, Pittsburgh	2.35c
Bars, soft steel, Chicago	2.82c
Bars, soft steel, New York	2.62c to 2.77c
Bars, soft steel, Philadelphia	2.595c to 2.745c
Bar iron, common, Phila.	2.845c
Bar iron, common, Chicago	2.72c to 2.87c
Bar iron, common, Pittsburgh	2.75c to 3.00c
Bar iron, common, New York	2.87c
Bar iron, common, Pittsburgh	31.0c
Hard steel bars, Chicago	2.65c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 46.00
Relaying rails, Pittsburgh	40.00 to 43.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.25c to 3.50c
Plain wire, Pittsburgh	3.00c to 3.10c
Galvanized wire, Pittsburgh	3.70c to 3.80c
Barbed wire, painted, Pitts.	3.40c to 3.50c
Barbed wire, galvanized, Pitts.	4.10c to 4.20c
Cut nails, Pittsburgh l. c. l.	5.045c
Coated nails per count keg, Pitts.	2.85c to 3.10c
Polished staples, Pittsburgh	3.40c to 3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1⅛ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.895c to 3.995c

Full sheet schedule page 1296.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	34½	18½

Full pipe schedule page 1296.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$62.80
Six-inch and over, Chicago	59.80
Four-inch, New York	61.30
Six-inch and over, New York	58.30
Four-inch, Birmingham	56.00
Six-inch and over, Birmingham	53.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.79½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.77½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c to 4.15c
Boiler rivets, Pittsburgh	4.00c to 4.25c
Rivets ⅞ in. and smaller Pitts.	50–10 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50 to 50–10 off
Cut thread	45 to 50 off
Larger and longer	35–5 to 40–5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled therad	50–10 to 60 off
Cut thread	50 to 50–10 off
Larger and longer	40–10 to 45–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	75–5 off
Gimlet and cone point lag screws	50–10–10 to 60 off

NUTS

Hot pressed, square blank	2.70c to 3.10c off
Hot pressed, square tapped	2.45c to 2.85c off
Hot pressed, hexagon blank	2.70c to 3.10c off
Hot pressed, hexagon tapped	2.45c to 2.85c off
Cold pressed, square tapped	2.45c to 2.85c off
Cold pressed, square blank	2.70c to 3.10c off
Cold pressed, hexagon blank	2.70c to 3.10c off
Cold pressed, hexagon tapped	2.45c to 2.85c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Nov. 12, 1919	Average prices Oct., 1919	Aug., 1919	Nov., 1918
Bessemer, valley, del., Pittsburgh	$30.35	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	29.10	27.15	27.15	34.40
*No. 2 Foundry, Pittsburgh	33.40	28.85	28.15	35.40
*No. 2 Foundry, Chicago, furnace	30.00	27.55	26.75	34.60
Lake Superior charcoal, Chicago	35.50	33.15	32.75	38.70
Malleable, valley	31.00	29.15	28.65	35.90
M[illegible] Chicago	31.50	28.00	27.25	34.50
*Southern, No. 2, Birmingham	30.00	27.45	26.75	35.25
*Southern Ohio, No. 2, Ironton	29.75	28.80	26.75	34.00
Basic, eastern del., eastern Pa.	34.00	27.90	27.00	36.90
**No. 2X, Virginia, furnace	33.25	30.35	28.25	38.00
*No. 2X, eastern del., Philadelphia	36.10	32.00	29.60	39.15
Gray forge, valley del., Pittsburgh	32.40	27.65	27.15	34.40
Ferromanganese, 80% per cent, delivered	110.00	110.00	110.00	250.00†
Bessemer billets, Pittsburgh	40.50	39.30	38.50	47.50
Bessemer sheet bars, Pittsburgh	45.00	43.20	42.00	51.00
Open-hearth sheet bars, Pittsburgh	45.00	43.20	42.00	51.00
Open-hearth billets Pittsburgh	40.50	39.30	38.50	47.50
Steel bars, Pittsburgh	2.35	2.35	2.55	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.845	2.745	2.595	3.74

	Prices Nov. 12, 1919	Average prices Oct., 1919	Aug., 1919	Nov., 1918
Iron bars, Cleveland	$2.75	$2.75	$2.52	$3.64
Iron bars, Chicago mill	2.72	2.68	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.24
Tank plates, Pittsburgh	2.65c	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.49
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.55	4.25
Sheets galv., No. 28, Pittsburgh	5.70	5.70	5.70	6.25
Wire nails, Pittsburgh	3.50	3.25	3.25	3.50
Connellsville furnace coke	6.00	4.15	4.30	6.00
Connellsville foundry coke	7.00	5.60	5.10	7.00
Heavy melting steel, Pittsburgh	21.50	20.00	21.25	28.75
Heavy melting steel, eastern Pa.	25.00	19.55	19.60	28.00
Heavy melting steel Chicago	21.50	18.80	20.75	26.50
No. 1 wrought, eastern Pennsylvania	27.50	27.00	27.25	34.00
No. 1 wrought, Chicago	25.50	22.00	23.25	29.65
Rerolling rails, Chicago	30.50	26.80	29.00	30.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Basic Iron Takes Upward Swing

Eastern Buyers Close for 30,000 to 35,000 Tons at $6 Advance—Valley Basic Sells at $27.25 to $27.70—Iron Market Continues General Advance—Northern No. 2 at $32 and Southern Iron at $30

Philadelphia, Nov. 11.—Basic iron in the East underwent a sensational advance of $6 per ton the past week. One user bought 21,000 tons for first quarter at $30, furnace, another 6000 tons for first quarter at $33, furnace, and another 6000 tons for first half at $33, furnace. The latter price now is the market. One maker on the basic business asked $35, furnace. Several thousand tons of standard low phosphorus was sold at $39, furnace, for this year's delivery and 2000 to 3000 tons of copper-bearing iron for this year and first half went at $35, furnace. It is expected, however, the low phosphorus market shortly will be higher. A number of sales of foundry iron for this year were made at $35 and $35.25, eastern Pennsylvania furnace, for No. 2X (2.25 to 2.75 silicon) and $34 for No. 2 plain (1.75 to 2.25 silicon). Some business for first quarter was booked at $35. Central Pennsylvania makers after selling No. 2X for this year at $35, furnace, now are asking $35.50. One Buffalo maker is making $36, Buffalo, for No. 2X for this year. Virginia No. 2 plain (1.75 to 2.25 silicon) now is $32, furnace, and more than 1000 tons were sold at this price. No. 2X (2.25 to 2.75 silicon) was sold at $33.25 and No. 1X (2.75 to 3.25 silicon) at $35. The wildness of the market is reflected by soles of Virginia No. 2 plain to this district for this year at $35, furnace. The Juniata furnace will go in on foundry in December, and the Temple furnace may make foundry soon. Gray iron is nominal. Some malleable, now is obtainable in East at around $36, Philadelphia but none has been sold as yet as far as can be learned.

The J. L. Matt Co.'s inquiry for 2500 tons of foundry iron still is pending.

Boston Buying in Southern Markets

Boston, Nov. 10.—With almost all available supplies of spot northern pig iron taken during the feverish buying of the past two weeks, foundries in New England are turning to the Alabama and Virginia fields. Furnaces which normally supply New England have no more than a few hundred tons of No. 2X (2.25 to 2.75 silicon) for prompt shipment and this situation is sending up prices. Resale iron is coming into the market in large quantities and sales at $28, delivered, have been reported for iron with 2.25 to 2.75 per cent silicon. The 1920 market is also strong, and the few furnaces that have iron for this delivery are quoting higher prices. One eastern Pennsylvania furnace is asking $33.75 for No. 2X (2.25 to 2.75 silicon) and reports that this price will be advanced during the week. A Bridgeport, Conn., consumer bought 300 tons of Alabama iron (silicon 4.25 to 4.75) for first half at $36, furnace, making the delivered price $42.60. The same consumer bought a like amount of a grade with less silicon from an eastern Pennsylvania furnace. Another analysis for first quarter and other orders aggregating approximately 1000 tons for this same grade have been placed. The Sloss-Sheffield Steel & Iron Co., is quoting $30 for 1.75 to 2.25 silicon iron for first quarter delivery and $31.20 for 2.25 to 2.75 silicon. The Virginia Iron Coal & Coke Co., is quoting $33 for 1.75 to 2.25 silicon, $34.25 for 2.25 to 2.75 and $36 for the 2.75 to 3.25. The Sullivan Machine Co., Claremont, N. H., has placed an order for 300 tons of high silicon iron at the regular price. The General Fire Extinguisher Co., Auburn, R. I., is in the market for its 1920 requirements. A New Britain, Conn., melter is asking for 1000 tons for first half. The Donner Steel Co., Buffalo, has been offering some prompt iron, although it is now reported out of the market. The estimated total of sales in Boston for the week is 6000 tons.

Prices Again Go Up

New York, Nov. 10.—Due to the scarcity of pig iron, holders are able to obtain constantly advancing prices on such tonnage as is available for sale. During the past week, several thousand tons of foundry iron have changed hands in this district for shipment this year. Eastern Pennsylvania iron for shipment over November and December has brought $35 furnace, for 2.25 to 2.75 silicon, and $34, for 1.75 to 2.25 silicon. Buffalo foundry for this year has sold at $33 and $34 Buffalo, for 2.25 to 2.75 silicon, and $36 has been asked on this grade. Central Pennsylvania foundry for this year has been sold at $35 furnace for 2.25 to 2.75 silicon. Iron for next year is hard to get, and sales for next year as a rule are being restricted to the needs of regular customers. Some eastern Pennsylvania foundry has been sold during the past week for first half at $34 furnace for 2.25 to 2.75 silicon and at $33, for 1.75 to 2.25. The sellers at these figures now are disposed to hold for $1 higher. One eastern Pennsylvania interest is asking $35.25 for 2.25 to 2.75 silicon for first half. While there is considerable export inquiry for foundry iron it is held up in most cases by the inability to get

the tonnage. For Birmingham iron for export, $30 Birmingham has been asked during the past week on 1.75 to 2.25 silicon. There continues an urgent demand for malleable iron from some consumers in this district, but this grade cannot be obtained in the east. There are no more offerings of charcoal iron for any delivery. On basic, it seems that the minimum asking price of the eastern Pennsylvania interests now is $31 furnace, but none has been sold at this figure. The Cranberry furnace at Cranberry, Tenn., is scheduled to go in blast on low phosphorus iron about Dec. 1.

Basic Swinging Into Line

Pittsburgh, Nov. 11.—Basic iron prices, for some time out of line with those of other grades, have moved up in the past week to more nearly normal levels in comparison with bessemer and foundry iron. Sales of fair tonnages of basic are noted from valley furnaces at $27.25, $27.60 and $27.70, while a Pittsburgh merchant interest sold this grade at slightly better than $28, furnace. All of this business is for shipment by Jan. 1. Even higher prices have been paid on smaller tonnages, sales of standard basic being reported by merchant interests at $29 valley. While the market appears to be quotable from $27.25 to $27.70, valley furnaces, based on sales of 1000 tons or more, it is doubtful if any of the makers with tonnages available for shipment over the remanider of the year, would consider less than $28, furnace. Some are asking as high as $29. Makers generally are disinclined to quote against inquiries for first quarter and first half of 1920 for basic until they have a clearer line on probable producing costs. Sales of bessemer iron have been made at $28.50, $28.95 and $29.50, valley furnace, the latter price being paid for 2000 tons by a brokerage interest. Activity in the steelmaking grades of iron are due as much to purchases by foundries as by steel manufacturers. Both basic and bessemer iron can be blended so as to replace straight foundry grades. The big recent advance in foundry iron therefore permits foundries to pay relatively high prices for these grades and to bring the iron up in silicon by the use of ferrosilicon or silvery iron. A tremendous demand has continued in both foundry and malleable grades and prices have been registering almost daily advances, especially on the sales made through brokers for shipment to markets not ordinarily served from this part of the country. Seemingly there is an acute shortage of iron along the lake front and in the Chicago district and these demands are pouring in here. Sales of 2.75 to 3.25 silicon iron for shipment in the Middle West are reported at $35 and a Pittsburgh furnace interest refused $35 for No. 2 (1.75 to 2.25 silicon) for shipment to a distant consuming point. On iron running 2.25 to 2.75 silicon, $34 furnace has been done for prompt shipment and on No. 2 (1.75 to 2.25 silicon) for first quarter, $32, furnace, has been paid by a Pittsburgh district consumer. The market now is well established at $32, furnace, for No. 2 foundry, $31 for No. 3 foundry and $30.50 to $31 for gray forge. A sale of 3000 tons of forge at $31 western Pennsylvania furnace was closed. Sales of malleable iron have been made anywhere from $29 to $31, furnace, but it is doubtful if any of this grade today could be bought as low as $30. Demands for silvery iron still are heavy and one Ohio producer who recently quoted a basis of $43.25, furnace, has announced an increase to $45.25, the same base quoted by other makers.

New Schedule to Become General

Buffalo, Nov. 11.—There is every reason to believe that the schedule of higher prices in foundry iron announced three weeks ago by a local iron interest will become the ruling schedule of the district. This schedule is $34 for No. 2 plain (1.75 to 2.25 silicon); $35.25 for No. 2X (2.25 to 2.75 silicon), and $37 for No. 1X (2.75 to 3.25 silicon). In addition to selling considerable tonnage during the past week on this basis, another interest which has been out of the market for the past two months announces that it will re-enter within a week or 10 days for 1920 iron which it will sell at these prices. The furnace which was the first to announce the prices states it will not accept any inquiry for 1920 at a less figure. Records of sales of No. 2X foundry at $35 by another district have been obtained. One furnace interest reports an inquiry for 7500 tons of all grades of foundry for delivery in 1920. This includes No. 2 and No. 2X, No. 1 and No. 1X. One interest reports sales of malleable in the week at $33.

Cleveland Prices Again Up

Cleveland, Nov. 11.—Active demand and a curtailed supply still are upholding the advancing movement in pig iron prices. Cleveland makers after selling a considerable tonnage of 1.75 to 2.25 silicon iron for this year and first half at $30 have raised their schedule to $32 for this grade and to $33.25 for 2.25 to 2.75 silicon. Some tonnage has been sold on the higher basis. A lot of Cleveland malleable also went at $32 furnace. Makers generally, however, are reluctant to sell much tonnage at any price. Spot iron is almost unobtainable and is bringing high figures. A sale of Buffalo foundry at $34 furnace or $36.10 delivered Cleveland, was closed as was some western Pennsylvania iron at 3.00 to 3.75 silicon content at $36 furnace or $38.30 Cleveland. For January-February delivery 1000 tons of 1.75 to 2.25 foundry was sold at $31 and $32 Ohio furnace. A lot of 300 tons of prompt basic was placed at $29 Ohio furnace. Owing to the attractive price for foundry iron, some of the furnaces which were contemplating going in on basic, now are planning to produce the former grade. New inquiry is active. In the latter is included a considerable tonnage for the motor car companies in the Detroit district, principal among which is 15,000 to 20,000 tons of foundry and malleable for the General Motors Corp. This latter inquiry still is pending.

Sellers Out of Market

Chicago, Nov. 11.—With most producers of pig iron out of the market for first half delivery, it is practically impossible for melters to place contracts for that position. Chicago producers are entirely out of the market for both prompt and future iron, and will not accept further business until it has been possible to determine more nearly what the future offers. Two important southern producers are out of the market. The Algoma Steel Co., which has been shipping considerable iron into this territory, is sold up as far as it desires to go. Prompt iron from outside producing centers is available in small lots, and consumers are taking it eagerly as fast as offered. In spite of the inability of melters to place their requirements pressure on makers is much less than had been expected and whatever excitement may have existed a fortnight ago, seems to have disappeared in large measure. Considerable malleable from the valleys has been sold for delivery in Chicago at $31 to $31.50, furnace. A machine manufacturer in northern Illinois is inquiring for 500 tons of foundry for first half. Several inquiries for malleable ranging from 2000 to 2500 tons for the first half are pending and are awaiting an opportunity to obtain iron produced in this district. A furnace just going into blast is expected to care for this business. An inquiry just made public calls for 600 tons of standard bessemer, 600 tons of low phosphorus and 200 tons of bessemer ferrosilicon for 1920 delivery. No producer of silvery iron now appears to be in the market. While some have sold their output for first half of 1920, the Red River furnace and stacks in Jackson county have not yet opened their books for that delivery.

Prices Still on Rise

Cincinnati, Nov. 10.—Malleable is again in demand, showing that all wants were not filled during the buying movement that was in effect the first part of October. A limited tonnage of valley malleable has been sold recently, most of which brought $34, furnace. The southern Ohio supply seems to have been exhausted. Practically every southern producer has withdrawn from the market on foundry iron, although a considerable tonnage was booked within the past few days at $30, Birmingham, for 1.75 to 2.25 silicon, with an advance of 4 per cent for the next grade. Only one interest in the Ironton district is quoting for first quarter shipment, and its price has now been advanced to $32.75. Ironton, for that delivery. No iron is now being offered for first half. Spot foundry iron is very scarce and only odd lots of resale iron are to be had in the South and holders do not seem to have any trouble in getting a premium over the market price.

Heavy Demand at St. Louis

St. Louis, Nov. 8.—The coal strike has brought out a heavy demand for pig iron and large sales have been made during the past week. Virtually everything offered has been taken, even at an advance in price. Southern producers are withdrawing certain grades because their stocks have been exhausted, while others say it is only a matter of days before they will be entirely out of the market. Foundries have enough business to keep them running full time for the re-

mainder of the year. Demand for spot iron is especially urgent. Some deliveries from Ohio and a few from Gary were reported during the week, but they are inadequate. Selling agents of the Birmingham interests report a land-office business, orders pouring in on them from the St. Louis district and from the Northwest. As high as $35 has been asked and received for No. 2 southern (1.75 to 2.25 silicon), and as a rule brokers are quoting $30 to $32.50. Furnaces are advancing their prices, and very little iron was sold under $30 during the past week. The quotation for the first quarter of 1920, when furnaces are willing to negotiate, is generally $30.

Cautious in Selling

Birmingham, Ala., Nov. 1.—Southern furnace companies generally still are refraining from selling although inquiries are numerous. It is almost impossible to obtain spot iron from southern furnaces, except in small tonnage, while three or four companies are holding off from future business in anticipation of a strong demand and better prices. While three furnaces have been banked because of the coal strike, production for the month will not be retarded much. The coal strike already is on the wane and fuel and coke soon will be plentiful.

Ore Shipments

To Youngstown District Improve—Some Contracts Will Not Be Filled

Cleveland, Nov. 11.—Shipments of ore from Lake Erie docks to furnaces continue at a slow rate, the only exception to this being a slight improvement since last week in shipments to Youngstown, due to the subsidence of the strike in that district and an increase in plant operations. While the amount of ore brought down this season is ample for the bulk of requirements instances are coming to light where certain operators will not be able to bring down sufficient ore to fill contract requirements. The frozen condition of the ore at the mines and upper lake docks, the congested condition of the docks at the lower end of the route and inability of furnaces to unload ore have contributed to slow up deliveries. An inquiry is out for 30,000 tons of high phosphorus ore, while one furnace interest has resold 25,000 tons of that grade and is negotiating for the resale of 30,000 more. High phosphorus ores are expected to be in good demand owing to the extensive operations of foundry interests. Some furnaces which originally planned to make basic and now are going on foundry iron because of the attractive prices for the latter grade have made some purchases of foundry ore on dock.

The amount of ore on dock at Lake Erie ports on Nov. 1 was 10,004,767 tons, as compared with 9,909,279 tons Nov. 1, 1918. Complete reports on shipments from the Lake Superior district show that the October movement amounted to 6,201,883 tons, a decrease of 2,339,710 compared with the month last year, while shipments for the season up to Nov. 1 amounted to 43,978,414, a decrease of 12,892,457, compared with last year.

Spot Furnace Coke Scarce

Price Advances 50 Cents as Re-establishment of Maximum Coal Prices Fails to Increase Production—Contracting for Next Year Tapering off

Pittsburgh, Nov. 11.—Spot furnace coke is 50 cents a ton higher than a week ago and extremely firm at the advance. Contrary to expectations the re-establishment of maximum coal prices, while placing no limitations on coke prices, has not resulted in a greatly increased production of coke. With the price of mine-run coal fixed at $2.35, mines, and furnace coke bringing more than $5, the latter would have been the more profitable method of marketing coal controlled by the beehive oven operators. Actually, however, the tendency in the Connellsville regions has been to keep up the production of coal, and while some operators were disposed to start idle ovens when coal prices were marked down, this has happened only in a few isolated cases. Reports from the regions today were to the effect that coal output would be kept up even at the expense of coke production until the strike of the miners in union fields is over. With contracts fully absorbing production, some of the steel companies seeking good tonnages are willing to pay $6, ovens, and an export order for a cargo went at that price. Spot standard furnace coke is quotable from $5.75 to $6, ovens, the lower price applying chiefly to small lots going to regular customers while $6 is the more general figure. Contracting for first half has tapered off. On such tonnage closed the contracts have called for a fixed price, either of $5.50 or $5.60, ovens. Operators still are disinclined to consider sliding scale contracts based, as for the last half, on basic iron at valley furnaces. Such contracts carried a price of $4.12, ovens, with basic iron at $25.75, valley furnace, and there have been few periods in the six months when the producers would not have been better paid if they had sold their coke on the market. Whether the belated advance in basic pig iron will cause any change in this attitude remains to be seen. Steady demands are coming out for foundry coke, and while the spot market is around $7, ovens, business recently has been done on either side of that figure. Production of coke in the Connellsville regions for the week ended Nov. 1, is estimated by *The Connellsville Courier* to have been 202,500 tons, as compared with 203,130 tons in the previous week.

Spot Advances at Boston

Boston, Nov. 10.—Coke shipments continue active, and spot coke has advanced to $11.40. Foundries are continuing to place orders both for this year and for first half. The foundries, however, are exceptionally well supplied for the balance of this year. As a result of the coal strike, however, a new demand for spot shipments outside of New England has sprung up, and many orders particularly from northern New York are being booked by the Everett, Mass., by-product producer. First half business is continuing on a normal basis. Flat-rate contracts are decidedly more popular than sliding scale, and the local reports that the bulk of the business is of the former character. The Providence, R. I., producer is sold up for first half.

Much By-Product Sold

New York, Nov. 10.—Continued uncertainty as to the fuel situation, because of the coal strike, has led to a continuation of the heavy volume of local coke business. The northern New Jersey by-product producer has sold good-sized tonnages both for this year and next. Its price for November-December is $7, Connellsville, equivalent to $10.10 delivered at Newark and other northern New Jersey consuming points, and at $11.40 delivered in New England. This interest is selling much foundry fuel to this district for first half at $7, Connellsville, and at $7.50 Connellsville, for shipment to the New England district.

Southern Districts Not Affected

Cincinnati, Nov. 10.—The demand for both furnace and foundry coke is more active. Connellsville producers are holding the former around $5 to $5.75 and the latter at $6.50 to $7. New River foundry coke has been advanced to $10.50 to $11, and some prompt foundry coke was recently sold at the last-named figure. Wise county oven operators are holding back accepting any more future business and nominal quotations there range for foundry coke from $8 to $8.50, ovens.

Coke Scarce at St. Louis

St. Louis, Nov. 8.—Dealers and producers report an enormous inquiry for coke for prompt shipment, and extreme difficulty in securing material. Conditions are like those obtaining during the rush period of the war. Freight equipment is scarce, and should the coal strike continue, it is feared freight trains will be retired by western railroads. Certain foundries in this district have been required to draw on scanty reserves of fuel, but the leading by-product interest still has a fair supply. There are numerous inquiries from the West, Southwest and Northwest. Thus far there has been no interruption in oven operations. Prices are strong and are advancing. Connellsville 72-hour foundry is quoted at $7, ovens, against $6.75 to $7 last week, and premiums over the quoted figure are being paid for prompt delivery.

Production in South is Fair

Birmingham, Ala., Nov. 11.—Despite the coal strike, coke production in the South has been fair since Nov. 1. Iron and steel companies, with one exception, have managed to obtain sufficient coke for their own needs. Independent coke producers were not so fortunate, but at the beginning of the second week of the coal strike the output of coke is improving. Contracts to run for several months are offered independents.

Scrap Prices Are Rising

Eastern Buyers Bid Up Market There and at Pittsburgh—Great Tonnages of Borings and Turnings Sought—Buying Increases

FOR COMPLETE SCRAP PRICES SEE PAGE 1360

Philadelphia, Nov. 11.—Scrap demand is active and sales are limited only by willingness of dealers to sell. The Alan Wood Iron & Steel Co., this city, inquired for 15,000 tons of heavy melting steel but could buy only 6000 tons. This purchase was made at $20.50, delivered. Car wheels are active, selling for $28, delivered. Iron axles are strong, bringing $40. Nearly 1000 tons of steel axles were sold for export at $32, New York. From 3000 to 4000 tons of rerolling rails were sold at $28 and another big tonnage is wanted. Cast scrap prices are going up in sympathy with pig iron scrap. The estimated demand for borings and turnings now is 90,000 tons monthly, of which only one-third is obtainable. The big demand is due to fact that many blast furnaces became accustomed to using borings and turnings during the war when this scrap was produced in large quantities. One eastern furnace bought 1000 tons of machine shop turnings during the past week at $16.50.

Boston Market is Active

Boston, Nov. 10.—Pennsylvania steel plants are placing orders in the local scrap market and trading has become unusually active. The Alan Wood Iron & Steel Co. has been one of the active buyers and has been offering $20.50 for heavy melting scrap delivered. The scarcity of pig iron has made nearly every foundry in New England a prospective purchaser of cast scrap. Stocks of this grade are rapidly being depleted, and substantial advances are expected by the dealers. Borings are practically unobtainable and the small lots that come out have sold at high prices. In some cases $21, delivered, has been paid for chemical borings, and $18.50 is a common price for those not for chemical use. Malleable iron scrap is in particularly good demand for use in place of malleable pig iron by consumers who seldom use scrap in any form. A lot of 445 tons of malleable trench mortar castings was awarded to Perry, Buxton & Doane at $18.30 f.o.b. South Boston.

New York Conditions Strong

New York, Nov. 10.—Strength continues to characterize the local scrap market. Quotations, although advanced in but few instances, are tending upward, and trading involves considerable tonnage. Wrought appears to be the only grade not in active demand; nevertheless, prices are being stimulated by the strength in other materials. Another description not moving so freely is cast scrap. This, however, is due to scarcity of supplies rather than to a lack of demand.

A feature of the local market has been the irregularity in the prices of clean cast borings and mixed borings and turnings. The differential has been much wider than usual, as indicated by the present market of $11 to $11.75 on mixed borings and turnings and $15 to $16 on clean cast borings. This irregularity is attributed to a heavy demand for clean cast borings by the chemical interests, which has forced the steel manufacturers to advance their offers. Heavy melting steel, probably is reflecting the greatest strength. Good tonnages are moving at $16.50 to $17, f.o.b., New York.

Buffalo Prices Strengthened

Buffalo, Nov. 10.—Scrap dealers believe there is good business in store for them in the near future. There is a good outside demand with some fair sales and there is fair buying by mills within the district. Some consumers are interested in large tonnages and just as soon as labor troubles are settled, dealers believe they will come into the market stronger than at any time since the armistice. There have been some sales of steel to local mills. Cast, car wheels, machine shop scrap and cast borings are strong, and prices in some instances have strengthened.

Prices Move Up Sharply

Pittsburgh, Nov. 11.—Sharply higher prices on all grades of scrap have been established since a week ago. Open-hearth grades have shared in the advance, not so much because of a good demand from Pittsburgh district steel manufacturers, although they have been doing some buying, as because of the fact that eastern manufacturers, practically unaffected by the strike and in receipt of big orders, have been paying better prices than could be obtained for material here. An advance here to the equivalent of those prices prevailing in the East has been the consequence. Harrisburg and Phoenixville, Pa., consumers recently paid $20, delivered, for cast borings and $17, delivered, for machine shop turnings, in the West. Consumers in this district have raised their bids accordingly. As much as $18 has been refused for borings by dealers. Pittsburgh district steel companies have paid up to $14 for machine shop turnings. While generally steel manufacturers will not pay $21 for heavy melting steel, fair tonnages have been moved at $21.50, and that is at least $1.50 below the price at which most dealers would be willing to take an order. Consumers here still are inclined to pass up baled and bundled sheets, but they are being taken by eastern plants and this has resulted in higher local prices. Larger demands are coming out for low phosphorus steel and this grade is scarce. A Chicago interest recently bought the shell steel stored at Neville island at $24.50. While this steel in part is "unguaranteed" low phosphorus, this business forms a basis for the value of "guaranteed" low phosphorus. A bid of $22.60 for knuckles, couplers and springs by a Pittsburgh dealer failed to secure any of the material from the Pennsylvania railroad, lines east. Foundries continue persistent buyers of No. 1 cast scrap. Rerolling rail mills are seeking old standard sections and dealers here have made sales into Ohio as high as $32, delivered, which would mean about $29.50 to $30, here. Bar iron manufacturers have recently paid $40 and $41 for iron axles and car builders up to $29 for cast iron car wheels.

Market Tone is Firmer

Cleveland, Nov. 11.—Scrap iron and steel is decidedly firmer in tone, and an increase in shipments, while slight, is noted. Prospects are not strongly encouraging, but they appear the best now of any time since the steel strike began. Every week sees operations of melters on the increase. Some heavy melting steel has been sold to a nearby consumer, with a 50-cent freight rate from Cleveland, at $20.50 delivered. One scrap firm claims to be willing to take on 5000 tons of melting steel at this figure. Offers of about $1 higher than the prevailing quotations are made for axle turnings and machine shop turnings, but no trading has yet come about. Cast iron borings, No. 1 and 2 busheling, small forge flashings and short steel rails for melting have been advanced slightly.

Chicago Market Strong

Chicago, Nov. 11.—Continued demand for practically all grades of iron and steel scrap characterizes the market in Chicago, and prices are advancing steadily in keeping with the comparatively small supply of most grades. Steel mills are increasing their operation and are taking in more scrap for their furnaces, while rolling mills and foundries are working practically at capacity and need considerable raw material to meet their needs. While the market to a certain extent is being controlled by dealers their position appears to be strong. Railroad offerings at present are somewhat more numerous but do not aggregate a heavy tonnage. The Southern offers 2300 tons. the Wabash 1750 tons, George W. Jenings 1375 tons, the Santa Fe 1250 tons, the Chicago, Milwaukee & St. Paul 1000 tons, the Chicago, Indianapolis & Louisville 650 tons and the Burlington 225 tons.

St. Louis Market Advances

St. Louis, Nov. 8.—Virtually all grades of scrap have been advanced from 50 cents to $3 per ton. Rolling mills and foundries are crowded with business, and while many of them are well covered by contracts, they have found it necessary to buy additional quantities to provide for recent orders. All the plants have business to carry them through this year, while many report excellent prospects for the future. The situation has been considerably enlivened by speculative purchasing among dealers, and

efforts on the part of certain individuals and firms to cover on material sold short prior to the present bulge. Rolling-mill and iron-foundry grades are difficult to obtain, and during the past few days steel has advanced in sympathy with the general market. Rerolling rails are in special demand and would easily bring from dealers $31, an advance of $2.50 over the preceding week. Car axles are up $2, and heavy melting steel is quoted at $20 to $20.50, against $18.50 to $19 ten days ago. On Nov. 5 the government, sold 1300 tons of steel ingots at the plant of the American Steel Foundries at the highest bid of $22.05. Relaying rails are in urgent demand, with none offering. An inquiry was received here for 25 to 30 miles of 60 to 75-pound rails from a railroad in Louisiana, no part of which could be handled. Cuban sugar interests and oil companies in the Southwest have orders for all the relayers obtainable.

Conditions Are Improved

Cincinnati, Nov. 10.—A general feeling is prevalent that a turn in the market is very close. An improvement in the car situation has enabled dealers to resume outside shipments. All prices have been advanced. Cupola-size foundry scrap is in good demand and there is also a better call from outside melters for heavy melting steel. Short length steel rails are also wanted more freely. While it cannot be claimed that there is a marked improvement, conditions are much more satisfactory than at this time last week.

Stock Bars Raised

New York, Nov. 10.—Prices on steel bars, ¼-inch thick and heavier, out of warehouse, have been advanced $3.00 per ton to 3.52c, New York. A similar advance has also been made in soft steel bars, ⅜-inch thick and lighter, and in hoops. the New York price on the former being 4.22c and on the latter, 4.47c. Other quotations in the local warehouse market continue unchanged, although an increase is being expected almost momentarily in sheets. Stocks of this latter material are steadily diminishing, mill shipments being exceedingly difficult to obtain. Demand for virtually all descriptions is heavy.

Prices Are Raised

Philadelphia, Nov. 11.—Philadelphia jobbers have abandoned the Pittsburgh basing system on prices. They have made no change in prices in Philadelphia district but they are asking the following on out-of-town shipments: Steel and iron bars 3.50c, bands 4.20c, hoops 4.45c, plates 3.75c, shapes 3.45c, excepting when New York and Baltimore are lower in which case the prices will be equalized with these points. Jobbers' sheet prices have been advanced both in and out-of-town shipments as follows: Blue annealed 5.00c, black 6.00c, galvanized 7.50c. Warehouses here on bars and shapes are quoting warehouse extras on Philadelphia district business and mill extras on out of town shipments.

Higher Prices

In Sheets May Be Named By Independents—1920 Sales Soon

Pittsburgh, Nov. 11.—A tendency to seek higher prices is noted among independent makers of sheets, but this movement is finding no encouragement from the American Sheet & Tin Plate Co. which, although out of the market as far as new business for delivery during the next few months is concerned, still is holding to the so-called Redfield schedule. The position of the independent makers with regard to early shipment business is not much better than that of the leading interest, both being heavily committed and likely to carry considerable tonnage from 1919 over into 1920. Consumers of sheets of all classes are pressing makers for deliveries against contracts, but the best that the latter can do is to apportion their production. Mill operations are still gaining, the American Sheet & Tin Plate Co. now having 91 per cent of its capacity in operation, while resumption in Newport, Ky., Canton, O., and in the Youngstown, O., district has brought up independent mill operations.

Hard to Obtain Black Sheets

Philadelphia, Nov. 11.—The plant of the Alan Wood Iron Co., which was shut down for five weeks is operating again and shipping. Black sheets, No. 28, are now bringing 4.85c, but are practically unobtainable. Blue annealed sheets have been sold at 3.65c to 3.75c. Galvanized sheets are sold at 5.80c to 6.00c. One reseller is asking 6.10c, Pittsburgh, for No. 28, black, due to the scarcity here. American exporters have bought English sheets for shipment to Japan, Belgium and England, becoming factors in the export sheet market.

Hard to Place Business

Chicago, Nov. 11.—Steel sheets seem to be in heavier demand than any other form of finished steel and all makers are besieged with inquiries for lots ranging from 500 tons to 10,000 tons each. Not only are domestic users seeking large supplies but foreign demand is heavy, and unusual premiums are offered to get orders on mill books. Sheet mills in this territory are out of the market.

Heavy Demand in Valley

Youngstown, O., Nov. 11.—Sheet market conditions throughout the Mahoning valley are similar to those during the war. Mills are loaded to capacity with business, which will require steady rolling for several months. In most cases books remain closed, buyers finding it extremely difficult to locate sheets of any grade under three months' delivery. Production has been hindered somewhat by strike conditions, and since the mills here are just beginning to get back on their former operating basis managers find they have all the business they can handle until well into 1920. The policy which is being followed to a large extent by the mills is to work up present orders before taking on additional business. The demand is particularly heavy for galvanized and black sheets in the lighter gages. As far as can be learned, it is useless to try to buy this material from valley makers. Stock of No. 26 gage and lighter cannot be had, because makers feel they cannot afford to roll such specifications when more attractive orders are in hand. Export buyers particularly are clamoring for light gage material. Various premiums are being offered.

Acute Shortage

Shown in Semifinished Material—Odd Sheet Bars Bring $45

Pittsburgh, Nov. 11.—While the Carnegie Steel Co. now is operating close to 75 per cent of ingot capacity, and more open-hearth and bessemer furnaces are in operation in the valley districts than before since the outbreak of the strike, production still is considerably behind demand. Consumers needing early supplies find it extremely difficult to pick them up. The shortage is acute in all classes of semifinished steel, but is especially so in sheet bars for the reason that the recovery at sheet and tin plate mills from the strike has been more rapid than with other classes of finishing mills. It probably would be impossible to obtain tonnages of sheet bars today at less than $45, Pittsburgh or Youngstown, and some consumers whose needs are urgent probably would pay more. Small sales of standard bessemer billets are reported from the valley for shipment east at $42, and it is understood another small lot running rather high in sulphur is under negotiation at the same price. The last business reported in wire rods was at $60 for soft steel.

The open market business in semifinished steel is very much restricted by the fact that practically all of the current production is required to meet contract obligations.

Sell Slabs at $47.50

Philadelphia, Nov. 11.—Slabs are selling at $47.50 delivered eastern Pennsylvania and this is the market here. Rerolling billets are bringing $45 to $47.50 delivered and forging $55 to $60. Fair tonnages of all these grades have been sold.

Steel Bars Are Scarce

Cleveland, Nov. 11.—Sheet bars for early delivery are in exceedingly strong demand but practically no supplies are available. One lot of odds and ends which have been accumulated for some time was sold by a mill in this district on the $45 basis.

Strip Output Limited

Pittsburgh, Nov. 11.—The situation in strip steel remains extremely taut for while makers in this part of the country, with one exception, are unaffected by labor conditions, general production still is far below normal and only a few manufacturers are anywhere nearly abreast of their contract obligations. It is doubtful if either hot or cold rolled strip steel could be had for prompt shipment except at premiums over the March 21 bases.

Bar Contracts Refused

Makers Confine Attention to Filling Old Orders—Big Tonnage to be Carried Over—Bar Iron, Nuts, Bolts and Rivets Up

Chicago, Nov. 11.—Demand for finished steel is strong from all sources, and not much is available for 1919 delivery. Bookings the past week in soft steel bars as well as other finished steel products were the heaviest in a long time. The same thing applies to specifications on existing contracts. All contract holders seem inclined to specify to the full in order to receive as much material as they can at the earliest moment. Operation and production at local mills are being increased steadily, an indication of this being the operation of the rail mill at Gary on two turns, covering the entire 24 hours. It is practically impossible now to place new contracts for soft steel bars with local makers, both of whom decline to obligate themselves further. Some eastern makers are still able to take business, and premiums as high as $6 per ton over the present quotation of 2.62c, Chicago, have been made. However, this is not general and applies to comparatively small tonnage.

Makers of bar iron are increasing their price gradually as the general level of the scrap market advances and as they are faced by a probable increase in the cost of fuel. While the quotation has been 2.45c, Pittsburgh, or 2.72c, Chicago, sales have been made as high as 2.60c, Pittsburgh, or 2.87c, Chicago. However, the latter figure is higher than the average quotation which probably is close to 2.77c, Chicago mill. All present demand for bar iron is for prompt delivery and demand continues to be greater than production, piling up tonnage on mill books to some extent.

Most producers of hard steel bars rerolled from rails have sold their entire production for 1919 and are unable to take on additional business.

Steel Bars Scarce

Philadelphia, Nov. 11.—Consumers of iron bars say they can buy at 2.60c, Pittsburgh, although some makers are asking 2.75c. Steel bars are hard to get. Good tonnages placed some months ago by exporters are now being sold abroad by the latter at 2.50c and 2.60c, and in some cases, 2.85c and 3c, Pittsburgh.

War Conditions Return

New York, Nov. 10.—Makers of steel bars say that consumers apparently are just beginning to become aware of the extent of the present scarcity in this product. In fact, the makers say, present conditions as regards the supply of steel bars, now are almost as bad as prevailed during the war when consumers were able to obtain their requirements only in accordance with the rulings of the priorities division. With the mills sold up far ahead, buyers are making urgent pleas for new tonnage. In many cases they are anxious to place big tonnages and are bidding such prices as 2.75c and 2.85c, Pittsburgh, as inducements. The jobbing trade, particularly, is anxious to obtain big tonnages at any reasonable premium. Exporters say that it is practically impossible for them to obtain steel bars.

Further Advance in Bar Iron

Pittsburgh, Nov. 11.—A further advance of $2 a ton has just been announced by the leading makers of iron bars in this district putting the market on a basis of 3.10c for common merchant iron and 3.35c for refined. Not only is the demand for iron bars extremely heavy, but the scrap material used in making these bars has risen sharply. Iron axles which could be bought recently around $34 to $35, have sold as high as $40 and $41. While some demand for iron bars is occasioned by the shortage of soft steel bars, it is the needs of regular users of iron bars that are giving the market its strength. Chain makers are showing more interest. The situation in merchant steel bars still is taut, although the past week has developed some improvement in production. Practically all of the bar mills of the Carnegie Steel Co., at Youngstown, now are in operation and a portion of them are running double turn. With the other Youngstown manufacturers also starting up, supplies should gradually work easier. At the same time it probably will be several months before supplies are up to the point prevailing just before the strike. One valley maker is understood to have orders on his books for 150,000 tons of bars of various sizes. All makers are heavily committed on the smaller sizes of rounds and squares. The general quotation remains at 2.35c, Pittsburgh, but no new business is being accepted at this figure and it refers chiefly to deliveries on old contracts.

Carry Over Big Tonnage

Cleveland, Nov. 11.—Steel bars are extremely scarce and as the mills will carry over into next year a large unshipped tonnage, they remain reluctant to take on additional orders for first quarter. A number of the manufacturing consumers continue to urge acceptance of this business. Prices are nominally unchanged but it is apparent that buyers would be willing to pay advances could they be accommodated. Small rivets again have been advanced, effective Nov. 7, to 50 and 10 off.

Schedule is Advanced

Chicago, Nov. 11.—An increase of about 15 per cent in prices on bolts and nuts has been put into effect by practically all makers in the face of increased cost and an unusually strong market. On nuts the advance ranges from $8 to $12 per ton, while on bolts it is about 15 points. This went into effect Nov. 7. Bolt makers have inquiry for much more material than they can accommodate and it is becoming increasingly difficult to place new business.

Production Still Behind Demand

Pittsburgh, Nov. 11.—Although the makers of cold-finished steel bars who make their own steel are operating normally, the plants dependent on outside sources for supplies of merchant steel bars are considerably hampered because of the restricted shipments of the latter against contracts. Generally, production at the moment is considerably behind the demand with the builders of automobiles and tractors, and the accessory manufacturers, pressing heavily for supplies. Accessory manufacturers are particularly anxious to obtain supplies of bessemer screw stock.

Premiums for Early Shipment

Pittsburgh, Nov. 11.—While makers of hoops and bands generally are holding to the March 21 base of 3.05c, base Pittsburgh, it is reported that premiums of as much as $5 to $10 a ton have been paid for bands for early delivery. Makers are heavily committed on both hoops and bands and while production is gaining steadily, it still is necessary to apportion it among consumers.

Market is Stronger

Pittsburgh, Nov. 11.—Shortage in the supply of rods and steel bars is beginning to find reflection in the production of steel chain and the market which recently was inclined to droop in the absence of much buying has stiffened perceptibly. Demand has increased and makers, from a condition where prompt shipments were readily made, now are finding it hard to keep up with their orders. The base price remains at $5.75 per 100 pounds, base Pittsburgh, for 1-inch proof coil, but sizes running from ⅜ to ¾ inches inclusive, have advanced. The increase is 50 cents on ⅜-inch chain, 35 cents on $\frac{7}{16}$ and 25 cents on ½ and $\frac{9}{16}$, ⅝ and ¾ inch. The prices of chain made from iron bars incline higher because of the strength of the latter product.

Quiet Market

Prevails in Ferroalloys—Some Spiegeleisen Sold—Ferrosilicon Firmer

New York, Nov. 10.—Some carload business has featured the market in spiegeleisen and this has been done at $35 furnace, for 19 to 21 per cent. There is a lack of inquiry with which to test out the market on bigger tonnages. In ferromanganese, the market is featureless. No offers are being made on English metal and the market is largely nominal at $110 delivered on domestic 78 to 82 per cent metal. Some business has been turned away at this price, it is said. Electrolytic ferromanganese has been offered on the Pacific coast by makers in that district at $120 furnace for 78 to 82 per cent.

The situation in special steelmaking ferroalloys shows little change. Less has been heard recently of offerings of British and French ferrotungsten and ferrochrome and the ferrochrome market in particular is reflecting this in increased strength. Inquiry for

ferrochrome has been fairly broad and brisk. No prices below 27 cents a pound contained now are being heard on alloy containing 4 to 6 per cent carbon and some makers are asking about 30 cents for this grade. English makers some time ago sold good sized lots as low as 20 cents, delivered, duty paid.

The British makers of ferrotungsten also sold some alloy in this market at considerable concessions, as low as 95 cents a pound contained having been done some time ago. It is understood this material was low in manganese but rather high in tin and copper. Some low prices also were done on tungsten powder. On the other hand, domestic producers have been obtaining from $1.15 to $1.25 a pound contained for their product.

The market for ferrovanadium is firm. The leading seller continues to quote $5.50 a pound contained for alloy running above 1 per cent in silicon, another seller is quoting $5.95 a pound while other sellers are obtaining $7 and higher for metal running below 1 per cent silicon.

The ferrosilicon market has been somewhat stronger following sales below $80, delivered Pittsburgh district, for 50 per cent.

80 Per Cent Sold at $110

Philadelphia, Nov. 11.—Several carloads of 80 per cen ferromanganese have ben sold at $110, delivered, and some 60 per cent is now being offered. Numerous small lots of spiegeleisen, totaling more than 1000 tons have been sold at $35 furnace, for 18 per cent, at $34, furnace, for 16 per cent.

Prices Favorable to Buyers

Pittsburgh, Nov. 11.—Current demands for all kinds of ferroalloys are light in this market and generally prices are in favor of buyers. Although domestic makers of ferromanganese at present are not having much competition from English producers, they are finding it difficult to interest consumers in 80 per cent material at $110, delivered, and it is intimated small sales have been made at concessions of $2 to $3. Some business is reported in 18 to 22 per cent spiegeleisen at around $34, furnace. It is being pointed out to the steel manufacturer using either spiegeleisen or ferromanganese that the latter is much the cheaper material. To obtain the same amount of manganese as in a ton of ferromanganese, four tons of spiegeleisen at $34 a ton would mean $136 as against $108 to $110 for 80 per cent ferromanganese, without regard to freight charges.

Sales of 50 per cent ferrosilicon run in small lots with the great bulk of them at $80, delivered Pittsburgh. Most domestic makers of this material are quoting at least $85 and some run up to $100.

All makers of bessemer ferrosilicon now are quoting a basis of $54.75, furnace, for 10 per cent. Demands are not especially heavy, but production for some time past has been extremely light.

Spiegel Tonnage Closed

Chicago, Nov. 11.—An important manufacturer of car wheels in this district has closed for 2000 tons of spiegeleisen with an eastern maker at a price understood to be $35 furnace.

Plate Mills Filled Up

Eastern Makers Have Months of Work Ahead—One Producer Advances to 2.75c—50,000 Tons of Ship Steel Up at Chicago

Philadelphia, Nov. 11.—Eastern plate mills as the result of big demand now are booked to capacity for two to three months ahead. The demand is coming from all sources except the railroads and even the latter source now is developing. The Pennsylvania railroad placed 2000 tons of plates for 50 locomotives to be built at Altoona. The American Car Foundry Co. placed 15,000 tons of plates for tank cars. Many sheet consumers unable to get that material are asking the plate mills for light gages but latter are dodging this business because it is only of temporary character and because of trouble in rolling such gages. As a result of the big demand for the heavier gages the Lukens Steel Co. advanced its price to 2.75c, mill or Pittsburgh. Exporters say it is difficult to get plates at 2.65c Pittsburgh, whereas they can sell all they can get at this figure. England is placing some plate orders with eastern mills. The navy is expected to put out an inquiry soon for heat-treated plates for battleships.

Little Tonnage for Early Delivery

Pittsburgh, Nov. 11.—Makers of plates in this district have become so well sold up on demands resulting from the crippling by the strike of plants in other districts, that they have little tonnage available for prompt shipment. One Pittsburgh company which temporarily was out of the market is offering limited tonnages of grooved plates in the heavier gages. The Pennsylvania railroad has just received instructions from the railroad administration to build 50 passenger locomotives at its own lines. Not much demand is coming here for ship plates, but builders of tanks and the fabricating interests are persistent buyers. The Carnegie Steel Co., is holding at 2.65c, Pittsburgh, for plates and because of that fact independent makers here are not inclined to seek any advance.

Eastern Mill Raises Prices

Cleveland, Nov. 11.—A leading eastern plate maker who has been selling on the basis of 2.65c, mill, or 2.92c, Cleveland, has withdrawn this price. While he is not anxious to quote for next year's delivery, he is naming an advanced figure of 2.75c, mill, to buyers who insist upon a price. It is learned that some of the merchant vessels of canal size upon which shipyards in this district were figuring for France have been lost to some continental European country, probably Germany, because of the lower price in which the depreciated exchange figured largely.

Cars Take Much Tonnage

Chicago, Nov. 11.—Contracts with carbuilders for repairs of railway equipment are bringing considerable tonnages to the mills and the leading interest last week booked about 35,000 tons for this purpose. This is an aggregate of several contracts. The greater portion is for car repairs, although some is for the construction of new tank cars. While some shapes and bars are included in this total, by far the greater part is plates. An inquiry for steel for five to ten tankers has been put forth by a Pacific coast shipbuilder which will require from 20,000 to 40,000 tons of plates. Four other tankers already on inquiry are still pending and these two inquiries represent about 50,000 tons of steel, mostly plates. The current quotation on plates remains at 2.92c, Chicago.

Round Tonnage

Of Cast Pipe Sought By Cuban Interests—Mill Output Grows

New York, Nov. 10.—From 12,000 to 15,000 tons of cast iron pipe are being sought in this market by a Cuban interest. In addition, several inquiries were issued last week by South American interests. The tonnages involved, however, are considerably smaller. Eastern pipe makers also report a good quantity of demand from water companies and other private buyers. One particularly good tonnage is said to be included. Public demand, however, continues exceedingly dull. Prices are strong at last week's levels.

Sold Well Into Next Year

Pittsburgh, Nov. 11.—Makers of tubular goods, both steel and wrought iron, have business in sight now that hardly will be filled until well into 1920. All makers were booked to the end of this year when the strike broke out and large tonnages now will be carried over into next year, despite the fact that practically no new business has been taken recently. Most companies are entering the orders of their regular customers but are giving no guarantee as to deliveries. The recent advance announced by the A. M. Byers Co. hardly will be effective before the second quarter as that company has enough business now on its books to carry it through the first three months of 1920 and this carries the prices in effect prior to Oct. 28. Pipe mill operations are gaining steadily. Conditions with the National Tube Co. and the Jones & Laughlin Steel Co. continue favorable.

Lettings Are Slow

Chicago, Nov. 11.—Comparatively little tonnage of cast iron pipe has been sold the past few days, probably due largely to end of the season being close. Bids were opened last week at Chadron, Nebr., on an inquiry for 1200 tons of pipe, most of which was for a supply line. On account of present prices of cast iron pipe, this will be laid with wood pipe and only 100 tons of cast iron pipe was bought from the United States Cast Iron Pipe & Foundry Co.

New Work is Held Back

Delays in Mill Shipments of Shapes are Factor — Further Shortage is Feared—New Awards are Fair

Philadelphia, Nov. 11. — Well-informed steel men here predict a great scarcity of shapes when railroad buying and new construction gets in full swing. They say that new shape capacity is far behind its proper proportion to plate capacity. Eastern shapemakers report a large demand, and they are booked several weeks ahead, and in some instances two months. Increasing prices of pig iron and scrap are worrying some of the mills, and one maker has adopted a policy of taking orders only when they will net him more than 2.55c, mill. Makers say present demand is larger than at any time since the armistice.

Mills Well Sold Up

Pittsburgh, Nov. 11. — Although shape mills in the Pittsburgh district at the outset of the steel strike were poorly provided with orders, they since have had a generous influx of business and now are so heavily committed as to be unable to give much consideration to new business except in beams, angles and channels of sizes in which the demand has been light.

Fair Demand at Cleveland

Cleveland, Nov. 11.—Demand for structural material continues in fair volume, but some difficulty is being encountered in obtaining delivery, one of the leading fabricators in this district having had to reject a number of offers during the past week owing to the fact that material could not be promised in time to meet the plans of the prospective purchasers. The largest job to come up for bids during the past week is one involving 5000 tons for the First & Old National Bank building, Detroit, which is to replace the Hotel Pontchartrain. The Superior Sheet Steel Co., Canton, O., is inquiring for 650 tons for a new building. A dozen or more jobs in this district on which bids have been taken during the past week are still to be awarded. A preliminary lot of work about 4000 tons in the form of overhead bridges, in connection with the new Cleveland union station, is expected out soon.

Shapes Lag in West

Chicago, Nov. 11.—Structural shapes are in somewhat less demand than either bars or plates, but a fair volume of this business is coming to mills, and much building is going on throughout the western territory. In Chicago proper fabricating is unusually slow, as a result of a strike of employes of bridge shops. Plain material is steady at 2.72c, Chicago, with no tendency toward a change.

Spring Work Being Let

Boston, Nov. 10.—Mills again have opened their books for 1920 structural shapes, and new work in New England planned for the early spring is being let. An increase in activity among fabricators is reported the past week. Most of the large work is for next year construction but the aggregate of small jobs requiring structural steel has increased favorably. The new telephone building in Boston which was let last week will require 857 tons.

CONTRACTS AWARDED

Open-hearth foundry and scrap-handling crane runway for Interstate Iron & Steel Co., Chicago, 1500 tons to the Worden-Allen Co.

Structural steel for buildings No. 22, 23 and 25, for the Western Electric Co., Hawthorne station, Chicago, 2723 tons, to McClintic-Marshall Co.

Building for Omaha Cold Storage Co., Omaha, Nebr., 707 tons, to Omaha Structural Steel Works.

Snake river bridge near Pasco, Wash., 630 tons, to Minneapolis Steel & Machinery Co.

The Pinacea theater, Chicago, 588 tons, to Duffin Iron Works.

Eleven story annex for the Canal Commercial Bank building, New Orleans, La., 310 tons, to McClintic-Marshall Co.

Steel framing for warehouse for Concrete Steel Co., Chicago, 249 tons, to Continental Bridge Works.

Marshfield theater building, Chicago, 227 tons, to Wendnagel & Co.

Foundry building at Atchison, Kans., for Cooper Foundry Co., 207 tons.

Central exchange building for the Northwestern Telephone exchange of Duluth, Minn., 205 tons, to National Iron Works.

Blacksmith, tankshop and garage, for the General Electric Co., Fort Wayne, Ind., 161 tons to H. K. Ferguson Co., Cleveland.

Theater building at Hammond, Ind., for S. J. Gregory Theatrical Co., 124 tons, to Central States Bridge Co.

Tank construction, Standard Oil Co., 155 tons to White & Conley.

Loft building for Julius Kiselman & Son, thirty-sixth street and Seventh avenue, N. Y., 1000 tons, to Hinkle Iron Works.

Theater building, Philadelphia, 700 tons to the American Bridge Co.

Plant at Chrome, N. J., 400 tons placed through Westinghouse, Church, Kerr & Co., Inc., New York, with independent fabricator.

Bridge for Norfolk & Western railroad, 500 tons to a Columbus fabricator.

Building for Ball Engineering Co., Erie, Pa., 150 tons to Fort Pitt Bridge Co.

Bankers building, Boston, 350 tons to New England Structural Co.

Telephone building, Boston, 857 tons to New England Structural Co.

Bank building, Boston, 113 tons to New England Structural Co.

School building, Stamford, Conn., 150 tons to Eastern Bridge & Structural Co.

Factory, Springfield, Mass., 175 tons to Harmann & Co.

CONTRACTS PENDING

Second unit of shop extensions for A. O. Smith Corp., Milwaukee, 4000 tons, bids being taken.

Building for Cole Motor Car Co., Indianapolis, 900 tons, bids asked.

Building for *Denver Post*, at Denver, Colo., 300 tons, bids asked.

Building for state of Colorado at Denver, Colo., 200 tons, bids asked.

Steel for 30-story building for *Buffalo Enquirer*, Buffalo, 3700 tons, general contractors asking bids.

Century theater, Philadelphia, 500 tons, bids being taken.

Boiler house, Toledo, O., 500 tons, bids being taken.

High school, Queensborough, N. Y., 250 tons, bids being taken.

Building for Cleveland Rubber Mold & Foundry Co., 150 tons; bids being taken.

Building for Superior Sheet Steel Co., Canton, O., 650 tons; bids being taken.

Building for First & Old National Bank, Detroit, Mich., 5000 tons; bids being taken.

Newtown high school, Brooklyn, 840 tons, general contract to Conner Bros.

Tin Plate Demand Heavy

Pittsburgh, Nov. 11.—Heavy and insistent demands still are coming out for tin plate for delivery over the remainder of this year and the first quarter of 1920, but are not easily placed. Practically all makers are committed on production for the next 45 days, and as the American Sheet & Tin Plate Co. has not yet opened its books for first quarter and first half business, a tendency is noted to wait on this development before considering 1920 orders. It is reported that a large independent oil interest is seeking to place 100,000 boxes of tin plate as well as a considerable tonnage of tin mill black sheets for January, February and March delivery, but has not found any of the manufacturers in a position to take on this business. The carry-over of 1919 tonnage into 1920 probably will be heavy, for in addition to the interruption to production due to the strike, the report is heard that some tonnage, booked about the middle of the year below the market price then prevailing, has not yet been delivered. Mill operations are on the increase with the American Sheet & Tin Plate Co. now running 70 per cent of its mills and most of the Pittsburgh district independents back to practically normal operations.

Wire Gains

In Output But Backed-Up Orders Remain—Higher Sales Are Made

Pittsburgh, Nov. 11.—Although operations by the makers of wire and wire products most seriously affected by the strike show a steady gain, no appreciable inroads are being made against the business backed up. No maker yet is in a position to do much with new demands. The American Steel & Wire Co. has more capacity in operation in its Pittsburgh district plants than at any time since Sept. 22, and the return of workmen has permitted the running of some capacity on a double turn basis. Production is rising as operations increase. The Pittsburgh Steel Co. and the Page Steel & Wire Co., both at Monessen, Pa., steadily are working out the effects of the strike and the Youngstown Sheet & Tube Co. is coming back to normal conditions. It is considered likely, in view of the activities recently of the workmen who want to work and the citizens' committee in Johnstown, Pa., that a resumption at the Cambria works of the Midvale Steel & Ordnance Co., will be attempted soon. Sales of nails recently were made by a manufacturer at $5.50 a keg and of plain wire at $6. The circumstances surrounding these sales, however, were that the consumer had to have supplies and the manufacturer never before did business with the buyer and does not expect to again. The American Steel & Wire Co. is taking no new business.

Mills Doing Better

Chicago, Nov. 11.—Considerably better delivery is being made on wire and nails, although the situation is still far from satisfactory. Tremendous demand is being made on mills, especially for nails, as a virtual famine in this product is developing. Enlarged building operations all over the country have pulled down reserve stocks in the hands of jobbers, and the cry for more nails is going up from all directions.

Exporters Again Accept Orders

Demand for Iron and Steel From Abroad Grows Insistent—Big Traders Close Their Books on Account of Shortage of Supplies, Then Reopen Them—Smaller Houses Report Phenomenal Activity — Prices Advancing

NEW YORK, Nov. 10.—Refusal of the two large interests in the iron and steel export field to accept further orders of any considerable size has been terminated and the United States Steel Products Co. now is understood to be accepting business. It has taken an order for 20,000 tons of open-hearth rails for first quarter delivery from Belgium at a reported price of $52 mill. While the ban on sales remained it resulted in a sharp increase in business done by the more stable of the miscellaneous independent export houses. One did more business during October than any month this year, and the tonnage closed this month has been unusually large. The same report was received from the local representatives of foreign purchasers of whom there are a large number in this market. They report a heavy demand from abroad, although they complain of the prices it is now necessary to pay American producers.

One international trading house has received a quotation from a German producer which indicated that Germany is able to undersell us on sheets. The price is approximately $6 under the American market on sheets, when taking the rate of exchange into consideration. It was also announced that the French are now underselling American mills on bars, and the Belgian producers are underquoting on a number of products. It was declared by some of the international traders that, due to the higher prices American producers are asking, export trade with Europe is probably only 25 per cent of what it might be.

The stand taken by the Consolidated Steel Corp. and United States Steel Products Co., however met with much favorable comment among foreign purchasers. While these two big export houses determined to curtail foreign business, their old customers were not entirely neglected. It was possible to place orders with them in sizes up to several hundred tons. Other export houses say that it is practically impossible to purchase bars, especially small sizes, or small-gage sheets. Tin plate and other products are extremely scarce, but the independents say that they have been able to fill all new orders for other lines. Recently a Japanese inquiry for approximately 6000 tons of sheets was turned down because the material was not available. Certain sizes of pipe are almost unobtainable.

Despite the curtailment of supplies for export the big producers have not advanced their prices. This has served as a stabilizer especially in that business which comes from regular and established customers abroad. The tendency, nevertheless, is toward an advance and the old quotations prevailing prior to the strike are not now in effect even in the case of the leading sellers. The two largest interests have business on their books now that will keep them busy making deliveries throughout the first quarter of 1920. It is anticipated that they will not be ready to open their books to new business much before the first of the new year. It was stated unofficially recently that the United States Steel Corp.'s export business in lighter steel products would be temporarily suspended on account of the sold-up condition of the domestic plants. The Consolidated was said to be doing practically the same, some lines handled by this corporation having already been withheld from overseas business because of the effects of the steel, coal and longshoremen's strikes.

Trade of the independent houses with South America and the Orient has been growing regardless of rising prices. The Oriental inquiry for nails is normal although the product is difficult to find. Japan has purchased 1000 tons of plates and 700 tons of sheets. The price for the sheets was $5 per 100 pounds, Pittsburgh. An effort is being made now to place another Japanese inquiry for 600 tons of plates for first quarter delivery. Japan has also inquired for 2000 tons of rails. An inquiry for 3500 cases of tin plate also is noted, as well as various Japanese inquiries for small tonnages of wire, etc.

There has been rather heavy buying in the market on Oriental account. A sale of 1000 kegs of nails to Rangoon, India, was reported, and a sale of 600 tons of steel boiler plates to Shanghai. A large number of small orders for light steel products were accepted from Hongkong, Wellington and Melbourne.

South America has been taking wire chiefly although the sales include the usual long list of light steel products. South American inquiries have been in small tonnages. They include the usual line of wire products, sheets, tin plate, nails and bars. The sales made have consisted chiefly of shipments out of stock. A South American inquiry for 500 tons of sheets is out.

England is said to be suffering from a shortage of tin plate. An English inquiry in this market for tin plate last week caused some comment although it was concluded that the material was desired for filling one of that country's own export inquiries. A small English inquiry for plates also was received.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Nov. 5	21.00	53.50	6.75	7.65	33.00	8.87½	41.00
Nov. 6	21.00	53.75	6.75	7.70	33.00	8.87½	41.00
Nov. 7	21.00	53.75	6.75	7.70	33.00	8.87½	41.00
Nov. 10	21.00	53.75	6.75	7.75	33.00	9.00	41.00
Nov. 11	21.00	53.50	6.75	7.90	33.00	9.00	41.00

*Future shipment from Singapore.
† American Smelting & Refining Co.'s price.
‡Open market.

NEW YORK, Nov. 11.—Despite the coal strike, the metal markets have been holding up well, although many consumers were inclined to hold off purchases until assured of a steady supply of fuel. Today the better news on the coal strike quickly sent zinc up and cheered other metals. News from the steel strike centers has been favorable and tin and zinc sellers look for a decided resumption in demand soon. There has been some export business in copper and zinc, both with Japan and with Europe, but the sterling exchange rates keep export sales to a minimum.

The leading copper sellers have been competing actively for business, meeting the prices of dealers and smaller sellers, and shading 21c. refinery, in cases. The usual quotation on electrolytic for delivery this year is about 21c, New York. Casting is quoted 20c to 20.25c; lake 21.25c to 21.50c. The copper market has been extremely dull, but the prospect for early ratification of the peace treaty is being greeted by large sellers as opening the way for financial arrangements which will stabilize exchange and facilitate the filling of European copper requirements.

Some inquiries for brass special zinc have been received by the zinc producers from brass mills, who long had been conspicuous by their absence from the zinc market. The inquiries were not large, involving only a few hundred tons for shipment this year, but were expected to lead the way to larger business. Galvanizers, who also had been out of the market for a considerable period, renewed their interest and there were indications that a heavy volume of business would be placed for the galvanizers before the close of the month. Prime western advanced in the face of the coal strike, reaching 7.90c, East St. Louis, Tuesday. High grade sold at 8.37½c to 8.50c, New York.

The tin market eased up with the conclusion of the dock strike and the resumption of deliveries from October arrivals. Spot Straits tin, which had sold at 57.00c, or 3.00c above the price of tin on dock, speculative declined, until this week the margin between spot and tin on dock was practically nil, with the former at 53.75c. Futures in all positions were held at about the same figure, 53.50c to 53.75c. Ninety-nine per cent tin, both spot and futures, were held at 53c. November deliveries will be heavy, due to the deliveries from the accumulated supplies in the port, whereas October deliveries were light.

The lead market remained strong, but spotty. Today the outside market was up to 6.97½c. New York, 6.60c to 6.70c, East St. Louis. Consumption of lead appears on the increase.

Some spot antimony sold at 9c. New York, in wholesale lots, an advance of about ¼c to ½c.

Brass rod is down one cent to 24.75c, but other brass and copper products are steady.

American Market Affects British

Blast Furnaces Resume and Pig Iron Market Gains Strength on Report of Advance in United States—Shortage of Semifinished Material Almost Reaches Famine Proportions—Strike Here Helps Tin Plate

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Oct. 24.

Rate of Exchange 4.16

NEARLY all blast furnaces have resumed operations, coal supplies increasing during the fine weather of the past fortnight. The few furnaces still idle are completing repairs. It is possible that furnaces in South Staffordshire making cold-blast iron may go out as the molders' strike which may continue indefinitely has seriously affected the large foundries, their men being connected with the three unions on strike. South Staffordshire makes a large proportion of the rolls and heavy mill equipment used all over the country in iron and steel works. The foundries cannot take the iron, which is being stocked at the furnaces. The iron is rather expensive, the selling price being now about £13 ($54.00) per ton, and as no furnace owner expects to get more than 50 per cent of first-class iron out of his make in these days of poor fuel, a good deal of undesirable iron is accumulating. If the strike continues one or two furnaces may go out in a week or two and this will add to the founders' troubles when work is resumed.

There is considerable bitterness over the failure of collective bargaining, the iron founders declaring that if they had been at liberty to negotiate with their men instead of being bound by the engineering federation, they would have settled the question and had their molders at work long ago. It will readily be seen that all interests do not harmonize in this matter, since some molders are making little domestic articles, while others are engaged on big mill castings. Yet all are supposed to be dealt with under the same agreement.

For the present the iron founders consider themselves bound to be loyal to the Engineering federation, with its arbitration arrangements, but if the next effort to settle the strike fails, the great firms probably will take the matter into their own hands, and get their men back to work on the best terms they can obtain.

Prices of pig iron are steady, with no material change. Some buyers claim to have obtained a slight concession in their purchases of Derbyshire iron, but the news conveyed Oct. 23 by the IRON TRADE REVIEW's cable of an advance of $3 in the United States had a marked effect in strengthening the market, and further reduction is unlikely. Makers are booking rather cautiously, in view of the limited output, and there has been little diminution in the demand for foundry iron, notwithstanding the strike, as portions of foundries are in operation,

The average price of West Coast hematite pig iron for the September quarter was £10 4s 10d ($42.43) per ton, giving the workmen an increase of 31½ per cent in their wages, dating from their first full pay in October. Wages are now 206 per cent above the standard for the Cumberland district, and 201 per cent above for Barrow, Ulverton and Carnforth.

There has been a marked increase in demand for export in the Cleveland district, which has strengthened the market there, and as shipping is improving steadily, the export trade promises to figure much more prominently in the volume of business than at any time since the war started.

The trade is seriously hampered by shortage of cars, a difficulty largely aggravated by the continuance of national control. A short time ago a large smelter in the Cleveland district applied to the government transport department to have the use of 600 cars which were idle, and which were needed to move ore and fuel to the furnaces and convey pig iron to customers. He was met with a peremptory refusal, as the authorities feared the cars might be needed for the government's purposes. That was five or six weeks ago, and the cars have not been used since.

Shortage of Semifinished Material

The country is suffering severely from the scarcity of semifinished steel, which has almost reached famine proportions. In the Birmingham area there is a rerolling mill, with a weekly capacity of 2000 tons. The railroad strike forced the suspension of the mills for a week as the billets have to be conveyed to the mills by rail. During the previous week output amounted to 200 tons and in the week preceding that, 400 tons. Complete suspension appears to be imminent, but the company may obtain a portion of one or two consignments of billets which have arrived from America, chiefly through the port of Manchester. Recent purchases from France and Belgium are due for arrival in November and December, although nobody expects the contracts will be strictly adhered to. Some importing merchants are still inquiring for steel ordered from America as long ago as May. The shortage will be very great during the next month or two, although it is hoped that the strikes at the Welsh steel works which stopped the supply of billets therefrom, will soon collapse.

The news of a rise in the price of American semifinished steel, ranging from $2 to $5 is regarded as adding another serious obstacle.

South Wales is in the midst of a boom in tin plate for which the American steel strike mainly is responsible. Orders are abundant, and the greatest activity prevails in the Swansea district, where Germany is inquiring for supplies.

Galvanized sheets are in much the same position, but in this department production is hampered by the lack of skilled workmen, and there seems no immediate prospect of restarting the numerous mills still idle. At Birmingham this week sellers raised their prices from £33 ($137.28) to £35 (145.60) and then refused to book any more, in view of their limited output and the great uncertainty with regard to the supply of sheet bars. Difficulties in the way of production have been increased by the workmen insisting on bars of certain width.

In the Black Country the coal situation is much easier, enabling practically all the works to make full time. Output could be increased enormously if the 8-hour interval of idleness in each 24 hours could be abolished.

Effort to induce the workers to make some concession in wages has failed. The men are now getting 162½ per cent over their prewar earnings.

One effect of the small output is the inability to handle foreign business. A large works in the Black Country this week received from a London merchant an offer of a contract for 1000 tons of bars for an overseas buyer. The offer was returned without consideration.

Normal Operation Near in Valley

Wholesale Back-to-the-Mill Movement Indicates Work Will be Limited at End of Week Only by Restrictions on Fuel — Eleven Out of 25 Blast Furnaces Now Making Iron — Improvement Continues in Other Districts

YOUNGSTOWN, O., Nov. 11.—Old employes returned for work at the various steelworks throughout the district Monday in large numbers. The movement gives every indication that before the last of the week, the mills will be working as close to normal as will be advisable in view of present fuel conditions. Authentic reports show that 11 out of 25 blast furnaces in the Mahoning valley are making iron and that open-hearth steel production has been increased substantially during the past week.

The finishing mills at the Upper and Lower Union and at the McDonald works of the Carnegie Steel Co., are maintaining practically 100 per cent operation. The officials of this company report the return of more old employes and state that normal production in nearly every department will be reached this week.

At the Republic Iron & Steel Co.'s plant the plate, skelp and tube departments got under way Monday for the first time since Sept. 22. The company has two active stacks at its Haselton plant and expects to get a third in operation this week. Four of its DeForest sheet mills at Niles, O., are rolling.

East Youngstown street cars were crowded this morning with workmen returning with tools to the plant of the Youngstown Sheet & Tube Co. Few pickets were to be seen at the various entrances of this company's plant. Every department was in operation one week ago and the company expects to increase production this week materially. The Sharon Steel Hoop Co. also is maintaining a better operating schedule at its Haselton mills.

The Tod stack of the Brier Hill Steel Co. began blowing Sunday, thus making two active stacks at this company's plant. Only four out of 12 open hearths are idle and preparations now are being made to put these in operation. A number of sheet mills at its Western Reserve and Niles, O., plants also are rolling.

At the A. M. Byers plant, Girard, O., 62 out of 88 puddle furnaces now are making iron as against 27 at this time last week. The company now has its muck bar and skelp departments in operation and expects to resume operations in its blast furnace department soon.

Strike Practically Ended in Cleveland District

Cleveland, Nov. 11.—The steel strike is practically at an end in the Cleveland district, all steel mill and furnace operators reporting resumption of operations at practically 75 per cent of capacity. Officials of the American Steel & Wire Co. report satisfactory progress being made at the various plants. The finishing plant of the Upson Nut Co. is in operation, while the two idle open-hearth furnaces and the blast furnace are being put in shape. The Otis Steel Co. reports operations at its Riverside plant at 100 per cent, while conditions are improving at its Lakeside plant. One blast furnace is operating the other being down for repairs. The McKinney Steel Co. reports operations at practically 75 per cent of capacity, including operation of two blast furnaces and two batteries of coke ovens.

Operations at the plant of the United Alloy Steel Corp., Canton, O., at which place riots were reported several weeks ago, are increasing rapidly. Of 18 open-hearth furnaces 11 are running this week, an increase of five. Conditions have also materially improved at the Stark Rolling Mill, also at Canton.

Strike in Final Stage in Pittsburgh District

Pitsburgh, Nov. 11.—The strike of the steel plant workmen may be said to be in its final stages. While the Cambria works of the Midvale Steel & Ordnance Co., Cambria, Pa., still are down, the fact that a committee of citizens of that city together with a number of steel plant workmen who are desirous of going back to work recently escorted William Z. Foster out of the town, and that other labor agitators also have been ordered to leave, suggests that a resumption at this plant is not far off.

While no break has been observed in the Wheeling, W. Va., district, strong intimations have been heard that the men are getting tired of idleness and that before long a break in the strike is probable. In the valley district steady increase both in the number of men at work and in the amount of active capacity is noted, especially in the plants which have been working under an agreement with the Amalgamated Association of Iron,and Steel and Tin Workers. Officials of this organization have been urging members to go back to work.

In the Pittsburgh district, except where the foreign population is large, almost normal conditions have been restored.

The Sharpsville furnace, Sharpsville, Pa., resumed yesterday, as did the stack of the A. M. Byers Co., Girard, O. No. 4 furnace of the Shenango Furnace Co., Sharpsville, Pa., will resume this week. The Struthers Furnace Co., Struthers, O., and the stack of the Stewart Iron Co., Sharon, Pa., still are on the idle list. The Carnegie Steel Co. has increased its active stacks by two since a week ago, now having 41 in blast.

Mills in Chicago District Have Steady Output

Chicago, Nov. 10.—Except at the Joliet plants of the Illinois Steel Co., and the American Steel & Wire Co., the steel strike is over. At Joliet the situation has not cleared and workers are still out, rendering operation intermittent and difficult. At Gary, South Chicago, Indiana Harbor and Milwaukee all mills are running. The Inland Steel Co. now has in operation as many mills as it was running when the strike began. The Illinois Steel Co. has started full operation of its rail mill at Gary, running 24 hours in two shifts. This interest has nine blast furnaces out of 12 at Gary producing iron and eight out of 11 at South works. Practically all mills in all plants are now manned sufficiently to give a steady output.

Donner Operating Mills

Buffalo, Nov. 11.—The Donner Steel Co. has resumed operation of its two bar mills and expects to operate its plate mill within a few days. Strike leaders by means of intimidation succeeded during the past week

in inducing 150 men employed by the Buffalo Corrugated Bar Co., Blasdell, N. Y., to quit work, forcing the company to suspend operations.

Regional Committees Are Distributing Fuel

Washington, Nov. 11.—The fuel administration's control over bituminous coal is in full force under the direction of the railroad administration. Essential fuel requirements, including those of manufacturers, are being administered through a central distributing committee named by Director Hines and headed by Henry B. Spencer, director of purchases for the railroad administration. H. A. Garfield, fuel administrator, is in Washington advising and assisting Mr. Hines and transferring to him such duties under the fuel laws as are necessary in handling the curtailed coal output. The organization is practically on a war footing with conservation and priority the two controlling factors.

The central committee has numerous regional and district coal committees, which have been appointed by Mr. Hines, which handle the fuel problems in the territories under their respective jurisdictions. Mr. Hines, in naming the committees, urged on all consumers to make their essential coal requirements known to the railroads from which they ordinarily receive their fuel supplies, and if the railroads cannot meet the individual problems, the committees may, as far as more essential public needs and the fuel supply permit.

Pollak Steel Co., Purchases Rolling Mills

The Pollak Steel Co. has completed negotiations with the Interstate Iron & Steel Co., Chicago, for the purchase of the latter's rolling mill in Marion, O. The purchase includes all contracts, land, buildings, machinery, raw and finished materials at Marion. The Marion mill is in full operation with plenty of orders booked ahead, and its acquisition adds to the Pollak products shapes, angles and bars, including reinforcing bars.

The purchase was in conformity with a policy of expansion adopted some time ago by the Pollak company. It recently completed an extension of its plant at South Chicago, Ill., for the manufacture of drop forgings for the automobile, tractor and agricultural implement trade, and also added to its plant at Cincinnati a large extension for the manufacture of automobile parts. The company for many years has been one of the largest manufacturers of railroad car axles, locomotive forgings and heavy forgings for marine and machine builders. In prewar days the company's trade was principally dependent on railroad buying, but since the war it has made extensive improvements to diversify output. Its latest acquisitions give it a capacity of 300,000 tons a year of forged and rolled products, in addition to the output of specialties, such as automobile parts, and drop forgings which cannot be measured on a tonnage basis.

To Sell Equipment

The Cleveland-Duplex Machinery Co., Cleveland, has closed a contract for the exclusive sale of all machinery which the American Multigraph Co., that city, now has to offer or will have in the future. Equipment now on hand for disposal is valued at approximately $50,000 and additions to this are being made from time to time. Many tools already have been sold.

Big Scrap Lot Sold

Chicago, Nov. 11.—One of the largest, if not the largest deal in scrap material was closed today when Briggs & Turivas, of Chicago, New York and Montreal, bought from the government 141,000 tons of steel shells located in about 10 cities. This material is classed as low phosphorus heavy melting steel. The same buyer also closed for 30,000 tons of similar material in Montreal a few days ago with the Imperial Munitions Board of Canada. This makes a total of 171,000 tons of shells involved in the two deals.

The shells bought from the United States government are located as follows: At Cleveland, 30,000 tons, at Pittsburgh 40,000 tons, at Boston 13,000 tons, at St. Louis 12,000 tons, at Cincinnati 8000 tons, at Rochester 3000 tons, at New York City 3000 tons, at Philadelphia 2000 tons, and at various other cities, principally Toledo, 30,000 tons.

Building Steel Plant

The Kansas City Bolt & Nut Co., Kansas City, Mo., has started construction of additions to its plant to house two 50-ton open-hearth furnaces, a 22-inch mill and the necessary finishing buildings. Steel from the open hearth will be cast into ingots, 10 x 10 inches, part of which will be rolled to billets on the 22-inch mill and finished on the 16-inch and 10-inch mill for use in the bolt and nut department and sold as merchant bars and reinforcing bars. The remainder of the ingots will be finished on the 22-inch mill into larger bars, billets and structural shapes for the market.

The open-hearth furnaces and the heating furnace will be operated on fuel oil. As soon as the two furnaces in the initial installation are completed and in operation the company will begin construction of a third furnace, and the plant is laid out for the addition of a fourth and fifth when circumstances make this advisable. The first two furnaces are expected to go into operation about April 1.

Rail Tonnages

Continue Under Negotiation in East and West—Tank Cars Placed

New York, Nov. 10.—Since the Pennsylvania railroad put out its inquiry for 200,000 tons of rails for 1920 delivery, week before last, other eastern roads, it is found, are planning to take action in connection with their rail needs. The New York Central now is making up the tonnage which it will need for 1920 and an inquiry may come out from this line within a few days, for several hundred thousand tons. The Erie railroad needs 30,000 tons of rails to be laid in January, February and March, but may buy only 20,000 tons in case 10,000 which were loaned to other roads at the instruction of the railroad administration are returned.

Tank Cars Placed

Philadelphia, Nov. 11.—The Union Tank Car Co. has placed orders for 4000 tank cars with various builders.

Car Building Slack

Nov. 11.—Practically nothing is being done in the way of building new railroad equipment and most shops are engaged in repair work, of which a large total is being contracted by the railroad administration. Contracts recently booked for repairs have called for about 35,000 tons of steel from the leading interest here. The Pullman Co. has resumed building standard sleeping cars after having been out of that market for several years. The N., C. & St. L. railroad has let a contract for 11 passenger cars to the American Car & Foundry Co. The leading interest has booked 340 tons of pressed steel parts for the Burlington railroad for use in constructing coal cars.

Rolls Strip Steel in Long Lengths

Vertical Guides Near Last Finishing Stand of New Strip Mill in Chicago Impart Oscillating Motion to Product as It Slides on Edge to Coilers— Strips Close Annealed in Muffle Furnace

BY G. H. MANLOVE

WITH a white-hot steel ribbon, 0.035 inch thick, about an inch wide and 1500 to 2500 feet long issuing from a mill at a speed of nearly 30 miles per hour, the chances for the piece buckling or cobbling seems unusually propitious. The steel ribbon is too soft to carry itself down the cooling bed at that speed, and a bed half a mile long is out of the question. This was only one of the problems which presented themselves when the Acme Steel Goods Co., Chicago, set out more than a year ago to produce hot-rolled strip steel in long strands and at a lower price than the market afforded. The problems have been solved, and the mill is now engaged in reducing a billet 30 feet long and 1½ inches square into a single steel band 1500 feet long. A billet 2 inches square yields a string 2500 feet long. Two continuous-type mills, which are arranged in tandem and function under an unusually delicate speed control, effect the change from billet to strip.

The problems of the new installation were attacked early in 1918 by James E. MacMurray, president of the Acme company, the Morgan Construction Co., Worcester, Mass., and the General Electric Co. The first billet was converted into strip steel Aug. 15 of the present year. Production now has been increased to 150 tons per day, on a double-turn basis. Billets are fed into a Morgan-type heating furnace, 30 x 25 feet, which will accommodate either 1½ x 1½-inch or 2 x 2-inch billets. The furnace is heated by producer gas. An automatic Hawthorne-type pusher, which is operated electrically, delivers the heated billet to the roughing rolls.

The roughing mill includes six stands of rolls with an edging mill placed between the fifth and sixth stands. By means of this arrangement the strip is given a true edge just before the last roughing pass. Between the roughing and finishing mills is another edger, which is driven by an independent motor. The finishing mill includes five stands of rolls, with provision for a sixth stand. The first set of roughing-mill rolls operates at about 19 revolutions per minute, while the last set of the finishing-mill rolls operates at about 800 revolutions per minute. The rolls are 10 inches in diameter, giving a delivery speed close to 2500 feet per minute.

The roughing-mill rolls are driven by a 1000-horsepower motor and the finishing-mill rolls by a 2000-horsepower motor. Each of the latter are equipped with special controls by which the speed of any set of mill rolls can be varied by a single operator stationed in the pulpit overlooking the roll stands. About 500 horsepower additional is supplied by motors operating the edging mills, furnace, pusher, conveyor and other appurtenances. The entire electric equipment is housed in a room inside the main building. The latter is separated by a fireproof wall and is covered by a removable metal ceiling which allows the crane to be used in installing or handling machinery in the room.

After passing between the last set of finishing rolls, the ribbon of steel, which has been formed flat on the horizontal rolls, passes through a guide. This turns it on edge, in which manner it is conveyed to the electrically-driven coilers. At this point the difficulty mentioned at the beginning of this article presents itself. It has been solved in an interesting and rather spectacular way. The strip passes between parallel vertical guides which are pivoted at the end nearest the mill and give an oscillating or vibrating motion in a horizontal plane. This throws the advancing strip alternately to each side of the conveyor table and deposits it on edge in wide loops, similar to the figure 8. By this means of delivery

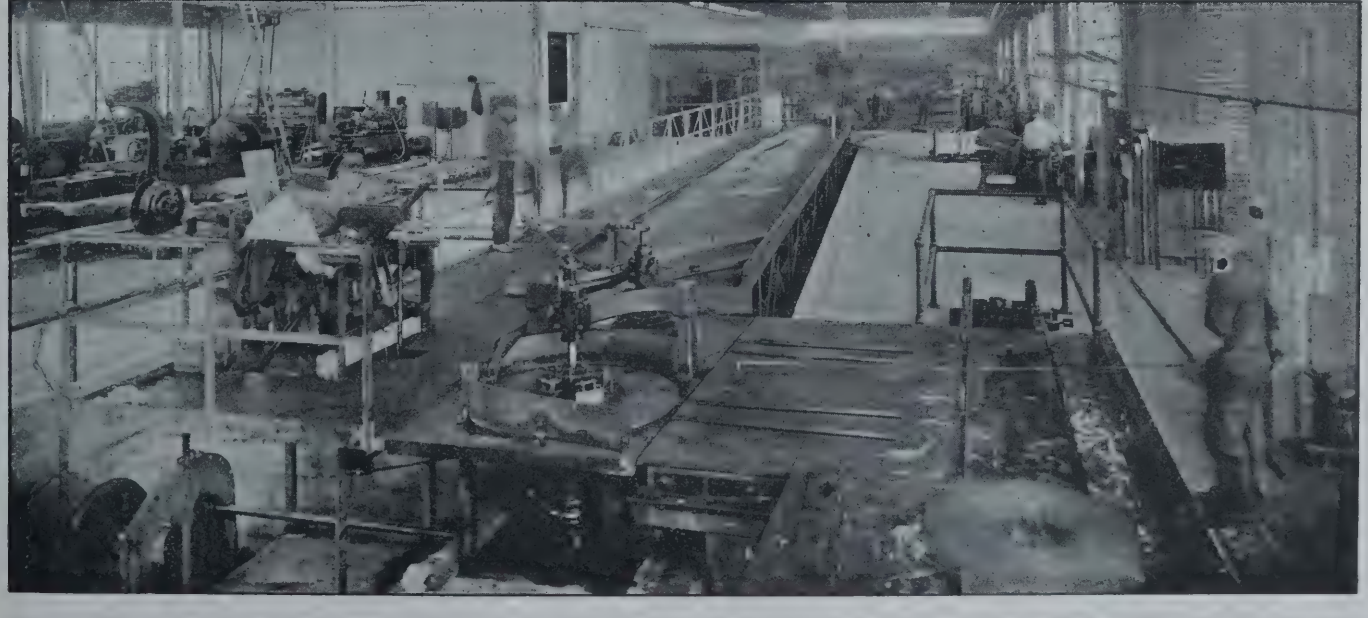


FIG. 1—LOOPS OF HOT-ROLLED STRIP STEEL SLIDE ON THE EDGE TO THE ELECTRICALLY-DRIVEN COILERS FROM WHENCE THEY ARE PULLED ONTO THE CONVEYOR SHOWN AT THE RIGHT. THE CONVEYOR MOVES THE STRIPS SLOWLY THROUGH A MUFFLE-TYPE ANNEALING FURNACE

a 2500-foot strip is handled on a few feet of the conveyor table. This apron-type conveyor moves forward slowly and carries the steel away sufficiently fast to clear a space for the next strip. The forward end of the strip is grasped by means of tongs by a boy and carried to the end of the conveyor where it is clamped to the hub of a coiler which draws the entire piece into a flat coil like a watchspring.

Two coilers, operated independently, are provided. Space is provided for a third. The coiled strips are pulled to one side by a hook where they are caught by the teeth of a conveyor which carries them into a watercooled, semi-airtight muffle conveyor about 250 feet long. The passage of the first eight or 10 coils through this muffle usually exhausts most of the oxygen and gives a neutral atmosphere which greatly reduces the quantity of scale formed on the steel. Emerging from the muffle the coils are cool enough to be banded and handled into cars or storage. The steel is annealed in the muffle until it is unusually soft.

Disposition of Finished Product

From here the coiled strips are piled on corrugated-steel platforms which are picked up by an electric-driven tractor and carried to the storage platforms or direct into cars. From the arrival of the billet in the dock at one end of the building until the coils are loaded into cars at the further end, it is not handled other than mechanically except when being attached to the coiler and when being pulled from the coiler to conveyor.

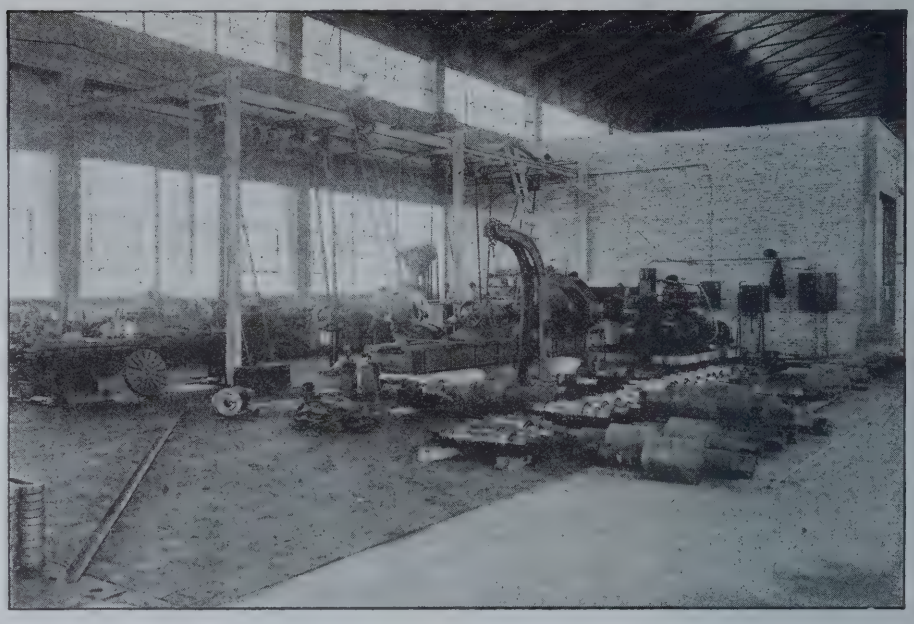


FIG. 3—MACHINE AND ROLL SHOP, WITH WOOD-BLOCK FLOOR AND AMPLE ILLUMINATION. A SMOOTH SURFACE IS IMPARTED TO THE ROLLS BY GRINDING

The banding operation is manual but is accomplished as the coil moves ahead on the conveyor after passing the muffle. The loading track is depressed, the floor of the car being level with the mill floor. By means of this construction the electric tractor carries its load into the car and deposits it where desired.

Aside from solving the problem of handling the swift outpouring of the finished strip, the speed of each successive set of rolls had to be considered. If each succeeding set of rolls was not operated at a rate of speed sufficient to handle the elongated strip as fast as delivered by the preceding set of rolls, then the steel strip would buckle and form a cobble or loop. It was necessary also to avoid establishing a pull by a stand of rolls operating too fast in relation to the preceding, for this action would stretch the steel strip and make it narrow. Much attention was paid to the delicate speed control for each set of rolls.

Uniform Heating is Necessary

Another desideratum was an even heating of the billet to insure accuracy in the finished strip. If hot or cold spots existed in the billet, thicker or thinner sections would result, because the cold portions would resist the pressure of the rolls, while the hotter portions would yield and give thin spots. The furnace, therefore, was

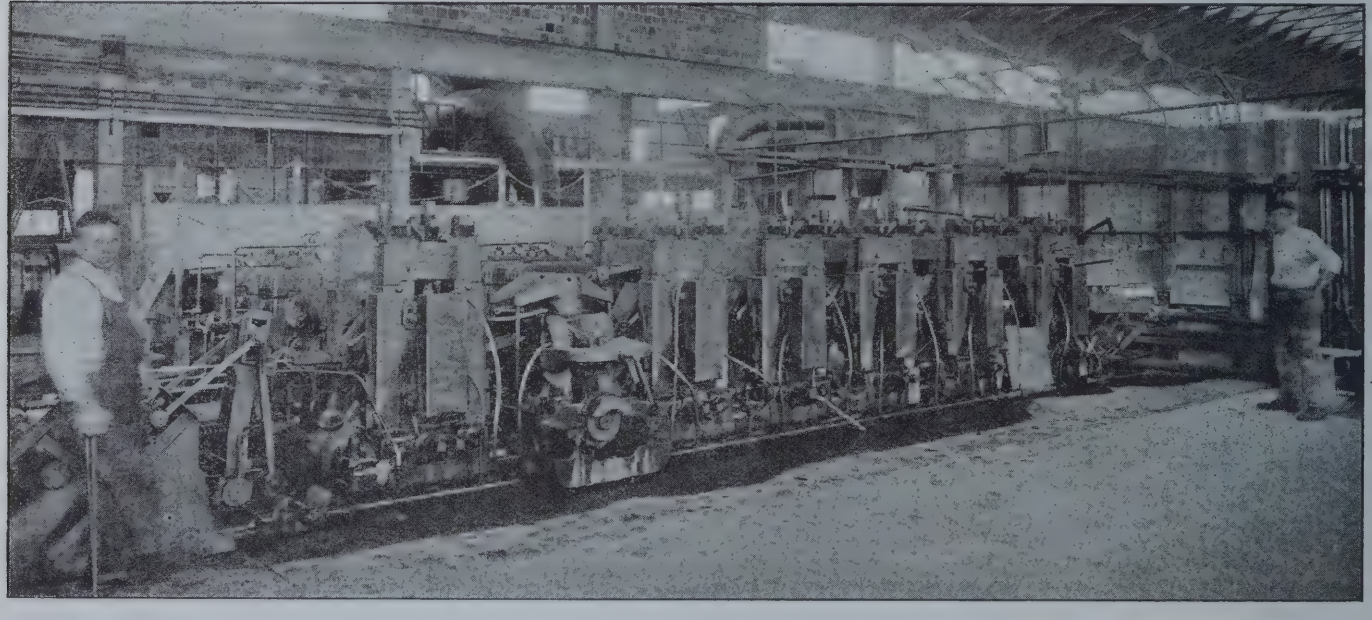


FIG. 2—ROUGHING MILL INCLUDES SIX STANDS OF ROLLS ARRANGED TANDEM. THE FIFTH STAND OF ROLLS GIVES THE EDGING PASS. THE HEATING FURNACE IS SHOWN AT THE RIGHT

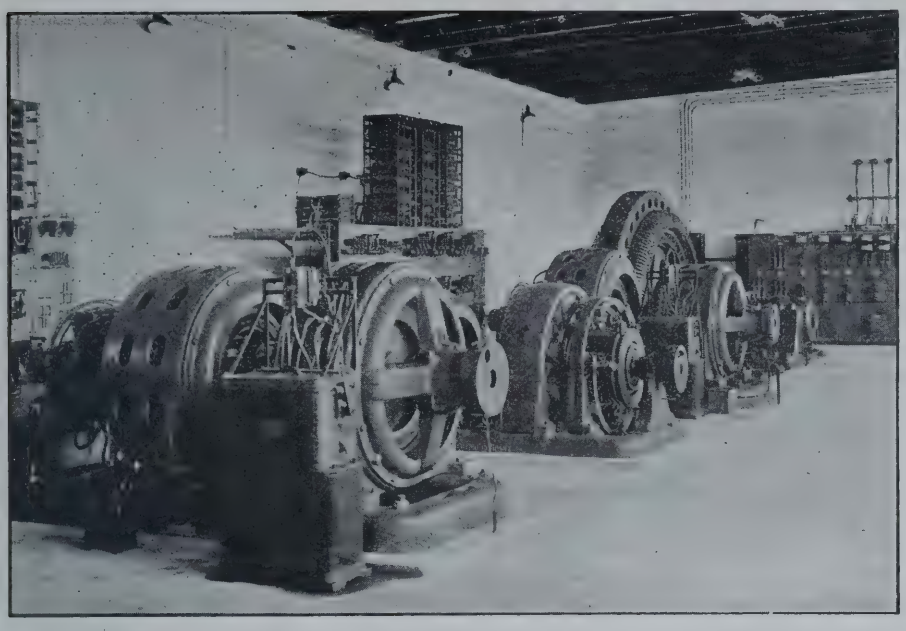


FIG. 4—INTERIOR OF POWER HOUSE SHOWING THE 2000-HORSEPOWER, FINISHING-MILL MOTOR AND AUXILIARY EQUIPMENT

designed to give the maximum of even operation from end to end in order to avoid the slightest difference in temperature over the entire length of the billet.

Range of Specifications

The mill is designed to roll strips from 1 to 3 inches wide and from 0.025 to 0.080 inch thick. The length of the strip depends on the size of the billet and the thickness of the strip. Nothing longer than 2500 feet probably will be attained on this mill from the largest billet rolled to the thinnest strip. The capacity of the mill was rated at 100 to 200 tons per day, varying with the size and gage being rolled. Actual operation has shown a 50 per cent increase over this estimate. The mill site, which consists of 130 acres, has a frontage of more than half a mile on the Calumet river. Three trunk lines pass one boundary. The mill is housed in a reinforced concrete building 85 feet between crane rails, 705 feet long and 25 feet high to the crane rail. Unusual light is supplied through six generous bands of glass in metal sashes, two in each side wall and one in each side of the roof. All floors are cement except that in the roll and machine shop wood blocks are used.

A 15-ton crane with a span of 80 feet, made by the Whiting Foundry Equipment Co., Harvey, Ill., runs the full length of the mill. The crane is used for unloading billets and transfering them to the upper end of the heating furnace in readiness for charging, and for every other service demanded. Billets are delivered on cars inside the mill building thus providing storage under roof and doing away with the necessity of an outside craneway. Rolls, which are used for forming the strips, are turned in the ordinary way in a lathe but all finishing is done by grinding in order to obtain minute accuracy made necessary by the unusually thin section produced. Central station power is delivered at high tension and stepped down by transformers. Extra roll stands, which are completely equipped, are kept in readiness so that in case of an accident they can be set in the mill train. As soon as possible a complete set of duplicate stands will be ready for any emergency.

Fuel for the gas producers is delivered by truck and is dumped into a track hopper. The latter discharges into a crusher, which in turn, discharges into a continuous bucket elevator. This elevator was designed and installed by the Link Belt Co., Chicago. The individual buckets discharge the crushed coal into two bins of 150 tons capacity. These bins are built at the top of the gas-house building in order that the coal can be fed automatically into the producers.

Is Cold Rolled in Three Passes

For more than 30 years the Acme Steel Goods Co. has been producing hot-rolled and cold-rolled strip steel from ¼-inch to 2 inches wide and from 0.01 to 0.07-inch thick, in all



FIG. 5—FINISHING MILL INCLUDES FIVE STANDS OF TWO-HIGH, 10-INCH ROLLS, THE LAST SET OF WHICH OPERATES AT 800 REVOLUTIONS PER MINUTE. THE SECOND EDGING MILL IS SHOWN AT THE EXTREME RIGHT

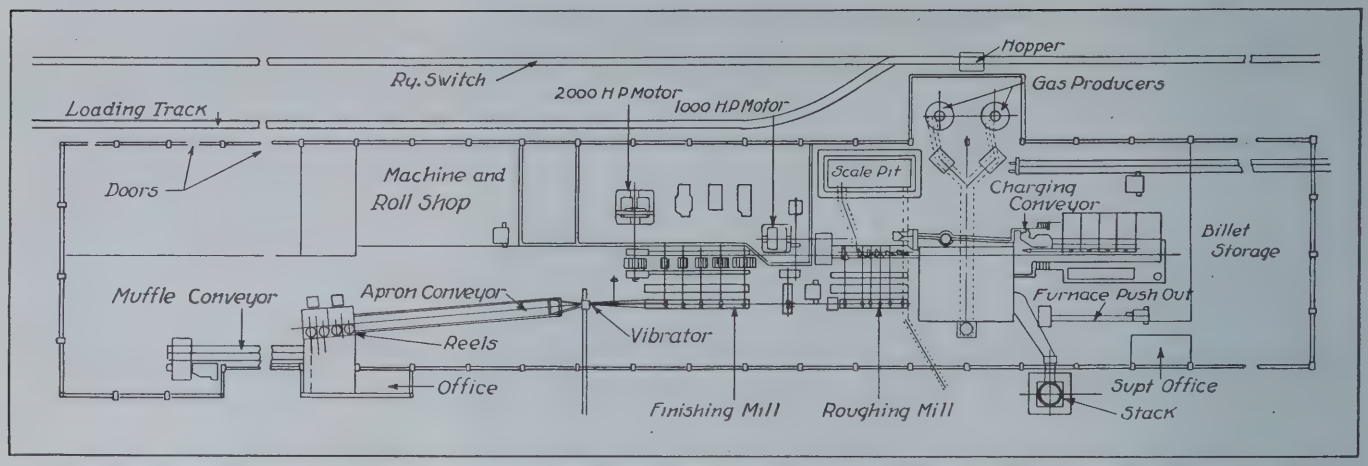


FIG. 6—LAYOUT OF THE ACME STEEL GOODS CO.'S STRIP MILL. BOTH THE ROLLING AND ANNEALING PROCESSES ARE CONTINUOUS

finishes and tempers. Need for longer strips than the market afforded and for a cheaper raw material, caused the present plant to be projected. The steel delivered by the new mill at 0.035-inch thickness is cold rolled to 0.015-inch in three passes. The present output is being absorbed by the company although the officials plan to supply the market also. Charles Traer is general manager of the mill, and W. J. Powner is superintendent. The latter has had extensive experience in the production of wire rods on continuous mills at the Grand Crossing Tack Co. and also in mills at Cleveland and Youngstown, O.

Book Reviews

Commercial Laboratory Notes, by C. L. Petty; leather, 105 pages, 7¼ x 4½ inches; published by the Dayton Metal Products Co. and furnished by THE IRON TRADE REVIEW for $6.

This work is prepared particularly for the use of analytical chemists. The author points out that when called upon to do work along unfamiliar lines the chemist does not have the inclination or the time to look through the available literature pertaining to the subject for the purpose of finding a method to suit his particular needs. The present volume was written to meet this situation.

The book is published in loose leaf form which makes the insertion of new data brought out from time to time a simple matter. Methods for handling many commercial materials in the analytical laboratory are given including many substances classified on the reading of nonferrous alloys, paint, oil, rubber, steel and iron, together with a collection of miscellaneous subjects. The methods indicated were used by the Pennsylvania railroad at Altoona, Pa., and have been slightly modified and extended to make them more comprehensive to the average layman. It is pointed out that the methods given have also stood the test during the world war in the laboratories of the Dayton Metal Products Co., Dayton, O.

Forge Practice and Heat Treatment of Steel, by John Lord Bacon; cloth; 418 pages, 4¾ x 7¼ inches; published by John Wiley & Sons, Inc., and furnished by THE IRON TRADE REVIEW for $1.75.

The art of forging metals is without a doubt one of the most difficult branches of modern manufacturing as the manual operations involved call for a thorough understanding of basic principles, together with skill that is developed only by practice.

In this branch of metal working, it is essential for the beginner to start correctly, otherwise he may find it impossible to develop into a skilled workman. The present volume is now in its third edition, revised and enlarged by Edward R. Markham, a consulting engineer specializing in the heat treatment of steel.

The volume is the outgrowth of a series of notes given to the students at Lewis institute from time to time in connection with shop work of the character under consideration. The author draws attention to the fact that he has not included examples in the book that are not used in everyday shop practice.

The first part of the book is devoted to a description of forges and tools, followed by a concise treatise on welding. Stock calculations, upsetting, bending, etc., follow and simple examples of actual forge work are explained, the author describing each step. Thus the student or apprentice can readily grasp the principles necessary to follow in prosecuting actual work. The chapter on steam hammer work is interesting and explains at length the various classes of forging that are handled advantageously on this tool.

The author next describes tool forging and tempering and gives numerous examples of miscellaneous work. In the chapters devoted to heat treatment, several types of commonly used furnaces are described. The author explains how lathe and planer tools, milling cutters, dies, etc., should be handled in heat treating to give the best results. Numerous mathematical tables are included together with a number of mechanical drawings of typical examples of forge shop work.

The book will be a valuable aid to student, apprentices and practical workmen or foremen and also will serve as a reference book for those who deal with forging and heat-treating problems.

Set National Standards

The council of the German industrial standards committee has agreed to the following conditions becoming standard practice:

1—The uniform temperature of reference for gages, etc., shall be 20 degrees Cent.

2—In view of practical and theoretical advantages, the zero line shall be taken as the limiting line in connection with standard systems of fits.

3—The SI (système international) and Whitworth systems of standard screw thread shall both be considered as standard.

In connection with the third item some industries in Germany are already using the "système international," on the recommendations of the Zurich conference.

Standard specifications have been prepared by the council for drawings, straight pins, standard weights for straight pins, square heads, and taper reamers.—*Stahl und Eisen.*

Must Buy Goods From Germany

British Technical Advisor in Occupied Regions Says One-Sided Trading With Former Enemy is Impossible—Germans Now Selling Rails in Holland Cheaper Than Price Offered by the Allied Countries

BY FRANCIS MILTOUN

French Correspondent of The Iron Trade Review

PARIS, Oct. 21.—The chief technical adviser to the British military governor of Cologne, H. B. Fergusson, set forth in a recent speech some interesting facts concerning the industrial situation in occupied Germany. He said German supremacy in certain manufacturing lines was due largely to the system of "combining capital and pooling knowledge," this being particularly true of the chemical industry. The "give-and-take" bodies for the exchange of information were known under the generic name of Interessengemeinschaft, and while valuable to the various trades, individually and collectively, did not in any way interfere with the executive organization of the various factory members, although they did regulate selling prices, the prices at which raw materials should be acquired and also served as a clearing house for trade secrets.

It is evident, he said, that whoever is to sell goods to Germany must be prepared to buy goods of Germany also; there is no possibility of one-sided trade with an insurmountable barrier over which nothing but cash can climb. Germany has little raw material, and what she has got is not particularly varied. In respect to potash, France has the Germans at a disadvantage and the British have them "tied hand and foot" with respect to dyes.

Rails are being shipped into Holland from Germany at £8 ($38.40) a ton, which is a lower price than either England, France or Belgium can offer. The rate of exchange of the mark is the only thing which tends to make it possible for Germany to send her products abroad; otherwise German competition need not to be feared by England, he declared.

* * *

Increase Production of Electric Steel

Official statistics of the German metallurgical industry show that the production of electric steel in Germany during 1915 amounted to 131,579 tons, in 1916, 190,036, in 1917, 219,700, and in the first ten months of 1918, 221,824. The number of electric steel furnaces in operation during 1918 was 90. The disannexation of Alsace and Lorraine and the occupation of the left bank of the Rhine has brought directly under French control but ten of these electric steel plants, as follows: the Thyssen plant at Hagondange in Lorraine, including two furnaces of eight tons capacity and one of 20 tons capacity; the Rombas plant in Lorraine, with one furnace of two tons capacity; the Roechling steel plant at Voelklingen, in the basin of the Saar, with five furnaces of eight tons capacity, and the Stumm plant at Nuenkirchen, in the basin of the Saar, with one electric furnace.

* * *

Swiss Metal Exchange Organized

A new organization has been created at Zurich, Switzerland, by the Society of Iron and Steel Stockholders to be known as the Bourse Metallurgique. It is to meet each week in the tonhalle of Zurich, the meetings to be open to those connected with the steel and iron and allied industries. The society proposes to invite foreign manufacturers who may be interested as buyers or sellers in Swiss markets.

* * *

Use New Industrial Credit System

The Economic and Industrial Groupment, of St. Etienne, one of the important metal-trade centers of France, in co-operation with a local bank, is organizing a method of extending credit to exporters which goes a step further than the trade acceptance method now so largely in use.

Each order shipped is accepted by a bank, if the customer be known, at a premium based on reports which may be on file as a result of other transactions by other firms. The premium varies from ½ to 5 per cent. The bank pays the shipper upon the turning over of the documents, the premium being in addition to the usual discount charges. If, according to American banking methods this looks like a gamble let it be remembered that the famous Lloyds of London will take almost any kind of a legitimate gamble, even on next season's crops, the end of the war or the end of the world. The system is considered a benefit to the French exporter, and may have to be reckoned with by other nations in dealing with French firms.

* * *

Forge Masters Deny Interference

Defending itself against criticisms which recently have been made concerning its attitude in regard to the metal trades strikes in France the Comité des Forges publicly denies that "as an employers' organization" it is in any way the cause of the conflict between individual employers and their workmen. The employers' organization directly interested is the Groupe of Industrials of the Parisian District, an association distinctly regional, though in its membership are numbers of firms who also are associated with the national committee. In view of the status of the Comité des Forges, and much unjust criticism of its patriotic and self-sacrificing attitude during the war, it is well that its case should be presented. It is the organized, co-operative body of forge masters of France, engaged in solving the big problems of the industry, but it never interferes with matters pertaining solely to labor unrest or issues wherein the interests of the industry as a whole are not involved.

* * *

Italian Firms Increase Capital

The following Italian firms in the metal trades have increased their capital to the amounts stated: Milan—Union of Special Steel Manufacturers, 10,000,000 lire ($2,400,000); Society Bianchi, manufacturing iron and steel, 500,000 lire ($100,000); United Cutlery Works of Castino-Maniago, 3,000,000 lire ($600,000). Rome—Society General, for development of mining and metal industry, from 50,000,000 to 100,000,000 lire ($20,000,000). Turin—F. I. A. T., from 100,000,000 to 200,000,000 lire ($40,000,000). Reggio-Emilia, Italian

machine company, 32,000,000 lire ($6,400,000).

* * *

Italy in Need of Coal

Italy is in great need of coal. By the terms of the peace treaty she is to be granted 100,000 tons per month of coal from the Saar basin. France has granted another 40,000 tons a month. Last year Italy imported 6,400,000 tons of coal, of which 2,000,000 came from France. At present American coal in Italy is more costly than British, but with open market conditions British coal will cost nearly as much as American, a fact which should stimulate the American shipper to greater effort. The Italian government is sending a mission to America to seek sufficient coal to keep Italian industries going during the period of reconstruction and reapportionment of European resources.

Great Britain has promised Italy 750,000 tons a month but now suggests that she may not be able to supply more than 100,000 tons. Coal which England shipped to Marseilles has been diverted from that port and unloaded in Italy, much to the displeasure of the French buyers. England replies that she is doing her best to aid her Italian ally.

At Naples where there was great activity in shipbuilding there is not a pound of coal, and in that region there is no water power. One ship repair station on the Bay of Naples, employing 2000 men, has but one week's coal supply.

* * *

Find Castings Are Faulty

A member of French metallurgical industry comments on the causes which have brought about the high cost of automobile production in England. According to his information, delay in delivery of automobiles, despite the fact that premiums are offered is due to bad cylinder castings, thousands of engines being held up. One manufacturer is reported to have rejected 87 per cent of one lot of gray iron castings while another rejected more than 60 per cent. Both produce high-class cars. Practically all engine manufacturers are having trouble with their castings. It has been suggested that sabotage was the cause, but this explanation must be rejected as many of the faults only come to light at the time of setting up and testing.

As Lloyd George said in parliament only a few days ago: "The effects of the war are far-reaching." One plausible explanation is the difficulty of readjustment of labor to new conditions on top of four years' of strenuous war work by workers who previously were engaged on different processes.

The effect on prices is more apparent than would be supposed. The Crossley, one of Britain's leading cars was priced at $4775 immediately after the war. It was then advanced to $5500, and today is cataloged at $6000, with not a car at the latter price on the road.

The cost of the power unit is sending up the price; that, and the necessity of putting out fully equipped automobiles to compete with the American product.

* * *

Italy's Industries Booming

The manufacturers of machine tools in Italy have held a convention at Milan to protest against the accusation that the Italian industry is not able to supply the demand for the simplest of machine tools, and that their tools, almost without exception, were imported from America, England and Switzerland. It was the mention of Switzerland that caused the protest, for many believe articles of "Swiss manufacture" are German goods.

The syndicate stated that its members were in a position to give "normal satisfaction" to any demands made upon them. The question is simply one of whether or not the present demand is normal. I should say it is not because Italian industries of all kinds are enjoying a degree of prosperity which it never knew before. All of the industries use machine tools.

The recent labor disturbances of Italy seem not to have reduced production to any great extent. Italy's industrial policy provides for the working up of the raw material within her own frontiers. The Italian government is studying the possible effects of liberal importations from Germany, the present abnormal foreign-exchange rates, and the establishment of new tariffs.

* * *

French Obtain Thyssen Plant

From Metz comes the information that details have been decided on which will bring the Thyssen Hagondange plant into control of a French society, the Groupment des Consommateurs de Produits Metallurgique. This is the first after-the-war attempt at a consolidation among consumers to acquire their raw and semifinished material.

At the head of the new organization is the Baron Petiet, president of the Automobile Chamber of Commerce. Among the other automobile firms interested are: Renault, Panhard et Levassor, Aries, Peugeot, Weyher et Richmond, Alsacienne Soc des Constructions Metalliques, Etablissements Dayde, Bessoneau, Lorraine-Dietrich, the Japy group and the Groupment of Iron Founders.

* * *

Luxemburg to Help France

The metallurgical industry of the grand duchy of Luxemburg is henceforth to co-operate with that of France. The die was cast in the last days of September when the people of Luxemburg voted to maintain the reigning dynasty and the Grande Duchesse Charlotte, and to abolish the former economic understanding with Germany in order to throw the weight of their economic force in with that of France.

The ties which naturally, politically and economically, bind Luxemburg to France are manifestly to the detriment of the relations which Belgium hoped for, but the people of Luxemburg were free to choose their working partner. In addition the metallurgical industry of Luxemburg has need of the minerals of Briey, on its southern border.

Luxemburg before the war consumed 8,600,000 tons of iron ore, of which 4,200,000 tons came from Lorraine. Of its own production of 7,500,000 tons 3,000,00 tons were exported to Belgium. Production of pig iron in 1913 amounted to 2,550,000 tons, and steel, 1,336,000 tons.

* * *

Clemenceau Increases Reparation

None of the voyages of observation of Premier Clemenceau since the armistice have been productive of so much encouragement for the business revival of France as that which he completed recently in the iron and steel district of the French Ardennes. Of 400 miles of railroads in the district the Germans left undamaged not more than 30. The bulk of the reconstruction is yet to be done.

Money grants by the government to those whose property was destroyed by the Germans were previously proposed at the rate of 3000 francs each, but on the return of Monsieur Clemenceau this was raised to 20,000. It has taken eight months from the time of the armistice to find that the damage was seven times as great as at first supposed.

* * *

Sweden Buys From Germany

The current Swedish journals announce a signal success for the German steel trade. The management of the Swedish government railroads recently placed orders for a steel railroad bridge to cross a wide arm of the sea near Stockholm. The first and second most favorable bids were from Germany. The first was submitted by a steel works of Augsburg-Nuremburg, and the second by Krupps.

Improving Industrial Management

Scientific Organization for Maximum Production is Considered in Relation to Plant Executives, Workmen and Equipment—Standardization of Duties as Well as of Process is Held to be Important

BY M. H. POTTER

IN THE successful management of an industrial organization the underlying principle of importance is the balancing of production cost, quality, and selling price. It is a well known fact that in the majority of instances it is easy to manufacture, but when selling price and competition are taken into consideration, the problem becomes more complex. Therefore, it is the business of the manager to balance conditions, and to maintain the equilibrium of the organization.

Executive Duties Are Allotted

Fig. 1 illustrated the duties of the organization as related to and governed by the manager. The importance of the functional duties or responsibilities will vary in accordance with the nature of the work, but the general application is identical in all cases. This is the first step in the analysis of management, and serves only as a basis for consideration of details.

Fig. 2 carries the analysis still further, showing the distribution of functions and responsibilities among the various departments. This is an analysis of the underlying principles of plant management, which must receive first consideration if maximum results are to be secured. Here again, the general plan only is illustrated.

Too much consideration cannot be given to processes and operations, and the hiring and handling of labor, to control by means of the standardization of shop operations, the movements of practically every employe.

Organization charts, showing the lines of authority from the general manager to the shop foremen, have their proper place in the handling of an organization, but do not constitute the underlying principles of management. It is only by thorough consideration of the cost of manufacture, quality and selling price that maximum results can be secured. Problems related to lines of authority of various executives will solve themselves, but the allotment of executive duties is another matter. It is this problem that must be solved from the standpoint of practical routine, if the successful results are to be secured.

Standardization is Important

The well-defined rules of efficiency management also have their place, and play their part in increasing production and in maintaining an aggressive, co-operative organization. But the successful manager must go into details when necessity demands, and therefore he must have a system of executive oversight which will permit of prompt and wise decision.

Standardization of duties, and standardization of processes and operations are important to efficient management. By referring to Fig. 4 it

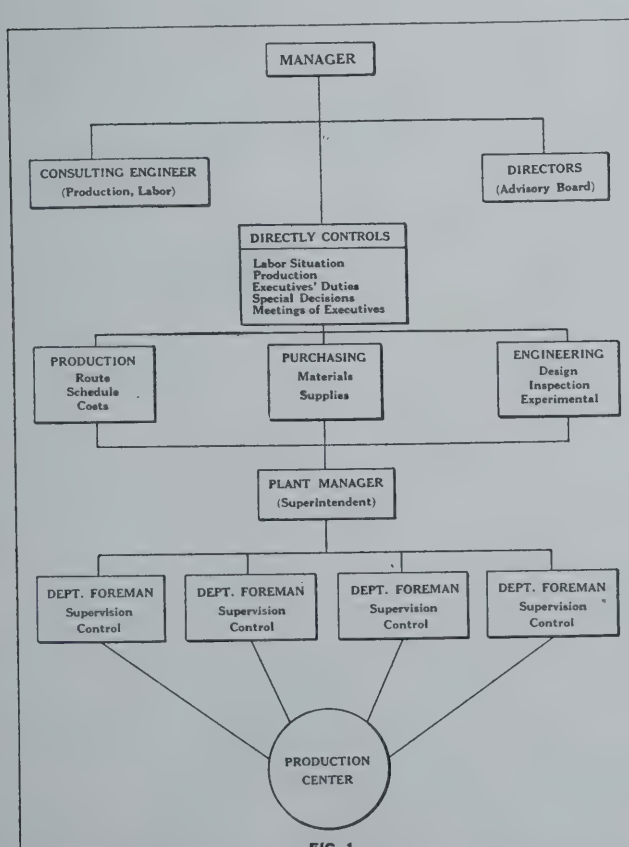


FIG. 1

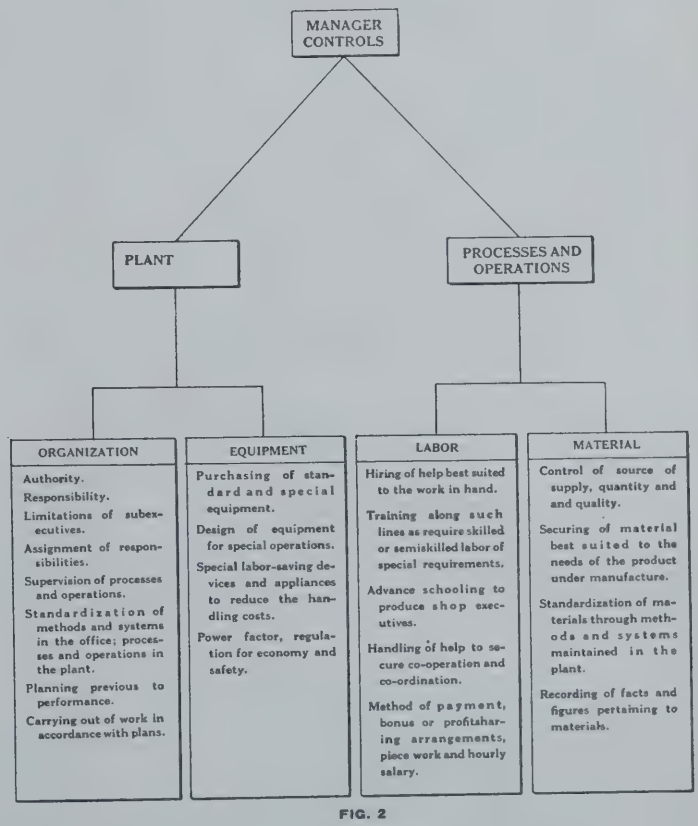


FIG. 2

DUTIES OF ORGANIZATION AS RELATED TO AND GOVERNED BY THE MANAGER

will be noted that it is the desire and function of the manager to outline and maintain definite and fixed duties for the executives and employes under his control. It is through this source of control that a system can be properly handled and that co-operation and co-ordination can be maintained.

Grouping the Duties Desirable

In some lines of industrial work the exact method of determining such standards will vary. For instance, it may be desirable to group the duties by departments, or on the other hand it may facilitate control to decide authority along other lines.

In undertaking to establish a method of control to assist in efficient management, it is necessary to secure information from the executives in charge of various operations in particular groups or departments. The executive in charge of each group will in turn secure the greater part of the desired information from the subexecutives or clerks. It is important that the views of the one performing the various duties be taken as a basis upon which the manager is to compile and allot the duties which will govern the functioning of the organization under a form of standardization. A manual should be prepared as a guide, and used to enforce the lines of duties as established. Too much thought cannot be devoted to this important feature of plant management.

Duplication of Work Prevented

The proper division of duties is most important, and will relieve the executives and higher salaried employes of routine. Furthermore it will limit the field of action of employes, and permit of centralization of duty, which is an important factor in scientific management. In larger organizations, such a method of control will prevent duplication of work, and will greatly assist in the simplification of the system employed by eliminating unnecessary forms and blanks for planning, stock control, routing, scheduling, cost keeping and production. It will permit of the recording of only such facts and figures which are of actual value to the manager.

Departments Must Co-Operate

Standardization of processes and operations is another valuable aid to efficient management, provided it is not carried to extremes. Fig. 5 illustrates the important details which come under this subject. The successful operation of this branch of standardization begins with the planning department and is expanded in the engineering and production departments. There are instances, due to shop equipment and other reasons, when the routing and scheduling departments must co-operate in this matter, in order to maintain the balanced use of equipment in the shop. This is especially important in plants whose equipment is always in maximum operation, when an error in routing and scheduling of work may cause congestion.

Fig. 6 shows an outline of organization functions, representing further development in efficient, economical management. The system is based entirely upon results of endeavors to organize for maximum efficiency all executives under control of the manager.

Efficient Control Necessary

It is reasonable to expect only maximum results from the workmen in the shop when conditions are so prearranged as to secure maximum efficiency of the executives in charge. It is through efficient control of all subexecutives and foremen that the

WHILE attention has been focused on employment problems and modern ideas in regard to the management of men, an important feature of industrial management has been overlooked, at least in some establishments where there is a tendency to permit employes to share in management. Regardless of whether a plant is operated on old established lines, or whether new theories of employe participation are tried out, the centralization of authority and responsibility must remain as the foundation stone of successful management.

In this article which is the first of a series on industrial management written for THE IRON TRADE REVIEW, *the author, M. H. Potter, has analyzed factors of successful management, and presents an outline for organization of executive and plant forces in relation to various duties to obtain maximum results. The series is of special interest to plant executives and foremen. The next article which will be published in the near future will deal with manufacturing standards and their advantages.*

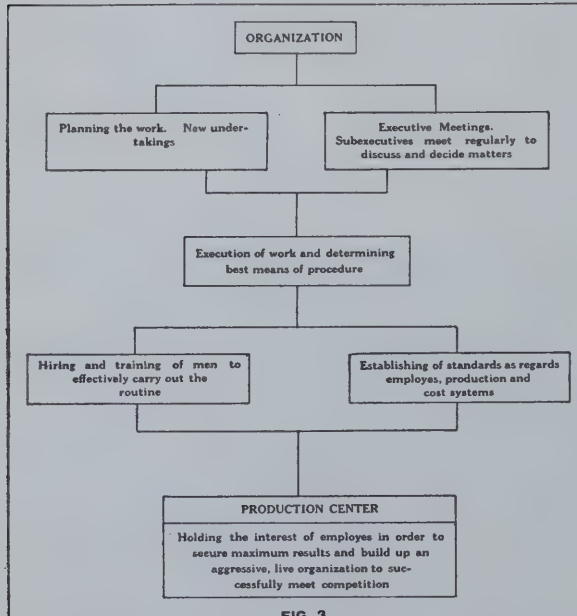


FIG. 3

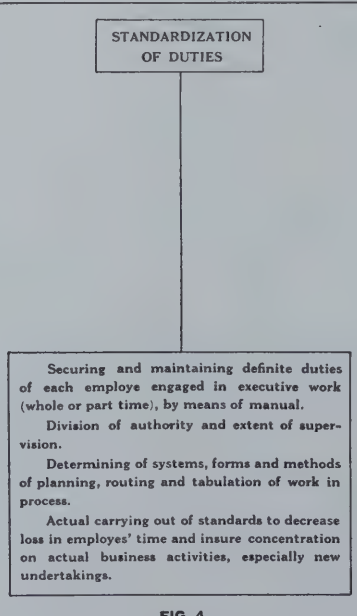


FIG. 4

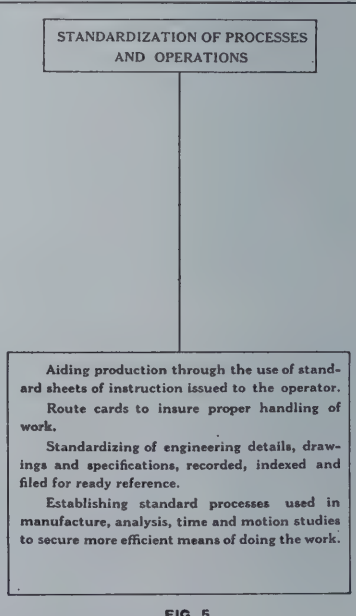


FIG. 5

STANDARDIZATION OF ORGANIZATION AND OPERATIONS

manager must work for efficiency and quality in output, and a satisfied, earnest working force.

Install Electric Furnaces in Norway

Electrical equipment for 20 electric furnaces which, when placed in operation, will comprise what is said to be the largest electric furnace installation ever made, is now being shipped from the United States to the Glomfjord Smeltverk Co., Glomfjord, Norway.

Each of the 20 units includes a 1300-kilovolt-ampere single-phase main power transformer; a 26.2-kilovolt-ampere series transformer; a 26.2-kilovolt-ampere induction regulator; an automatic selector switch; a transformer switch; and a two-panel, separately-mounted switchboard for the control of the electrical apparatus. The oil for insulating and cooling the transformers and regulators amounted to 16,200 gallons.

Heat regulation of each furnace is accomplished by changing voltage taps on the high-voltage winding of the main power transformer. Switches and induction regulators operate together to automatically change connections on the high-tension winding and to provide voltage control on each step. The apparatus was made by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Mexican Oil Industry

Mexico, it is said, is in the way to become the most important oil-producing country in the world. In spite of much labor unrest, it has reached the second place, being inferior only to the United States. In seven years the production increased from 3,630,000 barrels in 1910 to 55,300,000 barrels in 1917. This is far behind the United States but Mexico is only at the beginning of its production. It is estimated that when the 300 and more borings now in progress have reached completion as working wells, the output will amount to 500,000,000 barrels a year. Only 25 wells were in operation in 1917. The development of the industry is at present seriously hindered by difficulties of transport. The greater portion of the exports go to the United States, Great Britain being the next important customer. Now that the war has ended, a great development of the Mexican oil export trade may be expected, for all European countries are short of oil. Mexico seems destined to play an important part in the world's industries in the future. (*Prometheus; Allgemeinen Oesterreichische Chemiker-und-Techniker-Zeitung.*)

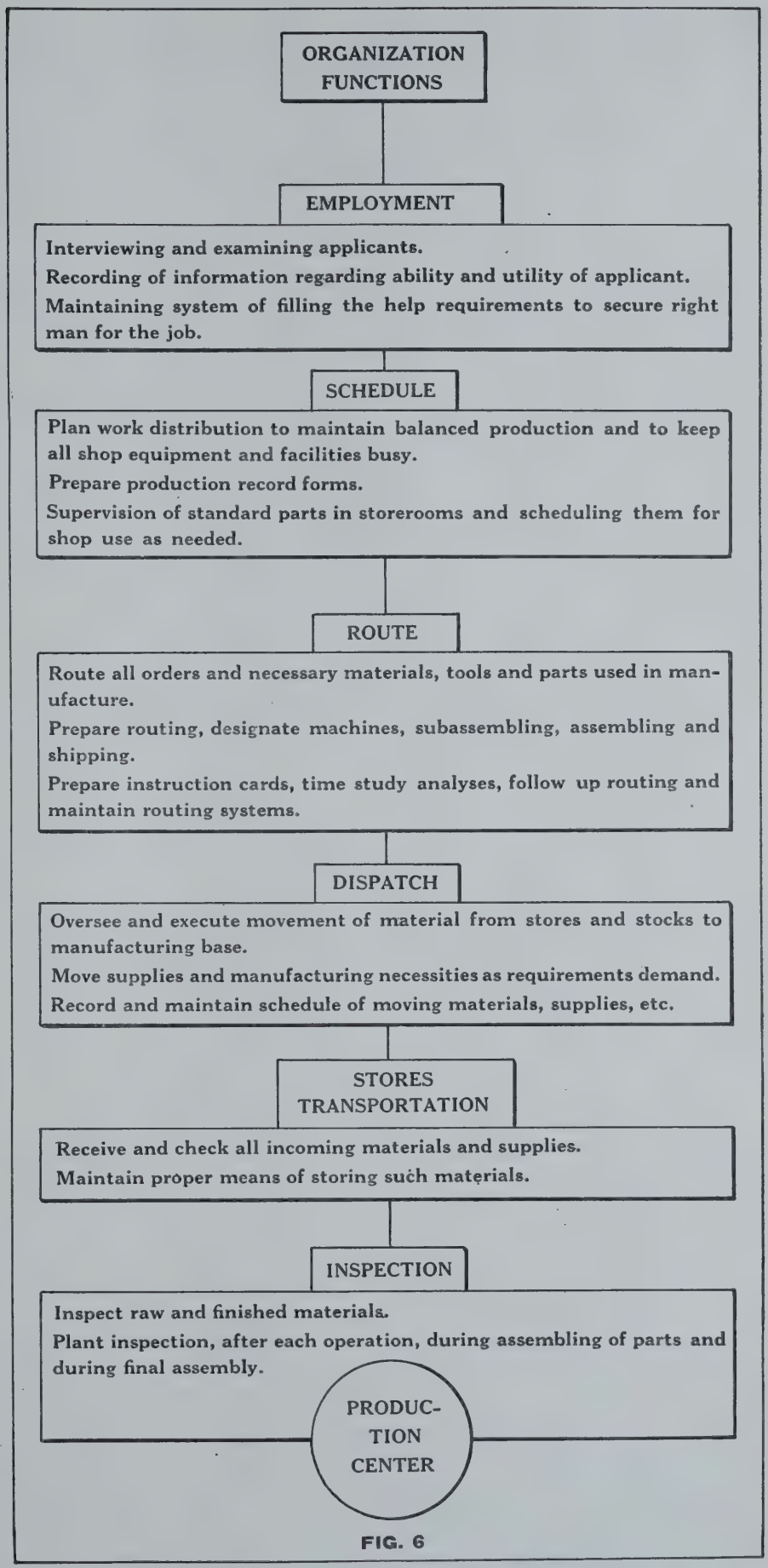


FIG. 6

OUTLINE OF AN INDUSTRIAL ORGANIZATION WHICH REPRESENTS A HIGH DEVELOPMENT IN EFFICIENT AND ECONOMICAL MANAGEMENT. THE BASIS OF THE SYSTEM IS THAT OF ORGANIZING EFFICIENTLY ALL EXECUTIVES UNDER CONTROL OF THE MANAGER

Making the Toolroom Efficient

Economical Tool Room Practice Depends on Two Principal Factors: Installing Up-to-Date Equipment and Routing Work so That Lower Priced Workmen Perform the Simple Operations

BY F. B. JACOBS

TOOLMAKING departments for making jigs, dies, fixtures and other special tools date from the time about 30 years ago when sewing machine and arms manufacturers began to have enough of this class of work to keep a force of toolmakers engaged constantly. Prior to that time, every all-around machinist was a toolmaker. With the steady march of progress, however, the all-around machinist is becoming extinct while the present day toolmaker serves as the nearest approach to the all around man, that is, a workman who is competent to handle a lathe, planer, milling machine, universal grinder, etc.

Toolmaking is a comparatively expensive branch of present-day manufacturing, due to the fact that competent toolroom men command high wages. Moreover, the machine and small-tool equipment of the toolroom is an expensive factor in itself. While indifferently made tools may be satisfactory for the general run of machine work, this is not true of tools to be used in the toolroom. Machine tools for this work must be as accurate as it is possible to produce them, otherwise unnecessary labor is consumed in bringing the finished product up to a satisfactory standard of finish.

How Error Developed

As an illustration, a milling machine, in which the knee and upright do not stand exactly square will produce work that is out of square. This, it is readily seen, is a decided objection when working on such pieces as jig castings. If such a casting is milled on a machine wherein the knee and upright are not exactly at an angle of 90 degrees, much time is consumed in scraping the finished piece to bring it square. Again, if a drilling or boring jig is bored on such a machine, it is readily evident that the bored holes will not be parallel with the surface from which the jig was located for boring. Therefore the first point to consider in efficient toolroom work is to make sure that only first class tools are installed.

Time was when one toolmaker did all the work on one tool, say a jig for instance. He planed the base casting, bored the holes for the bushings, turned, hardened and ground the bushings, made the small parts, such as latches, feet, special screws, clamps, etc., and then assembled the complete unit. While this practice resulted in an excellent finished product, a comparatively high labor cost was involved, due to the fact that much of the work could have been done by men who, while not thoroughly skilled in the whole art of toolmaking, possessed sufficient skill to make many of the necessary parts. At the present time, in some plants, it is customary to have one man make a complete unit but better and cheaper results are derived by dividing the work among several departments.

Machining Jig Castings

Castings for jigs and fixtures, die bolsters, blanks for blanking dies, etc., can be finished to advantage on the planer, shaper or milling machine. A man who spends all his time at this one class of work becomes highly proficient. Considering the planer and shaper first; these tools are admirably adapted for the work in question. About all the equipment needed for the planer are several good angle irons, plenty of straps and bolts and a sufficient supply of cutting tools. The shaper is a handy machine to utilize on this work as it can be run at high speeds while on comparatively short strokes. Care must be exercised in using the shaper, however, when true work is wanted, for two reasons. First, in raising and lowering the platen, chips are liable to work in behind the upright and crossrail which destroys the parallel alignment between the travel of the ram and the surface of the platen. It is obvious that when this condition exists, tapered work will result. Second, the ways of the ram wear in time, due to taking heavy cuts, making it impossible for the machine to plane a true surface.

On the other hand, the planer generally stays in good alignment for many years, provided it is set on a firm foundation in the first place. An occasional facing off of the platen is all that is required to keep the tool in first class condition for many years. A planer that is used every day on tool work should have its platen faced off about once a year. In time, the cross rail may become worn to the extent of causing the machine to plane work that is not flat when inspected crosswise. A planer will have to be used for many years, however, before this condition exists.

The milling machine is also a handy tool to use in machining jig castings. Equipped with several large cutters, of the end cutting variety, jigs can be machined in an economical manner. In using the miller for this work, however, one factor is present that is often considered detrimental, that is, it is a more time-consuming operation to scrape a piece of work that comes from the miller than it is to scrape a surface that has been finished by planing. As the majority of bases for accurate jigs must be scraped to insure their being true, many toolmakers prefer to machine these pieces on the planer because this machine leaves a surface that is easily scraped.

Several machines can be used to advantage for jig boring. Small jigs are often bored by strapping them to the face plate of the lathe, indicating buttons that have been previously located for this purpose and then drilling and boring the holes. For extremely accurate small work, master plates are often used in connection with the lathe.

Advantages of the Miller

The milling machine can be used to advantage in jig boring, provided it stands square, as previously explained. This machine, however, possesses one disadvantage in that the knee being comparatively short, it is sometimes impossible to get it far enough away from the column to insert boring bars. For boring comparatively short holes, however, the milling machine is used in many large toolrooms with excellent results.

Without a doubt, the ideal machine to utilize for jig boring is the horizontal type boring machine. As this machine is not an all-around tool,

special attention in its design has been given to one object only, and that is to produce a machine for boring.

The lathe, planer, milling machine and grinder are the principal machines used in the toolroom and to make them produce to maximum efficiency it is evident that one man operating one machine or several machines of one type (not necessarily at the same time) is surer of producing more efficient results than if he attempted to use several different types of machines in the course of a week in making one jig.

A man who possesses the necessary skill and "accurate touch" to bore precision jigs within close limits receives comparatively high wages. Thus if he spends his time on operations where a high degree of skill is not required, such as turning jig bushings, his employer is the loser because a lathe hand, generally called a toolroom lathe hand in this case, receives often 25 per cent less wages than a firstclass toolmaker. Finishing jig bushings by grinding is, of course, accurate work. However, the desired accuracy is easily attained by a boy or a woman in a few weeks' time. For this reason operators to run grinding machines in the toolroom can be hired much cheaper than first class toolmakers. For this reason it is again seen that the proper division of labor and routing of work is of importance in keeping down production costs.

Although toolmakers usually understand how to harden and temper practically every tool that is used in the average manufacturing plant, they should not be allowed to harden and temper work in every day practice. A tool hardener, who does one thing day after day, is certain to know more about the heat treatment of steel than does the toolmaker.

Where Women Are Efficient

In making small tools such as reamers, cutters, etc., a necessary part of the routine of every toolroom, the world war has taught that women are highly efficient. As the work to be handled is comparatively small, no physical exertion is entailed. As a matter of fact, women can chuck out, bore, turn, cut and grind milling cutters and like tools, day after day, without any apparent overexertion. It is well known that a woman's hands are more nimble than are those of a man. For this reason, they handle this comparatively small class of work in a more rapid manner.

Probably of the various classes of efficient workmen, diemakers are the hardest to find. This work calls for exceptional skill, good judgment and long practice at handling hand tools such as files, scrapers, etc. To make dies efficiently, whether they are little ones for punching out watch hands or big ones for blanking our armature disks, calls for the selection of the proper kind of labor. Not all toolmakers are diemakers although a diemaker often speaks of himself as a toolmaker.

In late years the introduction of die-filing machines has aided materially in cutting down diemaking costs. While it requires skill to operate one of these machines, it does not require the same degree of skill that is necessary to file dies by hand. For this reason the installation of die-filing machines is gradually finding favor even among manufacturers who have only comparatively few dies to make in the course of a year.

To introduce a high degree of efficiency in the toolroom is really a simple procedure. The machine tool equipment should be as complete and up-to-date as possible; the work should be routed so that each man does that for which he is best adapted, and the department should be under the supervision of a man who, through skill and long training, knows toolmaking from start to finish. Once let the working force find out that its foreman is not competent to prosecute the work he hands to the men and the morale of the whole force is bound to be lowered.

Gives Practical Advice on Labor Plans

BY E. B. TOLSTED

THE annals of the country are full of examples of misused power both on the part of employers individually and collectively and on the part of organized workmen. In the interest of the nation as a whole the disastrous effects of misused power must be eliminated. It must no longer be possible for employers by virtue of their financial resources and solidarity to treat workers unfairly, or for the workers through the open strike or the passive "strike on the job" to cripple industry.

To careful thinkers the solution lies definitely along the lines of a clear understanding by each side of its own attitude and of the problems of the other, and of their joint recognition of their relation to society. The result is bound to be in many instances the substitution of responsibility for irresponsibility, of co-operation for antagonism, of good will for ill will. This greatly desired result, the securing of industrial peace and efficiency, is so gigantic a problem that even the best thinkers in the economic field have as yet reached no definite practical solution. We are as yet in a state of flux.

Many Favor Employes' Representation

Many workers appear not to be satisfied by good working conditions, shortened hours, and high wages; they strike even after these things have been granted them. No doubt some want a voice in the determination of these matters, although the dissatisfaction is largely due to the spirit of the times. It may be that the real desire is for first hand information about the conditions which cause managers to come to their decisions. Probably no body of American men, for instance, would deliberately demand wages which they knew would bankrupt the business which employs them.

Of the various plans for producing industrial satisfaction which have been advanced up to the present time, the one which is attracting the greatest attention is employes' representation. Some feel that this is just another short-lived fad; others think that it is here to stay. A safety engineer cannot help recalling the time when the safety movement was a fad.

Many employers, not hostile to union organization, feel that better results will be obtained through an employes' representation plan than through the customary union channels, because of the direct relation and the mutuality of interest which can be obtained. In effect, the usual employes' representation plan creates a company or household union, sometimes alongside a national union. There need be no conflict between the two.

There are at the present time about

From a paper presented at the eighth annual congress of the National Safety council, Cleveland, Oct. 2. The author, E. B. Tolsted, is associated with the Independence Bureau, Philadelphia.

150 employes' representation plans in operation in the United States. By personal investigation of approximately 50 of these plans, we have found that employes' representatives may provide simply an orderly method for the adjustment of grievances; it may include machinery for collective bargaining with reference to wages, hours, and working conditions; it may be the means of eliciting from workers their hearty co-operation and valuable suggestions regarding processes, organization and policies; or it may involve all of these or any combination of them. Its structural features may be very simple and the procedure altogether informal, or these may be highly elaborate. The power possessed by employes through their industrial representation may be that of "public opinion," the authority of the representatives being merely advisory to the management, or the management may delegate to the employes final authority in regard to certain specified matters, or authority may be exercised jointly by the men and the management.

Take More Interest in Work

One very definite advantage of works committees which seems to be reported without exception is that representatives take back to the employes from the meetings a more adequate appreciation of the problems of the management, and that this, together with the increased comprehension by the executives of the problems, desires and ambitions of their workers, results in a much better understanding on both sides.

One company reports that during the first few months after the establishment of its works committee system, production was increased about 20 per cent and expenses advanced less than 5 per cent, while another reports an increase of 15 per cent in production without an advance in wages. Both attribute the increased efficiency largely to the better plant spirit brought about by the works committees.

Several concerns report that while at the first election a number of "radicals" were elected, the employes soon learned to distinguish between mere talkers and competent representatives.

Without exception, where a works committee has been in operation for several months, the company reports that it has revealed capacity for leadership among employes which otherwise would have been suppressed or have found an outlet in some undesirable channel.

Industrial representation is in successful operation in plants varying widely as to process and products, size and complexity of organization, and as to the character of the working force. None of these factors seems to determine the success, although each of them affects it and must be taken into consideration in working out the application of any plan to particular needs. But here are a few suggestions which I think it would be well for everyone to consider when contemplating a plan:

Install it under peaceful conditions. One large company inaugurated a plan as the result of a strike, and the plan ended in another strike some time later. The company is now attempting to make a new start. To propose a plan to men on the verge of a strike is also almost certain to result in failure to win over the men.

To attain its highest success, a plan should be developed gradually, each step in so far as possible resulting from suggestions or requests of employes. By all means, do not impose a ready-made plan; let the men help work it out; it will be a better plan and they will feel that it is their own.

See that the plan is simple in form so that procedure under it is easy to understand and to carry out. As to the specific form, we find that the best results have been obtained with the joint committee. But give opportunity for free discussion, that is, discussion without the presence of the management. It has been found good practice to alternate joint and separate meetings, with final action taken only in joint meetings. At a banquet held recently by the Standard Oil Co. of New Jersey for the representatives of the men and the management, one of the employes' representatives suggested the establishment of separate boards for the management and the men. This action was not especially desired by the representatives, who had already taken up the subject once and voted against separate boards, but the men felt that their delegates would not speak freely before their "bosses."

In some plans the committees deal only with working conditions and welfare work, such as light, ventilation, locker rooms, etc.; in some they deal with all matters which directly concern the worker, including wages and hours. There are drawbacks to both plans. On the one hand, committees which have been restricted in their activities have grown restless and felt that they were deprived of their just rights. On the other hand, committees which have been given free sway have sometimes failed to use judgment in the determination of hours and wages. In one plant, it is said that wages were forced up, despite the company's claim that they could not meet an increase. The reply of the men was, "Raise the price of your product." Experience would seem to show that a middle course works best.

Give your committee supervision over working conditions and welfare work; educate them through the use of this function to a better understanding of the position and problems of the management; then as they show themselves capable of handling the more serious problems, extend their authority toward grievances, hours, wages, absence, cost of living, community conditions, etc. In most cases, it will be found that the desire for a wider scope of activities will go hand in hand with the growth of ability to handle the higher subjects.

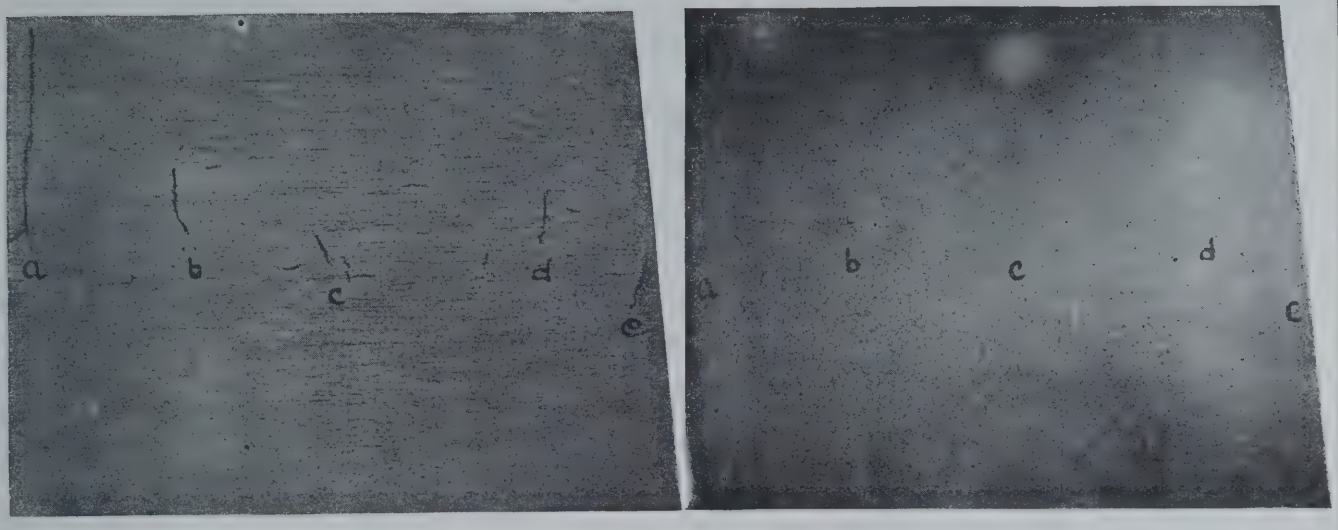
We advise that every employe, man or woman, citizen or alien, be made to feel as far as possible that he has a part in the operation of the plan.

It is especially important to make it plain that the plan in no way interferes with membership in unions or with existing relations of the management with labor unions.

Usually best results follow holding meetings during working hours. In one case, which has come to our attention, the representatives requested that the conferences be held out of hours, as they would feel less constraint in voting as they pleased. As a rule, however, committees which meet outside hours have failed to hold the interest of the representatives.

Germans Fear Scarcity of Iron Ore

The future of the German iron and steel industry is a question of more than national interest. Professor Krusch has been at pains to ascertain the available ore reserves of Germany in the altered territorial circumstances now existing, and to calculate their duration on the basis of the prewar consumption. The results show a dependence on foreign sources of supply that is not encouraging for the future prosperity of Germany's chief industry. When the loss of rich ore-bearing lands consequent on the failure of war aims is taken account of, the life of that industry appears short. In less than 40 years the home reserves will have been exhausted. With France, the richest country in Europe in iron ore, rapidly developing her resources, the outlook for Germany is not encouraging. —*Zeitschrift fur angewandte Chemie.*



A B

FIG. 1—LONGITUDINAL SECTION OF TRANSVERSELY FISSURED RAIL HEAD SHOWING INTERIOR FRACTURES

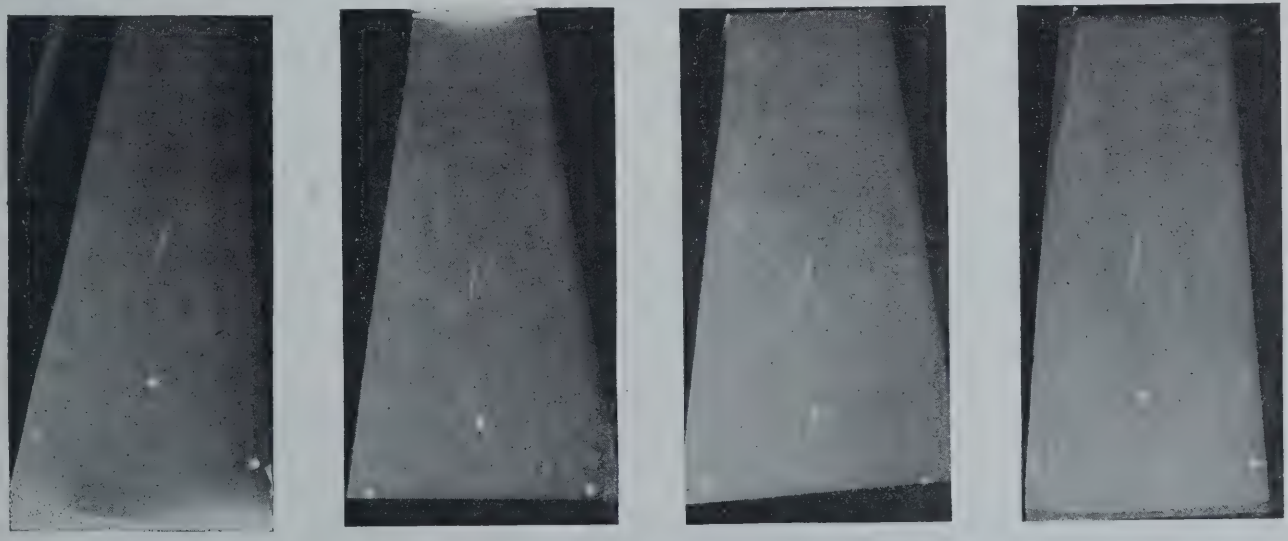
A—Interior fractures revealed by deep etching with hot concentrated hydrochloric acid
B—Same specimen as *A* before etching. The defects have been located by magnetizing the specimen and then immersing it in kerosene containing fine iron dust in suspension. X-rays failed entirely to reveal the presence of these defects.

Using X-Rays in Examination of Steel

BY HENRY S. RAWDON

IN EXAMINING steel by means of X-rays the United States bureau of standards has been limited to apparatus of the 100,000 volt (10-inch spark gap) type mentioned by Dr. Ruder, hence it has not been possible to attempt readily, with any hope of success, the study of specimens whose thickness exceed 1 inch. Most of the examinations have been made upon specimens considerably less than this thickness. Of course with lighter metals and alloys, such as aluminum and its light alloys, much thicker specimens may be used and very satisfactory results obtained. In the study of this class of metals the method appears to offer more possibilities than in the field of iron and steel. It is believed that some of the applications of metal-radiography made at the bureau of standards laboratories and working within the limits outlined by Dr. Ruder,

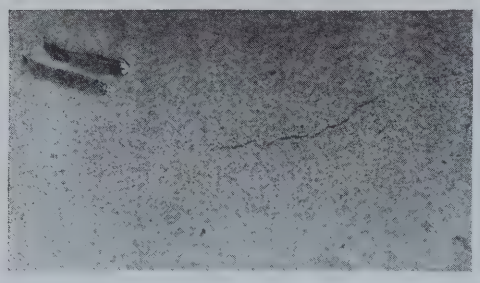
From a discussion of the paper presented at the sixteenth general meeting of the American Iron and Steel institute, New York, Oct. 24, by W. E. Ruder. The author, Henry S. Rawdon, is physicist, United States bureau of standards, Washington, D. C.



A B C D

FIG. 2—FLAKY GUN STEEL EXAMINED BY X-RAYS AFTER VARIOUS HEAT TREATMENTS

The specimen was placed so that the direction of the rays coincided with the plane of the defects. Each white line represents a flake. The three white circles are reference points made by drill holes partly through the specimen. *A*—Finished forging, as received. *B*—Same after annealing 30 minutes at 900 degrees Cent. and cooling in the furnace. *C*—Same after heating 30 minutes at 900 degrees Cent., and quenching in oil. *D*—Same after heating 30 minutes at 1050 degrees Cent., and quenching in oil. Note the increase in number and in definiteness of the white lines. Exposure—9-inch spark, 2 milliamps., 7 minutes.



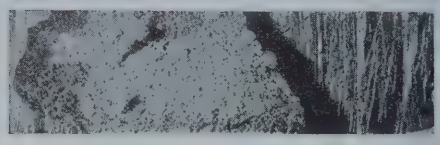
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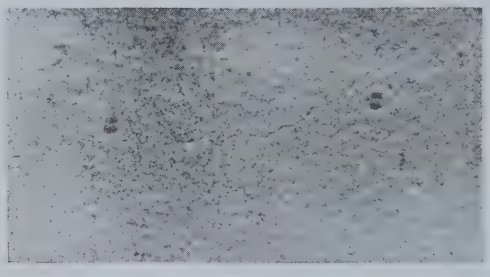
D



B



E



C

FIG. 3—NATURE OF THE DEFECTS IN TRANSVERSELY FISSURED RAIL HEADS

A—Defect similar to those shown in Fig. A. Located in the magnetized specimen by fine iron dust in suspension in oil. *B*—Same specimen after locating the defect by a punch mark at each end and then wiping off the iron dust. *C*—Same specimen, retreated with iron dust. *D*—Similar defect which has been opened up by means of two punch marks. *E*—Similar specimen. The material was broken transversely to reveal the interior fracture. It was impossible to locate these defects by means of radiographic examination.

are suggestive and interesting enough to warrant a short description.

In the study of flaky steel, unfortunately, it was desired to follow the behavior of material known to be defective through a series of heat treatments without mutilating the material in any way. The claim has been made repeatedly that proper heat treatment alone is sufficient to remedy the defect known as flakes. Fig. 2 shows a series of radiographs of a specimen of gun steel, containing 0.38 carbon, 2.92 nickel and 0.20 per cent chromium. The specimen, which was a transverse radial section of a finished gun-tube forging, was ⅜-inch in thickness. The three white circular spots were produced by drilling holes of the size shown nearly half way through the specimen; these were needed as reference points for locating the various features revealed by the examinations. The four radiographs represent the material in the following conditions: *A*, the finished forged gun tube, as received; *B*, after annealing for 30 minutes at 900 degrees Cent., and cooling in the furnace; *C*, after heating in a barium chloride bath for 30 minutes at 900 degrees Cent., and quenching in oil; *D*, after heating for 30 minutes at 1050 degrees Cent. and quenching in oil. The series of radiographs show the gradual opening up of the defects. In many of the flakes in the initial or forged specimen the metal on the two sides of the separation was in such intimate contact that the intensity of the transmitted rays at the point was practically the same as that of those which passed through the adjacent sound metal, hence no evidence of the flakes was recorded on the photographic plate. The behavior of the defects during vigorous heat treatment is shown by the increase in number and in definiteness of the white lines in the radiographs, which change can be due only to an increase in the width of the separation or fissures. The same method is to be used in the further study of this material to show the behavior of flakes in defective material when it is mechanically worked.

Examining Fissured Rails

A similar application was attempted in the study of transversely fissured rails. The deep etching by means of concentrated acid of sections cut from the head of rails which have developed transverse fissures in service shows the presence of very serious defects such as are illustrated in Fig. 1. The presence of these defects in the material before etching had never been demonstrated and as a result a grave difference of opinion as to their seriousness and the real character existed. Longitudinal slices, ¼ inch in thickness cut from the head of a rail were examined by means of X-rays in an endeavor to locate such defects before the specimen was etched. Although the piece was known to contain these defects and their location had been definitely established by means of a magnetic method, no trace of their presence could be obtained by the X-rays. This confirms the third conclusion of Dr. Ruder that the detection of defects which if exposed to view, are invisible to the eye is very uncertain, if indeed, any indication is obtained. The method by which the defects were located in specimens, previous to etching, was to polish the surface as for microscopic examination, magnetize the piece, and then bathe it in a light oil such as kerosene, containing fine iron dust in suspension. Wherever a discontinuity in the metal exists a change in the density of the magnetic flux results and the particles of iron arrange themselves so as to outline the shape of this discontinuity. Of course this method can be applied only to the detection of defects which extend to the surface. Fig. 3 shows the appearance of interior fractures located by this means. Although an actual discontinuity exists as was shown by cutting out sections and breaking them in two, and is of such an extent that it must be regarded as a very serious defect, the metal is still in

such intimate contact along the plane of the separation and the face of the separation is so irregular in its contour that the transmission of the X-rays here is the same as that through the adjacent sound metal.

Another application was made of X-rays in the study of specimens which were to be tested as to their behavior under fatigue tests. The interior condition of three typical specimens which were of the shape and size for the Upton-Lewis machine is shown in the radiographs *A, B, C* of Fig. 4. In this case as before, the specimen was so placed that the path of the rays was parallel to the plane of the flake. The type of fracture produced in the fatigue test for each class of steel is shown in *D, E, F,* Fig. 4. As might be expected the material showing no evidence of the flakes broke with a smooth porcelain-like fracture, the others show large conspicuous crystalline areas in the face of the fracture corresponding to the flakes. The examination of test specimens, particularly those tests which are expensive either from the viewpoint of the time required to carry one to completion or of the extreme care which is required in shaping the test specimen, is probably one of the most important applications which can be made of metal-radiography. In the investigation of arc-welded materials now in progress at the bureau of standards laboratories it is proposed to examine all specimens for the impact and the fatigue tests in this manner in order to locate any serious defects such are quite common in welded materials which would vitiate the results of the test.

Other applications of the method have been made mainly of a miscellaneous character, however. One such examination was of complex mixtures such as copper-lead bearing metals in which the fineness of the grain of the mixture which can be detected by X-rays is very surprising. Another instance worthy of mention is the examination of a small ingot too thick for the X-ray apparatus available by means of the radiations from radium. The presence of an enclosed pipe was indicated by the radium-radiograph obtained. It is believed however that the most interesting and helpful work has been along the two lines described.

The division of metallurgy of the bureau is indebted to the co-operation and help of Dr. Dorsey by whom the radiographic examinations were made.

About 90 per cent of the potash in blast-furnace gas can be collected in a product containing from 5 to 30 per cent total potash, of which 80 per cent is readily water soluble. In

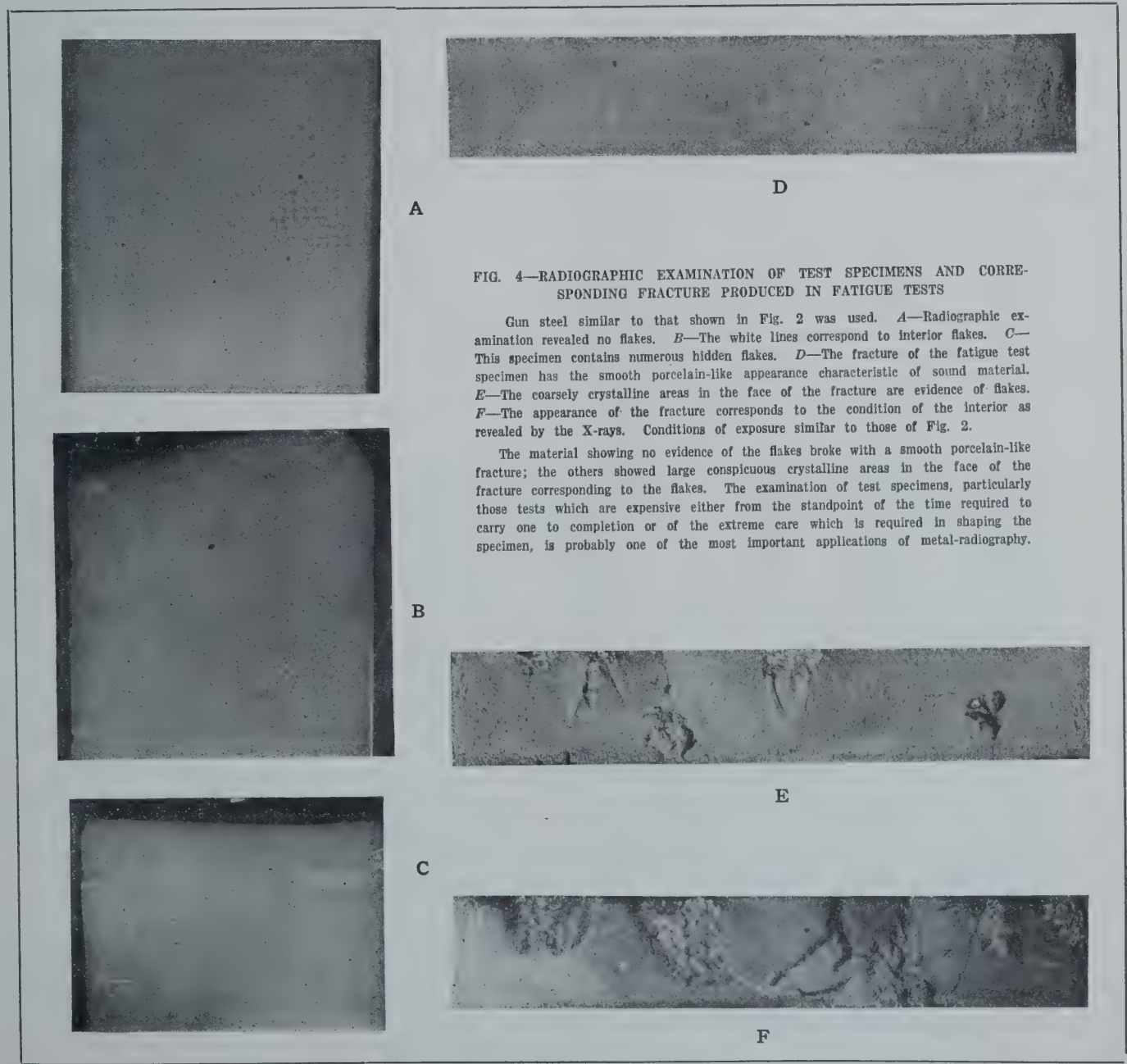


FIG. 4—RADIOGRAPHIC EXAMINATION OF TEST SPECIMENS AND CORRESPONDING FRACTURE PRODUCED IN FATIGUE TESTS

Gun steel similar to that shown in Fig. 2 was used. *A*—Radiographic examination revealed no flakes. *B*—The white lines correspond to interior flakes. *C*—This specimen contains numerous hidden flakes. *D*—The fracture of the fatigue test specimen has the smooth porcelain-like appearance characteristic of sound material. *E*—The coarsely crystalline areas in the face of the fracture are evidence of flakes. *F*—The appearance of the fracture corresponds to the condition of the interior as revealed by the X-rays. Conditions of exposure similar to those of Fig. 2.

The material showing no evidence of the flakes broke with a smooth porcelain-like fracture; the others showed large conspicuous crystalline areas in the face of the fracture corresponding to the flakes. The examination of test specimens, particularly those tests which are expensive either from the standpoint of the time required to carry one to completion or of the extreme care which is required in shaping the specimen, is probably one of the most important applications of metal-radiography.

other words, if the average burden contains 12 pounds of potash per ton of pig, about 6 pounds of potash per ton or about 50 per cent can be recovered as readily, water-soluble product. With a higher potash content of charge, a higher percentage of extraction is possible.

Investigations as to the possible potash recoveries are now being made at a plant located in the Birmingham district, where the potash content of the blast-furnace charge is higher than at the northern plants.

Under the present methods of handling blast-furnace gases, either using them directly in the stoves and boilers, or passing them first through washers and scrubbers before utilizing them in stoves, boilers, or gas engines, very little volatilized potash is recovered, most of it being lost in the water with which the gases are washed in the primary or secondary washers. A large proportion is actually discharged into the atmosphere.

Possibly about 1000 to 1500 tons of potash per year might be caught in the dust in the boilers and stoves at blast furnaces where the charges contain relatively high potash content, but even during the high price conditions existing during the war, the maximum recovery from this source was actually less than 500 tons per year.

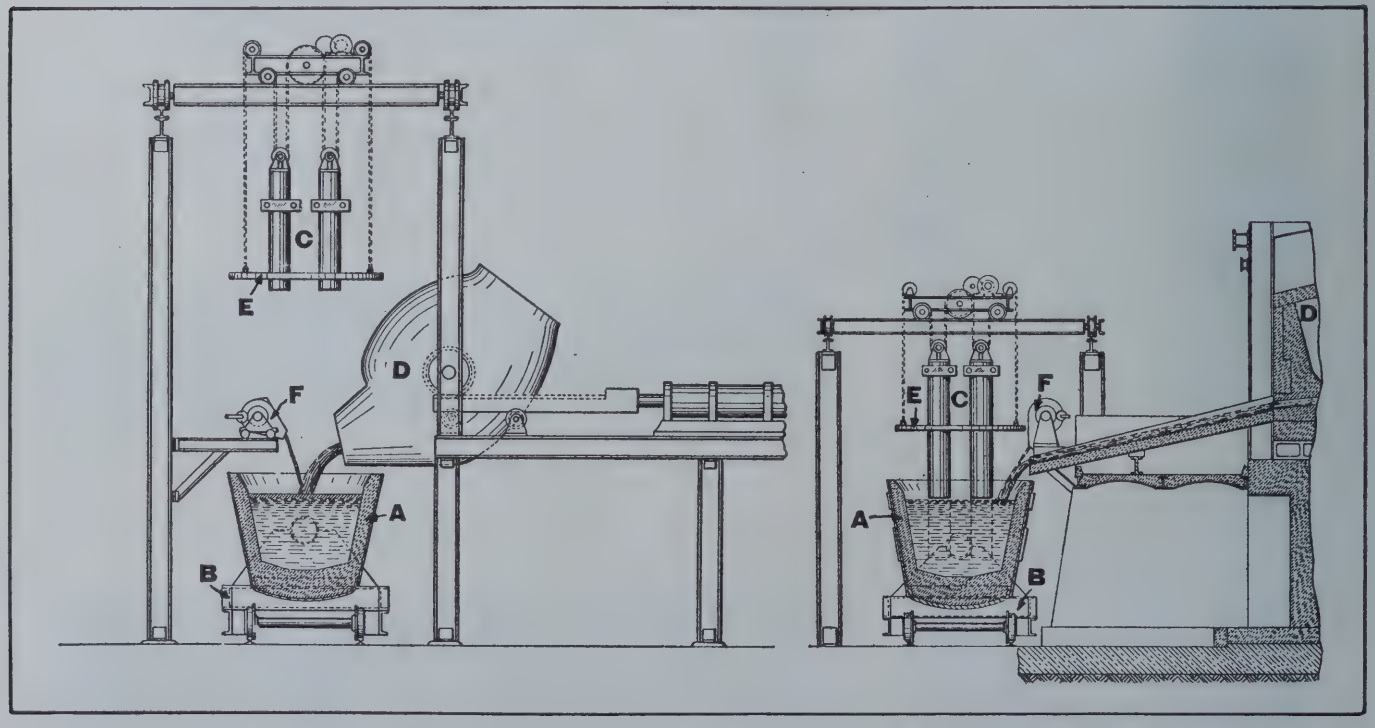
Super-Refining Steels Electrically

IMPROVEMENT in the manufacture of steel by subjecting the product of either the bessemer converter or open-hearth furnace to electric treatment is claimed in a recent patent by John McConnell, superintendent of the open-hearth department, Interstate Steel & Iron Co., Chicago. It is said that by the use of Mr. McConnell's process a large tonnage at a minimum cost and a more uniform product is obtained and that only a small amount of oxidizing materials is required, due to the fact that little material is lost during the oxidizing period.

As shown in the accompanying illustrations, standard equipment is used. While the steel is being tapped into a ladle, the desired alloys in a cold state may be added to the streams of metal from a container, *F*, as shown in the drawing. It is preferable to introduce the alloys in the form of ferroalloys and crushed. Particularly in the case of chromium, it has been found that when the addition is introduced into the furnace, usually at the time or just before tapping, there is a large variation in the product. This is due to the alloy being subjected to furnace reactions which cause it to be oxidized and to go into the slag.

When the open-hearth furnace is tapped, all of the metal and slag, as is the usual custom, is directed into the service ladle. A small amount of slag is allowed to remain in the ladle for the purpose of keeping the steel hot, the remaining part being directed into a cinder thimble or slag pocket. The electrodes are lowered into the bath, as shown below, and the current applied for approximately 15 minutes. This sets up a mixing action; removes the minute cavities of slag that have arisen from internal chemical actions, and also some oxygen, the oxides going into the slag; and, effects further purification from

In the basic process of steelmaking a substantial amount of the phosphorus can be removed. Sulphur, however, is more difficult and uncertain to control. If it is desired, when using Mr. McConnell's process, to remove sulphur from steel in the ladle by other means than temperature, which always is a potent factor in sulphur elimination, the slag is removed from the top of the metal. Lime or a similar product in combination with fluorspar is added to make a basic slag. The latter removes part of the sulphur and absorbs the impurities and oxides from the steel. Further purification can then be effected by lowering the electrodes into the bath of steel and applying the current. It is claimed that the process is particularly adapted to refining open-hearth, bessemer and alloy steels by the duplex method.



IN THE ILLUSTRATION AT THE RIGHT THE DOTTED LINES OF THE ELECTRODES SHOW THE POSITION OF THE CARBON ELEMENTS AS THE MOLTEN STEEL AND THE OXIDIZING PRODUCT ENTERS THE LADLE. THE ILLUSTRATION AT THE LEFT SHOWS THE POURING POSITION OF A BESSEMER CONVERTER AND AN ALLOY CONTAINER WITH ELECTRODES AND LADLE COVER SUSPENDED FROM ABOVE

Announce Program

For National Founders Convention at New York Nov. 19 and 20

Announcement has been made of the program for the twenty-third annual convention of the National Founders association to be held at Hotel Astor, New York, Nov. 19 and 20. A large attendance is expected. The opening session will be devoted to the usual reports of officers and committees. At this session, George F. Monaghan, general counsel for the association, will deliver an address on "Industrial Unrest."

Papers to be read at the Wednesday afternoon session include, "Government Competition in Industry," by W. H. Van Dervoort, president of the Root & Van Dervoort Engineering Co., Moline, Ill.; "The Washington Industrial Conference," by James A. Emery, counsel for the National Council for Industrial Defense; "British and American Labor Problems," by Prof. J. Laurence Laughlin, of the National Industrial Conference board, and "The Man with a Number," by Richard H. Waldo, manager of the Inter-Racial Council. At Thursday's session, H. P. Bole, vice president of the Hydraulic Pressed Steel Co., Cleveland, will read a paper, "The Industrial Association of Cleveland," and L. R. Clausen, of, Deere & Co., Moline, Ill., will deliver an address.

At the annual banquet to be held Wednesday night, William H. Barr, president of the association, will act as toastmaster. Among speakers will be the Rt. Rev. Charles H. Brent, senior chaplain of the American Expeditionary Forces in France.

Hoist Data Considered

Data relative to tracks and switches, as compiled by the engineering committee, was discussed at the regular monthly meeting of the Electric Hoist Manufacturers' association at 9 West Fortieth street, New York City, Oct 28. Consideration also was given to the committee's report on its work relative to cables, hooks, load blocks, and certain other appurtenances. Bulletins comprising this data will be issued at an early date. The next meeting of the association will be held at the Fortieth street address, Dec. 5, at which time the standardization of certain auxiliary equipment will be discussed.

The membership of the association now comprises the Alfred Box Co., Inc., Philadelphia; the Brown Hoisting Machinery Co., Cleveland; the Detroit Hoist & Machine Co., Detroit; the Euclid Crane & Hoist Co., Euclid, O.; the Franklin-Moore Co., Winsted, Conn.; the Link Belt Co., Philadelphia; the Northern Engineering Works, Detroit; the Roeper Crane & Hoist Works, Reading, Pa.; Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.; Sprague Electric Works, New York City; and the Yale & Towne Mfg. Co., New York City.

Grinding Reduces Losses Incurred From Surface Defects

TO REMOVE surface defects from the billets from which tool steel is produced, the Ludlum Steel Co., Watervliet, N. Y., resorts almost entirely to the grinding method described on page 1690 of THE IRON TRADE REVIEW of June 26. It is estimated by the company that prior to the installation of the grinding machines, the average losses incurred from surface defects in alloy steels, and, particularly, high-speed steel, amounted to slightly more than 61 per cent of the heat. That is, for every ton of high-speed steel melted, only 750 to 800 pounds were shipped. Since the company installed grinding machines, the loss due to surface defects has been so reduced that it now is possible to ship 75 per cent of each ton melted. In addition, the resulting product has a better surface than was possible before the grinding method was adopted. The company now has 60 billet grinding machines working continuously, and both alloy and carbon steels are ground after each operation so as to remove all surface defects as they appear. A battery of these grinders is shown below.



Strike Chiefs Held Most to Blame

Senate Committee Declares Responsibility for Walkout in Steel Industry Rests With Gompers, Fitzpatrick, Tighe and Foster—"Wages Satisfactory, Hours Too Long"—Industrial Commission and Americanization Urged

WASHINGTON, Nov. 11.—Recommendations for legislative action made by the senate subcommittee on education and labor in its report on its investigation of the steel strike call for the establishment of a commission similar to the war labor board, enactment of the Americanization bill reported favorably about two weeks ago; better naturalization laws and passage of a law dealing with those who would destroy the American government. A bill for the last named purpose already has been prepared by Senator Sterling and is before the judiciary committee. In addition to these recommendations, the commitee suggested the adoption of the straight 8-hour day in the steel industry.

The subcommittee which made the report consists of Senator William S. Kenyon, chairman; Senator Thomas Sterling, Senator Lawrence C. Phipps, Senator Kenneth McKellar and Senator David I. Walsh. While the senate resolution providing for the investigation did not request the committee to suggest remedies, the committee decided to do so.

While the committee acknowledges that it had differences of opinions on some of the broader issues involved it was in substantial agreement, making possible a unanimous report. It was thought for a while that Senator Walsh, a strong supporter of organized labor, might file a minority report.

The report severely criticizes William Z. Foster, secretary of the steel strikers' committee, for his radical views, the committee expressing the belief that they have not changed much from time when he advocated syndicalism. Foster was urged to withdraw from leadership in the strike.

The report also contains strong attacks on all red agitators, many of whom have been extremely active in connection with the strike; mild rebukes for Samuel Gompers, president of the American Federation of Labor, for supporting the strike; a suggestion that Judge E. H. Gary, chairman of the United States Steel Corp., would have done well to have received members of the strikers' committee, except men with such views as those held by Foster, and criticism of both sides for not being willing to heed the request of President Wilson to postpone the strike. The question of wages paid in the steel industry, it was stated in the report, was not involved in the controversy and few of the witnesses examined at the hearings made any complaint as to wages. Working and living conditions of employes are approved and praise is given to employers for taking such good care of their workmen in these respects.

Referring to Judge Gary, the committee says that in refusing to receive a committee claiming to represent the men in the employment of the corporation, "he could well have objected to receiving a man with the views of Mr. Foster," but explains he did not put his refusal on that ground, "but put it rather on the ground that the men did not represent the employes, though himself conceding that 10 to 15 per cent of the mills were probably unionized."

The committee explained that it seems that "even 10 to 15 per cent of the men had the right to select their own representatives and present their grievances to the steel company (meaning the Steel corporation) and that they should have been heard. Judge Gary could have announced to them, as well as he did afterwards in his letters to the presidents of his subsidiary companies, that he would not deal with representatives of the unions, and that he considered the question one of open and closed shop; likewise, it seems to us unfortunate that Mr. Gary did not answer the letter of Samuel Gompers, the accredited representative of the American Federation of Labor. Such things do not tend to harmonize conditions but rather to accentuate them."

Criticism is made of Mr. Gompers at several points in the report, once with regard to responsibility for the strike. The committee states bluntly that the letter of the steel strike committee, Chairman John Fitzpatrick and others, to President Wilson under date of Sept. 19, saying the strike could not be prevented, contains at least one statement that is false, wherein it declares "seven of the organizers and members had been brutally murdered in cold blood."

While the committee says responsibility for the strike rests primarily with Fitzpatrick, M. F. Tighe and Foster, it is pointed out that sole responsibility can not be entirely charged to them, but holds Gompers responsible also for having decided at the meeting of the 24 responsible leaders of the unions involved on Sept. 19 that further delay would result in failure to hold the men from striking.

"Wages Satisfactory"

THE question of wages is not involved in the controversy," says the senate committee in its report on the steel strike. "Few of the witnesses examined made any complaint as to wages. Some of them did contend that they should have 12-hour pay for 8-hour work, but most of them, while striking for an 8-hour day, claimed only a fair living wage. It is the opinion of the committee that, broadly speaking, the employes of the steel industry at the time of the strike were fairly well satisfied with the wages received, and that such question was not persuasive at all in any consideration of a strike.

"It may also be said that most of the men speak highly of such homes as are furnished by the company. There is undoubtedly great need of more homes to be sold to the men in order to encourage home owning. They rent these homes at very reasonable prices, and the general condition of these homes seems fairly good.

"We find also little complaint as to lack of safety appliances, as to improved machinery, or as to conditions in general outside of the long hours of work. In encouraging and assisting its employes to become owners of its stock; in guarding its employes against accidental injuries; in caring for the sick; and in sanitary precautions generally the work of the United States Steel Corp. at the present time is in the main admirable, and in refreshing contrast to the shortsighted selfishness that still persists in many manufacturing concerns."

Taking up the causes of the strike, the report says that the underlying cause is the determination of the American Federation of Labor to organize the steel workers in opposition to the known and long-established policy of the steel industry against unionization. In this connection attention is called to the claim of the steel employers that the object of the organizers in unionizing the shops was to bring about a closed shop and that a closed shop means lessening of production. With Judge Gary, the committee says, this seems to be the most important proposition.

This cause, the report points out, was seized upon by some radicals in the American Federation of Labor to elevate their power in that organization. It is stated that were it not for the attempt to unionize the mills the strike in all probability would not have occurred. Various reasons for the strike as given by both sides are set forth and it is declared that Judge Gary lays down as the fundamental issue the question of the open or closed shop, while Fitzpatrick and Gompers contended that the open or closed shop is not in issue.

Regarding its finding of the right of men to select their own representatives to present their grievances, the committee makes an exception of men holding such views as those of Foster. The committee agreed the principle of collective bargaining is a right of men working in industry and declares that collective bargaining has generally been recognized as a right of labor and is apparently one of the effective methods that labor has to secure its rights.

"The right of collective bargaining, however, should not be employed for the purpose of discriminating against any class of workmen whether union or nonunion men," the report states.

The committee proceeds to say that there may be two kinds of closed

Recommendations Made by Senate Committee

FIRST. That a board or commission somewhat similar to the war labor board should be established. This board to have power of compulsory investigation; to have large power in mediation and conciliation and recommendations; not to the extent of compulsory arbitration, but before this board controversies could be heard, investigations made and decisions rendered. That pending said investigation and decision no strike should be declared provided no employes are discharged for taking part in the controversy and provided further that all opportunity for the employer to take advantage of the delay has been removed; and recommendations made to industry in relation thereto; that the board should be in the nature of a federal industrial commission, seeking at all times not only to settle pending disputes but to help bring about a more harmonious condition between employer and employe.

"A just decision of said board would be indorsed by the public and public sentiment is powerful enough to enforce the findings of such a commission. There is good sense enough among the great body of the American people to bring about an adjustment of these difficulties. The great body of the American people believe in a liberal industrial system, in living wages for men employed in industry; wages that will permit them to raise their families according to the standards of American life and to enjoy recreation from hard, grinding toil; but the American people have no patience and will have none with any leadership that seeks to accomplish its purposes by barbarous methods of freezing or starving the American people. They do not propose to freeze and they do not propose to be starved, and they do not propose that a few men in this country shall have the power to bring about such a condition of affairs. On the other hand, they are as much opposed to an autocracy of capital. Capital must be reasonable likewise. The employer must recognize that there is a new spirit in the world; that labor is not content to be merely a hewer of wood and a drawer of water, and that labor is fighting for a status in industrial life, and it is not concerned with wages.

Why cannot capital and labor co-operate and establish between themselves the doctrine of the square deal; cease to be suspicious of one another, join together and act together for the good of each other and for the well-being of the public at large? It is the hope of the world that military warfare has ceased. Have we not reason also to hope and insist that industrial warfare may cease? It cannot without a spirit of mutual co-operation between capital and labor.

SECOND. *That an Americanization bill be passed by the congress which will provide for the effective education and Americanization of the illiterate foreigners and native illiterates in this country. A bill of this kind has already been reported out of this committee and your committee urges an early adoption of the same by congress.*

THIRD. *It is observable in the strike districts that the men who own their homes are more contented and more interested in the affairs of the country. One real antidote for unrest in this country is home ownership. It is difficult to plant the seeds of revolution in the minds of those who own their own homes. The work of the steel companies in building homes has been most commendable. It is to be hoped that such work will be enlarged and carried on by them. It would not be out of place to suggest that it would be most commendable for the steel companies to use some of their large profits in extending the work of home building. The question of aid and encouragement in the work of assisting townspeople of small means in securing their own homes in some such way as the farmer has been aided under the federal farm loan act is worthy the serious consideration of congress.*

FOURTH. *There should be a change in our naturalization laws which will require the naturalization and some education of all foreigners, at least to the extent of speaking the American language; that they should acquire such knowledge within a period of five years after they arrive, with proper limitations upon further immigration, giving to those already here a certain period of time in which to become naturalized, and if this is not done then deportation should follow.*

FIFTH. *An effective law should be passed dealing with anarchists, revolutionists, and all who would destroy the American government. There are too many Americans who love their country and are willing to give their life for it and who intend that all the doors of American opportunity shall remain open for the children of today and the children of tomorrow to permit a few thousand anarchists, revolutionists, and I. W. W's to keep on with their nefarious propaganda to destroy the government.*

shop, as it understands it, a shop closed against men because they do not belong to a union and a shop closed against union men. Both of such closed shops are declared to be unamerican, but it is stated that the testimony did not disclose either class of closed shop existing in the steel industry. The committee says that no body of men has the right to stop other men from working because they do not belong to a union, nor have employers any right to prevent men joining unions.

"The doctrine of collective bargaining as generally understood is not recognized in the steel mills," it is stated, "and this has caused considerable dissatisfaction upon the part of many of the steel workers. The question of the open and closed shop would not be involved except indirectly until in fact there was a substantial unionization of the plants. However, Judge Gary takes the position that the organization and unionization of the plants of necessity results in the closed shop. The difficult proposition in this matter continually arising is this: Does collective bargaining through union representatives result in a closed shop? If the unions would recognize the right of men to work and be treated as fellow workers even though they do not belong to the unions, it would not of necessity result in a closed shop. The question is one of great difficulty."

Justifies Complaints of Long Hours

The committee says that testimony and study of the situation leads it to the conclusion that while there were legitimate complaints as to long hours of service, that the strike has been seized on by some I. W. W.'s, bolshevists, and anarchists to further their own interests, and that their influence in the strike has been powerful.

The report takes up complaints that the strikers were denied the right of free speech, that officers of the law were brutal, and that the treatment of the strikers in the courts does not accord with the high ideals of American democracy.

"It may be open to question," says the report, "whether permits to hold meetings should have been denied to the workers, and while generally the orders denying permits were obeyed, yet in most instances where clashes occurred or arrests made it was because of attempts to hold meetings after the request for a permit had been denied."

Freedom of speech, it is stated, does not mean unbridled license, but it is added that where a strike is carried on in a peaceful way the least possible amount of restraint and the largest freedom of speech where meetings are conducted in an orderly way "is certainly to be desired in the American republic." Officials, it is stated, should not hesitate to prevent meetings called for the purpose of advocating the overthrow of the government.

The report says there is a third party to the strike, "the great public" and that no one should be permitted to unjustly cause the great body of the public to suffer. Strikes are declared to be a relic of barbarism, "but at present strikes are apparently the only way for labor to secure even its just demands if employers refuse to grant them or submit them to arbitration." It is declared not to be to the credit of the nation that no way has ben devised to settle disputes outside of strikes. Somebody has to pay the bill, it is asserted, and in every instance it is the public.

"The public," says the report, "has a right to demand that capital shall not arrogate to itself the right to determine in its own way these industrial questions, and it is the same as to labor, and the duty is upon the congress as representing the people to provide some means for the adjustment of these difficulties. This was done during the war through the war labor board and their action was fairly satisfactory."

Regarding the 8-hour day, the report states:

"The evidence disclosed that a percentage of the men work eight hours; a larger percentage 10 hours, and a lesser percentage 12 hours, although there is dispute in the evidence as to this proposition.

"Judge Gary testifies that 34.8 per cent work eight hours; 39.40 per cent 10 hours; 26.52 per cent 12 hours. We believe that a large majority of the men actually working in the mills work 10 and 12 hours per day. While there are spells of rest here and there through these long periods of 10 and 12 hours, yet the fact remains that the general rule is either a 10 or 12-hour day, during which the men are on duty.

"There has been some improvement in the steel industry in this respect, for some years ago a large percentage of the labor worked 10 and 12 hours a day and seven days in the week. While the claim is made that the seven-day week has been abolished except in emergencies and the men who work on Sundays are allowed one week day for rest, the evidence on this point is conflicting.

"We believe where continuous operation is absolutely necessary the men should at least be allowed one day's rest in each week. The work in the steel mills is such that men must be constantly in attendance and the work does not stop. To change to an 8-hour day would mean three shifts instead of two. The Steel company claims that it is impossible to get the men. And further, that the men want to work more than eight hours in order to get the additional pay, there being a basic 8-hour day as far as pay is concerned, and time and a half for all time over eight hours.

"It is true some of the workers testified that they wanted to work longer in order to get the increased compensation, but most of them seemed anxious for an 8-hour day with a living wage. The policy of working men 10 and 12 hours per day in the steel mills is, it seems to the committee, an unwise and unamerican policy. There are many hundreds of thousands of employes in the steel mills, a considerable portion who can not read, speak, or write the English language. It is claimed by the Steel company that a very large proportion of those who are out on the strike are foreigners, which is defined in the evidence to be nonenglish-speaking people. The testimony sustains this contention.

"The 8-hour day is involved in the solution of this question. These nonenglish-speaking aliens must be Americanized and must learn our language, so the question of a reasonable working day is involved in the question of Americanization. Men cannot work 10 and 12 hours per day and attend classes at night school. It is the general consensus of opinion of the best economic writers and thinkers that the establishment of 8-hour-day systems does not diminish production. Nor do we think the claim made that an 8-hour day is impossible because the workmen can not be secured for three shifts is tenable. An 8-hour day with a living wage that will enable men to support their families and bring up their children according to the standards of American life ought to be a cardinal part of our industrial policy and the sooner the principle is recognized the better it will be for the entire country.

"The public also has an interest in the problem of an 8-hour day. Fatigue in human kind is a breeder of unrest and dissatisfaction."

"Federation Made Mistake"

Regarding the radicals in the American Federation of Labor, the report states:

"The committee is of the opinion that the American Federation of Labor has made a serious mistake and has lost much favorable public opinion which otherwise they would possess by permitting the leadership of this strike movement to pass into the hands of some who heretofore have entertained most radical and dangerous doctrines. If labor is to retain the confidence of that large element of our population which affiliates neither with labor organizations nor capital, it must keep men who entertain and formulate unamerican doctrines out of its ranks and join with the employers of labor in eliminating this element from the industrial life of our nation. Unquestionably, the United States Steel Corp. has had the support of a larger and of a wider circle in the country during the strike because of the character of some of the strike leadership. Labor organizations should not place the workingmen in the position of any sympathy with unamerican doctrines or make them followers of

any such leadership. Such practice will result in defeating the accomplishment of their demands.

Take the case of Mr. William Z. Foster. Mr. Foster is secretary to the committee composed of the 24 international unions managing this strike. His duties were substantially to act as secretary of the strike, to look after the organization of workers, and to handle the finances. He is in the office at Pittsburgh and seems to be the general manager of the strike. While it is claimed that he has had little to do with it, it is quite apparent to the committee that he has more to do with it than any other man in its actual management. He is one of the signers of the letter to the President and to Mr. Gary. He appears to be a man of excellent education, a thinker, and prolific writer. It is a source of regret to find that a man born in America should have written such doctrines as are set forth in his 'syndicalism' and his more recent publications. At the time of his writing 'Syndicalism' he was wholly antagonistic to American labor unions, and especially to the American Federation of Labor. Soon after, however, he seems to have come to the conclusion that he could accomplish his aims and purposes better by boring from within, as he expressed it in one letter to *Solidarity*, the I. W. W. publication.

Advocated Violence in Strikes

"Carrying out his doctrine of 'boring from within' he became active in organized labor work and soon became a leader. He advocated violence in strikes. He charged the American labor movement was infested with hordes of dishonest officials. He was closely associated with Mr. Margolis, present attorney for the I. W. W.'s at Pittsburgh, who has been behind this strike with all of his power; with Vincent St. John, formerly secretary to the I. W. W.'s, and the evidence convinces the committee there has been little change of heart on the part of Mr. Foster and that he is now in the full heyday of his power in the 'boring from within' process.

"Such men are dangerous to the country and they are dangerous to the cause of union labor. It is unfair to men who may be struggling for their rights to be represented by such leaders. It prevents them from securing proper hearing for their cause. If Mr. Foster has the real interest of the laboring man at heart he should remove himself from any leadership. His leadership injures instead of helps. If he will not remove himself from leadership the American Federation of Labor should purge itself of such leadership in order to sustain the confidence which the country has had in it under the leadership of Mr. Gompers."

Radicals Seek Power By Strike

Conclusions drawn by the committee follow:

"That the laborers in the steel mills had a just complaint relative to the long hours of service on the part of some of them and the right to have that complaint heard by the company.

"That they had the right to have the representatives of their own choosing present grievances to the employers. Some members of the committee believe that more friendly relations would be maintained between employer and employe if the representatives who are chosen to present grievances to the employers were actually working in the industry and that such representatives ought not to be from outside of the industry.

"That behind this strike there is massed a considerable element of I. W. W.'s, anarchists, revolutionists, and Russian soviets, and that some radical men not in harmony with the conservative elements of the American Federation of Labor are attempting to use the strike as a means of elevating themselves to power within the ranks of organized labor."

New Labor Conference's Delay Puzzling

Washington, Nov. 11.—The official promise of a committee of 15 to constitute or plan for another industrial conference to take up the work of the first which failed through labor's play for power has injected another factor into the already perplexing industrial situation. This commitee is said to have been named by the President, but not announced, thereby giving room for more speculation and accentuating uncertainties.

Why the committee has not been announced is, of course, the puzzling point. Several explanations have been offered and it has even been suggested that the committee not only has been selected but notified privately and now may be at work framing a program for public consideration after industrial strife has subsided.

Another reason assigned to the delay in the announcement is that the President wants to wait until he is able physically to take part in the proposed conference. Presidential leadership might harmonize the factions.

More Companies Heard on Basing Point

WASHINGTON, Nov. 11.—More written statements are being received by the federal trade commission in regard to the basing point case, most of the recent ones being opposed to the trade custom. Many of those opposed are members of either the Western Association of Rolled Steel Consumers or of some other organization already committed to the abolition of the practice.

The commission yesterday issued a supplement to the printed booklet issued 10 days ago giving the views as received by the commission. All the statements in the supplement are in opposition to the single basing point. Because of the continued receipt of views, however, the commission will issue no more supplements, but the subsequent statements are on file with the commission and may be seen there. They will be used when the case is considered Dec. 2.

Many Views Are Published

The views published in the supplement are by the joint committee of civic organizations of Duluth, which submitted an amended statement; Howard Stove Co., Ralston, Neb.; Baker Mfg. Co., Evansville, Wis.; Niles & Scott Co., La Porte, Ind.; Gehl Bros. Mfg. Co., West Bend, Wis.; Parsons Co., Newton, Iowa; Golden Foundry & Machine Co., Columbus, Ga.; engineers department of the city of Minneapolis; department of public works, St. Paul; department of public works, Chicago; department of public improvements, Omaha; Brown-Rogers Co., Winston-Salem, N. C.; Towers & Sullivan, Rome, Ga.; the International Shipbuilding Co., Gulfport, Miss.; Austin Mfg. Co., Chicago; Helena Hardware Co., Helena, Mont.; and the Puffer-Hubbard Mfg. Co., Minneapolis.

Subsequent but unpublished views have been received from the following opponents of the basing point: Rockford Bolt Co., Rockford, Ill.; Federal Sign System, Chicago; F. Meyer & Bro. Co., Peoria; Weller Mfg. Co., Chicago; Chicago Steel Car Co., Harvey, Ill.; Salisbury & Satterlee Co., Minneapolis; La Crosse Tractor Co., La Crosse, Wis.; Harris & Reid Mfg. Co., Chicago; Louden Machinery Co., Fairfield, Iowa, and Stewart-Warner Speedometer Corp., Chicago.

In favor of the basing point are the W. J. Holliday Co. and the Indianapolis Bolster Spring Co., both

of which are located in Indianapolis.

So far 22 firms or associations have signified their intention of having representatives here Dec. 2 when the commission begins hearings. Ten others have notified the commission they will be represented indirectly.

Continues Fight to Make Labor Responsible

Washington, Nov. 11.—Repeal of a provision in the deficiency appropriation act exempting labor and farmers' organizations from investigation and prosecution for violation of antitrust law is proposed in a bill introduced last week by Senator Edge, New Jersey. The deficiency appropriation bill was signed by President Wilson Nov. 4.

The specific provision of which repeal is sought by Senator Edge is a proviso exempting labor and farmers' organizations from investigation and prosecution under a special appropriation of $200,000 allowed by the act "for the enforcement of antitrust laws," or combinations in restraint of trade. When the bill was considered in the senate, an amendment to strike out such exemption was defeated by a vote of 28 to 31.

Senator Edge said that judging from hundreds of communications he has received he is convinced that a large majority of the people are in accord with his opposition to class legislation.

Board Named to Study Defense Problems

Washington, Nov. 11.—An interdepartmental board of men intimate with war-time requirements of the military and naval departments has been created by the council of national defense as the first step in its peace-time operation. The board consists of Maj. Gen. George H. Burr, assistant chief of staff, director of purchase, storage and traffic, war department; Rear Admiral William Strothers Smith, on special duty, navy department; Van H. Manning, director, bureau of mines, department of the interior; L. M. Estabrook, chief bureau of crop estimates, department of agriculture; Dr. W. S. Stratton, director, bureau of standards, department of commerce, and Royal Meeker, commissioner of labor statistics, department of labor.

Grosvenor B. Clarkson, director of the council, is of the opinion that the creation of the board is a progressive step toward a scientific and economical consideration of the national defense in all of its various phases. It is expected to check unnecessary duplication of activity on the part of several departments.

"The task of the interdepartmental board is essentially a studious, constructive and planning nature," said Director Clarkson. "The present research staff of the council, which for more than a year has been collecting information and making reports on domestic and foreign reconstruction and readjustment problems, will serve as a nucleus for permanent research work on national defense matters."

Belgium Bids for Surplus American Equipment

Washington, Nov. 11.—The Belgian government has offered to purchase from the war department 197 locomotives, Belgian consolidated type; 24 locomotive cranes, 1000 high side gondolas, and 10 gasoline locomotives for $6,028,000. The negotiations are in progress in connection with the war department's disposal of surplus property.

The value of 27,652 contracts suspended by the department up to Oct. 18 is estimated at $3,883,802,000, an increase of approximately $45,000,000 over the estimate of the previous week. In the last two weeks the value of suspended contracts increased more than $200,000,000. As a result of this, the per cent liquidated is less than previously reported, 54.6 per cent for the week ended Nov. 1, as compared with 55 per cent for the previous week and 56 per cent for the week ended Oct. 11. The total number of contracts liquidated up to Nov. 1 was 22,378, with a value of $2,119,156,000. The per cent of liquidations of the total suspensions was 80.6, representing 54.6 per cent in value. Of the 22,378 contracts liquidated, the saving effected was $1,864,742,000. It cost $253,414,000 to secure the relinquishment of these contracts. In addition, partial payments in liquidation on other contracts amount to $70,351,000, making a total of $323,765,000 paid in liquidation up to Oct 18. There are 5274 contracts remaining to be liquidated.

Offer Employes Stock and Vote in Company

Profit sharing is being tried out by a number of companies in the iron and steel and shipbuilding industries of Great Britain, one of the latest experiments in this direction being made by W. Somers & Co., of Haywood Forge, Halesowen, manufacturers of marine forgings. The company which employs 700 persons and which never has had a strike offers 50,000 participating preferred shares at $2.40 each, entitling the holders to a fixed cumulative dividend of 6½ per cent, the dividend being payable before a dividend is paid to the ordinary shareholders. After the latter have received their dividend, it is said the employes holding the preferred shares will share on a pro rata basis with the holders of the ordinary shares in any further distribution. Employes holding shares will be permitted to vote at the meetings of shareholders. The company has explained that the plan will have no influence in the payment of wages.

Trade Unionism Will Fail, Says Schwab

Chicago, Nov. 11.—Charles M. Schwab, president of the Bethlehem Steel Corp., speaking before the Pennsylvania Society of Chicago recently, said he is a friend of labor but the opponent of trade unions. He also claimed that American workingmen have not received their just share of the profits of their labor during the past 25 years.

"Unionism," he said, "devises artificial means of restricting the productiveness of the workingman and will ultimately fail of itself. Efficiency means greater production and unionism opposes efficiency. One reason why German efficiency became a byword was because the German workman had learned to produce a full day's work for a day's pay. Some other means than unionism must be invented before full justice can prevail."

Company To Sell Electric Mine Equipment

For the purpose of carrying on a manufacturers' agency to sell and erect for mines such units as power plants, substations, ventilating fans, pumps, locomotives, etc., the Kallmerten & Warner Electric Co., 120 Lovell street, Charleston-Kanawha, W. Va. has recently been incorporated.

Capital stock is $10,000 and the officers follow: President and treasurer, G. E. Warner; vice president and general manager, O. W. Kallmerten; secretary, Ira W. Belcher. The company also sells transformers, motors, small light plants, lamps, etc., and is equipping its shop with machinery to make armature coils, rewind and rebuild motors, armatures, field coils, transformers, etc.

Shipments Low

In Refractories and October Was Smallest Month—Situation Improving

Pittsburgh, Nov. 11.—Shipments of refractories in October, due to strike conditions at the steel plants, were the smallest of any month in some time. Manufacturers shipping to steel plants where the bricklayers were all organized and where the response was quite general to the strike call of Sept. 22, were especially hard hit, and even the companies whose business is with iron and steel manufacturers employing nonunion bricklayers, suffered heavily in the matter of specifications. Shipment by some of the latter fell as low as

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK (First Quality)	
Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 41.00
Illinois-Missouri	30.00 to 40.00
FIRE CLAY BRICK (Second Quality)	
Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00
SILICA BRICK	
Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50
MAGNESITE BRICK (Per Net Ton)	
9 x 4½ x 2½	$80.00 to 85.00
CHROME BRICK (Per Net Ton)	
9 x 4½ x 2½	$80.00 to 90.00
BAUXITE BRICK (Per Net Ton)	
55 per cent.	$ 40.00 base
76 per cent.	100.00 base

35 per cent of capacity, while some plants, notably those in Ohio, found it necessary to suspend a part of the time because of a lack of shipping instructions.

Conditions show some improvement this month, for with the breaking up of the steel plant strike and the return to work of a number of the men who have been out, steel plants and blast furnace interests are in better shape to take in brick, both for early use and for stocking. Most of the larger makers of refractories have their own coal mines and are unaffected by the coal miners' strike, but with the smaller companies this is not the case although practically all of them have some reserve supply of fuel and operations will not be affected unless the tie-up of the mines is protracted. Some difficulty is being experienced in getting a supply of open-top cars because of the placing of this equipment in the coal service.

Prices of all kinds of refractories are holding at the levels of the past few months and the market can be described as firm, especially on magnesite brick, production of which is restricted because a car shortage is holding up the movement of magnesite from the Far West.

British Exports Small in Tonnage, High in Value

The British board of trade returns for September show that Great Britain is making slow recovery in the export department. With a few exceptions, the iron and steel industries made a poor showing, especially when values are considered. The enormous increase in value as compared with the increase in tonnage is significant.

During September the value of British imports was $713,400,355, or 51.61 per cent more than the total for the same period last year. British exports for the month totaled $319,201,896, an increase of 65.62 per cent. For the nine months the value of imports was $5,599,715,793, an increase of 20.35 per cent. Exports for the nine months totaled $2,598,472,889, an increase of 44.68 per cent.

Iron and steel and manufactures thereof exported by Great Britain in September amounted to 188,906 tons compared with 108,794 tons in September, 1918, while the value was $26,103,576 against $12,659,222. For the nine months the quantity was 1,596,315 tons, against 1,237,844 tons, and the value $214,147,944 against $133,361,980. The quantity of coal exported was 2,677,189 tons, against 2,792,742 tons exported in September, 1918, and in the nine months 7,732,919, against 4,552,799.

Mine Officers to Meet

Mine superintendents and officials of the country will meet in Pittsburgh on Dec. 3 and 4 to hold a mining institute at which operating and scientific problems of the industry will be thoroughly discussed. The speakers include R. Dawson Hall, editor of *Coal Age*, New York; Dr. G. H. Ashley, state geologist, Harrisburg; Dr. A. A. Hammerschlag, president of Carnegie Institute of Technology; Dr. John A. Brashear, Harry Kreisinger, fuel engineer of the bureau of mines, Pittsburgh, and Prof. H. C. Ray, of the University of Pittsburgh.

Australian Steel

Output Retarded by Seamen's Strike—Operations Start at New Works

(*Special Correspondence*)

Newcastle, N. S. W., Australia, Oct. 14.—Operations have commenced at the Australia Nail Co.'s new works at Waratah. The company's former operations were confined to Melbourne, but the new works at Waratah are of far greater magnitude. The company installed its first wiredrawing plant in Melbourne several years ago for use in connection with its nail works. Owing to the importation of cheap German-made wire in 1913 many local mills were closed down, but in 1915 the works were enlarged and operations again started. Until 1918 the company imported wire rods from America. The new works have a floor area of over three acres.

The report of the Newcastle Steel Works for four weeks ending Aug. 20 states that production was seriously retarded owing to the seamen's strike. The by-product ovens produced 2165 tons of coke, 20,764 gallons of tar and 28 tons of sulphate of ammonia. Production of ferromanganese amounted to 365 tons. The open hearths were shut down for repairs. The blooming mill was shut down on Aug. 8. The rolling and finishing mill rolled 100 tons of plates. The 18-inch merchant mill produced 2487 tons; the 12-inch mill 606 tons, and the 8-inch mill 276 tons.

The Newcastle works of the Broken Hill Proprietary Co., also was affected considerably by the strike. In the four weeks ending July 23 the production was as follows: Coke, 8305 tons; tar, 101,289 gallons; sulphate of ammonia, 130 tons; pig iron, 6835 tons; ferromanganese, 366 tons; steel ingots, 9914 tons. The blooming mill produced 10,055 tons; rolling and finishing mill, 6692 tons; the 18-inch merchant mill, 2344 tons; 12-inch mill, 616 tons and the 8-inch mill, 145 tons.

The city council of Sydney has accepted the tender of Babcock & Wilcox, Ltd., for a boiler house with chain grate stokers, at a cost of £220,438.

Recently the commonwealth government obtained an option on the iron deposits of Blythe river, Tasmania, and experts were appointed to estimate the possibilities of the field and report on the subject of its exploitation. It is now announced that the government will not exercise the option to purchase but will leave the mine which is now opened up in private hands.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

PAUL B. MORGAN, president and treasurer of the Morgan Construction Co., Worcester, Mass., has been appointed chairman of the executive committee of the alumni of Worcester Polytechnic institute, Worcester, Mass., having in charge the raising of a $1,500,000 endowment fund. Other members of the committee are Maj. Victor E. Edwards, vice president of the Morgan Construction Co.; George I. Rockwood, president of the Rockwood Sprinkler Co., of Massachusetts; Aldus C. Higgins, treasurer and general counsel of the Norton Co., and Lieut. Com. E. Howard Reed, vice president of the Reed & Prentice Mfg. Co., all of Worcester. R. Sanford Riley, president of the Sanford Riley Stoker Co., Worcester, has been appointed chairman of a committee to work with New England industries in connection with the campaign.

Eric H. Fors, a mechanical engineer for the Morgan Construction Co., Worcester, Mass., will sail from New York on the S. S. BALTIC of the White Star line, Nov. 15, for Liverpool, whence he will go to Sheffield, Eng., to assist A. T. Bloom, another engineer of the company on several contracts secured by the Morgan Construction Co. since the war. He expects to be away a year.

J. G. Hallas has resigned as purchasing agent of the Duquesne Steel Foundry Co., Pittsburgh and Coraopolis, Pa. His successor is M. P. Emmerich.

Lyon Smith, formerly of Brookline, Mass., has been made superintendent of the York Ferroalloys Co., York, Pa.

Frank M. Welsh, formerly New York Resident manager of Hickman, Williams & Co., Inc., has become identified with Knapp & Baxter, New York City, export brokers.

Arthur Phillips recently resigned as metallurgist for the Bridgeport Brass Co., Bridgeport, Conn., to become assistant professor of metallurgy at Yale university.

Dr. C. J. Byrne, Worcester, Mass., has been appointed chief surgeon and medical director to supervise the four hospitals of the Clinton-Wright Wire Co., and Worcester and Spencer, Mass. Dr. J. P. Schneider will have charge of the same work in the Palmer, Mass., division, and Dr. C. W. Abbott in the Clinton, Mass., division of the company.

N. B. Folsom who for several years was assistant treasurer of the Brier Hill Steel Co., Youngstown, O., has been appointed treasurer of that company to succeed John Stambaugh.

Rolland C. Allen resigned recently as state geologist of Michigan and has been appointed vice president of the Lake Superior Iron Ore association, Rockefeller building, Cleveland.

Frederick K. Kett, who until recently was affiliated with the New York Shipbuilding Corp., Camden, N. J., has accepted a position with the Compania de Minas de Fierro las Truchas, Manzanillo, Mexico.

J. H. Nead, who during the war served as captain in the ordnance department of the army in this country and in France, has become affiliated with the American Rolling Mill Co., Middletown, O., as metallurgist.

E. Clyde Tousley, who resigned recently from the Ohio Steel Products Co., Niles, O., has accepted a position with the Cambria Steel Co., Johnstown, Pa. Mr. Tousley formerly was in charge of sales extension for the Trumbull Steel Co., Warren, O.

M. Davis, of the H. H. Robertson Co., Pittsburgh, presented a paper on "Roofing Materials for Industrial Plants," at the bi-monthly meeting of the civil section of the Engineers' Society of Western Pennsylvania, held at the Union Arcade auditorium, Tuesday evening, Nov. 11.

William B. Curtis ,who for the past few years specialized on sales of conduit for the Youngstown Sheet & Tube Co., Youngstown, O., has resigned to become president and treasurer of the Steelduct Co., a recently organized company with offices at 618 Dollar Bank building, Youngstown, O.

E. L. Messler, president of the Eureka Fire Brick Works, Mt. Braddock, Pa., has been placed in charge of the recently established office in Pittsburgh, 1507 First National bank building. Mr. Messler served as captain of the twenty-first engineers on the Meuse and other fronts in France, during the war.

Philip E. Wright, for many years sales agent for the pig iron output of the Thomas Iron Co. in the Philadelphia and New York territories, has terminated this connection, effective Dec. 31. Mr. Wright will retain his Philadelphia and New York offices and will sell Pennsylvania and Virginia irons. In addition, he will continue to sell foundry and furnace coke.

E. Arthur Tutein has been made exclusive sales agent in Philadelphia and New York territories for the Thomas Iron Co., Hokendauqua, Pa. His Philadelphia headquarters are in the Finance building, South Penn square, and the address of the New York office is 1419 Broad Exchange building, Broad street. Mr. Tutein will continue to represent the company in Boston with offices at 50 Congress street.

Eugene Schneider, head of the French trade mission now touring the country under the auspices of the chamber of commerce of the United States, will have occasion to recall the visit to Pittsburgh. Among other courtesies extended to the French steel manufacturer on the visit of the mission to that city, he was extended the freedom of the city by Mayor Babcock; was given the honorary degree of doctor of science of the University of Pittsburgh and will carry back a flag of the city of Pittsburgh to be flung to the breezes at the Creusot works.

M. E. Allen has become affiliated with the reopened Chicago office at 1228 Peoples Gas building, of the Federal Bridge & Structural Co., Waukesha, Wis. He is contracting engineer in charge of sales and formerly was in charge of sales for the Central States Bridge Co., Indianapolis. Later he was connected with the Baily & Allen Co. Mr. Allen's most recent connection was as assistant general manager of the Birmingham Steel Corp., Birmingham, Ala., where he was in charge of the construction of a large steel fabricating plant built and owned by the Mobile Shipbuilding Co., Mobile, Ala.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WILLIAM L. MOORHEAD recently resigned as vice president of the Duquesne Electric Mfg. Co., Pittsburgh, to become affiliated with Henry T. Parsons, to do a general machinery business under the name of Parsons-Moorhead Machinery Co., 309 Hostetter building, 237 Fourth avenue, Pittsburgh. Mr. Parsons has been doing a general machinery business in that city for several years.

Sir Thomas White, formerly Canadian minister of finance, has been elected a director of the Steel Co. of Canada, Ltd., Hamilton, Ont.

Stuart C. Lawson, formerly of Madison, Wis., now is identified with the sales department of the Otis Elevator Co., New York, as chief estimating engineer.

A. Brauer, automobile body designer for the Mansfield Steel Corp., Detroit, has been appointed assistant general manager in charge of production.

Frederick Baker has been placed in charge of the new Cleveland office in the Engineers' building, of the Poole Engineering & Machine Co., Baltimore.

F. E. Barth, formerly with the L. L. Harr Corp., New York, production engineer, has become office manager of the Graton & Knight Mfg. Co., Worcester, Mass.

D. B. Clark, district manager at 435 Stock Exchange building, Chicago, for the Cleveland Milling Machine Co., Cleveland, has had added to his territory the Indianapolis district.

Dr. Charles Proteus Steinmetz, chief construction engineer of the General Electric Co., spoke on the subject, "The Engineer and Education," before the Park club in Pittsfield, Mass., Nov. 6.

C. R. Norton, formerly general manager of the Packard Motor Car Co., Detroit, has become vice president and general manager of the General Top Co., Cleveland, a $1,000,000 company of which Christian Girl, of the Standard Parts Co., is president.

F. C. Wallace, of Pittsburgh, has been persuaded by the directors of the Canadian Locomotive Co., Kingston, Ont., to withdraw his resignation as president of that company and to continue in office. He has been granted a 6-months leave of absence.

W. C. Vrooman, who since last July, has been office manager for the Cleveland-Duplex Machinery Co., 1224 West Sixth street, Cleveland, has become identified with that company's sales force and will cover the western district of the city for the present.

Walter C. Chrysley, vice president and general manager of the General Motors Corp., and formerly president of the Buick Motor Co., Flint, Mich., resigned on Nov. 1. He recently returned from a visit to Europe with other General Motors officials after an investigation of foreign trade conditions.

R. J. Schuler, former purchasing agent for the Detroit Gear & Machine Co., Detroit, has been promoted to be supervisor of cost production and purchases. C. E. Messerschmidt, formerly assistant purchasing agent, succeeds Mr. Schuler as purchasing agent. L. E. Stevens has been appointed assistant purchasing agent.

William Gardner, formerly manager of sales of the rolls department, United Engineering & Foundry Co., Pittsburgh, was chosen second vice president at the company's recent annual meeting. Last week's issue incorrectly reported that K. C. Gardner had been promoted to the second vice presidency. He remains as general manager of sales.

Clarence E. Whitney, president of the Whitney Mfg. Co., Hartford, Conn.; William C. Fisher, secretary of the Russell Mfg. Co., Middletown, Conn.; Samuel Ferguson, vice president of the Hartford Electric Light Co.; John H. Goss, general superintendent of the Scoville Mfg. Co., Waterbury, Conn., and Sumner Simpson, president of the Raybestos Co., Bridgeport, Conn., have been nominated members of the board of directors of the Connecticut chamber of commerce, the election of which wil ltake place at the annual meeting in New Haven, Nov. 20.

D. V. Williamson, vice president of the Detroit Engineering society and formerly of the Detroit Gear & Machine Co., with Jervis B. Webb and T. M. O'Connell, of the Johns-Manville Co., have organized the Williamson-Webb Co., to represent the Geo. B. Bailey Co., of Chicago, and the Southwark Foundry & Machine Co., of Philadelphia, in Michigan. Offices are at 1646 Woodward avenue.

Clifton R. Hayes, manager of the Fitchburg Gas & Electric Co., Fitchburg, Mass., has been appointed by Charles H. Tenney & Co., Boston, engineers and managers of gas and electric light plants, engineering manager of their system from Maine to New Jersey, with headquarters in Boston. Mr. Hayes is president of the New England section, National Electric Light association.

B. E. Thompson, of Beaver, Pa., who is connected with the Rochester Clay Products Co., was elected president of the United States Cement Tile Co., Pittsburgh. Other officers follow: Vice president, H. N. Trimble, of the H. N. Trimble Steel Co., Pittsburgh; secretary, G. R. Mueller, Beaver, Pa.; treasurer, C. L. Kirk, Pittsburgh; superintendent, W. A. Ault, New Castle, Pa. The general offices of this company, formerly located at New Castle, have been moved to Pittsburgh, now being located at 2223 Farmers bank building. This company manufacturers a reinforced cement roofing tile.

Albert E. Newton, vice president and general manager of the Reed-Prentice Co., Worcester, Mass., and president of the National Machine Tool Builders association, has been elected a director and president of the Hobbs Mfg. Co., Worcester, manufacturer of paper box machinery, etc., to succeed Charles B. Manville, Pleasantville, N. Y., founder of the H. W. Johns-Manville Co., resigned. Other new officers of the Hobbs Mfg. Co. are Clarence J. Abbott, treasurer; and Roy J. W. Ashey. Mr. Abbott succeeds F. Stewart Andrews, founder of the Lancaster Wire Co., England, who recently resigned to return to New York. These three new officers also are to be elected to the same positions in the National Sales Machine Co., of which the Hobbs Mfg. Co. is a subsidiary.

Wind Up Season's Ore Activity

Shipments from Lake Superior District to End by Nov. 20, Earlier Than Anticipated, Due to Cold Weather and Congestion at Lower Lake Ports—Winter Work to Proceed on Extensive Scale—Millions Paid in Taxes

(*Special Correspondence*)

DULUTH, Nov. 10.—Mine operators and iron and steel interests in this district are optimistic regarding the outlook in the industry, despite the unsettled situation created by the steel strike. Business interests here are hopeful that labor difficulties will not interfere with the plans of the United States Steel Corp. for improvements and extension of plants during 1920. Rumors are current that arrangements are being made for proceeding with the building of the four plants for the manufacture of finished steel products, requiring an expenditure of more than $10,000,000, in accordance with the understanding Duluth business men had a year ago with E. H. Gary, chairman of the corporation.

The working force of men at the Minnesota Steel Co.'s plant here has been gradually increased during the last few weeks until it now numbers approximately 2000. Additional machinery has been installed in some of the departments and the tonnage of semifinished steel being shipped out to consumers in the southern part of the state is much larger than usual. A few months ago the force did not number more than 1000 men, and the products of the furnaces were accumulating.

Season's Output Estimated

Final shipments of ore are being made, and the season's tonnage is regarded as satisfactory. Some operators here estimate the season's shipments will be about 45,000,000 or 46,000,000 tons as compared with over 62,000,000 last year. The season is closing earlier than anticipated a few days ago as the result of cold weather, necessitating the employment of larger crews at the docks to thaw out the ore, and the congestion at lower lake ports, due to the inability of furnaces to accept the ore. The coal miners' strike was another factor making for a speedy termination of shipments.

The Oliver Iron Mining Co., however, decided some time ago to conclude shipments Nov. 15. The company's operations on the ranges were carried through steadily from the opening of the season with a force of approximately 12,000 men.

Beyond a few scattering loads to go down all the independents shipping from the docks at the head of the lakes have also closed down. E. D. Brigham, regional director of the railroad administration, fixes Nov. 20 as the date for winding up the shipping season.

From present indications winter work on the Mesabi and Vermillion ranges will be on a fairly extensive scale. It is intimated that the Oliver company will maintain a force of nearly 12,000 men at its various mines and that among others the M. A. Hanna & Co., the Republic Iron & Steel Co., the Interstate Iron Co., Tod-Stambaugh Co., Shenango Furnace Co. and the McKinney Steel Co. will employ substantial forces and do considerable stockpiling.

It has been announced here that M. A. Hanna & Co. have taken over the Judson mine at Crystal Falls, Mich., and will operate it next season. That property formerly was controlled by the Judson Mining Co., with headquarters at Chicago, and it was operated during the past season.

The Bourne location within the city limits of Hibbing is being built up with homes for the employes of the Bourne mine, operated by the Cleveland-Cliffs Co. Sinking of the shaft at the mine has been in progress for several months, and it is thought the mine will ship out a good tonnage next season.

Owners of manganiferous ore properties on the Cuyuna range are not discouraged over the dullness of the past season. Some of the mines are conceded to be capable of producing a marketable grade of ore. John A. Savage & Co. have faith in their Sagamore property on the Cuyuna range. It is estimated that the Winston-Dear Co. stripped 600,000 cubic yards of overburden at the Sagamore mine during the past season. Some shipments of the ore were made to eastern furnaces and encouraging reports regarding them are said to have been received. The Croft mine of the Cuyuna range also operated by John A. Savage & Co., shipped up to the end of the season, and development work is being continued.

The American Manganese Mfg. Co. shipped its final cargo of ore from its Cuyuna-Duluth mine last week, the season's shipments approximating 90,000 tons.

Tax payments aggregating $4,153,251.67 were made by the United States Steel Corp. and its subsidiary companies to the treasurer of St. Louis county at the end of last month. The remittance covered all the corporation's holdings in the country and was in payment of the realty tax for the last half of 1918. They covered taxes on mining lands in St. Louis county amounting to $4,016,773.88; land in Duluth, $72,875.86; the Universal Portland Cement Co.'s lands in Duluth, $9,473.68; Day mines, $30,318.93; the Morgan Park Co.'s lands, $20,365.90, and $3,443.52 for the Wolvin building in which are located the offices of the Oliver Mining Co., Universal Portland Cement Co., the Duluth, Missabe & Northern railroad, the Duluth & Iron Range railroad, and the American Bridge Co., all subsidiaries of the corporation. Another large check was from the Tod-Stambaugh Co., for $83,204.75, to cover taxes on properties it holds in St. Louis county.

Disapprove Tax Tonnage Proposal

The Hibbing Commercial club has taken the lead in connection with the campaign to acquaint the people of the state with the facts in regard to the tonnage tax proposal. R. W. Hitchcock, a member of the Minnesota state legislature, contends that the imposition of the tonnage tax would result disastrously to the mining interests by checking prospecting for ore. He states that if the tonnage tax is levied iron mining in northern Minnesota will be slowed down to such an extent that Hibbing's present $90,000,000 taxable assessment will be reduced to about $3,000,000, and that similar conditions will be brought about on every range.

The action of the Oliver Iron Mining Co. in transferring the old business portion of Hibbing to its new townsite at Alice continues to stir up opposition in some quarters.

Canadian Industry

Seriously Affected by Steel Strike in This Country—Supplies Short

Toronto, Ont., Nov. 10.—The automobile and agricultural implement industries, which for some time were very active, are seriously affected by the steel strike in the United States. They are extensive consumers of sheets and other lines and supplies are running short so that there is a general slackening of activity in these lines. Shipbuilders constructing vessels for Canadian merchant service have supplies of plates on hand for present requirements. Canadian mills rolling sheets, plates and bars are being speeded up to supply the demand. Mark Workman, president, the Dominion Steel Corp., hopes that the plate mill of the company will be in operation early in 1920, and states that the demand for steel products is improving.

The Ford Motor Co., of Canada, has purchased the plant of the Dominion Forge & Stamping Co., situated near its plant at Ford City, Ont. The Dominion plant has been engaged in production of fenders, sheet metal work and frames for the Ford company. The latter will now manufacture the parts, while the Dominion company will continue to turn out forgings and other parts in its second plant, which is not included in the purchase. An inventory of the plant sold is being taken and it is expected that the valuation will be between $700,000 and $800,000.

The directors of the National Steel Car Co., of Hamilton, Ont., have decided to recommend to the shareholders that a proposal made by a syndicate of New York capitalists, headed by R. J. Major, for the reorganization of the company, be accepted. The syndicate proposes to put up sufficient capital to operate the plant to capacity and to introduce more aggressive management. A general meeting of shareholders to consider the matter has been called for Nov. 12.

Furnace to Resume

Completion of repairs of machinery and plant of the Chattanooga Iron & Coal Corp., Chattanooga, Tenn., recently absorbed by the Iron Products Co., New York, within the next 90 days, will permit operation of the blast furnace which has been closed down since the signing of the armistice. W. W. Taylor, an engineer formerly with the Equitable Trust Co., New York, has been made vice president and manager of the property. W. R. Cooke will be the chief chemist. The Chattanooga company was organized in 1913 with an authorized common stock of $1,500,000 and preferred stock of $1,000,000. C. E. Buek was president and A. W. Chambliss vice president. The company owned and operated one furnace stack at Chattanooga, which was built in 1905-06. It had ore mines at Estelle, Ga., and bee-hive ovens at Dunlap, Tenn., both of which have been taken over. The annual capacity of the furnace is 75,000 tons.

The Domestic Coke Corp., Cleveland, will complete its 60-oven plant at Fairmont, W. Va., at an early date, says *West Virginia Mining News.*

Open New Office

J. F. Corlett & Co., Cleveland, mill representatives, have made arrangements effective Nov. 1, to open a Cincinnati office which will serve the territory in that city and vicinity. The Cincinnati office will be located at 607 First National bank building and will be in charge of W. B. Harris who up to several years ago was the sales agent of the Worth Bros. Co. in that district. J. F. Corlett & Co. are sales representatives of the Lukens Steel Co., the Eastern Steel Co., the Monongahela Tube Co., the Alan Wood Iron & Steel Co., the Champion Rivet Co. and the Franklin Steel Works.

Obituaries

DANIEL ASHWORTH, burgess of Crafton, Pa., who as a boy worked in the mills of the Jones & Laughlin Steel Co., and who from 1884 until 1901 was identified with the Carnegie Steel Co. as an expert on steam power, died at his home in Crafton, Nov. 8. He was born in Lancashire, Eng., 78 years ago, and came to this country with his parents when a lad of nine years. Early in life became identified with the glass industry, serving his apprenticeship as a designer of molds in the glass works of James B. Lyons & Co. He followed this business in various parts of the country until 1882, when he became superintendent of steam engine construction for the Lane & Bodley Co., Cincinnati. Returning to Pittsburgh in 1884, as a consulting engineer he did much work for the Carnegie Steel Co. He was one of the organizers of the American Society of Mechanical Engineers and a life member of that body. He also was a member of the Engineers' Society of Western Pennsylvania and the National Association of Steam Engineers. He served in both the army and navy during the civil war and had filled various public offices.

William A. Stanton, general manager of the General Refractories Co., formerly a resident of Pittsburgh, died recently in England, where he had gone on a business trip for his company.

George J. Capewell, founder of the Capewell Horseshoe Nail Co., died last week in Hartford, Conn. Mr. Capewell is best known as the inventor of machines for manufacturing horseshoe nails. He was born in England and came to this country in 1846 at which time he started in making firearms in Woodbury, Conn.

Harry W. Cobb, for several years employment manager of the Heald Machine Co., Worcester, Mass., until illness prevented his continuing, died in Memorial hospital in that city, Nov. 3. He was formerly connected with the Wyman-Gordon Co., Worcester.

Charles H. Holmes, at one time connected with the Hillman coal interests and lately general auditor of the Wheeling & Lake Erie railroad, died at his home in Cleveland, Oct. 31. He was a resident of Pittsburgh for a number of years and before going with the Wheeling & Lake Erie railroad was assistant to B. A. Worthington, vice president of the Wabash railroad, east of Toledo.

Edwin R. Stroughton, metallurgical engineer of Detroit, aged about 55, who was resident agent in Detroit for a number of years for M. A. Hanna & Co., Cleveland, died Nov. 7 in Atlantic City, following an illness from which he suffered for the past year. He was buried in Baltimore on Nov. 10. Mr. Stoughton also represented the Detroit Furnace Co., the Detroit Iron & Steel Co., and was a director in the Detroit Twist Drill Co.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

ANNOUNCEMENT is made that the AllisChalmers Mfg. Co., Milwaukee, has completed additions costing $3,600,000 to its main works at West Allis, Wis., which will be devoted exclusively to the manufacture of three models of farm tractors which the company has been producing for several years. The main tractor shop cost $3,000,000 and a foundry used only for making castings for this purpose represents an additional investment of $600,000. The capacity will be about 15,000 machines a year, but it is intended to limit the output to 7500 or 8000 during 1920, unless the demand is found to be of sufficient proportions to extend production. The Allis-Chalmers Mfg. Co. has been making tractors for about five years, but activity along this line was shut down by the war. The company has shipped tractors to France and to Portugal, and one order of six went to Tunis, Africa. The buyers of these have ordered 40 additional. The Allis-Chalmers Mfg. Co., with its present facilities, is regarded as the third largest manufacturer of tractors in the United States, being outranked only by the General Motors Corp. and Henry Ford & Son. Since the main tractor works of the General Motors Corp. are located at Janesville, Wis., the state of Wisconsin probably is the largest producer of tractors in the country.

* * *

ORDERS for steel mill bearings for the new 3-high 28-inch billet mill to be installed by the Bethlehem Steel Co., at its Saucon plant, Bethlehem, Pa., have been placed with the Hyatt Roller Bearing Co., New York. The mill is being built by the Morgan Engineering Co., Alliance, O.

* * *

FOR the purpose of reclaiming scrap metals, particularly aluminum, the Standard Metals Refining Corp., 216 to 220 West South street, South Bend, Ind., has been incorporated recently. All equipment has been purchased for the present but the erection of a new building is contemplated next spring. The officers are: M. L. Hurwich, president and treasurer; Richard Oglesbye, vice president and secretary, and C. C. Walters, general manager and metallurgical engineer.

* * *

CONTRACTS have been awarded by the Sioux Falls Metal Culvert Co., Sioux Falls, S. Dak., for the erection of a works addition, 90 x 130 feet. C. N. MacMillan, general manager, states that at this time the company is not in the market for any new equipment but probably will be at a later date.

* * *

HARROWS for southern agriculturalists will be manufactured at Tarboro, N. C., by a $100,000 company which will be organized by M. G. Mann, T. T. Thomas and M. S. Brown, the first named to be president, it is announced. The Eclipse Harrow Mfg. Co. is the name of the company.

* * *

AN AGREEMENT has been made by the Wellington Machine Co., Wellington, O., builder of clay-working machinery to manufacture an automatic brick dumper. This particular contract is one of the largest handled by the Wellington Machine Co. New employes have been put on and new machinery has been purchased.

* * *

THE Ajax Auto Parks Co., Racine, Wis., through L. B. Guffith, secretary, has advised that the company is building an addition to its plant, 65 x 120 feet, which will be used for the manufacture of pressed steel lifting jacks. Mr. Guffith further advises that new equipment, including punch presses and transmission apparatus, has been ordered.

* * *

EXPANSION of the business of the Eureka Fire Brick Works, Mt. Braddock, Pa., particularly in connection with products used by blast furnaces, it has been necessary to open an office in Pittsburgh, 1507 First National bank building, with E. L. Messler, president, in charge. Under the superintendency of H. Watson, the Mt. Braddock plant is running full and has been placed in shape to take care of the company's increasing sales.

* * *

OFFICES have been established by the Webb Electric Furnace Corp., at 36 Church street, New York City. It has taken over the manufacture and sale of the furnace developed by the Old Dominion Iron & Steel Corp., Richmond, Va., two of which have been in successful continous operation at the plant of the Old Dominion corporation for the past three years.

* * *

WORK has just been started on a concrete addition to the Ross-Meehan Foundry Co.'s plant at Chattanooga, Tenn. The building is an addition to the malleable iron department. It is of the most approved construction and is one story. The addition will increase the capacity of the department by 8000 tons a year. The present capacity is about 12,000 tons.

* * *

CAPITALIZED at $250,000, the Pierce Fuse Corp. of Canada, Ltd., Bridgeburg, Ont., recently was incorporated to manufacture renewable electric fuses. At present the company does not plan to erect a shop as it has rented ample space. Officers of the company are: President, W. N. Pierce; vice president, F. A. Myer, and secretary, B. C. Candee.

* * *

SINCE its quarters were found to be inadequate for its present business the Wappat Gear Works, Hamilton avenue, Pittsburgh, has increased its capital stock. Land has been acquired and a large modern building of steel and glass construction is being erected. The new plant which will be placed in operation some time during December, is located in Meade street, near Braddock and Penn avenues. With its present equipment and the additions to it which are being made, the Wappat company will be in an improved position to produce machine tools, special machinery and cut gears. F. W. Wappat is president and manager.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

OFFICIALS of the Prentiss Tool & Supply Co., New York, and Clayton O. Smith, formerly sales manager of the Norton Grinding Co., Worcester, Mass., are to take over the business of the O. S. Walker Co., Worcester, builder of grinding machines and magnetic chucks. Oakley S. Walker is president and treasurer, and Isaac F. Williams, secretary and manager, of the company. Mr. Walker has been ill for some time, which is the reason for the change in ownership. It is proposed to organize a new corporation. Among those interested in it are William F. McCarthy, manager of the Boston office of the Prentiss company, and Leon Goodspeed, of the New York office. Mr. Williams will remain with the new company.

* * *

INCORPORATION of a subsidiary of the Stromberg Electric Co., Chicago, known as the Stromberg Time Recorder Co. of Canada, Ltd., has been effected at Toronto, Ont. The company will carry on the Canadian business of the Chicago firm. Officers are: President, E. E. Spencer; general manager and treasurer, C. W. A. Woodburne, and secretary, H. F. Testin.

* * *

THE Plamondon Mfg. Co., 24 North Clinton street, Chicago, manufacturer of transmission machinery, has bought a tract, 200 x 1100 feet, at Western boulevard and Fifty-second street. Work has been started on the first unit, a 1-story building, 200 x 500 feet, which will cost $250,000. This company now occupies a 4-story building, 100 x 300 feet, which location it has held during the past 59 years.

* * *

THE Davenport Machine Tool Co., Inc., Rochester, N. Y., has been formed by W. S. Davenport, who formerly was engaged in building screw machines at New Bedford, Mass., and Clayton R. Burt, formerly connected with the Barber-Colman Co., Rockford, Ill., and more recently with the Russell Motor Car Co., Toronto, Ont., and Buffalo, N. Y. A plant has been bought at Rochester with part of the necessary equipment, and the remainder is being obtained in the market. Mr. Davenport is president, Mr. Burt vice president and general manager, and A. T. Hatch is secretary and treasurer.

* * *

SAMUEL T. HOBBS, for many years connected with the management of the Hobbs Mfg. Co., Worcester, Mass., and for the past five years sales manager of its lock washer department, has resigned to engage in business for himself. He is organizing a corporation which will be capitalized at $50,000 to make lock washers under the name of the Hobbs Lock Washer Co. A Worcester factory will be leased.

* * *

THE Claflin Oil Derrick Supply Co. with many prominent Connecticut manufacturers at its head, has been organized in Hartford, Conn., to build steel tubular section derricks. The company contemplates turning out 25 of the standard derricks per month, and arrangements already have been made whereby several of the Hartford machine manufacturers will make many of the smaller parts.

* * *

PLANS have been prepared by the Lakeside Forge Co., Erie, Pa., for an addition to its forge shop, in which it will install 12 new hammers. It has just completed an addition to its machine shop and has installed with other new machinery a complete nickel-plating plant and the die and machine rooms have been greatly enlarged. All these improvements are made necessary by the increasing demand for the wrenches and tools produced by the company.

* * *

THE Thomas Furnace Co., which operates a stack at Milwaukee, is undertaking considerable repairs to its plant and expects to put it back into blast about the beginning of 1920. The stack proper is being rebuilt and enlarged, a skip hoist is being added and a pig casting machine erected. This stack has been producing low phosphorus pig iron, but so far no decision has been made as to what grade will be made when it resumes activity.

* * *

THE Illinois Motor Co., manufacturer of motorcycles and engines, 3511 Lincoln avenue, Chicago, has established itself in a new plant and is extending its activities. George S. Walter, 38 South Dearborn street, is president; L. W. Harjes, 3520 Lake Park avenue, vice president, and Harry C. Kinne, 139 North Clark street, is secretary and treasurer. The board of directors consists of these three with John S. Coonley, 220 North Desplaines street, and Walter L. Morrison, 122 South Michigan boulevard.

* * *

APPOINTED by the Pollak Steel Co., Cincinnati, New York and Chicago, as its representative in the Detroit district, the C. A. S. Engineering Co., 790 Woodward avenue, Detroit, will serve the state of Michigan as well as northern Ohio, which includes the cities of Toledo, Elyria and Cleveland. It will have charge of the distribution of locomotive and railroad forgings, marine and heavy hammered forgings, as well as the entire line of drop forgings for automobiles, trucks, tractors, etc., manufactured by the Pollak company.

* * *

ADVICES have been received from S. P. Townsend & Co., Orange, N. J., manufacturer of lawn mowers, grease guns, etc., that the company has purchased seven acres from the American Malleable Iron Co., Bloomfield, N. J., on which it plans to erect a modern plant of brick and steel construction, and to repair the buildings now standing on the property. The new works will constitute about 70,000 square feet of floor space while the older buildings will give 50,000 more. Occupation of the buildings is expected to take place in March. The company has been in business since 1897 when S. Percy Townsend started the manufacture of lawn mowers in a small factory in Bloomfield, N. J. Three years after the inauguration of the business, the plant became too small and Mr. Townsend moved to a larger works at Orange, N. J.

October Speculation is Amazing

Stock Exchange Daily Average Trading for Month Exceeded But Two Times in Past —Aggregate Capitalization for New Incorporations Break all Records—Crucible Steel Report Out—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

WHAT many believe to have been the height of the speculative fever which has been raging with but slight interruption since last spring was attained during October when records both for incorporations of new enterprises and for transactions on the New York stock exchange reached amazing levels.

Figures compiled by *The Journal of Commerce* show that 1067 new companies were organized under the laws of the principal states last month with an authorized capital stock of $100,000 or over, involving an aggregate capitalization of $2,363,635,200, an increase over the same month last year of 1660 per cent. Since the first of the year there has been a steadily rising tide of new incorporations. Previous to October the high mark numerically had been reached in July with 1000 charters reported while September with $1,946,954,500 stood next to October in point of authorized capitalization.

For the nine months of the current year aggregate incorporations have involved the huge sum of $10,258,237,100 as compared with $2,338,722,600 and $4,024,561,500 for 1918 and 1917 respectively.

Share deals during October literally swamped Wall street and taxed its machinery severely. The daily trading average of 1,443,472 has been exceeded only two times in the history of the exchange—by the 1,486,660 shares per day in January, 1906 and by the 1,813,873 average of April, 1901. Industrial specialties, with steel shares figuring prominently in the movement, were bid up to new high levels, the price index reaching 118.92, up 7½ points for the month and nearly 40 points in advance of the low for the year existing in February. Share trading thus far this year is running ahead of 1918 by 120 per cent, while bond sales are double last year's and from three to six times the prewar average.

What Does it Mean?

The great enigma, of course, is what is the meaning of all this? Does it reflect merely the war-stimulated spirit of gambling based on the tremendous inflation of values and banking credit, or does it measure the great confidence with which those who have money to invest view the outlook for national prosperity despite the present labor clouds darkening the horizon?

Were the manifestation confined to the stock market the answer might be easier, for there is little doubt but that the gambling instinct, the lure of quick and fabulous profits—is a powerful motive behind the current Wall street activity. Yet when the test is applied to the business expansion a new light is shed upon the situation. It is true that the predominence of the oil and gas companies among the new incorporations indicates that the appeal of sudden riches is a great factor in the company investments, while of course in addition many investors have been induced to part with Liberty bonds by glib-tongued promoters of bogus or fanciful schemes. That is the unstable part of the picture.

On the other hand, it is certain that the vast majority of investors in new enterprises are hardheaded persons who are chancing their money, not in expectation of great immediate returns, but because they have an abiding faith in the ability of the country to solve its problems successfully and to go full steam ahead upon the paved road of prosperity open to it. They believe that the swelling volume of business that has hardly been interrupted by the recent great strikes is only an indication of what is in store for the country's industries within the next few years, with production far below the level of the demand in almost every conceivable line.

After every war there is a period of stimulated industrial activity and invention, the efforts of the community to make up the losses in production occasioned by the conflict. On the stock market speculation, of course, is running away with itself, but even there activity is largely based on belief in continued industrial prosperity. The activity is too strong for the financial position of the country, however, and as was predicted last week the New York federal reserve bank has raised its rediscount rates on "war paper" collateral, the object being to check speculation. With banking credit limited by the new move and call loan rates running up as high as 20 per cent on some days many believe that the pronounced upward swing of stocks cannot continue uninterrupted for long.

To Increase Capital

A special meeting of the stockholders of the Chicago Pneumatic Tool Co. has been called for Dec. 5 to authorize an increase in capital stock from 64,488 to 128,976 shares of $100 par value. Stockholders are to be offered the privilege of subscribing to new stock equivalent to their present holdings. Proceeds will be used for the retirement of outstanding bonds and all fixed charges and to increase the company's working capital. The report of the company for the nine months ended Sept. 30, shows net income after charges and taxes of $455,434.

New Crucible Officials Announce Policy

Stockholders of the Crucible Steel Co. of America, Pittsburgh, will be kept fully informed regarding the condition of their company, according to the promise of the new chairman, H. S. Wilkinson, who recently succeeded Herbert Dupuy in the annual report of the company for the fiscal year ended Aug. 31. Mr. Wilkinson and President O. H. Wharton in their statement state the company's cash and current assets will be greatly increased by the decision to complete improvements now under way, but to discontinue any further extensions or improvements at the present time.

That with iron ore investments already made and coal mines that have been opened, together with the new blast furnace and by-product coke ovens which are nearly completed, the company will have a well-rounded out plant from mines to finished material, is the assertion of the officials. Discussing the labor problem they say:

"We are pleased to report that the recent advance made in wages and the care we are taking of our em-

ployes have evidently met with their approval, and that there is a good feeling existing between your officers and men in the various plants of your company. It will be the purpose of the present management to see that reasonable hours and working conditions are granted to all of our employes and that the wages paid shall continue to be the best possible and equal at least to any in our line of industry."

The number of stockholders on Aug. 31 was 3934 of preferred owners and 946 of common, a total of 4880. The report shows net earnings after charges and federal taxes of $9,574,208 as compared with a surplus of $13,812,127 the previous year. Inventories as of Aug. 31 stood at $27,605,896, the property investment at $84,168,741 and cash at $4,536,718. The comparative income account follows:

	1919	1918
Total profits	*$14,093,005	$19,939,225
Replacements, deprec. ,etc.	4,171,489	5,759,000
Subsidiary bond interest..	347,308	368,098
Net prof.	$9,574,208	$13,812,127
Preferred dividend	1,750,000	1,750,000
Surplus	$7,824,208	$12,062,127

*After federal taxes of $8,500,000.

Otis Elevator Net Gains

The Otis Elevator Co., New York, reports net earnings for the year ended Sept. 30 of $1,423,026 after taxes and a depreciation charge of $612,788. After allowing a full year's dividend on the $6,500,000 6 per cent preferred stock there remained a balance of $1,043,026. This was equivalent to better than $15 a share on the $6,920,387 common stock outstanding, and is a decided improvement over earnings reported for the calendar year 1918, when $622,488, or $9.77 a share, was shown on the common stock. Working capital on Sept. 30 last amounted to $7,153,476, equal to about $104 a share on the common stock outstanding, and the largest working capital ever shown by the company, comparing with $5,281,962 at the close of 1918. The most notable improvement in the company's financial position is the heavy liquidation of the notes payable which amounted to only $900,000 on Sept. 30 last. At the beginning of the year the item amounted to $3,200,000, and at the close of 1917, $6,200,000.

Midvale Earnings Show a Decided Increase

A short spurt in earnings for the third quarter of 1919 is disclosed by the report of the Midvale Steel & Ordnance Co., for the period ended Sept. 30. Net profits for the three months were $3,408,359 almost four times the $946,267 earned during the previous quarter. Earnings were lower than the corresponding quarter last year, however, when $7,793,627 was earned. The surplus after charges and war taxes for the nine months of the year was $7,104,823 as compared with $24,139,411 in the same period of 1918. From the net earnings of $5,851,570 interests of $781,626 and depreciation of $1,661,585 were deducted.

The report for the third quarter, compared with the corresponding period in 1918 is as follows:

	1919	1918
Net earnings	*$5,851,570	$11,590,601
Interest	781,626	772,812
Depreciation, etc.	1,661,585	3,024,162
Net profits	$3,408,359	$7,793,627

Earnings for the nine months compiled from quarterly statements make the following comparison:

	1919	1918
*After provision for all taxes.		
Net earnings	$13,691,754	$33,474,398
Interest	2,362,327	2,351,020
Depreciation, etc.	4,224,604	6,983,967
Net profits	$7,104,823	$24,139,411

Financial Crop Ends

PLANS for the formation of a $25,000,000 wheel corporation by the merger of Michigan and Ohio interests are said to be in the making. C. B. Hayes, of the Hayes Wheel Co., Jackson, Mich., will head the combined concerns which will include seven companies, it is said.

* * *

The Mason Machine Works, Taunton, Mass., has purchased the business of the Worcester Crompton Loom Co., Worcester, Mass., and is preparing to build automatic filling changing looms.

* * *

The Eclipse Harrow Mfg. Co., Tarbora, N. C., has been organized for $100,000 for the purpose of manufacturing harrows. President M. G. Mann, of the company, T. T. Thomas and M. S. Brown are the organizers.

* * *

A new plan of organization is to be considered by a special committee of the National Steel Car Co., Hamilton, Ont. A circular of the president shows a deficiency of $1,603,184 the result of unsettled French war orders.

* * *

Under the reorganization of the Wharton Steel Co., New York, in the Replogle Steel Co., holders of 100 shares of the former will be offered 710 shares of the new company at $50 a share, it is reported. There will be no underwriting. J. L. Replogle is president of the new company.

Little Benzol

Now Available for Early Shipment—Coal Tar Products Firm

New York, Nov. 10.—Scarcity of spot benzol continues. The light supplies available at the time production was materially curtailed by the steel strike, have been absorbed, and with operations still affected, sellers have been unable to replenish stocks. Virtually the only material moving is that under old contracts. The bulk of this benzol is being consumed by the rubber industry. The market continues unchanged, although higher quotations are likely. Pure benzol is holding at 24 to 29 cents per gallon, and 90 per cent benzol at 22 to 24 cents.

Steady demand characterizes toluol and supplies, despite curtailed production, are sufficient. Prices remain unchanged at 26 to 30 cents per gallon on spot and contract. Rosin manufacturers are buying solvent naphtha in fairly good quantities, and spot and contract material is available at last week's market of 22 to 27 cents.

While the buying season is drawing to a close, the drug trade continues to purchase naphthalin in good volume. A fair amount of interest is still being manifested by the dye industry. Naphthalin is firm at 6½ to 7½ cents per 100 pounds, for flakes, and 8½ to 9½ cents for balls. Phenol is featureless with the government still offering stocks at 12 cents, f.o.b. eastern stores.

Producers of sulphate of ammonia quote the market at $3.50 to $3.75 per pound for spot and $3.40 to $3.50 for future. Nearby material, however, remains scarce.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.50 to 3.75

Contract

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.40 to 3.50

Present Tool Trade is Healthy

Deferred Deliveries Because of Extensive Buying Recently, Price Increases and Numerous Inquiries All Attest the Fact That Equipment Industry is in Good Condition —Action Awaited on Few Sizable Lists— Midvale Buys Nine Cranes

HEALTHY conditions, for the most part, exist at present in the machine tool trade. This is best exemplified by the deliveries on tools now being promised by manufacturers, most of whom are so filled up with orders, the best they can do is from two to five or six months. In rare cases, seven and eight months are required. Three factors are said to contribute to this condition. First: Extensive sales for many weeks past throughout the Middle West, particularly among automobile manufacturers whose tool needs seem insatiable; second, lack of sufficient working forces in makers' plants; and third, inefficient production by the forces employed. Further price increases indicate the strong basis of the equipment market. A manufacturer of wood-working machinery in Cincinnati, has brought his prices up 25 per cent to wartime levels. Dealers, particularly in the Middle West, state they are answering numerous inquiries, which generally are for one, two or three tools.

Sellers are off to a flying start in Chicago, and from appearances November will exceed October, which for some, broke all past records. The Nash Motors Co., Milwaukee; the International Harvester Co., Chicago, and the Samson Tractor Co., Janesville, Wis., all are making heavy purchases. Sales are frequent in Cleveland, but action is awaited on numerous smaller inquiries. The Hudson Motor Car Co., Detroit, issued a large list recently, said to aggregate $700,000 worth of machinery. Pittsburgh has been more or less affected by the steel and coal strikes which have brought about some contraction of machinery buying. However the Slick-Knox Co., Pittsburgh, bought grinders, stamping presses, drills, etc., in addition to three cranes for Wheatland, Pa. Further east, action is expected any minute on large lists issued by the General Electric Co., and the American Car & Foundry Co. The Otis Elevator Co. is buying equipment for Quincy, Ill., and Harrison, N. J. The Driver-Harris Co., Harrison, is figuring on some shop equipment and the Standard Oil Co. is making further purchases for Bayway, N. J.

Railroads are making entrances into the market from time to time for needed tools. The Santa Fe and Rock Island both bought in Chicago; the Chicago, Burlington & Quincy is gathering figures on a revived inquiry; the New York Central is asking Cleveland dealers for quotations; the Pennsylvania lines west wants cranes for Crestline, O., and Logansport, Ind.

Cranes continue to find takers, although few inquiries now are out. The Midvale Steel & Ordnance Co. closed on nine for Johnstown, Pa. The Superior Sheet Steel Co., Canton, O., ordered five. The Newton Machine Tool Works, Inc., Philadelphia, and the Aluminum Co. of America, Marysville, Tenn., each bought two. The Firestone Steel Products Co., Akron, O., has revised its inquiry to call for six overheads and two hand-operated cranes. Several steel companies and others each took one crane. A few small inquiries are current both in Pittsburgh and New York City. The Metal Hose & Tubing Co., Brooklyn, N. Y., has decided to purchase overhead cranes and no decision has been made by the Willys Corp., Elizabeth, N. J., regarding its electric crane program.

Recent Buying in Middle West Defers Deliveries

HEAVY buying which has prevailed throughout the Middle West for weeks past has affected materially the deliveries of machine tools in the East. Practically all of the larger manufacturers of this equipment are booked well ahead. They are offering planers at anywhere from two to five months, shapers at virtually the same delivery; boring mills at four to five months; lathes at eight to 12 weeks, and radial drills at two to three months. These deliveries, however, can be bettered by some of the smaller companies. Drilling machines, as a general proposition, can be had within three to four weeks. Shipments on turret lathes are also available for relatively early delivery.

In addition to the large volume of buying in the Middle West, the labor situation may be regarded as a factor in the present status of deliveries. Some shops have been affected by strikes, and in practically all cases, labor has not been up to the normal standard of efficiency. In a few instances, it is understood, forces were reduced early this year and since have not been increased.

Trading in the East during the past week has been light, although action on a couple of large lists now pending is being expected almost momentarily. The General Electric Co. and the American Car & Foundry Co. are referred to. The Otis Elevator Co. is buying machine tools for Quincy, Ill. The Driver-Harris Co., Harrison, N. J., is figuring on some hammer shop equipment. The Standard Oil Co. is buying further equipment for its Bayway, N. J. plant. The New York Air Brake Co. is planning not only to increase its production of motor trucks, recently undertaken, but also take up the manufacture of passenger cars. Another eastern concern to enter this field shortly is the Du Pont Motor Mfg. Co., now building a plant at Wilmington, Del. The machine tool requirements have not as yet been issued.

Approximately 1000 machine tools at the Eddystone

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rifle plant, Eddystone, Pa., are now being auctioned off by the Philadelphia district salvage board of the ordnance department. Half of the machines are from the Fox Gun Co., Philadelphia, and the Bethelehem Loading Co., New Castle, Del. It is understood that the majority of the machines have been used.

Activity in the crane market again is being confined principally to actual buying; but few new inquiries are coming out. The largest purchase recently was that of the Midvale Steel & Ordnance Co., involving four 10-ton overhead cranes, one 75-ton ladle crane, and two 75-ton trolleys and two 25-ton trolleys for its Johnstown, Pa. plant. The contract went to the Alliance Machine Co., Alliance, O. Another sizable order, reported in the East, called for four 10-ton and one 35-ton overhead crane for the Superior Sheet Steel Co., Canton, O., the business going to the Morgan Engineering Co., Alliance, O. The Newton Machine Tool Works, Inc., Philadelphia, placed two 15-ton overhead cranes with the Pawling & Harnischfeger Co., Milwaukee.

The Staten Island Shipbuilding Co. bought a 5-ton Milwaukee overhead crane, with 47-foot span, for a plate shop. The Corrugated Bar Co., Buffalo, ordered a 5-ton double trolley overhead crane, with 47-foot span, from the Champion Engineering Co. The Donner Steel Co., Buffalo, recently bought a 5-ton electric crane, with 37-foot span, from the Niles-Bement-Pond Co. Smidth-Lewis Foundry, Inc., 50 Church street, New York City, is to close shortly on a 10-ton electric crane. The Otis Elevator Co., Eleventh avenue and Twenty-sixth street, New York City, also is expected to close soon on a 5-ton electric crane with 50-foot span, for Quincy, Ill., and a 5-ton electric crane, with a 48-foot span, for Harrison, N. J.

The Metal Hose & Tubing Co., 253 Tillary street, Brooklyn, N. Y., is considering the installation of an overhead crane in a new plant to be erected in that city. It has been definitely decided to install overhead conveying equipment of some description. The Willys Corp., which is to spend approximately $4,000,000 on plant construction at Elizabeth, N. J., has not decided what action will be taken with regard to electric cranes.

Market Though Inactive is Strong

ALTHOUGH wanting in activity, the market for machine tools in the Pittsburgh district, shows no lack of strength. Indeed, it is getting to be an almost daily occurrence for the trade to receive notice of price advances in one line or another. A Cincinnati maker of wood-working machinery recently announced a 25 per cent increase, which carries the lists of this company back to the war levels. Frequent advances in the past few months have carried many makes of lathes, drills and heavy grinders above their war prices and it is doubtful if any of these lines now can be bought for less than the prices which prevailed at this time last year.

Although the steel and coal strikes have brought about a considerable contraction in buying, this development has not helped the makers in the matter of deliveries, eight weeks now being the shortest date promised even on the smaller tools. An Ohio maker of heavy steel-plant equipment recently announced a horizontal increase of about 20 per cent, due to the necessity of increasing wages to keep its working organization intact. As intimated in THE IRON TRADE REVIEW of Nov. 6, the Alliance Machine Co., Alliance, O., was the successful bidder for the cranes for the Cambria works of the Midvale Steel & Ordnance Co., at Johnstown, Pa. The Aluminum Co. of America, has placed an order for two 20-ton cranes for its new plant at Marysville, Tenn., with the Morgan Engineering Co., Alliance, O., in addition to the six ordered from this company several weeks ago. The Slick-Knox Co., Pittsburgh, has placed three overhead cranes with the Northern Engineering works, Detroit, Mich. These cranes are for its Wheatland, Pa. works, for which grinders, stamping presses and drills also have been purchased.

Live inquiries for cranes include a monorail for the American Window Glass Co., Pittsburgh; a crane and bridge for the McConway & Torley Co., Pittsburgh; a 15-ton crane for the Cincinnati Shaper Co., Cincinnati; a 20-ton crane with 5-ton auxiliary for the Weirton Steel Co., Weirton, W. Va.; a 10-ton, 38-foot span crane for the Marietta Mfg. Co., Mt. Pleasant, W. Va., while the Pennsylvania railroad, lines west, is looking for a 10-ton monorail for its Crestline, O. works and a 10-ton, 70½-foot span crane for its shops at Logansport, Ind. The Firestone Steel Products Co., Akron, O., has revised its original crane inquiry and now seeks bids on six overhead and two hand-operated cranes, all of the same span.

Several Large Sales Made in Chicago

SELLING of machine tools by Chicago dealers is going forward at a heavy rate with some large buyers now entering the market to add their purchases to the great volume which comes in small lots from scattered sources. One dealer finds his total sales for October higher than any other month but one since he entered business. November is bringing sales at a rate which promises to make it the largest in his experience.

The Nash Motors Co. has placed orders for about $60,000 worth of tools for its Milwaukee plant, most of them being for the tool room. Delivery is asked between Dec. 1 and Dec. 15. The International Harvester Co. is seeking further equipment for its tractor plant. The Samson Tractor Co., Janesville, Wis., continues to buy equipment from week to week, and one order to a single seller called for $160,000 worth of gear cutters. The Santa Fe railroad and the Rock Island railroad have bought a few tools, and the Chicago, Burlington & Quincy railroad is gathering figures on its revived list.

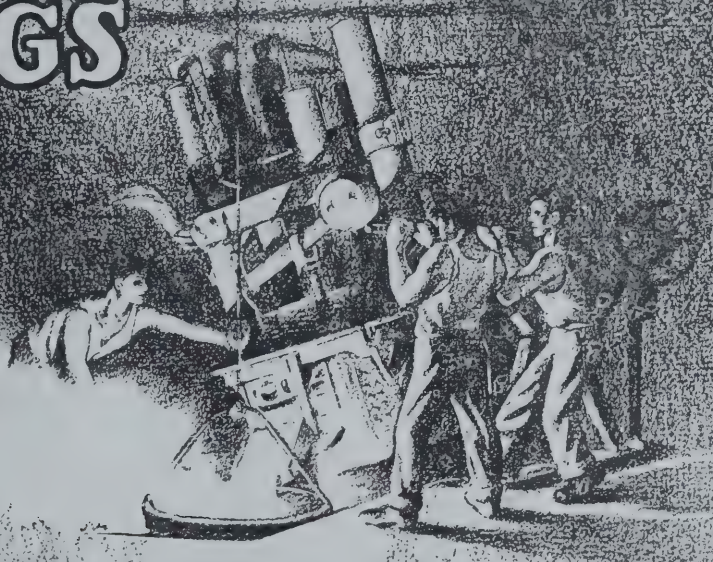
The Western Electric Co., Chicago, is starting construction on three additional buildings, and probably will be in the market shortly for equipment. The E. H. Wachs Co., Chicago, is building an addition to double its capacity for producing steam engines. A manufacturer of tools and dies who has just obtained a location, placed orders for his equipment recently. Milling machines are difficult to obtain and deliveries now range about four months.

Canadian Dealers Report Brisk Business

INQUIRIES for machine tools and equipment continue to be a feature of the Canadian machinery market, and dealers state that business is brisk. G. E. Reckin, Wiarton, Ont., is in the market for equipment for a furniture factory including double tenoning machine, band resaw, dovetail machine, two spindle horizontal boring machine, vertical boring machine, etc. F. Hogan, 337 Van Norman street, Port Arthur, Ont., is in the market for a small circular saw mill, 50 to 75-horsepower, all complete. The Aero Cushion Inner Tube Co., Wingham, Ont., will spend $20,000 on new machinery for the manufacture of casings, etc. The Thornbury Electric Lighting Co., Thornbury, Ont., will require equipment for the plant it will erect to replace the one damaged by fire. Gilbert Plains, Man., and the Provincial government of Manitoba, will erect an electric plant at Gilbert Plains and are requesting prices on machinery and equipment. The Bishopric Wall Board Co., has appointed W. E. Noffke, Central Cham-

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STAFF

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Say you saw it in THE IRON TRADE REVIEW

bers, Elgin street, architect for the erection of a plant at Ottawa, Ont., to cost $100,000, and is receiving prices on steel and machinery for the plant. The Dominion Coal Co., Glace Bay, N. S., is making improvements to its coal properties costing $200,000 and will also construct a bunk head to cost $50,000. J. W. Revere, purchasing agent of the company is in the market for compressor fans, hoisting engines, haulage engines, pumps, air pipe and other machinery.

Individual Inquiries Small, Bulk Large in Aggregate

WITH orders fairly frequent, Cleveland machinery and machine tool dealers state that it keeps them busy answering the numerous inquiries which come in from scattered sources. These inquiries are not particularly large but represent a steady demand that gives stability to the business. Practically no effects of the coal strike are noted; the chief difficulty facing dealers is the inability of manufacturers to make anything but long time deliveries.

From Detroit come additional reports of activities among the automobile manufacturers. A sizable list is expected soon from the Hackett Motor Car Co., Grand Rapids, Mich., which has increased its capital to $1,000,000 for the purpose of increasing production to 7500 cars annually. The Chevrolet Motor Co., Bay City, Mich., is filling extensive equipment needs but the largest transactions current are the purchases of the Hudson Motor Car Co., and the Essex Motor Car Co., Detroit, said to aggregate $700,000 for a machine shop which is to commence operations on Jan. 1, 1920. The Detroit Gear & Machine Co., Detroit, is refinancing to permit of new additions and the installation of equipment. An adding machine plant at Grand Rapids, Mich., for the American Can Co., will take much equipment, including many automatics, since it is to be four stories high. Milton A. Holmes is directing sizable machinery purchases for the Transport Truck Co., Mt. Pleasant, Mich. Details are lacking regarding the expansion plans of the Shaw Electric Crane Works, Muskegon, Mich., but several buildings are to be erected and it is thought, some machine tools will be purchased.

Only small inquiries are current in Cleveland. The Columbus Wire & Fence Co., Columbus, O., wants one milling machine, one lathe and three variable speed motors. The Forest City Machine & Forge Co., Cleveland, incorporated recently for $830,000 by Alonzo M. Snyder, Williamson building, has issued an inquiry for some equipment. It is understood to have closed on two multiple spindle drills. It is reported that the Collamer Machine Works, 1214 East 152nd street, Cleveland, also has closed on its requirements. The Adams Axle Co., Findlay, O., is in the market for a 2-spindle centering machine. The National Safe & Lock Co., Cleveland, is seeking a No. 4 type H condensation return pump. The Garford Laboratory, 131 Forest street, Oberlin, O., is asking for one new Amex bench lathe with fixtures. The Slick-Knox Steel Co., Pittsburgh, wants a used No. 59 Toledo press with 12-inch stroke and 3 x 32-inch bolster plate. The Klein Iron Works, Bellevue, O., wants a used 10-ton electric crane with 75-foot span. The Titan Steel Products Co., Cleveland, wants a ½-inch nut tap A few railroad inquiries continue to come out and one of the tools recently asked for by the New York Central railroad is a 2-inch bolt cutter.

The Bryan Pattern & Machine Co., Bryan, O., already has ordered tools to replace those damaged by fire Nov. 2. Milling machines, drills, etc., will probably be asked for soon by the More-Miles Manifold Co., just located in Warren, O., to manufacture a manifold invented by Edgar Gree, president of the company. Among other equipment, several automatics will probably have to be purchased by the Victor Typewriter Co., Scranton, Pa., when its 3-story addition to triple the plant output is further along. For the purpose of expanding and adding to its equipment, the Klein Iron Works, Bellevue, O., has increased its capital to $150,000. An addition to the plant of the Racine-Sattley Co., Springfield, Ill., together with equipment, yet to be purchased, will cost $850,000.

Building operations in several localities promise additional inquiries soon. These include an addition for the Lycoming Foundry & Machine Co., Williamsport, Pa.; 2-story addition for the Randall Machinery Co., Cincinnati; improvements to factory of the Frontier Machine & Tool Co., Buffalo; 1-story machine shop, 50 x 336 feet, for the American Locomotive Co. plant at Chester, Pa.; and an addition for the Stevens Metal Products Co., Niles, O.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

PORTLAND, ME.—The A. J. Waterman Mfg. Co. has been incorporated to build machinery with $200,000 capital by E. V. Mann, M. D. Mills and Charles D. Booth.

FRANKLIN, N. H.—The Seawell Needle Co. will move its plant from Tilton, N. H., to this city.

TROY, N. H.—The Troy Blanket Mills has let the contract for a 4-story, 68 x 284-foot mill, a 2-story, 64 x 225-foot picker house, a 1-story, 50 x 50-foot boiler house and a 1-story, 4 x 47-foot addition to the present boiler house to cost $300,000.

RUTLAND, VT.—The Rutland Railway, Light & Power Co. has started work on a hydroelectric power plant, to cost $500,000.

BOSTON.—The Rivett Lathe & Grinder Co. has let the contract for a 3-story, 60 x 200-foot factory to cost $100,000.

BOSTON.—The New England Telephone & Telegraph Co. has let the contract for a 3-story, 66 x 100 x 185 building to cost $700,000.

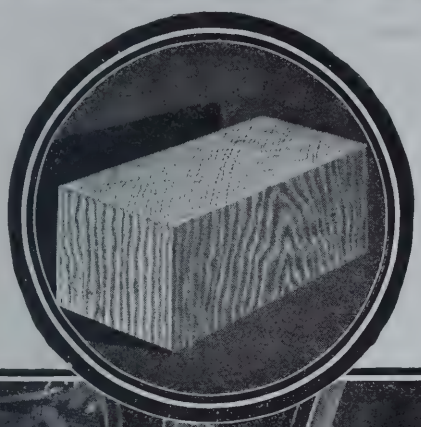
BOSTON.—The Dover Foundry & Mfg. Co. has awarded a contract for a warehouse and garage, 4-stories, 60 x 90 feet, to cost $47,000.

BOSTON.—The Mary E. Moore Mfg. Co. has been incorporated to make articles of steel with $25,000 capital by Mary E. Moore, A. C. Perry and E. P. Clough.

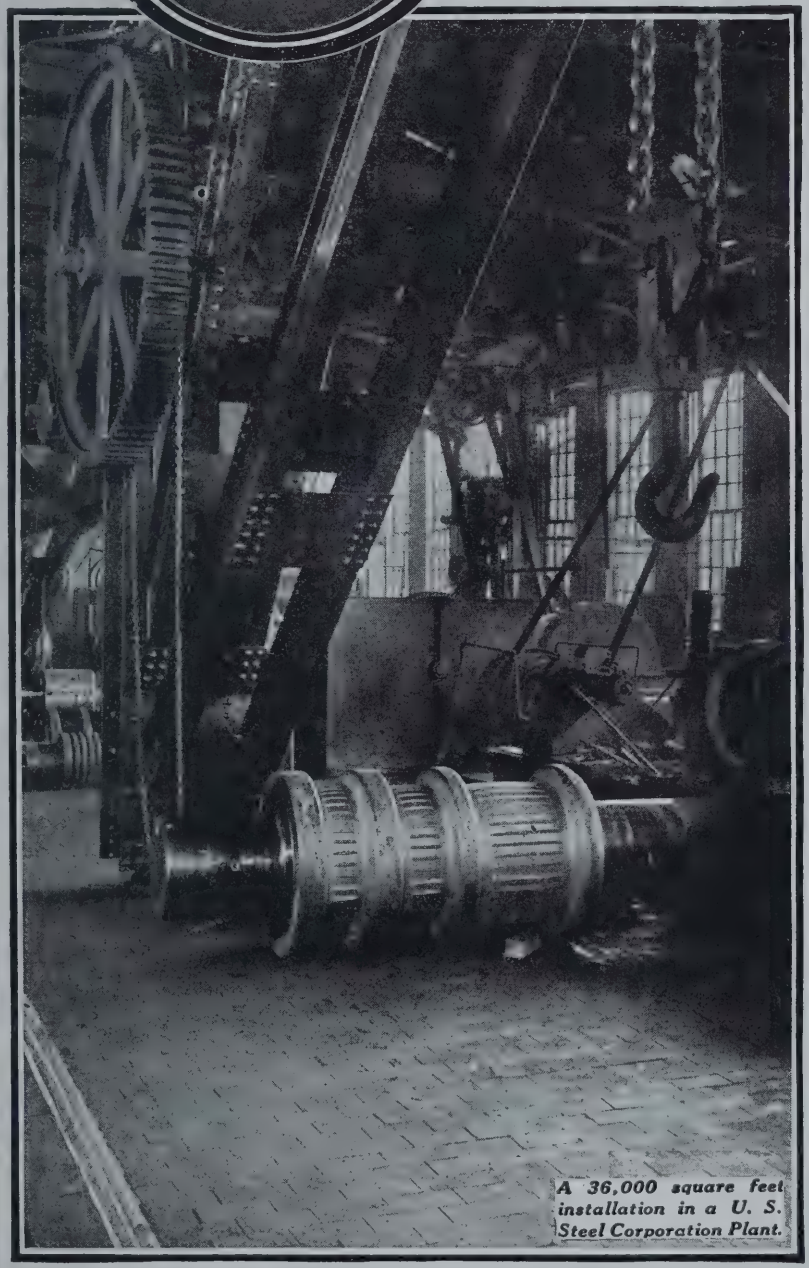
BOSTON.—The Associated Mills Supplies, Ltd., has been incorporated to deal in metals, etc., with $10,000 capital by James Chesney, Maurice Whalen, Everett, Mass., and Walter A. Hall.

CAMBRIDGE, MASS.—The Riverside Boiler Works has let the contract for a 1-story, 79 x 82-foot galvanizing building.

CAMBRIDGE, MASS.—The addition to the plant of the F. S. Paine Co., elevator manufacturer, is



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They wear like steel, are cool in summer and warm in winter. They are not affected by water, oil, grease, or dilute acids.

They are restful to the feet—no slippage, no unevenness. They make every move count and never fail to increase output.

In more than 20 years of pioneering experience in wood block floors we have solved the secret of the perfect factory floor—and the benefit is yours. We have the material and special construction if necessary for your plant.

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206 Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
Berkley Ward, Norfolk
222 Society for Savings Bldg., Cleveland
31 Transportation Bldg., Philadelphia
828 Plymouth Bldg., Minneapolis
445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hammond Bldg., Detroit

nearing completion and machinery will be installed soon.

CHICOPEE, MASS.—The Fisk Rubber Co. has let the contract for a 1-story and basement, 23 x 115-foot factory addition and a 23 x 40-foot power plant addition.

HOLYOKE, MASS.—The National Blank Book Co. has let the contract for a 2-story, 100 x 200-foot machine shop to cost $75,000.

HOLYOKE, MASS.—The George W. Prentiss Co. maker of wire, has let the contract for a 2-story, 60 x 100-foot warehouse to cost $60,000.

LACONIA, MASS.—Scott & Williams, 265 Union street, has awarded a contract for a boiler house, to cost $20,000.

MIDDLEBORO, MASS.—The Lobl Mfg. Co. has been incorporated to make cutlery with $250,000 capital by Frederick Lobl, Fred L. Bowman and Simon C. Pilshaw.

SOUTH WEYMOUTH, MASS.—The Gale-Sawyer Co., tool maker, is making extensive additions and alterations.

WORCESTER, MASS.—The O. & J. Machine Co. has been organized here to manufacture metal patterns. business.

WORCESTER, MASS.—The Modelyacht Co. has been incorporated to make metal goods, with $10,000 capital, by Henry H. Forbes, Linwood M. Erskine and Floyd A. Ramsdell.

WORCESTER, MASS.—The Ionite Storage Battery Co. has been incorporated to make storage batteries by a new process with $100,000 capital by Albert H. Williams, John L. Judkins, Rayworth W. Burnham and Howard W. Cowee.

PAWTUCKET, R. I.—The Rhode Island Malleable Iron Works has let the contract for an addition.

PAWTUCKET, R. I.—The Potter & Johnstone Machine Co. will build a 2-story, 63 x 72-foot foundry addition and will alter buildings Nos. 1 and 2 at a cost of $60,000.

PROVIDENCE, R. I.—The Aetna Automatic Oil Burner, Inc., has been incorporated to make oil burners with $1,000,000 capital by John Scheminger Jr., Charles F. Scheminger and George B. Peckham.

WARREN, R. I.—The Cap-Swivel-Let Co. has been incorporated to make electrical goods with $50,000 capital by Leonard P. Bosworth and Albert L. Bosworth, both of Barrington, R. I., and Frederick I. Johnson.

BRIDGEPORT, CONN.—The Bridgeport Hardware Mfg. Co. contemplates a plant addition to cost $10,000.

ELMWOOD, CONN.—The New Departure Mfg. Co., Bristol, Conn., has let the contract for a 2-story, with basement and sub-basement factory.

NEW BRITAIN, CONN.—Landers, Frary & Clark will build a 96 x 289-foot building to cost $200,000 and a 3-story, 40 x 68-foot tempering building.

NEW BRITAIN, CONN.—Plans are being drawn for a 1-story, 32 x 360-foot with a 40 x 60-foot ell addition to the New Britain Machine Co. to cost $40,000.

NEW BRITAIN, CONN.—The Hart & Hutchinson Mfg. Co., maker of steel lockers, has let the contract for a 1-story, 76 x 337-foot with a 30 x 67-foot wing factory to cost $30,000.

NEW HAVEN, CONN.—The Howard Engineering Co., Inc., has been incorporated with $50,000 capital, by Jacob Weinstein, E. A. Weinstein and Daniel Weinstein.

NEWINGTON, CONN.—The Hartford Tube Products Co., Hartford, Conn., has let the contract for a 1-story, 50 x 120-foot factory and a 1-story, 30 x 30-foot office building.

THOMASTON, CONN.—The Plume & Atwood Mfg. Co. will build a 30 x 60-foot addition to its brass mill.

TORRINGTON, CONN.—The Torrington Mfg. Co. has awarded a contract for a $10,000 plant addition, 60 x 180 feet, two stories high.

WATERBURY, CONN.—The Lux Clock Co. has let the contract for a 2-story, 30 x 54-foot addition.

WATERBURY, CONN.—The Oakville Co., wire and metal goods, has let a contract for a power house.

WATERBURY, CONN.—The American Chain Co. plans a 2 and 4-story, 128 x 100-foot factory to cost $135,000.

WATERBURY, CONN.—The Holaday, Telford Co. has been incorporated to deal in metal patterns with $10,000 capital by A. E. Holaday, Joseph Telford and W. S. Brakenridge.

WEST HAVEN, CONN.—Approximately $650,000 will be expended by the Kelly Tire & Rubber Co. on a building, 100 x 300 feet, and the necessary equipment.

Government Inquiries

BIDS on the following equipment are desired by the navy department, bureau of supplies and accounts.

Miscellaneous self-supporting pillar cranes, 4884, Brooklyn.
One bench lathe, Philadelphia, 4801.
One steam towing machine, 4885, Puget Sound.
One pipe cutting and threading machine, 4897, Washington.
Miscellaneous hoisting electric cranes, 4938, Brooklyn; miscellaneous hoisting and rotating equipment, 4938, Norfolk and Mare Island.
Three plate-punching tables, 4949, Mare Island.
Miscellaneous portable electric drills, electric bench grinders, 4968, various eastern and western yards.
Eleven vertical boring mills, 4990, Washington.
One traveling head slotter, 4991, Washington.
One motor-driven shaping machine, 4994, Washington.

Schedule numbers, dates of opening and places of delivery follow the specifications of the tools.

North Atlantic States

BROOKLYN, N. Y.—A $75,000 plant will be erected by the Metal Hose & Tubing Co., 253 Tillory street. Plans call for a 3-story structure, 80 x 100 feet.

BUFFALO.—The Clipper Tool Co., 38 A street, has had plans prepared for a 2-story addition, 20 x 60 feet.

BUFFALO.—The Jewell Steel & Malleable Co., 373 Hertel avenue, is having plans prepared for an addition.

BUFFALO.—The North Buffalo Hardware Foundry Co., 743 Hertel avenue, has had plans drawn for a foundry, 32 x 60 feet.

ELLIOT, N. Y.—The Chatauqua Electric Car Mfg. Co. has been incorporated with $750,000 capital, by E. A. Peterson, A. N. Broadhead and E. C. Nord.

MIDDLEPORT, N. Y.—The Niagara Spray Co. has had plans drawn for a machine shop, power house and chemical building.

MORRIS, N. Y.—The Linn Tractor Corp. has been incorporated with $50,000 capital, by G. Whitman, H. H. Linn and R. R. Ripley.

NEW YORK.—The Pioneer Metal Goods Corp. has been incorporated with $250,000 capital, by J. Hamber, P. Wurtz and W. M. Messersmith, 25 Broad street.

NEW YORK.—The Monarch Lamp Mfg. Co. has been incorporated with $10,000 capital, by L. Edelman, S. Gross and S. D. Schindler, 238 South Third street.

NEW YORK.—The Mutli-Angle Drill Corp. recently was incorporated with $500,000 capital, by G. S. Vangelder, R. M. Stillman and F. H. Prindle, 15 Broad street.

NEW YORK.—The Kobert Machine Co., Inc., recently was incorporated with $125,000 capital, by G. W. Wylie, W. P. Barker and M. B. Donahue, 27 William street.

NEW YORK.—William Vanderkoogh & Co., Inc., steel scrap, has been incorporated with $15,000 capital, by E. E. Fingarr, A. H. Holbrook and J. Macknight, Wood Haven.

NEW YORK.—The Continental Body Corp., auto and aircraft bodies, recently was incorporated with $25,000 capital, by N. W. Dalton, J. M. Sheehan and H. R. Frost, 52 Broadway.

NEW YORK.—The Mergenthaler Linotype has awarded a contract for a plant, 8-stories, 70 x 300 feet, to cost $600,000.

NEW YORK.—The Tiphany Motor Co. has been incorporated with $400,000 capital, by W. C. Dodge, F. U. Horowitz and L. M. Crumbacher, 1451 Broadway, and will manufacture electric motors and machine equipment.

NEW YORK.—Bishop, Friedman & Bergstrom have been incorporated with $20,000 active capital to manufacture metal alloys, by P. Corning, O. E. Friedman and V. E. Berkstrom, 30 Church street.

NEW YORK.—The Automatic Expansion Co. has been incorporated with $50,000 capital, by E. Kuebler, F. Roeger and L. Bach, 541 East Forty-eighth street, to engage in the manufacture of metal products.

OGDENSBURG, N. Y.—The Morgan Chemical Corp. has been incorporated with $250,000 capital, by A. O. Morgan, H. O. Meredith and W. S. Moore.

ROCHESTER, N. Y.—The Rochester Motors Co., Inc., has let a contract for a 1-story machine shop addition, 100 x 390 feet.

ROCHESTER, N. Y.—The Atlantic Stamping Co. has had plans drawn for an addition, 2-stories, 69 x 201 feet, to cost $75,000.

ROCHESTER, N. Y.—The Josiah Anstice Co., Inc., North Water street, has awarded a contract for a foundry, 145 x 216 feet, to cost $70,000.

SCHENECTADY, N. Y.—The General Electric Co. has awarded contracts for a brass foundry, 100 x 100 feet, to cost $30,000.

SYRACUSE, N. Y.—The Roberts Tool & Supply Co., Inc., has been incorporated with $60,000 capital, by F. A. and J. F. Roberts and F. J. Lynch.

CORNWELLS, PA.—The plant of the Traylor Shipbuilding Corp. is to be converted for the manufacture of motor trucks.

EAST STROUDSBURG, PA.—The Pocono Metal Mfg. Co. has been incorporated with $50,000 capital, by G. C. Gruenthal, Louis Rupprecht and L. A. Kohl.

HARRISBURG, PA.—Charles A. Fair, 128 Sylvan terrace, will build a 2-story machine shop and auto repair works, 70 x 120 feet, at an estimated cost of $20,000.

MAHONOY CITY, PA.—The Mahonoy City Foundry & Machine Works recently was incorporated with $25,000 capital, by L. Garfinkel, M. J. Ryan and S. Fogel.

NANTICOKE, PA.—The Buplan Silk Co., 50 Union Square, has awarded a contract for a boiler house, 2-stories, 90 x 100 feet.

PHILADELPHIA.—A $50,000 boiler house will be erected here by the American Preserve Co.

PHILADELPHIA.—Max Haupt, 1713 Samson street, has plans for a 1-story forge shop addition.

PHILADELPHIA.—Schaum & Uhlinger, Inc., Glenwood and North American avenues, manufacturer of







ON EVERY HEAD



VICTOR BOILER - SHIP - STRUCTURAL AND TANK RIVETS







UNBROKEN AFTER 25 YEARS TEST

REPUTATION REFLECTS CHARACTER





STANDARD SPECIFICATIONS

ALL SIZES-TWO INCHES IN DIAMETER AND SMALLER

BOOKLET - SCIENTIFIC FACTS - UPON APPLICATION







ALL OUR STEEL CAREFULLY ANALYZED

WHY DO SO MANY CONSUMERS SPECIFY OUR RIVETS?

THE CHAMPION RIVET CO.,

CLEVELAND, OHIO, U. S. A.

LARGEST RIVET MANUFACTURERS IN THE WORLD.

textile machinery, has plans for an extension to its machine shop to cost $15,000.

PHILADELPHIA.—The Brown Instrument Co. has acquired a factory building adjoining its plant.

PHILADELPHIA.—The Luster Machinery Co., Widener building, has leased property here for a local establishment.

PHILADELPHIA.—The Wicaco Screw & Machine Works, Seventh and Wood streets, is drawing plans for a plant, to cost $100,000.

PHILADELPHIA.—The Wright Mfg. Co., 131 Master street, has plans for a 1-story addition, 16 x 90 feet, to cost $17,000.

PHILADELPHIA.—Frank C. J. Dursch, 848 East Woodlawn street, has plans for a 2-story plant, 53 x 65 feet, to cost $13,000.

PHILADELPHIA.—The Bessemer Motor Truck Co. has purchased 16½ acres. Plans for improving the property have not been announced.

PHILADELPHIA.—The A. S. Ashman & Son Co., 2300 East Tioga street, contemplates a forge shop addition, 1-story, 20 x 32 feet.

PHILADELPHIA.—The Drain Steel Co. has been incorporated with $10,000 capital, by J. S. Shepherd, 1420 Chestnut street, John A. Drain, 405 Elm avenue, Swarthmore, Pa., and others.

PHILADELPHIA.—The Globe Machine Co., Kinsey and Josephine streets, has had plans prepared for a 1-story machine shop addition, 12 x 54 feet.

CAMDEN, N. J.—The Concrete Steel Co. contemplates a manufacturing building, 1-story, 26 x 144 feet, to cost $10,000.

ELIZABETH, N. J.—The general contract for factory buildings has been awarded by the Willis Corp. to Warren, Moore & Co. The buildings will be one and two stories. Equipment as yet has not been inquired for.

HARRISON, N. J.—The Crucible Steel Co., South Fourth street, plans a 1-story boiler house.

HARRISON, N. J.—The Harrison Bolt & Nut Co. has been organized to operate a plant for the manufacture of bolts, nuts, etc., by S. F. Laucks and others.

HARRISON, N. J.—The general contract for an addition to the plant of the Driver-Harris Co., manufacturer of wire products, has been awarded to E. M. Waldron, Newark, N. J. The addition will comprise two factory buildings, one a 3-story structure, 50 x 100 feet, to be used for wire working and the other, a 1-story structure, 60 x 200 feet, to serve as an extension to the hammer department.

HOBOKEN, N. J.—The Tidewater Iron Works, 731 Jefferson street, has had plans prepared for a 1-story addition.

HOBOKEN, N. J.—The Button Machinery Co., 1023 Clinton street, has awarded a contract for a plant and boiler house, to cost $170,000.

JERSEY CITY, N. J.—The White Metal Mfg. Co. has been incorporated with $500,000 capital to manufacture containers. Theodore Rurode, T. H. Smith and D. F. Edwards, all of Jersey, are interested.

MASURY, PA.—The Standard Steel Car Co. is reported planning plant additions.

NEWARK, N. J.—The Circle Stamping & Mfg. Co., 763 Broad street, has been incorporated with $100,000 capital.

NEWARK, N. J.—The Industrial Tool Works, Inc., 10 Railroad place, has been incorporated with $25,000 capital.

NEWARK, N. J.—The Accurate Screw Machine Co., 128 Mulberry street, has been organized by V. S. Buckson and others.

NEWARK, N. J.—The Star Cutlery Co., 75 Livingston street, has been incorporated to manufacture cutlery, metal goods, etc., with $50,000 capital.

NEWARK, N. J.—The International Motor Co. has taken a long term lease on the greater portion of a building to be erected here by George W. Baney. The company will use part of the building for machine shop and forge work.

NEWARK, N. J.—Approximately $300,000 will be expended by the Duratex Co. on a plant addition. The main building will be 1-story, 100 x 500 feet, and will be used for the manufacture of rubber goods. Another building, to be used for storage purposes will be 60 x 200 feet. Other structures include a building 40 x 75 feet and addition to the power house, 60 x 75 feet. The company plans to spend approximately $200,000 on equipment.

PLAINFIELD, N. J.—The Modern Machine & Tool Co. has been incorporated with $25,000 capital to manufacture tools, etc. The incorporators are Frank Cozzoli, Joseph Luchesi and Joseph Mutnick, all of Plainfield, N. J.

TRENTON, N. J.—A $20,000 power plant will be erected by the Trenton Malleable Iron Co.

TRENTON, N. J.—Fitzgibbon & Crisp, Inc., Calhoun street, will erect an addition to their auto and carriage manufacturing plant to cost $15,000.

TRENTON, N. J.—The Trenton Tool Co. has been incorporated with a capital stock of $25,000 to manufacture foundry tools and machinery. The incorporators are Harvey T. Satterthwaite, Marian H. Atkinson and Sara A. Satterthwaite.

BALTIMORE.—The American Train Control Corp. has been chartered with $2,000,000 capital to manufacture an automatic train control system, by C. W. Hendrick, 1337 Mt. Royal avenue, T. R. Thomas and R. L. Williams.

Belgians Buy Tools

ANNOUNCEMENT is made by R. D. Robinson, secretary of the army salvage board at Cincinnati, that the Belgian government has placed an order for more than 2200 machine tools to cost about $5,000,000. According to Mr. Robinson, many machine tools to fill the order already have been shipped from that city. "The importance of this sale to the Belgian government," declared Mr. Robinson, "will be of material advantage to the American machine tool manufacturers in foreign markets."

Central States Activity

APPLETON, WIS.—The Langstadt & Meyer Co., 767 College avenue, will build a 2-story shop, 55 x 150 feet, with a wing, 48 x 67 feet, to be equipped for general electric manufacturing purposes.

BARABOO, WIS.—C. H. Grubb, manufacturer of barn equipment, will build a forge shop and a factory addition, 40 x 120 feet.

BEAVER DAM, WIS.—The Western Malleable Co. is converting its Center street foundry for manufacturing light and small work. The building is being remodeled, the annealing room is being enlarged and the pattern shop will undergo extensive changes to meet the changed requirements.

DE PERE, WIS.—The Toonen-Barlamant-Wright Co. will spend $25,000 for the construction and equipment of an addition to its public garage, repair shop and farm machinery service building.

KENOSHA, WIS.—The International Earth Boring Machine Co., 10 South La Salle street, Chicago, will build a 1-story factory, 150 x 300 feet.

MILWAUKEE.—The Atlas Foundry Co. is taking bids for a core room, 1-story, 80 x 80 feet.

MILWAUKEE.—The Globe Electric Co., Inc., 193 Broadway, Milwaukee, with a capital stock of $200,000, has been reincorporated as the Globe Electric Co.

MILWAUKEE.—The American Radiator Co. is establishing a service shop and warehouse at 1801-1807 St. Paul avenue, 2-stories, 84 x 175 feet, and cost about $45,000.

MILWAUKEE.—Articles of incorporation have been filed by the Duplex Storage Battery Co. The capital stock is $60,000. A. J. Model and Thomas J. Mahon, attorney, appear as incorporators.

MILWAUKEE.—The Universal Aniline Dyes & Chemical Co., 137 Michigan street, is having plans prepared for the first unit of its plant at South Milwaukee, to be 2-stories, 50 x 150 feet, costing $150,000 with equipment. M. H. Wiltzius is president.

MILWAUKEE.—The A. O. Smith Corp. will start work about Nov. 20 on the second section of its new plant extension project. Work on the first unit is under way and will provide a 1-story shop, 175 x 740 feet. The second section will measure 360 x 850 feet.

MILWAUKEE.—The Cadillac Motor Car Co., Detroit, has selected Milwaukee as the site of one of a series of branch assembling plants. An initial expenditure of $250,000 is planned at Milwaukee. A site has been purchased and plans for a 3-story building, 121 x 250 feet are being prepared.

RHINELANDER, WIS.—The Rhinelander Light & Power Co. will make a 20 per cent increase in its generating capacity by installing new water wheels and dynamo equipment.

BAY CITY, MICH.—The Union Motor Truck Co. is having plans drawn for a 1-story power plant.

BAY CITY, MICH.—The Valley Auto Specialty Mfg. Co. has been incorporated with $50,000 capital, by Allan McEwan and others to manufacture auto parts, etc.

DETROIT.—Work has started on a foundry for the Packard Motor Car Co.

DETROIT.—The Liberty Motor Co. will build a $60,000 administration building.

DETROIT.—The Steel Products Co. is taking bids for a plant addition, 1-story, 32 x 60 feet.

DETROIT.—The Timken Detachable Axle Co. will erect a boiler house at an estimated cost of $25,000.

DETROIT.—The Detroit Gear & Machine Co. plans plant additions and the installation of new equipment.

DETROIT.—The National Forging Co. has been incorporated with $25,000 capital, by W. N. Coyer, 345 Hamilton avenue, and others.

DETROIT.—Kauffman & Co. recently was chartered with $10,000 capital to manufacture tools, by E. A. Kauffman, 405 Chene street, and others.

DETROIT.—The Wood Hydraulic Hoist & Body Co. has awarded a contract for a machine shop and storage building addition, 1-story, 50 x 240 feet, to cost $40,000.

DETROIT.—The Nevison-Reed Body Co. has been incorporated with $40,000 capital by William E. Reed, 384 Twelfth street, and others, to manufacture sheet metal auto bodies.

DETROIT.—The Hare Stoker & Furnace Co. has been chartered with $75,000 capital, by H. M. Lane, 208 Highland avenue, and others, to manufacture boiler room equipment.

DETROIT.—The Commonwealth Heat Treating Co. has been incorporated with $10,000 capital, by J. W. Petrie, 656 Virginia Park avenue and others, to engage in the heat treatment of steel.

DETROIT.—The Michigan Patent Peel Co. has been incorporated with $25,000 capital, by John L. Crandall, 845 Jefferson avenue, and others, to engage

in the manufacture of baking machinery and tools.

GRAND RAPIDS, MICH.—The American Can Co. is constructing a plant here the main building of which will be 4-stories, 66 x 286 feet.

KALAMAZOO, MICH.—The Herrbold-Keenan Co. has been chartered with $200,000 capital to manufacture machinery, by W. A. Herrbold and others.

LANSING, MICH.—The Bean Spray Pump Co. has awarded a contract for a plant addition, 1-story, 40 x 80 feet, to cost $25,000.

MT. CLEMENS, MICH.—The Reynolds Motor Truck Co. has been incorporated with $200,000 capital, by L. C. Wolff and others. Plans have been prepared for the erection of a plant.

MUSKEGON, MICH.—The Shaw Electric Crane Co. contemplates an addition to double its capacity.

MUSKEGON, MICH.—The Carlson Rotary Engine Co. has been incorporated with $10,000 capital, by T. A. Carlson and others, to engage in the manufacture of gas engines.

OWOSSO, MICH.—The Field Mfg. Co. is completing an automobile body plant addition.

CHAMPAIGN, ILL.—W. E. C. Clifford and D. B. Jacobs will operate a drop forge plant under the name of the Clifford-Jacobs Forging Co. The company will make a specialty of automobile hubs, connecting rods and other auto parts.

CHICAGO.—Montgomery, Ward & Co. are erecting an addition to their plant at Springfield, Ill.

CHICAGO.—The Crane Co., 836 South Michigan avenue, contemplates a machine shop and warehouse.

CHICAGO.—The C. A. Roberts Co., 228 North Jefferson street, steel tubing, contemplates a 1-story plant.

CHICAGO.—The Pettibone Mullikin Co., 140 South Dearborn street, will start work soon on a foundry, 154 x 243 feet, to cost $200,000.

CHICAGO.—The George W. Pyott Co., manufacturer of power transmission equipment, 1401 West North avenue, has purchased a site on which it plans to erect a plant.

DECATUR, ILL.—The H. Mueller Mfg. Co. is taking bids for a machine shop, 1-story, 156 x 200 feet, to cost $16,000.

HAVANA, ILL.—The E. J. List Co. has been incorporated with $35,000 capital to manufacture friction clutches, by E. J. and A. B. List and F. C. Eusteneur.

PEORIA, ILL.—The Twin City Steel & Machinery Co., Minneapolis, with a branch in this city, recently was incorporated in this state with $100,000 capital.

ROCKFORD, ILL.—The Mechanics Machine Co. contemplates a plant addition.

BETHAVEN, IND.—The McBeth Evans Glass Co. has awarded contracts for machine and pattern shop additions, 2-stories, 50 x 110 feet, to cost $40,000.

EVANSVILLE, IND.—The Advance Stove Works is having plans drawn for a plant addition, 2-stories, 30 x 50 feet.

EVANSVILLE, IND.—The Vulcan Implement Factories has been incorporated with $300,000 capital, by Richard Rosecrans, J. H. Berryhill and G. A. Trimble.

EVANSVILLE, IND.—The American Mfg. Co. has been incorporated with $100,000 capital, by George Tugwell, Leonard Hartman and Oscar Stahl. The company will manufacture spark plugs.

FT. WAYNE, IND.—The Tokheim Oil Tank Shop has awarded contracts for a tank shop, 1-story, 85 x 197 feet, to cost $150,000.

INDIANAPOLIS.—The Holcomb & Hoke Mfg. Co. contemplates an addition, 3-stories, 68 x 128 feet.

INDIANAPOLIS.—The H. A. Brown Mfg. Co. has been incorporated with $200,000 capital, by H. A. Brown and others.

INDIANAPOLIS.—The National Automatic Wireless Baler Co. has been incorporated with $100,000 capital, by B. T. Brown, A. D. Porter and R. M. Coleman.

INDIANAPOLIS.—The Brownlee Mfg. Co. has been incorporated with $100,000 capital, to manufacture machinery, by D. T. Brownlee, James H. Deakin and Merritt F. Blizard.

INDIANAPOLIS.—The H. C. S. Motor Car Co. recently was incorporated with $1,000,000 capital to manufacture motor cars, by H. C. Stutz, H. F. Campbell, Samuel T. Murdock and Henry H. Hornbrook.

KOKOMO, IND.—The Walton & Macke Nail Co., Inc., recently was incorporated with $100,000 capital, by A. G. Rundle, O. H. Skinner and George D. Armstrong.

RICHMOND, IND.—The National Automatic Tool Co. has placed contracts for a plant addition.

RICHMOND, IND.—The Richmond Piston Ring Co. recently was incorporated with $300,000 capital to manufacture iron and metal products. The directors are Richard A. Booker, William R. Dill, George H. Eggemeyer, W. C. Hibbered and Frederick G. White.

SULLIVAN, IND.—The Mutual Truck Co. is having plans drawn for a plant addition, 1-story, 100 x 300 feet, to cost $40,000.

VINCENNES, IND.—The Indiana Power Co. has been incorporated with $5,000,000 capital, by C. E. Gregg and others.

CANTON, O.—The Union Metal Mfg. Co. is erecting a building to be devoted to the manufacture of foundry equipment.

CINCINNATI.—The Ohio Butterine Co. is having plans drawn for a boiler and engine room, 1-story, 20 x 86 feet.

CLEVELAND.—The Auto Screw Products Co. has let a contract for a 1-story building, 89 x 140 feet.

CLEVELAND.—The Republic Brass Co., 4607 Payne avenue, has awarded contracts for a plant, 2-stories, 66 x 200 feet, to cost $100,000.

CLEVELAND.—The Pneumatic Appliance Co. has been incorporated with $25,000 capital, by T. J. Moffett, B. F. Evarts, Albert H. Manchester and others.

CLEVELAND.—W. H. Smith, care of Ernest McGeorge, 1900 Euclid avenue, is having plans prepared for a machine shop and foundry, 100 x 120 feet to cost $75,000.

CLEVELAND.—The Schenck Electrical Appliance Co. recently was incorporated with $10,000 capital, by Edward J. Shernoy, William H. Chapman and others.

CLEVELAND.—The Super Steel Co. recently was incorporated with $100,000 capital, by Louis Bloomfield, E. P. Chamberlain, F. M. Kemp, Engineers building, and others.

CLEVELAND.—The Cleveland Mixer & Mfg. Co. has been incorporated with $10,000 capital, by John P. Dempsey, John J. Sturgess, G. Henderson, Garfield building, and others.

COLUMBUS, O.—The Simplicity Wheel Columbus Co. has been incorporated with $15,000 capital, by George F. Burwell, Robert C. Byers, Louis M. Greenstein and others.

COLUMBUS, O.—The Safety Wire Gas Globe Co. has leased a building at 44 East Chestnut street, which will be equipped for the manufacture of safety wire gas globes.

CUYAHOGA FALLS, O.—The Superior Mold & Equipment Co. recently was incorporated with $50,000 capital, by A. G. Hachtel, S. J. Taylor and others.

DAYTON, O.—The Nichols Electric Co. has been incorporated with $30,000 capital, by John K. Meyers, G. D. Carver and others.

FINDLAY, O.—The Buckeye Traction Ditcher Co. is reported planning an addition to its foundry at a cost of $75,000.

OBERLIN, O.—This city contemplates an electric power plant.

TOLEDO, O.—The Automotive Corp., 644 Spitzer building, is taking bids for an assembling building, 1-story, 90 x 300 feet, to cost $40,000.

WARREN, O.—The Youngstown Sheet & Tube Co. is taking bids for several buildings.

PARKERSBURG, W. VA.—The Parkersburg Rig & Reel Co. has awarded contracts for a foundry, to cost $110,000.

Business in Canada

ELMWOOD, MAN.—The Elmwood Machine Works, 405 Nairn avenue, has started work on an addition to its plant to cost $20,000.

ST. BONIFACE, MAN.—The Canadian Car Wheel & Foundries Co., Montreal, Que., will start work at once on a plant here to cost $60,000.

WINNIPEG, MAN.—The American Grain Separator Co. (Canada), Ltd., has been incorporated to manufacture grain separating machinery, with $50,000 capital, by Robert J. Owens, John L. Owens both of Minneapolis; Charles S. Brown and Matthew R. Elden both of Winnipeg, and others.

CALGARY, ALTA.—The Liquid Air Co., First street east and second avenue, has let the general contract for a plant to cost $30,000.

ST. JOHN, N. B.—The Dominion government recently appropriated $700,000 for the construction of the Courtnay Bay drydock here. The St. John Dry Dock & Shipbuilding Co. has the contract for the erection of the plant.

MONTREAL, QUE.—The Engravers Machinery Co., of Canada, Ltd., has been incorporated with $50,000 capital to manufacture machinery, steel dies, copper plates, etc., by Francois P. Brais, Albert W. Stuart, Laura M. Smith and others.

MERRICKVILLE, ONT.—The Percival Plow & Stove Co. will build an addition.

OTTAWA, ONT.—The Ottawa Car Co., Slater street, has let the general contract for a brass foundry to cost $25,000.

OTTAWA, ONT.—The Chemical & Engineering Co., Ltd., has been incorporated to manufacture hydraulic equipment, etc., with $50,000 capital, by Arthur Ellis, Redmond Code, Marie K. Herbert and others.

TORONTO, ONT.—The Northern Aluminum Co., Sterling road, will start work on a factory building to cost $358,000.

WALKERVILLE, ONT.—The Eclipse Machine Co., Ltd., has been incorporated with $100,000 capital, to manufacture machinery, etc., by Edward J. Dunn, James B. Rathbone, Alexander D. Falck and others all of Elmira, N. Y.

WHITBY, ONT.—The Nash Motor Co. proposes to establish a branch plant in Canada. A site of 60 acres has been selected as a likely spot for the plant.

WINDERMERE, ONT.—Thomas Clark will build an electric light and power plant here. He wants prices on the necessary equipment for the plant.

WINDSOR, ONT.—The Sanford Riley Stoker Co. of Canada, Ltd., has been incorporated with $100,000 capital, to manufacture machinery, etc., by Robert S. Riley, Fred H. Daniels both of Worcester, Mass.; Oscar E. Fleming, Windsor, Ont., and others.

WINDSOR, ONT.—The purchase of the properties owned by the Dominion Stamping Co. at Ford City, by the Ford Motor Co. of Canada, has been announced. The plant will be used for the manufacture of fenders, sheet metal and other automobile accessories. This deal does not involve the forging plant of the Dominion Stamping Co.

INDUSTRIAL ISLAND, B. C.—The Britannia Wire Rope Co., amalgamated with Gibsons, Ltd., Vancouver, B. C., will build a plant here for the manufacture of wire rope, etc.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ores

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.38c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.52c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.45c
Iron bars, Boston	3.40c
Iron bars, Buffalo	4.15c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.75c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.70c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	3.80c
No. 10 blue anl. sheets, Boston	4.85c
No. 10 blue anl., Buffalo	4.65c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Cleveland	4.60c
No. 28 black sheets, Boston	6.15c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.695c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.70c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Boston	7.50c
No. 28 galv. sheets, Cleveland	5.95c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.05c
No. 28 galv. sheets, St. Louis	7.045c
Bands, Boston	4.60c
Bands, Detroit	4.03c
Hoops, Boston	4.70c
Hoops, Detroit	4.03c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long.

Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld	Black.	Galv.
⅛-inch	1	+14
¼-inch	24½	+ 2½
⅜-inch	25½	+ 1½
½-inch	29½	11½
¾ to 1½-inch	34½	18½
Lap Weld		
2-inch	28½	14½
2½ to 6-inch	30½	17½
7 to 12-inch	27½	14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼-inch	+21	+36
⅜-inch	23½	6½
½-inch	28½	15½
¾ to 1½-inch	34½	19½
Lap Weld		
2-inch	29½	16½
2½ to 4-inch	31½	19½
4½ to 6-inch	30½	18½
7 and 8-inch	22½	10½
9 and 12-inch	17½	5½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld	Black	Galv.
½-inch	15½	3½
¾ to 1½-inch	20½	8½
Lap Weld		
2-inch	16½	4½
2½ to 4-inch	18½	9½

Lapweld Boiler Tubes

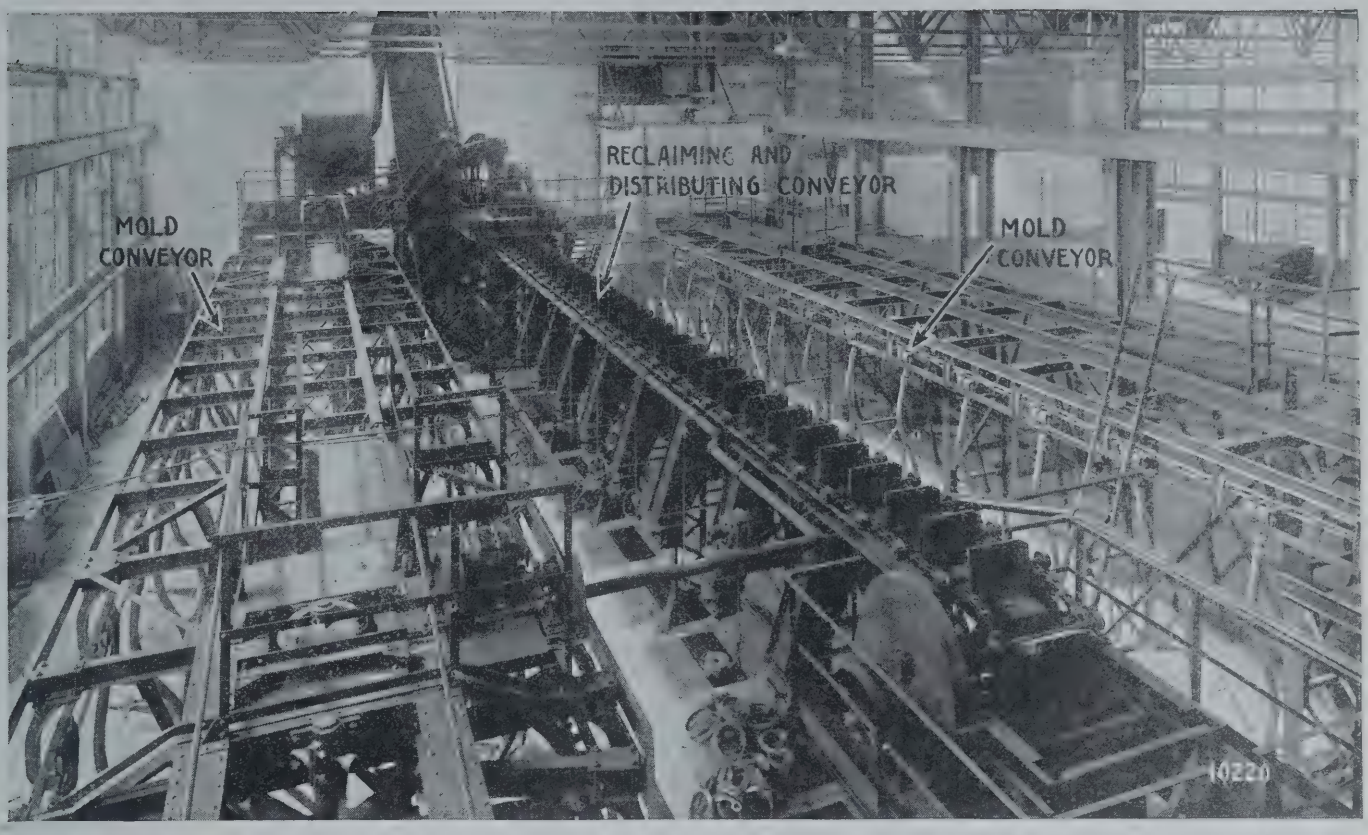
Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16



General view of Reclaiming and Distributing Conveyor, and Mold Conveyors, in foundry of Kelsey Wheel Co., Detroit, Mich.

Increased Efficiency and Link-Belt Machinery

THE present-day foundry is vastly different from the average foundry of the past, due to the increasing use of modern methods to save labor and minimize the operating expense.

With everything else geared up for quantity production to reduce costs, and in view of the growing scarcity of labor, it becomes necessary to install elevating and conveying machinery for handling the sand, pig iron, coke, molds, castings, refuse, etc. in the foundry. Foundrymen in general are realizing with increasing certainty that machinery of this type, when properly designed and built, and well taken care of, is fully as necessary an adjunct, and as reliable and economical in operation, as any other foundry equipment, such as ladle cranes, blowers, etc.

The Link-Belt Company has had a most extensive experience in building mechanical handling equipment for foundries—its installations dating back to the early period of development of the elevating and conveying art.

We invite foundry operators, when planning new foundries, or making changes in old foundries, to avail themselves of our special engineering service, to insure that suitable provisions for the proper machinery are made. Write for Catalog No. 390.

415

LINK-BELT COMPANY

PHILADELPHIA		CHICAGO		INDIANAPOLIS	
New York	299 Broadway	Huntington, W. Va.	Robson-Prichard Bldg.	San Francisco	582 Market St.
Boston	49 Federal St.	Cleveland	429 Rockefeller Bldg.	Los Angeles	163 N. Los Angeles St.
Pittsburgh	1501 Park Bldg.	Detroit	932 Dime Bank Bldg.	Toronto, Can.	Canadian Link-Belt Co., Ltd.
St. Louis	Cent'l Nat'l Bank Bldg.	Kansas City, Mo.	308 Elmhurst Bldg.	Denver	Lindrooth, Shubart & Co., Boston Bldg.
Buffalo	547 Ellicott Square	Seattle	576 First Ave., S.	Louisville, Ky.	Frederick Wehle, Starks Bldg.
Wilkes-Barre	2d National Bank Bldg.	Portland, Ore.	First and Stark Sts.	New Orleans	C. O. Hinz, Hibernia Bank Bldg.
				Birmingham, Ala.	S. L. Morrow, 720 Brown-Marx Bldg.

LINK-BELT

Labor-Saving Machinery

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$21.50
Chicago	20.50 to 21.00
Eastern Pennsylvania	20.00 to 22.50
Cleveland	19.50 to 20.00
St. Louis	20.00 to 20.50
Buffalo	19.00 to 20.00
New York (dealers)	16.50 to 17.00
Cincinnati	17.50 to 18.00
Birmingham	20.00 to 21.00
Valleys	20.00 to 20.50
Boston (dealers)	16.00 to 17.00

BUNDLED SHEETS

Pittsburgh	16.00 to 16.50
Eastern Pennsylvania	17.00 to 17.50
Cleveland	18.00 to 18.50
Buffalo	14.00 to 15.00
Cincinnati	13.50 to 14.00
St. Louis	12.00 to 12.50

STEEL RAILS, SHORT

Chicago	$23.50 to 24.00
Boston (dealers)	15.50 to 16.00
Cleveland	18.00 to 18.50
St. Louis	23.50 to 24.00
Birmingham	19.00 to 21.00
Cincinnati	22.00 to 22.50
Eastern Pennsylvania	20.00 to 21.00

STOVE PLATE

Pittsburgh	$21.00 to 22.00
Chicago	26.00 to 26.50
Eastern Pennsylvania	21.00 to 22.00
Cleveland	22.00 to 22.50
St. Louis	24.00 to 24.50
Buffalo	22.00 to 22.50
New York	17.50 to 18.00
Cincinnati	20.50 to 21.00
Birmingham	22.50 to 23.00
Boston	22.00 to 23.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$26.00 to 27.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	25.75 to 26.25
Buffalo	23.50 to 24.00

SHOVELING STEEL

Chicago	$20.00 to 20.50
St. Louis	18.50 to 19.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$23.00 to 23.50
Chicago	23.00 to 23.50
St. Louis	22.00 to 22.50

BALED SHEETS

Pittsburgh	18.00 to 18.50
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	20.50 to 21.00
St. Louis	20.00 to 20.50
Eastern Pennsylvania	20.00 to 22.50

BOILER PLATE, CUT

Chicago, No. 1	$18.00 to 18.50
St. Louis	16.00 to 16.50

ANGLE BARS—STEEL

Chicago	$24.00 to 24.50
St. Louis	20.00 to 20.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$24.00 to 25.00
Pittsburgh, No. 2	22.00 to 22.50
Chicago, No. 1	26.50 to 27.00
Chicago, No. 2	23.50 to 24.00
Eastern Pennsylvania, No. 1	27.00 to 28.00
Cleveland, No. 1	23.25 to 23.75
St. Louis, No. 1	23.50 to 24.00
St. Louis, No. 2	22.50 to 23.00
Buffalo	23.00 to 23.50
Cincinnati, No. 1	21.50 to 22.00
Birmingham, No. 1	17.00 to 18.00
New York, No. 1 (dealers)	25.00
Boston (dealers)	22.00 to 23.00

WROUGHT PIPE

Eastern Pennsylvania	$18.00 to 19.00
Eastern Pennsylvania, ungraded	13.00 to 14.00
Buffalo	17.50 to 18.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	14.00 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$22.00 to 23.00

CITY WROUGHT

New York, long (dealers)	20.00 to 21.00

BUSHELING

Chicago, No. 1	$21.50 to 22.00
Chicago, No. 2	14.50 to 15.00
Cleveland, No. 1	17.50 to 18.50
Cleveland, No. 2	15.00 to 15.50
St. Louis, No. 1	20.50 to 21.00
Buffalo No. 1	16.50 to 17.50
Cincinnati, No. 1	16.00 to 16.50
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.50 to 14.00
Chicago	11.00 to 11.50
Eastern Pennsylvania	17.00 to 18.00
Eastern Pennsylvania (blast furn.)	16.50 to 17.50
Eastern Pennsylvania (chemical)	18.50 to 19.50
Cleveland	11.50 to 12.00
Buffalo	13.00 to 14.00
New York (dealers)	12.50 to 13.00
St. Louis	13.50 to 14.00
Cincinnati	7.50 to 8.00
Birmingham	13.00 to 14.00
Valleys	11.00 to 11.50
Boston (dealers)	12.00 to 12.50
Boston (blast furnace) (dealers)	10.50 to 11.00

CAST IRON BORINGS

Pittsburgh	$18.00 to 19.00
Chicago	12.50 to 13.00
Eastern Pennsylvania	20.00 to 21.00
Eastern Pennsylvania (chemical)	20.00 to 21.00
Cleveland	13.50 to 14.00
St. Louis	13.00 to 13.50
Buffalo	16.00 to 16.50
New York (dealers' price)	15.00 to 16.00
Cincinnati	10.50 to 11.00
Birmingham	13.00 to 14.00
Valleys	14.75 to 15.00
Boston (dealers)	15.00 to 16.00
Boston (blast furnace) (dealers)	14.00 to 15.00

IRON AXLES

Pittsburgh	$40.00 to 41.00
Chicago	34.00 to 35.00
Eastern Pennsylvania	40.00
Cleveland	35.00 to 36.00
St. Louis	35.00 to 35.50
Buffalo	32.00 to 33.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	25.00 to 25.50
Cleveland	27.00 to 28.00
St. Louis	24.50 to 25.00
Buffalo	24.00 to 25.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	19.50 to 20.00
Cleveland	16.25 to 16.75
St. Louis	19.00 to 19.50
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$24.75 to 25.25
Cleveland	22.00 to 23.00
Buffalo	20.00 to 20.50
New York	16.50 to 17.00
Eastern Pennsylvania	21.00 to 22.00

FORGE CROPPINGS

Cleveland, large	$13.00 to 13.50
Cleveland, small	16.25 to 16.75
Chicago, small	15.50 to 16.00
Boston (dealers)	12.50 to 13.00

ORGE SCRAP

Chicago	28.00 to 28.50
Eastern Pennsylvania, No. 1	17.00 to 17.50
Boston	12.50 to 13.00

ARCH BARS AND TRANSOMS

Chicago	28.00 to 28.50
St. Louis	26.00 to 26.50

ANGLE BARS—IRON

Chicago	$28.00 to 28.50
St. Louis	24.50 to 25.00

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$18.00 to 18.50
Eastern Pennsylvania	16.00 to 17.00
Boston (dealers)	11.50 to 12.00
St. Louis	14.25 to 14.75
Cleveland	17.00 to 17.50
Buffalo	16.50 to 17.50
Chicago	15.50 to 16.00

STEEL CAR AXLES

Pittsburgh	$31.00 to 32.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	22.00 to 33.50
Buffalo	32.00 to 33.00
Chicago	31.00 to 32.00
New York (dealers)	25.00
Birmingham	22.50 to 23.00
Boston (dealers)	22.50 to 23.50

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	30.00 to 30.50
New York (dealers)	24.00
Chicago	29.50 to 30.00

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$28.00 to 29.00
Pittsburgh, steel	22.50 to 23.00
Chicago, iron	25.00 to 25.50
Eastern Pennsylvania, iron	28.00
Cleveland, iron	24.50 to 25.00
St. Louis, iron	25.50 to 26.00
Buffalo, iron	26.00 to 26.50
Birmingham, iron	20.00 to 21.00
Birmingham, tram car	19.00 to 20.00
Boston	23.00 to 24.00
Cincinnati	21.50 to 22.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$28.00 to 29.00
Chicago, cupola	29.50 to 30.00
Eastern Pennsylvania, cupola	26.50 to 27.50
Cleveland, cupola	27.00 to 28.00
New York, cupola (dealers)	24.00 to 25.00
Cincinnati, No. 1, cupola	24.50 to 25.00
Birmingham, cupola	24.00 to 25.00
St. Louis, railroad	30.00 to 30.50
St. Louis, agricultural	29.50 to 30.00
Buffalo	26.00 to 26.50
Boston	28.50 to 29.00
Valleys	26.50 to 28.00

HEAVY CAST

New York (dealers)	23.50 to 24.00
Buffalo	21.00 to 22.00
Pittsburgh	24.00 to 25.00
Cleveland	19.50 to 20.00
Boston	18.00 to 18.50

MALLEABLE

Pittsburgh, railroad	$24.00 to 25.00
Pittsburgh, agricultural	21.00 to 22.00
Chicago, railroad	24.00 to 24.50
Chicago, agricultural	24.00 to 24.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	21.00 to 22.00
Cleveland, agricultural	17.75 to 18.50
St. Louis, railroad	21.50 to 22.00
St. Louis, agricultural	20.50 to 21.00
Cincinnati, railroad	16.50 to 17.00
Cincinnati, agricultural	16.00 to 16.50
Boston	19.00 to 20.00
Buffalo	21.50 to 22.50

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$29.50 to 30.00
Chicago	30.50 to 31.00
Eastern Pennsylvania	23.00
Cleveland	27.00 to 28.00
St. Louis	30.50 to 31.00
Birmingham	23.00 to 24.00
Boston (dealers)	20.00 to 20.50

LOCOMOTIVE TIRES

Chicago	23.50 to 24.00
St. Louis	21.00 to 21.50

BOILER PUNCHINGS

Chicago	$25.00 to 26.00
Eastern Pennsylvania	23.00 to 24.00

An Invitation

If you are interested in the purchase or sale of:—

Scrap iron and Steel
Relaying rails
Billets for rerolling or forging

Write or phone us your inquiries—
And when in Chicago we would be pleased to have you call on us.

See us
Concerning your
Requirements
And our
Prices

Sell
Carloads
Right
And be
Pleased.

The James J. Miller Company.
McCormick Bldg.- Chicago.

New Trade Publications

MONEL METAL.—An illustrated booklet, published by the Monel Metal Products Corp., Bayonne, N. J., describes and illustrates monel metal, an alloy of copper, nickel and other metals. Various data pertaining to the metal are given, including tables of physical properties, tests, etc.

AIR COMPRESSORS.—Two bulletins have been issued by the Ingersoll-Rand Co., New York, calling attention to the use of air compressors. One bulletin is a cardboard folder and is devoted to air lift pumping of water. The second leaflet calls attention to two catalogs issued by the company, Nos. 3230 and 3131. The former describes belt driven compressors while the latter points out the details of the steam driven type.

SHAKING GRATE.—The Rose Patent Grate Co., Council Bluffs, Iowa, has published a 15-page booklet, in which a shaking grate for steam boilers is described and illustrated. This grate can be used for stationary, marine and locomotive work. According to the booklet it is constructed so that the fire bed is lifted bodily from the bottom allowing the ashes to fall through the grates to the pit below. Full data pertaining to the grate are given as well as a number of illustrations.

SAND BLAST.—The Pangborn Corp., Hagerstown, Md., is circulating an interesting booklet, containing illustrations of the company's executives, views of its offices and various departments of its plant as well as illustrations of sand blast and allied equipment which it manufactures. The booklet is printed on heavy coated stock and the pictures are mounted on a background of blue. A partial list of users of the equipment manufactured by the company is given on the back page of the booklet.

FOUNDRY SUPPLIES.—Small tools and supplies for foundry, factory and general mill use, are described and illustrated in a 62-page catalog recently published by the Liberty Supply Co., Philadelphia. Among the supplies described are chaplets, hinge tubes, stove door catches, foundry nails, wire nails, twisted steel gaggers, molders' bellows, brushes, brooms, rammers, mallets, goggles, general molders' tools, shovels, wheelbarrows, trucks, core-oven cars, etc. All articles are illustrated and specifications and other data are given.

ELECTRIC HEATERS.—Applications of electrical heat by means of standardized heaters are described in a 4-page folder published by the Cutler-Hammer Mfg. Co., Milwaukee. The heaters, which look like 2-foot rules, are 3/16 of an inch thick, 1½ inches wide and 24 inches long. All parts are enclosed in a steel jacket. A list of uses to which these heaters are adapted includes, heating, drying rooms, crane and hoist cabs, meter houses, and valve houses; drying rewound motor armatures, etc.; for heating platforms for table men and shear men in steel plants and for low temperature ovens.

CLAM-SHELL BUCKETS.—An illustrated folder is being circulated by the Blaw-Knox Co., Pittsburgh, in which single line clam-shell buckets are described and illustrated. These buckets are of riveted steel plate and parts are of annealed open-hearth steel castings and heavy steel forgings. Renewable bushings are provided and lubrication is provided for by means of compression plugs, grease being forced into the cavities machined in the pins and castings. These buckets are adapted to various kinds of work including, their use in power plants, foundries, steel mills, on railroad construction work, etc.

CENTRIFUGAL PUMP.—Design, theory and practical application of centrifugal pumps and the methods of testing employed in the plant of the Goulds Mfg. Co., Seneca Falls, N. Y., as well as descriptions of various types of these pumps, are treated in a 36-page booklet recently published by the Goulds company. The data in the bulletin was first issued in letter form for the use of the company's selling organization, but the booklet has been reprinted for general distribution. Much valuable data are given, and many illustrations show various parts of the pumps. A number of curves appearing in the booklet are interesting.

REFRACTORY BRICK.—A booklet of 16 pages has been published by the Harbison-Walker Refractories Co., Pittsburgh, in which refractory brick especially adapted for service in open-hearth and electric furnaces are described and illustrated. This brick was first placed on the market in 1916. The brick consist of round or square soft steel containers, open at the ends, and packed with ground dead-burned magnesite. According to the booklet they are especially adapted for service in the backwalls, bulkheads and ends of the basic open-hearth furnace, and the sidewalls of the electric furnace. Other data are given and the illustrations show the use of the brick.

OIL BURNERS.—The Hauck Mfg. Co., Brooklyn, N. Y., recently published an illustrated 16-page booklet in which various types of oil burners and furnaces are described. According to the booklet they are adapted particularly to use in foundries, firing cupolas, drying molds, heating and drying ladles, patching cores, melting brass; in boiler shops laying up corners, shaping throat sheet work, flanging, dishing, heating rivets, bending pipe, etc.; in machine and repair shops, preheating for welding, brazing, expanding to make shrink fits, melting soft metals, tool dressing, tempering and heating soldering irons. Various data pertaining to each type are given, as well as illustrations.

FACTORY TRUCKS.—The use of trucks for handling or storing materials in the process of manufacture is described and illustrated in a 24-page booklet recently issued by the Howe Chain Co., Muskegon, Mich. Each of these trucks consists of a platform, equipped with two malleable iron wheels at the rear and a malleable iron draw bar and leg in front. To move the truck a handle or tongue, mounted on a wheel, is attached to the draw bar by means of a lever action, which lifts the leg 1¼ inches from the floor, thus supporting the load on the two rear and one front wheels. Various types of bodies are provided for various work. The booklet contains a number of illustrations of these trucks in actual use. A list of users is given.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A commercial agent from Australia desires to purchase and secure agencies for the sale of hardware, electrical goods, tools, stoves, etc. Oportunity No. 31158.

An importer in Italy desires to purchase, or secure an agency, for lumber, automobiles, motorcycles, farm tractors and agricultural implements. Correspondence should be in Italian. Opportunity No. 31159.

Representation is desired by a man in Turkey of manufacturers and exporters of nails, hardware, iron and brass bedsteads, etc. Opportunity No. 31160.

A firm in Italy desires to purchase and secure an agency for the sale of metal casters, locks for furniture. Correspondence should be in Italian or French. Opportunity No. 31162.

A trading company in England desires to secure agencies for the sale of bolts and nuts, iron and brass screws, wire nails, horseshoe nails, wire netting, hinges, bar and sheet iron and other products. Opportunity No. 31164.

A company in England desires to purchase electrical fittings and appliances, steel-enameled conduits for electrical wires, and teak blocks for mounting switches. Opportunity No. 31166.

Representation is desired by a man in France for the sale of nails, steel tubing, wire, etc. Correspondence may be in English. Opportunity No. 31167.

A company in Spain operating four shipways, desires to get into communication with exporters of ship plates and angles. Correspondence should be in Spanish. Opportunity No. 31171.

A firm in France desires an agency from manufacturers of machine tools, such as lathes, planing machines, drilling machines of radial type, woodworking machinery and portable belt conveyors. Opportunity No. 31174.

A company in India desires to secure agencies and purchase clipless paper-fastening machines, paper fastener clips, collar buttons, sleeve links, small hand machines for making wicks, taps, embroidery, etc. Opportunity No. 31177.

The representative in the United States of a firm in Italy desires to make connections with agricultural machinery manufacturers with a view to securing an agency for pumps, tractors, harrows, plows, seeding machines, engines, windmills, harvesting machines, hay presses, dairy machinery, etc. Opportunity No. 31181.

A merchant in Argentina desires to purchase iron in bars, woods, construction materials, copper wire, hardware in general, etc. Opportunity No. 31183.

A commercial agent in Colombia desires an agency for the sale of agricultural implements and machinery. Opportunity No. 31185.

The general purchasing agent of a firm in Spain desires to purchase and secure an agency of iron-piping installations, with faucets, valves, connections, etc.; belting for power transmissions, electrical measuring instruments, electrical equipment of all kinds and motors. Correspondence should be in Spanish. Opportunity No. 31190.

A commercial agent in Belgium desires an agency for the sale of all kinds of articles connected with heating installations, such as boilers, radiators, taps, ventilators, pumps, turbines, motors, hydrometers, thermometers, regulators, tools, etc. Correspondence may be in English. Opportunity No. 31191.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, November 20, 1919 *No. 21*

More Production Greatly Needed

Pressure From Overdue Tonnage Upon the Mills is Severe—Prices Generally Incline Higher But Leading Maker Offers 1920 Sheet and Tin Plate at Unchanged Schedule—Pig Iron Less Feverish

REDOUBLED efforts to increase iron and steel production are resulting from the mounting pressure for supplies under which the mills and furnaces now are laboring. Output is steadily growing but it still is considerably below the prestrike volumes and little yet has been accomplished in overcoming the shortage of material. This lack of tonnage remains the dictating influence in shaping price and sales policies. In fact there continues small disposition to sell in any line in view of the heavy obligations. With large railroad requirements for steel now coming into view for release with the return to private control, the problem of supply has become more acute. In various products the tonnage now available and that expected through to July are being prorated with great care.

More tonnage has been added to the virtual reservations for rails for 1920 delivery which the mills are making for various roads awaiting the latter's return to their former ownership. This has applied both to roads in the Chicago district and in the East. Contracts have been all but formally closed for a large tonnage.

Steel Prices Are Strong

Restraint continues to be exerted by influential producing interests against higher prices for steel but this is only partially successful. The American Sheet & Tin Plate Co. has opened its books for first half contracts for sheets and tin plate at the same prices previously which represent the basis established by the industrial board March 21. Independent mills are inclined to follow suit, though occasional sales by them of prompt sheets are being made at large premiums. Wire products are commanding higher prices readily. An eastern mill has sold a round tonnage of plates at 2.75c and has taken some orders at 2.85c. Pittsburgh bar iron makers have made another advance of $3 per ton. Semifinished material is very strong. Wire rods have been sold at $60 to $65. Sheet bar sales above $45 are reported. Scrap is stronger and higher. Buffalo reports inquiries for 100,000 tons of heavy steel.

Iron is Less Feverish

Buying of pig iron is less excited and spot metal is not so actively sought but the market is extremely strong with a higher tendency. Foundry iron is steadier around $32 furnace for the base grade in valley, lake and Chicago territory. At Buffalo and in eastern Pennsylvania it is at $34 with No. 2X at $35 to $35.25. A southern maker sold 25,000 tons for next year in the Chicago district on the basis of $31 base. Heavy tonnages previously booked by lake and western Pennsylvania furnaces subject to prices to be determined later, now have been written into contracts at the $32 base. Most producers are reluctant to book further and much tonnage is seeking a seller. Automobile interests at Detroit want fully 100,000 tons including 40,000 to 50,000 tons for the Ford Motor Co. The General Motors Corp. has partially filled its inquiry for 22,000 tons. Basic has advanced to $30 valley and bessemer to $31.50 valley. There is a growing shortage of basic in the central west. After sizable sales last week up to $33 furnace, 25,000 tons of eastern basic were closed at $31 to $32 delivered.

Output Cut By Coal

While reduced production of coal has had little effect upon the iron and steel industry in this country, the fuel shortage is the dominating factor in the situation in Great Britain and Europe, according to special cable advices to THE IRON TRADE REVIEW. British pig iron production as a result is down to 575,000 tons monthly compared with an average of 625,000 tons for the year to date, 755,000 tons in 1918 and 855,000 tons in 1913. British steel output however is keeping ahead of the 1913 rate because of the wartime extensions. Germany is producing pig iron at present at the rate of 516,000 tons monthly as against 1,600,000 tons before the war. The situation in France is the worst of all and many furnaces have been forced down. Under these conditions export competition from these countries is limtied and some of them, England especially, continue to seek material freely on this side.

NOVEMBER 20, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - York St. and Western Ave.
NEW YORK - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - Prince's Chambers
LONDON, ENG. - - - Dorland House, 16 Regent St., S. W. I.

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Building on Solid Ground

HOW to prevent speculation in iron and steel products at a time when production is artificially curtailed by the reduced forces of employes is a problem to which the more substantial producers are giving serious consideration. The demand for steel products is so insistent that consumers willingly and anxiously offer premiums to the mills for early deliveries. This is the situation which is most discernible in the export trade. Business men know that premiums eventually have their effect upon prices. If the speculators were permitted absolute freedom of action the situation undoubtedly would become worse and prices would go soaring.

The severest critics of the American market are the foreign purchasers of steel. It is acknowledged that supplies have been curtailed and that foreign consumers are unable to purchase certain lines here for any amount of money. But foreign purchasers likewise recognize that the American mills have demonstrated a willingness to serve legitimate customers fairly and well. Reputable American mills have refused to sell to speculators but have accepted orders, whenever it was possible to do so, from legitimate consumers. They have attempted to supply only those who are in the greatest actual need of supplies of steel.

Foreigners have been prone to criticise American industries as being too anxious to chase the dollar. They are beginning to realize that a different doctrine has been and is being inculcated. It is the doctrine of established reputation and continued business relations. That is the only doctrine which will foster a permanent foreign trade.

Transportation Board Needed

WHILE it has become almost a pastime of congress to create unnecessary boards, commissions, etc., upon the slightest provocation, there are circumstances frequently which justify fully the establishment of new governmental bodies of this character. This is true in the case of the proposed transportation board provided for in the senate railroad bill. As stated by the senate committee on interstate commerce, this marks the first real recognition of co-ordination of water and land transportation, which should be brought about.

The board would perform functions now exercised by the interstate commerce commission, such as the administration of the car service act, of the safety appliance acts, of the hours of service act, of the locomotive boiler inspection act, and others. It also would be charged with a number of important duties relating to water transportation, chiefly by way of investigations that should lead to important results, and would be given control over the issuance of railroad securities. Section 45, an entirely new regulation, is intended to increase American export and coastwise trade, making it easier for the interior shipper to avail himself of the ocean routes, and would be administered by the board.

The entire country must know that the interstate commerce commission is greatly overworked, and is utterly unable to keep up with the demands made upon it. Yet its duties would be increased tremendously by the railroad bills unless some other body should be created to assume these new burdens or the commission should be enlarged and divided, which at best, would represent a doubtful expedient. Some new arm of the government's transportation service, therefore should be created to take over these new responsibilities and to relieve the commission of some which it now has to assume.

Smelting Titanium-Bearing Ore

ON ACCOUNT of the large deposits of titanium-bearing iron ore yet unmined in this country, the possibility of its use in the blast furnace is a problem furnace managers, no doubt, will be compelled to face in the future. Many furnacemen hold that ores analyzing over 1 per cent titanium are

detrimental to furnace operation, inasmuch as the ratio of coke per ton of metal is extremely high as compared with the practice when lake ores are used; and furthermore, that the furnace hearths are built up by the formation of infusible compounds. These beliefs evidently are founded on hearsay rather than on actual observation, because in the early days, when charcoal practice was in vogue, the percentage of titanium in the ores did not seem to worry the ironmasters to any great extent.

Experiments carried out in 1914 at a Port Henry, N. Y., blast furnace working on 25 per cent of an ore containing 13 per cent titanium, tend to throw a different light on what actually can be done with ores of this nature. Further experiments with titaniferous iron sands of New Zealand, a paper upon the subject of which appears elsewhere in this issue, also tend to offset whatever disfavor may be held in connection with titanium ore smelting.

The concensus of opinion of those in direct charge of the recent experiments is that titaniferous ores can be smelted in the blast furnace with no greater expenditure of heat than that required for nontitaniferous magnetites, and, since a larger volume of oxygen is removed by the action of carbon monoxide than is the case with nontitaniferous ores, a lower coke consumption per ton of iron may be expected. With the exhaustion of lake district ores, low in phosphorous, looming up in the future, many ironmasters eventually may be compelled to operate their furnaces on titanium-bearing ores, the analysis of which as a rule shows a comparatively low phosphorus content. For this reason, it is fortunate that research for solving the problem of smelting these ores is being conducted and is making progress.

Railroads Preparing to Buy

ALL of the railroad companies are formulating plans in anticipation of the return of the roads to their owners. Several have put out inquiries for large tonnages of rails for 1920, it being stipulated that the orders, if placed, may be cancelled if the railroad administration retains control. Some steel companies have refused to quote on this basis, while others are said to have taken orders subject to an understanding.

A great deal of tonnage is needed which neither has been placed nor inquired for. For instance, the Erie railroad needs 20,000 to 30,000 tons of rails which under ordinary circumstances it would lay in January, February and March. Many other roads need rails, and in addition they need large tonnages of steel for bridges, buildings and other purposes. If the roads are returned to their owners, the orders will be placed. If the control remains with the railroad administration, it is apparent that the latter will be required to place orders for at least a portion of the requirements.

Despite the absence of railroad buying, the steel industry has been choked with orders and some of the smaller steelmakers now are considering a policy of putting up prices to discourage buyers.

Because costs are low with relation to present selling prices and because some mills now are selling with practically no profit, there is some curiosity as to how long the steel industry as a whole would be able to resist the temptation to raise prices generally in the event that a freshet from railroad sources swelled the great stream of orders.

Light of Sanity Breaking

A REDEEMING feature of the strike situation in this country is to be found in the more frequent expressions of sanity and clear thinking on the part of labor itself. The loud-mouthed and radical minority has had the stage but as its leadership has proved so costly to the cause of labor, measured in terms of public opinion, the more sober counsel and influence among wage earners in different industrial centers gradually is being heard and heeded. The radical element has overstepped itself and a break among the workers is perhaps the most hopeful sign in the present period of unrest. In New England, the labor element has in many cases swung around to side against the extremists of its own class.

A recent action of the New England Foundrymen's association also shows the attitude of the vast majority of the people. This association sent the following resolution to the governor:

"The membership in the New England Foundrymen's association represents over 200 of the foundries throughout New England. To a great extent the members have risen from the ranks of those who have labored with their hands to the directorship of these particular industries. They appreciate that law and order must be maintained, and that in their enforcement, the commonwealth cannot allow itself to be embarrassed, nor the law questioned by groups of individuals, whoever they may be or whatever interest they represent. The members of the association unanimously voted at the regular meeting to express to you their very statesman-like stand in connection with the controversy with the Boston police force."

Roger W. Babson, in a recent talk before the American Gear Manufacturers' association, expressed his belief that manifestly unjust strikes such as the Boston police strike, and others, form an important step in the general progress toward a better understanding between labor and capital. The coal strike is playing its part in this awakening and will help to bring about sane and equitable conditions in industry not only for employer and employed, but for the general public as well.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1420 AND 1422

Pig Iron

Bessemer, valley	$31.50
Bessemer, Pittsburgh	32.90
Basic, valley	30 00
Basic, Pittsburgh	31.40
Basic, delivered, eastern Pa.	31.00 to 32.00
Malleable, Pittsburgh	32.50
Malleable, Chicago, furnace	32.50
Malleable, Buffalo, furnace	35.25
Malleable, delivered eastern Pa.	36.00 to 37.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$37.10 to 37.60
No. 1X, Buffalo	37.00
No. 1 foundry, Chicago furnace	33.25
No. 2 foundry, valley, Pittsburgh	33.40
No 2 foundry, Buffalo	34.00
No. 2 Northern, Boston	34.90 to 35.90
No. 2 foundry, Chicago furnace	32.00
No. 2 foundry, Ironton furnace	32.75
No. 2 foundry, Cleveland furnace	32.00
No. 2X, eastern del., Phila.	36.10
No. 2X, eastern, N. J. tidewater	36.10
No. 2X, eastern, Boston	35.90
No. 2X foundry, Buffalo furnace	35.25
No. 2 foundry, del., Philadelphia	35.10
No. 2 foundry, N. J. tidewater	35.10
No. 2 southern, Birmingham	30.00 to 31. 0
No. 2 southern, Cincinnati	33.60
No. 2 southern, Chicago	35.00
No. 2 southern, Phila.	36.50
No. 2 southern, Cleveland	35.00
No. 2 southern, Boston	38.00
No. 2 southern, St. Louis	34.25
Virginia, No. 2X, furnace	33.25 to 34.25
Virginia, No. 2X, Philadelphia	37.35 to 38.35
Virginia, No. 2X, Jersey City	37.65 to 38.65
Virginia, No. 2X, Boston	37.95 to 38.95
Gray forge, valley, Pittsburgh	32.40
Gray forge, Buffalo	32.00 to 33.00
Gray forge, eastern Pa.	31.50
Silveries, 8% furnace	45.25 to 47.25
Ohio Silveries, 8%, Chicago	46.80
Tennessee Silveries 8% Chicago	48 65
Low phos. standard, Phila.	43.50 to44.00
Low phos. Lebanon, furnace	36.00 to 37.00
Low phos. standard, Pittsburgh	41.40
Charcoal, Superior, Chicago	35.50 to 38.00
Charcoal, Superior, Chicago first quarter 1920	35.50 to 37.50

Coke

(At the ovens)

Connellsville furnace	$5.75 to 6.25
Connellsville foundry	6.50 to 7.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	10.50 to 11.00
New River furnace, nominal	8.00 to 9.00
Wise county furnace, nominal	7.00 to 7.50
Wise county foundry, nominal	8.00 to 9.00

Ferroalloys

Ferromanganese, 80 per cent, delivered producers' price	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	nominal
Spiegel, 18 to 22 per cent furnace, spot	33.00 to 35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.20
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon per pound contained, maker's plant	27c to 29c
Ferrovanadium, 35 to 40 per cent, per pound contained, according to analysis	$5.50 to $7.00
Ferro carbon-titanium, carloads, producers plant per net ton	200.00
Bessemer, ferrosilicon, 10 pe cent	54.75 to 56.75
Bessemer, ferosilicon, 11 per cent	58.05 to 60.05
Bessemer, ferrosilicon, 12 per cent	61.35 to 63.35

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	40.50
Open-hearth, Philadelphia	45.00 to 47.50
Open-hearth, Youngstown	40.50
Bessemer, Pittsburgh	40.50
Bessemer, Youngstown	40.50
Forging, Pittsburgh	51.00 to 53.00
Forging, Philadelphia	55.00 to 60.00

SHEET BARS

Open-hearth, Pittsburgh	$45.00
Open-hearth, Youngstown	45.00
Bessemer, Pittsburgh	45.00
Bessemer, Youngstown	45.00

SLABS

Pittsburgh and Youngstown	43.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$60.00 to 63.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c
Structural shapes, New York	2.72c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c to 2.995c
Tank plates, New York	2.92c to 3 02c
Bars, soft steel, Pittsburgh	2.35c to 2.50c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c to 2.77c
Bars, soft steel, Philadelphia	2.595c to 2.745c
Bar iron, common, Phila.	2.845c
Bar iron, common, Chicago	2.72c to 2.87c
Bar iron, common, Cleveland	2.75c to 3.00c
Bar iron, common, New York	2.87c
Bar iron, common, Pittsburgh	3.25c
Hard steel bars, Chcago	2.85c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light St. Louis	40 00 to 46 00
Relaying rails, Pittsburgh	40.00 to 43.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	4.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers 5c more)

Wire nails, Pittsburgh	3.50c
Plain wire, Pittsburgh	3.00c to 3.25c
Galvanized wire, Pittsburgh	3.70c to 3.95c
Barbed wire, painted, Pitts.	3.50c
Barbed wire, galvanized, Pitts.	4.20c
Cut nails, Pittsburgh l. c. l.	5.195c
Coated nails per count keg, Pitts.	3.10c
Polished staples, Pittsburgh	3.50c
Galvanized staples, Pittsburgh	4.10c to 4.20c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 5.65c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No 10 open-hearth Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c to 4.095c

Full sheet schedule page 1420.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

	Black	Galv.
Base, Pittsburgh	Per cent off	
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	34½	18½

Full pipe schedule page 1420.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$62.80
Six-inch and over, Chicago	59.80
Four-inch, New York	61.30
Six-inch and over, New York	58.30
Four-inch, Birmingham	56.00
Six-inch and over, Birmingham	53.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.30c
Cold finished steel bars, Pitts., base	3.60c

Cotton ties, lots of 1000 to 3000 bundles, $1.79½ per bundle, mill.

Cotton ties, 3000 bundles and over, $1.77½ per bundle.

Rivets

Structural rivets, Pittsburgh	3.90c to 4.15c
Boiler rivets, Pittsburgh	4.00c to 4.25c
Rivets 7/8 in. and smaller Pitts.	50 to 50—10 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	45–5 to 50–10 off
Cut thread	40–5 to 50 off
Larger and longer	30–10 to 40 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–7½ to 60 off
Cut thread	40–10–5 to 50 off
Larger and longer	40 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–5 off
Cold pressed semifinished hexagon nuts ⅜ in. and smaller	70–10–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c to 2.70c off
Hot pressed, square tapped	2.25c to 2.45c off
Hot pressed, hexagon blank	2.50c to 2.70c off
Hot pressed, hexagon tapped	2 25 to 2.45c off
Cold pressed, square tapped	2.25c to 2.45c off
Cold pressed, square blank	2.50c to 2.70c
Cold pressed, hexagon blank	2.50c to 2.70c off
Cold pressed, hexagon tapped	2.25c to 2.45c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Nov. 19, 1919	Average prices Oct., 1919	Aug., 1919	Nov., 1918
Bessemer, valley, del., Pittsburgh	$32.90	$29.35	$29.35	$36 60
Basic, valley, delivered, Pittsburgh	31.40	27.15	27.15	34.40
*No. 2 Foundry, Pittsburgh	33.40	28.85	28.15	35.40
*No. 2 Foundry, Chicago, furnace	32.00	27.55	26.75	34.60
Lake Superior charcoal, Chicago	35.50	33.15	32.75	38.70
Malleable, valley	32.50	29.15	28.65	35.90
Malleable, Chicago	32.50	28.00	27.25	34.50
*Southern, No. 2, Birmingham	30.50	27.45	26.75	35.25
*Southern Ohio, No. 2, Ironton	32.75	28.80	26.75	34.00
Basic, eastern del., eastern Pa.	31.50	27 90	27.00	36 90
**No. 2X, Virginia, furnace	33.25	30.35	28.25	38 00
*No. 2X, eastern del., Philadelphia	36.10	32.00	29.60	39.15
Gray forge, valley del., Pittsburgh	32.40	27.65	27.15	34.40
Ferromanganese, 80 per cent, delivered	110.00	110 00	110.00	250.00†
Bessemer billets, Pittsburgh	40.50	39.30	38.50	47.50
Bessemer sheet bars, Pittsburgh	45.00	43.20	42.00	51 00
Open-hearth sheet bars, Pittsburgh	45.00	43.20	42 00	51.00
Open-hearth billets, Pittsburgh	40.50	39.30	38.50	47.50
Steel bars, Pittsburgh	2.50c	2.35	2.55	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.845	2.745	2.595	3.74

	Prices Nov. 19, 1919	Average prices Oct., 1919	Aug., 1919	Nov., 1918
Iron bars, Cleveland	$2.75	$2.75	$2.52	$3.64
Iron bars, Chicago mill	2.72	2.68	2.62	3.50
Beams, Chicago	2.72	2 72	2.72	3.27
Beams, Pittsburgh	2.45	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.24
Tank plates, Pittsburgh	2.65c	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.49
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.55	4.25
Sheets galv., No 28, Pittsburgh	5 70	5.70	5.70	6.25
Wire nails, Pittsburgh	3.50	3.25	3.25	3.50
Connellsville furnace coke	6.00	4.15	4.30	6 00
Connels lle foundry coke	7.00	5 60	5.10	7.00
Heavy melting steel, Pittsburgh	22.00	20.00	21.25	28.75
Heavy melting steel, eastern Pa.	21.00	19.55	19.60	28 00
Heavy melting steel, Chicago	24.50	18 80	20.75	26.50
No. 1 wrought, eastern Pennsylvania	28.50	27.00	27.25	34.00
No. 1 wrought, Chicago	27.00	22.00	23.25	29 65
Rerolling rails, Chicago	32.00	26.80	29.00	30.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Pig Iron Less Excited But Strong

Valley Basic Sells at $30 Furnace But Eastern Basic After Reaching $33 Furnace Subsides to $31 and $32 Delivered—Northern Foundry From $32 to $34 and Southern at $31—Detroit Interests Seek 100,000 Tons

Pittsburgh, Nov. 18.—The feature of the pig iron market the past week has been the sharp advance in steel-making iron, which puts the latter in line with other grades. A lot of 2500 tons of basic was sold at $30, valley, for December shipment to a Cleveland furnace interest, while 1000 tons of standard bessemer for first quarter recently were sold to a Pittsburgh steel foundry at $31.50, valley. Producers now are not considering bids of less, for while the demand from Pittsburgh steel manufacturers is anything but brisk at present, the supply of both grades, particularly basic, is extremely scarce. This condition in part is explained by the fact that at hand-filled furnaces the supply of labor still is inadequate. The scarcity of standard basic iron is intensified by the fact that stocks recently were largely cleaned up, and also by the fact that several merchant producers who ordinarily make basic, now are running on other grades. The N. & G. Taylor Co. is reported to have covered on 3600 tons for the first quarter but verification is lacking. This company reported having had a price of $30.45, delivered, Cumberland, Md. The United Alloy Steel Corp., Canton, O., wants 10,000 tons of basic for December and the first quarter. The Westinghouse Electric & Mfg. Co. has covered for the remainder of this year and first quarter for its Cleveland foundry. A western Pennsylvania maker having taken 5700 tons at $33.25 for 2.25 to 2.75 silicon iron, $32 for 1.75 to 2.25 silicon and $31.50 for 1.25 to 1.75 silicon. A sale of 500 tons of No. 2 foundry for first half to a Pittsburgh district consumer is noted at $32, furnace. Meanwhile, spot foundry sales are numerous, generally around $34, furnace. Sales of malleable include 2500 tons at $31.50, valley, for this year and the early part of next year, while 300 tons for early delivery went at $32, valley furnace, and several carload lots at $33. A Pittsburgh district maker of bar iron recently closed on 6000 tons of gray forge for first half at $31, furnace, while between 2000 and 3000 tons of low phosphorus have been taken by a valley producer for first quarter at $40 furnace. Demand for silvery iron has continued heavy. The Ohio interest which recently increased to $45.25 for 8 per cent has made a further advance of $2 to $47.25. Sales at the higher price are reported to be quite as heavy as they were at the old figure. Only two merchant stacks in the Shenango valley now are idle, these being Stewart and No. 3 Shenango. The Carnegie Steel Co. now has 44 of its 59 stacks active, a gain of two stacks in the week. This company expects to start its furnaces at Mingo and Bellaire, O., soon.

Demand for Spot Iron Lets Up

Boston, Nov. 17.—The peak in spot pig iron buying here due to the combined effect of the steel strike and the coal strike has passed, and the last few days have seen spot iron turned down at $37 delivered for 2.25 to 2.75 silicon. First half iron remains firm, with prices in some districts advancing and with ready purchasers for almost any reasonable quantity offered. The Thomas Iron Co. has been making heavy sales throughout New England, evidently with the intention of obtaining a backlog for its first half operation. The prices from this producer during the first part of last week were below those generally offered from other sources but an announced advance taking effect from Nov. 15 establishes $34, $35.25 and $37 as the prices for 1.75 to 2.25, 2.25 to 2.75, 2.75 to 3.25 silicon iron, at the furnace, eastern Pennsylvania. Sales of Buffalo iron for first half delivery, during the week establish a market in that district at $34 at the furnace for base. Virginia furnaces have only limited amounts to offer, one furnace offering nothing but special analysis iron for spot shipment at fancy prices. The weeks sales in New England have been heavy due largely to the Thomas Iron Co. activity. The General Fire Extinguisher Co., Providence, R. I., bought 1000 tons of eastern Pennsylvania iron at $33.25 at the furnace for 2X eastern (2.25 to 2.75 silicon). A Connecticut consumer bought 800 tons of malleable from an Ohio furnace at approximately the market price for 2X (2.25 to 2.75 silicon). An order was placed for 2000 tons of Buffalo iron (2.75 to 3.25 silicon) at a price of $38 at the furnace. Small sales accepted by one of the southern furnaces for New England delivery were at $32 for 1.75 to 2.25 silicon iron at the furnace.

Much 1920 Business Closed

New York, Nov. 17.—While pig iron is even scarcer than it was, demand is less insistent, since consumers generally have been taken care of for this year. Orders placed here during the past week appear larger than surface indications show. One eastern Pennsylvania furnace during the past week booked fully 15,000 tons for first half delivery, in the New York and Philadelphia dis-

tricts. Some of this business was entered on outstanding quotations. Included in the business placed in this district during the past week were 1000 tons of foundry for first half to a Chicago district plant. Some Virginia, 1.75 to 2.25 silicon foundry for this year was sold here during the week at $32, furnace. High silicon iron is scarce and high. One eastern Pennsylvania maker has sold 2.75 to 3.25 silicon foundry during the week at $36.50 furnace. Bessemer iron is scarce. One lot for this year was sold at $34, eastern Pennsylvania furnace. For valley bessemer, $32 to $32.50, furnace, or $36.40 to $36.90, delivered in the east, is asked. A round lot of eastern Pennsylvania malleable was sold at $36.25, furnace, equivalent to about $37.25 delivered in eastern Pennsylvania. Ohio malleable was sold here at $35.25 furnace, equivalent to $40, delivered eastern Pennsylvania. A lot of 500 tons of valley malleable also was sold at $32 valley, equivalent to $36.40, delivered eastern Pennsylvania, and 1000 tons of western malleable for next year was placed, the price to be established later. A spot lot of 1000 tons of basic was sold in this district at $30, eastern Pennsylvania furnace, but this figure could not be duplicated. Makers of copper-bearing low phosphorus are observing approximately the following schedule: $36, furnace, on iron containing copper up to 1 per cent; silicon, 1 to 2 per cent, and sulphur and phosphorus, up to 0.04 per cent; $37, furnace, on copper up to 0.50 per cent; $38, furnace, on copper up to 0.25 per cent, and $39, furnace, where the copper is not over 0.04 per cent.

Some eastern Pennsylvania foundry for this year has been sold at $37, furnace, for 2.25 to 2.75 silicon and $38, furnace, for 2.75 to 3.25 silicon.

Shortage Reported at Buffalo

Buffalo, Nov. 18.—A shortage of iron is developing in this district. Many melters are hastening to be covered, but are encountering difficulty in getting iron for prompt shipment, only limited tonnages being sold in this territory. Melters are paying $34 for No. 2 foundry (1.75-2.25 silicon), $35.25 for No. 2X (2.25 to 2.75 silicon) and $37 for No. 1X (2.75 to 3.25 silicon). pound of iron in this district under the schedule. Some melters are going outside the district, and paying the freight. Canadian furnaces are selling considerable iron for delivery on this side.

Motor Interests Want Tonnage

Cleveland, Nov. 18.—Leading automolibe and accessory interests in the Detroit district have been in the market for probably 100,000 tons of foundry and malleable grades for first half and are meeting with difficulty in getting the furnaces to acept business in this amount. The Ford Motor Co. is in the market for 40,000 to 50,000 tons. The General Motors Corp. which sought 22,000 tons for Flint has bought partially against this requirement. A Detroit maker of automobile engine castings is out for 14,000 tons. In addition, there are various miscellaneous inquiries from plants identified with the automobile industry. One of these latter lots calls for 3000 tons of malleable and foundry. While the demand for spot iron is less feverish and the market consequently is steadier, much further tonnage was converted into orders the past week. This has been done mainly by interests which previously had taken tonnage from various regular consumers but had left the prices open for later determination. One producer in this territory with a large tonnage, accepted under these circumstances, settled upon a price of $32, furnace, for the base grade of 1.75 to 2.25 silicon, with the usual differentials for other grades. Local buyers have been enabled to place some further tonnage for first half on the basis of $32 for 1.75 to 2.25 silicon. At present however, most sellers are out of the market and are not inclined to take business at any price. A large producer was a buyer of 2500 tons of basic for November-December at $30 valley to apply against a contract for this grade and is seeking 3500 tons more. Another inquiry for 1000 tons of basic for this year is current. Some leading northern Ohio consumers of basic are likely to be buyers in the open market soon. A sale of 2000 tons of November-December malleable to an outside point at $31.50, valley, is noted, as well as 2600 tons of the same grade for first half at $32.50, western Pennsylvania furnace. A small sale of 1.75 to 2.25 silicon foundry for spot delivery at $34 valley, was made. Some speculative iron of the same grade is offered at $46 and $37, valley, but there are no sales at these levels. Some southern Ohio now is up to $34, furnace, for the base grade. B furnace at Toledo has gone out and the A stack there which has been undergoing rebuilding for seven months has gone in. The Struthers furnace has resumed.

Scarcity Reported at Cincinnati

Cincinnati, Nov. 17.—Malleable iron seems to be pretty well cleaned up in southern Ohio, but one late sale is reported around $35, furnace, for this year's shipment. No prices for future delivery are obtainable. Spot foundry iron is very hard to obtain both in the South and in the Ironton district. However, one selling interest took some additional business last week at $31, Birmingham, for No. 2 foundry, 1.75 to 2.25 silicon.

Expect Higher Prices at St. Louis

St. Louis, Nov. 15.—Pig iron continues active, all classes of consumers making strenuous efforts to acquire tonnages. More furnace interests have withdrawn from the market. A large tonnage has been sold in this district, and orders for 5000 tons were rejected, as were inquiries for iron for 1920. Prices are strong, with an advancing tendency. Spot iron of all grades and descriptions is extremely scarce, and brokers with small lots to dispose of are getting almost any price they care to ask. A feature in the situation is the return to this market of melters to the West and Northwest, who have not purchased here for several years.

Southern Iron Again Advances

Birmingham, Ala., Nov. 18.—Pig iron prices in the South have again advanced, $1 per ton, and are now on a basis of $31 for No. 2 foundry (1.75 to 2.25 silicon). Inquiries are numerous, but producers are still cautious. Reluctance to sell is caused by expectations of wage readjustments which may affect costs.

Alabama bessemer ferrosilicon now is held on the basis of $47 furnace from 9 to 10 per cent, $49.50 for 10 to 11 per cent, $52 for 11 to 12 per cent and $54.50 for 12 to 13 per cent.

Market is Less Excited

Philadelphia, Nov. 18.—Wildness of the pig iron market is reflected by fact that whereas 12,000 tons of basic for the first half were sold the week before last at $33 eastern Pennsylvania furnace, sales have been made the past week for first quarter at a delivered price of between $31 and $32. Of 25,000 tons of first quarter basic sold past week 15,000 tons brought this level and it is believed the remaining 10,000 brought the same figures. This business is only one indication of the fact that the upward tendency in eastern prices was less sensational the past week than in preceding weeks. Foundry sellers who advanced to $36 eastern Pennsylvania furnace for No. 2X (2.25 to 2.75 silicon) for next year report no business as yet at this figure. On the other hand, sellers report consumers now are showing less disposition to fall over themselves to cover for next year on the basis of $35 for No. 2X (2.25 to 2.75 silicon). Outside of the basic sales, the most important business was 10,000 tons of standard low phosphorus for first half sold on the basis of $43.50 to $44 delivered this district for 0.03 phosphorus. Although no copper-bearing low phosphorus iron has been sold, sellers have several thousand tons of inquiry for next year and the minimum they are quoting is $37 furnace. Malleable has been bought in East all way from $36 to $40 delivered. Highest price is being paid for valley malleable although some valley malleable sold in East at $32 valley or $36.40 delivered. No gray forge has been sold. One eastern maker quoted $36 furnace. Some eastern Pennsylvania foundry iron for spot shipment has been sold at $37 furnace for No. 2X and $38 for No. 1X (2.75 to 3.25 silicon) these figures are exceptional and market for this year still represented by $35 for No. 2X central Pennsylvania iron which was held at $35.50 furnace for No. 2X a week ago can be had at $35. Virginia foundry iron is higher. While No. 2 plain (1.75 to 2.25 silicon) has been sold at $32 furnace and possibly still is obtainable at this figure, No. 2X has been bought at $34.25 and No. 1X at $36 for this year. An unusual development is a sale during the past week of a large tonnage of eastern Pennsylvania foundry for shipment through the first half to a large Chicago district user. Another unusual incident is the offering here of Canadian inquiry for malleable. Export inquiries are out here for 22,000 tons of basic and 10,000 tons of foundry.

Chicago Market Nearly Bare

Chicago, Nov. 18.—With an unsatisfied demand estimated by some sellers

at close to 300,000 tons and with many definite inquiries simply filed, without probability of their being closed, the pig iron market in Chicago is strong as to price and tight as to the possibility for placing tonnage. The principal seller of northern iron is definitely out of the market, the only sales recently being carlots as an accommodation to a few regular customers in need. No contracts are being made. Southern makers are out of the market as well. One recently offered some iron at $31, Birmingham, and after one day retreated from the market with about 25,000 tons booked. The Virginia Iron, Coal & Coke Co. is offering some iron at about $33, furnace, for silicon 1.75 to 2.25, with a freight rate of $4 to $5 to Chicago. Some iron from the valleys is being sold here at $30 to $31, furnace, for silicon 1.75 to 2.25. These prices are expected to be replaced by higher figures shortly. Demand for malleable has lessened the past few days, probably because of impending shortage of coal. An important automobile manufacturer in Michigan is about to close for 10,000 tons of about 5 per cent iron. A Wisconsin foundry is asking for 3000 tons of foundry. An automobile manufacturer recently inquiring for a round tonnage is understood to have been able to close only a portion of the amount desired. A recent sale of 600 tons of foundry iron was made to a northern Illinois melter for first half. Other lots of 300 to 1000 tons have been closed. Silveries apparently are not obtainable from any source. An inquiry for 200 tons of 8 per cent for second quarter is unplaced. Production is increasing here, all merchant stacks being in blast except two small ones at the plant of the Iroquois Iron Co. and one at Bayview. The Wisconsin Steel Co. has two of its three furnaces in blast.

Ore Business

At Low Ebb—Price Increase Anticipated for 1920

Cleveland, Nov. 18.—Business in the ore market is at low ebb, neither furnace interests nor ore operators displaying any interest at this time in possible requirements for 1920. Some operators anticipate a general increase in prices of ore for next year, basing their opinion on developments in the pig iron market and the labor situation, and until a clearer perspective can be obtained on prices little activity is expected in the market. Furnaces are taking more ore than at any time since the beginning of the strike, and low phosphorus ores for foundry grades are in special demand.

Shipments from the upper lakes have slowed up considerably, due to the freezing of the ore and rough weather on the lakes. Forty vessels are now waiting cargoes. Shipments up to the twelfth of this month amounted to 1,635,000 tons, and operators expect to bring down about 800,000 tons before the season closes. This would bring the total shipments for the season up to 46,413,414 tons, as compared with 61,156,732 tons last year.

Strike Still Affects Coke

Miners' Failure to Resume Work Increases Demand From Steel Companies—Spot Scarce at $6—10,000 Tons for 1920 Placed at $5.75

Pittsburgh, Nov. 18.—The coal miners' strike still is a factor in the coke market, for failure by the union miners to resume work leaves steel companies' by-product plants without sufficient coal to be fully operated, and necessitates coke purchases on the open market. Although there has been a substantial gain in the beehive oven production, contracts are being specified against fully and some extra tonnages are being asked. This condition keeps the market barren of any spot offerings and $6, ovens, is about as low as any tonnages are being sold. There is basis for a price of $6.25, ovens, since to secure sufficient supplies, a Pittsburgh steel company has agreed to pay that much. This, however, is an emergency demand; the great bulk of tonnage is moving at around $6. The quotation of $5.75, ovens, applies chiefly to extra demands of consumers covered by contract. None of the Pittsburgh district coal operations, which were shut down by the strike, has yet resumed. Inquiries for first half furnace coke are numerous and one contract has been placed for 10,000 tons a month at $5.75, ovens. It is doubtful if this price could be bettered today. Most beehive oven operators are embodying in their contracts a clause which provides that the buyer will pay 50 per cent of any wage increase that may be made to miners or coke oven workmen. The contract market today stands at $5.75, ovens, on fixed price contracts, but forward business is brisk only as far as negotiations. Some talk is beginning to be heard of sliding scale contracts, with producers naming ratios of 5 and 5½ to 1 on basic iron, valley furnace. No business of this sort yet has been closed, however. Spot foundry coke takes a range of $6.50 to $7.50, ovens, but $7 appears to be the more general price. Higher figures refer chiefly to small emergency demands, while $6.50 rules for extra tonnages sought by customers from regular supply sources. The contract market on foundry coke is undefined. Production of coke in the Connellsville regions for the week ended Nov. 8, is estimated by *The Connellsville Courier* to have been 248,676 tons, against 202,500 tons in the previous week.

Foundries Well Supplied

Boston, Nov. 17.—The demand for spot coke which reached its height about a week ago, exceeded the capacity of the by-product plants supplying New England trade, and as a result, shipments now are in many cases overdue. The high point in spot coke trading has passed, however, and with the coal strike at an end, no further heavy buying is expected during the balance of the year. Foundries as a rule throughout New England are well supplied either with stocks or on contract. The past week has seen Connellsville coke shipped into New England at $11.65 delivered which is 25 cents above the spot market for by-product coke. The demand for 1920 coke is strong, and a flat price of $11.90 holds firm.

Sales Continue Active

New York, Nov. 17.—Coke sellers report continued activity in this district for delivery both this year and next. Beehive foundry coke continues to bring $6.50 to $7, Connellsville, both for this year and first half. The northern New Jersey by-product cokemaker is selling actively at $7, Connellsville, equivalent to $10.10, delivered at Newark and other northern New Jersey points, for shipment this year or over the first half. For shipments to New England, it is asking $7, Connellsville, or $11.40, delivered New England, for this year and $7.50, Connellsville, or $11.90, delivered New England, for first half.

Cincinnati Market Easing Off

Cincinnati, Nov. 17.—Uncertain conditions surrounding the coal strike cause considerable uneasiness, but so far purchasers in the Connellsville district have been able to fill customers' requirements. The situation is said to be easing off considerably, although spot furnace and foundry coke prices are still above contract quotations. Connellsville prompt furnace prices are around $5.50 to $6, and contract figures from $5.50 to $5.75. Foundry coke in that field is bringing from $7.50 to $7.75 for nearby shipment, and from $6.50 to $7 on contracts. New River foundry coke is still very firm and some has been sold for spot shipment as high as $11. The Wise County supply of foundry coke is improving and from $8 to $8.50 is quoted, the last named figure representing spot delivery.

Brisk Demand at St. Louis

St. Louis, Nov. 15.—Consumption of coke continues on a large scale, and demand from all quarters is brisk. Inquiries are out for 10,000 tons, mostly foundry grades. Deliveries from the East have been less satisfactory and efforts to accumulate have met with indifferent success. The price for 72-hour Connellsville coke was $7 during the past week, although some small tonnages were sold slightly under that figure. There is little selling for next year. The leading by-product interest reports virtually no inconvenience from the coal strike.

Makers Won't Sign Contracts

Birmingham, Ala., Nov. 18.—A better feeling exists in the coke market as coal production returns to normal. Contracts are being offered southern coke makers, but will not be considered until coal wage difficulties are adjusted. Some intimation is to be heard as to an advance in coke, but $9 is still quoted on foundry and $7.50 on furnace. Some Virginia coke was offered consumers in this state during the past week.

Scrap Prices Advancing

Market Shows Rising Tendency in all Centers—Up $2 in East—Buffalo Has Inquiry for 100,000 Tons of Steel

FOR COMPLETE SCRAP PRICES SEE PAGE 1422

St. Louis, Nov. 15.—Scrap prices have been further advanced, as in addition to professional buying, the industries are taking on tonnages. Supplies are scarce and little material is filtering in. Foundries are eager for scrap because of the scarcity of pig iron and the fact they have booked large volume of business. The same is true of rolling mills, while steel plants, also are displaying more activity. A liberal tonnage has been shipped to Chicago, particularly malleable iron. In the past ten days railroad malleable has advanced from $18 to $25 per ton, and there seems to be no limit to demand. Cast scrap continues in urgent demand, and is higher. Stove plate moved upward, and is $24.50 to $26.50. Rerollers were steady at the preceding week's quotation, but in strong demand. Heavy inquiries for relaying rails are meeting with no response here, there being virtually none available. Iron rails jumped $2 to $27. Railroad offerings were light, the only new list before the market being that of the St. Louis Terminal Railway association for 650 tons. The Wabash list of 1500 tons from the week before was sold at top prices.

Heavy Demand in New England

Boston, Nov. 17.—All foundry grades of scrap iron continue in good demand, with the available supplies inadequate to the needs of consumers. In several instances $32.50 has been paid for No. 1 machinery delivered to foundry. Borings and turnings are both in demand, and hard to obtain, and in fact, all grades of scrap may be said to be active, although the actual tonnage represented in the trading is not excessive. An order for 300 tons of wrought iron pipe placed during the week brought that grade into prominence. The scarcity of pig iron indicates continued firmness in scrap prices.

Borings and Turnings Up $1.50

New York, Nov. 17.—Heavy demand in conjunction with a scarcity has sent prices of mixed borings and turnings up $1.50, the market holding at $13.75 to $14.25, f.o.b. New York. An outstanding sale of this material during the past few days involved approximately 10,000 tons for shipment to Bethlehem. Active buying is noted in practically all descriptions, with the possible exception of wrought scrap, which continues to lag. Prices on wrought pipe and railroad wrought, nevertheless, have advanced in sympathy with the upward tendency in other quotations. Wrought pipe is now quoted at $16 to $16.50, f.o.b. New York, and No. 1 railroad wrought at $26. Among other grades to advance, are heavy melting steel, quoted at $17 to $17.50; old steel shafting, $24 to $25; machine shop turnings, $13.50 to $14; and machinery cast, $25 to $26.

Practically All Grades Advance

Philadelphia, Nov. 18.—Nearly all scrap prices have advanced here from 50 cents to $2 per ton. These advances were on a comparatively small volume of business. Dealers, generally are holding for several dollars higher than the market. A big unsatisfied demand for steel is evidenced by the fact that steel mills are taking lighter grades of scrap at lower prices, such as forge and bundled sheet scrap. Eastern heavy axle and forge turnings were sold to a Pittsburgh consumer at $21, delivered.

Prices Still Are Climbing

Pittsburgh, Nov. 18.—Although the steel manufacturers in this district are not heavy buyers of scrap at present, the market keeps on climbing under the influence of the activity and strength of eastern districts. Some of the steel manufacturers who have been picking up odd tonnages of heavy melting steel at around $21.50, delivered, now report that even small lots cannot be bought for less than $22 and on large tonnages claim that sellers are unwilling to consider a price below $23. Not only is there an apparent scarcity of this grade, but sellers' price views also are influenced by the strength of the pig iron market. Ordinarily the spread between basic pig iron and heavy melting steel is only a matter of a few dollars, while today on a basis of sales there is a spread of $8. A sharp rise in the price of heavy melting is predicted by sellers once the steel companies begin to buy in earnest. Baled and bundled sheets are slow of sale in this district, being taken quite freely in the East, and the consequent strength in prices is reflected here. With the eastern steel companies paying $20 or better for cast iron borings, consumers in this district have been obliged to raise their bids to secure tonnages. Foundry scrap grades still are in strong demand with sales of No. 1 cupola cast being noted at $29 and $30, the latter being the more general. An advance of $1 has been reported in malleable scrap due to a good demand and light offerings. A Pittsburgh district steel company paid $25 for heavy breakable cast and sales of low phosphorus scrap are noted to a steel foundry.

Buffalo Market Strengthens

Buffalo, Nov. 18.—Scrap has strengthened, prices of almost every grade increasing sharply. Local and outside mills are in the market for a large tonnage. Dealers say they have before them the greatest volume of inquiry since the beginning of the year. Demand is strong from all points, with little heavy melting steel to be had. Dealers think that the rising pig iron market indicates new prices in scrap, and there is a disposition to hold on to supplies. There is total inquiry current for over 100,000 tons of heavy melting steel, one local mill seeking 25,000 tons. Demand for cast iron borings and machine shop turnings also is strong.

Offer Higher For Steel

Cleveland, Nov. 18.—Local users of heavy melting steel are entirely out of the market, but $22 to $22.50 is being offered for steel for delivery at Lorain, O., which takes a 90-cent freight rate from Cleveland. Some selling is reported at $22, or $21.10, Cleveland. Several of the larger dealers, puzzled by the market, maintain they will not sell any steel on contract for less than $25. Foundries continue heavy buyers of cast grades, and the scarcity of this grade is becoming acute. Many inquiries are in the market, mainly for 1000 to 1500 tons. Dealers say melters are "shopping," and appear willing to buy if they are quoted what they consider a reasonable price. Dealers are quoting above the present level, feeling scrap will move up. Increases have been made in the quotations on melting steel, short steel rails, stove plate, cast iron borings, large and small forge flashings, rerolling rails, car wheels, railroad and agricultural malleable, pipes and flues, No. 1 busheling and axle turnings.

Great Strength Evident

Chicago, Nov. 18.—Although conditions in the scrap market at Chicago are relatively quiet, indications in the East are that an unusually strong market is to follow. Demand for heavy steel is fairly quiet, but nothing in present conditions indicates that accumulations in the hands of dealers will be disposed of for some time. Malleable grades are in strong demand and sales have been made at $28 per gross ton. Practically all foundry grades are relatively scarce and demand is heavy. As an indication of the market's strength, deals have been practically closed in the East by a Chicago firm represented there for one lot of 40,000 to 50,000 tons of shells, another of 25,000 tons, a third of 10,000 tons and several scattered lots involving smaller tonnage. Probable interruption of operation by bar iron and rerolling mills on account of lack of coal will have little effect on the market, as it probably will be only temporary. Railroad offerings at present are negligible. The Chicago Great Western is offering 450 tons and the Chicago, Burlington & Quincy 250.

Cincinnati Market Firm

Cincinnati, Nov. 17.—All grades of scrap are firm but prices remain unchanged. The car situation is much improved and shipments to Pittsburgh-Youngstown district are moving more freely. Offerings are heavier, although there is not much railroad scrap under negotiation. Although no changes have been made in last week's quotations dealers generally seem to think that the market will continue to grow stronger and

in a short time further advances may be justified.

Southern Market Stronger

Birmingham, Ala., Nov. 18.—Scrap prices have been revised, the southern market being much more active. Cast and stove plate are most in demand, although there is a good market for low grades of scrap. Government scrap is scarcer, but more industrial and agricultural material will be offered soon after the new year.

New Orders

Generally Declined in Tubular Goods But Some 1920 Tonnage Accepted

Pittsburgh, Nov. 18.—Conditions in the market for tubular goods are much as they have been for several weeks, with makers generally sold well into 1920 and showing a disposition to decline new orders. In the case of oil country goods, however, it is understood that some producers are taking 1920 business, the tonnage to take the price prevailing at the time of delivery. The La Belle Iron Works, Steubenville, O., started up in a small way this week but production has not improved much in the district. In Youngstown, O., the Youngstown Sheet & Tube and the Republic Iron & Steel Co. are making gains, and the A. M. Byers Co. is doing better at both its Girard, O., and Pittsburgh plants. The National Tube Co. maintains practically full operations at all of its plants and the Jones and Laughlin Steel Co. reports 100 per cent operation at its pipe mills.

Private Inquiry is Good

New York, Nov. 17.—A lot of 1500 tons of 36-inch cast iron pipe is being inquired for by this city and bids are to be opened Nov. 22 by the water department. Aside from this, public demand is small. Private inquiry, however, continues to hold up well, and the position of the shops in the East generally is good. Virtually all are booked up to the first of the year, especially on the smaller sizes. Owing to labor shortage and labor inefficiency, operations are running around 60 per cent.

Sell Much Small Pipe

Chicago, Nov. 18.—Although formal lettings of cast iron pipe tonnages are comparatively few, sellers are taking considerable business, especially for small sizes, by direct purchase instead of by formal lettings. This business and the ordinary routine orders from contractors make the market fairly active, even though larger tonnages are absent. The United States Cast Iron Pipe & Foundry Co. was the only bidder on 940 tons for the city of Chicago, and probably will be awarded the business.

Expect Activity Through Winter

Birmingham, Ala., Nov. 18.—No seasonal interruption is expected in the cast-iron pipe trade, as specifications in hand warrant steady operation for some time, and new business is in sight. More labor is available and plants are producing in good quantity.

Books Sheets for 1920

American Sheet & Tin Plate Co., Takes First-Half Business at March 21 Prices—Production Allotted—Independents Follow Present Schedule

Pittsburgh, Nov. 18.—The American Sheet & Tin Plate Co. has opened its books for first-quarter and first-half business and has named the same prices which have been in effect since March 21 last. This means that for the first six months of 1920 this company will take business in black sheets for both sheet and tin mill use at a base of 4.35c, Pittsburgh; 5.70c, Pittsburgh, for galvanized, and 3.55c, Pittsburgh, for blue annealed. The company apparently is pretty well sold into 1920, for with the announcement of the opening of the books comes the statement that it will be necessary for it to allot its production. Thus far the independent interests have taken no action with regard to prices for first half. In view of the action by the leading interest it is probable they will hold to present schedules, although sentiment in favor of an advance is known to be strong among some of them. Current demands for all kinds of sheets are large but particularly so in the case of automobile and other highly finished stock. Few makers of automobile sheets are abreast of their live obligations and the makers of pleasure cars are making numerous inquiries and offering premiums in an effort to secure tonnages that will enable them to keep up to their production schedules. Premiums also are obtainable on other kinds of sheets for early delivery. While mill operations and production are gaining steadily, makers still are behind in deliveries against contracts for galvanized sheets and also are somewhat short on black and blue annealed. The American Sheet & Tin Plate Co. now has 92 per cent of its sheet mills in operation while the independents are running close to 75 per cent of capacity. The showing would be still better if it were not for the fact that the Granite City, Ill., plant of the National Enameling & Stamping Co. still is down owing to a shortage of fuel.

Sheets Scarce in Valley

Youngstown, O., Nov. 18.—Shortage of sheets in the Mahoning valley virtually has reached famine proportions. Independent makers are sold up well into the first quarter, and, in one case, until about the middle of March. Probably never in the history of the valley have so many consumers visited the mills in an effort to obtain tonnages. Manufacturers give no assurances when they will offer their product freely. Mill schedules have been set back six weeks by the strike and makers cannot see their way clear to satisfy any new demands. Certain makers also are encountering trouble in locating tonnages of sheet bars at what they consider the right figure. An unprecedented demand exists for light-gage galvanized both for domestic and foreign consumption. Consumers of this grade are willing to pay most any premium for spot material, and offers from $15 to $20 above present quotations have been reported. The demand especially is pressing from makers of refrigerator linings, turpentine containers, etc. Dealers state they have customers who will buy most any grade of light sheets at high prices. Sheet quotations are practically worthless so far as the valley is concerned due to the fact that material is unobtainable. If the various grades were to be had, black would command from 4.55c to 4.80c, galvanized from 5.90c to 6.10c, and blue annealed from 3.75c to 3.80c. One sale of prompt sheets at 4.75c for black and 6.25c for galvanized was made this week.

Rail Contracts

Still in Final Stage—Japan Closes for Light Sections

Chicago, Nov. 18.—Contracts for standard steel rails for western railroads, aggregating about 200,000 tons, are still hanging fire, although part of the contracts have been carried up to the point of actual signing. This tonnage involves the requirements of about eight important lines, and the entire tonnage is expected to be closed before long. Light rails are in much demand for shipment to Japan and between 5000 and 6000 tons have been booked by the western mill, through its export connection. Demand for domestic use is only fair, as uncertainties of future mine operation prevent heavy buying. The Pullman Co. has received an inquiry for 70 cars for the South African railway. An inquiry from China asks figures on 200 high side gondolas. The Seaboard Air Line is inquiring for 11 mail, express and baggage cars.

Tank Car Order Detailed

New York, Nov. 17.—It is learned that the car business placed by the Union Tank Car Co. was somewhat less extensive than first reported. Instead of placing 4000 cars, this interest placed 2500, of which 1000 will be built by the Standard Steel Car Co. and 750 each, by the Pressed Steel Car Co. and the Cambria Steel Co. It is understood that the company also is going to build some tank cars in its own shops.

Trading Still Drags

Pittsburgh, Nov. 18.—While demand for standard rails in small lots is fairly good, and a fair amount of business is before makers, capacity is only partly engaged. The outlook, however, is considered good for it is known that the managements of the various railroads are making plans for the time when control will pass from the government. Some good export inquiries are coming out for light rails. Standard spikes are slow in selling in keeping with practically all other kinds of track material.

Bar Demands Increasing

Mills Heavily Booked Ahead—Implement Manufacturers Placing Tonnages — Pittsburgh Bar Iron Makers Again Advance

Chicago, Nov. 18.—Soft steel bars are in sharp demand and activity in this product is much greater than in shapes and plates. Inquiry is being received from all sources and every consumer apparently desires to get his order and specification in the hands of mills with the idea of obtaining as good delivery as possible. While mill operations are being improved steadily and production is heavier each week, delivery is difficult to promise with definiteness. It is possible to promise occasional small tonnages in 30 days, while some instances of bar orders cannot be promised short of six months. Agricultural implement manufacturers are covering their requirements for the first half of 1920, and it is understood no contract beyond the middle of the year has been undertaken by makers. While some makers have tended to ask higher than the prevailing price, western mills are continuing their quotation of 2.62c, Chicago.

Bar iron mills are increasing their backlog of orders as new contracts are taken in excess of shipments. The coal shortage, resulting from the present strike, has begun to affect these mills, and the Highland Iron & Steel Co., at Terre Haute, Ind., has been forced to close down for this reason. The mill of the Republic Iron & Steel Co. at East Chicago, has enough coal for a week or 10 days, and probably will shut down about the end of that period. The quotation on bar iron ranges from 2.72c to 2.77c, Chicago.

Hard steel bars rerolled from rails are almost impossible to obtain, as mills are sold up until the first of the year and lack of coal promises to shut down most of the plants within a short time. The quotation at present is 2.85c to 2.90c, mill.

Bethlehem Plant Resumes

New York, Nov. 17.—The puddling plant of the Bethlehem Steel Co., at Lebanon, Pa., which has been idle since last April, is being placed in commission. Ten of the 18 puddling furnaces which comprise the so-called active list at this plant are now operating. Altogether the plant embraces 22 puddling furnaces, but four of them have not been worked for a long time and are not regarded as active. Prior to last week no efforts were made to get the plant back in operation, due to the fact that demand for iron bars was not considered active. The Bethlehem Steel Co. now again is taking iron bar business. The bottom of the iron bar market here now is 2.60c, Pittsburgh, or 2.87c, New York, but business is being done in some instances, at 2.75c, Pittsburgh. Steel bars, being the most sold-up of the finished steel products, are involved mostly in a new policy which is being adopted generally by the mills. Due to their oversold condition, the makers are turning away all business offered by new customers, and the only new business they are placing on their books is tonnage absolutely required by regular customers going. It is easy to obtain from 2.60c to 3.00c, Pittsburgh, for steel bars for export, and in some cases more is being paid.

Eastern Mills Flooded

Philadelphia, Nov. 18.—Mills are flooded with orders for steel bars, and are accepting practically no new business, except when absolutely necessary to provide regular customers. The minimum on iron bars is 2.60c, Pittsburgh, and in some cases as high as 3.25c is asked.

Demand Still Ahead of Supply

Pittsburgh, Nov. 18.—In the lack of any material improvement in deliveries of soft steel bars, production of cold-finished steel bars still is inadequate to meet demand and consumers needing immediate supplies cannot buy much below the warehouse basis. It is reported several carloads of small rounds recently came into the Pittsburgh district from a Philadelphia warehouse at a price of 5.00c Philadelphia plus the freight. On straight mill business a base of 3.60c, Pittsburgh, still is quoted, but only one or two of the Pittsburgh district makers are accepting any new business at present. Production of bessemer screw stock is especially affected by the lack of steel bars. It is probable that much 1919 business will be carried over into next year.

Iron Bars Advance Further

Pittsburgh, Nov. 18.—Another advance of $3 per ton has been announced by leading producers of iron bars in this district, putting them on a base of 3.25c on common iron and 3.50c on refined. Increased costs and an extremely active demand are given as the cause. The situation in merchant steel bars remains extremely taut, and prices are for the most part on a nominal basis, as far as early tonnages are concerned. While the Carnegie Steel Co. continues to quote 3.25c base Pittsburgh, it is taking no business at that price and the quotation applies almost entirely to contract shipments. It is doubtful if any manufacturer today would be interested in less than 3.50c Pittsburgh. It is understood that some of the companies that are taking orders for delivery at their convenience are booking them with the understanding that the tonnage will take the price which prevails at time of delivery.

Bolt Demand Strong

Chicago, Nov. 18.—Manufacturers of bolts and nuts find their plants overloaded with much business being offered in addition to that already contracted. It is impossible to entertain more than a part of present inquiry. Bolt and nut plants are not likely to be affected by the coal strike, as gas and oil are used in heating operations and about the only use of coal is in the power house.

Price Tendency Strongly Upward

Pittsburgh, Nov. 18.—Prices of nuts and bolts, not only have advanced sharply but the market still is showing an upward tendency. Bookings before the steel strike were heavy, while as a result of the crippling of plants in and around Cleveland, huge demands have come in from buyers ordinarily served from that district. Getting out this business has been seriously hampered by the shortage in steel bars and as supplies of the latter only are available at advances over the contract base, the advances for the finished product have resulted. Track bolts still hold at the old base of 4.50c, Pittsburgh, in carload lots, but at the moment, there is no carlot business and on the small quantities to jobbers, most makers are quoting 5.90c base, Pittsburgh. No change is noted in rivets, but with rods and bars scarce and costly, the tendency is toward higher levels. Some makers are not inclined to consider any business at less than 4.10c for structural, 4.20c for boiler and 50 per cent off list on small rivets.

Foreign Inquiry

For Spiegeleisen About to Be Closed —Ferromanganese Sales at $110

New York, Nov. 17.—It is understood that an export inquiry for 1000 tons of spiegeleisen is on the point of being closed. The original lot may be increased and 1500 tons ordered at a price already quoted. Domestic spiegeleisen business is of fair proportions, mainly of carloads which are bringing $35, furnace, for 18 to 22 per cent. There is a lack of inquiries to test the market on bigger tonnage.

While the English makers of ferromanganese continue out of the market because they are sold up, domestic makers are booking fair tonnages. Several blocks, none of which is especially large, have been placed during the past week for first half shipment, at $110, delivered, for 78 to 82 per cent metal. This figure is regarded as the minimum. Spot ferromanganese continues scarce.

The ferrosilicon market appears to have strengthened somewhat, following a dip below $80, delivered. Some producers have steadily refused to quote below $90, delivered. Recent sales at $82, delivered are reported. Production continues slow and stocks are believed to have been greatly depleted.

Considerable interest continues to be attached to foreign offerings of ferrotungsten and ferrochrome. A bill recently was introduced in the house to levy a duty of 11½ cents on imports of ferrochrome and 60 cents a unit on chrome ore. Ferrochrome running 4 to 6 per cent carbon still is offering as low as 27 cents pound contained, but most makers are asking 28 to 30 cents. Domestic makers of ferrotungsten are quoting $1.15 to $1.20 pound contained and

doing some business, but imported alloy is being offered for shipment below these figures.

Ferrovanadium is unchanged at $5.50 to $7 pound contained according to analysis and delivery.

Sales for First Half at $110

Philadelphia, Nov. 18.—Considerable business is being done in domestic ferromanganese for the first half at $110, delivered. One English maker would take orders at $125, tidewater, but this price is not a factor. About 1500 tons of spiegeleisen sold for the first half at $35, furnace.

Market is Looking Up

Pittsburgh, Nov. 18.—A distinctly firmer tendency is observed in prices of ferroalloys. While prices are no higher than they have been, based on actual sales, the demand is much better than it has been and this is having its effect upon producers' price ideas. Several small lots of 80 per cent domestic ferromanganese lately were sold at $110, and that figure is said to be the bottom.

The Crucible Steel Co. recently closed on 500 tons of 50 per cent ferrosilicon for five months delivery. While some doubt exists as to the price paid the common impression is that it was in the neighborhood of $78, delivered Pittsburgh. Canadian material was furnished and deducting the usual charge of $6.50 to $7 per ton for packing and package, this would be equivalent to about $71 for American metal. This sale is believed to have cleaned up all of the low priced Canadian product. Small sales of 50 per cent domestic ferrosilicon have been made at $85 and it is doubtful if that price today could be bettered. Most domestic producers are asking that price and some are quoting $90, quotations ranging even as high as $135.

Although the demand for bessemer ferrosilicon still is extremely light, production is small due to the fact that Ohio interests are not producing at present. One maker recently raised his price $2 a ton and is now quoting $56.75, furnace, for 10 per cent. Electrolytic ferrosilicon of lower content is being offered at $55, delivered Pittsburgh. In view of the high prices which prevail for the lower grades of ferrosilicon, some talk is heard of electric furnace interests cutting out 50 per cent material and going in more heavily on the former.

Small sales of ferrotungsten are being made around $1 a pound, while consumers have been able to pick up tonnages of ferrovanadium at $5.75 a pound.

Starts By-Product Plant

Chicago, Nov. 18.—The Wisconsin Steel Co. has started the production of by-product coke at its plant at South Chicago. This plant is designed to make the steel plant independent of coke from the beehive districts and removes practically the last user of beehive coke in the Chicago district. A reserve of coal for conversion into coke has been accumulated and the coal strike will not affect this plant for some weeks.

Plate Sales Are Higher

Eastern Mill Books Large Tonnage at 2.75c and 2.85c—Tank Car Lot Placed—Oil Field Demands Heavy

Philadelphia, Nov. 18.—The best plate delivery which now can be had from eastern mills as a rule is eight weeks and most of these mills have enough business on their books to take their capacity for three to four months. One eastern mill has taken many thousand tons in the past week at 2.75c mill or Pittsburgh depending on location of the consumer. It quoted 2.85c in some instances to discourage buying but orders were placed at this figure. This interest is turning away thousands of tons including a large tonnage for which Pittsburgh district consumers are desirous of paying 2.75c eastern mills. Other mills have not yet departed from the price of 2.65c, Pittsburgh, but are taking very little business. There is some conjecture here whether or not the leading interest's decision not to take any further business may be forerunner of a price advance by this interest for the first quarter. As stated months ago by THE IRON TRADE REVIEW no advance is expected by this interest this year.

Plates for Tank Cars Placed

New York, Nov. 17.—It is estimated that for building 2500 tank cars ordered by the Union Tank Car Co., some 40,000 tons of steel, exclusive of axles and wheels, will be required. Practically all of this tonnage is plates, shapes and bars, principally plates, and it is understood this business has been closed. New plate tonnage continues to be offered to the mills faster than they want to book it, particularly from export sources. Export orders offered during the past week ran into thousands of tons. Such of this business as the mills can take they are having no trouble in booking at 2.65c, Pittsburgh. Some business has been booked at the new price of 2.75c, Pittsburgh, or mill, to which the Lukens Steel Co. advanced a week ago.

Price is Firmly Maintained

Pittsburgh, Nov. 18.—Makers of plates in this district still are quite fully committed and have little tonnage available to ship against current inquiries. This condition finds full reflection in prices, the market being extremely firm at 2.65c, base Pittsburgh, although several attractive inquiries recently have come out carrying a price somewhat below this figure. Among them was one for more than 2500 tons from a Pittsburgh district car company, which after being shifted about freely in the market, finally was placed at the full price. A few heavy sheared plates are being offered for early delivery, but makers are sold up pretty well to the end of the year on stock such as is required for tanks and fabricated structural material.

Oil Trade Big Factor

Chicago, Nov. 18.—Largely increased demand for steel plates has been evident in the market for several weeks, and is increasing. This is largely due to activity in the oil fields, which calls for tanks and tank cars. As illustrative of this demand, an inquiry has just been received for 10 oil tanks in the southwestern oil field which will require 1500 tons of steel plates. The Union Tank line has placed an order for 1000 tank cars with the Standard Steel Car Co., which will involve 11,000 tons of plates, 2500 tons of shapes and 1600 tons of axles. The quotations is firm at 2.92c, Chicago.

Tin Plate Bookings

For First Half Taken by Leading Maker at March 21 Base

Pittsburgh, Nov. 18.—The American Sheet & Tin Plate Co. last Saturday opened its books for orders for tin plate for the first quarter and first half of 1920 naming the same price which it has quoted since March 21 last, or $7 per base box, Pittsburgh, for standard coke plate. The company, however, will carry over considerable business into next year as a result of the strike and it will not be possible for it to take on much business for shipment during the first few months of the year. Independent producers have not yet announced the opening of their books for 1920, but it seems probable that they will also quote the present base, not only because the leading interest has left the price unchanged but also because this company also left the schedules on the tin mill black sheets at 4.35c, base Pittsburgh. No let-up is noted in the demand for tin plate but only a few makers are in a position to take on much business for early delivery owing to the fact that they have considerable unfilled tonnage. Some of the independent companies are quoting $7.50, Pittsburgh, against expert inquiries which still are numerous, especially from Japan.

Export Buying Difficult

New York, Nov. 17.—Although at least one tin plate maker, an eastern interest, has been taking domestic business in tin plate recently, at $7 Pittsburgh, per base box, it has been difficult for exporters to place orders at anything like this figure. One export house about a week ago placed some tin plate at $7.60, Pittsburgh, equivalent to $9, Kobe. Now, considerably higher prices are asked, and one maker, on an inquiry for export, has quoted $8.60, Pittsburgh.

The plant of Root & Van Dervoort-Wagner Ordnance Co., at Moline, Ill., has been purchased by the Root & Van Dervoort Co. The properties of the company adjoin and the merger will permit of an immediate expansion of output.

Structural Jobs Hold Up

Contracts Let in October Aggregate 77½ Per Cent of Capacity as Compared With 78½ in Previous Month—Recent Awards Plentiful

New York, Nov. 17.—In accordance with expectations, structural lettings in October fell off slightly. Contracts, as shown by the regular monthly statement of the Bridge Builders & Structural society just issued, aggregated 139,500 tons, or 77½ per cent of capacity, as compared with 141,000 tons, or 78½ per cent in the preceding month. During the past week the local structural market has been more active than in the earlier part of the month. Awards have been more plentiful and new inquiries have been noted in greater number. Several lots involving 1000 tons and over have been included. The largest of these amounts to about 4000 tons for factory buildings for the Willys Corp., Elizabeth, N. J. Another sizable lot involves 2000 tons for a power plant for the Penn Public Service Corp., Johnstown, Pa. The American Bridge Co. appears to have booked the most business. Following is a comparative statement of monthly bookings reported by the Bridge Builders' society:

Month	Per cent	Approximate tonnage
October, 1919	77½	139,500
September	78½	141,000
August	78½	141,000
July	74	133,200
June	65	177,000
May	49	88,200
April	24½	48,100
March	17½	32,300
February	12½	22,500
January	12	21,600
December, 1918	29	52,270
November	27	48,700
October	43	77,400
September	60	108,000
August	57	102,000
July	116½	209,700
June	56	100,800
May	60	108,000
April	64	115,200
March	47	84,600
February	55	99,900
January	53	95,400
December, 1917	121	205,200
November	77	138,600
October	61½	110,700
September	29	52,200
August	38	68,400
July	41½	74,700
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000
December, 1916	86	148,000
November	78	134,000
October	77	133,500
September	52½	99,400
August	64	112,000
July	47½	83,600
June	58	100,000
May	80	137,000

Construction Recovering in Boston

Boston, Nov. 17.—The future outlook for New England construction has a more favorable aspect than at any time in many months and buildings already awarded for early spring construction in Boston will take a round tonnage of structural steel. The time seems to have arrived when demand for space compels construction in spite of continued high prices.

Eastern Bookings Increase

Philadelphia, Nov. 18.—Business on the books of shape mills has been greatly increased in the past week, and some eastern makers are now arranging rollings for February. One mill has a uniform policy of accepting no business from the regular trade netting less than 2.55c, mill, and from new customers netting less than 2.65c, mill. Other makers still hold at 2.45c, Pittsburgh. All makers say they have all the business they want.

October Bookings Heavy

Pittsburgh, Nov. 18.—Structural awards during October made a surprisingly good showing, according to the figures compiled by the Bridge Builders Structural society. They amounted to 104 per cent of theoretical shop capacity of the independent fabricating interests. These figures, of course, exclude contracts placed with the American Bridge Co. Last month was not a particularly active one in this district, but evidently the country at large went forward with new projects more freely than was the case here where the steel plant strike exerted an influence on investors. A much more cheerful feeling prevails among the fabricating interests, for several awards have come here and at better prices than recently were obtainable. No diminution is noted in the volume of inquiries and the growing belief that deliveries will be somewhat delayed until normal conditions are restored at the steel plants makes buyers a little more anxious to be covered. Shape mills here are heavily booked as a result of demands resulting from mills in other districts being crippled by labor disturbance. Small tonnages of large angles, beams and channels are offered for early delivery, but on small shapes, makers have about all the business they can take care of during the remainder of the year.

Canadian Mill Seeks Orders

Buffalo, Nov. 18.—The Algoma Steel Co., Sault Ste. Marie, is now soliciting orders for structural shapes 15 inches and under. It began operating its new structural mill within the week.

Several Jobs Let at Cleveland

Cleveland, Nov. 18.—Several fair-sized structural jobs were let in the Cleveland district during the past week but the volume of structural work is falling off. The Harris Structural Steel Co., Chicago, took 750 tons for the Cleveland Theater Co.'s building at Euclid avenue and 117th street, but the contract for 500 tons for the theater which this company is to build at Euclid avenue and 101st street has not been let. The Canton Bridge Co., Canton, O., obtained the contract for 600 tons for a new steel plant to be built by the Canton Sheet Steel Co. Additional structural lettings are said to be in sight in connection with this plant. A large tonnage will be needed for new buildings to be erected for the Goodyear Tire & Rubber Co., Akron, O., the general contract for which have been let to the Hunkin-Conkey Construction Co., Cleveland. One large maker sold a considerable tonnage of plain shapes and plates for delivery this year to fabricators in this district during the past week at 2.45c, Pittsburgh, or 2.62c, Cleveland.

Much Tonnage in Prospect

Chicago, Nov. 18.—Lettings of structural steel in the west recently are headed by the Aetna Iron & Steel Co., which has awarded 1259 tons for a sheet mill building at Gary, Ind. Other lettings are relatively small. It is understood that the Lanquist & Illsley Co. of Chicago has been awarded a tentative contract for the construction of the Buffalo Enquirer building, at Buffalo, N. Y., which will require 3700 tons. It is understood further that the Bethlehem Steel Co. will furnish the steel. Another large inquiry comes out of Buffalo, the Connors building, requiring 3500 tons, being in prospect, and fabricators are being asked by contractors to give protective bids. Plain material is steady at 2.72c, Chicago. Bids have been taken on three units of the Union Railway station at Chicago, aggregating 17,000 tons,

CONTRACTS AWARDED

Office building for General Electric Co., Schenectady, N. Y., 500 tons, to the American Bridge Co.

Air coast defense station, Staten island, N. Y., 700 tons, to American Bridge Co.

Additions to Passaic Cotton Mills, Passaic, N. J., and Fall River, Mass., 600 tons, to American Bridge Co.

State power plant, Marcy, N. Y., 325 tons, to American Bridge Co.

Further addition to Cheswick power plant, near Pittsburgh, 500 tons, to American Bridge Co.

Building for Proctor & Gamble, Dallas, Tex., 450 tons, to American Bridge Co.

Telephone exchange on East Thirtieth street, New York, 2000 tons, to Hay Foundry & Iron Works.

Factory building for General Aluminum & Brass Mfg. Co., Marysville, Mich., 900 tons to the American Bridge Co.

Boiler house and power house for the Morgan & Wright Co., Detroit, 1900 tons to the American Bridge Co.

Boiler repair shop for the Pennsylvania railroad, lines west, Fort Wayne, Ind., works, 700 tons to the American Bridge Co.

New building for American Steel Foundries, Alliance, O., 450 tons to the McClintic-Marshall Co.

Factory building for Western Electric Co., Chicago, 3000 tons, to the McClintic Marshall Co.

Building for Standard Tank Car Co., Masury, O., 400 tons, to the McClintic-Marshall Co.

Sheet mill building at Gary, Ind., for the Aetna Iron & Steel Co., 1259 tons, to Northwestern Bridge & Iron Co.

Building for the Cole Motor Co., Indianapolis, 869 tons, to reinforced concrete.

Addition to the Hearst building, Chicago, 163 tons, to American Bridge Co.

Theater for Cleveland Theater Co., 750 tons; let to Harris Structural Steel Co.

Steel plant for Canton Sheet Steel Co., Canton, O., 600 tons; let to Canton Bridge Co.

Building for Guide Motor Lamp Co., Cleveland, 200 tons; let to Fort Pitt Bridge Works.

Building for Republic Brass Co., Cleveland, 200 tons; let to Merty Iron Works.

CONTRACTS PENDING

Loft building for National Tailors, Fourth avenue, New Yorw City, 1400 tons; pending.

Loft building on Livingston street, Brooklyn, 1000 tons; bids asked.

Factory buildings for Willys Corp., Elizabeth, N. J., approximately 4000 tons; pending.

Theater building, Baltimore, 1100 tons; pending.

Fertilizer for Armour & Co., Baltimore, 700 tons, Westinghouse, Church, Kerr & Co., contractor, New York; bids in.

Power plant for Penn Public Service Corp., Johnstown, Pa., 2000 tons; pending.

Connors building, Buffalo, N. Y., 3500 tons. Contractors taking bids.

Building for Coca-Cola Co., New Orleans, 400 tons, bids in.

Temple for Scottish Rite, Bloomington, Ill., 320 tons, revised bids being taken.

Hot metal mixer building for Inland Steel Co. Indiana Harbor, Ind., 370 tons, bids being taken.

Office building for Euclid-Windsor Co., Cleveland, 200 tons; bids being taken.

Loft building for Benjamin Hass, New York, 2400 tons; pending.

Addition to pressed steel and forging plant of A. O. Smith Corp., Milwaukee, 4800 tons, bids being taken.

Little Tonnage

Of Sheet Bars Open to Purchase—Wire Rods Sell High

Pittsburgh, Nov. 18.—Finishing mills which need sheet bars immediately probably will be unable to buy them at less than $45, Pittsburgh or Youngstown, as compared with the March 21 base of $42, at which price tonnages are moving on contracts. While the market is short of this class of semifinished steel, the fact that none of the sheet or tin plate mills has been obliged to suspend for want of steel makes it apparent that the scarcity is not acute. Sheet mill capacity of the country now is close to 80 per cent engaged, while makers of tin plate have between 65 and 70 per cent of their capacity in operation. It cannot be said that finishing mills are suffering much for want of billets, although manufacturers seeking open market supplies for prompt shipment find they cannot do better than $40.50, Youngstown or Pittsburgh. Prices of wire rods have risen considerably more than other forms of semifinished steel as a result of the strike conditions. Few makers of rods have any surplus over their own requirements for sale, while the excellent market in wire and wire products makes for a sharp demand for rods from the nonintegrated manufacturers. The current market may be quoted from $60 to $63 for soft rods, while as high as $68 recently was paid for export. One maker reports having declined 1500 tons of rods for which the inquirer made a bid of $60.

Few Tonnages Now Offered

Youngstown O., Nov. 18.—During the past three weeks the slack has been taken up in the sheet bar market and few tonnages now are offered. Whether any tonnages of either openhearth or bessemer grade can be bought here now for less than $46 is a matter of doubt. In fact one sale in the Chicago district is reported at over $50. The advance of sheet bars will not be so noticeable at sheet plants equipped to roll the semifinished material as at plants which depend on outside mills for this steel.

Sheet Bars Wanted

Cleveland, Nov. 18.—Some interests which are both makers of sheet bars and sheets are in the market for round tonnages of the former material but are having difficulty to cover their needs. One of these companies in the Mahoning valley bought some tonnage at $45, Pittsburgh. The semifinished market is very firm with offerings limited. A local buyer paid $65 for a small lot of wire rods. Eastern makers are naming $54, Pittsburgh on forging billets. The local semifinished producer now is running its steel works practically full with 12 of 14 open hearths in operation.

Warehouse Stocks Low

New York, Nov. 17.—Excepting plates and structurals, supplies in the local warehouses are said to be lower than at any time this year. Mill deliveries, while slightly improved, are not sufficient to relieve the existing shortage. Sheets and bars are said to be especially scarce.

Boston Schedules Higher

Boston, Nov. 17.—One of the largest warehouse interests in Boston reports a greater demand in some products than at any time in history, bars and sheets being especially active. Warehouse prices in New England have advanced in almost all cases. Individual interests have broken away from previous uniformity of quotation, and it is difficult now to give definite prices. Prices in effect as determined by several of the larger Boston interests are iron bars $3.55, shapes 3.50c, plates 3.95c, No. 10 blue annealed sheets 5.15c, No. 28 black sheets 6.65c, No. 28 galvanized sheets 8.00c, bands 4.85c, hoops 4.95c, and refined iron 3.75c.

Wire Prices

Are Being Bid Up by Consumers—Export Nails Sell High

Pittsburgh, Nov. 18.—Although makers of wire and wire products whose plants were crippled by the steel strike are restoring normal conditions, production is not yet at a rate that enables them to make much headway against their obligations. Little attention is given to new business, and even companies which were unaffected are going slow in accepting new orders. Such companies are filled up for the remainder of the year while the former have obligations that probably will carry them well into 1920. Quotations are nominal but 3.50c for nails appears to be about as low as should be quoted. While the American Steel & Wire Co. is holding to 3.25c, it is not accepting any business at that figure and still finds it necessary to apportion shipments among consumers who contracted at that figure. Actually 5.00c has been offered for nails and buyers have made a bid of 4.00c on plain wire which nominally is rated at from 3.00c to 3.25c.

Small Nails Ordered for Export

New York, Nov. 17.—An export order for 1500 kegs of wire nails has been placed at 5.65c, Pittsburgh. The order included mainly an assortment of small nails, and the price is not exceptional. One buyer says he paid $8 a keg, Pittsburgh, for 8-penny nails a few days ago. Nails are exceedingly scarce. In fact, all wire products are scarce, and instances are reported every day where manufacturers who use wire as a raw material are forced to shut down, at least certain departments of their plants.

Wire Demand Increases

Chicago, Nov. 18.—Although shipments of wire and nails are increasing weekly, as mill operation improves after the strike, present production apparently is not sufficient to meet consumption and scarcity of nails is especially noted. Jobbers are practically out of supplies, and the situation is assuming a serious aspect in view of the desire to push building operations in every part of the country.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Nov. 12	20.87½	53.50	6.75	8.00	33.00	9.00	41.00
Nov. 13	20.75	53.50	6.75	8.00	33.00	9.00	41.00
Nov. 14	20.50	53.50	6.75	8.00	33.00	9.15	41.00
Nov. 17	20.25	53.50	6.75	8.00	33.00	9.25	41.00
Nov. 18	20.00	53.25	6.75	8.00	33.00	9.25	41.00

*Future shipment from Singapore.
† American Smelting & Refining Co.'s price.
‡Open market.

NEW YORK, Nov. 18.—The rescinding of the coal strike order favorably affected sentiment in the metal markets, outweighing the slump in the stock market, high call money rates, low exchange rates, and further delay in formal peace, although these factors of course exerted some influence, especially on exports. Improvement in steel mill labor was reflected by the appearance of several additional galvanizers in the zinc market and more interest was shown in tin. The uncertainty as to the ratification of the peace treaty exerted some influence, particularly on the copper market, which has been counting on the promulgation of peace to open the way rof financial arrangements that would enable American producers to fil European requirements.

The copper market now is wide open, with large and small producers and dealers in active competition for such small business as is developing. The market for electrolytic copper hung at 21c for nearly a week, when the producers went after business at 20 75c, and now have cut as low as 20.00c delivered. Casting also was marked down to 19.50c and 19.62½c and lake to 20.50c and 20.75c.

The lead market has been firm. One producing interest sold over 1000 tons last week on the basis of 6.90c, New York, although the leading producer continued to quote 6.75c, New York, 6.50c, St Louis. Outside lead cannot be purchased at St. Louis under 6.75c. Some New York prices are as high as 7.00c.

The zinc market has held firm at 8c, East St. Louis, for shipment this year, during several days. The appearance of several additional galvanizers as buyers, who had been out of the market for weeks previously owing to strike interference, had a heartening effect

The tin market has been relatively lower in New York than in England or the Far East, due to the accumulation of stocks resulting from the recently concluded longshoremen's strike. Straits tin for future shipment from Singapore and London is obtainable at 53.25c, New York; Straits tin ex steamer at dock, 53.25c; and spot tin in warehouse at 53.50c. Ninety-nine per cent tin is quoted 52.75c to 53.00c. Private cables from the Far East give quotations much above the current prices here, indicating a bullish feeling in the Orient.

Antimony has stiffened to 9.25c.

Export Difficulties Being Met

Responsible Steel Producers Resort to a Preferential List of Dealers—Japan Fills the Market With Orders—England Sends Various Inquiries to This Country—South American Business is Below Normal

NEW YORK, Nov. 17.—American iron and steel exporters are facing some awkward situations at present and conditions are more or less upset. According to some observers, however, an opportunity is being provided for a "shaking down" of the irresponsible agencies in the export field. It has been discovered that certain interests which have contracted with mills to dispose of a certain output in the foreign market have held that product in warehouses and resold in the domestic market in direct competition with the mill for which they were acting as agents. The market has also been full of inexperienced exporters who have caused no end of trouble to producers in requesting quotations of all sorts without any compensating orders resulting. Such business has caused unlimited work for the producers and the latter are becoming tired of their fruitless efforts.

Recently one of the largest steel producers resorted to a preferential list of exporters. This was followed by other large producers and today foreign sales practically are being limited to those houses which are known to be honestly in the export business and which refuse to speculate in commodities to the detriment of legitimate producers and consumers. This tendency toward the listing of responsible exporters has given added credence to the report that the big producers have enforced an embargo on American iron and steel exports. As a matter of fact there was a partial embargo during the strike and there still is a serious hesitancy on the part of American producers to accept new foreign business in the light of the present unsettled costs of production. American producers prefer to accept domestic orders because the terms for carrying out of a contract are much simpler. Foreign business has dropped off because there is little spot material to be had although the larger interests now declare they will open their books for 1920 deliveries.

From Tokyo a telegraphic report has just been received stating that the United States Steel Products Co. has cabled definitely that it is out of the market for the present. Inasmuch as the cable was brief and failed to make normal explanations, it is presumed that there were reasons why certain business in this particular case was refused. The sold-up condition of the mills and the indefinite cost problem, without doubt, prevent much business coming to the United States just at present. This situation is now much more serious than the economic conditions abroad, which is reflected in the lack of credits and the weakened exchange.

The market still shows interest in the large billet order received from Belgium. It was learned from the agency placing the order last week that Belgium signed up for 20,000 tons, although it is now reported in the market that supplemental orders increased that tonnage to 50,000 of 2-inch billets, and that the price was probably nearer $47 than $43.50, Pittsburgh, as first understood. Deliveries will be made in 1920. Last week the same agency which placed the billet order offered 10,000 tons of pig iron in the export market but the producer withdrew the iron before a sale could be made and sold it in the domestic market. It is said a large Belgian order for freight cars has been placed in Antwerp, but that an inquiry for 10,000 coal cars has been sent to the United States. Business with continental Europe has been far from satisfactory.

British More Optimistic

American exporters fear that the English are displaying considerable optimism over the outlook. The orders which were placed with American producers last summer were startling to the latter but the dropping off since has been so pronounced that the English producers anticipate a complete realignment of international business. The English are reported to contend that America will not be able to hold her export gains once international conditions are restored to normal. Nevertheless the volume of trade today is going ahead in the face of tremendous obstacles, not the smallest of which is the abnormal appreciation of the dollar in foreign countries. Furthermore English exporters continue to turn to the American market with export requirements which they themselves cannot fill. This week an English house purchased 400 tons of relaying rails in the United States for a customer in Manila. A number of houses here have sold small tonnages of miscellaneous supplies to English merchants for customers in South America. South America is still buying her necessary supplies of wire, sheets and bars in this country. While it is still possible to place new wire business, sheets continue to become scarcer and bars are extremely difficult to find. In addition to the heavy South American inquiry for bars in the market, it is learned that England is also sending in inquiries for bars. Last week it was learned that an order for the material for the construction of 50 railroad cars has been placed by Argentine.

South Africa has purchased 1500 reels of barbed wire. A sale of 1500 kegs of wire nails to southern China is noted. The first of the foreign orders based upon a 1920 delivery were received from the Orient. This week a cable was received from Japan confirming an order for six locomotives for that country and Manchuria, which went to the Baldwin Locomotive Works. Japan has purchased upward of 40 locomotives this year from the United States. A Japanese order has also just been received for 300 Ford automobiles, which makes about 2000 such cars sold to that country by one agent this year.

Among other Japanese sales noted in the market this week were 300 tons of tank plates, three orders each for 3000 boxes of tin plate, 200 tons of plain galvanized sheets, a fourth order for 5000 boxes of tin plate, 300 tons of wire, 2500 tons of black sheets, 5000 tons of steel bars, and 20 miles of 12-pound rails. Japanese sales of tin plate made by one house now total approximately 40,000 boxes. The quotations now made on tin plate are much higher than previously.

Japan is now inquiring for approximately 300 tons of mild steel plates. A sale of 500 tons of heavy plates to Japan is noted. Japan is also inquiring for 1400 tons of black sheets and for 3 miles of 12-pound rails. One of the largest Japanese inquiries in the market at present calls for 10,000 kegs of wire nails. An inquiry for 1500 kegs of wire nails drew a quotation of $5.65, base.

Europe's Coal Shortage Serious

Output of Iron Hampered in England, France and Belgium Due to Lack of Coal and Coke—Germans Fail to Supply Fuel as Provided by Armistice—British Prices Further Strengthened by American Advances

Staff Cable

LONDON, Eng., Nov. 17.—British production of pig iron, due to the fuel shortage, is now at the rate of but 575,000 tons monthly. Coal is the most important factor affecting the British and European iron and steel output.

The British output of pig iron in the 10 months ending Oct. 31 was 6,250,000 tons. The monthly average was 625,000 tons, compared with a monthly average of 755,000 in 1918, and 855,000 in 1913. The present deficiency in production is due to the lack of coke.

In the first 10 months of 1919 Germany produced 5,160,000 tons of pig iron. The monthly average was 516,000, compared with a monthly average production of 1,600,000 in 1913.

The British steel output in the past 10 months of this year was approximately 6,775,000. The monthly average, 677,500, compared with a monthly output of 639,000 tons of ingots in 1913. The higher output now is due to wartime steel-plant extensions, which have not been matched by blast furnace construction.

British coal output is somewhat better, the monthly rate now being 21,400,000 tons. Nevertheless, several stacks in the North Yorkshire district are inactive, due to the coke shortage.

The French situation is worse than the British. Thirty stacks in the Roubaix Turcoing district are closed for the lack of coke and ore. Only 10 blast furnaces out of a total of 27 in the Nancy district are active; 33 in the Longwy district, and three out of four in the Briey basin. The Germans are failing miserably to supply fuel as provided by the armistice. German mines supplied France only 17,000 tons of coal and coke in October.

French coal production is hampered by a lack of cars and locomotives, throwing 2000 out of work in St. Etienne. Half a million tons of coal are stalled at French ports.

Lorraine coke is quoted at 105 francs a ton. Belgian and Luxemburg pig iron has advanced 10 francs. All British and European industries face a serious fuel situation this winter.

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation Street,
Birmingham, Eng., Oct. 15.

Rate of Exchange 4.16

STRIKES continue to affect the pig iron market. In addition to the molders' strike there is now the strike of bricklayers in Scotland, which has stopped a number of the steel works and thereby reduced demand for pig iron. The molders' strike is increasing in seriousness, and is threatening to stop most of the engineering works. Naturally, there is less demand for foundry iron, but this grade has been scarce for some time and the owners of foundries are disposed to take the opportunity to increase their supplies. The make of foundry iron will fall far short of filling demand this year.

Owing to the comparatively low quality of iron produced, forge iron has become plentiful, and there are reports that concessions can be obtained for Northamptonshire forge iron in the Midlands. There is the same excess of low-grade iron in the Middlesborough district, but there the makers prefer to put the material into stock rather than reduce prices. The market in that district also is strengthened by good foreign demand. Foreign buyers are making the best use of the opening offered to them and are placing their orders. With some improvement in the supply of ships, iron is now being exported in larger quantities.

The molders' strike is seriously affecting the Barrow district, which concentrates on hematites and high-grade iron. Buyers of low phosphorus are placing few orders. There is, however, sufficient confidence in that district to encourage the starting up of furnaces, especially as the output of those in operation is booked to the end of the year. More furnaces have been put in blast in Cumberland, 10 now being in operation. It is expected that two more furnaces at Oldfield will be relighted, but these are employed on ferromanganese. Another furnace may go into commission at Derwent. The situation in that district is adversely affected by the molders' strike, which is holding up a great deal of work at the shipyards.

The market was strengthened somewhat by the news of a further advance in American pig iron. At the same time, there is a possibility of lower prices on forge iron, the sale of which is beginning to lag. The position of the cold-blast furnaces in South Staffordshire continues difficult, as a large proportion of the output goes to the heavy iron foundries which make rolls and other equipment for the large steel and engineering works, all of which are to some extent idle. Unless the Engineering Federation is successful in bringing the strike to a close the iron founders are disposed to take the matter into their own hands, and endeavor to arrive at some understanding with their men. The blast furnaces are maintaining a fair output as far as fuel supplies will permit. Cars are scarce, delaying shipments of coal, and retarding deliveries of pig iron to iron and steel works.

Scarcity of semifinished steel is rapidly bringing the trade to a crisis. Nearly all the finishing mills in the Birmingham district are idle, or nearly so, some having operated for only one or two days a week for several weeks. American strikes which are holding up shipping and preventing the deliveries of good tonnages contracted for, are regarded as a great misfortune. During the summer some very unsatisfactory contracts for American billets were entered. One large works in the Birmingham district bought billets at £12 2s 6d ($50.44), and most of these have yet to be delivered. The buyer states that by special arrangement he will avoid any additional impost through the unfavorable rate of exchange, and if he could get the billets the bargain would be satisfactory, in view of the

fact that no British billets can now be bought under £15 5s ($63.44), ($65.52). The British steelmakers are (65.52). The British steelmakers are in a position practically to impose their own terms.

All foreign importations have been arrested owing to various causes, and the output of small steel bars, which are nearly all made from purchased billets has become absurdly insufficient. One Birmingham merchant this week had seven letters returned to him by one post from mills in different parts of the country to which he replied for small bars, hoops, and other steel products. The same shortage of material places a very serious obstacle in the way of the production of galvanized sheets, orders for which it is impossible to place in the Midlands, as sheetmakers decline all new business. The last quotation for sheets was £35 ($145.60) but in the absence of business this must be taken as a purely nominal figure.

The effect of the American strikes has been to increase the foreign demand for British material of all kinds, especially tin plate. In the Swansea district, the tin plate mills have orders to carry them well into the new year and new orders are pouring in every day for tin plate from South America, South Africa, China, Japan, the Middle East, and various European countries. Recently an inquiry for 200,000 boxes was turned down through the inability of makers to handle the orders although the prices offered were considerably in excess of present rates. South Africa wants 20,000 tons of sheets, Spain and Portugal 50,000 boxes of tin plate, and China 50,000 tons of steel and rails. At present these orders have to be suspended in view of the large commitments of the mills, but a strong effort will be made to handle them early next year.

Only 25 per cent of the Welsh mills can be operated on account of the lack of skilled labor. Prices are very high, 42s 6s ($8.84) being asked for the base box, and it is likely that this will be raised to 45s ($9.36) within the next few weeks. This week 100,000 boxes of tin plate have been shipped to the Far East.

Laborers Return

Amalgamated Association Rounding Up Strikers—More Mills Start

Youngstown, O., Nov. 18.—More employes entered the mills in this district Monday than at any time since the strike began, despite the fact that union organizers urged their followers to congregate at mill entrances to arrest the return movement. The Republic Iron & Steel Co. started another pipe mill at its Haselton plant while six of the eight sheet mills at the Haselton plant of the Sharon Steel Hoop Co. got under way. Every sheet plant in this district has two or more stands of rolls in production and operation in this direction conservatively can be placed at 55 per cent. Reports indicate that 44 open-hearth furnaces are active.

The underlying cause which led certain members of the Amalgamated Association of Iron, Steel and Tin Plate Workers to return to their former positions is interesting. Beneath the surface, these workers did not look with favor upon the general strike movement but were forced out of employment when the unskilled laborers walked out. The various lodges of the association in this and other districts extended permission to unskilled laborers in the steel industry to affiliate, having in mind that they would abide by the association's agreement with the mills.

However, the unskilled laborers broke their faith with the association when they walked out and thereby placed the association in a critical predicament.

The Amalgamated officials realized that if the confidence of many mill managers which it had held in the past was to be retained some action had to be forthcoming immediately. M. F. Tighe, president of the association, was alive to this fact, and ordered the Amalgamated workers to return to work, holding that all agreements between mill owners and the association made before the strike should be held inviolate. Consequently, the only policy left for Amalgamated workers to follow was to round up unskilled laborers and get them back to work.

Operations in Cleveland Steadily Increasing

Cleveland, Nov. 18.—Operating conditions are showing steady improvement. The McKinney Steel Co. is now operating 12 open-hearth furnaces, two blast furnaces, three coke ovens and the finishing mills. The American Steel & Wire Co. and the Otis Steel Co. also report further progress. Although the blast furnace of the Upson Nut Co. is down, the finishing mills are working at capacity. The Cleveland Steel Co. expects to start operations the latter part of the week, sufficient men having returned to work.

Cambria Plants Resume

Pittsburgh, Nov. 18.—A portion of the blast furnace plant of the Cambria Steel Co., and also some coke ovens at Johnstown, Pa., have resumed operation following a vote by strikers taken under the direction of the Citizens league, the same organization which recently escorted William Z. Foster out of town. This is the first attempt to operate the Johnstown plants since Sept. 22, and further resumptions are expected in the near future.

Announce Program

Of Annual Meeting of A. S. M. E.—Will Discuss Unrest

Industrial unrest, the engineering of man power and service of the engineer to the public are topics which will be discussed at the annual meeting of the American Society of Mechanical Engineers, to be held at the Engineering Societies building, 29 West Thirty-ninth street, New York, Dec. 2-5. The following tentative program has been announced:

Tuesday, Dec. 2

Morning: Registration and conference of local section delegates.
Evening: Reception at which presidential address will be delivered.
Election of honorary members.

Wednesday, Dec. 3

Morning: Business meeting with reports of standing and special committee.
Afternoon: Appraisal and valuation session to be held jointly with the American Society of Refrigerating Engineers.
Session on machine design.
Gas power session.
Evening: Commemoration meeting on the work of the DeLamater Iron Works and of John Ericsson.

Thursday, Dec. 4

Morning: Session on the industrial situation.
Afternoon: Power plant session.
Machine shop session.
Session on textile industry.
Evening: Annual reunion and dance, and lecture on the future of aviation by Col. E. A. Deeds, Dayton, Ohio.

Friday, Dec. 5

Morning: Session on transportation.
Final general session.

Among the papers which will be delivered during the meeting are the following: "Lubrication of Ball bearings," by A. H. Blaisdell; "The Hvid Engine and Its Relation to the Fuel Problem," by E. E. Blakely; "Kerosene as a Fuel for High-Speed Engines," by L. F. Seaton; "Wage Payment," by A. L. DeLeeuw; "An Investigation of Strains in the Rolling of Metal," by Alfred Musso; "Modern Electric-Furnace Practice as Related to Foundries in Particular," by W. E. Moore; "Causes of Industrial Unrest; and the Remedy," by Frederick P. Fish; "Profit Sharing," by Ralph E. Heilman; and "Appraisal and Valuation Methods," by David H. Ray.

Reclaiming Precision Tools from High Speed Cutting Scrap Heap

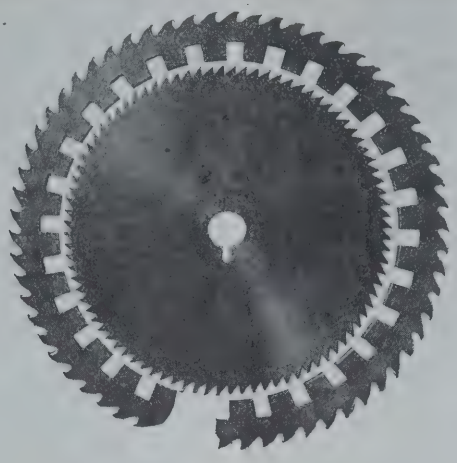


Fig. 1—The 20-inch slitting saw in the center was cut from a 24-inch worn-out cold cutting saw, represented by the outside rim

BY W. H. LLOYD

CONSERVATION still is the urgent need of the day. As practiced during the recent war, it saved the various nations, particularly the United States, millions of dollars, and provided incentives for discovering new methods for economizing. Manufacturers seem to have profited by this wartime experience and now many of them not only seek to purchase material more shrewdly, but endeavor to obtain the greatest possible service from it. More attention is being given to the possibilities of making money by saving it.

In seeking new opportunities in this direction, methods heretofore neglected, have been successfully employed. For instance, many plant executives are discovering that often untapped mines of wealth lie hidden or partially hidden in the box, crib or barrel containing discarded tools. High speed steel, now selling at from $4.50 to $40 per pound, virtually is a semiprecious metal and for this reason the scrapping of worn out cutting tools in most cases becomes an unwarranted extravagance.

In disposing of old tools before the war, many manufacturers followed the line of least resistance. When the blades of a milling cutter or reamer became worn or when a drill end was burned, the defective tools were consigned to a corner of the shop where they remained until a sufficient quantity had accumulated to warrant selling it to a dealer as high speed steel scrap.

Old Tools Are Made Over

Intelligent manufacturers now are having such tools remanufactured. Instead of selling them as scrap or junk at anywhere from $4 to $20 per ton, the tools are remanufactured again and again until there is nothing left upon which to work further. Since high speed steel hardens from the heart out, it naturally follows that when cutting tools are remanufactured they become better the nearer the cutting edge gets to the center providing sufficient strength remains to stand up under usage.

For years many large manufacturers endeavored to maintain their own tool salvage shops but the work of reclamation was carried on in a more or less haphazard fashion. It seemed easier for the machine shop foreman to send a requisition for needed cutting tools to the purchasing agent than it was for him to dig up tools that had been discarded by the machinists, have them inspected to see if they could be salvaged, send them to the tool-salvaging department, line up machines, and take high class machinists from other jobs to reclaim the tools.

Several large shops, notably among automobile manufacturing establishments, have in the past equipped elaborate tool salvaging departments and have endeavored to operate them exclusively as such. This of course was the practice followed only in those shops consuming tools at a sufficiently high rate to permit of a large expenditure for an exclusive department. However, it is stated that this plan never has been proved practical nor profitable. One of the largest automobile manufacturing com-



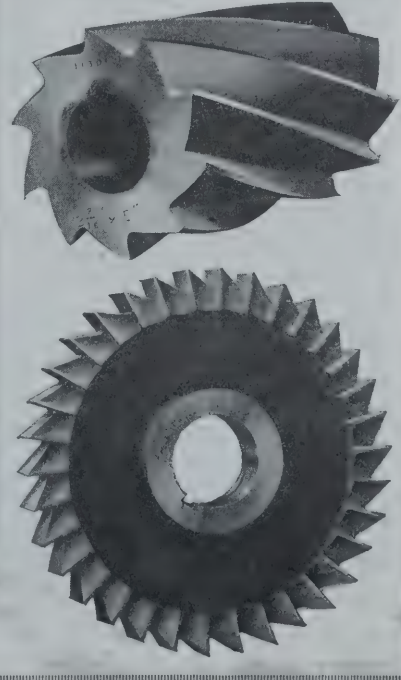


FIG. 2 (LEFT)—WORN OUT SPIRAL AND SIDE MILLING CUTTERS AS RECEIVED FOR RECLAMATION

FIG. 3 (RIGHT)—AS THEY APPEAR AFTER GOING THROUGH THE REMANUFACTURING PROCESS

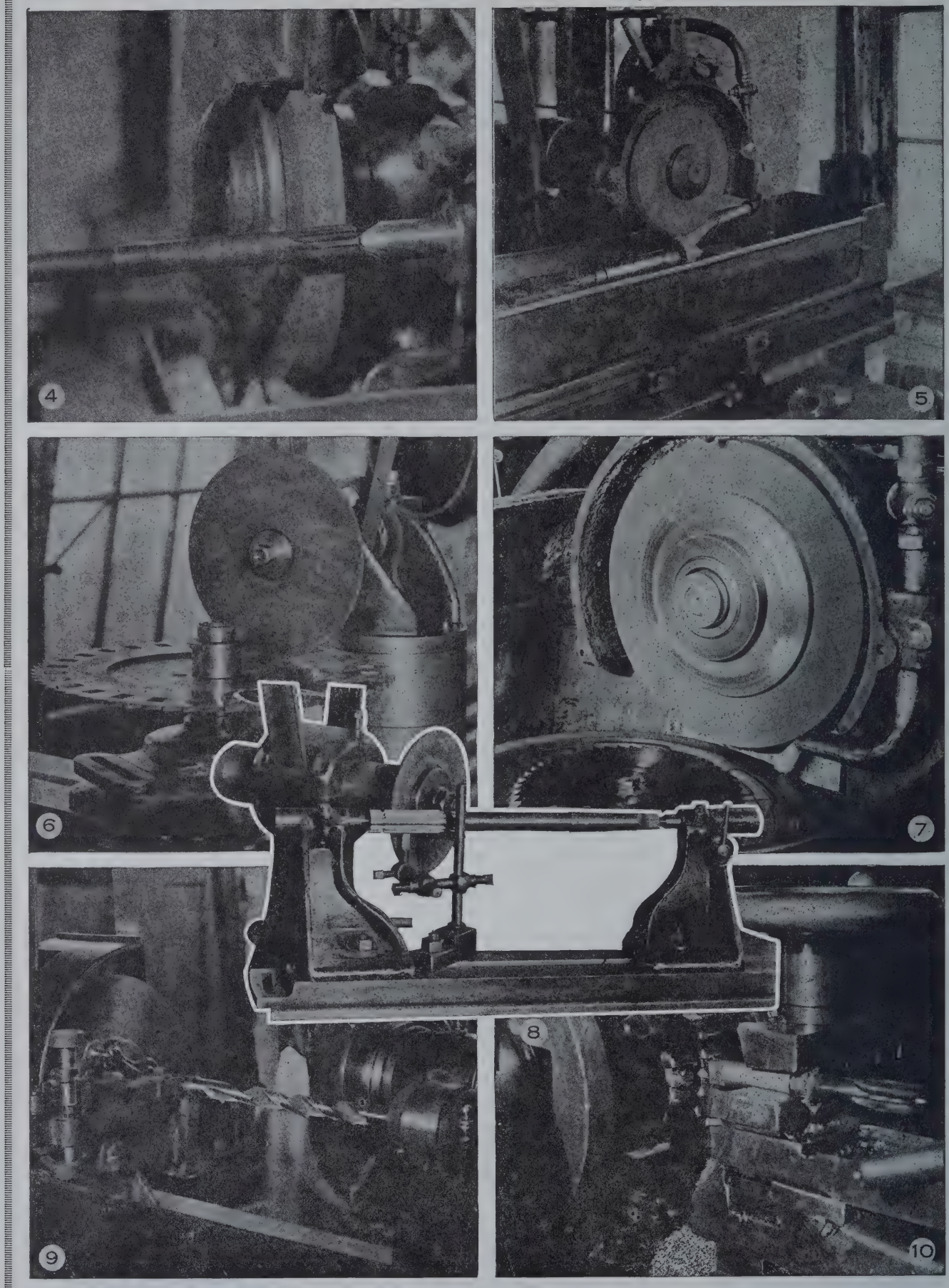


FIG. 4—GRINDING REAMER ON CYLINDRICAL GRINDER. FIG. 5—GUMMING OR RECUTTING NEW TEETH. FIG. 6—RECLAIMING CENTER OF LARGE COLD CUTTING SAW. FIG. 7—REDISHING OR GRINDING CLEARANCE ON SLITTING SAW. FIG. 8—BACKING OFF FOR CLEARANCE BACK OF CUTTING TEETH. FIG. 9—GRINDING DRILL ON UNIVERSAL GRINDER. FIG. 10—MILLING DRILL TANGS ON LATHE

panies in the country officially has stated that its tool salvaging department when operated as that alone, was run at a loss and never warranted the huge outlay in time and money. Gradually these tool salvaging departments are being dispensed with and the reclaiming of the tools is being left to experts who have made a close study of the proposition. A few years ago, several companies in the United States recognized that the time was propitious for centralizing such tool reclaiming efforts. They saw the possibilities of developing a business of reclaiming tools. A number of these companies are located in Detroit and while the methods which they employ vary, many of them are highly successful.

Among the first to realize the commercial possibilities of remanufacturing cutting tools, is the Grinding Process Tool Co., 818-820 West Warren avenue, Detroit. As is indicated by its name, the company's process is entirely one of grinding.

About five or six years ago, S. A. Cogsdill who now is president of the company, formed the Detroit Reamer Salvage Co., which in August this year became the Grinding Process Tool Co. In the early days of the tool reclamation business, Mr. Cogsdill, who devoted his entire time to it, drew an average wage of $10 weekly, while W. W. Blakely, who now is secretary and treasurer of the company, but who then gave but a portion of his time to the business, served without compensation. A combined shop and office about 16 feet square was obtained and a second-hand Landis grinder, which weighed about 4 tons, was installed for plain cylindrical grinding. This machine cost the newly formed company about $275 and was paid for at the rate of $25 down and $25 monthly. Later a used cutter grinder, which cost $96, and an old lathe were added.

Manufacturers Were Skeptical

The members of the firm experienced considerable difficulty in introducing their process. Manufacturers were skeptical and loathe to give out their tools, believing that when they did, they would not see them again. Others considered them as scrap and their attitude was: "Well, if they do take them and cannot bring them back, we'll only be out the value of the scrap." After many discouragments the company's president succeeded in prevailing upon a number of manufacturers to trust him with a few reamers. He rushed the tools to the shop, repaired them and as quickly as possible returned them with the request that their performance be checked. The answer invariably was: "Yes, they look all right, perhaps they'll work out all right. Come back in a month and and we'll see if we can give you another order." In the majority of cases, the tools were absorbed into the shop, and their identity lost. Frequently repeat orders were forthcoming, but in other cases manufacturers were not disposed to offer further business.

Finally, however, the Studebaker Corp., which was the first company of size to order its cutting tools remanufactured, commenced to turn its reamers over to the salvage company. The remade tools performed so well in actual tests that the corporation has submitted its worn tools for remanufacture in increasing ratio ever since. Other large manufacturers who have followed the example of the Studebaker company include the Hudson, Packard, Cadillac and Ford motor car companies, the Burroughs Adding Machine Co., Detroit; the Waterloo Gas Engine Co., Waterloo, Iowa; the Curtis Airplane & Motor Co., Buffalo, and a large number of manufacturers in the automotive field.

Plant Has Modern Equipment

The Grinding Process Tool Co. now operates about three dozen machines and all the men who attend them are expert mechanics. This equipment includes several milling machines including one made by the Pratt & Whitney Co., Hartford, Conn; one 12-inch lathe manufactured by the Monarch Machine Tool Co., Sidney, O.; one 14-inch lathe made by the Hendey Machine Co., Torrington, Conn.; a 24-inch drill built by the Cincinnati Bickford Tool Co., Cincinnati; 24 grinders including those made by the Cincinnati Grinder Co., Cincinnati; Brown & Sharpe Mfg. Co., Providence, R. I.; Norton Co., Worcester, Mass.; Wilmarth & Morman, Grand Rapids, Mich.; Persons-Arter Machine Co., Worcester, Mass.; Ott Grinder Co., Indianapolis; Greenfield Machine Co., Greenfield, Mass.; and the Oesterlein Machine Co., Cincinnati; the necessary straightening presses, cut-off saws, etc. Approximately 7500 square feet of floor space now is occupied by the company and the erection of its own building at an early date is contemplated. As indicative of the size to which the business has grown, a shipment was delivered one afternoon recently from the Hudson Motor Car Co., Detroit, which comprised about 7000 reamers of all sizes for remanufacturing.

When first formed, the company reclaimed only reamers, but its facilities gradually have been expanded to take in end mills, milling cutters, drills and finally all sorts of precision cutting tools were included in its remanufacturing program. Now it remanufactures reamers, milling cutters, end mills, drills, slitting saws, counterbores, spot facers, rivet sets, keyseating cutters, hobbs, arbors, plug gages, all types of round broaches except spline broaches, etc.

How Old Tools Are Handled

When shipments reach the company's receiving room the tools are inspected and checked with the customer's list, and discrepancies are noted on the receiving sheet. Specific defects in the tools not mentioned by the customer also are noted.

Thousands of reamers, end mills, milling cutters, etc., with flutes and teeth broken out, are received each month. This necessitates cylindrical grinding as shown in Fig. 4, in which a reamer is being ground on a Brown & Sharpe grinder, to prepare them for the gumming process. This process is illustrated in Fig. 5, which shows a milling cutter receiving new teeth on a special grinder. Both processes are conducted under a cooling solution which is forced from its delivery nozzle under a pressure of 80 pounds per square inch to eliminate the possibility of burning or drawing the temper. Drills, reamers, slitting saws, cut-off saws, milling cutters and end mills are treated in this way.

Large diameter cutting-off saws which have been cracked or whose teeth are broken out, are transformrd into slitting saws. In Fig. 1, in the head piece, is shown the outside rim of a 24-inch cold cutting saw, as removed to form the 20-inch slitting saw shown in the center. This cutting process is illustrated in Fig. 6. After being cut out, blanks are furnished with new teeth and then the slitting saw is redished for clearance. Close attention is paid to this process to prevent gripping. All saws, milling cutters, etc., are checked carefully for clearance and if it is found that the cutting ability of the tool is hampered through lack of clearance, the tool is given the required clearance. The third process for slitting saws takes place on the rotary grinder, illustrated in Fig. 7. After leaving this machine, the saw goes to a dry grinder to be backed off to assure proper clearance back of the cutting edge. All reamers, etc., are carefully treated in this manner by skilled workmen. In Fig. 8, a reamer is being backed off. This is the only

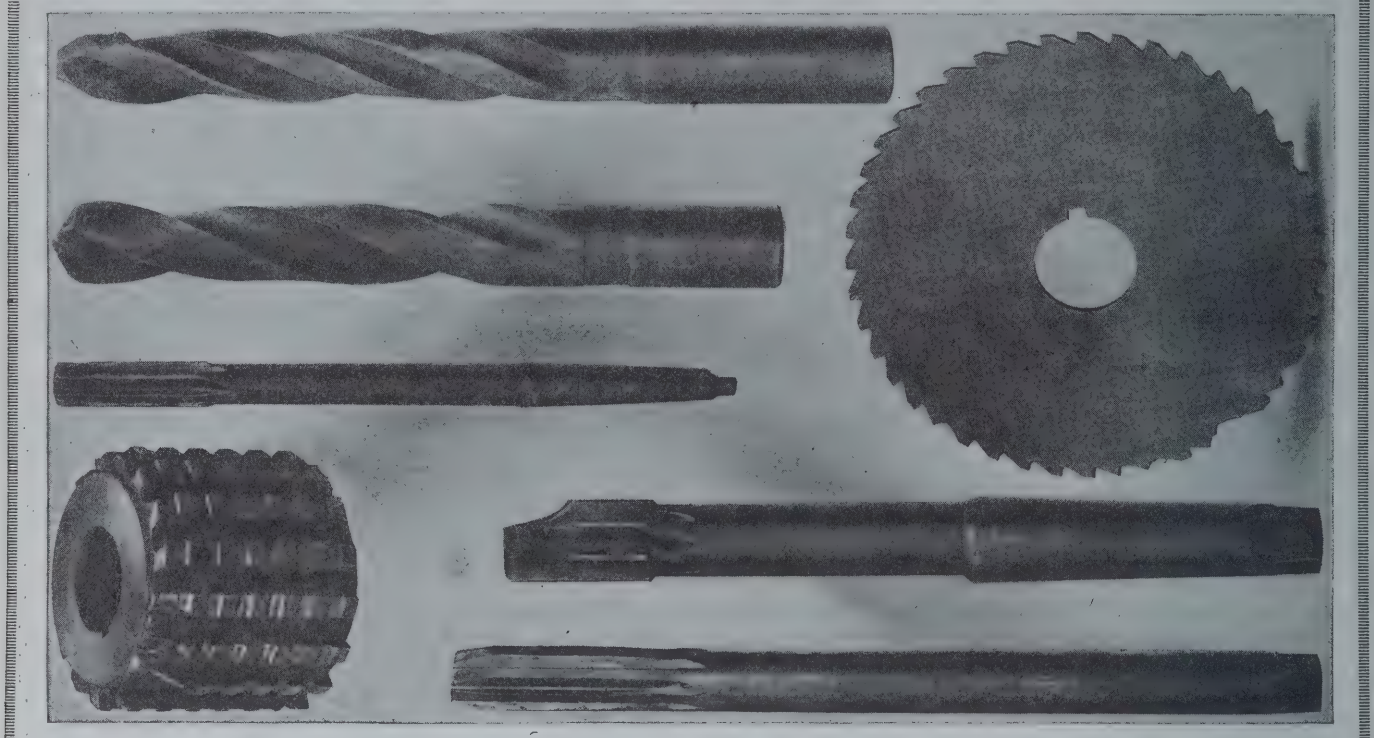


FIG. 11—TWIST DRILLS, SMALL TAPER SHANK MACHINE REAMER, HOB, SAW, TAPER SHANK MACHINE REAMER AND HAND REAMER AS RECEIVED FOR RECLAMATION, BROKEN DOWN AND WORN OUT UNDER USAGE

dry operation in the entire course of remanufacturing and the grinding wheel touches the metal so lightly that there is no possibility of heating the tool sufficiently to draw temper. Tools when finished, ground or polished are revolved between centers under the cooling solution and when they leave the shop no marks whatever are upon them.

The company also manufactures large quantities of cutter blades and also remakes old ones. Obsolete style blades are cut down in size and made into modern blades. These are redished for clearance in a manner similar to that illustrated in Fig. 7. It likewise makes blades for insertion in milling cutters.

Drills over 1½ inches in diameter are more or less special and a greater

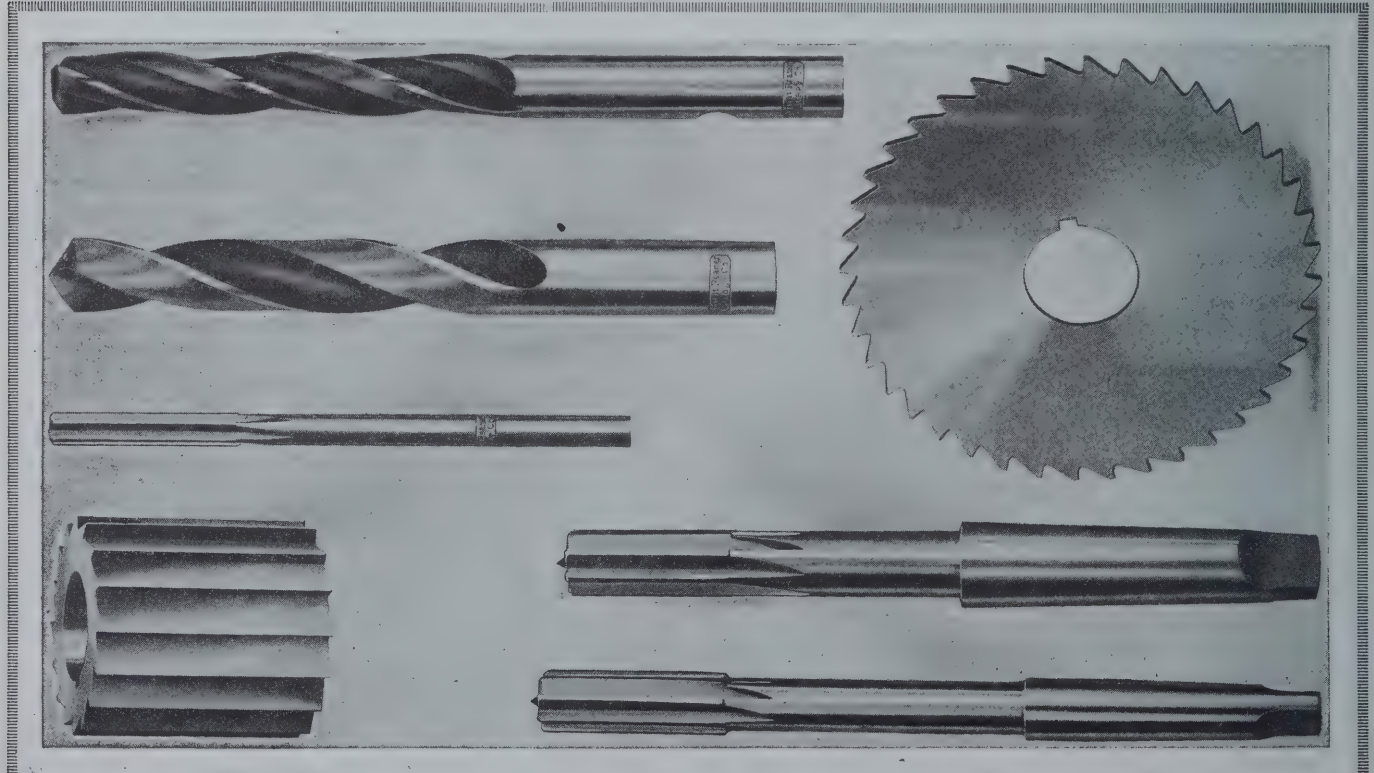


FIG. 12—SAME TOOLS AS SHOWN IN FIG. 11, AFTER HAVING BEEN RECLAIMED AND REMANUFACTURED. SOME TOOLS MERELY ARE REDUCED IN SIZE; OTHERS HAVE BEEN MADE INTO DIFFERENT TYPES OF TOOLS

amount of stock is taken off in the cylindrical grinding operation than from some of the other tools in remanufacturing. This is done to make standard size twist drills to meet the customer's requirements. The grinding operation as shown in Fig. 9, is performed on a universal grinder and is said to greatly improve the drills. Drills often are received for reclamation which are too short for operations requiring a jig or a fixture. In this event the old short shanks are cut off and long shanks of nickel steel are substituted by welding to increase sufficiently the overall length. The new shanks are turned on a 12-inch lathe and then are ground to the taper desired. Tangs for drills, reamers, etc., are milled on a 14-inch engine lathe, as shown in Fig. 10. If the point end of the drill has been burned in usage, it is cut off and a new drill is made of the remaining stock.

New Types From Old

The versatility of the shop thus is demonstrated in many ways. One of the interesting examples of this quality is the manufacture of distinctly different tools from worn out ones. Some slight reference to this already has been made but a few striking examples are shown in Figs. 11 and 12. In the lower left hand corner of Fig. 11, is shown a worn out hob with some teeth broken and others completely gone. This was one of a lot of about 100 hobs sent in; several were made into plain milling cutters as shown in the lower left hand corner of Fig. 12. The remaining hobs were made into shell reamers at about one-third of the price of new tools. As scrap, the old hobbs were worth about 20 cents a pound whereas the new milling cutters each cost from $17 to $18. The small taper shank reamer shown in Fig. 11 was made into the valve stem reamer shown in Fig. 12; the hand reamer became a taper shank machine reamer while the two twist drills and the taper shank machine reamer simply were remade with the necessary reduction in size. The cold cutting saw was made into a slitting saw as explained above.

Sometimes a straight shank hand reamer is made out of a standard chucking reamer and sometimes when a customer requires a 2-size reamer, it is made out of a worn out standard reamer. Great savings thus are being effected. Plain milling cutters which now cost about $12.50 each have been made at a cost of about $2.30 from special gear cutters which have reached the reclamation stage and worth as scrap about 20 cents each. Side mills are made from plain milling cutters. Recently several barrel shaped cutters, 4 17/16 x 10½ inches, having a 75-inch radius, which cost about $250 each when new, were rescued by the Grinding Process Co. from one of its customer's scrap tool boxes. These were taken and completely remanufactured at a saving to the customer of about $200 per cutter. The company bases its charges on a certain percentage of the list prices of the respective new cutting tools, not taking into consideration the advances which recently have been placed in effect by the various manufactures of cutting tools.

Practically the same course through the shop is taken by all tools received for reclamation, the number of operations varying according to their condition. Except when the customer gives the company right of way to use its own judgment in making up new tools which it can use from the worn out tools sent in, an effort is made to follow specifications or blue prints wherever possible.

When a smaller sized reamer is desired, the tang if broken, is cut off and both ends are centered. If bent, the reamer is straightened in a straightening press, the shank is ground down to proper size and the tang is restored. Then it is rough ground on a cylindrical grinder down to 0.01 or 0.015 inch of its proper diameter; the flutes are gummed so that their depth is restored; the reamer is finished ground to accurate size; then it is backed off on a dry grinder, whose wheel barely touches the metal so that it does not get warm or draw temper; the reamer is marked for size, greased and packed worn out tools sent in, an effort is made to follow specifications or blue prints wherever possible.

When a smaller sized reamer is desired, the tang if broken, is cut off and both ends are centered. If bent the reamer is straightened in a straightening press, the shank is ground down to proper size, and the tang is restored. Then it is rough for reshipping, after inspection.

In a legitimate test where the operator did not know whether he was using new or remanufactured reamers, the latter proved to be the best. Six new reamers produced 9000 pieces with 12 sharpenings, whereas the six remanufactured reamers produced 13,000 pieces with five sharpenings.

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Contrary to the natural expectation, encouragement is being received from the manufacturers of high speed steel. Instead of reducing the consumption of this commodity, the educative work carried on by the company has tended to increase the use of high speed steel. The greater the number of manufacturers who recognize the economy of having tools remanufactured becomes, the more widespread will the demand for high speed steel tools become. As an example of remanufacturing carbon steel tools, the company takes worn out rivet sets, anneals, re-turns, recaps, hardens and puts them through the finishing grinding process and sends them back as new sets at a cost of about 80 cents as compared with $2.25 the cost of new sets.

Save 50 Per Cent on Tools

In the plants of some of its larger customers, a systematic routine is followed preparatory to shipping tools for reclamation. All tools scrapped in the machine shop go through a central clearing station. This is in charge of a tool supervisor, who is experienced in determining a tool's potential value. All tools are sorted and the tool supervisor exercises his best judgment as to what can and cannot be reclaimed. Possibly the advice of an expert mechanic or a representative of the house which is to do the remanufacturing is solicited as to whether such tools as may already have been requisitioned from the purchasing agent, can be made out of the ostensible scrap. A favorable answer is followed by the issuance of the order to the remanufacturer who receives the specifications as to what tools are required, the scrapped cutting tools and in a short time, the worn out tools take their positions on the machines in the remanufacturer's shop and are metamorphosed into new cutting tools. Many manufacturers are saving not less than 50 per cent of their tool replacement costs. In many instances the saving runs higher.

For the purpose of helping trade relations between the United States and Italy a credit corporation capitalized at $100,000,000, equally divided between American and Italian bankers is being organized. The Italian government will be asked to guarantee returns on the investment of either 5 or 7 per cent and to guarantee credits up to $500,000,000, which the company will be prepared to advance.

Determining Accident Liability

Extent of Damages is Based on Depreciation of Earning Capacity of Workman in His Trade, Regardless of What Wage His Employer May Continue to Pay Him—Some Loss Taken for Granted in All Cases

BY CHESLA C. SHERLOCK

THE whole theory underlying compensation acts is that the workman has suffered a loss of earning capacity due to the industry in which he is engaged, and that the industry ought to share that loss with him. It is in determining just what this depreciation in the earning capacity is that employers meet with the greatest obstacles in applying the compensation acts.

It would seem from first thought that if a workman has suffered no loss of earning capacity by reason of his accident he would not be entitled to compensation, no matter how severe his injury might have been. The legislative authority, however, has taken the liberty to assume, in a given list of cases, that the loss of earning capacity has amounted to a certain per cent of the workman's total capacity, regardless of what the facts in the case might be. These assumed percentages are known as "schedule injuries" and must be paid to the workman so injured, regardless of what the fact of his loss of earning ability may be.

Among these schedule injuries are such as where a finger is lost, an eye, a leg or any specific dismemberment which has been expressly provided for by the statute. If a workman sustains a scheduled injury, the employer must pay the full amount of that scheduled liability whether or not the workman loses a day from work.

It is not in the case of scheduled injuries that the great mistakes are made by employers, for the statutes are sufficiently plain to make it apparent to all that there is no room for argument there. It is in the injuries where no scheduled liability has been made but where, from the nature of the injury, it has been necessary to leave the matter to the settlement of the courts, upon the facts in the case.

Employers naturally assume that since the statutes are silent in this respect that if a workman suffers such an injury, but does not, in fact, suffer any apparent loss of earning capacity, he is not entitled to any compensation. In a Pennsylvania case the court said:

"The standard for the determination of the future earning capacity of an injured employe is whether the power or capacity to earn has been diminished as a result of an injury."

This would then seem to narrow the matter down to the specific question as to whether the fact of lessened earning capacity is to be measured by money return or by some other standard of measurement. It is assumed that the earning capacity to be considered normal, is that of the injured man immediately preceding his injury.

Earning Capacity Less Important

The Illinois court has reminded us that "we cannot be unmindful of the fact that the money value of life and health is appreciating and the earning capacity of money steadily diminishing during these recent years."

As we examine these cases, we find that the courts are giving less attention to the actual money earnings of the injured man and are paying more attention to outside considerations, for they have come to feel that the money earning capacity does not always tell the real story. For that reason employers who have been pinning their faith to the fundamental principles underlying the compensation acts, have been surprised to find the courts compelling them to pay compensation in cases where they honestly were of the opinion that no compensation was due.

In a Kentucky case, a molder's leg was burned by molten metal. The burn was so severe that it prevented him working for more than three months and he was unable to walk upon the leg without the aid of a cane one year after the accident. As soon as he was able to get back to the plant, the employer employed him at his old wages, and jumped to the conclusion that since there had been no loss of earning capacity there was no compensation due the injured man. The court, however, held that this was not conclusive evidence of an absence of impairment of earning capacity.

In a Missouri case it was shown that the plaintiff sustained a severe injury to a foot which made it impossible for him to follow his former occupation. He was skilled in several trades, but the injury was such that it was impossible for him to work at any of them, except at reduced earning capacity.

The employer, however, gave him another position and continued to pay him his former wages, although the evidence inferred that the man was not capable of performing all of the duties of this position, due to the injured foot. In an action for damages he was awarded $6000, the court saying:

"While it appears that he is at present receiving the same salary from his employers as heretofore, the evidence is clear that his ability to serve his employer is diminished, and in the event he should lose his present position, his disability would seriously affect his earning capacity."

This is a point that employers often overlook in attempting to determine whether or not there has been a diminished earning capacity in the case of an injured workman. The true criterion is not the amount of money the workman is receiving in the shop where the accident occurred and which he has continued to receive subsequent to the accident, but it is the actual earning capacity of the man as judged in relation to the whole field of work in which he is skilled. What would he be worth, if placed in the hands of any other employer, who, possibly, would not be moved by sentiment, but would base his pay on actual productive power?

In a Texas case a workman received an injury which prevented him from working for more than six months. When he returned to work his salary was increased, and during the interval that he had not worked his former salary was paid. The increase which he received on returning to work, was not due to any increased earning capacity, but was due to a general increase given all employes in the same kind of employment. In

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The author, Chesla C. Sherlock, was formerly secretary of the Iowa industrial commission, and is now a practicing lawyer of Des Moines, Iowa.

an action for damages he was awarded $6500 from which judgment the employer appealed.

The court held that the fact that the employer had continued to pay the salary during the time the workman was totally incapacitated, and had increased the wages when the man returned to work did not necessarily overcome the plaintiff's showing that his earning capacity had been diminished.

While it is to be commended in employers, it is not necessary legally for them to continue the full payment of wages to employes incapacitated; the only thing contemplated by the compensation acts is that they shall share the loss according to the percentage of the workman's wage indicated by the state statute. But where the payment is made in full, it will have no effect upon determining whether there has been an actual loss of earning power. In fact, the courts seem to think, if the matter is considered at all, that it is evidence of the employer's attempt to defeat a showing of loss of earning capacity by the workman, rather than a humanitarian attempt to make his injury as inconsequential as possible in his own eyes.

Question Demands Study

The question of loss of earning capacity is one of fact to be determined by all of the circumstances surrounding each case, and it cannot be determined by any one rule. That is why it is impossible for the courts to accept the theory that if there has been no actual loss of earning capacity, as measured in money return, that there has been no impaired capacity.

It is reasonable to suppose, if the condition of the man prior to the accident is to be taken as normal or standard, that any injury sustained subsequent to that time will more or less impair his earning capacity, regardless of whether such impairment is immediately reflected in his wages or not. It is upon this larger basis that the courts are placing their decisions. The man should not, and seldom is, judged according to the treatment he has received at the hands of his individual employer. He is rather considered in the light of his trade or calling and judged as to his value in that trade or calling.

If he is actually impaired in his capacity so that he cannot perform the duties expected of a normal person in the same trade or calling, then he has suffered an impairment of his earning capacity in that trade, regardless of the amount of money he happens to be receiving from his employer.

Employers can well afford to go into this question, for it is the root of all liability under the workmen's compensation acts, at least, as to the extent of such liability.

Character First for Industrial Engineer

IN THE list of essential requirements for an industrial engineer character is first in importance and technique is last, according to the results of an extensive investigation of the subject. In speaking on the subject "College Training for Executives," Joseph W. Roe, secretary, Railway Car Manufacturers' association, gave the Society of Industrial Engineers at its Cleveland conference, Oct. 29, some facts relating to the profession which emphasize the need of college education even for those endowed with character, judgment and knowledge of men. Mr. Roe said:

"The Carnegie foundation at the request of the Society for the Promotion of Engineering Education, the four great engineering societies, and the American Chemical society, undertook an exhaustive study of engineering education. At the first meeting of the joint committee of the societies and the foundation it was felt that before attempting to judge the work of the engineering schools there should be an agreement on the elements needed for success in engineering.

"A series of interviews showed almost immediately that representative engineers and certain large manufacturing companies employing and systematically rating college graduates, were giving much more weight to the proper personal qualities than to technical training; yet the emphasis and attention of the engineering schools were directed almost wholly upon technical training. It seemed desirable therefore to continue the inquiry on the broadest possible basis.

"A circular letter was sent out asking the question: 'What are the most important factors in determining probable success or failure in engineering?' The relative importance of the qualities as derived from the answers received from 1500 engineers is as follows: Character, 41 per cent; judgment, 17.5; efficiency, 14.5; understanding of men, 14; knowledge of fundamentals, 7; technique, 6. These replies were so unexpected and so vital that a second letter was sent out to the 30,000 members of the four engineering societies as follows:

Please prefix numbers to the groups of qualities listed below to show the order of importance that you give them in judging the reasons for engineering success or in sizing up young men for employment or promotion.

Character, integrity, responsibility, resourcefulness, initiative.

Judgment, common sense, scientific attitude, perspective.

Efficiency, thoroughness, accuracy, industry.

Understanding of men, executive ability.

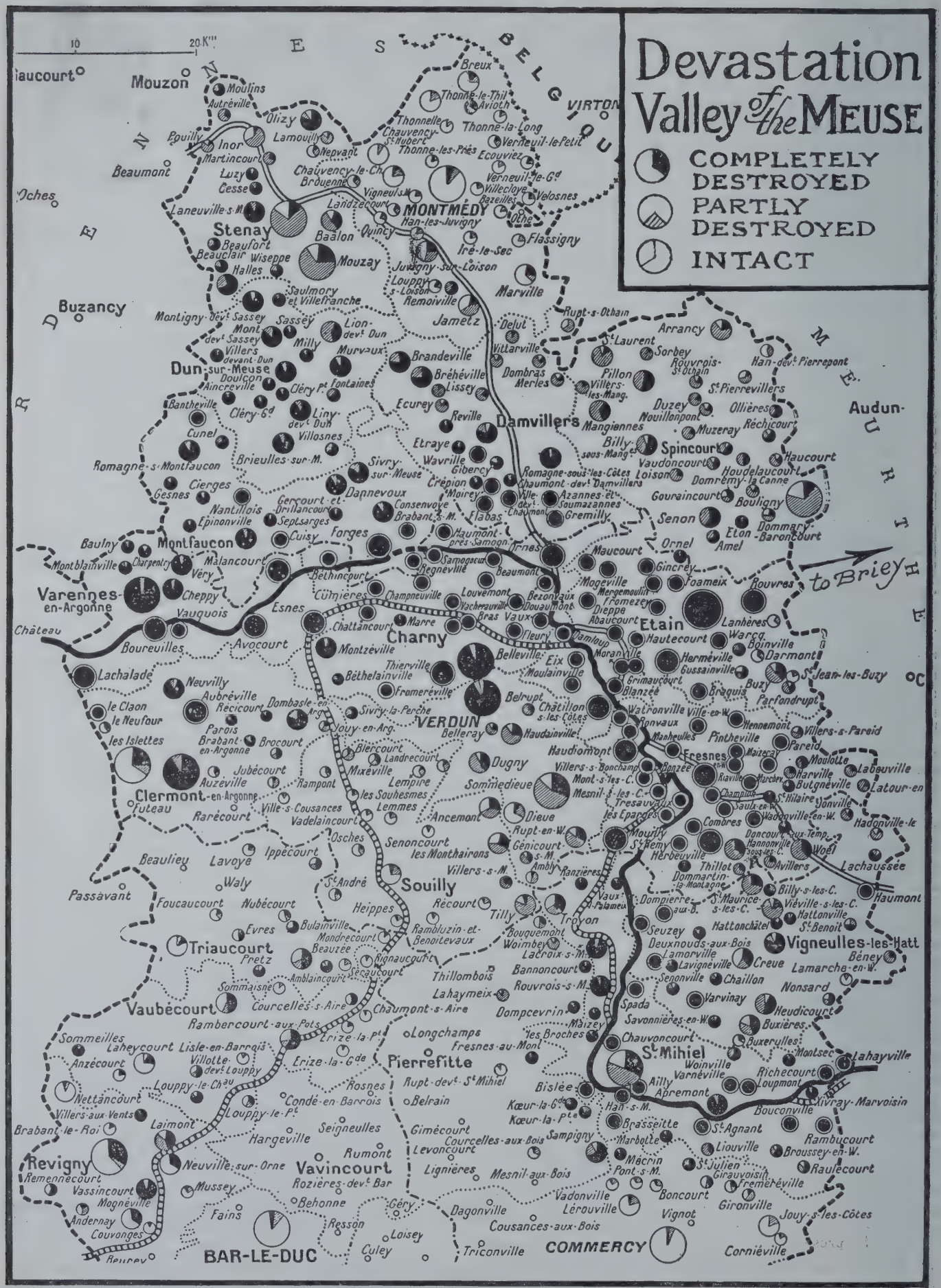
Knowledge of the fundamentals of engineering science.

Technique of practice and of business.

"More than 7000 replies were received. Of these 94½ per cent placed the character group first, and a similar number put knowledge and technique last. The rating of the groups according to the analysis of these replies is as follows: Character, 24 per cent; judgment, 19.5; efficiency, 16.5; understanding of men, 15; knowledge of fundamentals, 15; technique, 10.

"The percentages according to this rating were not quite the same as in the first replies but the order was unchanged. I know of no judgment on this question which can be considered so authoritative. Seldom does a producer have a clearer statement of what the market wants. The colleges as producers must listen to it. Dr. Mann, who made the investigation, has called attention to certain points as follows:

In the first place, *all* the qualities mentioned are essential to genuine success and conscious effort should be made to develop all of them as far as possible. Second, character, initiative, common sense, and qualities of this sort cannot be taught explicitly like multiplication tables and rules of grammar. Third, education is a continuous process of growth, and therefore, the conscious development of the qualities of the first four groups cannot to advantage be arrested for four years, even for the sake of a mastery of knowledge and technique. Fourth, the man whose character, judgment, efficiency and understanding of men has developed most during his college years has the best show after graduation, since these qualities constitute 75 per cent of his equipment. Fifth, the fact that character is rated at 24 per cent does not mean that an engineer can succeed with a 24 per cent character. It does mean that even a perfect character is but 24 per cent of the engineer's total equipment.



FRENCH ENGINEER'S MAP SHOWING EXTENT OF DESTRUCTION OF INDUSTRIAL PLANTS IN THE VALLEY OF THE MEUSE

Germany Restoring Factory Loot

Trainloads of Machine Tools Now Rolling Back to France—Twenty Thousand Tons of Cranes Were Stolen From Northern Part of Country—German Production of Iron and Steel Growing

BY FRANCIS MILTOUN
French Correspondent of The Iron Trade Review

TWO official reports embodying documents of considerable economic importance have just been issued by the French minister of industrial reconstruction. The real meaning of them is elucidated by the accompany map of the Meuse valley in northeastern France, showing the extent of the destruction of industrial plants.

The first of the official communications deals with the recovery by the Wiesbaden commission of machinery and tools stolen from northern France and transported to Germany. Train loads of identified machinery are being sent back monthly. The tonnage thus recovered is as follows:

	Car loads	Tons
March, 1919	81	1,085
April	334	3,270
May	487	5,224
June	788	9,211
July	...	10,000

The other document establishes the fact that 20,000 tons of cranes were stolen from steel and iron plants in northern France. The work of recovery has just begun. Doubtless all of the cranes will not be found, and doubtless Germany will avoid paying for a considerable number of them. But certain it is that France will have to scrape the world markets closely for replacements. Replacements are only to be had at from twice to three times the cost of the equipment before the war. Government aid is being extended manufacturers only on the basis of prewar inventories.

The inventory of the loot as compiled by the ministry of industrial reconstruction divides all industries into three classes: Big industries, employing more than 1000; average industries, employing more than 200 and less than 1000; and small industries, employing less than 200. The figures were obtained by the various committees which were appointed by the government to estimate the damages resulting from the invasion. They were obtained only from industries which could definitely establish inventories of their losses. They were compiled under the supervision of the president of the commission, Monsieur L. Le Chatelier, president of the corporative committee of the Metal and Electrical Industries of the Central association. They do not include the mining industry and its losses. Following is the inventory:

Machinery and equipment	Big industries	Average industries	Small industries
Boilers, in square meters of heating surface	15,000	50,000	30,000
Steam engines, horsepower	30,000	55,000	30,000
Motors and dynamos, horsepower	45,000	145,000	10,000
Transformers, horsepower	30,000	80,000	10,000
Gas containers	1,000	300	300
Machine tools for metal working and cutting	6,500	10,500	22,500
Machine tools for metal modeling, etc.	1,400	600	5,600
Machine tools for wood working	200	500	3,300
Cranes and windlasses	800	700	1,500
Turntables, etc., tons	2,000	12,000	6,000
Scales and balances	1,500	3,000	2,000
Locomotives, standard	50	.....	....
Freight cars, standard	800	200	....
Freight cars, narrow gage	500	1,500	2,000

The Association of German Iron and Steel Producers reports that in April, 1919, 435,242 tons of pig iron were produced in Germany, and in May, 524,986 tons. Production in May was divided as follows: Hematite, 48,582 tons; foundry iron, 88,178; bessemer, 3425; basic, 248,633; iron for forging, 8998; ferromanganese and similar grades, 127,175.

Steel production in May amounted to 598,377 tons, as compared with 426,910 in April, and was divided as follows: Bessemer, basic, 240,963 tons; bessemer, acid, 6526; martin, basic, 316,600; martin, acid, 5048; cast steel, basic, 14,007; cast steel, acid, 7979; crucible steel, 2916; electric steel, 4338.

Rolling mill production was as follows: April, 365,437 tons; May, 507,963.

* * *

France produced annually before the war approximately 35,000 tons of tin plate, imported 20,000 tons and exported 2300 tons. Home consumption thus accounted for 53,000 tons.

According to a recent report of the French minister of commerce, production in France in 1915 amounted to 2500 tons, and imports, 68,340. Production in 1917 was practically nil, and importations, owing to the restrictions by the British government, amounted to only 45,329 tons, whereas in 1916 they amounted to 80,708 tons. Interdiction of export from Great Britain was abolished by an Anglo-Franco accord, but there was but one single purchaser for Welsh tin plate, the state.

The figures for 1918 are as follows: French imports, 58,209 tons, of which 46,809 tons were received from Great Britain. French exports in 1916 amounted to 1180 tons; in 1917, 727, and in 1918, 745.

Production of tin plate in France is decreasing, and the remodelling of the customs tariff is considered the only possible means of reviving the industry.

Germany has seen its production of tin plate grow steadily in recent years. In 1912 it had reached a tonnage of 72,000, whereas in 1900 it was but 40,500. Production in 1913 was 89,000 tons, in 1914, 85,569 tons, and in 1916, 92,701. Germany absorbed, including importations, 120,000 tons in 1912. A German syndicate of tin plate makers existed before the war, but was dissolved in 1914, though efforts were made in 1917 to reorganize it, or form another.

Italy in recent years has made considerable progress in tin plate production. On the eve of hostilities production was in the neighborhood of 30,000 tons. As her home needs were 50,000 tons imports amounted to 20,000 tons.

* * *

A report has come to Paris from the Vienna bourse concerning the famous Skoda armament works, which made the big siege guns, first used against the forts of Liege in Belgium. An offer is said to have been made to Herr Karl Skoda by the Prague government for the purchase of 70,000 shares of the company. It is said that the Tcheko Slav government is working in connection with the Creusot works in mid-France. Again there is a rumor that American capital is going in. The former Austrian government, through its ministry of war, still owes the Skoda company 150,000,000 crowns for guns and ammunition delivered during the war.

Announcement has been made to the effect that the eleventh annual meeting of the American Institute of Chemical Engineers will be held in Savannah, Ga., Dec. 3 to 6. An elaborate program is now being prepared. J. C. Olsen is secretary of the organization.

Smelting Titanium-Bearing Ores

Iron Sands Deposited Along the Shores of New Zealand Present Difficult Problems When Utilized in Blast Furnace—How Sands Were Treated for the Production of Pig Iron

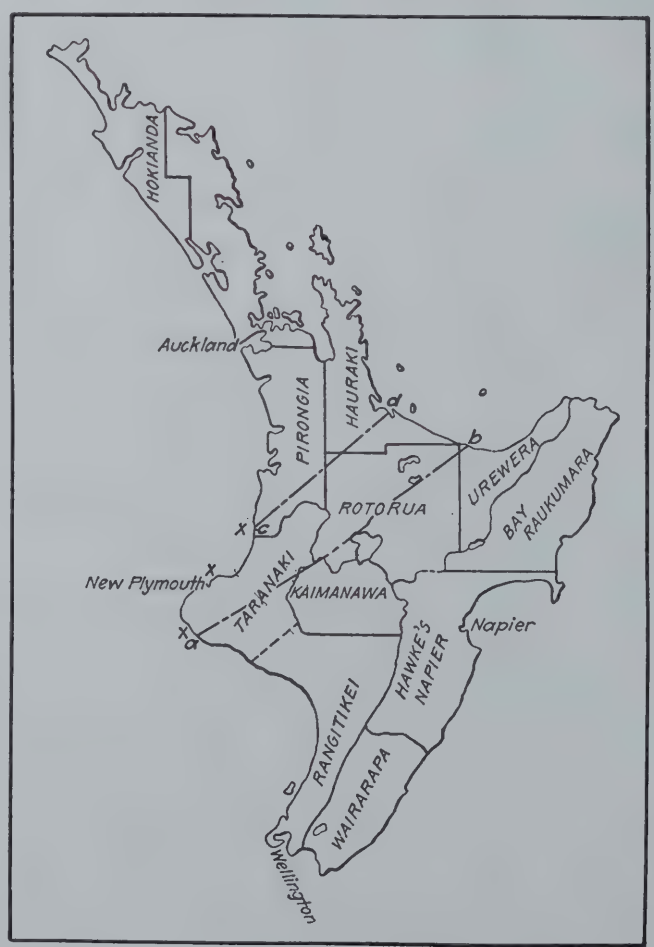
BY V. W. AUBEL

AMONG the iron-bearing ores of the world, the titaniferous iron sands of New Zealand are probably the least known to American engineers. This is not surprising in view of the fact that American ironmasters look with disfavor on any, even domestic ores, containing over 1 per cent titanium. The possibilities of smelting titanium-bearing ores in the blast furnace are still undetermined, but the problem of their efficient reduction is becoming more important each year. New Zealand has, however, been intensely interested in her deposits of titanium-bearing iron sand, and during the last 50 years considerable English and New Zealand capital has been expended on this problem. The extent of the New Zealand iron-sand deposits is almost beyond measure. From Patea north to Manuka Heads, along almost the entire west coast of the north island, these deposits exist. Wherever there is beach sand along this 300 miles of coast line, the sand is iron bearing. It varies considerably in grade; but wherever the contour of the coast affords small bays and inlets, large dunes are found that are remarkably uniform in quality. Several of these large deposits, especially those at New Plymouth and Patea, are noted for their high iron content. The dune at New Plymouth runs between 55 and 60 per cent of metallic iron; the panning action of the prevailing westerly winds and northwesterly currents has no doubt resulted in this concentration. Whatever the origin of this material may be, there is no doubt that deposition is going on continuously. At New Plymouth, a small artificial harbor, protected from the drifting sand by a large breakwall, has been dredged. Here sailing vessels have for years been loaded with iron sand for ballast by means of a crane and grab bucket operated from the wall of the breakwater. Thousands of tons of sand have been removed from this spot yet each succeeding storm renews the supply. The sand dune shown in Fig. 1 has been tested to a depth of 50 feet without losing its high quality. The beach itself is of high iron content at a depth of 30 feet.

Sand is Easily Accessible

The origin of this ore is generally accepted as being subterranean and volcanic. The New Plymouth district is, however, the western extremity of a volcanic belt, that extends across the North Island, the eastern end is the well-known active thermal region of Rotorua. New Plymouth is well connected by rail with both Wellington and Auckland and its deposit of sand is easily accessible by both rail and water.

About 1868, a small blast furnace was built at New Plymouth and the iron sand, mixed with clay and baked into bricks, was charged into the furnace with charcoal as the fuel. This test was evidently not successful. The next attempt of any magnitude, and the one perhaps that deserves the most mention, was made at Onehunga about 1884. Considerable interest was being aroused at this time in England over the possibilities of iron sand. As Canada and New Zealand were both rich in this mineral, the matter was brought to the attention of the foremost steel and iron men of that day. Sir William Sieman, just before he died in 1883, developed a combination balling furnace and open-hearth furnace which was to be used to treat the Canadian iron sand. Sir Henry Bessemer also became interested and carried out some laboratory experiments. Between 1887 and 1912 a great many companies were formed for the exploiting of these sands. Some of these made honest efforts to utilize the iron sand, while others were of a distinctly wildcat nature. The operations of some of these wildcat companies have caused considerable prejudice against this material both in England and New Zealand. In 1914, a company was formed for treating the iron sand for the production of pig iron by a process patented in New Zealand. The sand from the beach was dried, put through a magnetic separator, mixed with a large proportion of fine coal, and coked in fireclay retorts.



MAP OF NORTH ISLAND OF NEW ZEALAND

The active volcanic region of the island lies between the lines *AB* and *CD*. The principal deposits are at places marked *X*. The trend of the currents on this coast has scattered this sand in large quantities practically all the way to Auckland.

Abstract of a paper presented at the annual meeting of the American Institute of Mining and Metallurgical Engineers, Chicago, Sept. 22 to 26. The author, V. W. Aubel, is assistant blast-furnace superintendent, Clairton works, Carnegie Steel Co.

The product from the retorts, termed ferrocoke, was smelted in a large cupola with a little limestone for flux but without the addition of any extra fuel. The amount of fixed carbon in the ferrocoke was to be kept great enough to supply sufficient heat and carbon for the reduction of the already partly deoxidized iron sand. This process was tried out in a variety of ways for nearly three years but the iron produced was inferior. Such a process has little to recommend it from a metallurgical point of view and it is not surprising that it was abandoned. The scarcity of pig iron in New Zealand and the resulting high price due to the war, encouraged another attempt to use these sands. Late in 1917, it was decided to build a small hand-filled blast furnace, equip it with hot blast, and experiment still further.

The utilization of such an ore of iron as this titaniferous iron sand for the production of pig iron in the blast furnace, presents two very difficult problems. The first is the physical condition of the ore; being in the form of fine beach sand, there is obviously the necessity of briqueting, sintering, or otherwise preparing the sand for charging into the furnace. The second is the necessity of either eliminating the titanium content of the sand wholly or in part by magnetic separation milling methods, or attempting to slag it off without interfering with the continuous operation of the furnace or the production of a marketable iron.

A sample was taken from that part of the beach which constituted the ore supply for the furnace and was used also when testing the sand with the magnetic separator for the elimination of the titanium.

AVERAGE ANALYSIS OF SAND FROM NEW PLYMOUTH DEPOSITS

	Per cent
Metallic iron	56.22
SiO_2	6.20
Al_2O_3	2.00
CaO	0.62
MgO	2.80
TiO_2	10.30
P_2O_5	0.74
V_2O_5	0.39

Experiments were conducted on a large scale with the magnetic separator, which was part of the original equipment. This machine consisted of two pairs of rolls operating between two pairs of fixed magnets. The sand was fed and distributed to the rolls in a uniform stream by a revolving feeder. The magnets were excited by a small generator, driven by the motor that operated the rest of the machine. They could be adjusted both as to strength of current and as to length of magnetic field. The dry sand dropping from the rolls in a uniform sheet was deflected on either side by the magnets; the tailings, or nonmagnetic material, dropped onto a conveyor belt and discharged outside of the building. The magnets were excited and adjusted from a weak magnetic field to a strong magnetic field, with no appreciable lowering of the titanic-acid content of the concentrates. Not even with a weak field and the consequent loss of iron in the tailings did the titanic acid in the concentrates drop under 9 per cent. In this respect the New Zealand sands differ materially from the St. Lawrence river iron sands of Canada. These latter, although they are of considerably lower grade, lend themselves easily to wet magnetic concentration with a product containing from 65 to 70 per cent of metallic iron and only 2 to 3 per cent of titanic acid.

Results of Tests Made with Cast Iron Bars

Test Specimen	Deflection Inch	Pounds to Break	Remarks
1 PSS*		2900	Flaw in casting at breaking point.
2 PSS	0.5	3250	Small flaw in casting.
3 PSS	0.5	3530	Bar not broken.
1 P	0.5	3400	Broke at small flaw.
2 P	0.5	3500	No break.
3 P		3550	No break.
1 M		3550	No break.
2 M		3550	No break.
3 M		3550	No break.

*PSS indicates proportion of two parts of good machinery scrap to one part of pig iron; P indicates all pig iron, M indicates three parts of pig and one part of scrap.

Treatment of Sand

In the first experiments with a roll-type of egg briquetting machine, the attempt was made to use the raw sand from the beach mixed with 12 per cent of ground coal. The pressure exerted by the rolls, however, was not sufficient to bind this material and the proportion of good eggettes was probably not over 50 per cent. An effort was then made to grind the coal and the sand together; this gave a much better yield of good eggs and led to the purchase of a 33-inch grinding mill.

The treatment of the sand finally adopted was as follows: The sand was loaded from the beach into small side-tipping narrow-gage trucks; fed by bucket elevator into a rotary coal-fired kiln and discharged by a screw conveyor; elevated by bucket chain and fed to the distributor of the magnetic separator; the dried concentrated sand was mixed with 12 per cent, by weight, of low-sulphur coal, elevated and fed to a disintegrator, and discharged into a storage bin; fed from bin by a screw conveyor feed to the mill, all the product from the mill passed through a 100-mesh sieve; discharged from mill, slightly dampened with water, into an enclosed mixing conveyor and elevated by bucket belt to storage bin. From the bin the material was fed by a roller feeder to a vertical pug mill acting as a mixer and feeder to the eggette machine; eggettes were discharged over shaking screen onto a conveyor belt running to feeding platform of roasting furnace then hand-fed into blast roasting furnace, automatically discharged over screen, and stored for smelting in the blast furnace.

The blast-furnace plant, as completed, consisted of a small furnace of about 15 tons daily capacity, a 24-pipe hot-blast stove, and a 24-inch smelter blower. The blower was either direct driven by a 70 horsepower vertical steam engine or belt driven by a 75 horsepower motor. The furnace was 46 feet high, 4 feet diameter at the hearth, and 9 feet diameter at the bosh. The bosh was spray cooled and pierced for six 3-inch tuyeres; the tuyere coolers were of cast iron with coiled cooling pipes. Several cast iron cooling boxes were inserted in the tuyere area. The furnace shell was of ½-inch plate stiffened by rails bolted on the inside. The top was closed by the usual cone and bell, with a 24-inch bleeder leading off the downcomer. Two burners led the gas to the combustion chamber of the hot-blast stove. This stove was 40 feet long, 10 feet wide, and 14 feet high. Twenty-four 10-inch diameter U-pipes were suspended in three rows of eight each. The walls were lined with firebrick and insulated with a 3-inch layer of granular pumice. All the units of the plant were electrically driven except the blower.

The analyses of the ore used, the coke, which we obtained locally, and the limestone are as follows:

	Eggettes Per cent	Limestone Per cent
Iron	50.0	....
CaO	2.8	54.1
Al_2O_3	1.8	0.9
TiO_2	9.2	....
SiO_2	5.7	4.0
MgO	2.0	3.17
C	10.0	....

Westport Coke

	Per cent
Fixed carbon	93.55
Volatile hydr.	1.85
Water	0.25
Ash	4.35
Ash includes sulphur and phosphorus	0.85 0.035

It is at once seen that, excluding the titanic acid, the amount of slag-

forming ingredients is small, and it would be extremely hazardous to attempt a run without diluting this titanic-acid content to some extent by the addition of some foreign slag-forming materials. This material was found in a local volcanic rock, which it was thought would furnish the necessary ingredients to make those complex silicotitanates of lime and alumina considered necessary to flux away any great quantities of titanium. This rock also contained a considerable amount of alkalies, which are well known to form easily fusible compounds with titanic acid. An analysis of the rock as used is:

SILICEOUS ROCK

	Per cent
SiO_2	53.3
Al_2O_3	20.4
CaO	8.1
MgO	0.36
Mn	0.86
Alkalies	6.6
Fe_2O_3	8.1

This test run was not so much a question of production or cost as an attempt to secure some practical data. Naturally, under such conditions, the furnace operator would keep a high slag volume per ton of pig, and also a low burden of ore per ton of coke. Starting off in this way with titanium low in the slag and working up to a normal burden, and then working down on the slag volume, with a consequent rise of titanium in the slag, until the point of economic balance had been reached, would, of course, mean running over a considerable length of time to obtain satisfactory results. The furnace was filled to start as follows:

Four charges coke, 1500 lb. each.
Five charges, each { coke, 1500 lb. / limestone, 636 lb. / silica rock, 600 lb.
Three charges, each { coke, 1500 lb. / limestone, 730 lb. / silica rock, 700 lb.
Two charges, each { coke, 1500 lb. / ore, 500 lb. / limestone, 810 lb. / silica rock, 700 lb.
Three charges, each { coke, 1500 lb. / ore, 800 lb. / limestone, 760 lb. / silica rock, 600 lb.

Starting with these charges on a coke unit of 1500 pounds, the ore was gradually increased to 2000 pounds and the amount of the silica rock and limestone was gradually decreased in order to bring up the percentage of titanic acid in the slag. The first day the speed of the blower was brought up to a maximum of 60 revolutions, which gave an average blast pressure of 20 ounces at the blower and about 14 ounces at the furnace. The average blast temperature was controlled at approximately 1000 degrees by regulating the supply of gas to the stove. The furnace was cast and flushed regularly the first five days. The first slag was essentially a silica-lime slag, as only what titanium contained in the silica rock was present. All the slags obtained through the cinder notch from the beginning to the end of the run were extremely fluid, more so than the average blast-furnace slag.

On the fifth day, one of the tuyeres was burned and before the trouble was located, due to the high-water pressure and relatively low-blast pressure, the furnace had secured considerable water. On the cast succeeding the changing of this tuyere difficulty was experienced in getting the tapping hole open; the remaining five days of the run the furnace seemed to be getting steadily worse in this respect. It was often necessary to burn the tap hole open with oxygen, and the hearth bottom seemed to be getting higher each day. During this time the cinder obtained through the cinder notch was hot, gray, and very fluid, while the slag obtained through the tap hole at the end of the cast showed none of these very desirable characteristics. The tap-hole cinder seemed to be darker, heavier, and to have a tough sticky nature.

Hard Iron Notch Encountered

Analysis of this material is given with that of the other data obtained from this run. On the last two days of the run, considerable iron was tapped through the cinder notch. Outside of the hard tap hole, iron at the cinder notch, and building up of the hearth bottom, there were none of the indications of a bunged up furnace. The iron was hot and gray and the cinder was hot and fluid. On the seventh or eighth day of the run, the brickwork around the tuyere zone on one side of the furnace began to steam and moisture oozed out around the joints in the brickwork. The coil-cooled cast iron cooling blocks were suspected of leaking so the water was shut off of these. On account of the bunged up condition of the furnace and suspicion of water leaking, it was decided to "blow out" on the tenth day.

The furnace had made about 90 tons of iron. Some of the analyses are given. Test bars were made from some of this pig and tested with the results given in the accompanying table. On cleaning out the furnace, it was found that the hearth had built up about 2 feet from its former level; the analysis of the salamander is given. One of the tuyere coolers was found to be leaking and the furnace no doubt obtained considerable water from this source and also from the blocks. From this test we had wished to observe the quality of the iron obtained, the nature of the slag in relation to its titanium content, and to obtain evidence to either prove or disprove the contention that titanium segregated in the furnace hearth. Due to the water trouble encountered, the data obtained from this run could not be considered conclusive, so it was decided to have another test of at least a week's duration.

The following analyses were made by the New Zealand Government Dominion laboratory.

REPRESENTATIVE ANALYSES OF IRON OBTAINED ON THE FIRST RUN

	First Cast Per cent	Fourth day Per cent	Seventh day Per cent	Ninth day Per cent
Silicon	8.18	1.63	1.49	1.60
Titanium	0.98	1.69	0.39	0.45
Phosphorus	0.73	0.45	0.56	0.57
Vanadium	0.11	0.03		
Sulphur	0.007	0.030	0.080	0.090
Manganese	0.28	0.31	0.44	0.38
C C	1.53	1.34	1.15	1.14
G C	2.04	2.07	2.80	2.79

REPRESENTATIVE ANALYSES OF SLAGS OBTAINED ON THE FIRST RUN

	First slag Per cent	Slag Third day Per cent	Slag Sixth day Per cent
SiO_2	43.00	32.40	31.29
Al_2O_3	20.00	15.17	13.90
Fe_2O_3	.....	1.15	2.73
CaO	32.60	35.80	37.97
MgO	.....	6.36	6.28
TiO_2	.....	7.09	7.72
Alkalies	.....	2.03	.....

Without considering the effect of any water that, no doubt, had leaked into the furnace both through the leaking tuyere cooler and through several cracked plate coolers, it is at once seen both from the operation of the furnace and from the analyses of the slags and the material found built up in the hearth bottom, that all of the titanium in the charges was not finding its way out of the furnace.

In preparing the furnace for the second run, every possible care was taken to avoid any repetition of the previous water trouble. The bronze tuyeres were made heavier in construction and given a larger water feed at a lower pressure. The cast-iron coil cooled blocks were dispensed with entirely, under the theory that no cooling would be necessary in the tuyere area for such a short run. New and better tuyere coolers were provided. The second run lasted 11 days, but there was no trouble from water leaking into the furnace. At the completion of the run all, the cooling bronze was as sound as at the start.

The furnace was filled to start in the same way as for the first run. With a coke unit of 1000 pounds, the ore charge was gradually increased to 1800 pounds, limestone to 448 pounds, and silica rock to 270 pounds. The furnace was flushed and cast regular-

ly, no trouble being experienced until the fifth day. During the first five days, the iron at no time ran under 2.50 per cent silicon. On the fifth day some trouble was experienced in getting the tap hole open; on this cast it was impossible to get any slag to follow the iron. The next cast was small, and from then on all slag and iron were tapped together out of the cinder notch. About the eighth day, a hole was cut above the tap hole at the same level as the slag notch and from this hole all the slag and iron were tapped together at regular intervals until the end of the run. No further building up of the hearth occurred; if anything the hole was lowered to some extent by this method of tapping. On the fifth day, when the trouble was first experienced with the tap hole, the iron obtained was white; no change was made in the furnace burden from that indicated above. White iron was obtained on the sixth, seventh, and eighth days but after the tap hole was cut in the front of the furnace, the iron turned gray and the silicon content jumped at once to over 2 per cent. Good, gray iron was the rule from this time until the end of the run.

From our experience with these two runs we have drawn a few conclusions that may be of interest. The difference between the slag obtained from the cinder notch and that obtained from the tap hole at the end of the cast was emphasized before. This difference was marked on the second run. After the cinder notch was abandoned on the second test, and all the slag and iron were run out together from the improvised tap hole, a large sample of the slag was taken in a mold and allowed to cool. On breaking this sample a distinct line of demarkation was shown between two formations. The bottom layer had a specific gravity of 3.8 and the top layer a specific gravity of 3.2. The bottom layer was of a much deeper blue color than the top, and showed plainly the presence of more titanium. From this it would appear that when flushing slag out of the furnace through the cinder notch, that we are obtaining slag with the low specific gravity and segregating the titanium in the hearth. This would account for the vast difference in the appearance of the slag from the cast and that from the flush. It would also appear that when all the slag and iron are taken at regular periods from the same tap hole that a greater percentage of the titanium is eliminated.

On the ninth day of the second run the supply of prepared eggettes was exhausted. It was, therefore, decided to try a few days' operation with the raw beach sand in place of the prepared material. The raw sand was wetted down with a 5 per cent solution of clay wash, just sufficient to prevent filtration and also to prevent excessive loss in the dust catcher. The coke, sand, limestone, and silica rock were thoroughly mixed before charging into the furnace. Practically the same weights were used as when using the prepared material. This practice was followed for the two remaining days of the run, or until the stock of coke was exhausted. No difference was noticed in the workings of the furnace. The iron obtained was high in silicon, averaging about 2.40 per cent. It is unfortunate that we were unable to obtain sufficient coke to keep on with this second run. It was the consensus of opinion, however, from those in charge that it would have been no trouble whatever to have run the furnace indefinitely. Further efforts along these lines are to be made to utilize this material, and preparations are under way for a more extended trial of the furnace. When further trials are completed more information may be available.

Urges Standardization in Industry

Charles LeMaistre, secretary of the British engineering standards, at a dinner recently given in his honor by the recently organized American engineering standards committee, expressed the opinion that one of the strongest ties which can bind two or more nations together is engineering and industrial standardization. Mr. LeMaistre described the work and organization of the British association, which he said was formed in 1901 at the instance of Sir John Wolfe Barry, through whose able guidance during some 16 years of the most important period of its existence the association gradually gained the confidence of the people. It now is an organization of some 300 committees and 1200 members who give their time fully to



Observe Safety Week at River Rouge

DURING safety week at the blast furnace plant now under construction for the Ford Motor Co. at River Rouge, Mich., the banner in the accompanying illustration was one of a number used to promote safety among the employes. The number of accidents in each department were posted on the banners each day, this proving an effective aid to accident prevention. A campaign for prevention of accidents, especially in plants under construction, was undertaken by the Ford company because of its belief that safety education is the principal medium for reducing accidents. It is stated that the workmen displayed considerable interest in the banners and made a special effort to keep their particular departments free from accidents.

the work of the British association.

"Much of the work of our committee," Mr. LeMaistre said, "is done in London and many of them meet in the centers where the particular standard under discussion is manufactured. This assures at the outset that those people who are going to use the standards and who are in daily contact with the apparatus involved, and who have the closest knowledge of the details shall put up the first proposals. This is not what we used to do but we realize more and more that standardization is, shall I say, 15 per cent technical and 85 per cent human. Standardization is an industrial matter and it is the industry that should put up the standards and get the help of the engineers and experts to support them.

"We agree that standardization means efficient production. It can only be effective when overlapping is avoided. Overlapping can only be obviated by the operation of some central organization, which we have provided in Great Britain with wonderful effect. We find now that overlapping of effort is becoming less and less each year and the British engineering standards association is becoming more and more recognized as the central authority for drawing up standards for the engineering and allied industries.

"During the last year or two I have received at my office numbers of letters from America inviting co-operation and I have always been in some difficulty to know how to reply. Take for instance the electrical industry which has in this country at least a dozen organizations doing standardizing work. A request from one of these could not be accepted as from all. My association feels that, at the present important stage of the development of the work and of the closer relationship with the United States, if only we could get co-ordination of standardization on both sides of the water, one central authority on each side, it would not only help our industries enormously, but we could work hand in hand on these technical problems which involve this complicated human factor. And in doing this big work we would surely be no mean influence in promoting the peace of the world."

Mr. LeMaistre's address evoked responses from the officers of numerous American engineering and scientific societies, who expressed their willingness and that of their organizations to centralize the work of standardization in the new American engineering standards committee.

Install Operatorless Freight Elevators

AMONG the interesting features of the government's new army receiving and distributing base at Brooklyn, N. Y., is the equipment installed for transporting material horizontally and vertically in the warehouses. That the problem of transportation is complex is readily apparent when it is understood that the warehouses, yards and docks cover about 100 acres of ground, accommodate 1300 freight cars and 12 ocean freighters simultaneously and are equipped to handle 15,000 carloads or 400,000 tons of freight on a 30-day turnover basis.

The principal buildings include two main warehouse structures, 200 x 980 feet and 240 x 980 feet, respectively; a mechanical and repair shop; a 4-story administration building and three transfer sheds or pier houses, each 150 x 1350 feet, which function in the transfer of freight to and from the cargo carriers. In handling freight in this extensive plant, it is carried on 4-wheel trailer trucks, which are moved horizontally by industrial plant tractors and vertically by means of elevators of a new and distinctly novel type. Material remains on the original trailer trucks from loading point to destination, greatly reducing extra handling. The trailers usually are moved in trains of four or five if loaded, and from six to eight if light. One man with a tractor handles the train.

The depot is served by 96 elevators, 90 of which are for freight service and six for passengers. Each of the freight elevators has a capacity of 10,000 pounds. Eighteen of this type are in the pier sheds, serving two floors and having a speed of 100 feet per minute, while 72 are in the warehouses, serving nine floors and operating at a speed of 150 feet per minute. Each elevator is equipped with an automatic levelling device which causes the elevator floor to register accurately with the landing sill. The door opens automatically when the elevator reaches the floor to which it has been dispatched. A dispatcher controls the movements of a battery of elevators, no operators being required on the cars. The elevators are installed in groups of from seven to 10 serving a section about 325 feet long in each warehouse building.

Central Dispatch Control

Each group of elevators is handled entirely by a central dispatcher, who is located in an office placed for convenience a short distance from the group. Before him is a table, shown in Fig. 1, which is not unlike a telephone switchboard, with one upright and one horizontal panel. In the upright panel is a column of white lights for each elevator, each light representing a floor. At the top of each column is a colored light which indicates, when lighted, that all hatchway doors are closed and the elevator can be operated. The operating buttons are placed in rows in the horizontal panel.

This system gives the least waiting time and maximum service from a given number of elevators. In general or miscellaneous service, the dispatcher receives calls for cars from the various floors. As an example, the dispatcher gets a call for a car from the seventh floor to take goods to the third floor. A quick glance at the vertical panel shows that car No. 5 is standing idle at the sixth floor, since its "6" white light is burning. The colored lamp at the top of the row is lighted, indicating that all doors are closed. The central dispatcher then touches "7" button and the white light disappears as the car leaves the sixth floor, and shortly signals arrival at the seventh floor by means of a light in bulb "7." As the doors open automatically the colored light is extinguished and the car is out of the control of the dispatcher and cannot be run until some one on the seventh floor touches one of the seventh floor door closing buttons, of which one is on either end of the car and two others alongside the opposite entrances. As soon as the load has been run on and the door button pushed the doors close and the colored light again appears, signaling to the dispatcher that all is clear to go ahead. He then touches "3" button, thereby dispatching the car to the third or destination floor.

A push button controlled elevator has recently been developed which stops the car automatically with any desired accuracy and with any load within its capacity. When the position of the car changes during the loading and unloading, due to the

lengthening or shortening of the cables, the car is automatically and quickly restored to the landing level. This remarkable accomplishment made it not only possible but more advantageous in this case to operate the freight elevators by a central dispatcher than by individual operators on each car.

How Cars Are Stopped

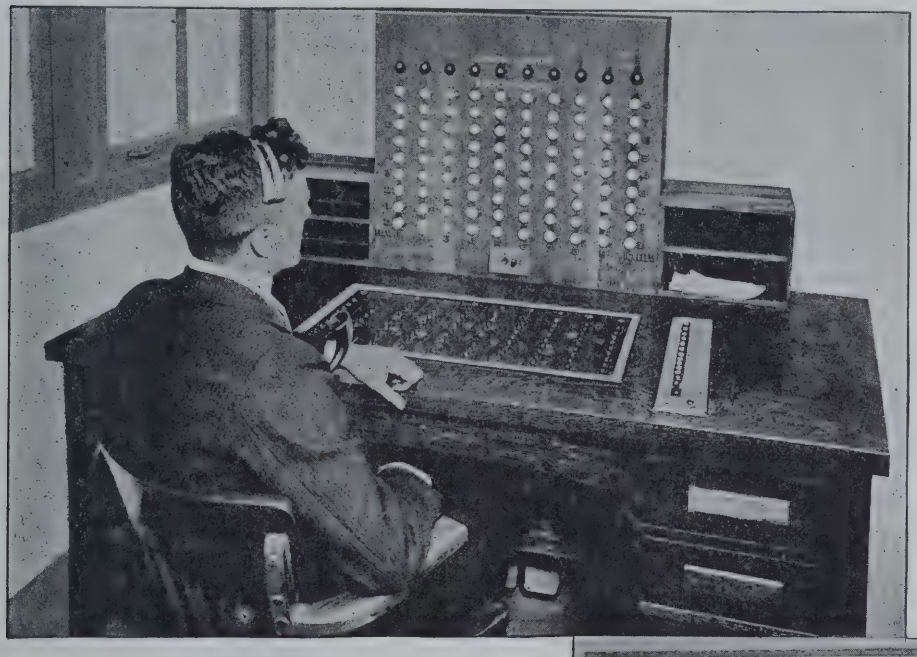
The main driving machine is of the worm gear type and is driven by a 2-speed alternating current motor giving full and one-third speed. The device for stopping the elevator accurately consists of motor, brake and worm gearing of about one-tenth of the speed and power of the main machine. This drive is mechanically connected to the main machine through the revolving electromechanical main brake. The slow motion of the device for stopping through the final few inches of travel in connection with a novel system of control, results in the car stopping level with the landing with any load to the full load capacity of 10,000 pounds.

The accurate stopping operation is applied to car switch as well as automatic push button control. In this case the operator throws his switch to the stop position on approaching the floor just as in the operation of the ordinary car switch control. If the car is within the stopping zone, the stopping drive functions and stops the car level with the floor. Although the stopping or leveling zone extends 8 inches above and below floor levels, in actual service the average movement is usually not more than 3 inches.

The doors are operated by an ingeniously arranged mechanism which automatically opens the doors at the floor to which the car has been dispatched and as the car approaches that floor. As the door operating machine starts to open the doors when the leveling zone is reached by the car, it is obvious that the leveling is accomplished while the doors are being opened and therefore no additional time is required for leveling. The door closing operation can be initiated only by touching a closing button either on the car or alongside the door opening on the floor. The doors themselves represent a radical development in elevator hatchway doors.

Consideration of the trailer truck problem pointed the way to doors of maximum height and rising from fixed sills. Due to the high door openings and limited story height it was necessary that the door operating mechanism be so arranged as to first move the door horizontally into the hatchway a sufficient distance to clear the sill and door above and then to raise the door vertically to clear the opening. These doors are made of a steel frame with panels ¾ inch thick of sheet steel and asbestos composition. In case of emergency, the cars can be run with the doors open.

Ships are unloaded in part on both piershed levels, and goods in transit between the warehouse and first transfer shed level reach or leave the latter on trailer trucks by way of the 18 automatic elevators with which the sheds are equipped. These elevators are operated individually by means of buttons on each floor and in the car. In all other features they duplicate the warehouse elevators.



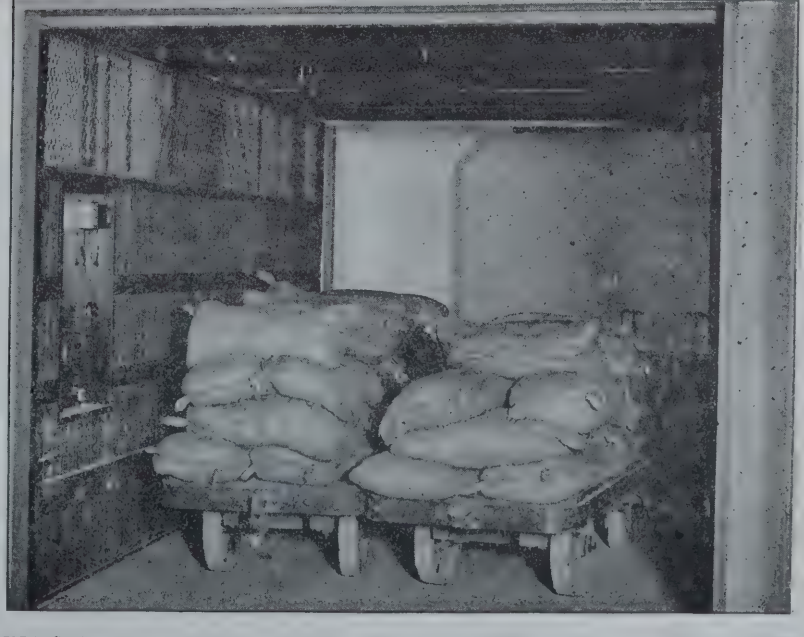
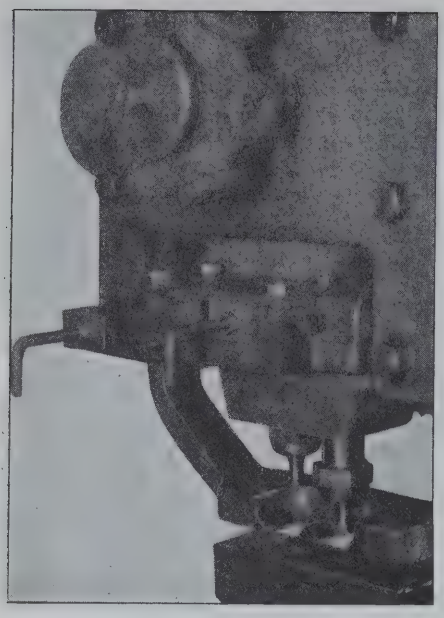


FIG. 1—DISPATCHER AND AUTOMATIC CONTROL BOARD IN STATION FIG. 2—LOADED TRAILERS READY TO LEAVE ELEVATOR

Electric Rivet Heater

An electric rivet heating forge has been invented by Geo. A. Jones, New London, Conn., and business men in Worcester, Mass., are endeavoring to induce the new industry, which is contemplated in the manufacture of this forge, to locate in that ctiy. It is said that Springfield, Mass., is also anxious for this industry. The new device is simple, consisting of two electrodes placed one above the other in such a way that the rivets to be heated span the gap. The forges which have been tested heat two rivets at one time and use a current of four volts pressure. In some cases it has been found possible to place the rivets through the holes in the steel



DOUBLE GAGGED PUNCHING ATTACHMENT

which is to be fabricated and to heat them afterwards in place. It is reported that large rivets are heated in 12½ seconds and that no scale is left after heating.

Tests Tool Steel in New Machine Shop

Desiring to gain first hand knowledge of the performance of its tool steel in actual service, the Ludlum Steel Co., Watervliet, N. Y., has completed a large new machine shop, which covers one-third of an acre. It has been provided with a full complement of machine tools, so that practically all conditions actually existant in machine shops can be duplicated. All grades of tool steel manufactured by the company are thoroughly tested in actual machining operations so that their performance under all conditions can be measured. As a result of the tests in this department, the company is able to select, by actual tests, the grade of steel best suited for a particular requirement. The new machine shop supplements the work of the company's research department, which is fitted up with a transformation point meter, magnetic testing apparatus, Fahy permeameter, physical testing machines, resistance and arc furnaces for making trial melts, and extensive equipment for making chemical analysis.

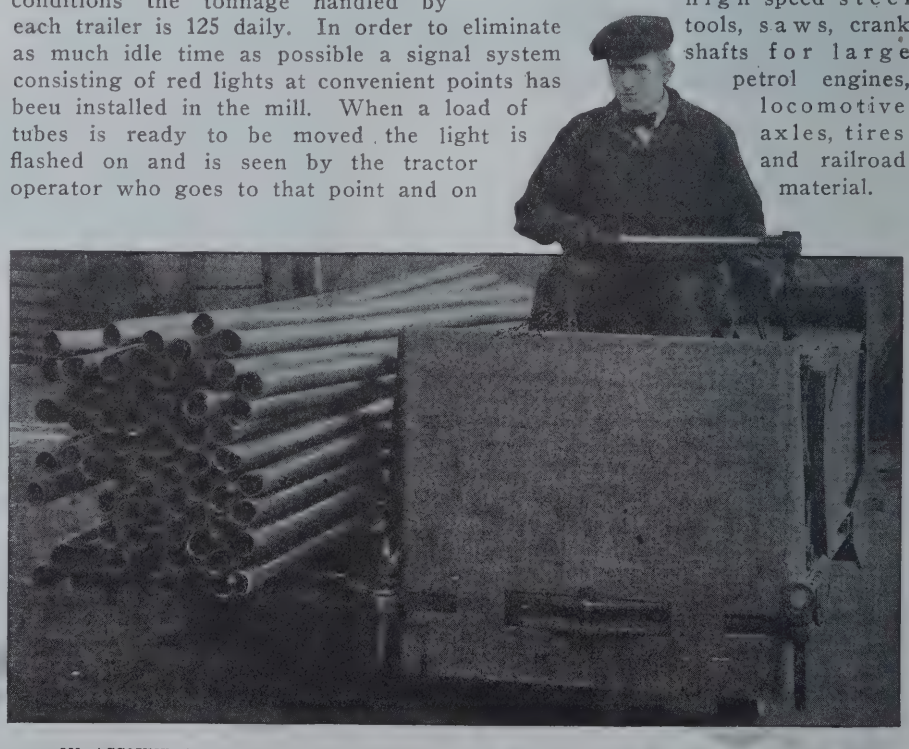
Designs Double Punch Attachment

The double gagged punching attachment shown in the accompanying illustration, which recently was developed by the Cleveland Punch & Shear Works Co., is fitted with a spring to lift the punch clear of the material when the gag is withdrawn. Each gag is individually operated and has a long taper and so that when the gag is inserted the taper end acts as a wedge and forces the punch stem down. This attachment is especially adapted for use with a spacing table and or when the plate has two sizes of holes. As one punch stem is entirely clear of the material even when the plunger is at the bottom of its stroke. Therefore there is no interference or dragging of the disengaged member. The centers are fixed.

Use Side-Coupled Tractor in Tube Plant

A novel method of coupling an electric tractor to a trailer is employed at the plant of the Globe Seamless Steel Tube Co., Milwaukee. On account of the length of the tubes, which overhang the ends of the trailers several feet on either end it was found advisable to provide forged eyebolts at the corners of the trailer and tractor so that they might be coupled alongside of each other. This method of coupling enables the tractor to move trailers carrying tubes as long as 26 feet with ease and dispatch. Prior to the time when this plan was adopted trouble was encountered when pushing a load of greasy tubes by butting the tractors against tube ends because of the danger of pushing the load from the trailer.

It is estimated that under present conditions the tonnage handled by each trailer is 125 daily. In order to eliminate as much idle time as possible a signal system consisting of red lights at convenient points has beeu installed in the mill. When a load of tubes is ready to be moved the light is flashed on and is seen by the tractor operator who goes to that point and on passing the drop cord switch turns out the light. The tractor shown in the accompanying illustration, side-coupled to a trailer loaded with long tubes, is the product of the Elwell-Parker Electric Co., Cleveland.



ON ACCOUNT OF OVERHANG OF TUBES, TRACTOR IS COUPLED ALONGSIDE OF TRAILER

Old Manganese Deposits

During the war, an attempt was made, on a large scale, to reopen the abandoned manganese ore works at Hohenkirchen, near Cassel, but the residual quantity of ore proved disappointing, and the work has been given up.

The deposit occupies an oval basin, 3000 feet long by 833 feet wide, on the boundary of the tertiary and buntsandstein formations. The ore is a manganiferous ironstone, the upper 60-80 cm. being silicious with 5-10 per cent of manganese, the middle 15-20 cm. being higher grade (15 per cent Mn.), and the lower 30-40 cm. silicious ironstone with only 2 per cent of manganese. The simplest explanation of the formation of the deposit is considered to be that iron and manganese became concentrated on the surface, in tertiary times, by the weathering of the buntsandstein.—F. Beyschlag, *Zeitschrift fur praktische Geologie.*

An exhibition of British manufactures is being held in Athens, promoted by the Federation of British industry and supported by King Alexander, of Greece. Its purpose is the extension of British trade in the Near East. The exhibits include cutlery, high speed steel tools, saws, crank shafts for large petrol engines, locomotive axles, tires and railroad material.

Designs New Tote Box

A new metal tote box recently developed by the E. F. Hauserman Co., Cleveland, is designed to withstand hard usage. As shown in the accompanying illustration, boxes of this type which are used for carrying material from place to place and as receptacles for small parts, are constructed so as to make stacking relatively simple.

The upper edges of metal on the sides and ends are folded back on the under sides and welded. The insides of the four upper corners are reinforced with electrically welded plates of No. 14 gage steel. Care has been taken to provide large and broad handles with no edges of metal above the handle to become loosened and dangerous to the hands of workmen. To prevent sagging and to prolong the life of the box, the bottom is strengthened by two heavy 1-inch strap steel runners welded the length of the box. These runners prove advantageous when loaded boxes are drawn over the floor.

Production of Iron in Sweden Lagging

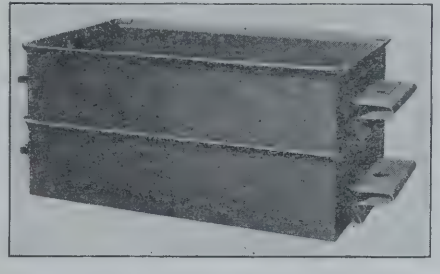
Unsettled conditions in the world markets, over production in the iron industries of larger countries, the selling of government war stocks and difficulties in the mode of payment arising from abnormal foreign exchange, are circumstances which are weighing heavily on the iron producing industry of Sweden, according to an article in a recent issue of *Swedish Export*. The article states that depression in the industry noted during the first quarter of the year was still more evident during the second quarter.

Figures compiled by the Iron Works association for the second quarter, show that of 131 blast furnaces existing at the first of the year, only 52 were in operation at the end of the second quarter; that only 33 per cent of the Lancashire hearths, 35 per cent of the bessemer furnaces and 45 per cent of the open hearth plants, were operating at the end of this period.

The article commenting on iron and steel exports states that these have been reduced nearly 50 per cent, the reduction being most marked in pig iron, rough bars and bar ends. Counteracting the reduction of exports in these lines, to a small extent, have been small increases of exports in tubes, blooms, plates and sheets, as well as nails and tacks. Although the increases in these products were not large enough scarcely to affect the final figures, the article points out, that they indicate the period of reconstruction has set in, with the hope of brighter prospects for the iron industry.

The month of July showed some improvement in regard to rolled iron and steel, and increased demand acted as a check to the steady fall in prices, and in some instances caused small increases for the more important rolled products. In August there was a decrease in the number of orders but prices remained unchanged.

According to the article the position of the exporting blast furnaces has been the worst and although they still continue to operate, they are doing so at the bare margin of loss, and in many cases below it. The accompanying table shows the production of iron for the first and second quarters as well as for the first half year. It also shows the differences between the 1918 output and that of 1919. The figures are in tons.



NEW TOTE BOXES ARE REINFORCED AT CORNERS AND ON BOTTOM

PRODUCTION IN TONS

	Jan. 1 1918	July 31 1919
Pig iron inclusive of castings made direct from the ore	477,400	338,200
Blooms and rough bars	58,800	39,900
Bessemer ingots	39,700	30,900
Open-hearth ingots, inclusive of castings	261,300	242,300
Crucible and electro ingots	6,500	6,200
Rolled and hammered iron and steel, prepared for market	201,500	179,400

Adding New Mills

The Interstate Iron & Steel Co. is undertaking considerable additions to its South Chicago plant, the principal item of which is the installation of the Morgan continuous bar mill of 16-inch, 14-inch and 12-inch stands, with an additional 75-ton open-hearth furnace, heating furnaces and other essentials in connection with this mill. Construction will be hastened and present plans indicate the installation will be in operation during the latter half of 1920.

Other improvements are under way, including a complete rearrangement of the scrap yard, with a crane runway and large cranes for handling the scrap and skull crackers.

Will Meet in South

The twelfth annual meeting of the American Institute of Chemical Engineers, to be held at the Hotel De Sota, Savannah, Ga., Dec. 3-6, will be devoted largely to southern chemical industries. Among the papers to be presented are the following:

"Developments of Some Southern Industries," by R. K. Meade; "Accident Prevention in the Mill," by H. K. Moore; "Double Pipe Boilers," by George A. Richter; "Recovery of Pyridene Bases at By-product Coke Ovens," by F. D. Dodge and F. H. Rhodes; and "Acid Electric Furnace Ferrotungsten," by J. G. Dailey. Discussions will follow the papers.

A number of inspection trips to industries in and near Savannah have been arranged.

Better Letters Will Be Topic at Meeting

The third annual conference of the Better Letters association will be held at Hotel Cleveland, Cleveland, Nov. 20 and 21, and an interesting program has been arranged. A large attendance is expected. Discussions bearing on all phases of business letter writing will be led by men who are well acquainted with this phase of modern business. Some of the subjects will be, "The Business Letter"; "Training as a Basis for Success as a Writer Salesman"; "How to Express Oneself Effectively in Writing," and various other subjects all pertaining to modern business correspondence.

Organization of the Better Letters association was effected at Worcester, Mass., in 1917 at the close of a two-day conference by business men, in presenting and discussing the possibilities of more effective letters in business. Since then the organization has grown steadily. H. N. Rasely, of the Norton Co., Worcester, Mass., is secretary-treasurer of the association.

Furnace Not Placed

Correction is herewith made of statement carried on page 1067 of the October 16 issue of THE IRON TRADE REVIEW to the effect that the Mitsubishi company, of Japan, with American offices at 120 Broadway, New York City, had awarded a contract to C. H. vom Baur, 15 Park row, for a 1-ton electric furnace. This contract has not yet been awarded.

Steel Exports Lose August Gain

September Shipments Fall to a Low Figure After Recovery During the Preceding Month—Imports Make a Gain of 50.3 Per Cent and Set the Highest Mark Reached Since April 1917

AFTER showing a partial recovery in August, exports of iron and steel in September fell to a low figure, the third lowest during 1919, while imports jumped to the highest point since April, 1917. The drop in exports was in no way proportionate to the gain in imports. Although the strike of longshoremen in New York was at its height during September and affected the situation to some extent, the greater part may be assigned to the exchange situation.

Exports for September totaled 363,531 gross tons, a decrease of 33,212 tons or 8.4 per cent over the August total of 396,743 tons. This tonnage compared with the high mark of 653,344 tons in December, 1917, represents only 55.6 per cent while August's total represented 60.7 per cent. Gains were made in steel billets, ingots and blooms, steel rails, sheets, tin and terne plate, barbed wire, cut nails and spikes. With the exception of rails which showed a gain of 9724 tons and tin and terne plate with a gain of 7573 tons, all other increases were small, some amounting to only a few tons. At the same time most of the losses were small with the exception of pig iron which fell 17,080 tons, structural iron and steel which dropped 11,118 tons, and wire which decreased 4672 tons.

Imports with 43,567 tons was a gain of 14,580 tons over August or an increase of 50.3 per cent. The gain of August over July was only 2.58 per cent. Outside of steel rails practically all products gained slightly. Pig iron improved by 12,737 tons and scrap by 2677 tons.

A gain of 10,038 tons was made in imports of iron ore, the September figure being 42,155 tons compared with the August figure of 32,117 tons.

EXPORTS PIG IRON AND SEMI-FINISHED

(Gross Tons)

	Pig iron	Semi-finished material
1916—		
January	19,319	55,315
February	15,061	87,406
March	19,439	107,675
April	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
August	60,264	160,921
September	64,122	163,104
October	92,756	162,669
November	106,781	120,883
December	105,195	162,901
Total	607,236	1,504,563
1917—		
January	69,146	183,656
February	49,018	131,566
March	69,629	193,469
April	44,783	162,209
May	61,112	168,158
June	83,406	190,907
July	32,305	106,085
August	62,083	170,503
September	44,287	148,932
October	47,115	209,667
November	25,733	150,120
December	67,593	203,085
Total	656,210	2,018,357
1918—		
January	20,581	195,385
February	10,540	173,272
March	9,849	144,443
April	11,282	177,128
May	22,567	159,299
June	22,896	139,377
July	20,265	139,612
August	26,028	189,851
September	34,494	135,450
October	35,452	125,023
November	30,825	150,024
December	24,577	63,890
Total	269,356	1,792,754
1919—		
January	36,757	11,594
February	20,840	10,407
March	22,158	8,176
April	17,038	11,488
May	37,087	20,771
June	39,758	46,016
July	42,327	21,318
August	36,071	36,162
September	18,991	37,513
Total nine months	271,027	203,445

IMPORTS VARIOUS ORES AND FERROALLOYS

(Gross Tons)

	September 1919	September 1918	Nine months ending September 1919	Nine months ending September 1918
Ferromanganese	1,655	102	18,649	26,271
Ferrosilicon	1,015	147	5,634	1,877
Manganese ore	19,601	72,685	269,411	382,382
Tungsten-bearing ore	818	1,134	5,843	6,062
Nickel ore	1,714	6,898	16,136	45,582
Total	24,803	80,966	315,673	462,174

IRON ORE IMPORTS

(Gross Tons)

From:	September 1919	September 1918	Nine months ending September 1919	Nine months ending September 1918
Spain	...	...	54,937	15,563
Sweden	6,768	...	55,591	...
Canada	851	13,341	10,227	73,770
Cuba	34,536	63,590	175,408	523,977
Other countries	...	...	702	...
Total	42,155	76,931	296,865	613,310

IRON AND STEEL IMPORTS

(Gross Tons)

	September 1919	September 1918	Nine months ending September 1919	Nine months ending September 1918
Pig iron	17,838	269	53,947	30,121
Scrap	24,668	2,035	122,227	31,930
Bar iron	205	...	1,248	1,283
Ingots, blooms and billets	289	3,986	4,398	29,026
Structural shapes	35	165	743	1,966
Rails	27	1,423	14,666	5,566
Sheets and plates	23	45	717	1,348
Tin and terne plate	18	...	148	32
Tin scrap	433	557	4,203	4,710
Wire rods	31	533	150	7,064
Total	43,567	9,013	202,447	113,046

IRON AND STEEL EXPORTS

(Gross Tons)

	September 1919	September 1918	Nine months ending September 1919	Nine months ending September 1918
Pig iron	18,991	34,494	271,112	178,673
Scrap	2,775	....	14,693	1,679
Steel billets, ingots & bl'ms.	37,513	135,450	202,962	1,447,352
Wire rods	6,509	16,346	93,873	112,175
Steel rails	58,424	43,868	520,333	326,130
Steel bars	50,677	44,851	432,089	464,281
Iron bars	3,773	5,861	53,088	39,722
Struc. iron and steel	21,933	22,132	295,705	175,142
Hoops, bands and scroll	2,408	2,846	40,434	38,711
Sheets & plates	81,809	74,068	814,316	607,301
Ship and tank plates, punched and shaped	998	1,878	10,080	22,591
Tin and terne plate	16,835	19,558	158,324	211,624
Barbed wire	9,516	33,691	70,952	178,531
All oth. wire	17,019	16,535	153,999	119,109
Cut nails	220	247	2,553	3,201
Wire nails	7,541	4,395	76,458	58,045
All other nails incl. tacks	898	1,346	13,863	8,761
Pipes and fit'gs	19,792	11,023	220,365	117,904
R. R. spikes	1,919	937	21,513	7,956
Bolts, nuts, rivets and wash.	2,787	3,003	32,654	20,106
Horseshoes	108	194	3,007	2,439
Cast radiators	1,086	403	3,494	1,852
Total	363,531	473,126	3,505,867	4,143,285

IMPORTS AND EXPORTS

(Gross Tons)

1916	Imports	Exports
January	15,824	360,102
February	20,279	368,980
March	15,159	438,649
April	20,176	384,452
May	32,114	538,657
June	26,885	515,214
July	14,774	502,330
August	23,255	571,401
September	25,559	643,762
October	30,169	588,892
November	42,545	554,219
December	44,134	580,988
Total	310,891	5,947,646
1917—		
January	40,910	608,281
February	24,947	449,099
March	37,943	606,559
April	48,213	519,397
May	26,479	582,303
June	29,080	629,305
July	28,859	346,393
August	26,129	503,075
September	19,058	499,067
October	14,310	571,868
November	13,995	473,549
December	14,642	653,344
Total	324,565	6,442,240
1918—		
January	12,475	490,259
February	12,941	438,848
March	14,345	379,924
April	11,371	462,887
May	14,387	488,515
June	13,913	418,605
July	11,511	452,759
August	12,520	512,104
September	8,440	473,688
October	15,744	426,767
November	11,582	471,427
December	28,996	356,641
Total	168,225	5,372,424
1919—		
January	16,913	371,570
February	12,302	344,180
March	17,632	367,224
April	16,560	396,813
May	17,885	422,282
June	21,056	561,020
July	28,258	287,685
August	28,987	396,743
September	43,567	363,531
Total nine months	203,160	3,511,048

Building Activity

In Detroit Involve Expenditure of $60,000,000—Equipment Needed

Detroit, Mich., Nov. 17.—Plans for $60,000,000 worth of industrial and mercantile construction work requiring steel work are in the hands of architects and contractors and there is a brisk demand for structural steel.

The new work includes building operations involving $8,000,000 for the Detroit-Biltmore Hotel Co.; $5,000,000, First & Old Detroit National bank; $5,000,000, General Motors office building; $3,000,000, Detroit Seamless Steel Tubes Co.; $2,500,000, apartment hotel; $2,225,000, Hudson Motor Car Co.; $2,000,000, Wolverine hotel; $2,000,000, Goodyear Rubber Co.; $2,500,000, convention and motor sales auditorium for the Thompson Auto Co.; $2,000,000, National Biscuit Co.; $1,750,000, Packard Motor Car Co.; $2,000,000, Paige-Detroit Motor Car Co.; $1,600,000, Cadillac Motor Co.; $3,000,000, Fisher Body Corp., and $12,000,000, Maxwell Motor Co.

The Ford Motor Co. development work at River Rouge entails an outlay of more than $25,000,000, while the development of the Canadian Steel Co.'s townsite of Ojibway, Ont., across the Detroit river, calls for expenditure of $75,000,000 in time.

The Maxwell Motor Co. has started erection of the first unit of its new $12,000,000 plant. It will be a sheet metal plant, costing $750,000. The Detroit Gear & Machine Co. has issued $800,000 of new preferred stock to finance new plant equipment and additions. The Hudson-Essex Motor Co. will begin operations in a new $1,200,000 assembly plant Nov. 15. A machine shop and heat treating plant will be completed by Jan. 1, for which $700,000 of equipment is now being purchased.

Tool and machinery distributors are unanimous in declaring that as soon as the steel and coal strike situations are cleared there will be a pronounced increase in orders for all kinds of tools, machinery and shop equipment. Demand for factory supplies far exceeds that of a year ago.

The Chevrolet Motor unit of the General Motors Co., is installing new equipment in its Bay City plant.

Additions to the plant of the Continental Motors Corp., Muskegon, Mich., will be completed by Dec. 1. They include a building 480 feet long to be added to the assembly plant, a steam plant with five boilers, and a new drop forge plant. The Hoover Steel Ball Co., Ann Arbor, Mich., has absorbed the Chelsea Steel Ball Co., of Chelsea, Mich.

Among the corporations recently filing notice of increased capitalization are Dail Steel Products Co., Lansing, Mich., from $100,000 to $250,000; Quality Tool & Engineering Co., Detroit, $20,000 to $50,000; Steel Age Mfg. Co., Battle Creek, Mich., $100,000 to $250,000; General Steel & Wire Co., Detroit, from $75,000 to $125,000 and the Colonial Tool Co., Detroit, $15,000 to $30,000.

Company Formed to Make Steel Conduit

The Steelduct Co., capitalized at $100,000, was organized recently at Youngstown, O. Offices have been opened at 618 Dollar Bank building. The company will manufacture enameled and galvanized rigid-steel conduit at Mineral Ridge, near Niles, O. William B. Curtis is president and treasurer, and John A. Logan, III, is vice president and secretary. For the past eight years Mr. Curtis was associated with the Youngstown Sheet & Tube Co., Youngstown, O., and at the time of his resignation from the company was handling conduit sales. He was the first advertising director employed by the Youngstown Sheet & Tube Co. Mr. Logan is the largest stockholder of the Ohio Steel Products Co., Mineral Ridge, O.

Pig Iron Men Elect

R. H. Sweetser, works manager of the American Rolling Mill Co., Columbus, O., was elected president of the Southern Ohio Pig Iron and Coke association, at its second annual meeting held in Columbus, O., recently. Other officers were elected as follows: First vice president, E. O. Marting, the Marting Iron & Steel Co., Ironton, O.; second vice president, Chas. R. Peebles, Ashland Iron & Mining Co., Ashland, Ky.; third vice president, W. R. Knapp, superintendent, the Portsmouth Solvay Coke Co., Portsmouth, O.; fourth vice president, N. G. Spangler, general manager, the Jackson Iron & Steel Co., Jackson, O.; fifth vice president, J. T. Savage, the Hamilton Furnace Co., Hamilton, O.; secretary-treasurer, J. H. Briscoe, Eaton, Rhoades & Co., Cincinnati.

The November meeting of the Southern association was held at the Hotel Marting, Ironton, at 1:30 p. m., Wednesday, Nov. 12. At this meeting the committee on "furnace rating" reported. Chas. R. Peebles, of the committee on standards, then presented a paper on "The Method for Determining the Rated Capacity of a Blast Furnace."

Higher Prices

Ruling on Spot Sulphate—Early Advance Expected in Benzol

New York, Nov. 17.—Spot sulphate of ammonia has advanced to $3.70 to $3.80 per 100 pounds compared with $3.50 to $3.75 previously. This rise is the result of the scarcity of material. All producers virtually are sold up until July 1. Future buying, owing to the season and the extent to which producers are booked ahead, is practically nil. Some spot buying is being done for export at $4.25 to $4.50, eastern seaboard.

Old contracts continue to absorb the great bulk of available benzol. Prices, however, remain unchanged though an advance is expected. Pure benzol is quoted at 24 to 29 cents and 90 per cent at 22 to 24 cents. The rubber industry is the largest consumer at present. Demand for motor fuel is seasonably dull.

Demand for toluol is featureless, except for its steadiness. Prices are unchanged at 26 to 30 cents. The market on solvent naphtha also is steady. Rosin manufacturers are buying in good quantities, and prices are holding at 22 to 27 cents for both spot and contract.

While demand for naphthalin is falling off slightly, good sales continue. The market is steady at 6½ to 7½ cents flakes, and 8½ to 9½ cents for balls.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.75 to 3.80

Contract

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

After being relined and overhauled, the Port Henry, N. Y., furnace of Witherbee, Sherman & Co. was put in blast on Oct. 7. It will produce some malleable but mostly foundry iron. A pig casting machine is being installed at this stack.

Selling Last of Surplus Steel

Ordnance Department Disposes of 106,000 Tons of Shell Billets at $33, and 71,000 Tons of Forgings at $24.05 and $24.50—Offering Cold-Drawn Screw Stock, Hot-Rolled Bars and Miscellaneous Scrap

WASHINGTON, Nov. 18.—The ordnance department of the war department has disposed of its remaining surplus of shell-steel billets and its present surplus of shell-steel forgings, and is about to offer for sale its present surplus of cold-drawn screw-stock steel, hot-rolled bars and miscellaneous scrap. Not only is the work of the department in selling its surplus steel drawing to a close, but it is making good on its policy of demanding a fair price for the tonnages.

E. A. Schwartzenberg, Cleveland scrap dealer, has just bought the remaining surplus of shell steel billets, approximately 106,000 tons, at $33 per gross ton, f.o.b. Pittsburgh. This figure is from $5.50 to $9 a ton under the Pittsburgh price for soft 4 x 4 billets. The bids submitted to the war department for its remaining stock of shell-steel billets ranged from $29 to the figure at which the sale was made. The steel was acquired by the Cleveland dealer for rolling and forging purposes. It is located at Boston, Buffalo, Pittsburgh, Cleveland, Chicago, St. Louis, Cincinnati and Toledo. The ordnance department has made previous sales of shell billets which aggregated approximately 34,000 tons at prices which averaged $32 a ton.

The department soon will offer for sale by negotiation its present surplus of cold-drawn screw-stock steel and hot-rolled bars, consisting of about 25,000 tons, and its present surplus of miscellaneous scrap, including both iron and steel, which approximates 40,000 tons. Informal bids on this material will be requested by the ordnance salvage board, Munitions building, Washington. It is announced that persons who desire to be informed of these offerings should communicate with the ordnance salvage board immediately.

Recently as stated in last week's IRON TRADE REVIEW the ordnance department sold by negotiation 71,000 tons of shell-steel forging to Briggs & Turivas, Chicago. These stocks of forgings were also sold by negotiation, bids having been made by a number of dealers in steel scrap. The sale of forgings to this firm consisted of 20,000 tons at $24.05 per gross ton and 51,000 tons at $24.50 per gross ton, Pittsburgh. These tonnages constituted the entire present surplus of shell forgings, slugs and unit billets held by the ordnance department and the prices received were from $2 to $2.50 higher than the price of heavy melting scrap at Pittsburgh.

Trade to Decide Base Point Question, Says Colver

Washington, Nov. 18.—William B. Colver, member of the federal trade commission, in an address before the National Coffee Roasters' association at Atlantic City last Friday, discussed some of the commission's functions and mentioned the steel basing point case, which is to be heard commencing Dec. 2. Mr. Colver explained how trade practices in industries other than steel have already been investigated by the commission and detailed the commission's procedure in conducting such investigations. He said:

"Practices which are alleged to be unfair and contrary to the public interest are submitted publicly to the representative men affected by those practices, and the industry itself is asked to declare for the guidance of the commission what it deems to be the law-merchant and to set its mark of disapproval upon unfair practices. We have found that business men, asked to declare what is right and fair, check the razor of business rivalry at the door, sit side by side and discuss frankly and freely the abuses which have grown up in their trade. Neither the fact that a given practice is almost universally employed or that by reason of its age it has come to be more or less accepted as an inevitable thing, stands in the way of a frank and decisive condemnation of it by the industry itself.

"Thus, the commission secures for its guidance the mandate of business as to what is and what is not unfair, and thereafter if the practice is persisted in and application for complaint is made, the commission proceeds with the certain knowledge that it has the backing and the sympathy and understanding of the vast majority of the men in that industry.

"In such a trade practice submittal, the commission is itself making no rules, expressing no opinion and rendering no order. The purpose is the gathering of the best judgment of the industry as to what is fair and what is not fair.

"The most far-reaching matter of this sort that is now before the commission involves the question as to whether or not the public interest and industry is best served by the ancient custom of having a single basing point price for iron and steel products, or whether there should be two or more basing points for the computation of selling prices. Not only will a determination of this question go to the very foundation of the iron and steel industry, but it will have a widespread effect upon a great many other industries whose products are commonly sold on the basis of a certain few selling points."

Manufactures Census to Begin Next Month

Washington, Nov. 18.—Special effort is being put forth to make the manufactures section of the approaching fourteenth decennial census the most complete and comprehensive inventory of the nation's manufacturing establishments ever taken, according to officials of the bureau of census who have this work in charge.

The schedules to be used in tabulating the information concerning the country's industrial resources have already been prepared and printed. These schedules will be mailed to every manufacturing establishment in the United States during December. The questions relate to the calendar year 1919.

In 1914, the year the last manufactures census was taken, about 275,000 manufacturing establishments were listed by the census bureau. This time more than 300,000 establishments will be sent schedules. In addition to this it is expected that about 50,000 mines and quarries also will be reported.

The inquiries relating to manufactures, as specified by the act of congress providing for the census, include the name and location of each manufacturing establishment; character of organization, whether individual, corporate or other form; character of business or kind of goods manufactured; amount of capital actually invested; number of proprietors, firm members, copartners and officers, together with the amount of their salaries; number of employes and amount of their wages; quantity and cost of materials used in each establishment; quantity and value of products; principal miscellaneous expense; time in operation during the year; character and quantity of power used; character and number of machines employed.

The foregoing questions will be cov-

ered by the general schedule which every establishment will receive. In addition to this a supplemental schedule will be sent to the 68 principal industries as classified by the census bureau. This supplemental schedule will allow detailed statistics of output to be set forth under the heading "products manufactured."

Tools Go to Schools at 15 Per Cent of Cost

Washington, Nov. 18.—Congress has adopted the conference report on the machine tool bill and it now is before the President for his signature. As finally enacted, the measure, which provides for the disposal of surplus machine tools held by the war department to educational institutions of the United States, authorizes the secretary of war to sell the tools at the rate of 15 per cent of their cost. This represents a compromise between the senate and house conferees. The house bill fixed the price at 10 per cent of cost and the senate bill fixed the price at 20 per cent. The senate measure also provided that the money realized from the sale of machine tools may be used by the secretary of war to defray expenses incident to the distribution of the tools, except the cost of transportation, and that the balance shall be turned into the treasury as miscellaneous receipts. The house conferees agreed to the change.

Announcement has been made by the director of sales that the salvage officer at the Springfield, Mass., armory has been authorized to offer for sale under sealed proposals 230 used machine tools at the armory. Bids will be opened at 2 p. m., Nov. 23, by the salvage officer.

The machine tools are said to be in fairly good condition and were used until recently at the Springfield arsenal. In instances minor parts are missing, and prospective purchasers are invited to inspect the condition of the machines before submitting bids. The offering includes wood lathes, screw machines, turret lathes, hand millers, drills, drill presses, hammers, punch presses, shaving machines, etc. A complete inventory of machine tools offered and information regarding the terms of sale may be obtained from the salvage officer at the arsenal.

590 Ships Used in War Returned to Service

Washington, Nov. 18.—Prompt redelivery by the war department of cargo troop transports to the shipping board and the American merchant marine has proved a most potent economic transaction for the government in reducing the enormous cost of war operations, according to an announcement from the office of the chief of transportation service. It also has proved a most timely stimulus to the merchant marine in lifting the great congestion of export cargo that accumulated at American seaports for shipment to all parts of the world. The war tonnage that has been redelivered by the transportation service reached a total of 590 ships of 3,911,000 tons deadweight, not including 24 battleships of 352,395 tons displacement, pressed into service as troop carriers, and two troop ships and 31 cargo ships which were sunk.

To Abandon Sandy Hook Proving Ground

Washington, Nov. 18.—Following a conference of a board of officers at Fort Hancock, N. J., recently, it has been determined to abandon the Sandy Hook proving ground in the near future. Tests which otherwise would be made there will be conducted at the new and larger grounds at Aberdeen, Md. It was recommended by the board that certain shops and storehouses at Sandy Hook be turned over to the engineer department for use in connection with its work of construction and maintenance in the New York engineer district, and that all buildings, structures and facilities be turned over to the coast defense commander.

The board further recommended that the post and facilities at Sandy Hook be utilized under instructions of the commanding general, middle Atlantic coast artillery defense, as a vocational school for the purpose of training enlisted men and young officers for short periods in practical artillery work.

Vocational Training to be Given Service Men

Washington, Nov. 18.—Broadening the duties of the assistant to the secretary of war has been determined on so that his staff hereafter will assist all who need vocational training. In the past the office has been concerned only with jobs for service men.

Maj. Gen. William G. Haan, director of the war plans division of the general staff, has now directed all field representatives of the department, engaged in soldier employment work, to give special attention to aiding disabled veterans. This corps of representatives, under the direct supervision of Lieut. Col. Mathew C. Smith, of the general staff, has been in the field for over six months engaged in placing discharged service men in jobs. Their work has carried them into practically every city and community of the United States, and the connections which they have established with various industrial plants, as well as with civic and welfare organizations, and their knowledge of local conditions, it is believed, will make them most valuable in aiding wounded and disabled veterans.

"Our field representatives have heretofore assisted the disabled men where possible, but in the future this is to be a special feature of their work," said General Haan. "We propose to establish close connection between the different agencies interested in the welfare of soldiers, including the American Legion and the Association of Disabled Veterans, and the district vocational board officer, and secure their co-operation."

Navy Wants Steel

Washington, Nov. 18.—The navy's bureau of construction and repair will receive bids until 10 a. m., Nov. 25, on 7440 tons of special treatment steel plates and 3960 tons of nickel steel plates, for battleships Nos. 49, 50, 51 and 52 which are now under construction in the Brooklyn, Norfolk and Mare Island navy yards. Each vessel is to require 1860 tons of special treatment steel plates and 990 tons of nickel steel plates, delivery of which is to be at the monthly rate of 310 tons and 165 tons, respectively, commencing December, 1919. Quotations are to be net only.

Decide on Tunnel

New York City authorities have finally decided to build a tunnel between Manhattan and Staten island. Surveys, maps and plans now are being made by engineers under the direction of John H. Delaney, transit construction commissioner. It is expected that construction will begin in 1920. Public hearings are to be held by Commissioner Delaney to aid in determining whether the tunnel should connect with the Fourth avenue subway in Brooklyn and extend to St. George, Staten island, from a point at Sixty-fifth street, Brooklyn, or whether it should connect with the Interborough subway at the Battery. It is estimated that a tunnel under the shorter stretch of water could be built for about $12,000,000, whereas the longer tunnel would cost about $20,000,000.

Menace in Unions' Propaganda

Manufacturers Must Take Steps to Neutralize Effects of Labor-Farmer Conference, Declares Founders' President—Warns of Effort to Gain Control of Government—Open Shop a National Principle

TWO years ago the open shop was a local issue; now it is a national principle," declared William H. Barr, president, National Founders' association, in speaking at the opening of the association's twenty-third annual convention in Hotel Astor, New York, Nov. 19. Representatives of the employers in the national industrial conference were given credit for blazing a wider path toward independence in industry and employers were urged to take a firm stand against any encroachments on their rights which may be designed at the labor-farmer conference in Washington, Dec. 13. He said:

"Notwithstanding the fact that industry has been brought under the law, and manufacturers abide by its limitations, organized labor prefers to defy the law and control those forces whose duty it is to uphold it. In this attempt they also fail to understand that we do not derive our right to do business from the government, but given civil liberty, have developed a government to protect all citizens. The serious element in the situation is the attitude of the militant labor unions.

"A few years ago we did not class them as radical because there was an element of conservatism which restrained their activities. Today this conservatism has been abandoned, and the purpose of labor unionism is as unamerican as that of the organizations which are admittedly anarchistic. The labor unions have in recent months given perfect object lessons as to their radicalism, but there is still that general misunderstanding which prevents us from realizing the significance of what is still in contemplation.

"The question of radicalism goes deeper than agitation and unrest, the fundamental factor in the situation being the attempt of a limited class to assume all power over industry and government, of which heretofore they have been able to control only a small part.

"In a supreme effort to partially remedy this state of affairs the men who sat in the industrial conference at Washington, representing the employers of the country, did their full duty, under tremendous pressure. They realized their obligations as representatives of the great industries, and submitted an intelligible, workable program which was loyally supported when the issue was joined on questions which should not have come before the conference. They properly declined to be a party to passing the control of our industries, the fortunes of 35,000,000 of nonunion workers, and the welfare of the nation, into the hands of a few union agents.

"Gentlemen, you cannot pay too much honor to the employers' group in the recent industrial conference. They blazed a wider path toward independence in industry, and it is for you to follow that trail of the open shop, its only permanent safeguard. The employer members recognized that our greatest problem is that of production for the effective maintenance of both our domestic and our foreign markets. They understood that production is decreasing, because of plans which are designed to bring about an industrial condition where radical propaganda may become a factor. But the industrial conference was not permitted to touch upon production or increased efficiency. It was not permitted to indicate the present relationship between wages and cost of living. It was allowed only to consider the question of a national closed shop, and failing to approve, the conference was dissolved because the labor representatives refused to go further.

"That there is no room for anarchy is the gospel which every right-thinking American should preach, and there is little difference between the radical who preaches revolution under the red flag of confiscation and the organizer who preaches revolution under the black flag of labor unionism. On the other hand, I believe that unionism in its inception and original purpose did represent a humanitarian movement. Forty years ago labor was oft-times niggardly recompensed, improperly taken care of, and the employers of the country did not pursue the broad policy followed today. For we have traveled far and fast in a conscientious development of our duty toward workers, and conditions in most open foundries are all that humanitarianism could rightfully expect. This is not so true in closed union foundries where the limitation of output always practiced, cuts to a minimum the earnings of the owner, making it difficult to finance modern manufacturing improvements.

"On Dec. 13 a significant labor-farmer conference will be held in Washington, and any farmers who may participate will be merely the representatives of paper organizations committed to a familiar type of propaganda. The great, conservative National Grange will not be represented. The plan is that which the Non-Partisan league formerly attempted and in which it was only partially successful. The present scheme is more ambitious and its success depends greatly upon the attitude of the farmers, and to some extent upon yours. The farmer is to be told that government ownership is desirable, that collective bargaining is progression, and that private ownership of the railroads means increased rates. He is to become the recipient of propaganda designed to convince him that a union with organized labor will mean betterment for himself.

"The farmer is one of the general public. He is not as familiar with economic manufacturing conditions as foundrymen should be, and it is possible that his own overenthusiastic leaders may attempt to guide him into this unprofitable and dangerous alliance. The relationship of the manufacturer and the farmer must be presented to the farmers in its true light. This cannot be done without funds, for which an appeal will be made. I am emphasizing the necessity and if you will realize the situation you will give assistance without urging and with a full appreciation of its advisability."

Plant Officials Take Course in Production Methods

G. W. Prentiss & Co. of Holyoke, Mass., has inaugurated a plan of training for their foremen and other factory supervisors. A group of 25 men has been formed to take a three months' course in modern production methods, which comprises the study of special text units, the solution of problems relating to the units, and the discussion of this material. There will be six biweekly meetings held after hours in the plant.

At each meeting a lecture will be delivered by an experienced production man and the lectures will be followd by a round-table discussion. Included in the group, besides foremen, are the general manager and the superintendent. The subjects to be studied are: How to promote team work in the shop; handling men in a way to increase production and promote harmony; how production should be organized; efficient purchasing, scheduling, routing, repairing, etc.; keeping down the overhead by stricter cost keeping; major problems of management.

The course is under the direction of the Business Training Corp., New York, which supplies the study material and the class instruction.

Employment Increasing in Great Britain

The October issue of the *Labour Gazette*, published by the British minister of labor shows that 14,617 men were employed in mining iron ore

in Great Britain in September, an increase of 0.5 per cent over the previous month and 1.1 per cent over the month last year.

British imports of iron ore in September amounted to 266,385 tons, or 403,353 tons less than in August, and 263,017 less than in September, 1913. Exports of pig iron in September amounted to 32,380 tons, 2099 more than in August, but 74,145 tons less than in September, 1913.

In the iron and steel works, employment throughout most of the month was good, although in some districts unemployment was caused by the strike of iron molders. Steel works were partially closed down in Ebbw Vale and Dowlais districts of South Wales, in consequence of a strike of craftsmen. An insufficiency of puddlers was reported in Scotland, and a few firms in other districts reported a scarcity of labor. A shortage of coal was reported by several firms. In the last days of September and the beginning of October many works closed in consequence of the railroad strike, and considerable unemployment resulted.

According to returns relating to 110,715 workers the aggregate number of shifts at the steelworks during the week ended Sept. 27 was 609,918, an increase of 3 per cent over the previous month, but a decrease of 4.1 per cent from a year ago. The average number of shifts worked was 5.51 as compared with 5.50 in the previous month, and 5.72 a year ago. Returns from firms employing 84,659 workers in September showed an increase of 17,512, or 26 per cent in the number employed as compared with September, 1913.

In the engineering trades, employment was fairly good, but toward the end of the month it became adversely affected by the railroad strike and the strike of iron molders.

In the tin plate and steel and galvanized sheet trades employment was better than a year ago. British exports of tinned and galvanized plates and sheets in September amounted to 47,746 tons, or 10,540 tons less than in August, 1919, and 52,390 tons less than in September, 1913.

Sheet and Tin Workers' Wages Unchanged

No change was made in wages of sheet and tin mill workmen at the bimonthly settlement in Youngstown, O., Nov. 11. James H. Nutt, representing the manufacturers, and M. F. Tighe, president of the Amalgamated Association of Iron, Steel and Tin Workers based the settlement on 4.35c per pound for sheets and $6.90 per box for tin plates. The following gives the percentages in wage changes for sheet workers made since Jan. 1:

November-December	4.35	Unchanged
September-October	4.35	Unchanged
July-August	4.35	— 4½ per cent
May-June	4.50	—10 per cent
March-April	4.90	—10½ per cent
January-February	5.25	+ 7 per cent

Schneider is Honored

Charles Eugene Schneider, the French steelmaster and chairman of the French delegation now touring this country in conjunction with other foreign trade missions, received the honorary degree of doctor of science from Western Reserve university at Cleveland, Nov. 14. Samuel Mather, vice president of the board of trustees of the university, presented M. Schneider, and in that connection said:

"Schneider has been a name to conjure with in French metallurgy for over a century, and especially during this recent war. Schneider & Co.'s steel works at Creusot, France, have been the mainstay for the output of weapons and munitions of war, serving not France alone, but also furnishing our own armies in France with a larger part of its artillery. But this firm, under its able management, has been distinguished not alone for its achievements in the steel world, but for its relations with its employes for over half a century. This large steel establishment, the largest in France, has taken a personal interest in its employes, and has conducted a wonderfully effective welfare system, its interest not being confined to the well-being of its workmen only, but also to the health and happiness of the wives and children of its employes. As a result, strikes have been unknown at this plant for more than a generation."

Business Editors Join

Sixty-seven editors and editorial representatives of business papers meeting at the Hotel Astor, New York City, Nov. 13, took steps to organize the National Conference of Business Paper Editors. Practically all the leading business and technical business papers of the country were in attendance upon the conference and have become affiliated with the new organization. In the election of officers, A. I. Findley, editor of *The Iron Age,* New York, was made president; Clay Cooper of *Mill Supplies,* Chicago, vice president, and R. Dawson Hall, managing editor, *Coal Age,* New York, secretary and treasurer. The executive committee consists of Julian Chase, editor and business manager, Class Journal Co., New York; B. O. Hough, *American Exporter,* New York; Mr. McQuilkin, *National Builder,* Chicago; E. T. Howson, editor, *Railway Maintenance Engineer,* Chicago; C. J. Stark, editor, THE IRON TRADE REVIEW, Cleveland; and Harvey Whipple, managing editor, *Concrete,* Detroit.

The purpose of the new organization is to provide closer contact among the editors of business publications of the country, and active co-operation along those lines which are of common interest. It is provided that three meetings a year will be held by the conference, one of which will be in connection with the annual meeting of the Associated Business Papers, Inc., with which the new organization is to be closely affiliated.

Tax on Manganiferous

A considerable reduction has been made in the assessed tax rate on the manganiferous ore properties of the Cuyuna range by the Minnesota tax commission. The assessments as equalized by Director of Mines Rukard Hurd for 1918 and 1919 are as follows:

Property	May 1, 1919	May 1, 1918
Algoma	$0.15	$0.75
Ferro	.15	.75
Joan No. 4	.15	1.00
*Merritt No. 1	.15	.75
Sultana	.15	.50
*Cuyuna-Mille Lacs	.10	.50
*Hopkins	.6	.50
Clark	.6	.50
Joan No. 3	.6	.20
*Ida Mae	.6	.20
*Preston	.6	.35
Mangan No. 1	.6	.75
*Mangan No. 2	.3	.60
Northland	.3	.15
Gloria	.3	.35
*Arko	.3	.10
Zeno	.1	.10

*The properties also contain tonnages of iron ore all now assessed at 3 cents per ton.

Fifty cents per ton was assessed against the manganiferous ore in stock pile May 1, 1919 at the Algoma, Ferro, Joan No. 4, Merritt No. 1 and Mangan No. 1 properties. Twenty-five cents per ton was assessed against the manganiferous ore in stock pile May 1, 1919 at the Sultana, Cuyuna-Mille Lacs and Hopkins properties.

Installs New Bar Mills

plant of the Hammond Steel Co., Solvay N. Y., now are nearing completion. The new steel-mill building, which parallels the old steel-making department, houses a 10 and 16-inch bar mill, straightening rolls and turning equipment. Additional annealing and electric-melting equipment also has been installed. After the new bar mills are placed in operation, the officials of the company will break ground for the erection of a new cold-drawing plant. The products of the company include hammered and rolled-alloy steel, die blocks and special forgings.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

W. A. McCALLUM, who has been assistant to the vice president of the Canadian Tube & Iron Co. and assistant to the president of the Canadian Rolling Mills and the Colonial Wire Mfg. Co., Montreal, has resigned from these positions to accept the office of vice president of F. E. Smith, Ltd., Montreal and Toronto, Ont., a firm doing a large domestic and foreign business in iron and steel refractories.

T. W. Allison, president of Allison & Co., Chester, Pa., sailed recently for England on a business trip.

R. B. Isner has been made purchasing agent for the Boone County Coal Corp., at Sharples, W. Va. The corporation operates 11 mines in the Coal river field.

William L. Niekamp, president of the Beck & Corbett Iron Co., and a director of the St. Louis Screw Co., has been elected a director of the United States Bank of St. Louis.

Capt. Charles B. Carter, who has been connected with the Chicago Steel Foundry, Chicago, since his return from military service in France, has been made sales manager.

J. Palmer Barstow has been elected president and treasurer of the reorganized Barstow Stove Co., Providence, R. I. Mr. Barstow also is president of the Flint Realty Co., Worcester, Mass.

W. S. Atwood, for many years assistant to the president, and A. D. Neal, purchasing agent of the Canadian Car & Foundry Co., Montreal, have been chosen vice presidents of the company.

J. E. Fries, chief electrical engineer of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., will present a paper at the November meeting of the Association of Iron and Steel Electrical Engineers Saturday evening, Nov. 22, at the Chatham hotel, Pittsburgh. The subject of the paper is "Influence of Gear Ratio on Speed of Operation, Motor Heating and Tractor Wear in Auxiliary Steel Mill Drives."

A. W. Swan, who has been associated with the Canadian Ingersoll-Rand Co., Sherbrooke, Que., for the past two years, has resigned to take the position of assistant secretary for the Engineering Institute of Canada, in the head office at Montreal.

William P. Day, president of the International Steel Tie Co., is president of the Union Finance Co., just organized at Cleveland. C. E. Stuart, secretary-treasurer of the Central Steel Co., Massillon, O., is vice president of the company.

Sir John Gibson, president of the National Steel Car Co., Hamilton, Ont., is retiring from that position on account of the company having been acquired by American interests. He has been identified with the company since its inception.

Dr. George G. Davis, assistant professor of surgery at Rush Medical college and associate attending surgeon at the Presbyterian hospital, Chicago, has been appointed chief surgeon of the Illinois Steel Co., that city, to succeed Dr. James Barry, deceased.

Fred P. McLlyar, who was hot mill foreman at the Guernsey works of the American Sheet & Tin Plate Co., Cambridge, O., has assumed the position as superintendent of the Newton Steel Co., Newton Falls, Ohio. He had been with the Guernsey works about 17 years.

E. L. Hershey, formerly superintendent of the Irondale Furnace Co., Irondale, Wash., now is research chemist for the Claussen Chemical Co., Hadlock, Wash. Mr. Hershey had been actively connected with blast furnaces for many years in the east before he went to the Pacific coast.

H. H. Vaughn has retired from the executive staff of the Dominion Bridge Co., Montreal, to take more active interest in the operations of Armstrong, Whitworth of Canada, Ltd., of which company he recently was appointed a director. Mr. Vaughn also is actively interested in the recently organized General Combustion Co.

W. Hume Logan, of the Dow Wire & Iron Co., Louisville, Ky., has launched the American Federation of Business Men. The 10,000,000 business men of the United States all are prospective members, he claims. The aim is to protect and uphold Americanism from the onslaughts of labor radicals, "reds" and to protect and guard from intimidation honest workingmen.

J. Leonard Replogle, director of the steel supply of the war industries board during the war, has been decorated with the Belgian order of the crown, at the order of King Albert of Belgium, in recognition of his work in connection with the allotment of steel supplies to foreign governments. The decoration was delivered by a Belgian vice consul for Baron de Cartier, the Belgian ambassador.

F. B. Lounsberry, metallurgist of the Atlas Crucible Steel Co., Dunkirk, N. Y., presented a paper illustrated by motion pictures on the manufacture and subsequent heat treatment of high speed steel at a joint meeting of the Pittsburgh chapters of the American Steel Treaters' society and the Steel Treaters' Research society which was held at the General Forbes hotel, Pittsburgh, Monday evening, Nov. 17.

Frank W. T. Amis has resigned from Pilling & Crane, Philadelphia, for whom he was New York manager for 15 years, to accept the position of New York manager for Gueret, Jacks & Partners, Inc., 52 Broadway, New York City, which is a combination of ship operating and chartering companies with dealers in coal, iron and steel products. Offices are at 52 Broadway, New York City and at Seattle. Mr. Amis also formerly represented the Nova Scotia Steel & Coal Co., Ltd., and its subsidiary, the Eastern Car Co., Ltd., Canada.

C. F. Neudorfer, formerly general plant superintendent for the Standard Tank Car Co., Masury, O., has been made general manager. N. L. Mabey, chief engineer for the last two years, becomes assistant general manager, Frederick Burroughs, former chief estimator, has been made chief engineer, while J. W. Todd, who has been assistant chief engineer becomes assistant purchasing agent in the office of J. T. O'Connor, former superintendent of transportation, who has been made purchasing agent. J. R. Sweeken succeeds Mr. O'Connor as superintendent of transportation.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

LLEWELLYN R. DUFFIELD recently was appointed manager of the machinery branch of the international exposition of industries at Grand Central palace, New York, in charge of factory appliances, mining industries and production machinery expositions. He formerly was in charge of the exhibition department and salesroom of the Philadelphia bourse, which was one of the most successful and best known machinery exhibitions in America. In joining the force of department managers at Grand Central palace, Mr. Duffield brings 20 years of experience in machinery and scientific fields to the world market project which is being financed by Alfred I. du Pont. The object of the international exposition of industries is to exhibit and sell American manufactured products in America and abroad. There are six branches comprising municipal equipment, machinery and mining industries, factory appliances and tractor, trailer and farm implement and hardware and housefurnishing exchanges and expositions.

Benjamin F. Curtis, traffic manager of the Norton Co., Worcester, Mass., has been elected president of the Worcester Traffic association.

Eldon McLeod, treasurer of the Mason Regulator Co., Boston, and trustee of the Florence Mfg. Co., has been elected a director of the Exchange Trust Co., Boston.

Wilmot L. Matthews and Stephen Haas, both of Toronto, Ont., have been elected directors of the Canadian General Electric Co.

Harry Mills, elected as labor member for Fort William, Ont., has been appointed minister of mines in the new administration of Ontario which assumed office on Nov. 14.

R. Sanford Riley, president of the Sanford Riley Stoker Co., Worcester, Mass., has gone to the Hot Springs of Virginia to attend a meeting of the American Stoker Manufacturers' association this week.

Henry D. Sharpe, president and treasurer of the Brown & Sharpe Mfg. Co., Providence, R. I., is a member of the committee in charge of building a large modern hotel in Providence.

M. W. Chipman, formerly with the Lynn, Mass., plant of the General Electric Co., has become president and general manager of the recently organized Lynn Machine & Screw Co., Lynn, Mass.

Joseph R. Nystrom sailed from New York, Nov. 15, for Europe as the foreign representative of the Graton & Knight Mfg. Co., Worcester, Mass. He will visit England, Sweden, Russia, Belgium, Holland, the Netherlands and other European countries, and expects to be away two years.



LLEWELLYN R. DUFFIELD

J. A. Corcoran, of the General Electric Co., Lynn, Mass., will be the principal speaker at the annual meeting of the Massachusetts States Association of Electrical Contractors and Dealers at the Bancroft hotel. Worcester, Mass., Dec. 3, the opening day of the Worcester electrical show.

Robert S. Parks, treasurer of the Parks-Cramer Co., Fitchburg, Mass., has been appointed publicity director for the campaign to raise a fund of at least $2,000,000 as an endowment for the Worcester Polytechnic institute, Worcester, Mass. Mr. Parks is a graduate of the institute, class of '93.

R. M. Rook, who for the past five years has been associated with the Metal & Thermit Corp., Equitable building, New York City, has been appointed general foreman of the St. Lawrence Welding Co., Montreal, Que. T. W. Rogers also has become affiliated with the St. Lawrence company in the capacity of general sales agent.

Frank L. Klingensmith, vice president of the Ford Motor Co., Detroit, has left for an extended tour of Europe and Ford automobile distributing branches abroad. He will investigate the possibilities of the tractor business

Carl I. Overton, formerly treasurer of the Bowen Products Co., Detroit, has resigned to become connected with the Alemite Co., of Chicago, manufacturers of automobile parts.

John L. Bender resigns as sales manager of the Anderson Forge and Machine Co. to join the C. A. S. Engineering Co., Detroit, which has just completed arrangements to represent the Pollak Steel Co., which operates plants at Cincinnati and Marion, O., and Chicago. This company produces light and heavy forgings for automobiles, locomotives, engines, machinery, etc., as well as rolled products.

Charles F. Scribner, formerly industrial engineer for the Colt's Patent Fire Arms Mfg. Co., Hartford, Conn., and more recently consulting engineer for L. V. Estes, Inc., Chicago, has become affiliated with the Business Service Corp. of America, 29 South La Salle street, Chicago, engineer and accountant, in the capacity of vice president and chief engineer.

Edward M. Woodward, president and treasurer of the Woodward & Powell Planer Co., Worcester, Mass., celebrated his seventy-third birthday anniversary Nov. 11. He organized the company in 1887 and has been active in its management since. Mr. Woodward was the third president of the National Machine Tool Builders' association and a former president of the National Metal Trades association.

Tractor Contract

Made by Quebec Government to Supply Them to Farmers at Cost

Toronto, Ont., Nov. 17.—The Quebec government has closed a contract with the Cleveland Tractor Co., of Canada, the plant of which is located at Windsor, Ont., for an unlimited number of tractors. The government will act as distributor and will sell the tractors at cost to any farmer or farmers' club wishing to purchase. The object in view is to promote the use of tractors on farms and keep the young men on the land by making their work easier.

The Algoma Steel Co., of Sault Ste. Marie, Ont., has received sufficient orders for rails and structural steel to keep the mill in operation six months. Large orders have been placed by the Canadian railroads for rails for replacements and repairs delayed by the war. The structural mill is now in steady operation making structural shapes up to 15 inches, whereas formerly six inches was the limit in Canada. The manufacture of alloy steels, for which the automobile industry offers an important market, has been commenced.

The Canadian railway war board will cease to exist Dec. 1. Because of what it was able to accomplish in the way of co-ordination and increased efficiency the organization will be continued under the name of the Railway Association of Canada, which will assume the functions of the war board, with practically the same officials: Lord Shaughnessy, honorary chairman of the war board, and Howard G. Kelley, of the Grand Trunk railroad, chairman of the executive committee will fill the same offices in the new organization, which will represent 94 per cent of the total railroad mileage of Canada.

Sir Henry Pellart, a prominent Toronto financier is to sail soon for England on business understood to be in connection with negotiations for the acquisition by British capitalists of a large interest in the Dominion Steel Corp.

The Laco-Phillips Co., manufacturer of tungsten lamps, has applied to the Canadian Board of Commerce to have the Canadian General Electric Co. declared a combine and ordered to sell to the applicant at a reasonable price tungsten wire required for use in the manufacture of electric lamps. The applicant's claim that the General Electric company having a monopoly under its patent, may force the Laco-Phillips company out of business. On behalf of the General Electric company, it is urged that the combines and fair prices act is designed only to protect the public and not the rival producer.

It is officially announced that next season engineers in the employ of the Canadian and British Columbia governments will investigate iron ore deposits on the Pacific coast. Representatives of an English steel firm in the meantime are making a private investigation, and have intimated that if the deposits prove to be as rich as stated they are prepared to finance iron and steel works in the neighborhood of Vancouver and build a railroad to make the deposits accessible. W. M. Brewer, a provincial government engineer, estimates that there are deposits of 50,000,000 tons, free from phosphorus or other deleterious substances.

Obituaries

ANDREW JACKSON BOYLE, aged 74, one of the pioneers of the iron and steel industry, died Nov. 16, at his home in North Braddock, Pa., from heart failure. He was born in Johnstown, Pa., Feb. 12, 1846, and was a son of Robert Boyle, for many years an official at the plant of the Cambria Iron Co. Mr. Boyle became a roller at the Cambria mills and in 1873 left Johntown and went to Braddock, where he took charge of the rolls at the rail mills built there by Andrew Carnegie and Capt. William R. Jones. In 1884 he became night superintendent of the steel department of the Edgar Thomson plant and held that position until he retired about 13 years ago.

Napoleon Fournier, foundry superintendent for the Wright-Martin Aircraft Corp., New Brunswick, N. J., died in his home in that city, Nov. 9, aged 52.

Lester R. Spencer, aged 35, secretary and treasurer of the Troy Metal Products Co., Springfield, O., died recently at his home in Piqua, O., following an operation for appendicitis.

Charles Dallett, who for 28 years had been connected with the W. P. Dallett Co., Indianapolis, machinery dealer, in an important capacity, died Nov. 5, at his home in that city, aged 49.

J. J. Fisher, a director of the Parkersburg Iron & Steel Co., Parkersburg, W. Va., and a conspicuous figure in the oil industry, died at his home in Pittsburgh, Nov. 12. He was 81 years old and a native of Pittsburgh.

Charles E. Alcorn, day superintendent of the Weirton, W. Va., plant of the Weirton Steel Co., died at the Ohio Valley hospital, Steubenville, O., Nov. 11, as a result of blood poisoning following an operation. He was 40 years old and made his home at Hollidays Cove, W. Va.

William T. Woodruff, former president of the Seth Thomas Clock Co., Thomaston, Conn., died at his home in that town Nov. 5, aged 80 years. He entered the employ of the company in 1868, and by gradual steps he rose from one position to another until he became president which office he filled for 23 years, resigning Jan. 1, 1915.

George E. Wilbur, for many years president of the Weir Stove Co., Taunton, Mass., died at his home in that city, Nov. 5, aged 79 years. He was one of the founders of the company 40 years ago which later became the largest industry of its kind in New England. He began his business career as a machinist and patternmaker.

Silas Emerson Harthan, a retired mechanical engineer and inventor, died at his home in Worcester, Mass., Nov. 5, aged 81 years. Mr. Harthan invented the Bigelow heeling machine, which was the basis of several fortunes in the show business, introduced the first electric lights in Worcester, and operated the city's first electric railway. He had a part in constructing about 50 steamboats during his life.

Wallace E. Sawin, treasurer of the Holyoke Water Power Co., Holyoke, Mass., who had a national reputation as an authority on hydraulic engineering, died while attending a funeral in that city, Nov. 7, aged 53 years. He entered the employ of the company in 1887 as draughtsman, later becoming engineer, then chief engineer, corporation clerk and assistant treasurer, being elected treasurer in 1913. He designed and had complete supervision of the Holyoke dam.

Steel Club

Made Up of Philadelphia Sales Managers Holds Initial Dinner

Philadelphia district sales managers assembled with their guests at the Ritz Carlton hotel at Philadelphia Friday evening, Nov. 15, for the initial dinner of the Steel club. This body was organized about eight months ago and its 30 members include representatives of all but two of the steel companies having offices in Philadelphia. The object of the club is to promote the good feeling which always has existed in the steel fraternity in and around Philadelphia, and as a result of this good feeling, to foster clean and friendly competition. It is felt by its members that the Steel club of Philadelphia is a worthy adjunct to the American Iron and Steel institute in fostering good will among competitors as well as respect for, and confidence in, the steel industry, on the part of consumers.

Meetings of the Steel club have taken the form of monthly luncheons, followed by golf. Last night's dinner, which probably was the first of a series of similar affairs to be held annually, was free of speeches and all formality and was devoted to good fellowship and entertainment. Arrangements for the program were made by William L. Hoffman, Philadelphia district sales manager for the Brier Hill Steel Co., who is president of the club. Frank Jones, Eastern Steel Co., Philadelphia, the only other officer, is secretary and treasurer. The membership of the club made up of sales managers of Philadelphia and vicinity is as follows:

Craig Adair, manager sales, Penn Seaboard Steel Corp., Philadelphia.

William Breeden, manager sales, Lackawanna Steel Co.

S. J. Cottsworth, manager sales, Lorain Steel Co.

G. Clinton Fogwell, manager sales, Jones & Laughlin Steel Co.

W. L. Fotterall, Republic Iron & Steel Co.

H. B. Gaylord, manager sales, Carpenter Steel Co.

F. H. Gordon, general manager sales, Lukens Steel Co.

C. O. Hadley, general manager sales, Alan Wood Iron & Steel Co.

William L. Hoffman, manager sales, Brier Hill Steel Co.

Frank W. Jones, manager sales, the Eastern Steel Co.

Walter B. Kennedy, manager sales, Bethlehem Steel Co.

Paul M. King, manager sales, Worth Steel Co., Claymont, Del.

Frank J. Krouse, manager sales, Cambria-Midvale Steel Co.

A. B. Miles, Brier Hill Steel Co.

H. S. Moore, manager sales, Central Iron & Steel Co.

William H. Oliver, manager sales, Republic Iron & Steel Co.

LeRoy Richards, manager sales, Nagle Steel Co.

Henry Rose, manager sales, American Steel & Wire Co.

W. S. Stephenson, manager sales, American Rolling Mills Co.

G. T. Shants, manager sales, Lukens Steel Co.

T. W. Simpers, manager sales, American Sheet & Tin Plate Co.

L. R. Steuer, Cambria-Midvale Steel Co.

S. H. Truitt, manager sales, LaBelle Iron & Steel Co.

H. G. Uphouse, manager sales, Donner Steel Co.

Ray P. Farrington, Trumbull Steel Co.

A. H. Cordery, general manager sales, Phoenix Iron Co.

Frank Wallace, manager sales, Central Steel Co.

Lee R. Stewart, manager structural sales, Bethlehem Steel Co.

John E. Wetzel, manager sales, Superior Steel Co.

H. Lindley Crowther, manager sales, Sharon Steel Hoop Co.

Forms Exclusive Agency

Furnaces of the Thomas Iron Co., Hokendauqua, Pa., are to be altered and repaired and an annual capacity of approximately 350,000 tons is anticipated. The product of the furnaces is to be handled exclusively by E. Arthur Tutein, Inc. Mr. Tutein, head of the new sales organization, formerly was the company's Boston agent for several years. The Boston office remains at 50 Congress street, and is in charge of Hubert A. White. The New York office, formerly at 90 West street, now has been established under the new regime at 25 Broad street, in charge of Dexter A. Tutein. The Philadelphia office, formerly at 626 Stephen Girard building, now is located in the Finance building and is in charge of Water A. Barrows 3rd, as representative of E. Arthur Tutein, Inc.

Stone Companies Join

Youngstown, O., Nov. 17.—A deal has been closed whereby the Bessemer Limestone Co., with extensive quarries at Bessemer, Pa., about 15 miles south of this city, will consolidate with the Bessemer Limestone & Cement Co., and after Jan. 1, 1920, will be under the latter name. A cement plant, which will have a capacity of 3000 barrels per day, will be built nearby the Bessemer quarries. Plans for the new plant are being prepared by the Allis-Chalmers Co., Milwaukee. The equipment will include three rotary kilns, a powdered-coal plant and crushing and grinding machinery. The Bessemer Limestone Co. will continue to distribute its product which includes agricultural limestone, crushed stone for road building and limestone for fluxing purposes. A large percentage of the limestone used at the blast furnaces in the Mahoning and Shenango valleys is shipped from the Bessemer quarries. The officers of the Bessemer Limestone & Cement Co. are: Joseph G. Butler Jr., chairman of the board of directors; John Tod, president; F. R. Kanengeiser, vice president and general manager; G. G. Treat, secretary; and J. R. Rowland, treasurer.

Prices Are Advanced

Prices on cast iron boilers and radiators have been advanced 7½ per cent, and all accessories such as valves and pipe fittings have been advanced from 5 to 25 per cent. The general increases were made necessary, it is explained, by the recent advances in pig iron and fuel. Demand for these products is reported good, with a shortage of production. Dealers point out that prices still are below the level of war times. Radiation stock which now is bringing 34 cents a foot was 40 cents at the time of the armistice, and before the war was 17 cents.

Corporation Is Changed

Birmingham, Ala., Nov. 17.—The Chickasaw Shipbuilding & Car Co. has filed articles of incorporation at Mobile, as the successor to the Chickasaw Shipbuilding Co., the subsidiary organization of the Tennessee Coal, Iron & Railroad Co. The new corporation takes in the Fairfield works, the steel fabrication plant at Fairfield, in the immediate Birmingham district. This change in the title and scope of the Chickasaw corporation is believed to be a matter of considerable significance in the future development of this enterprise. The first steel ship of the Chickasaw Shipbuilding Co. will be launched early in December. The concern has contracts for a large number of steel ships, several months work being assured.

To Present Gold Medal

A reception and dinner is to be tendered Eugene Schneider, head of Schneider & Co., who operate the Creusot and other steel works in France, by the Mining and Metallurgical Society of America, at the Hotel Biltmore, New York City, Monday evening, Nov. 24. The reception will take place at 6:45, followed by the dinner at 7:15 p. m. On this occasion the Mining and Metallurgical society will present Mr. Schneider with its gold medal. Speakers at the dinner will be as follows: Bradley Stoughton, Henry M. Howe, Charles M. Schwab and Col. Manus McCloskey of the United States army.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

REPRESENTING a merger of four companies, the Republic Tool & Mfg. Co. has been formed at Cleveland. It succeeds the Cleveland Power Transmission Co., the Diamond Stamping Works and the Clyde E. Lowe Co., Cleveland, and the Detroit Reamer & Tool Co., Detroit. The new company acquires from the Clyde E. Lowe Co. basic patents on pressed steel cores and steel mandrels used in the manufacture of automobile castings and tubes for tires. Plans have been formulated for increasing production at the Diamond Stamping Works. The Cleveland Power Transmission Co. will become a jobbing unit for mill equipment of all kinds, including small tools, steel and factory supplies. The Detroit Reamer & Tool Co. will continue the production of small cutting tools and will sell its products to jobbing and manufacturing companies. Proceeds from preferred stock after paying for the properties will be used in the extension of the Cleveland and Detroit plants. Clyde E. Lowe is president; B. V. Selby, vice president, and D. A. Clark is consulting engineer of the new company. These with the following constitute the board of directors: Charles H. Beardslee, vice president and general manager of the Fate-Root-Heath Co., Plymouth, O.; Harry W. Kellar, treasurer, Standard Scale & Supply Co.; E. H. Krueger, Cleveland; Elmer E. Lenarz, Cleveland; and Herman J. Nord, secretary, the Oriente Sugar Co.

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OFFICERS of the Federal Tool Co., 453 Michigan avenue, Detroit, were elected at a recent meeting, as follows: President, Joseph Larkin; treasurer, Matthew Finn, and secretary, Thomas Tierney. At this meeting, it was decided to build a plant before the end of the present year, on Apple street, Detroit. The company is capitalized at $72,000.

* * *

THE American Forge & Machine Co., Canton, O., manufacturer of pressed or hammered steel forgings, open-hearth, vanadium or chrome nickel steels, etc., recently added another steam hydraulic forging press to its forge shop equipment. This addition enables it to take care of a wide range of forging work, with increased facilities for rough machining and heat treating.

* * *

THE National Roll & Foundry Co., Avonmore, Pa., has received the contract for the sheet mill installation at the new plant of Follansbee Bros. Co., at Toronto, O., consisting of 10 roughing mills, 10 finishing mills, 10 stands of cold rolls and the necessary equipment, as well as a complete 28-inch, 2-high reversing sheet bar mill, including tables and cooling bed. The company also is building the hot mill equipment for the Eastern Rolling Mill Co., Baltimore.

* * *

ORGANIZED to manufacture screw machine products, the Lynn Machine & Screw Co., Lynn, Mass., now is installing necessary machinery in the building of the Matson Hoyt Machine Co., which it purchased together with equipment. Thirty new automatic screw machines have been purchased and will be added to the present equipment. M. W. Chipman, formerly with the General Electric Co., at Lynn, is president and general manager of the new company and A. M. Hoyt is vice president.

* * *

ALBERT F. ROCKWELL, Bristol, Conn., has been elected president of the $8,000,000 corporation, the Standard Steel & Bearings, Inc., which is a consolidation of the Marlin-Rockwell interests. It will operate the plants in Philadelphia and Braeburn, Pa., New Haven, Plainville and Norwich, Conn. T. C. Fogel, George L. Sanford, Hugh M. Rockwell, F. M. Germain and George H. Neilson are vice presidents; and H. C. Pryor is secretary and treasurer. Directors are A. F. Rockwell, Edgar Park, T. C. Fogel, George L. Sanford and H. C. Pryor.

* * *

FRED J. FISHER, president of the Fisher Body Corp., Detroit, was elected president of the Fisher Body Ohio Co., Cleveland, at a meeting held last week in that city. Charles F. Fisher was elected vice president; L. Mendelsohn, treasurer, and A. Mendelsohn, secretary. Directors include E. F. Fisher and A. J. Fisher, of Detroit, and L. Fisher Sr., of Norwalk, O. Grovener Hutchins, Hallgratten & Co., New York; John Sherwin and Joseph R. Kraus, the First National bank; Frank H. Ginn, member of the law firm of Tolles, Hoggsett, Ginn & Morley; Charles A. Otis, Richard Inglis and C. V. Crowther, of Otis & Co., and Norris J. Clarke, of the Lake Erie Bolt & Nut Co., all of Cleveland.

* * *

CAPITALIZED at $75,000, the Jones Bros. Structural Steel Co., Ravenna, O., recently was incorporated to take over the business formed as a partnership several months ago by J. A. Jones and B. F. Jones, formerly of the Alliance Structural Co., Alliance, O., and G. G. Jones, formerly of the Penn Bridge Co., Beaver Falls, Pa. The new company will take over the plant, which is completely equipped for the fabrication of all kinds of structural steel. No plant extensions are contemplated before next spring. The plant now is in full operation and more business is being booked daily. Officers of the company are: President, J. A. Jones; vice president, G. G. Jones; secretary, B. F. Jones, and the board of directors composed of the officers and V. W. Filiatrault.

* * *

THE Ohio Heating & Pipe Bending Co., 1063 West Eleventh street, Cleveland, has advised that it has increased its capital to $250,000, for the purpose of erecting a new building and installing additional power apparatus and machinery, including several lathes. The company also plans to enlarge its stock of pipe and fittings and will equip in a small way for ship chandlery. The firm has established a marine department and is in addition carrying a department for heating and ventilating, pipe bending and the fabricating of pipe, etc. The marine department will care for the piping of vessels, supplying equipment and do repair work on steamers. The company also plans to install a power construction department. B. Waller Neyhard is secretary and treasurer.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

PURCHASED property, 219 x 561 feet, at the northwest corner of Blackhawk street and Cherry avenue, Chicago, will be improved by the erection of a building with a floor area of about 200,000 square feet by A. M. Castle & Co., 715 North Morgan street, that city. The new property is located on the Chicago river and is served with a Chicago, Milwaukee & St. Paul railway switch. Two 7-story, two 3-story, two 2-story and two 1-story buildings now are located on the east half of the property and are leased to the Union Wire Mattress Co., for a number of years at $15,000 annually. A. M. Castle & Co. are warehouse distributors of finished steel products and also are engineers and manufacturers of hydraulic press steel work. The main plant is located on North Branch street and the river on a 4-acre site. The company also owns a block in Division street from Hooker to Hickory streets and the warehouse property at Morgan, Huron and Superior streets. An associate company, A. M. Castle & Co., of Washington, is located in Seattle by which the markets of China, Japan, India, Australia and Alaska, are reached.

* * *

AN ORDER received recently from the Missouri, Kansas & Texas railroad for two steam-driven, 20-ton locomotive cranes by the Exeter Machine Works, 30 Church street, New York, represents the second contract closed by this particular railroad. The first order called for the same number and size of cranes.

* * *

THE American Machinery Equipment Co., 1246 Penobscot building, Detroit, was recently organized as a clearing department for cranes, boilers, power plant equipment, new and second-hand machinery, etc. W. R. Gard, general manager, has announced that the company's operations will cover the entire east and central western sections of the country with branch offices in all the largest cities.

* * *

PLANS of the International Harvester Co., Chicago, practically to double the plant, the Chattanooga Plow Co., Chattanooga, Tenn., were announced recently by Judson Buchanan, local manager. They call for an addition to the main plant. Plans also are being made for a $10,000 building containing club rooms, cafeteria, locker rooms and gymnasium. The Chattanooga Plow Co. was purchased several months ago by the International Harvester Co., and manufactures chill plows, of various styles, and cane sorghum mills.

* * *

ANNOUNCEMENT has been made that the Interstate Steel Mfg. Co., Milwaukee, has purchased all of the machinery and equipment of the Bayley Structural Iron Co., 705-709 South Pierce street, that city. The plant will be operated on an enlarged scale. The Interstate company is developing a new department of its business in the manufacture of auto truck and tractor frames, bumper bars and radiator guards for auto trucks, fans, sheet steel tanks, etc. This is in addition to its regular line of structural iron and steel work. It also owns a patent on a new style of sidewalk lights.

* * *

WHAT is considered will be the largest and best equipped forging shop in the world is to be erected by the New Departure Mfg. Co., Bristol, Conn., in its extensive program to double the output of its plants in that city, Elmwood and Meriden, Conn. The forge shop is to be reinforced concrete and steel, one story, 126 x 405 feet, next to which is to be a 70 x 270-foot die, machine and tool building and a steel 75 x 240-foot storage building. The contract for the three buildings has been let. Other additions to the Bristol plant will include a 220-foot, with two 88 x 110-foot ells ball plant; a 110 x 220-foot annealing plant; a 2-story and basement, 48 x 64-foot pattern and carpenter shop; a 1-story, 30 x 30-foot addition to the engineering building; a 54 x 114-foot heating plant, with two 175-foot high stacks; a 2-story 40 x 132-foot addition to the power plant and a hospital building. A reinforced concrete, 3 and 4-story building will be erected at the Elmwood plant and two new buildings in Meriden. The work will take seven months, cost several millions and will mean employment for 9000.

* * *

SPECIAL machinery for the recently incorporated Hartford Tube Products Co., Hartford, Conn., already has been ordered for its new plant now being built at Elmwood, Conn., about 4 miles from Hartford, on the main line of the New York, New Haven & Hartford railroad. Other equipment not yet contracted for includes lathe, shaper, miller, grinder and drill for the tool room; two pipe machines up to 4-inch capacity; radial drill; ten 1 and 2-ton chain hoists; air compressor about 80 pounds with 300 cubic feet capacity; pressure blower; hydraulic pump with 1000-pound pressure and 1½-inch discharge; blacksmith shop equipment, etc. The company is capitalized at $200,000 and will manufacture coils and bends of iron and steel pipe for refrigerating, chemical and general manufacturing; copper and brass tube coils; ammonia receivers; hot water service heaters; feed water heaters, etc. Officers are: President and treasurer, Irving I. Ingraham; vice president and general manager, H. K. Herbinson, and secretary, J. P. Fitch.

* * *

THE steel mill of the Stanley Works, New Britain, Conn., now in process of erection, covers more ground space than any other factory in that city. The steel frame is being erected by the Berlin Construction Co., East Berlin, Conn., and covers an area of 300 x 700 feet, being three stories high. The roof is pitched from the center. The building is separated by a row of supporting columns in the center. Traveling cranes will be installed in the building. In addition, railroad tracks will run through the building connecting with the main line which will pass through the center of the building, going to other parts of the plant. The mill will be used to roll steel.

The Stanley Works is to open a branch factory in Springfield, Mass. It will transfer part of the packing and wrapping departments to the new branch because of inability to secure favorable space in New Britain.

Current Tax Rates Are Lower

Comparison of Taxes for Individuals and Partnerships Shows That the Outstanding Features of 1919 Revenue Measure Are Practically the Same as Last Year—Greatest Change in Normal Rates

INCOME TAX DEPARTMENT
Conducted by
WOLFF, MILLER & CO.
Certified Public Accountants
1326 Broadway, New York City

TAX rates for individuals for 1919 were prescribed by federal tax law of 1918. Although the normal tax rates for 1919 are lower than they were in 1918, the total tax for individuals will not be materially reduced, as the surtax rates for 1919 remain the same as for 1918. There has been some talk of reducing the tax rates for 1919, but financial requirements of the government, including the charges piled up by the war, are so great as to make necessary every dollar of revenue contemplated by the present law.

The outstanding features of the 1919 tax provisions are practically the same as for the year 1918, but one important modification is in the normal tax rates. On the first $4000 above the usual credit of $2000 ($1000 for single persons) the normal tax rate is 4 per cent. Everything in excess of the $4000 is taxable at 8 per cent. In 1918, the corresponding tax rates were 6 per cent and 12 per cent respectively. The surtaxes which are additional to the normal taxes are exempted for the first $5000, no credit of $1000 or $2000 being allowed. On the first $1000 after the exemption of $5000, the rate is 1 per cent, and then for every $2000 additional up to $100,000 the rate is increased 1 per cent, so that on an income of $100,000, the highest surtax rate reached is 48 per cent. For 1917, the surtax up to this amount reached only to 22 per cent. The total taxes payable in 1919 on taxable incomes ranging from $5000 to $1,000,000, after credit for exemptions, will exhaust from 3 per cent to 67 per cent of the total income. In 1916, such taxes exhausted from 5 per cent to 70 per cent of the total income.

The accompanying table shows a comparison between the taxes payable on various incomes, together with the percentages of income payable as taxes for 1918 and 1919. On the range, shown in the table, the reduction in 1919 taxes as compared with rates for 1918, is less than 10 per cent on a weighted average.

The table is applicable to individuals, including members of partnerships. Each partner as an individual is taxed on his share of the profits earned by the partnership, as shown by the partnership return, whether or not such profits have been distributed to the partners. If John Brown, a member of Smith & Brown, a partnership, has been credited with one-half of the profits of $50,000, or $25,000, he is taxed on $25,000, even though his drawings during the year have been only $10,000. This will mean that some business men will be under the necessity of drawing out a part of their profits for the purpose of meeting taxes.

Some of the important features of the 1919 tax provisions are as follows:

1. A single person with a net income of $1000 or over and a married person with an income of $2000 or over, must file a return.

2. The exemptions are $1000 for a single person, and $2000 for a married individual, or the head of a family, plus $200 for each child or dependent other than wife. A single person at the head of a family, earning say $1800 per annum, will have to file a return, although he will not have to pay any taxes.

3. Amounts received as interest on state or municipal bonds are exempt. Interest received on Liberty bonds are exempt only with certain limitations.

4. Losses incurred by individuals in transactions entered into for profit, though not connected with his trade or business are deductible from gross income. For example, a person earning $50,000 in his regular business, and losing $75,000 in Wall street would not have to file any return as he has not a net income. Under the 1917 law his income would have been considered as $50,000, on which figure he would be obliged to pay taxes.

5. Losses on personal loans are deductible from gross income.

6. The taxes are payable in four installments, as last year.

7. Individuals are permitted to file their returns on the basis of fiscal years, as in 1918, instead of on a calendar-year basis. Those individuals who have adopted a fiscal-year basis, will in computing their taxes for 1919 have to apply both 1918 and 1919 rates. No change may be made from fiscal year basis to calendar year basis unless with the approval of the commissioner of internal revenue.

8. A very important provision permits a taxpayer to deduct a net loss sustained in the year 1919. The provision follows:

"If for any taxable year beginning after Oct. 31, 1918, and ending prior to Jan. 1, 1920, it appears upon the production of evidence satisfactory to the commissioner that any taxpayer has sustained a net loss, the amount of such net loss shall, under regulations prescribed by the commissioner with the approval of the secretary, be deducted from the net income of the taxpayer for the preceding taxable year * * * the taxes imposed by this title and by title III for such preceding taxable year shall be redetermined accordingly. Any amount found to be due to the taxpayer upon the basis of such redetermination shall be credited or refunded to the taxpayer, in accordance with the provisions of Section 252. If such net loss is in excess of the net income for such preceding taxable year, the amount of such excess

Individuals' Tax Rates of 1918 and 1919

Income (exemption $1000)	1918 Normal tax	1918 Surtax	1918 Total	1919 Normal	1919 Surtax	1919 Total	Percentage of income payable as taxes 1918	Percentage of income payable as taxes 1919	Percentage of saving in 1919 taxes
$ 5,000	$ 240		$ 240	$ 160		$ 160	5	3	40
10,000	840	$ 110	950	560	$ 110	670	10	7	30
20,000	2,040	710	2,750	1,360	710	2,070	14	10	30
40,000	4,440	3,410	7,850	2,960	3,410	6,370	20	16	20
100,000	11,640	23,510	35,150	7,760	23,510	31,270	35	31	10
200,000	23,640	77,510	101,150	15,760	77,510	93,270	51	47	8
300,000	35,640	137,510	173,150	23,760	137,510	161,270	58	54	7
500,000	59,640	263,510	323,150	39,760	263,510	303,270	65	60	7
1,000,000	119,640	583,510	703,150	79,760	583,510	663,270	70	66	6

shall under regulations prescribed by the commissioner, with the approval of the secretary, be allowed as a deduction in computing the net income for the succeeding taxable year."

Fortunately, due to the rising prices of commodities, there are few individuals who will show net losses for 1919. This section should be extended by congress to cover future years, so that in a period of a declining price level, the business man will receive refunds for net losses.

Another important deduction now allowable is for losses in inventories. If it is shown to the satisfaction of the commissioner that during the taxable year 1919, the taxpayer sustained a substantial loss from a material reduction in the inventory valuation made at the end of the taxable year 1918, then the amount of such loss will be deducted from the net income for the taxable year 1918, and the tax for 1918 will be redetermined. Any amount found to be due to the taxpayer will be refunded or credited to him. This provision, too, is not very important just now, in view of the gradual rise in prices of most commodities during 1919. In this connection, the taxpayer must have his records in such shape so as to be able to convince the government of the validity of his claim. This provision is a fair one and should be applied to all years by amendment to the income tax law.

Charcoal Surplus Grows

Report of the Charcoal Iron Co. of America for the nine months ending Sept. 30 as issued at Detroit by President F. W. Blair, shows net profits of $306,427.17 and total accumulated surplus of $1,835,502.72 after payment of $213,304 in dividends. Assets of $13,233,296.01 includes $10,329,077 in property account; $2,823,121.76 of current assets and $81,096 deferred charges. Unfilled tonnage for charcoal iron as of Sept. 30 stood at 45,062 tons.

Increases Its Shares

Fisher Body Corp. stockholders have approved the proposed increase in the capital stock from 200,000 to 500,000 shares all common stock without par value. The decision of the directors to increase the number of directors to 15 and to amend the certificate of incorporation so that the amount of capital with which the corporation is to carry on business shall be $8,500,000 was also ratified. Any additional stock issued above the 500,000 may be issued and sold at $92 per share for common, it was decided. The plans adopted at the stockholders meeting open the way for carrying out the plan of the General Motors Corp. to secure a substantial interest in the Fisher Body concern.

Beginning New Series on Taxation

THE IRON TRADE REVIEW *has made arrangements with Messrs. Wolff, Miller & Co, 306 Broadway, New York, certified public accountants, for the preparation and publication of exclusive articles explanatory of the 1919 income tax law and internal revenue regulations, and their application to corporations, partnerships and individuals.*

These articles have been prepared by Mark Wolff and David Miller, both certified public accountants of New York state. They are authors of accounting literature, special lecturers to income tax deputies and expert accountants of many years experience.

Their articles on the application of the income tax law published by THE IRON TRADE REVIEW *last spring received widespread and favorable attention.*

The first article of the new series treats of the taxation of individuals and partners for 1919. The next article will explain the taxation of corporations.

Large India Order Leads to Amalgamation

The Cammell, Laird Co., one of the great steel interests of Sheffield, Eng., has amalgamated with the Midland Railway Carriage & Wagon Co., Ltd., a large Birmingham enterprise. One of its objects was to find more work for the great extensions already made and others approaching completion at the Cammell company's Penistone and Nottingham plants. The Penistone plant is a new steel works with a large capacity. At a recent meeting of stockholders of the Cammell company resolutions were adopted authorizing a division of 400,000 ordinary shares at £5 each into £1 shares, and £5 cumulative preferred shares into £1 cumulative preferred shares, and the increasing of the capital of the company to £4,000,000 by the creation of 750,000 ordinary shares of £1 each, which number of shares will be allotted to the shareholders of the Midland company.

At the meeting of the Midland company, at which the amalgamation was approved, the chairman, George Turner, said the company's relations with Cammell, Laird & Co., arose out of the financing of a big contract for rolling stock for India. While Cammell's undertook the financing of the business, it arranged to get the material from the Midland company and this will occupy a good portion of its capacity for some years.

To Vote on Increase

A meeting of stockholders of the Timken-Detroit Axle Co. will be held in Canton, O., Nov. 26 to vote on a proposal to increase authorized capital from $6,000,000 to $48,000,000. The plan provides for an increase of common stock from $3,000,000 to $30,000,000 and reduction of par value to $10 a share and for the issue of $15,000,000 of preferred stock in addition to the $3,000,000 outstanding.

Financial Crop Ends

THE Van Dorn Iron Works, Cleveland, is offering $650,000 of 7 per cent preferred stock at par. The finances of the company are being reorganized to place the common stock on a no par basis. Application will be made to list both the common and preferred stock on the Cleveland exchange, it is reported.

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Dort Motor Car Co., of Flint, Mich., has increased capital from $2,000,000 to $3,500,000 and is expected soon to announce a new building program.

* * *

Contemplated purchase of the Fairbanks Co., Chicago, by the American Steel Foundries, Chicago, is reported. According to the plan, it is said Fairbanks company stock will be exchanged at the rate of one share for two and one-half shares of Steel Foundries.

* * *

Total net sales of the Republic Motor Truck Co., of Alma, Mich., and Torbensen Axle Co., of Cleveland, a subsidiary, for the three months ending Sept. 30 was $6,264,773. Net profits before federal taxes was $520,-903.

* * *

Studebaker Corp. stockholders will meet in Jersey City, Nov. 24, to vote on a proposal to increase authorized capital stock from $45,000,000 to $90,000,000 of which $75,000,000 will be common stock.

* * *

Stockholders of the Stewart Warner Speedometer Corp. at a special meeting in Richmond, Va., a few days ago approved the resolution of the directors to exchange new stock of no par value for outstanding stock of $100 par in ratio of four for one.

Tool Builders Make Users Wait

Much Deferred Deliveries Handicap Sellers—Some Buyers Postponing Action Until Jan. 1, 1920—General Electric Issues Inquiries for 200 Machines—Emergency Fleet Sells Tools—Bethlehem Steel Wants 11 Cranes

ALTHOUGH the usual end-of-the-year slowing down is not expected in the machine tool and equipment field at this time, because of the exceptional amount of building activity going on, a few users have announced their intention to wait until after Jan. 1, 1920, before placing orders on inquiries recently issued. This is true of the Firestone Steel Products Co., Akron, O., among others. Deferred deliveries are the rule both in the United States and Canada and this is cutting down sales volumes. Sellers believe they could close much attractive business if they could give suitable deliveries but machinery manufacturers are filled up for as much as five months ahead in some cases. Users therefore, are obliged to wait for needed equipment in various instances. In Pittsburgh, heavy equipment builders complain of a scarcity of cleaning-room labor in foundries which furnish them heavy castings. This is curtailing heavy equipment building.

Featured in the east, are the inquiries from the General Electric Co., Schenectady, N. Y. These now are said to aggregate 200 machines although little buying so far has been done. Action on other large lists issued recently is expected soon. Increased activity is noted in shipyards. The Union Shipbuilding Co., Baltimore, is to take much fabricating equipment; it will spend $4,000,000 on increased facilities. The National Concrete Boat Co. is to expend $500,000 on a new yard at Norfolk, Va. The Robert Dollar Steamship Co., New York City, will erect a $1,000,000 pier on Long Island. The Sun Shipbuilding Co., Chester, Pa., is in the market for 12 cranes.

A wide spread exists between crane inquiries and orders, few of the latter being taken. The Carnegie Steel Co. wants prices on several cranes and the Bethlehem Steel Co. is out for 11 machines for Lebanon, Pa. The Follansbee Bros. Co., Pittsburgh, which will require seven for Toronto, O., plant, has closed with the National Roll & Foundry Co., Avonmore, Pa., for the mill equipment. Several inquiries for single cranes are out.

Machine tools are moving at a steady rate in the Middle West. The Nash Motors Co. continues to buy for Milwaukee, as does the Samson Tractor for Janesville, Wis. The Allis-Chalmers Co. also is buying tractor plant equipment while the Chas. Stecher Co., Chicago, is adding to its automatic equipment. The largest inquiries in Cleveland come from the Lewis Steel Products Co., Toledo, O., and the Ellicott Machine Corp., Baltimore, for five tools each. About two dozen pieces of equipment are wanted by the Hartford Tube Products Co., Hartford, Conn., for a new plant at Elmwood, Conn.

The Emergency Fleet corporation is selling a large number of tools in different plants throughout the country. The senate and house finally has agreed upon 15 per cent as a selling price for tools to educational institutions. The ordnance department has taken over the plant built by the Symington-Chicago Corp., Chicago, to use as a center for disposing of equipment from various outside points.

Shipbuilding Projects to Take Much Equipment

THE General Electric Co. continues to issue inquiries for machine tools for its Schenectady, N. Y., plant. It is estimated now that its requirements total more than 200 machines. As yet, however, little buying of consequence has developed. Action on the other large lists which feature the eastern market also is pending, and the situation as a whole is quiet. Sentiment, nevertheless, remains strong. The larger buying interests in the market are expected to start closing any time and there is also considerable additional business in prospect. Included in the latter is equipment for the Union Shipbuilding Co., Baltimore, involving some fabricating machinery. The company plans to expend about $4,000,000 on new facilities.

Another shipbuilding project is that of the National Concrete Boat Co., calling for the expenditure of $500,000 for a new yard at Norfolk, Va. Of interest to the trade is a bill recently introduced in congress, specifying the creation of a $12,500,000 federal corporation to take over the government's nitrogen plants at Sheffield and Muscle Shoals, Ala., and to buy and build additional plants. The Hartford Tube Products Co., Hartford, Conn., is in the market for a lathe, shaper, miller, grinder, drill, two pipe machines, radial drill, 10 1 and 2-ton hoists, air compressors, pressure blower, hydraulic pump, blacksmith shop equipment, etc. Two large plant additions are to be erected at Buffalo by the Beaver Board Co. Some tool shop equipment, it is understood, will be required. The Newark Leather Machinery Co., Newark, N. J., is to build a 50 x 112-foot shop addition. The Torrington Co. is to erect an $80,000 addition to its Standard plant at Torrington, Conn. The Duratex Co., Newark, has awarded a contract for the erection of a machine shop addition. The Pennsylvania Forge Co., Philadelphia, will require equipment for a $30,000 rolling mill. The H. H. Franklin Mfg. Co., Syracuse, N. Y., plans to establish a new plant for the exclusive manufacture of motor trucks.

Outstanding among crane inquiries in the eastern market is a list of 11 cranes for the Lebanon, Pa., plant of the Bethlehem Steel Co. Specifications call for one 15-ton, 65-foot

EVERY BAR OF LUDLUM STEEL THOROUGHLY TESTED

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Prompt shipment from warehouse stock at Watervliet, N. Y.; Detroit, Mich.; Chicago, Ill.; or Cambridge, Mass., handled through our branch offices.

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span; one 20-ton, 27-foot span; two 5-ton, 56-foot span; two 7½-ton, 66-foot span; and five 7½-ton cranes, with 50-foot span. Another large inquiry pending in the East, although likely to be closed very shortly, is that of the Sun Shipbuilding Co., Chester, Pa., calling for approximately 12 10-ton overhead cranes, with 100-foot spans. The Du Pont Engineering Co., Wilmington, Del., is inquiring for a 5-ton overhead crane, with 86-foot span. The Penn Cement Co., Nazareth, Pa., is in the market for an 8-ton crane, with 90-foot span. The Concrete Steel Co., 42 Broadway, New York City, is expected to close soon on a 5-ton overhead crane for Long Island City, N. Y.; and two overhead cranes of 7½ and 10 tons capacity, respectively, for Chicago. This company has recently bought a 20-ton locomotive crane from Orton & Steinbrenner.

It is thought likely that the New Departure Mfg. Co., Bristol, Conn., will be in the market for overhead crane equipment shortly. The company plans to spend several million dollars on plant extension at Bristol, Meriden and Hartford, Conn., and already has issued a list of machine tools. The Hedden Iron & Construction Co., Elizabeth, N. J., is in the market for a 3-ton hoist. The Robert Dollar Steamship Co., 17 Battery place, New York City, has purchased a 700-foot waterfront at Hunters Point, Long Island, where it contemplates the erection of a $1,000,000 pier. The American Tube & Stamping Co., Bridgeport, Conn., has awarded a 5-ton crane to the Niles-Bement-Pond Co. It is stated that 22 companies applied for specifications.

Heavy Equipment Builders Cannot Get Castings

BUILDERS of heavy machinery and equipment who supply the Pittsburgh market appear to be having considerable trouble in securing sufficient supplies of steel castings and consequently few of them are running or producing normally. The trouble is not a lack of sufficient foundry help, but entirely is due to a scarcity of cleaning room labor. Since this condition is fairly general, attempts to "farm" out casting work have not been overly successful.

Plenty of crane business is in sight, but actual orders are slow in coming out. Few builders are so well off in the matter of bookings as to be indifferent about new business and competition for business is so sharp that it is rather to the advantage of the buyers to wait until they have had all bids and revisions before closing. This, in the lack of a more plausible reason, must be given in explanation for the disproportion between inquiries and sales. The National Roll & Foundry Co., Avonmore, Pa., which is building the hot mill equipment for the Eastern Rolling Mill Co., Baltimore, has been awarded the mill equipment for the new plant at Toronto, O., of the Follansbee Bros. Co., Pittsburgh. Seven cranes and much other equipment are wanted for this plant, and the Carnegie Steel Co. has asked for approximate prices on a number of cranes. Some big machinery orders are likely at no distant date for the new plant of the National Tube Co., at Gary, Ind.

Tool Demand at High Point in Chicago

DEMAND for machine tool equipment is held at a high point in the Chicago district, with general buying in small lots the most important factor and a few large buyers taking a large aggregate in successive orders. The ordnance department has taken over the plant built by the Symington-Chicago Corp. and is using it as a center for disposing of tools brouht here from various outside points. The collection of equipment now on hand there represents millions of dollars and much of it is in demand. Governmental red tape is eminently successful in preventing much selling in spite of the needs of users. The aircraft production division has stopped selling and will not offer anything for a month, taking the time to make an inventory of material on hand.

The Nash Motors Corp. continues to place orders for production equipment for its new plant at Milwaukee, the aggregate running into a large sum. The Samson Tractor Co., at Janesville, Wis., is still in the market, as has been the case for the past few weeks. The Allis-Chalmers Mfg. Co., Milwaukee, is inquiring for equip-

September Machinery Exports Gain Slightly Over August

WHILE exports of machinery showed a slight improvement in September over the preceding month, it is apparent that conditions relating to exchange still are curtailing efforts of exporters. The gain over August, according to figures just issued by the department of commerce, is only $22,359. The total for September, $3,871,502, still is $4,735,063 below the high level for 1919, reached in June, at $8,606,565. France regains the leading position, having taken $1,095,418 worth of American machinery in September. England, which has been first for July and August falls back to second place in September, with $771,538. Japan, Canada and Belgium rank third, fourth and fifth, the same positions occupied by them in August. September imports of American machinery by those countries are $381,038, $375,740 and $358,256, respectively. European Russia which took $57,000 worth in August took none in September; British India also shows a reduction from $160,437 to $59,696. China increases her imports of machinery from $18,469 to $73,678. Detailed figures follow:

	Lathes		Other Machine Tools		Sharpening and Grinding Machinery		All other Metalworking Machinery		Total	
	September	August	September	August	September	August	September	August	September	August
France	$167,401	$118,536	$222,282	$207,829	$ 83,405	$ 65,985	$ 622,330	$ 383,208	$1,095,418	$ 785,558
England	171,465	327,518	252,889	244,835	80,003	58,252	267,181	341,238	771,538	971,844
Italy	155	264	1,474	40,562	793	....	44,886	17,405	47,308	58,231
Belgium	107,089	45,213	24,690	3,726	31,243	60,802	195,234	132,960	358,256	242,701
Japan	37,155	69,952	41,459	40,594	31,297	19,832	271,127	302,009	381,038	432,387
South America	41,124	26,136	14,406	18,302	3,808	6,250	74,681	33,566	134,019	84,254
Canada	50,510	27,652	86,493	69,867	31,312	18,282	207,425	271,521	375,740	387,322
China	32,272	10,075	10,390	895	5,800	481	25,216	7,018	73,678	18,469
Netherlands	12,197	27,148	6,129	12,820	731	1,998	43,170	5,409	62,227	47,375
Norway	833	2,288	7,644	8,587	64	1,490	2,444	12,228	10,985	24,593
Sweden	15,119	13,625	2,346	2,442	21,646	6,867	30,617	22,238	69,728	45,172
Denmark	7,355	468	3,573	26,381	2,124	10,149	20,564	12,754	33,616	49,752
Russia in Europe	....	....	....	57,000	....	....	.....	.....	.....	57,000
Spain	18,751	19,550	20,342	19,425	4,579	6,107	44,969	56,894	88,641	101,976
Cuba	19,518	31,845	41,817	34,815	1,810	6,309	13,558	16,225	76,703	89,194
British India	3,576	5,980	1,462	13,252	3,171	3,617	11,487	137,588	19,696	160,437
Total	$684,520	$726,251	$737,396	$801,332	$301,786	$314,987	$1,874,889	$1,843,253	$3,598,591	$3,849,143
All other countries	40,440	49,183	104,560	114,137	11,795	48,566	116,116	80,992	272,911	292,878
Grand total	$724,960	$775,434	$841,956	$915,469	$313,581	$314,987	$1,991,005	$1,843,253	$3,871,502	$3,849,143

Rolling Mill Jim Offers Thanks



Say fellas—

There's lots to be thankful fir—look at the abundance of good things all around us, and then if you hurry in your orders you can get Hubbard Rolls, and if you know about 'em as I do, they're a lot to be thankful fir.

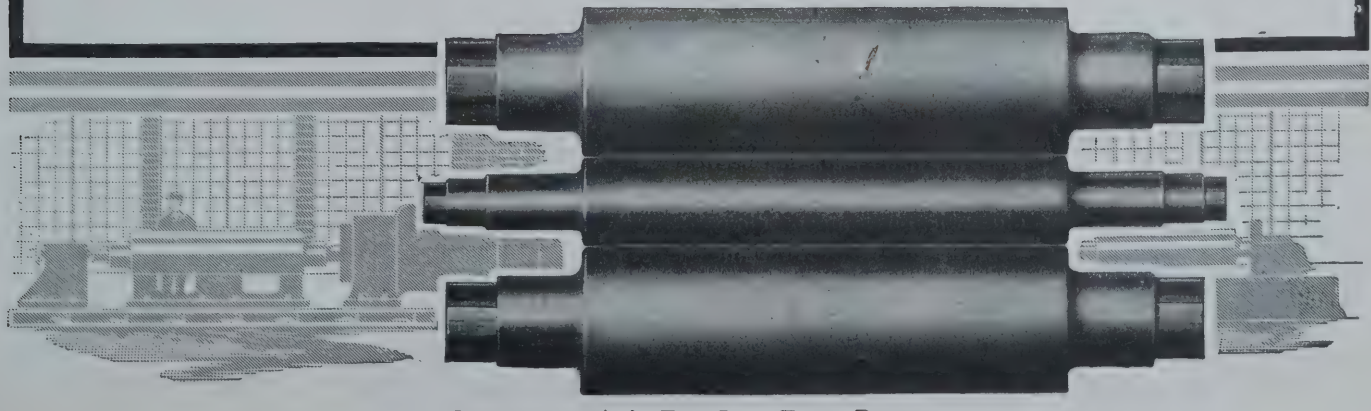
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings



Say you saw it in THE IRON TRADE REVIEW

ment for a tractor plant and for general purposes. The Chalmers & Williams Co., Chicago Heights, is seeking some unusually heavy equipment, including 72-inch lathes. The inquiry revived recently by the Burlington railroad is still pending but has not resulted in any orders. The Charles Stecher Co., Chicago, manufacturer of automatic machinery, will add to its factory and equipment.

Deferred Deliveries Curtail Machinery Sales

WITH much deferred deliveries only being offered by machinery manufacturers, Cleveland dealers are somewhat handicapped in their sales efforts. Inquiries continue to be received in large numbers and while some quotations are followed by the placing of orders, action on others is being deferred until after the first of the year. The Firestone Tire & Rubber Co., Akron, O., has closed on some equipment but it is stated that the Firestone Steel Products Co., that city, will not place orders on its sizable list until early in 1920. The White Motor Co., Cleveland, which was a large purchaser several weeks ago, now is receiving daily shipments on orders placed at that time. So far as is known, its requirements have been met for the present; it is producing on an average of 50 trucks daily.

The majority of the inquiries now circulating in Cleveland are for one tool; several for two, three and four are claiming attention and a request for prices on a larger number is the exception. The Lewis Steel Products Co., Toledo, O., wants new or used equipment as follows: One each Stewart triple purpose furnace, No. 1 LeBlond tool room grinder; No. 1 B universal Milwaukee milling machine; 16-inch drill press; and 16-inch Gould & Eberhardt or Cincinnati shaper. The Raub Supply Co., successor to the Sheet Metal & Supply Co., Lancaster, Pa., wants a metal sawing machine suitable for sawing cold rolled rings up to 4¼-inch diameter and also angles. The Lakeside Forge Co., Erie, Pa., wants a Keller automatic profiling machine. The Chevrolet Motor Co., Flint, Mich., wants a large bulldozer. The Woodhill Stamping Co., 10585 Quincy avenue, Cleveland, wants a drawing press for medium work, with 4 to 6-inch stroke. The Superior Foundry Co., Cleveland, wants a 5-ton crane and the National Supply Co., Toledo, O., is in the market for a small wall-type jib traveling crane. The New York Central railroad, Cleveland, issues tentative inquiries for needed tools, but no real buying on the part of the railroads is anticipated until they are returned to private ownership. The Atlas Car & Mfg. Co., Cleveland, wants a combination punch and shear with 8-foot gap to punch to center of any length 48-inch plate, ⅝-inch thick.

Machinery dealers in Detroit report a fair amount of machinery moving from floors. The Four Drive Tractor Co., Big Rapids, Mich., is in the market for $10,000 worth of machinery. The Benton Harbor Malleable Foundry Co., Benton Harbor, Mich., wants one 2-stage air compressor with a capacity of 450 cubic feet or more.

Apparently users located at a distance from the immediate vicinity of Cleveland, are having difficulty meeting their requirements. Wm. Sears & Allen, Chicago, is in the market for National automatics. Willicott Machine Corp., Baltimore, wants one old style pit lathe or chucking lathe, head suitable to swing 12 or 15 feet in diameter; one old style boring mill or similar apparatus which would swing 10 or 15 feet in diameter; one second-hand planer 48 inches x 15 feet; one second-hand lathe to swing 36 or 48 inches. Williams & Wilson, Ltd., Montreal, Que., want one 72-inch x 20-foot planer for light work or one 72-inch x 20-foot planer, enlarged to 100-inch. This latter's customer will take a 96-inch x 96-inch x 20-foot planer or one widened to 120-inch. The J. B. Klein Iron & Foundry Co., Oklahoma City, Okla., wants two electric traveling cranes; one 5 to 7½-ton, 45 to 50-foot span, and one 3½ to 5-ton, 35 to 40-foot span. Both cranes to be 3-motor type, 220 volt, 3-phase, 60-cycle; floor operator preferred.

A few inquiries are being received and quoted upon by the Cleveland Duplex Machinery Co., Cleveland, on the equipment it is offering from the plant of the American Multigraph Co., that city. One of these comes from New York City. The Hendrickson Machine Co., 1310 East Fourteenth street, Cleveland, which is going out of business, is endeavoring to dispose of one 18, one 20 and one 22-inch engine lathes. The Guide Motor Lamp Co., 11500 Madison avenue, Cleveland, is disposing of some of its equipment and it is understood that after it is sold will place orders for its requirements. It has purchased land for a new factory, 120 x 500 feet, to cost $225,000.

Lists of equipment, varying in size according to the size of the project, are expected soon from the following: The Cole Motor Car Co., Indianapolis, which is to erect a new building; Mutual Truck Co., Sullivan, Ind., which is erecting an addition, 100 x 300 feet; the Federal Tool Co., 453 Michigan avenue, Detroit, which is to build a new plant on Apple street, that city, before the end of the year; the Reynolds Motor Truck Co., Mt. Clemens, Mich., which will build a plant; the National Automatic Tool Co., Richmond, Ind., which has placed contracts for a new plant; the Thomas J. Corcoran Lamp Co., Cincinnati, which is to spend $250,000 on a 4-story addition; and the International Boiler Works Co., Stroudsburgh, Pa., which is erecting a modern plant on a 40-acre site recently acquired.

Six machine shops will require considerable equipment, some of which will be bought in Cleveland. These are being erected for the following companies: The Towers-Sullivan Mfg. Co., Rome, Ga.; Wood Hydraulic Hoist & Body Co., Detroit; American Brake Co., 1900 North Broadway, St. Louis; W. H. Smith, care Ernest McGeorge. 1900 Euclid avenue, Cleveland; Charles A. Fair, 128 Sylvan Terrace, York, Pa., and the Danville Iron & Steel Co., Danville, Pa.

Another automobile company has been incorporated in Indiana. This is the H. C. S. Motor Car Co., Indianapolis, with a capital of $1,000,000. H. C. Stutz is interested.

Canadian Tool Users Demand Many Tools

CANADA'S machine tool and equipment market is very active. Demand for new equipment is brisk but in many cases dealers are unable to promise delivery for three or four months. Rebuilt tools and machinery also are in good demand, chiefly due to low prices and quick shipment. Shops are busy rebuilding war machinery which is taken up almost as rapidly as it leaves the shop.

The McKinnon Industries, Ltd., St. Catharines, Ont., is in the market for shears with a capacity for sheets 48 inches wide x ¼-inch thick. The Corbet Foundry & Machine Co., Owen Sound, Ont., is inquiring for a modern set of 5-ton chain blocks. The Dillon Crucible Alloys, Ltd., Welland, Ont., is in the market for alligator shears for cutting steel bars. The Ontario Furniture Co., 365 Bleury street, Montreal, Que., is in the market for air compressor with motor or gas engine. A. S. Forman, 24 Chesterfield avenue, Montreal, Que., has asked for a steam engine and generator, 15 kilowatt; also stationary gas engine about 4 horsepower. The Thomas Organ & Piano

Co., Woodstock, Ont., wants a 24 or 30-inch cabinet planer. The Colonial Wire Mfg. Co., Hamilton street, Montreal, Que., will purchase machinery for a new factory. The Dominion Rubber System Co., 201 Inspector street, St. Gerome, Que., is asking for prices on machinery and equipment for a new plant. The city of Edmonton, Alta., Mr. Clark, mayor, is receiving prices on power plant machinery and equipment.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

BOSTON.—Plans are being drawn for a 1-story, 150 x 110-foot factory for the Eco Mfg. Co., maker of piston rings.

BOSTON.—The National Wrapping Machine Corp. has been incorporated with $325,000 capital, by Kendall A. Sanderson, Frank C. Williams and Walter A. Dane.

BOSTON.—The Conway-Cannon Co. has been incorporated to make iron, steel, brass and other metals with $5000 capital, by C. W. Conway, H. F. Cannon and Thomas Kelly.

BOSTON.—The Boston Merchant Marine Sealing Co., vessel repairing, has been incorporated with $25,000 capital, by John J. Collins, William F. Collins, Thomas H. Ryan, Russell V. McIntosh, Winfield, Me., and others.

CAMBRIDGE, MASS.—The Palmer Electric Mfg. Co. has started work on a plant, 50 x 200 feet.

CAMBRIDGE, MASS.—The Middlesex Mfg. Co., factory equipment, recently was incorporated with $25,000 capital by Edward F. O'Brien, Harry L Michaels and Walter Hartstone.

CHELSEA, MASS.—The Smith Steel Products Co. has been incorporated with $25,000 capital, by Arthur L. Smith, Hiram A. Lerner and Moses Rosenthal.

DORCHESTER, MASS.—The Harrison Square Foundry Co. is erecting an addition to its foundry, 2-stories, 50 x 100 feet.

EAST CAMBRIDGE, MASS.—The contract has been awarded for a 1-story, 50 x 200-foot plant for the Palmer Electric Mfg. Co., South Boston, Mass.

HARTFORD, CONN.—The Hanson-Whitney Machine Co. has started on a new plant, to be 4-stories, 60 x 120 feet.

LYNN, MASS.—The Lynn Machine & Screw Co. has been organized to manufacture screw machine products. New equipment and machinery has been ordered.

LYNN, MASS.—The Rex Engineering Co. has been incorporated with $50,000 capital, by Arthur L. Cash, H. Ashley Bowen, Swampscott, Mass., and Sven R. Bergman.

MALDEN, MASS.—The Malden & Melrose Gas Light Co. will build a storage building, 36 x 52 feet.

MERIDEN, CONN.—The Wolf Emery Wheel Co. has changed its name to the Wolf New Process Emery Wheel Co. and has increased its capital stock. The company will erect a new plant, 1-story, 47 x 52 feet.

SPRINGFIELD, MASS.—The Stevens-Duryea Co. has started work on a plant addition.

TAUNTON, MASS.—The General Electric Co. contemplates the erection of a small addition.

WEST SPRINGFIELD, MASS.—The Smith Body Co. has let the contract for a factory, steam plant and dry kiln to cost $42,000.

WORCESTER, MASS.—The American Steel & Wire Co. will erect a 1-story, 20 x 100-foot machine shop at its South Works.

WORCESTER, MASS.—The Olson Mfg. Co., screw machine products, has purchased a site on which it is reported planning to erect a plant.

WORCESTER, MASS.—Plans are being made for a 1-story, 90 x 113-foot factory for the Park Mfg. Co., maker of screw machine products.

WORCESTER, MASS.—The Clarke-Emerson Mfg. Co. recently was incorporated with $50,000 capital to manufacture shoe last measuring machines.

WORCESTER, MASS.—The Hobbs Lock Washer Co., which is being organized by Samuel T. Hobbs, 216 Park avenue, and others, is reported ordering equipment.

PAWTUCKET, R. I.—The William H. Haskell Mfg. Co. will build a 2-story, 85 x 150-foot machine shop addition to cost $75,000.

PROVIDENCE, R. I.—The Spartan Needle Co. recently was incorporated with $200,000 capital to manufacture steel needles.

PROVIDENCE, R. I.—The Texas Co. contemplates a machine shop addition, 40 x 160 feet.

ALLINGTON, CONN.—The New Haven Machine Co. contemplates a manufacturing building to be 60 x 200 feet.

BRIDGEPORT, CONN.—The Coulter & McKenzie Machine Co. will build a factory addition.

BRIDGEPORT, CONN.—The Bridgeport Hardware Co. has let the contract for a 2-story, 40 x 125-foot plant to cost $35,000.

BRIDGEPORT, CONN.—The United Illuminating Co. will erect a power house of 75,000 horsepower capacity, generator house, boiler house, switchboard and screen house. The plant will be equipped with automatic stokers and ash removers.

BRISTOL, CONN.—Work will be started on additions to the plants of the New Departure Mfg. Co. at Bristol, Meriden, and Elmwood. In Bristol, three large buildings will be erected, one a forge shop, 126 x 405 feet, 1-story, another a die, machine and tool building, 70 x 270 feet, and the third a storage building, 75 x 240 feet. A new ball plant will be erected. An annealing plant, 110 x 200 feet, also is being planned. At the Elmwood plant, there will be a three and 4-story building, 60 x 220 feet. At Meriden, two new buildings will be erected.

HARTFORD, CONN.—The Hartford Electric Light Co. will erect a $38,000 warehouse.

HARTFORD, CONN.—The Royal Typewriter Co. will start work in the spring on a 5-story, 50 x 310-foot plant addition.

HARTFORD, CONN.—The Southern New England Telephone Co. has let the contract for a 6-story, 33 x 90-foot building addition.

HARTFORD, CONN.—Bids closed Nov. 19 for a 1-story, 60 x 200-foot factory to cost $30,000 for the Hartford Special Machinery Co.

HARTFORD, CONN.—The Auto Supply Mfg. Co. has been incorporated with $100,000 capital, by E. E. Tryon, M. Rudick, H. G. Bowman Jr. and John Weber.

HARTFORD, CONN.—The Claflin Oil Derrick Supply Co. has been incorporated to make derricks with $200,000 capital, by Daniel M. Wright, Charles R. B. Claflin and Horace W. Griffith, Buffalo. An assembling plant will be located in Buffalo.

MERIDEN, CONN.—The Wolf New Process Emery Wheel Co. has been incorporated with $500,000 capital and will erect a 1-story, 47 x 52-foot plant.

NEW HAVEN, CONN.—The Acme Wire Co. has let a contract for a storage building, 35 x 50 feet.

NEW HAVEN, CONN.—The Oven Equipment & Mfg. Co. will build a 1-story, 90 x 280-foot plant.

NEW HAVEN, CONN.—The William Schollhorn Co., pliers and tools, will build a 4-story, 40 x 140-foot plant.

Touring Trade Centers

AFTER eight months spent in studying the industrial machinery situation in France and Belgium, Trade Commissioner Charles P. Wood, of the bureau of foreign and domestic commerce, has returned to this country and is visiting the various manufacturing and exporting centers to discuss with business men the facts his investigation has brought to light.

Major Wood is an experienced engineer, and saw service in the British, French, and American armies during the war, receiving the croix de guerre from the French for conducting successful gas attacks against the enemy. His itinerary for the tour which he now is taking, is as follows:

Baltimore, Nov. 12-13; Philadelphia, Nov. 14-15; New York, Nov. 17-22; Boston, Nov. 24-26; Pittsburgh, Nov. 28-29; Cincinnati, Dec. 1-2; Cleveland, Dec. 4; Detroit, Dec. 6; Chicago, Dec. 8-11; St. Louis, Dec. 12-13; Chattanooga, Tenn., Dec. 15; Birmingham, Ala., Dec. 16; Atlanta, Ga., Dec. 17.

NEW HAVEN, CONN.—The O. B. North Co., maker of hardware, has let the contract for a 25 x 56-foot factory addition to be used for annealing purposes.

NEW HAVEN, CONN.—The Seamless Rubber Co. has let the contract for a 2-story, 113 x 42-foot power house to include a 180-foot stack and a 60-foot water tank, to cost $100,000.

PLAINVILLE, CONN.—The Standard Steel Bearings, Inc., is building a large plant here.

STRATFORD, CONN.—The Albert Peck Co., manufacturer of silverware, has had plans prepared for a 2-story, 67 x 180-foot plant.

TORRINGTON, CONN.—Contracts for a $80,000 addition, 2-stories, 50 x 340 feet, to the Standard plant of the Torrington Co. has been awarded to the Torrington Building Co.

WATERBURY, CONN.—The Waterbury Jewell Co. plans a plant for the manufacture of metal novelties.

North Atlantic States

BUFFALO.—The A. F. Oliver Gear & Machine Co., 60 Cherry street, has let a contract for a 3-story addition.

BUFFALO.—The Huron Electric Co. recently was incorporated with $10,000 capital, by S. Eckert, E. A. Heller and E. J. Hanks.

BUFFALO.—The Bagg Steel Wheel Corp. has been incorporated with $200,000 capital, by C. M. Bagg, F. C. Schoenthal and T. F. Hogan.

BUFFALO.—The Arrow Tool Co. has been incorporated with $100,000 capital, by R. J. Mackenzie, K. B. Macdonald and J. E. McArthur.

BUFFALO.—The Automatic Tire Machine Corp. has been incorporated with $1,500,000 capital, by S. H. Millener, W. A. Schaffer and H. G. E. Smith.

GLOVERSVILLE, N. Y.—The Fulton County Machine & Supply Co. recently was incorporated with $150,000 capital, by E. H. Van Valkenburgh, W. S. Decker and H. A. Steele.

LONG ISLAND CITY, N. Y.—The Houpert Machine Co. has had plans prepared for plant extensions, to cost $25,000.

NEW YORK.—The Albin Tool Corp. recently was incorporated with $150,000 capital, by J. W. Albin, F. R. Walker and C. D. Rose, 336 Sixth avenue.

NEW YORK.—The Triangle Iron Works, Inc., recently was incorporated with $10,000 capital, by A. and G. Lechtman and G. Lippert, 4525 Park avenue.

NEW YORK.—The Paragon Bale-Tie Machine Corp. has been incorporated with $200,000 capital, by E. J. E. Vollber, O. C. W. Brede, 111 West Forty-second street, and others.

NEW YORK.—The Wilsch Machine Specialty Co. recently was incorporated with $50,000 capital to make machinery and dies, by M. Stone, N. Nyer and W. Schenker, Broadway Central hotel.

NEW YORK.—The Vitreous Enameling & Stamping Co., 11 East 147th street, which was recently organized with $300,000 capital, is having plans prepared for a plant, 1-story, 95 x 172 feet.

RICHMOND, N. Y.—The West Brighton Brass Foundry, Inc., has been incorporated with $10,000 capital, by P. J. Knobloch, M. H. and M. Epstein, 721 Fulton street, Brooklyn, N. Y.

ROCHESTER, N. Y.—The Yawman & Erbe Mfg. Co., 424 St. Paul street, is having plans prepared for an addition.

SYRACUSE, N. Y.—Plans are being prepared by the H. H. Franklin Mfg. Co. for a plant here for the manufacture of motor trucks.

SYRACUSE, N. Y.—The Syracuse Alloy Steel Co. recently was incorporated with $190,000 capital, by F. W. Hertrick, C. A. Lawton and M. O. Warwick.

DANVILLE, PA.—The Danville Iron & Steel Co. has been purchased by George E. Clarke and others of New York, and improvements will be made to the plant by the new owners. A new machine shop, 100 x 220 feet, will be among the improvements.

ERIE, PA.—The Erie Tool Works, 640 West Twelfth street, has purchased the plant of the Brown Folding Machine Co., and will move into it shortly. In addition to the plant, the company has purchased a site, 30 x 135 feet, adjoining, which will probably be used for extensions.

GREENVILLE, PA.—The Greenville Steel Car Co. has arranged to spend $100,000 for a machine and pattern shop addition to the plan shop, an extension to the car shop and an office building.

MACUNGIE, PA.—The East Penn Foundry Co. is contemplating a plant addition.

MARCUS HOOK, PA.—The Marcus Hook Foundry Co. recently was incorporated with $50,000 capital by M. W. Lefever and others.

PHILADELPHIA.—Ballinger & Perrot are receiving bids on an addition to the Esterbrook Steel Pen Co., Camden, N. J.

PHILADELPHIA.—William Steele & Sons are taking bids on the construction of a 3-story warehouse, 60 x 90 feet, for the American Insulation Co.

PHILADELPHIA.—A general contract for a warehouse and power plant for H. O. Wilbur & Sons, Inc., has been awarded to the Turner Construction Co.

PHILADELPHIA.—The plant of the Tabor Mfg. Co., Eighteenth and Hamilton streets, manufacturer of molding machines, etc., recently was damaged by fire.

PHILADELPHIA.—Contracts for the erection of a $30,000 rolling mill for the Pennsylvania Forge Co. have been awarded to the William G. Donley Co. The building will be 1-story, 102 x 200 feet.

PITTSBURGH.—The Federal Spring Co. has been incorporated with $5000 capital, by R. T. Rossell, E. C. McHugh, L. R. Martin, C. J. Nicklas and F. J. Young.

PITTSBURGH.—The Armstrong-Williams Co., recently organized to manufacture machine parts, has acquired a 4-story building which it will equip for machine and auto repair operations.

SCRANTON, PA.—Excavation work for the foundation of a 3-story addition to the plant of the Victor Typewriter Co. has been started.

STROUDSBURG, PA.—The International Boiler Works Co. has acquired 40 acres on which it is reported planning a modern plant.

STROUDSBURG, PA.—Work will be started shortly by the International Boiler Works Co. on a large plant. Equipment is being purchased.

YORK, PA.—The Brooks Machine Co. recently purchased the York Steam Boiler Works.

CAMDEN, N. J.—The Esterbrook Steel Pen Co. has had plans drawn for additions and alterations to its plant.

HOBOKEN, N. J.—The Wedlake-Lamson Co., Inc., 1616 Willow avenue, recently was incorporated with $75,000 capital, to manufacture iron, steel, etc.

JERSEY CITY, N. J.—The New Jersey Bolt & Forging Co., 241 Seventeenth street, has been incorporated with $25,000 capital.

NEWARK, N. J.—The Newark Leather Machinery Co. will erect a 1-story plant, 50 x 112 feet.

NEWARK, N. J.—The Duratex Co. has awarded contracts for three factory buildings, 102 x 561 feet, 48 x 50 feet and 60 x 80 feet.

NEWARK, N. J.—The Essex Metal Co., Inc., 22 Orange street, has been incorporated with $100,000 capital to manufacture iron, steel, etc.

SPRINGFIELD, N. J.—The Springfield Reamer & Tool Co. recently was incorporated with $25,000 capi-

Business Changes Recently Announced

ADMINISTRATIVE offices of the J. T. Tractor Co., Cleveland, have been removed to the company's new plant at 1516 Fairfield road, just off West Fourteenth street. The new plant is the first unit of several which are to be erected on the 6-acre site on which the company holds a 25-year lease.

* * *

The New England district office of Lockwood, Greene & Co., engineers, has been moved to the Brewer building, 245 State street, Boston. The executive offices have been retained in the First National Bank building, 60 Federal street, Boston.

* * *

The Republic Tool & Mfg. Co. is the corporate style for four companies which have merged, namely, the Cleveland Power Transmission Co., Diamond Stamping Works and the Clyde E. Lowe Co., Cleveland, and the Detroit Reamer & Tool Co., Detroit.

* * *

The Coe-Stapley Mfg. Co., Bridgeport, Conn., maker of sheet metal goods, is to remove to West Haven, Conn., Feb. 1, 1920, owing to inadequate housing conditions.

* * *

The A. Burlingame Co., manufacturers of steam engines, etc., now is located in its new building, 149 Commercial street, Worcester, Mass.

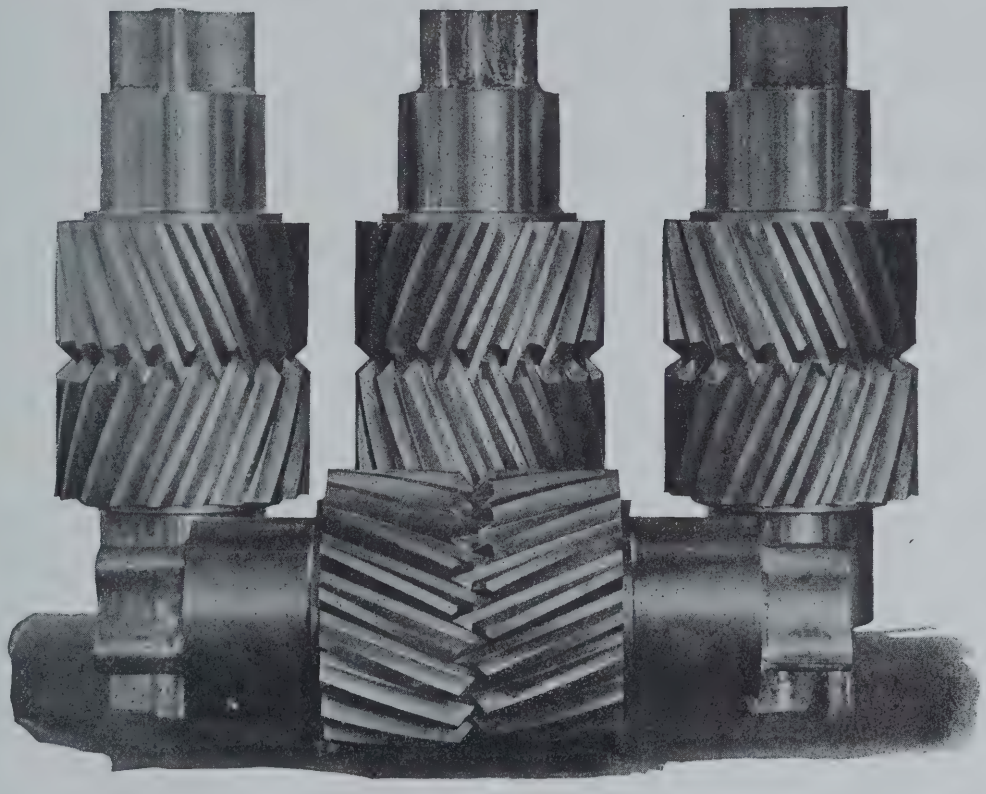
* * *

The E. R. Little Co., Inc., 2033 Dime Bank building, Detroit, mechanical engineers, has been incorporated to succeed Little & Shepard. E. R. Little is president of the new company which will specialize in power and heating plant design and operation.

* * *

The Syracuse Alloy Steel Co., Syracuse, N. Y., has changed its name to the Syracuse Alloy Steel Co., Inc.

Gears for All Types of Rolling Mill Service



Open Hearth Steel Castings
FALK HERRINGBONE GEARS

Combine high efficiency, great reliability and long wearing quality with low upkeep.

These advantages, and many others can be derived from an installation of Falk Herringbone Gears.

Steel Castings from 1 to 100,000 lbs.

Write for Particulars

The Falk Company Milwaukee, Wis.

REPRESENTATIVES:

PITTSBURGH, W. O. Beyer, 1007 Park Building
SAN FRANCISCO, F. W. Grimwood, Rialto Bldg.
NEW YORK, M. P. Fillingham, 50 Church Street
DENVER, COLO., Denver Engineering Works
WILKES-BARRE, PENNA., Vulcan Iron Works

tal to manufacture tools, by C. E. Peer, Charles Brown and H. H. Muhsgnug.

BALTIMORE.—The Columbia Graphaphone Mfg. Co. will build a plant.

BALTIMORE.—The Crown Cork & Seal Co. will build eight additional warehouses.

BALTIMORE.—The terminal coal pier, badly damaged by fire last August, at Port Covington, will be rebuilt by the Western Maryland railroad, at a cost of approximately $750,000.

CARDIFF, MD.—Part of the plant of the Richard Roberts & Son Foundry recently was damaged by fire.

CUMBERLAND, MD.—The Kelly-Springfield Tire Co. has had plans prepared for a large laboratory, a power house to cost $400,000, an intake house to cost $40,000, a pump house to cost $150,000 and a machine shop to cost $250,000, as well as a garage and 20 dwellings.

ALEXANDRIA, VA.—The Cathcart Machinery Co. recently was incorporated with $100,000 capital, by S. M. Newton, president, A. L. Hawse, secretary, and others.

NORFOLK, VA.—The National Concrete Boat Co. is planning to expend about $500,000 on a new yard for the erection of concrete ships. Arthur W. Duehl is the company's chief engineer.

Central States Activity

BELOIT, WIS.—Fairbanks, Morse & Co. is reported planning a foundry here at an estimated cost of $1,500,000. It is said construction will be started in the spring, and the plant will provide 495,000 square feet of floor space.

DE PERE, WIS.—E. T. McGeehan will build a 1-story addition, 72 x 120 feet, to be used for machine and repair work.

DULUTH.—The Clyde Iron Works has awarded a contract for a 1-story addition, 30 x 150 feet, to cost $30,000.

FT. ATKINSON, WIS.—The Koshkonong Light & Power Co. has been incorporated with $15,000 capital, by A. R. Hoard, Oval Swart and John Hetts.

KENOSHA, WIS.—The Tri-Clover Machinery Co. has been organized by L. C. Thomas, Thorwald Jensen and Ole Rasmussen and is erecting a foundry and shop for the manufacture of brass specialties. The company is capitalized at $20,000.

MENASHA, WIS.—The Menasha Machinery Co. recently was incorporated with $50,000 capital, by L. W. Claybourn, G. S. Gaylord and S. H. Clinedinst.

MILWAUKEE.—The Perfection Engine Co. has filed articles of incorporation. Incorporators are William P. and John H. Bower and Arthur D. Paul.

MILWAUKEE.—The Briggs & Stratton Co., 1047 Louis avenue, has increased its capital from $250,000 to $1,750,000, and is erecting additions.

MILWAUKEE.—The Standard Sheet Metal Works has been incorporated with $10,000 capital, by John G. Mattes, Jacob Schahner and Henry Bloodow.

MILWAUKEE.—It is reported that the Cutler-Hammer Mfg. Co. is negotiating for the purchase of the plant and equipment of the Wisconsin Gun Co.

MILWAUKEE.—The Res Mfg. Co., 2907 Meinecke avenue, hardware specialties, has a permit to erect a 2-story shop addition, 31 x 50 feet, to cost $15,000.

MILWAUKEE.—Articles of incorporation have been filed by the Daniels Washing Machine Co. The capital stock is $25,000. H. D. Townley is among the incorporators.

MILWAUKEE.—The Milwaukee Auto Engine & Supply Co., 841 Twenty-ninth street, has broken ground for a 1-story machine shop addition, 120 x 120 feet, estimated to cost $100,000 with complete equipment.

MILWAUKEE.—A machine shop is being equipped at 339 Thirty-first street by the Wisconsin Machine Products Co., organized recently by Robert A. Chadwick, Jay J. Van Vechten and Oliver W. Bow, with a capital stock of $10,000.

MILWAUKEE.—A charter has been granted to the National Auto Top Co., incorporated with a capital stock of $10,000, to manufacture automobile tops, cabs, etc. The organizers are Mrs. Rose Eder, Mrs. H. Goldmann and Mrs. Harry Eder.

OSHKOSH, WIS.—The Doman Mfg. Co., which recently acquired the plant and equipment of the Oshkosh Washing Machine Co., will build a 1-story addition, 25 x 200 feet.

OSHKOSH, WIS.—The Molle Typewriter Co. plans the construction of a 3-story addition, 40 x 75 feet, and will soon be in the market for new tool equipment, including automatic machines. R. D. Wynn is president.

PORT WASHINGTON, WIS.—The Gilson Mfg. Co., gas engines, is making plant improvements.

RICE LAKE, WIS.—The Consumers Co. is about to start on a 2-story building, 50 x 120 feet. A complete machine shop will be installed.

SCHLEISINGERVILLE, WIS.—The Vim Tractor Co. has let the general contract to Walter Tickwell, 86 Michigan street, Milwaukee, for a $90,000 factory addition to be equipped for machine work, assembling, testing, etc.

SOUTH MILWAUKEE, WIS.—The Adjax Pattern Co., 1016 Madison avenue, has broken ground for a new shop and storage vault.

SPOONER, WIS.—The board of education has commissioned Architect W. S. Alban, St. Paul, Minn., to prepare plans for a high school and vocational training institute, two stories, 60 x 130 feet, costing $80,000.

WAUSAU, WIS.—William F. Beilke is erecting a 1-story machine shop, 59 x 120 feet, and is purchasing some shop equipment and one elevator.

WHITEHALL, WIS.—Architects Oppenhainer & Speer, Wausau, Wis., will soon be ready for bids for a 2-story high school, 73 x 124 feet, with a separate heating plant, manual training shop and gymnasium, 50 x 83 feet.

BATTLE CREEK, MICH.—The A-B Stove Co. has increased its capital to $350,000 and will double its foundry capacity.

BATTLE CREEK, MICH.—Nichols & Shepard Co., manufacturers of threshing machinery, has a $600,000 expansion program, half of which has been completed.

BAY CITY, MICH.—The Wilson Body Co. has let a contract for a $500,000 plant addition.

BENTON HARBOR, MICH.—The Superior Steel Castings Co. plans an addition to be used as a malleable iron unit. The building will be 130 x 440 feet with wings, 60 x 80 and 60 x 100 feet. Construction will be started immediately. W. R. Gilmore, vice president and general manager, in charge of construction, states the company is in the market for equipment.

CADILLAC, MICH.—Erection of a new plant for the Kol-Ben Wheel Co., to be 46 x 156 feet, is being directed by Guy Corwin.

DETROIT.—The Detroit Steel Products Co. is letting contracts for plant additions.

DETROIT.—The Fisher Body Corp. is letting contracts for a 2-story die shop.

DETROIT.—The Sewell Cushion Wheel Co. has purchased a site for a plant.

DETROIT.—The Commerce Motor Car Co. has issued additional stock to provide plant extensions.

DETROIT.—The Auto Necessities Co. has been chartered with $10,000 capital to manufacture motor trucks and accessories by Fred A. Carroll, 95 West Fort street, and others.

DETROIT.—Roy Fisher of this city is president of the Fisher-Wilkie Foundry Co., which plans a plant at an estimated cost of $200,000.

DETROIT.—Andrew A. Lehr, 1333 West Grand Boulevard, and others have incorporated the Reynolds Motor Truck Co., of Mt. Clemens, with an authorized capital of $200,000.

DETROIT.—The Markey & Belprez Mfg. Co. has been chartered with $10,000 capital to manufacture brass, bronze, bearings and bushings by Frank Bachrach of Adrian, Mich., and others.

DETROIT.—The Koss Bros. Mfg. Co. has been incorporated with $10,000 capital to manufacture machinery, motor valves, auto parts, etc., by Anton Koss, 997 Kirby avenue, and others.

DETROIT.—The Burns Pattern & Machine Co. has been chartered to do a general machine shop business with $10,000 capital. Herbert Hughes, Grosse Point Park, Mich., is among the incorporators.

DETROIT.—John A. Reynolds Co., Inc., has been chartered with $1,000,000 capital to manufacture machinery used in the coffee business. Incorporators include John A. Reynolds, 463 Greenwood avenue, and Fred J. Pound.

GRAND RAPIDS, MICH.—Plans of the Hackett Motor Car Co. call for a 1-story plant, 70 x 500 feet

KALAMAZOO, MICH.—The Herrbold-Keelan Co. has been incorporated with $200,000 capital by William A. Herrbold and others, to manufacture a machine for use in the paper making industry.

KALAMAZOO, MICH.—Kalamazoo Railway Supply Co. has increased capital from $150,000 to $300,000 and plans a plant addition 100 x 310 feet, for manufacture of railroad gasoline motor cars.

LANSING, MICH.—The Lansing Forge Co. has started on a building, 50 x 100 feet.

MARSHALL, MICH.—The foundry at the plant of the Simons Leedle Furnace Co., leased by the Marshall Castings Co. for five years, is to be reopened and operated at capacity.

PORT AUSTIN, MICH.—The Hayes Bros. Tool Mfg. Co. has been chartered with $25,000 capital by George S. Farrar and others.

ROCHESTER, MICH.—The Rochester Machinery & Foundry Co. has been incorporated with $30,000 capital to manufacture nonferrous castings by H. A. Chase and others.

SAGINAW, MICH.—Andre G. Lockwood and others have purchased the plant of the Brooks Boat Co., for $100,000 and will remodel it for the manufacture of truck bodies.

SAGINAW, MICH.—The Saginaw Malleable Iron Co. is building two plant additions at an estimated cost of $250,000.

YPSILANTI, MICH.—The Apex Motor Co. is reported in the market for machinery for its motor truck plant which is nearing completion.

CHESTERFIELD, ILL.—The Chesterfield Electric Co. has been incorporated with $15,000 capital, by W. J. Finch, L. Ambler and others.

CHICAGO.—John R. Bowers, 39 South La Salle street, will build a 3-story plant, 100 x 125 feet, costing $100,000.

CHICAGO.—The Plamondon Mfg. Co., manufacturer of transmission machinery, has started work on a building, 200 x 500 feet, to cost $250,000.

CHICAGO.—The Charles Stecher Co., Inc., 1580 Crossing street, manufacturer of auotmatic machinery, will build a 1-story factory, 100 x 140 feet, costing $35,000.

CHICAGO.—The Superior Oven Co., Sixty-sixth street and Fifty-seventh avenue, capitalized at $100,000, has been chartered by A. W. Fosdyke, W. J. McBeth and J. O. Conway.

FT. WAYNE, IND.—The Dudlo Mfg. Co. will build a 1-story warehouse, 70 x 125 feet. The company recently completed a 2-story building in which

machinery has been installed for the handling of copper from the mines.

GREENFIELD, IND.—The Taylor Mfg. Co., capitalized at $150,000, has been chartered to manufacture automobile accessories by Joseph C. Snell, Bert C. Lichty and H. R. Taylor Jr.

INDIANAPOLIS.—The Adams-Coulter Mfg. Co. recently was incorporated with $35,000 capital to manufacture machinery, by L. P. Adams, A. L. Coulter and Walter G. Holt.

KOKOMO, IND.—The Howard Wire Products Co. has been incorporated with $25,000 capital, to manufacture metal wire, by M. A. Brown, Henry F. Quigley, James F. Milner and R. Porter Jay.

MUNCIE, IND.—The Star Storage Battery Co. recently was incorporated with $25,000 capital to manufacture storage batteries. W. O. Haymond is one of the incorporators.

SOUTH BEND, IND.—The Lock Joint Tube Co. has been incorporated with a capital of $100,000 to engage in the manufacture of metal tubing.

BRYAN, O.—Plans have been completed for a plant for the Bryan Pattern & Machine Co. to replace the plant recently damaged by fire. The building will be 50 x 250 feet. A new furnace building and administration building will also be built. Total expenditure will be about $150,000.

CANTON, O.—Ground has been broken for a plant for the Superior Sheet Steel Co., which was recently organized.

CANTON, O.—The Weber Dental Mfg. Co. is erecting two brick buildings, each 33 x 80 feet. One will be used as an addition to the company's present brass and aluminum foundry and the other as an addition to the polishing and plating department. The buildings and equipment will cost about $50,000.

CINCINNATI.—The plant of the Queen City Forging Co. recently was damaged by fire.

CINCINNATI.—The O. P. Schriever Co. will add a plant addition to be equipped for the manufacture of lift-jacks.

CINCINNATI.—The Peerless Foundry Co. plans to increase its warehouse facilities. It has awarded a contract for a building, one story, 40 x 50 feet.

CINCINNATI.—The Thomas J. Corcoran Lamp Co. has let contracts for the construction of a $250,000 4-story addition to its plant. The Austin Co., Cleveland, has the contract.

CLEVELAND.—The Universal Time Switch & Mfg. Co. has been incorporated with $175,000 capital, by E. E. McCloud, John A. Nash and others.

CLEVELAND.—The Apex Brass Mfg. Co. recently was incorporated with $50,000 capital, by A. F. Counts, 911 American Trust building, J. H. Mellen and others.

CLEVELAND.—The Great Lakes Copper Co. has a permit to erect a building, one story, 40 x 73 feet, at 4217 Trumbull avenue. Ernest McGeorge, 1900 Euclid aevnue, is in charge.

CUYAHOGA FALLS, O.—The Auto Alarm & Mfg. Co. has been incorporated by G. D. Porter, William H. Taylor and others. The company is capitalized at $10,000.

ELYRIA, O.—The City Metal Casting Co. recently was incorporated with $4000 capital, by G. A. Dossin, James Melet and others.

MIDDLETOWN, O.—The Mid-West Castings Co. will start soon on a new plant.

MT. VERNON, O.—Plans have been completed for a foundry for the Mt. Vernon Foundry & Engineering Co. The building will be 100 x 180 feet. It will be equipped with a large cupola. In addition to the main building a warehouse, 82 x 160 feet, for use as a pattern storage building, will be erected.

NEWTON FALLS, O.—The Owen Bearing Co., Pittsburgh, is reported contemplating locating its plant here.

SANDUSKY, O.—The Gartland-Carroll Foundry Co. is reported planning to double the capacity of its plant. According to the report, construction of an addition will be started in the spring.

SPRINGFIELD, ILL.—The Racine-Sattley Co., agricultural implements, has a permit to erect a plant at an estimated cost of $850,000.

TOLEDO, O.—The Toledo Smelting & Refining Co. recently was incorporated with $100,000 capital, by Sam Kasle, Joe Kasle, Albert Cousins and others.

YOUNGSTOWN, O.—The Lumen Bearing Co. has a permit to erect a foundry building, 105 x 142 feet, to cost $25,000.

BOWLING GREEN, KY.—The Wright Tool Co. has been incorporated with $60,000 capital, by John Wright, S. Peterson and C. E. Wood.

COVINGTON, KY.—The R. A. Jones & Co., soap forming machines, is reported contemplating a 1-story addition, 60 x 60 feet.

CHARLESTON, W. VA.—The newly organized Charleston Steam Tractor & Truck Mfg. Co. will start work shortly on a 75 x 660-foot factory building.

NEW CUMBERLAND, W. VA.—L. A. Frazer, Columbus, O., has the plans for additions and equipment for the Atlas Jack Mfg. Co. which lately took over the plant of the Hancock Foundry & Machine Co.

Throughout the West

BELMOND, IOWA.—The United Mfg. Co. recently was incorporated with $75,000 capital to manufacture concrete mixers, punching machines, trip hammers, fence posts, shingle machines, etc., by several men of Waterloo, Iowa.

CEDAR RAPIDS, IOWA.—The Iowa Steel & Iron Works will erect a foundry.

KANSAS CITY, MO.—The Russell Grader Mfg. Co., Minneapolis, is reported planning a branch plant here, to be one story and cost about $35,000.

KANSAS CITY, MO.—Rupert Cox, Beaumont, Tex., is reported organizing a company here with $100,000 capital, to manufacture a visible pumping device.

SPRINGFIELD, MO.—The Ford Brass Co., 320 South street, has purchased a building in which it plans operations.

ST. LOUIS.—The Hope Fan & Blower Co. plans a 1-story plant addition, 25 x 75 feet.

ST. LOUIS.—The Royal Typewriter Co., main office at Hartford, Conn., is reported contemplating a plant here.

ST. LOUIS.—The American Brake Co., 1900 North Broadway, has awarded contracts for a machine shop, to cost $225,000.

ST. LOUIS.—The Whitney Milling Machine Co. has been incorporated with $100,000 capital by Hugh Whitney, Webster Groves and others.

ST. LOUIS.—The Liberty System Corp., indexograph machines, care of W. J. Dineen, Water street, contemplates a plant, 2-stories, 65 x 450 feet.

TEXARKANA, ARK.—The Chandler Welding & Machine Co. has been incorporated with $25,000 capital, by M. B. Chandler, E. L. Berry and L. K. Whitehead.

DALLAS, TEX.—The Thomas Hall Machine Shop has been incorporated with $6000 capital, by A. T. Hall, A. Felton and C. F. Sebastian.

DESDEMONA, TEX.—The Giant Machine & Tool Co. recently was incorporated with $24,000 capital, by Paul J. Shoner, S. D. Shirk and W. G. Allender.

KILEEN, TEX.—The City Light & Power Co. plans the reconstruction of its plant which was recently damaged by fire with a loss estimated at $28,000.

McALESTER, OKLA.—The McAlester Roofing Co. is reported planning to build a plant to be devoted to the manufacture of automobile radiators.

MIAMI, OKLA.—The electric power plant of the Miami Traction Co. recently was damaged by fire. The loss has been estimated at $75,000.

TANKAWA, OKLA.—Bonds for $60,000 have been voted for waterworks extensions, and $15,000 for improvements to the electric light plant.

ATCHISON, KANS.—The Cooper Foundry Co. is building a plant, 120 x 350 feet, to cost $50,000.

SALEM, OREG.—The state highway department is preparing plans for a double leaf bascule bridge over Youngs Bay at Astoria. Herbert Nunn, state highway engineer, Salem, is in charge.

Business in Canada

IBERVILLE, QUE.—The Oil Engine Works of Canada, 29 Prince street, Montreal, Que., will establish its plant here, where it will occupy a portion of the plant of the Rapid Tool & Machine Co.

MONTREAL, QUE.—The National Acme Co., 278 DeCourcelles street, will build an addition to cost $50,000.

MONTREAL, QUE.—The Steel Co. of Canada, 1272 Notre Dame street west, has let the general contract for an addition to cost $150,000.

MONTREAL, QUE.—The Costograph Co. of Canada, Ltd., has been incorporated to manufacture computing machines with $250,000 capital, by E. Daoust, George W. Odell and John N. Brigg.

MONTREAL, QUE.—The St. Lawrence Welding Co. has purchased the property adjoining its plant, which is now being prepared for the installation of equipment and machinery for the manufacture of tanks.

MONTREAL, QUE.—The Dominion Bridge Co. will utilize the plant of the St. Lawrence Bridge Co., at Rockfield, for the manufacture of pulp and paper machinery. The company will build a gray iron foundry.

MONTREAL, QUE.—The M. & S. Co., Ltd., has been incorporated with $50,000 capital to manufacture iron and woodworking tools and machinery, by Francis P. Brais, Laura M. Smith, Jules Burunean and others.

MONTREAL, QUE.—The firm of Peacock Bros. will remove offices to 175 Delorimer avenue, where the manufacturing plant is located. Considerable expansion has taken place recently and further additions are contemplated.

SHERBROOKE, QUE.—The Dominion Gas Saver, Ltd., has been incorporated to manufacture iron, steel, bronze, copper and other metals, has been incorporated with $40,000 capital, by Charles E. Bachard, Leonidas Bachard, Henri M. Cormier and others.

BEAVERTON, ONT.—Plans are being prepared by the E. A. James Co., Excelsior Life building, Toronto, Ont., for a waterworks plant here.

BELLEVILLE, ONT.—The H. A. Wood Mfg. Co.

(*Concluded on page* 1424)

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bess., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.38c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.52c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.365c
Iron bars, Boston	3.55c
Iron bars, Buffalo	3.95c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.37c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.665c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.95c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Phila.	5.00c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	4.47c
No. 10 blue anl. sheets, Boston	5.15c
No. 10 blue anl. sheets, Buffalo	4.565c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.795c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Phila.	6.00c
No. 28 black sheets, Cleveland	5.27c
No. 28 black sheets, Boston	6.65c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.69c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.865c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Phila.	7.50c
No. 28 galv. sheets, Boston	8.09c
No. 28 galv. sheets, Cleveland	6.62c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.215c
No. 28 galv. sheets, St. Louis	7.04c
Bands, Boston	4.85c
Bands, Detroit	4.03c
Hoops, Buffalo	4.065c
Bands, Buffalo	4.065c
Hoops, Boston	4.95c
Hoops, Detroit	4.03c
Cold rolled shafting, Buffalo	4.85c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches ide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N Y	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.25

Chicago to:

Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.30
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 0c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1¼-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1¼-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black.	Galv.
⅛-inch	1	+14
¼-inch	24½	+ 2½
⅜-inch	25½	+ 1½
½-inch	29½	11½
¾ to 1½-inch	34½	18½

Lap Weld

2-inch	28½	14½
2½ to 6-inch	30½	17½
7 to 12-inch	27½	14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼-inch	+21	+36
⅜-inch	23½	6½
½-inch	28½	15½
¾ to 1½-inch	34½	19½

Lap Weld

2-inch	29½	16½
2½ to 4-inch	31½	19½
4½ to 6-inch	30½	18½
7 and 8-inch	22½	10½
9 and 12-inch	17½	5½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Black	Galv.
½-inch	15½	3½
¾ to 1½-inch	20½	8½

Lap Weld

2-inch	16½	4½
2½ to 4-inch	18½	9½

Lapweld Boiler Tubes

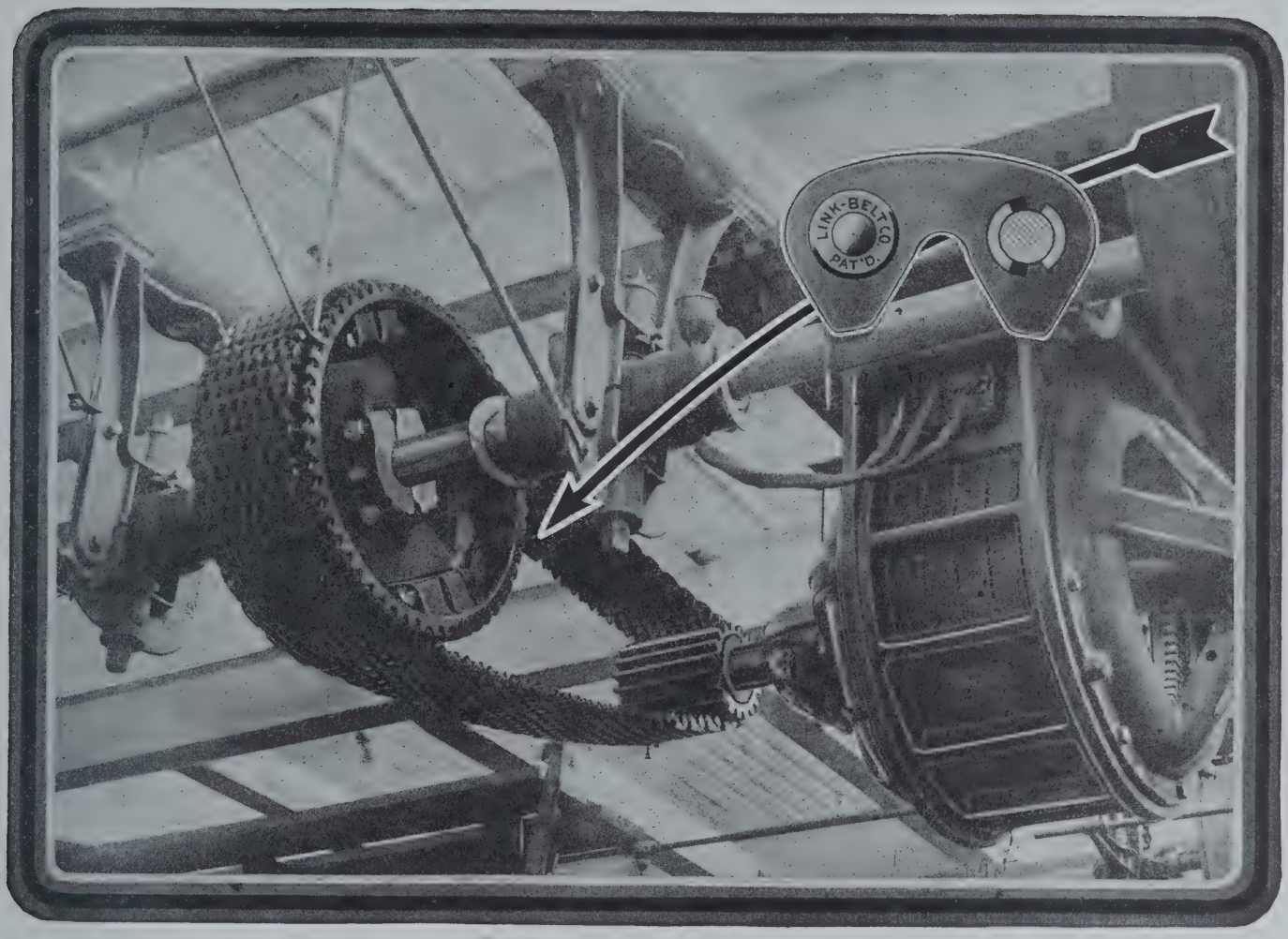
Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16



Driving Without Slip

THIS is the way to transmit power and it is being done every day in modern mills, factories and plants throughout the country by Link-Belt Silent Chain Drives.

Link-Belt Silent Chain Drives transmit all the power of the motor to the machine for useful work without the slippage and constant loss of power so common with leather belts, and without the noise of gearing.

Link-Belt Silent Chain is the ideal method of transmitting power. If you want 98.2% efficiency in power transmission, learn all about the Link-Belt Silent Chain Drive. Write for data Book No. 125.

If every mill, factory and shop in the United States had this 98% efficient drive instead of power wasting, slipping leather belt drives, production would increase.

LINK-BELT COMPANY

362

CHICAGO

PHILADELPHIA		Cleveland	429 Rockefeller Bldg.	Los Angeles	163 N. Los Angeles St.
New York	299 Broadway	Detroit	932 Dime Bank Bldg.	Toronto, Can.	Canadian Link-Belt Co., Ltd.
Boston	49 Federal St.	Minneapolis	418 S. Third St.	Denver	Lindrooth, Shubart & Co., Boston Bldg.
Pittsburgh	1501 Park Bldg.	Kansas City, Mo.	306 Elmhurst Bldg.	Louisville, Ky.	Frederick Wehle, Starks Bldg.
St. Louis	Cent'l Nat'l Bank Bldg.	Seattle	576 First Avenue, S.	New Orleans	C. O. Hinz, Hibernia Bank Bldg.
Buffalo	547 Ellicott Square	Portland, Ore.	First and Stark Sts.	Charlotte, N. C.	J. S. Cothran, Com'l Bank Bldg.
Wilkes-Barre	2d Nat'l Bank Bldg.	San Francisco	682 Market St.	Birmingham, Ala.	S. L. Morrow, 720 Brown-Marx Bldg.
Huntington, W. Va.	Robson-Prichard Bldg.			INDIANAPOLIS	

LINK-BELT
SILENT CHAIN DRIVES

We Also Make

- ☐ Elevators and Conveyors
- ☐ Link-Belt and Sprockets
- ☐ Silent Chain Drives
- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Locomotive Cranes
- ☐ Portable Loaders
- ☐ Coal and Ashes Systems
- ☐ Coal Pockets

Write for Catalogs
Place X in Square

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$22.00
Chicago	20.50 to 21.00
Eastern Pennsylvania	20.50 to 21.50
Cleveland	20.50 to 21.00
St. Louis	20.50 to 21.00
Buffalo	20.00
New York (dealers)	17.00 to 17.50
Cincinnati	17.50 to 18.00
Birmingham	20.00 to 21.00
Valleys	22.00 to 22.50
Boston (dealers)	16.00 to 17.00

BUNDLED SHEETS

Pittsburgh	17.00 to 18.00
Eastern Pennsylvania	17.50 to 18.50
Cleveland	18.00 to 18.50
Buffalo	15.50 to 16.00
Cincinnati	13.50 to 14.00
St. Louis	13.50 to 14.00

STEEL RAILS, SHORT

Chicago	$24.00 to 24.50
Boston (dealers)	15.50 to 16.00
Cleveland	19.00 to 20.00
St. Louis	24.50 to 25.00
Birmingham	20.00 to 21.00
Cincinnati	22.00 to 22.50
Eastern Pennsylvania	20.50 to 21.50

STOVE PLATE

Pittsburgh	$21.00 to 22.00
Chicago	27.00 to 27.50
Eastern Pennsylvania	21.00 to 22.00
Cleveland	22.00 to 23.00
St. Louis	26.00 to 26.50
Buffalo	22.00 to 23.50
New York	17.50 to 18.00
Cincinnati	20.50 to 21.00
Birmingham	23.00 to 24.00
Boston	22.00 to 23.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$26.00 to 27.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	26.00 to 27.50
Buffalo	24.50 to 25.00

SHOVELING STEEL

Chicago	$20.00 to 20.50
St. Louis	19.00 to 20.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$23.50 to 24.50
Chicago	24.50 to 25.00
St. Louis	23.50 to 24.00

BALED SHEETS

Pittsburgh	19.00 to 19.50
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	20.50 to 21.00
St. Louis	21.00 to 21.50
Eastern Pennsylvania	20.00 to 22.50

BOILER PLATE, CUT

Chicago, No. 1	$18.00 to 18.50
St. Louis	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$26.00 to 26.50
St. Louis	20.00 to 20.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$25.00 to 26.00
Pittsburgh, No. 2	23.00 to 23.50
Chicago, No. 1	27.00 to 28.00
Chicago, No. 2	23.50 to 24.00
Eastern Pennsylvania, No. 1	28.00 to 29.00
Cleveland, No. 1	24.50 to 25.00
St. Louis, No. 1	23.00 to 23.50
St. Louis, No. 2	22.50 to 23.00
Buffalo	24.00 to 24.50
Cincinnati, No. 1	21.50 to 22.00
Birmingham, No. 1	17.50 to 18.50
New York, No. 1 (dealers)	26.00
Boston (dealers)	22.00 to 23.00

WROUGHT PIPE

Eastern Pennsylvania	$20.00 to 21.00
Eastern Pennsylvania, ungraded	15.00 to 16.00
Buffalo	18.50 to 19.00
New York (dealers)	15.00 to 15.50
Boston (dealers)	14.00 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$24.00 to 25.00

CITY WROUGHT

New York, long (dealers)	20.00 to 21.00

BUSHELING

Chicago, No. 1	$22.00 to 22.50
Chicago, No. 2	15.50 to 16.00
Cleveland, No. 1	18.50 to 19.00
Cleveland, No. 2	15.00 to 15.50
St. Louis, No. 1	21.50 to 22.00
Buffalo, No. 1	17.50 to 18.50
Cincinnati, No. 1	16.00 to 16.50
Eastern Pennsylvania, No. 1	15.00 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$13.50 to 14.00
Chicago	12.00 to 12.50
Eastern Pennsylvania	17.50 to 18.50
Eastern Pennsylvania (blast furn.)	17.00 to 18.00
Eastern Pennsylvania (chemical)	21.00 to 22.00
Cleveland	11.50 to 12.00
Buffalo	14.00 to 15.00
New York (dealers)	13.50 to 14.00
St. Louis	15.00 to 15.50
Cincinnati	7.50 to 8.00
Birmingham	14.00 to 15.00
Valleys	12.50 to 13.00
Boston (dealers)	12.00 to 13.00
Boston (blast furnace) (dealers)	10.50 to 11.00

CAST IRON BORINGS

Pittsburgh	$18.50 to 19.00
Chicago	13.50 to 14.00
Eastern Pennsylvania	20.00 to 21.00
Eastern Pennsylvania (chemical)	20.00 to 21.00
Cleveland	15.50 to 16.00
St. Louis	14.50 to 15.00
Buffalo	17.00 to 17.50
New York (dealers' price)	16.00 to 16.50
Cincinnati	10.50 to 11.00
Birmingham	14.00 to 15.00
Valleys	17.50 to 17.75
Boston (dealers)	15.00 to 16.00
Boston (blast furnace) (dealers)	14.00 to 15.00

IRON AXLES

Pittsburgh	$40.00 to 41.00
Chicago	35.00 to 36.00
Eastern Pennsylvania	40.00
Cleveland	35.00 to 36.00
St. Louis	36.00 to 36.50
Buffalo	33.00 to 34.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	28.00 to 28.50
Cleveland	27.00 to 28.00
St. Louis	26.50 to 27.00
Buffalo	25.00 to 26.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	21.00 to 21.50
Cleveland	17.50 to 18.00
St. Louis	20.00 to 20.50
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$27.50 to 28.00
Cleveland	22.00 to 23.00
Buffalo	21.00 to 21.50
New York	16.50 to 17.00
Eastern Pennsylvania	23.00 to 24.00

FORGE FLASHINGS

Cleveland, large	$16.75 to 17.25
Cleveland, small	18.00 to 18.50
Chicago, small	16.50 to 17.00
Boston (dealers)	13.00 to 13.50

FORGE SCRAP

Chicago	23.50 to 24.00
Eastern Pennsylvania, No. 1	18.00 to 19.00
Boston	14.00 to 14.50

ARCH BARS AND TRANSOMS

Chicago	31.00 to 31.50
St. Louis	29.00 to 30.00

ANGLE BARS—IRON

Chicago	$29.00 to 29.50
St. Louis	26.00 to 26.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$18.50 to 19.50
Eastern Pennsylvania	18.00 to 19.00
Boston (dealers)	13.00 to 14.00
St. Louis	14.00 to 15.00
Cleveland	18.00 to 18.50
Buffalo	17.50 to 18.00
Chicago	17.00 to 17.50

STEEL CAR AXLES

Pittsburgh	$31.00 to 32.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	35.00 to 35.50
Buffalo	33.00 to 34.00
Chicago	33.00 to 34.00
New York (dealers)	25.00
Birmingham	21.50 to 22.50
Boston (dealers)	24.00 to 25.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	30.50 to 31.00
New York (dealers)	24.00 to 25.00
Chicago	30.00 to 30.50

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$29.00 to 30.00
Pittsburgh, steel	23.50 to 24.00
Chicago, iron	28.50 to 29.00
Eastern Pennsylvania, iron	29.00 to 30.00
Cleveland, iron	26.00 to 27.00
St. Louis, iron	25.50 to 26.00
Buffalo, iron	27.00 to 27.50
Birmingham, iron	20.50 to 21.50
Birmingham, tram car	20.00 to 21.00
Boston	25.00 to 26.00
Cincinnati	21.50 to 22.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$29.00 to 30.00
Chicago, cupola	31.50 to 32.00
Eastern Pennsylvania, cupola	28.00 to 29.00
Cleveland, cupola	27.00 to 28.00
New York, cupola (dealers)	25.00 to 26.00
Cincinnati, No. 1, cupola	24.50 to 25.00
Birmingham, cupola	25.00 to 26.00
St. Louis, railroad	30.00 to 30.50
St. Louis, agricultural	29.50 to 30.00
Buffalo	27.00 to 27.50
Boston	30.00 to 31.00
Valleys	27.00 to 28.00

HEAVY CAST

New York (dealers)	23.50 to 24.00
Buffalo	21.00 to 22.00
Pittsburgh	25.00 to 26.00
Cleveland	19.50 to 20.00
Boston	23.00 to 24.00

MALLEABLE

Pittsburgh, railroad	$25.00 to 26.00
Pittsburgh, agricultural	22.00 to 23.00
Chicago, railroad	27.50 to 28.00
Chicago, agricultural	27.50 to 28.00
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	22.50 to 23.50
Cleveland, agricultural	18.50 to 19.00
St. Louis, railroad	24.50 to 25.00
St. Louis, agricultural	23.50 to 24.00
Cincinnati, railroad	16.50 to 17.00
Cincinnati, agricultural	16.00 to 16.50
Boston, railroad	23.00 to 24.00
Buffalo	22.50 to 23.50

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$29.50 to 30.00
Chicago	32.00 to 32.50
Eastern Pennsylvania	30.00
Cleveland	28.50 to 29.00
St. Louis	30.50 to 31.00
Birmingham	24.00 to 26.00
Boston (dealers)	21.00 to 22.00

LOCOMOTIVE TIRES

Chicago	23.50 to 24.00
St. Louis	22.50 to 23.00

BOILER PUNCHINGS

Chicago	$25.00 to 26.00
Eastern Pennsylvania	23.00 to 24.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

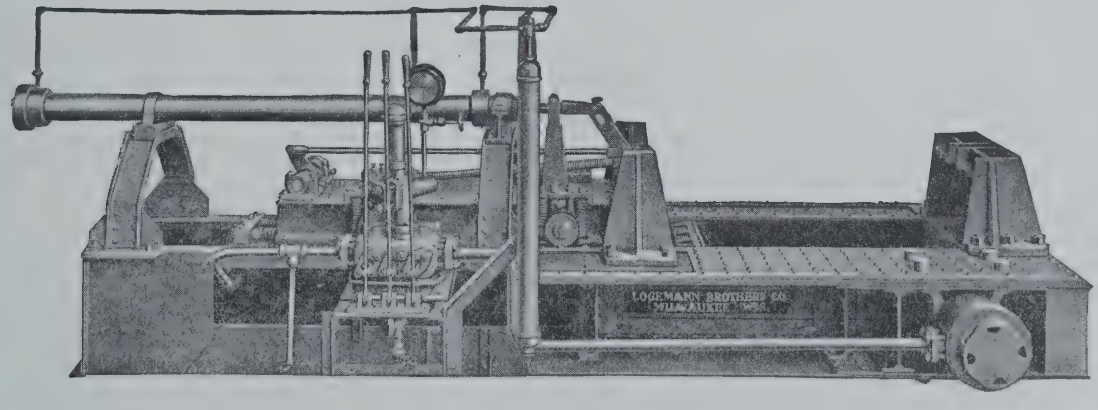
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

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Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

THERMIT WELDING.—A folder entitled, "How Thermit Cured My Diseased Neck," containing a story "told by a roughing mill pinion, as to the process by which its damaged neck was repaired," is being circulated by the Metal & Thermit Corp., New York.

CLUTCHES.—An illustrated booklet has been published by the Medart Patent Pulley Co., Inc., St. Louis, in which friction clutches for transmission equipment are described and illustrated. Various data pertaining to this type of transmission are given.

ELECTRIC DRILLS.—The Independent Pneumatic Tool Co., Chicago, is circulating an illustrated leaflet in which electric drills and grinders are described and illustrated. According to the leaflet, these tools can be operated from any electric lamp socket.

HEAT TREATING.—A booklet containing a preliminary chapter from the "The Heat Treating Handbook," soon to be issued complete by Tate-Jones & Co., Inc., Pittsburgh, is being distributed. The chapter is devoted to normalizing and heating. The fore part of the booklet contains descriptions and illustrations of heat treating furnaces.

MICROSCOPES.—The Bausch & Lomb Optical Co., Rochester, N. Y., recently published the twenty-eighth edition of its microscope catalog, which contains data, specifications and illustrations of microscopes for various work, including metallurgical research. Two types of microscopes for metallurgical work are described.

COMPRESSED AIR EQUIPMENT.—Under the title, "Compressed Air in the Saw Mill," a booklet issued by the Ingersoll Rand Co., New York, describes the use of compressed air equipment in the operation of various departments in a sawmill. This equipment includes hoisting apparatus, pneumatic tools, compressors, condensers, pumps, etc. The booklet contains a number of illustrations.

PNEUMATIC DRILLS.—The Ingersoll-Rand Co., New York, is circulating a 40-page booklet in which pneumatic drills, grinders and saws are described and illustrated. Several types of each tool is described and all are accompanied with complete data and specifications. A number of the illustrations show the kind of work to which these tools are adapted.

MISCROSCOPES.—A 4-page folder has been published by Holz & Co., Inc., New York, describing 1920 microscope outfits. According to the leaflet a complete outfit permits photographs under magnification from 1 to 3500. Both forms of vertical illuminators are contained and the focusing movement is separated from the base, which according to the leaflet, represents an advance in the design of metallographic microscopes. Other details of the equipment are explained.

CONCRETE FORMS.—Steel forms for use in concrete construction work are described and illustrated in a booklet being circulated by the Blaw-Knox Co., Pittsburgh. The booklet shows how these forms are used on a great variety of work and describes the method of assembling and applying them to various types of construction. The forms are entirely of steel and each weighs about 22 pounds. They are connected and held in alignment by means of liners, keys and ties.

COAL CUTTER.—An illustrated booklet of 16 pages recently was published by the Ingersoll-Rand Co., New York, in which a coal mining machine is described. The illustrations show the machine in actual operation, such as overcutting and undercutting a vein of coal. Usually but two men are employed in the operation of the machine and it can be easily and quickly set up and taken down. Various parts of the machine are described, and the booklet contains data pertaining to the performance of the machine in several mines where it has been used extensively.

(*Concluded from* (1419)

has secured a 3-story building and will install machinery for the manufacture of valves.

HAMILTON, ONT.—The Canadian Westinghouse Co. has let the general contract for an addition to cost $30,000.

HAMILTON, ONT.—The Hoover Suction Sweeper Co. of Canada, Ltd., recently was incorporated with $1,000,000 capital, by William H. Hoover, Frank G. Hoover and others.

KITCHENER, ONT.—The F. W. D. Auto Co. has let the general contract for a factory to cost $10,000.

MERRICKVILLE, ONT.—The Percival Plow & Stove Co. is reported contemplating a plant addition.

STRATFORD, ONT.—The Canadian General Electric Co. has bought a plant here and is installing equipment.

TORONTO, ONT.—The Nash Motor Co., Oshkosh, Wis., is making arrangements for a manufacturing plant here.

TORONTO, ONT.—The F. F. Barber Machinery Co., Ltd., has been incorporated with $200,000 capital, by Frank F. Barber, Leopold Macaulay, William T. Sinclair and others.

VANCOUVER, B. C.—The Standard Motors, Ltd., Kinsway, has awarded a general contract for a garage to cost $22,000.

VANCOUVER, B. C.—The Sumner Metal Works, Everett, Wash., will establish a branch plant here. The present plant of the Allan & McKelvie Co., will be taken over by the new company, and an addition erected. The Canadian company will be capitalized at $250,000, and the officers will be George Sumner, president; Mr. Allan, vice president and A. McKelvie, secretary-treasurer.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A firm in Spain desires to secure agencies for the sale of machinery and all raw materials for industries. Correspondence should be in Spanish. Opportunity No. 31259.

An agency is desired by a party in Italy for the sale of hydraulic turbines, machine tools, electrical machinery and supplies. Opportunity No. 31203.

A company in Greece desires agencies from manufacturers for the sale of iron concrete reinforcement bars, structural and shipbuilding iron and steel, plain and galvanized soft-steel sheets, corrugated-iron sheets, steel, iron and copper pipes, internal combustion engines, marine engines, pumps, electric motors, electric machinery, electric cables and wires and steel ropes and wires. Opportunity No. 31207.

A business man in England desires to secure an agency or act as a representative of electrical and mechanical engineering concerns, motor car manufacturers, machine tools, automobile accessories, etc. Opportunity No. 31223.

A commercial agent in France desires to secure an agency for the sale of machinery, tools, and general merchandise. Opportunity No. 31224.

An agency is desired by a commercial agent in Switzerland for the sale of various articles including machinery, iron articles, electric instruments, etc. Correspondence should be in French. Opportunity No. 31227.

A commercial agent in Spain desires to secure agencies for the sale of iron and steel sheets, metals, hardware, electrical supplies, chemicals, etc. Correspondence should be in Spanish or in French. Opportunity No. 31228.

An American who has been a traveling salesman in Europe for several years, is in the United States and desires to secure an agency for the sale in Central Europe of stoves, radiators, gas water heaters, bathroom and plumbing supplies, agricultural implements, etc. Opportunity No. 31232.

An agency is desired by a party from Australia for hardware, aluminum goods, etc. Opportunity No. 31234.

A resident missionary in the Dominican Republic desires to receive tenders for the iron framework and sheet-iron sides and roof of a new church. The building is to be 1 story in height. Opportunity No. 31236.

An agency is desired by a party from Brazil for the sale of agricultural implements, dairy machinery, tractors, cotton gins, presses, seed-crushing machinery, etc. Opportunity No. 31244.

Tenders have been received from a firm in South Africa for the supply of brass piping and brass and copper sheets for railways and harbors. Proposals must be received before Nov 29. Opportunity No. 31245.

The director of an agency firm in Spain desires to secure agencies for the sale of agricultural implements, such as plows, threshers, reapers, as well as hand tools, hammers, saws, etc. Correspondence should be in Spanish or French. Opportunnity No. 31246.

A commercial agent in Spain desires to secure an agency for the sale of bandsaws, sawmill machinery, etc. Correspondence should be in Spanish. Opportunity No. 31255.

A merchant in England desires an agency direct from manufacturers for the sale of cement, twisted steel bars for concrete reinforcement, etc. Opportunity No. 31256.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, November 27, 1919 *No. 22*

Scarcity of Material More Acute

Production of Iron and Steel Still Lags and Market Shows Varied Price Tendencies —Many Lines Advancing—Coal Strike More of Factor—Pennsylvania Reserves Rail Tonnage

VARIOUS cross currents continue to influence production and prices in iron and steel. The direct effects of the steel strike at present have been minimized but operating efficiency in many plants has not been restored to the basis prevailing before the various suspensions. In some cases this is due to the reorganization of works forces which has been found necessary. Blast furnace labor is lacking in some districts and this is preventing the resumption of certain stacks. With demand of large proportions and apparently growing, these drags upon production added to the tonnage already lost, serve to intensify the strength of prices and to point the market to constantly higher levels.

Actual and possible effects of the continuing coal strike are more of a factor. In sheets it is feared that production which has been rising steadily may again be set back unless the reduced supplies of fuel of the mills are replenished quickly. A softer market has developed in some grades of scrap because some plants have been forced to slow down their operations.

Prices Are Divergent

The Steel corporation mills continue their policy of holding back on price advances and at this time there is strong likelihood of no changes in their schedules before the end of the first quarter at least. However their sales continue to be confined to regular customers and as their deliveries in many lines now are a matter of months, the influence of their position on the general market is becoming less. As a result, the selling policies of various producers are more divergent and prices show a growing spread. Some makers because of the upset condition of individual mill costs, are allowing the latter more definitely to govern the variations of their selling figures and are letting practically each transaction make its own price. A large eastern producer has been taking first quarter orders in steel bars at 2.50c, Pittsburgh, and second quarter at 3.00c, Pittsburgh. Other mills are selling at considerable advances over the nominal market of 2.35c, Pittsburgh. Eastern makers have sold plates in considerable tonnage at 2.75c and 2.85c mill.

Famine in Some Lines

Almost a famine prevails in certain lines of finished steel and bids by buyers are on that basis. This is especially true of wire nails, early sheets, small bars and some other products. In tin plate, makers are allotting tonnage for first half on a fractional scale. The larger mills are sold up several months on bars and on the larger sizes of structural shapes, deliveries have fallen back decidedly.

The Pennsylvania railroad has made reservations with various mills for 186,000 tons of rails for delivery over the first half. The division gave the Carnegie Steel Co. 80,000 tons, the Bethlehem Steel Corp. 56,000 tons, the Cambria Steel Co. 30,000 tons and the Lackawanna Steel Co. 12,000 tons. Prices are to be fixed later. At Chicago about 300,000 tons of rail orders for western roads await only the affixing of signatures to contracts.

Iron Advance Continues

Pig iron prices are keeping up their rise but under a lighter volume of sales as makers are holding back on further bookings. Supplies are limited and many consumers have been unable as yet to cover for first quarter or beyond. Spot iron is extremely scarce and makers are obtaining for it almost any price they ask. Furnace operations are showing the usual irregularities that attend a resumption after a period of idleness. Foundry iron is up to $35 at Chicago, to $34 to $35 in the valley and lake districts and to $37 to $38 in the East. One Alabama maker has taken some tonnage for first quarter at $33 Birmingham. The situation in basic is becoming interesting as there are more buyers than sellers; furthermore it has been complicated because two producers have been forced into the central western market as buyers due to furnace troubles. Several thousand tons of bessemer have been sold up to $34 valley furnace.

NOVEMBER 27, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by

THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - York St. and Western Ave.
NEW YORK - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - - - Prince's Chambers
LONDON, ENG. - - - Dorland House, 16 Regent St., S. W. I.

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Paying the Price of Radicalism

THAT production is the basic and controlling factor in prices and that any restrictions or interference placed upon it are bound quickly to register their effects is being fitly demonstrated by the present course of the iron and steel market.

During the past month prices on all leading products have strengthened materially and in some cases, notably pig iron, the advance has been rapid and abrupt. Today pig iron prices are quotable from $6 to $7 a ton over the level that prevailed around mid-October. The general average of the market has been advanced fully by this amount. In steel products the rise has been less general and more erratic, being confined more to individual producers than to the general industry. The reason for this is to be found in the persistent efforts which strong interests in the industry, such as the Steel corporation and certain leading independents have been exerting against an upward swing of the market in view of the nation-wide campaign that has been made to reduce the high cost of living. Up to this time this policy of powerful producers in attempting to hold the market in check has been instrumental in keeping back advances. It is a question, however whether now it is not losing much of its effect and will do so in an accelerated way as the underlying economic forces assert themselves more insistently. In the end supply and demand must prevail.

Before the steel strike of Sept. 22 the market was moving along in a firm but orderly fashion. The present elevated condition of prices, there can be no doubt, is due above all other things to the shortened supply of material occasioned by the loss of production during the strike. Furtherfore all this is water that has gone past the mill and it represents a deficiency of output which cannot be recovered. It promises therefore to be a fixed and continuing factor which will have its effect upon prices for some time to come unless demand should slump decidedly which does not appear likely. The influence of this lost tonnage must be in the direction of higher prices. The strike imposed upon the steel industry by the minority misled by their leaders or fatuously following a mistaken cause, has been lost by the men as it was certain it would be from the beginning in view of its flimsy and insincere basis. Nothing has been gained but much has been lost for the industry and country at large. The scars of the strike remain in the higher prices that have been forced upon buyers and therefore in the end upon the general public, in the loss of wages, expected profits, unearned interest charges, increased depreciation, etc. The bill is far too large for the country to pay that a radical coterie of labor agitators might have a chance to try out a set of unjust and extreme demands.

Shipbuilding Awaits Government Exit

DOMESTIC demand for shipbuilding material undoubtedly will increase with 1920. All present indications point to this fact. Ship repair yards still are extremely active and the volume of contracts for future work is holding up evenly. Much further new construction likewise is promised, despite the determination of the government to end its shipbuilding activities as soon as possible.

The Atlantic Gulf West Indies Steamship lines has let contracts for eight tankers. The Bethlehem Steel Corp. has drawn plans for a number of 17,000 ton Chilean ore carriers. The Standard Oil Co. is preparing to build some of the largest tankers ever constructed. The Florida East Coast Line plans two new passenger vessels for the Cuban trade. Naval architects are extremely busy putting the plans for the new work on the board. While the time between the incipiency of the plans and the actual letting of contracts is normally lengthy, the new work for American shipyards in sight assures a large volume and is a matter which should give considerable gratification.

Shipbuilders now are anxious to rid themselves

of government contracts and to return to the old scheme of competitive conditions. This desire is to be understood as the shipbuilders, like other commercial interests, have come to realize that business fostered and directed by the government is too often subjected to political control which restricts and blocks healthy development and that such interference in the long run will ruin almost any business. Steel producers now have a fine opportunity to lend their support to a sister industry. By encouraging the return to normal and competitive conditions in shipbuilding where private American initiative and genius again may have free play, American steel interests will be assisting in building up an industry in this country which should be able to hold its own with that of any foreign country. The war has upset many fallacies and one of these is that this country could not build ships in quantity and build them well. With the greatest ship steel manufacturing capacity in the world and an artisanship in heavy steel structures that is unrivalled, successful shipbuilding on a commercial basis, it would seem, awaits helpful and systematic teamplay between shipbuilders, steel workers and the government.

Where Appreciation Has Failed

TO NO individuals do the arguments of the radical leaders make a more enticing appeal than to those who are underpaid. It readily can be understood how the man whose income is insufficient to enable him and his family to live decently might be swayed by arguments of those who are in favor of the confiscation and nationalization of property along communistic lines. Such an individual might be excused for welcoming the thought that under such an arrangement his enjoyment of the good things of life might be increased.

Such reasoning undoubtedly impelled President Barr, of the National Founders' association, at the convention of that organization in New York last week to voice a plea for proper and adequate remuneration for the educator class, including the teachers and clergy, in this country. Mr. Barr pointed out how it is customary almost without exception to hire teachers and clergymen at the lowest salaries possible. He urged the upward revision of these salaries, as well as the formulation of some plan by which the members of these professions may be cared for in their old age. Perhaps the prevailing low pay to teachers and clergymen is due to a lack of appreciation of the commanding place, in the existing scheme of things, that these professions occupy. The educators of the country, outside of the parents of each individual child, have more to do with the training of minds and the building of characters than any other agency. The children of today compose the next generation, and the latter will be governed largely by what it learns from the educators of the present day. If higher salaries cannot be had for the educators on the ground of simple justice, surely the necessity of shaping posterity along proper lines should be a determining factor as a commonsense proposition in banishing the penurious and unwise attitude now shown toward those who must be counted upon to keep and direct national thought along safe and sound channels.

Exposing the Wolf Among Labor

SLOWLY but surely the public is awakening to the danger of permitting ignorant and irresponsible troublemongers to sow the seeds of anarchy and revolution while camouflaged as "labor organizers." Men who know absolutely nothing about the industries concerning which they talk, who have at heart neither the interests of the public nor the workers, and whose influence is antagonistic to the welfare of the country, have been given all the liberty they could desire. They have been permitted to libel and slander employers, to mislead employes, and to use any language or means their disordered brains might suggest for stirring up class hatred. But now the public is beginning to realize the extent of the damage which may be done by giving vicious ignoramuses the privilege to malign industrial organizations under the right of "free speech."

A case in point is the arrest last week of John E. McCadden, secretary and treasurer of the Youngstown district for the steel strikers' committee, and organizer in the Youngstown district for the American Federation of Labor. In its issue of Oct. 2, THE IRON TRADE REVIEW quoted at length a speech made by McCadden to steel workers in Youngstown. McCadden lauded the syndicalist, Foster, voiced hatred for employers in the steel industry and urged the men to seize the mills if the employers did not surrender to the dictates of the strikers' committee. More than two months elapsed and the strike was practically over in the Youngstown district before the authorities of that city concluded it was against public policy to permit McCadden to continue pouring forth his venom. McCadden was arrested on the charge of preaching syndicalism and is now out on a bond of $3000, awaiting trial. It may be considered but a small incident in the labor situation today, but it is significant when the authorities in a large industrial community recognize the fact that the public wants no more of this Jekyl-Hyde arrangement whereby privileged organizers of the American federation may expound Russian doctrines and do so with perfect impunity.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1484 AND 1486

Pig Iron

Bessemer, valley	$33.00
Besesmer, Pittsburgh	34.40
Basic, valley	31.00 to 32.00
Basic, Pittsburgh	32.40 to 33.40
Basic, delivered, eastern Pa.	31.00 to 32.00
Malleable, Pittsburgh	35.90 to 36.65
Malleable, Chicago, furnace	35.50
Malleable, Buffalo, furnace	36.25
Malleable, delivered eastern Pa.	36.00 to 37.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$38.10 to 39.10
No. 1X, Buffalo	37.00 to 39.00
No. 1 foundry, Chicago, furnace	36.25
No. 2 foundry, valley, Pittsburgh	35.40
No. 2 foundry, Buffalo	34.00 to 36.00
No. 2 Northern, Boston	35.90 to 36.90
No. 2 found y, Chicago furnace	35.00
No. 2 foundry, Ironton furnace	34.75
No. 2 foundry, Cleveland furnace	34.00 to 35.00
No. 2X, eastern del., Phila.	36.10 to 38.10
No. 2X, eastern, N. J. tidewater	36.10 to 38.10
No. 2X, eastern, Boston	36.90
No. 2X, foundry, Buffalo furnace	35.25 to 37.25
No. 2 foundry, del., Philadelphia	35.10 to 37.10
No. 2 foundry, N. J. tidewater	35.10 to 37.10
No. 2 southern, Birmingham	32.00 to 33.00
No. 2 southern, Cincinnati	35.60 to 36.60
No. 2 southern, Chicago	37.00 to 38.00
No. 2 southern, Phila.	38.50 to 39.50
No. 2 Southern, Cleveland	37.00 to 38.00
No. 2 southern, Boston	39.00
No. 2 southern, St. Louis	36.25 to 37.25
Virginia, No. 2X, furnace	35.00
Virginia, No. 2X, Philadelphia	39.10
Virginia, No. 2X, Jersey City	39.40
Virginia, No. 2X, Boston	39.70
Gray forge, valley, Pittsburgh	32.40
Gray forge, Buffalo	32.00 to 33.00
Gray forge, eastern Pa.	34.50
Silveries, 8% furnace	47.25 to 48.25
Ohio Silveries, 8%, Chicago	46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	43.50 to44.00
Low phos. Lebanon, furnace	37.00
Low phos. standard, Pittsburgh	41.40
Charcoal, Superior, Chicago	35.50 to 38.00
Charcoal, Superior, Chicago first quarter 1920	35.50 to 37.50

Coke

(At the ovens)

Connellsville furnace	$5.45 to 6.25
Connellsville foundry	6.50 to 7.00
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	10.50 to 11.00
New River furnace, nominal	8.00 to 9.00
Wise county furnace, nominal	7.00 to 7.50
Wise county foundry, nominal	8.00 to 9.00

Ferroalloys

Ferromanganese, 80 per cent. delivered, domestic metal	$110.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	nominal
Spiegel, 18 to 22 per cent furnace, spot	35.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.20
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's plant	27c to 29c
Ferrovanadium, 35 to 40 per cent per pound contained, according to analysis	$5.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 pe cent	54.75 to 56.75
Bessemer, ferosilicon, 11 per cent	58.05 to 60.05
Bessemer, ferrosilicon, 12 per cent	61.35 to 63.35

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	42.00 to 43.00
Open-hearth, Philadelphia	45.00 to 47.50
Open-hearth, Youngstown	40.50
Bessemer, Pittsburgh	42.00 to 43.00
Bessemer, Youngstown	40.50
Forging, Pittsburgh	51.00 to 53.00
Forging, Philadelphia	55.00 to 60.00

SHEET BARS

Open-hearth, Pittsburgh	$45.00
Open-hearth, Youngstown	45.00
Bessemer, Pittsburgh	45.00
Bessemer, Youngstown	45.00

SLABS

Pittsburgh and Youngstown	43.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$60.00 to 63.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c to 2.925c
Structural shapes, New York	2.72c to 3.00c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c to 3.045c
Tank plates, New York	2.92c to 3.07c
Bars, soft steel, Pittsburgh	2.35c to 2.50c
Bars, soft steel, Chicago	2.62c
Bars, saft steel, New York	2.62c to 2.87c
Bars, saft steel, Philadelphia	2.595c to 2.845c
Bar iron, common, Phila.	2.995c to 3.245c
Bar iron, common, Chicago	2.77c to 3.00c
Bar iron, common, Cleveland	3.25c
Bar iron, common, New York	3.02c to 3.27c
Bar iron, common, Pittsburgh	3.25c
Hard steel bars, Chcago	2.85c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 46.00
Relaying rails, Pittsburgh	40.00 to 43.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	5.00c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 5c more)

Wire nails, Pittsburgh	3.50c
Plain wire, Pittsburgh	3.10c to 3.25c
Galvanized wire, Pittsburgh	3.80c to 3.95c
Barbed wire, painted, Pitts	3.50c
Barbed wire, galvanized, Pitts	4.20c
Cut nails, Pittsburgh l. c. l.	5.195c
Coated nails per count keg, Pitts.	3.10c to 3.25c
Polished staples, Pittsbugh	3.50c
Galvanized staples, Pittsburgh	4.20c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.00c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c to 4.095c

Full sheet schedule page 1484.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	34½	18½

Full pipe schedule page 1484.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$62.80
Six-inch and over, Chicago	59.80
Four-inch, New York	61.30
Six-inch and over, New York	58.30
Four-inch, Birmingham	58.00
Six-inch and over, Birmingham	55.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.50c
Cold finished steel bars, Pitts., base	3.60c

Rivets

Structural rivets, Pittsburgh	3.90c to 4.15c
Boiler rivets, Pittsburgh	4.00c to 4.25c
Rivets ⅞ in. and smaller Pitts.	50 to 50—10 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	45–5 to 50–10 off
Cut thread	40–5 to 50–10 off
Larger and longer	30–10 to 40–10 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–7½ to 60 off
Cut thread	40–10–5 to 50–10 off
Larger and longer	40 to 40–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–5 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	70–10–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c to 2.70c off
Hot pressed, square tapped	2.25c to 2.45c off
Hot pressed, hexagon blank	2.50c to 2.70c off
Hot pressed, hexagon tapped	2.25 to 2.45c off
Cold pressed, square tapped	2.25c to 2.45c off
Cold presed, square blank	2.50c to 2.70 off
Cold pressed, hexagon blank	2.50c to 2.70c off
Cold pressed, hexagon tapped	2.25c to 2.45c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Nov. 26, 1919	Average prices Oct., 1919	Aug., 1919	Nov., 1918
Bessemer valley, del., Pittsburgh	$34.40	$29.35	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	32.90	27.15	27.15	34.40
*No. 2 Foundry, Pittsburgh	35.40	28.85	28.15	35.40
*No. 2 Foundry, Chicago, furnace	35.00	27.55	26.75	34.60
Lake Superior charcoal, Chicago	35.50	33.15	32.75	38.70
Malleable, valley	34.50	29.15	28.65	35.90
Malleable, Chicago	35.50	28.00	27.25	34.50
*Southern, No. 2, Birmingham	33.00	27.45	26.75	35.25
*Southern Ohio, No. 2, Ironton	34.75	28.80	26.75	34.00
Basic, eastern del., eastern Pa.	31.50	27.90	27.00	36.90
**No. 2X, Virginia, furnace	35.00	30.35	28.25	38.00
*No. 2X, eastern del., Philadelphia	37.10	32.00	29.60	39.15
Gray forge, valley del., Pittsburgh	33.90	27.65	27.15	34.40
Ferromanganese, 80 per cent, delivered	110.00	110.00	110.00	250.00†
Bessemer billets, Pittsburgh	42.00	39.30	38.50	47.50
Bessemer sheet bars, Pittsburgh	45.00	43.20	42.00	51.00
Open-hearth sheet bars, Pittsburgh	45.00	43.20	42.00	51.00
Open-hearth billets, Pittsburgh	42.00	39.30	38.50	47.50
Steel bars, Pittsburgh	2.50c	2.35	2.55	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.845	2.745	2.595	3.74

	Prices Nov. 26, 1919	Average prices Oct., 1919	Aug., 1919	Nov., 1918
Iron bars, Cleveland	$3.25	$2.75	$2.52	$3.64
Iron bars, Chicago mill	2.77c	2.68	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.995	2.45	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.24
Tank plates, Pittsburgh	2.65c	2.65	2.65	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.895	3.49
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.55	4.25
Sheets galv., No. 28, Pittsburgh	5.70	5.70	5.70	6.25
Wire nails, Pittsburgh	3.50	3.25	3.25	3.50
Connellsville furnace coke	6.00	4.15	4.30	6.00
Connellsville foundry coke	6.75	5.60	5.10	7.00
Heavy melting steel, Pittsburgh	23.00	20.00	21.25	28.75
Heavy melting steel, eastern Pa.	22.50	19.55	19.60	28.00
Heavy melting steel, Chicago	21.00	18.80	20.75	26.50
No. 1 wrought, eastern Pennsylvania	28.50	27.00	27.25	34.00
No. 1 wrought, Chicago	27.00	22.00	23.25	29.65
Rerolling rails, Chicago	31.50	26.80	29.00	30.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Pig Iron Prices Still Advancing

Northern Foundry Market Reaches $34 to $37 and Southern Tonnage is Sold at $33 —Bessemer Reaches $34—Basic Situation Complicated by Producers Being Forced Into Market—Makers Selling More Cautiously

Pittsburgh, Pa., Nov. 25.—Although lacking the excitement which recently was displayed, the pig iron market here is not wanting in strength. An advance of fully $1.50 has been established on standard bessemer on sales to steel manufacturers, several thousand tons having been taken by one consumer at an average price of about $33, furnace. To have reached this average, some of the tonnage must have brought as high as $33.50, but such a quotation is not well established on sales for steelmaking purposes, although $34, furnace, has been paid for a lot of 3000 tons for delivery over the remainder of this year and the first quarter of 1920, while two lots of 500 tons each at the same price and for the same delivery, also have been sold. These tonnages are supposed to be for substitution for foundry iron. Basic grade again is laggard and while there have been reports of business at $31.80, furnace, verification is lacking. Failure of the price of basic to advance cannot be charged to back supplies or lack of demand. Actually supplies are extremely scant while several good sized inquiries are before makers. The Carbon Steel Co. is seeking 10,000 tons for first half of next year, while the N. G. Taylor Co., Cumberland, Md., has not yet covered on its requirements for the first quarter, although it was reported recently that it had. Renewals of this inquiry which is for 1200 tons a month for the first three months of 1920 has been made this week. The United Alloy Steel Corp., Canton, O., and the Trumbull Steel Co., Warren, O., still are seeking tonnages for early 1920 delivery. Merchant producers will not entertain bids around the price of the last sale and $32 to $33 is the present talking figure. Spot tonnages of foundry iron are salable at practically any price sellers see fit to ask. For No. 2 (1.75 to 2.25 silicon) $35, furnace, now is the minimum for this year and for first half year. None of the blast furnace interests now will consider less than $34, furnace, for this grade. One western Pennsylvania interest having three stacks reports less than 20,000 tons of foundry iron unsold for first half of a total production of approximately 150,000 tons and other makers are equally well off. Recent business in foundry iron for first half includes 4000 tons to a car wheel company, having several plants, at $32, furnace; 1200 tons to a Pittsburgh district consumer at the same price and for the same delivery; 1500 tons of No. 2 foundry to a Pittsburgh district car builder at $31.50 and a good sized tonnage of No. 2X (2.25 to 2.75 silicon) at $35.25, furnace. Sales of several hundred tons of malleable for shipment this year are noted at $35.25, valley furnace.

$35 Price Disappearing

New York, Nov. 24.—Buying of pig iron for 1920 delivery has reached proportions beyond which eastern furnaces do not think it safe to go at this time, and they are discouraging further business. Both $38 and $39, furnace, have been asked on 2.25 to 2.75 silicon for next year. These prices still are way in advance of the market. At the same time, several thousand tons of foundry grades have been sold during the past week at $36 and $37, eastern Pennsylvania, for 2.25 to 2.75 silicon, for shipment both this year and next, and the price of $35, furnace, which was representative of the bulk of the going business a week ago, now is disappearing. For 2.75 to 3.25 silicon $38, eastern Pennsylvania furnace, has been obtained for this year, and in view of the scarcity of this grade, this figure is not considered unusual. A number of furnaces have not opened books for next year, while others which are selling ahead, are restricting their orders to first quarter. One Virginia interest has come into the market for first quarter with a schedule of $34, furnace, for 1.75 to 2.25 silicon, $35 for 2.25 to 2.75, and $36, for 2.75 to 3.25, and has booked business on this basis. Southern iron is well sold up and the minimum figure that northern sellers have been able to obtain is $31, Birmingham, for 1.75 to 2.25 silicon. There is a fair amount of foreign inquiry but the high prices, the scarcity of iron and the unfavorable exchange, are said to be keeping this business away.

Little Tonnage is Available

Cleveland, Nov. 25.—The tonnage of pig iron offered for sale has grown increasingly scant as most of the sellers in this and surrounding territory either are out of the market entirely or are following very conservative policies in taking on additional tonnages. Supplies of basic especially are extremely limited. A number of interests including both producers and consumers who have been seeking to obtain tonnages of this grade have met with little success. The two producers who have been forced into the market by difficulties with their furnaces are inquiring for round lots. One of them wants 6000 to 8000 tons and the other who was a purchaser of 2500 tons last week as reported, is still out for 3500 tons additional. The basic market is indefinite at present and

makers apparently are unwilling to entertain any business under $32 or $33 furnace. A small lot of valley basic western delivery was closed at $31.50 furnace. Foundry iron also is very scarce and has advanced further in the week. Where the last previous sales by Cleveland makers were at $32 and $33 furnace for 1.75 to 2.25 silicon, moderate lots have been booked within the week at $35 furnace for the base grade. Local makers, however, are willing to sell very little additional tonnage at present. Sales of valley No. 2 (1.75 to 2.25 silicon) in lots of 100 to 200 tons are noted at $34 furnace, and of malleable at $35.50 furnace. A heavy tonnage of foundry and malleable iron for automobile interests in the Detroit district remains uncovered. New inquiry is not in heavy volume but apparently exceeds the amount of iron offered. Production locally is improving through better operating efficiency at the different stacks.

Foundry Iron Scarce

Cincinnati, Nov. 24.—A small tonnage of valley foundry iron (1.75 to 2.25 silicon) has been purchased recently by melters in this vicinity at $34, furnace. The supply has practically been exhausted, and with the exception of special iron in the South there is nothing to offer the foundries in any district. All southern producers have now withdrawn, but one interest is understood to be taking care of a few customers at $32, Birmingham, or an advance of $1 per ton over its last week's quotation. In the Hanging Rock district no foundry iron is to be had, but a furnace farther north is disposing of some malleable. It is reported that the last lot of malleable sold brought over $36, furnace. The last quotation on southern Ohio No. 2 foundry iron (1.75 to 2.25 silicon) was $34.75, Ironton, but none is offered at any figure at present, although there is a heavy inquiry for both first and second quarter shipment.

Prices Continue to Advance

St. Louis, Nov. 24.—The pig iron market has slowed down a bit, due to the fact that supplies are low, and the coal strike threatens to close certain industrial plants. There is no decline in the demand, however, and prices continue to advance. At the close of the week No. 2 southern (1.25 to 1.75 silicon) was quoted at from $33 to $35 for 1919 shipment, and $37 for next year's delivery is being asked for 2.25 to 3.25 silicon. Chicago and valley iron is quoted at $35 for 1.75 to 2.25 silicon. More furnaces are reported out of the market for all deliveries. All consumers are deluged with business, and are making every effort to acquire raw material. Foundries are offering premiums for reasonably prompt shipments. Deliveries from the South are fair, and a few more consignments are arriving from Chicago, Ohio and Michigan points, but scarcity of coal threatens to upset transportation. Sales of various grades of iron during the past week or 10 days run from 20,000 to 25,000 tons in this district, and it is safe to say a fourth as much more could have been placed had the grades desired been available. There has been a good inquiry for malleable iron, one user wanting 700 tons, while other plants are asking for lots ranging from 200 to 500 tons. Some inquiries have been received for unusual grades, among them one for 100 tons of spiegeleisen and small lots of silvery, aggregating about 400 tons.

First-Half Iron Sold at $33

Birmingham, Nov. 25.—Sales of No. 2 foundry iron for delivery in the first half of 1920 have been made in the Birmingham district at $33. A majority of the furnaces, however, are still out of the market. Southern companies are receiving many urgent inquiries. Spot iron is very scarce and some of the companies which have been selling freely into 1920 now show less inclination to do so. Production is still below normal, as fires are banked in three or four furnaces because of the scarcity of coal and coke.

New England Market Tightens

Boston, Nov. 24.—The New England pig iron market suddenly tightened up when several of the furnaces which were offering large blocks of 1920 iron a week ago, closed their books. At present 1920 iron is almost entirely absent from the local market. No Buffalo iron is available, although it is rumored that two of the Susquehanna furnaces have blown in. In rare cases eastern Pennsylvania furnaces are accepting orders from old customers for small tonnages. Sales show a wide spread. A sale of over 500 tons at $37 at an eastern Pennsylvania furnace for No. 2X (2.25 to 2.75 silicon) is reported. One furnace agent reports a sale of 2.75 silicon at $39, eastern Pennsylvania furnace. Sales from the Virginia district have been mostly of special analysis iron, and while a fair tonnage has been moving to New England, it is difficult to determine a market price. Most of the furnaces have announced they are out of the market, but small orders are being accepted. Several of these have been reported at $34, furnace, for 1.75 to 2.25 silicon, though it is doubtful whether any sizable tonnage could be placed under $35. The southern furnaces also are out of the market, but one at least is ready to accept a fair amount of business. Inquiry at present, while in excess of available iron for 1920 is for comparatively small tonnages and in many cases for special analysis iron. One eastern Massachusetts consumer wants 300 tons of 6 per cent silicon iron for prompt or first quarter delivery, and so far no furnace east of Ohio has been able to quote on this tonnage. A western Massachusetts consumer wants 200 tons of 3.25 to 3.75 silicon for prompt delivery and a Connecticut consumer a fair tonnage of malleable. High prices generally have forced much resale iron onto the market and rumors of $43 to $45, delivered, for No. 2X iron are circulating.

Demand Exceeds Supply

Chicago, Nov. 25.—Pig iron melters need much more iron than they have been able to buy and many inquiries for first half fail to bring out offers. Local producers are entirely out of the market, and no sales of northern iron have been made recently except occasional carloads to established customers. On this business $35, furnace, has prevailed. Most southern producers have been out of the market, but one interest has been selling some iron for first quarter recently on the basis of $33, Birmingham, while another has disposed of approximately 10,000 tons at from $32 to $34, Birmingham. Not only are melters in this district drawing supplies from the South, but also from the valleys and even farther east. A malleable melter in Michigan recently closed for 1500 tons, part of which will come from the valleys. A stove manufacturer in Wisconsin has placed 600 and 100 tons of malleable and 1500 and 2000 tons of foundry. An important Wisconsin melter bought 5000 to 6000 tons of foundry, and an inquiry from another Wisconsin melter is for 2000 tons of foundry. The Virginia Iron, Coal & Coke Co. has made tentative offers of first half iron at $35, furnace. Low phosphorus iron has been active, and a Chicago consumer recently inquiring for 3000 tons, is believed to have placed the business. The Ford Motor Co., which has been in the market for a large tonnage, has placed about 8000 tons with southern makers. The Western Electric Co. has just closed for 1000 tons of southern at $34, Birmingham. Settlement of the strike at Jackson county furnaces producing silveries promises to relieve the shortage in the metal soon. A southern producer of silveries is offering some material at $48.25, Birmingham, for 8 per cent, which figures out $53.25, Chicago. Sales have been made of 8 per cent silvery at $50, delivered Chicago.

Three Prices Prevail in Buffalo

Buffalo, Nov. 25.—Three separate pig iron prices are now quoted in this market. One producer is asking $34 for No. 2 foundry (1.75 to 2.25 silicon), another $35 and another $36. On No. 2X foundry (2.25 to 2.75 silicon), one producer is quoting $35.25, another $36.25 and another $37.25. On No. 1X foundry prices are $37, $38 and $39. The high quotation is exclusively for first quarter shipment. The intermediate price is for first quarter, with occasionally a little tonnage of prompt; and the low quotation is for first quarter iron. The last quotation is made by a furnace which is just beginning to come back into production after losing time due to the steel strike. One producer is said to have sold 6500 tons of basic during the week for first half at about $32 to $34. It is now quoting basic at $36. Malleable iron is held at $36.25. Tonnages of all grades are taken up as soon as offered and there is little iron available for prompt delivery.

Eastern Prices Advance Rapidly

Philadelphia, Nov. 25.—Foundry iron prices again are advancing rapidly and $38 for No. 2X (2.25 to 2.75 silicon) and $37 for No. 2 plain (1.75 to 2.25 silicon) already has been obtained at eastern Pennsylvania furnace for next year. One furnace has refused

business at this level. The usual prices of the past few days on No. 2X eastern Pennsylvania furnace have been $36.00, $36.50 and $37.00. No more is heard of $34 and $35 excepting where they were quoted previously and now are being taken up. Several eastern furnaces have sold more than three-fourths of their firsthalf output. As an example of current tendencies, a small lot of Buffalo No. 2X for spot, western shipment was sold at $39, Buffalo. No Buffalo iron now is being offered here. Central Pennsylvania No. 2X for this year has been sold at $36 furnace and some for next year at $36.50 for this district. Virginia prices are up. No. 2 plain is now $34 furnace and No. 2X $35 for this year. One Virginia maker having mainly high silicon iron is quoting $34 for No. 2 plain, $35.25 for No. 2X and $37 for No. 1X. The Virginia Iron, Coal & Coke Co. now is in market for first quarter with prices of $35 for No. 2 plain, $36.25 for No. 2X, $38 for No. 1X and $40 for 3.25 to 3.75 silicon and has sold at this level. It expects to sell mainly $40 grade. It is difficult to estimate the foundry business of the past week but it ran into many thousands of tons. A lot of 3000 tons of gray forge was sold the past week for first quarter at $33.50 eastern Pennsylvania furnace. At least 8000 tons of Pennsylvania malleable were sold at $35 furnace for this year and at $35.50 furnace for first quarter. Over 3000 tons of copper bearing low phosphorus was sold for first quarter and first half at $37 furnace in addition to recently reported sales of standard low phosphorus, 3000 tons were sold for first half at $43.50 delivered this district. Some eastern bessemer is available but no price has been named yet. Incidentally $42 eastern furnace now is being asked for standard low phosphorus. About 1000 tons of basic were sold for first quarter but this was of special analysis and had no bearing on the market. While there is some export inquiry, exchange prevents buying. Producers say that were it not for exchange situation, foreign buying would have resulted in even more acute pig iron scarcity than now prevails here.

Ore Moving More Freely to Furnaces

Cleveland, Nov. 25.—Ore is moving along to the furnaces more freely than at any time since the beginning of the steel strike, but shipments from the upper lakes have come almost to a halt. The Missabe dock at Duluth will be closed for the season Nov. 26 and many ore carriers awaiting cargoes there will not be loaded. Shipments from the mines to docks have stopped, although it is expected to load carriers at some of the docks up to the end of the month. Market conditions are stagnant, thus far no business for 1920 being offered.

The common stock of the recently reorganized Otis Steel Co., Cleveland, made its appearance upon the New York stock exchange last week, with first quotations of around 38. Plants of the company although affected by the steel strike are speedily resuming normal operations, officials report.

Spot Coke Now Plentiful

Bulk of Business in Standard 48-hour Fuel Done at $6 For Prompt Shipment—Production in Advance of Demand

Pittsburgh, Nov. 25.—Spot supplies of both furnace and foundry coke are a little more plentiful than recently and while the range of prices does not vary much from that of a week ago, the higher quotations do not find a general basis in sales, and are somewhat extreme. Standard 48-hour beehive fuel for spot or prompt shipment still has a range of $6 to $6.25, ovens, but the great bulk of the business is at the lower figure. A sale of 200 cars at $6, oven, is noted. Production continues to gain and now is somewhat ahead of the current demands. While occasional spot sales of foundry coke are taking place at higher than $7, ovens, that price is the more general maximum and $6.50 is finding more basis in sales than it did recently. A number of beehive-oven operators lately have been shipping Monday and Tuesday drawings as foundry grade, and the situation also has been weakened by the fact that a number of foundries, short of pig iron, have asked that shipments against contracts be held up. Negotiations are being actively conducted for first-half furnace coke. On fixed price contracts, $6, ovens, has been done with a provision for a higher price in the event wages are increased. Eastern furnace interests were the buyers. It is doubtful if less than that now would be accepted by producers and it is reported that brokers have bid $6.50 for first half tonnages. Sliding scale contracts are being considered in a number of pending deals and some business has been closed on a basis of 5½ to 1 on basic iron, valley furnace. About 6000 tons a month is involved and this provides the basis for the quotation of $5.45, although none of the coke may move at that price, as basic iron may be higher by Jan. 1, when shipments are to start. Other deals are pending on a 5 to 1 basis and some that will mean an even higher price for coke even than that. Such first half business as has been closed in standard 72-hour fuel has been at $6.50 to $6.75, ovens, but operators now will not consider less than the latter figure and some have even more exalted price ideas. Connellsville production of coke for the week ended Nov. 15, is estimated by *The Connellsville Courier* to have been 253,924 tons, against 248,676 tons in the previous week.

Demand Continues Active

New York, Nov. 24.—Active buying continues to feature the coke market, principally for spot shipment, but also for first half. Included in the business of the past week was considerable beehive furnace coke which went at $6.10 to $6.25, Connellsville, both for spot and first half. Beehive foundry coke is bringing $6.75 to $7, Connellsville, both for spot and first half. On northern New Jersey by-product coke, $7, Connellsville, continues to be the price for all deliveries this year, as well as for first half in this district. For first half shipment to New England, however, the northern New Jersey by-product producer is asking $7.50, Connellsville.

Spot Coke in Better Demand

Cincinnati, Nov. 24.—Both spot furnace and foundry coke is said to be in better demand in the Connellsville field. Furnace coke also is wanted for nearby shipment for filling in. The local consumption of foundry coke is well up to normal and most foundries seem to be well supplied, although occasional purchases are necessary. Outside foundries do not seem to be so well fixed and are willing to pay advances on standard brands of coke that can be had for shipment desired. Connellsville furnace coke ranges from $5.75 to $6.25 and foundry grades from $7 to $7.50, ovens. Wise county foundry grades are quoted around $8.50 to $9, and New River is unchanged at $10.50 to $11.20. As high as $12 has been paid on some New River foundry fuel. Gondola cars are again becoming scarcer, and frequently coke shipments have to be sent forward in covered cars.

Good Demand at St. Louis

St. Louis, Nov. 25.—Demand for coke in this district continues good, and supplies are more plentiful. Coal mines supplying ovens which make a good part of the coke used in this district have not closed, and production is on a fairly liberal scale. Cars are more plentiful in the East, and coke is being shipped about as rapidly as produced. Business is largely for prompt or nearby delivery, as virtually all the leading oven interests seem willing to wait before selling heavily into next year. Foundry coke is quoted at $6.75 to $7.50. Dealers report an excellent inquiry from the West, with good tonnages sold as far as California. A number of inquiries were received from Arizona and New Mexico for both foundry and furnace grades. Consumption by smelters has been reduced by labor troubles and car shortage. The recent advance in lead and zinc prices, however, is expected to revive activities. The leading by-product interest here, which obtains its coal from outside the strike zone, has been working at capacity to date and is finding an excellent market for its product.

Southern Ovens Resuming

Birmingham, Ala., Nov. 25.—Coke production in Alabama is still far from being satisfactory. Manufacturers are resuming work at ovens where possible, and output may become normal this week. No new business is being considered. Production of coal is less than 80 per cent of normal.

Because of fuel shortage, British pig-iron production is down to 575,000 tons monthly compared with an average of 625,000 tons for the year to date, 755,000 tons in 1918 and 855,000 tons in 1917.

Coal Strike Hits Scrap

Some Grades of Old Material Held Back by Interruption of Plants —Strong Market in East and Pittsburgh

FOR COMPLETE SCRAP PRICES SEE PAGE 1486

Chicago, Nov. 25.—Actual and prospective shortage of fuel as a result of the present coal strike is putting a damper on some grades of iron and steel scrap, but some consumers who are affected by the shortage of fuel have not let up in their efforts to buy raw material. Rerolling mills are either closed from lack of fuel, or face an early shutdown. Because of the acute shortage of rerolling rails, however, this condition has not resulted in diminution of buying. These mills realize they will need all the rails available well into next year, and as a result they are not letting any material of this character pass them. Steel grades are not moving readily owing to the curtailed buying. Difficulty in obtaining pig iron has caused foundries to seek cast scrap, which is active and is bringing higher prices. Railroad offerings are not many and this source is not yielding its usual tonnage. The Rock Island offers 3300 tons, and the Chicago, Burlington & Quincy 5565 tons. In the latter list is 1000 tons of No. 1 steel rails.

New York Prices Advanced Again

New York, Nov. 24.—A general advance again features the local scrap market. Heavy melting steel has gone up another half dollar, holding at $17.50 to $18 f.o.b. New York. A similar increase has been made in the price of clean cast borings and machine shop turnings. Grate bars, stove plate and wrought pipe and railroad wrought have advanced $1. Heavy cast and machinery cast appear among the few items to remain unchanged, the market on these descriptions holding at $23.50 to $24 and $25 to $26, f.o.b. New York, respectively. With indications pointing to still higher prices, holders generally are backward about disposing of their supplies, which appear plentiful.

Holding for Higher Prices

Philadelphia, Nov. 25.—While heavy melting steel is quoted at $21 to $22 delivered it is doubtful whether any tonnage could be had at this level as dealers are holding for higher. A round tonnage of eastern steel has been sold at $24 delivered Pittsburgh. Rerolling rails have been sold at $32 delivered eastern Pennsylvania. Almost every grade on the list has advanced. While there is a big unsatisfied demand, dealers are holding for higher prices than the present market. Sales generally are less than 1000 tons each.

Prices Are Advancing Rapidly

Pittsburgh, Nov. 25.—Consumers of scrap iron and steel in the Pittsburgh district are showing more interest, and find it impossible to pick up tonnages except at sharply higher prices. Dealers are holding on firmly to open-hearth grades and the dearth of offerings is further intensified by the fact that valley steel manufacturers are buying up supplies at extremely high prices. It is reported that a Massillon, O., steel manufacturer recently made a large purchase of heavy melting steel and paid $25.75 per gross ton, delivered. A Youngstown, O., steel manufacturer is said to have paid $25, delivered, for a substantial tonnage of this grade, and while small tonnages have been moved here at $22.50 to $23, a bid of $23.50 on 6000 tons was refused by a shipper, whose price was $24. The strength of the market in this grade is finding reflection in prices of other open-hearth material. Baled sheets recently have sold at $21, delivered, and it is doubtful if they could be had today under $21.50. Users of machine shop turnings have offered up to $15 for this grade and a steel manufacturer is reported to have paid $28 to $29, delivered, for a tonnage of heavy machinery scrap. The market is extremely short of all kinds of cast scrap.

Market Is Looking Better

Cleveland, Nov. 25.—Scrap iron and steel continues to look up. Heavy melting steel is far below pig iron, and the wider this spread becomes the more confident local scrap dealers are that early 1920 prices will be most satisfactory to them. A Lorain, O., melter is reported to have bought from 10,000 to 15,000 tons of melting steel, up to as high as $23, delivered. Rerolling rails are extremely short, an offer of $30 delivered Pittsburgh with a freight $1.50 from Cleveland having appeared in the local market. No activity is reported in busheling. One local scrap dealer paid $30.50 for some No. 1 cast a few days ago and was able to dispose of it at a good profit. The local buyer of malleable places the market around $26. A dealer claims to be willing to take a good tonnage of blast furnace turnings at $14.50, $1 above the quotation. Some machine shop turnings are reported having been purchased here at $13.60 plant, meaning about $14 delivered consumers' works. Axle turnings are in demand, with practically none available.

Some Grades Increased

Cincinnati, Nov. 24.—The scrap market is advancing slowly, as the coal strike having an adverse effect. Consumption of scrap has been curtailed in a number of rolling mills, especially those in Indiana which are short of fuel. Heavy melting steel is holding its own and an advance of approximately $1 per ton is reported on both No. 1 machine cast and on cast borings. The car shortage still is causing considerable annoyance.

St. Louis Market Soft

St. Louis, Nov. 22.—The bottom has fallen out of the scrap market, due to the coal strike. Threatened with the possibility of having to close down, leading industries stopped buying, and asked that shipments be held up. There had been heavy sales and large accumulations on the recent upturn, and with the halt in consumptive activities smaller dealers and yard interests displayed a feverish desire to sell. Heavy offerings of a variety of grades at radically lower prices were reported, but virtually no trading was done, so that dealers failed to make any revisions in the price lists. Several of the larger plants and heaviest consumers of scrap either closed down last week or announced they would do so soon unless the coal strike was settled. Despite the softness of the market, cast and malleable grades are in strong demand and scarce, and the same is true of other varieties. New offerings were not heavy, the only railroad list being one from the Missouri, Kansas & Texas for 875 tons. Little material is coming in from the country.

Southern Prices Shaded

Birmingham, Ala., Nov. 25.—No. 1 cast and stove plate scrap continue to be most in demand, although considerable heavy melting steel is being used. Consumers are not paying the prices announced by dealers as the market quotations. Stocks on hand are being fairly well maintained.

Prices Advance at Buffalo

Buffalo, Nov. 25.—The price of heavy melting steel in this district is $22.50 to $23 delivered. It is reported that 15,000 tons of this grade has been placed with a local plant at $23 delivered. Inquiry for this material far exceeds supply and is driving up the price. Offers of $22.50 for this grade have been rejected by local dealers. Low phosphorus is up $1. Fairly good sales of machine shop turnings have been made. There is strong activity in all the other grades, and many of them have taken an upward trend.

Cast Scrap is Higher

Boston, Nov. 24.—An urgent demand for cast scrap has caused prices, already high, to mount even higher during the last few days. The amount of scrap accumulating for foundry use is entirely inadequate to the needs and the market tightness in pig iron has aggravated this general condition. Dealers have paid as high as $30 for No. 1 machinery which is the highest point reached since the signing of the armistice. Malleable is also in demand and heavy melting steel while in no way enjoying the activity of the foundry grades, has been moving to the steel centers in large tonnages than for some time. The shortage of cars further south has diverted considerable business to this territory where as yet open top cars are plentiful.

Stocks Are Depleted

New York, Nov. 24.—Stocks in local warehouses are said to be in poor shape. This is particularly true of bars, sheets, small shapes and hoops and bands. The steel strike

has virtually played out, but so heavy are the bookings of the mills that shipments to the local warehouses have improved little, if any. Buyers are accepting substitutions in many instances, while in some cases they are forced to go without after thoroughly scouring the market. This situation has naturally made prices very strong, and advances in some products are expected before the week is over. A better demand for heavy structurals and plates is anticipated as the eastern mills generally are said to be booked several weeks ahead.

Rising Prices

Continue in Semifinished Steel—Sheet Bars Sell at $46.50

Cleveland, Nov. 25.—Some new business in sheet bars in the form of extensions of present contracts into next year have been made by sellers in this district on the basis of $46.50 mill.

Billets Sold at $45

Philadelphia, Nov. 25.—One thousand tons of rerolling billets have been sold to an eastern user at $45, Pittsburgh. Another lot of 2000 tons has been offered at $46 without finding a taker. Billets are far from plentiful.

Premiums Offered on Early Tonnages

Pittsburgh, Nov. 25.—While production of billets, sheet bars and other forms of semifinished steel is gaining steadily, it is not yet sufficient to keep all consumers fully supplied, and there is a strong demand for limited tonnages appearing on the open market. Little new business is reported here in sheet bars, due to the fact that practically all of the current production of Pittsburgh and valley plants is being applied to existing contracts. It is doubtful, however, if a price of less than $45 could be done, and that quotation is nominal, in the lack of any sizable sales. Attempts on the part of some buyers to secure prompt tonnages of standard billets have brought about quotations up to $46, but no sales have been made that high and from $42 to $43 is regarded as the approximate range at present. Sales of wire rods continue to be made at anywhere from $60 to $63 and as high as $57 has been paid for some off-grade material. Demand for rods outruns the supply and such high prices are obtainable on nails and other wire products for early shipment that the manufacturers are inclined to put the price secondary to securing supplies.

Report Sheet Bars at $47

Youngstown, O., Nov. 25.—Few sheet bars, if any, can be bought in this district at the old price of $42. The market for this product is tightening right along. A few tonnages have been closed at $45 which seems to be the average sale price now in effect here. Tonnages are hard to place in view of a future steel shortage and a rising market. Considerable tonnage of open-hearth sheet bars, it is heard, was sold by one mill here this week at $47. Approximately 2000 tons of soft, open-hearth sheet bars were offered in this market recently at $42, Baltimore.

Much Work Now Figured

Structural Awards Less Numerous But Many Plans Are Before Shops—6000 Ton Job in East—Eastern Mills Raise Shapes

New York, Nov. 24.—Outstanding among awards in the eastern structural market is the placing of 6000 tons with the American Bridge Co. for an office building in Philadelphia for the Atlantic Refining Co. This fabricator also was awarded 600 tons for a boiler plant for the Standard Oil Co., at Toledo, O. Other sizable contracts include 1100 tons for a department store in Springfield, Mass., this business going to Levering & Garrigues. New inquiries of importance have been few relatively during the past week. Perhaps the largest calls for 1600 tons for plant construction in Atlanta, Ga., by the Tennessee Copper & Chemical Co., New York. The final date for receiving bids on the heat-treating building at the government armor plate plant at Charleston, W. Va., has been postponed until next month. The drydock for the Baltimore Drydock & Shipbuilding Co., Baltimore, on which bids were asked for approximately 1700 tons, is to be erected of wood, in accordance with a recent change in plans.

More Activity at Boston

Boston, Nov. 24.—Conditions in the structural steel market are improving. The Pittsburgh base price still holds for mill shipments to New England, but the increased lettings, demand on warehouses, and the difficulty in getting prompt deliveries, all tend toward a rising market.

Eastern Prices Advancing

Philadelphia, Nov. 25.—Prices of shapes are advancing rapidly. One eastern mill has a minimum of 2.65c mill, on all business. Another has a minimum of 2.60c mill. On some tonnage of 2.75c and 2.80c, eastern mill, has been done. One eastern mill has a minimum of 3.00c, mill, on bar-size angles, but most makers are still quoting 2.45c, Pittsburgh. Mills are not in a position to make quick delivery of any considerable tonnage business. Durings the past week many thousands of tons, including nearly 4000 tons of ship shapes for Pacific coast yards have been placed in the East. Several thousand tons of ship shapes for export also have been placed. A big shape inquiry is pending, including one lot of 6000 tons. The Belmont Iron Works has 3000 tons for a sheet and tin mill for Follansbee Bros. Co., Toronto, O.

Mills Well Sold Up

Pittsburgh, Nov. 25.—Shape mills in this district are fairly well committed as a result of the demands from consumers not ordinarily served from Pittsburgh, but if there is a scarcity of prompt tonnage it is the smaller sizes, for it is in these that the bookings, both domestic and export, are heaviest. Most makers can take on early business in the larger sizes of angles, beams and channels. This has been a season of light material, not only in shapes, but also in bars and plates. Little premium business in shapes is noted here, although a St. Louis maker of sashes recently was in the market for a prompt tonnage of small angles and offered more than the market price.

Small Tonnages in Demand

Cleveland, Nov. 25.—An unusual amount of business for this time of year is developing in the demand for small tonnages of shapes, but fabricators for the first time this season report a lack of new building projects calling for large orders. Several large projects on which bids have been taken are hanging fire, and contracts are still to be awarded calling for early delivery. The only new job on which figures are being taken is one for 1500 tons for a rim plant to be built in Akron, O., by the Goodyear Tire & Rubber Co. The May Co., Cleveland, is understood to be inquiring for 1500 tons for a new store. Fabricators report a scarcity of labor not only in the shops but among the structural steel workers.

West Keeps Up Demand

Chicago, Nov. 25.—Inquiry for structural material continues strong in western territory with numerous projects being closed each week. The First & Old National bank, Detroit, is considering bids on 4500 tons for a new bank building. The May store at Cleveland is asking bids on 1500 tons for an addition. The Noel State bank, Chicago, asks bids on 250 tons.

CONTRACTS AWARDED

Tradesmen's State Bank at Oklahoma City, Okla., 566 tons, to Morava Construction Co.

Colorado State office building, Denver, 417 tons, to Midwest Steel & Iron Co.

Factory buildings for the Duluth Show Case Co., Duluth, Minn., 104 tons, to National Iron Works.

Office building for Atlantic Refining Co., Philadelphia, 6000 tons; to the American Bridge Co.

Boiler house for Standard Oil Co., Toledo, 600 tons; let through James Stewart & Co., New York City, to the American Bridge Co.

Department store in Springfield, Mass., 1100 tons; to Levering & Garrigues.

Apartment house in Baltimore, 500 tons; to the Chesapeake Iron Works.

Building in Philadelphia, 300 tons; to Phoenix Bridge Co.

Building for Gotham bank, New York City, 900 tons; to Hunkle Iron Co.

Hoffman's Palace theater, Cleveland, 100 tons; let to Republic Structural Steel Co.

New sheet and tin plate plant for Follansbee Bros. Co., Toronto, O., 3000 tons to Belmont Iron Works.

CONTRACTS PENDING

Heat treating department for government armor plant, Charleston, W. Va., about 1600 tons; closing date for bids postponed until next month.

Plant additions for Tennessee Copper & Chemical Co., Atlanta, Ga., 1600 tons, pending.

Bank building for First & Old National Bank Detroit, 4500 tons, bids taken.

Addition for the May Store, Cleveland, 1500 tons bids asked.

Power house for the Continental Motors Co., Muskegon, Mich., 640 tons, bids asked by The Arnold Co.

Addition for the Western Electric Co., Chicago, 400 tons, bids being taken.

Theater for the Industrial investment Co., Minneapolis, 250 tons, bids asked.

Building for Noel State Bank, Chicago, 250 tons, bids asked.

Rim plant for Goodyear Tire & Rubber Co., Akron, O., 1500 tons; bids being taken.

Building for Mullen Boat Co., Salem, O., 700 tons, bids being taken.

Bar Prices Are Bid Up

Intensity of Demand From Buyers Forcing up Market—3.00c Done in East—Chicago Mill Declines Much Tonnage

Chicago, Nov. 25.—Mills are unable to accommodate more than a small portion of present inquiry for soft steel bars as this product is in much heavier demand than plates or shapes. As a result of the sold-up condition of mills, inquiries are being scrutinized carefully and new business is accepted only from regular customers. As a rule it is not possible for the mills to give the latter as much as they ask. The market is steady at 2.62c, Chicago. Mills are operating at much better rate each week, and one important producer finds output for the first half of November is considerably in excess of the entire tonnage rolled during October.

Buying of bar iron is excellent and steady operation over the remainder of the year is assured as far as orders are concerned, and if the coal strike interferes materially this will carry a considerable tonnage over into next year. The minimum quotation at present seems to be 2.77c, Chicago, with some quotations running as high as 3.00c, Chicago. This volume of business has been attained without participation by the railroads.

Bands are under heavy demand and present bookings cover maximum production of most producers for about six weeks. The quotation is 3.02c, base.

Hard steel bar mills have ceased selling because of fuel difficulties and heavy bookings. The final price was 2.85c, base, mill, but with advanced cost of fuel, transportation and old rails, it is confidently believed that when selling is resumed the quotation will be at least 3.00c, mill.

Consumers Bid Up Price

New York, Nov. 24.—Independent steel bar makers say that despite their attitude of moderation as to advancing prices, it seems almost certain that the anxiety of consumers to obtain their requirements will have the effect of bidding up the market. In a great many instances, consumers have insisted on covering themselves for first quarter, and this they have done to such an extent, that some makers now are completely sold up for the first quarter. Much of this first quarter business has been taken at 2.50c, Pittsburgh, for steel bars of ordinary quality and at 2.85c, Pittsburgh, for bars of forging quality. In numerous instances, consumers have insisted upon covering themselves for second quarter, and particularly where it is necessary for the consumers to dispose of their second quarter manufactured products at this time. In booking second quarter business, the mills have been making an allowance for increased costs at that time, although they have no assurance as to just how much these increases will be. It is interesting to note, however, that a considerable portion of the second quarter business which has been booked has been taken on the basis of 3.00c, Pittsburgh, for ordinary steel bars, and 3.25c, Pittsburgh, for steel bars of forging quality. The reason for the additional 10-cent premium which now is being asked for steel bars of forging quality as compared with ordinary commercial bars is the difficulty in obtaining chippers due to the shortage of labor. An eastern buyer has closed for 1500 tons of concrete reinforcing bars for Detroit delivery at 3.50c, Pittsburgh.

Bars Scarce, Selling Higher

Philadelphia, Nov. 25.—Steel bars are scarce and are bringing prices ranging from 2.50c to 3.00c, Pittsburgh, and higher, for prompt shipment. Rivet rods are being sold at 3.50c. Bars of forging quality are bringing 3.25c, Pittsburgh, for any delivery. Twisted reinforcing bars have been sold as high as 3.50c Pittsburgh. The minimum on bar iron is 2.75c, Pittsburgh, and as high as 3.50c is asked on common quality for quick shipment.

Shortage Still Unrelieved

Pittsburgh, Nov. 25.—The shortage of merchant steel bars for early delivery remains extremely acute and those consumers who must have supplies are obliged to pay substantial premiums. The Carnegie Steel Co., and some of the larger independents still are quoting a 2.35c base to regular customers. They are so heavily committed they are unable to enter new business for shipment over the first quarter at that figure. Several of the independent companies are holding at 2.50, Pittsburgh, but if they are entering any new business for future delivery it is with the understanding that the material will take the price which pervails at the time ff delivery. One maker of forging bars in a position to make fairly prompt delivery is quoting 3.90c base, Pittsburgh. Makers of iron bars are heavily sold up and are declining orders from all but their regular customers.

Mills Turn Business Down

Buffalo, Nov. 25.—Bar mills here can have all the business they care to handle. They are all turning away tonnage. Inquiries are for small and large tonnages. One mill has received several inquiries for 5000 to 10,000 tons. This mill has been offered as high as 3.25c and even 3.50c for quick delivery.

Small Sizes Are Scarce

Cleveland, O., Nov. 25.—An acute shortage of bars either soft or special quality under 1-inch size has developed and buyers are searching in all directions for this material. The question of prices appear secondary. As much tonnage as can be had is being taken from warehouses but such supplies are so depleted that only a small fraction of this demand is being filled. The 2.35c base price is so restricted to regular customers of the largest interests that it has become largely nominal at 2.50c and higher is being paid readily. An inquiry for 3000 tons of reinforced bars for a rubber manufacturing plant in this district is current. Reinforced bars are being held at 2.75c to 3.00c in all. Rivet manufacturers now are accepting first-quarter contracts at the old figure of 3.90c for structural Pittsburgh, 4.00c for boilers and 5.50c and 10 off for small rivets.

Bolt Demand Heavy

Chicago, Nov. 25.—Consumers of nuts and bolts are inquiring for large quantities and find it difficult to place this business with producers. One lot of 1,200,000 bolts was recently placed in the Chicago district. Most producers are sold through last quarter, and no new business is being booked for delivery before Jan. 1, 1920.

Substitute Ties for Hoops

Pittsburgh, Nov. 25.—So short is the present supply of hoops that cases are reported where buyers in their anxiety to secure supplies have substituted cotton ties. Most makers have some surplus of ties due to the fact that they rolled more heavily than was necessary for this year's cotton crop.

Bar Shortage Still Felt

Pittsburgh, Nov. 25.—Makers of cold finished steel bars, except those who make their own merchant bars, still are operating on a rather restricted scale because of their inability to secure cars. Demands still are heavy, particularly in the smaller sizes of squares and rounds and for screw stock. Obligations of all makers are piling up steadily and new business is not being booked unless buyers are willing to wait for delivery and then to pay the prices which prevail at time of delivery.

Sheet Mills Need Fuel

Production Again Threatened by Coal Situation—Famine Prevails in Early Material—First Quarter Contracts Closed

Pittsburgh, Nov. 25.—Although the number of active sheet mills is greater now than it has been at any time since Sept. 22 and independent manufacturers actually have more capacity in use than they did just prior to the steel strike, the failure of the union coal miners to go back to work and the consequent shortage of fuel threatens to bring about a reversal of these conditions. The fear is expressed in some quarters that unless coal is available in more generous amounts in the next six days that the number of active sheet mills may fall to an even lower notch than during the worst time of the strike period. While the American Sheet & Tin Plate Co. today is operating about 93 per cent of its sheet mills and independent capacity in use is around 85 per cent, production does not approximate these figures due to the fact that a large number of mills

are employing inexperienced hands. There is almost a famine of sheets for early delivery, and in view of the large carry-over of orders from this year, it probably will be well in the first quarter of 1920 before anything like normal conditions are restored. The American Sheet & Tin Plate Co. will prorate its production during the first half of next year and this fact will throw additional demands on the independents. Business for early 1920 delivery is being taken at the old quotations, but it is understood big premiums are being offered by buyers who must have immediate supplies. A small sale of galvanized sheets recently was made at 6.25c base, Pittsburgh. It is stated that a high price was named for the purpose of discouraging the purchaser.

Sell at Open Prices

Chicago Nov. 25.—The leading independent sheetmaker in Chicago has begun booking contracts for second quarter of 1920 on the basis of about one-half the requirements of its regular customers. The contracts carry no price and the sheets are to be paid for at the price ruling at the time of delivery. Heavy demand for sheets is evident but practically all producers are in a position requiring them to refrain from booking further tonnage.

First Quarter Tonnage Exhausted

Youngstown, O., Nov. 25.—First quarter sheets are impossible to find in this territory. Makers either are committed fully over that period so far as they can tell now, or, they are not inclined to take on additional tonnages on account of the impending fuel crisis. Some mills have a three weeks' supply of coal on hand while others are not so favorably fixed.

Light gage black and galvanized sheets continue in strong demand which has had a tendency to draw out fancy prices. So far as can be found, valley makers have declined to consider these. Dealers, however, have been turning considerable tonnage recently at attractive figures. A few hundred tons of No. 7 gage blue annealed in random lengths were taken by a Detroit automobile builder at a premium considerably over $10 per ton. Some buyers have stipulated the price they are willing to pay for certain grades of sheets and have requested brokers to locate stocks accordingly.

Considerable first quarter tonnage has been closed on March 21 prices, as far as can be learned. Consequently, the quotations of 3.55c for blue annealed, 4.35c for black and 5.70c for galvanized, still holds. But in the case of spot tonnages of various grades in dealer's or broker's hands, prices are practically anything that the buyer is willing to pay.

Want Manganese Ore

Philadelphia, Nov. 25.—More interest is shown in manganese ore by domestic buyers. Consumers have expressed willingness in some cases to pay close to 60 cents per unit at tidewater.

Eastern Plates Higher

Tonnage Sold at 2.75c to 2.85c Mill—Demand Heavy From Various Sources—Oil Field and Ship Work Supplies Big Tonnages

Philadelphia, Nov. 25.—Considerable plate tonnage was sold the past week at 2.75c and 2.85c eastern mill. One lot of 1100 tons for February delivery was booked at 2.90c mill. One eastern maker on some tonnage quoted 3.00c mill. The premiums are due largely to the desire of eastern makers to discourage buying. The demand coming from all classes of domestic sources. Much ship tonnage has been placed but details not announced. There is a big demand from Japan active inquiries totalling more than 10,000 tons which the mills are not taking due to their desire to work off some of tonnage on books for that country. Many inquiries are coming from England, France and Italy and easily 10,000 tons would be placed immediately except for the exchange situation which prevents the establishing of credits. Eastern mills have made some first quarter contracts at 2.75c Pittsburgh where they could not avoid taking them.

Demand is Less Urgent

Pittsburgh, Nov. 25.—Demands on makers of plates in this district are not so heavy and urgent as they were during the first few weeks of the steel plant strike, and some capacity is open for tonnages between now and the end of the year. Consumers not ordinarily served from this district now are able to secure supplies from regular sources. Heavy sheared plates are offered in fair quantities and those used in building cars are said to be easily placed, while there are intimations that all makers are not firmly adhering to the base price of 2.65c, Pittsburgh. Much tonnage is moving to fabricating interests, but car and ship builders still are rather sparing buyers. The latter have rather sizable stocks due to cancellation of orders and these supplies may later be felt as a market influence. Return of railroads to private management is expected to mean big car orders and a consequent demand for car plates.

Oil Business Boosts Demand

Chicago, Nov. 25.—Heavy demand for steel plates is coming out from various sources, with the major portion stimulated by the present activity in production and transportation of oil. The proportion of plates for these purposes is greater in Chicago than in the east and is furnishing mills with heavy tonnage. The leading producer has taken 14,000 tons, mostly plates, with some shapes and bars, and 4000 axles, for 1000 tank cars for the Union Tank line. The same interest has taken 3000 tons of plates for a Pacific coast shipyard to complete Emergency Fleet vessels on which work had been suspended earlier in the year. It also has booked 5000 tons of plates and other steel for car repair work. Much tonnage of plates is being required for the construction of oil tanks, but this comes through fabricators and is difficult to identify. The Standard Oil Co. is buying plates steadily in lots of 1000 tons or more. An inquiry has been put out by a Duluth shipbuilder for 10,000 tons, mostly plates, for second quarter and last half of 1920. Up to this time no producer has been found willing to quote for that remote delivery. The price remains firm at 2.92c, Chicago.

Tin Plate Business

For 1920 Taken by Independents at $7—Export Price, $7.50

Pittsburgh, Nov. 25.—Although the American Sheet & Tin Plate Co. opened its books for first quarter and first half of 1920 business in tin plate on Nov. 15, the independent manufacturers have made no formal opening and in view of the fact that only a few have any tonnage available for shipment over the first quarter, it is unlikely that they will do so. Such business as is being placed on the books is carrying a price of $7 per base box, Pittsburgh, for domestic accounts, but it is understood that some of the smaller makers have disposed of much of their output for first half, and on export business have secured a price of $7.50. It is doubtful if any of the independent companies today would consider a price of less than $7.50 for export business and some talk is heard of an $8 market. The present quotation of Welsh tin platemakers is around $10 a box in American money and while enjoying a better ocean freight rate than American makers, the latter are much better off in the matter of prices at which they can sell in foreign markets. Mill operations, including both the American Sheet & Tin Plate Co. and the independents, today are averaging close to 75 per cent of capacity but production is below this rate due to inexperience of a number of workmen. The possibility of a serious coal shortage may at no distant date curtail operations.

Offers $8 Per Box

Philadelphia, Nov. 25.—Scarcity of tin plate is causing exporters to bid big premiums. One exporter offered to pay $8.00 Pittsburgh without getting any material.

Vice Chancellor Stevenson has signed an order of removal which permits former Judge John Warren to bring the strike case between the American Type Founders Co. and its striking employes into the United States district court for final disposition. The International Association of Machinists is the defendant. The issue involves the picketing of the plant.

Alloy Market is Stronger

Liberal Sales Closed in Ferromanganese and Spiegeleisen—Possibility of Duty on Manganese Ore Becomes Factor

Philadelphia, Nov. 25.—After selling 5000 tons of ferromanganese for the first half of 1920 at $110, domestic producers yesterday advanced the price to $120. Business at this figure has not yet been done, and inquiry is now quiet. Sales during the past week included 2000 tons to a consumer in the Pittsburgh district. Following heavy business in spiegeleisen recently, one producer advanced his price to $45, furnace. Some spot spiegeleisen is still obtainable at $35.

Active Selling Features Market

New York, Nov. 24.—Active selling of spiegeleisen has been the feature of the ferroalloys market during the past week. Sales of 4000 tons are reported and it is likely that the business done was even larger than this total. The delivery involved, in most cases, is first half. This business was done on the basis of $35, furnace, for 18 to 22 per cent metal, 19 to 21 per cent being specified in some cases. There now is a disposition to ask higher prices for spiegeleisen. In fact, it is said that $36, furnace, is the lowest that could be obtained in some quarters. A number of spiegeleisen inquiries now are before the trade.

Inquiry for ferromanganese has taken an upward jump and current lots which are under negotiation involve 2500 to 3000 tons and probably more. The largest of these is a block which the Brier Hill Steel Co. wants for next year. In addition, there has been been some business done the past week involving several hundred tons, mainly for delivery next year. The business which now is being done is on the basis of $110, delivered, for 78 to 82 per cent metal. No English metal is being offered at this time. However, importers have received advices from their British principles, intimating that the former may be in a position this week to offer ferromanganese for 1920 delivery. In the meantime, the only price on English ferromanganese at present is $125, c.i.f. tidewater. This price is significant only because it indicates that the seller is willing to book business at this level as soon as the market advances to this figure. One consumer has offered to place a tonnage with an importer at $95, tidewater, but without interesting the latter. It is stated in the West, according to reports here, that offers of English metal at $100 tidewater, still are outstanding. A canvass of the market indicates that this price was quoted some months ago, and no longer is good.

Inquiries for at least 12,000 tons of ferrochrome, mostly high carbon, were in the market the past week for next year's delivery. The price of ferrochrome, 6 to 8 per cent carbon, remains about 27 to 29 cents, and alloy 4 to 6 per cent carbon, 28 to 30 cents.

The market for 50 per cent ferrosilicon is definitely stronger at $82 to $83, delivered, sales having been made previously at below $80. An inquiry for 300 tons, shipments to begin immediately, was reported.

The ferrotungsten situation shows little change. Foreign offerings continue to be made at less than $1 a pound, duty paid, while domestic makers are quoting $1.15 to $1.25 a pound contained and getting some business.

The price of ferrovanadium is somewhat stronger, but $5.50 per pound contained still can be done on very large lots, for high silicon alloy. Low silicon and otherwise high grade alloy commands $7 a pound contained and higher.

Demand Better, Prices Firmer

Pittsburgh, Nov. 25.—Better demand is noted in practically all kinds of ferroalloys with the possible exception of bessemer ferrosilicon and ferrotungsten. The latter material can be bought for $1 a pound and possibly less, although public quotations of several producers are much above these figures. Lack of activity in bessemer ferrosilicon occasions no weakness in prices for the reason that current production is almost nil, and most of the available supplies are owned by consumers. Competition from Canadian producers of 50 per cent ferrosilicon has practically vanished, and this fact is reflected in a firmer tendency in prices for the domestic material. While four or five carloads of this material recently were sold at $80, furnace, or slightly under $83, delivered Pittsburgh, few makers now would consider less than $85, furnace, freight allowed.

Lack of English competition enables domestic makers of 80 per cent ferromanganese to obtain full quotations on such business as is passing. It is doubtful if any of them now would shade $110, delivered, and with the English makers out of the market, for the time being at least, an advance is considered to be within the range of possibility. The Brier Hill Steel Co. is understood to have closed recently on 2000 tons of 18 to 22 per cent spiegeleisen and to have paid close to $35 furnace. One maker recently withdrew his quotation of $35 ,furnace, and now is quoting $45.

Good demand is noted for ferrochrome with material running low in carbon reported to be bringing up to 31 cents a pound. Ferrovanadium is selling direct to consumers at $5.50 a pound.

Higher Ferro Prices Are Asked

Cleveland, O., Nov. 25.—Domestic makers of ferromanganese are inclined to ask higher prices for forward delivery after having booked some tonnage for that position at the old figure of $110, furnace. One maker has quoted $120 flat and where many $110 quotations have been put out they are coupled with the provision that they are subject to a possible duty on manganese ore. Inquiries total 200 to 3000 tons are current from consumers in this territory.

Activity at Chicago

Chicago, Nov. 25.—Considerable activity in spiegeleisen and ferromanganese has developed. Demand for spiegel is especially good. The price has risen from $35 to $45, furnace, and while sales are not actually known at the maximum, some tonnages have moved at figures slightly under. Sales of ferromanganese involving several hundred tons each have been made for first half at $110, delivered, but sellers who made this figure have since withdrawn.

Contracts for fluor spar are now being made for next year, and the prevailing price is $25, Kentucky mine, for the gravel grade, which is somewhat under the price prevailing during the war.

Rails Reserved

By Pennsylvania With Various Mills —Much Tonnage Still Open

Philadelphia, Nov. 25.—The Pennsylvania railroad has made reservations for first half rails as follows: Carnegie Steel Co., 80,000 tons; Bethlehem Steel Co., 56,000; Cambria Steel Co., 30,000; Lackawanna Steel Co., 12,000, a total of 186,000 tons. The figures are subject to increase or decrease, the business being tentative.

Rail Contracts Near Signing

Chicago, Nov. 25.—Negotiations by western railroads for standard steel rails are going forward to the point where some contracts are practically closed, waiting only final signature by the purchasers. Additional tonnage has come into the negotiations until the total now being considered is practically 300,000 tons. It is understood present negotiations are subject to action of the government relative to turning the railroads back to their owners. Light rails are in active demand for domestic use, and orders approximating 5000 tons have been entered for export to Japan.

In addition to the 1000 tank cars recently bought by the Union Tank line from the Standard Steel Car Co. it is understood this interest has placed a total of 2500 tank cars.

Railroads Figuring Requirements

Pittsburgh, Nov. 25.—While demands for rails are confined entirely to small lots such as are required in repair work, these small orders together with export business provide manufacturers with a fair-sized backlog. It is understood that the railroads are figuring on their requirements and informally seeking information as to the ability of manufacturers to provide for them. Almost no carload business is being done in track bolts at present, but 5.00c, Pittsburgh, is about as low as any other makers now are quoting in quantities of 200 kegs or more. In less than carload lots the price ranges from 5.50c to 5.90c, Pittsburgh. Makers of standard spikes no longer have stocks on hand for only a few small spikes are available for early delivery, unless buyers are prepared to pay around 4.50c, Pittsburgh, as present obligations will probably absorb all production between now and the end of the year.

Spring Demand

Appears Early in Cast Pipe—Southern Prices Again Advanced

New York, Nov. 24.—Buying of cast iron pipe at this time for spring delivery is of significance in the eastern market. Usually consumers do not enter the market for their spring requirements much before the latter part of December. Their present activity is taken by sellers as an indication that they are endeavoring to place orders before prices advance. The market at present is tending strongly upward, and an increase in quotations is expected soon. Bids on the 1500 tons of 36-inch pipe for New York City were closed Nov. 25, the date was originally reported as Nov. 22. Little other public demand is in sight.

Makers Away Behind Orders

Pittsburgh, Nov. 25.—Although operations of pipe mills are much heavier now than at any time since Sept. 22, due to the gains at the valley plants and the fact that the steel strike in the Wheeling district has begun to crumble, production has not gained accordingly because all plants have a number of inexperienced men, and little headway has been made against contract obligations. Most producers are taking orders for oil country goods for 1920 delivery, but are naming no prices, the buyer taking his chances on deliveries and agreeing to pay the price prevailing at the time. A Pittsburgh producer of wrought iron pipe which a few weeks ago advanced prices on both lapweld and buttweld merchant pipe, has taken some business for future delivery at the advance. More or less talk is heard of an advance in steel merchant pipe, but it is probable that action in this direction will be delayed for some time or at least until the National Tube Co. takes a different stand relative to prices. La Belle Iron Works, Steubenville, O., has completed the clean-up and repairs necessary before making a start and this week got some departments in operation. A large number of men employed in the Riverside works of the National Tube Co., Benwood, W. Va., recently signed up to go back to work and an early resumption at the plant of the Wheeling Steel & Iron Co. also is likely. The National Tube Co. has its plants at Pittsburgh, McKeesport, Ellwood City, Pa., and Lorain, O., operating practically normal. The A. M. Byers Co. has its Pittsburgh and Gerard, O., plants running almost full, although somewhat hampered in the matter of production and shipments through green workmen. The Jones & Laughlin Steel Co. has its pipe mills running 100 per cent.

Seek Large Tonnages

Chicago, Nov. 25.—Though the season for buying cast iron pipe is well toward its close, some cities apparently desire to cover their requirements for work next season by getting their orders in early. Bids will be opened Dec. 1 at Elyria, O., on 5000 to 7000 tons and at Toledo, O., Nov. 25, on 3300 tons. Both these lettings involve the larger sizes. Norfolk, Nebr., has bought 145 tons and Witt, Ill., 615 tons, both of which will be furnished by the United States Cast Iron Pipe & Foundry Co.

Southern Makers Advance Price

Birmingham, Ala., Nov. 25.—Prices of cast iron pipe again advanced during the past week, this time $2 per ton. The 4-inch, class B pipe is now quoted at $58, and the 6-inch and over, $55. These quotations are for the 12-foot lengths, the 16-foot pipe being $1 additional. Both sizes of class A pipe are $2 above the B prices. There is a steady demand and the plants will operate on practically full turn through the winter. Sanitary pipe also is in strong demand.

Higher Prices for 1920

Pittsburgh, Nov. 25.—Makers of strip steel have opened their books for first-quarter business on a basis of 6.00c, Pittsburgh, for cold rolled, and 3.50c, Pittsburgh, for hot rolled. This is an advance of $7 per ton on the former and $4 in the latter. Very little tonnage is available. The one maker in this district is in danger of being obliged to curtail production because of the shortage of coal. General production of hot and cold-rolled strip steel still is far short of consumption, and prices are of secondary importance.

Prices of Castings Likely to Adance in East

New York, Nov. 24.—While prices of gray iron castings in this district have not yet been affected by the advance in pig iron and scrap and other foundry materials, eastern foundrymen say that increases are sure to come. The only change which has been noticed in the castings market in recent weeks is the elimination of the disposition on the part of certain foundrymen to shade the market. It is expected that prices in this district will show a tendency to advance at the end of the year.

Most foundries now have enough work on hand to keep them busy for two months, and some are booked considerably in excess of this period. Numerous buyers of castings report that they are having great difficulty in some cases in placing their work for any kind of quick shipment, and difficulty has been had in some cases in obtaining promises of reasonably deferred delivery.

Contract Let for New Follansbee Plant

Philadelphia, Nov. 25.—Follansbee Bros. Co. have let a contract to the Belmont Iron Works, Philadelphia, for the construction of a large new plant at Toronto, O. The project will require about 3000 tons of fabricated steel and the Belmont company will do all of the general contract work above the foundations. The plant at Toronto will comprise a 180 x 360-foot open-hearth building, a 100 x 300-foot bar mill, ingot and furnace building, a 140 x 880-foot hot mill, a 92 x 820-foot annealing building, a 60 x 300-foot scrap shed and a 75 x 500-foot wareroom.

Nail Shortage

Brings Out High Offers—General Wire Situation is Taut

Pittsburgh, Nov. 25.—Huge demands are pouring in on the makers of nails. Not only is the open weather assisting building operations, but the fruit growers of California and the tropics, now in the midst of their shipping season, are poorly supplied. The makers of roofing material who are obliged to provide the nails with every bundle that is shipped are offering as high as $10 a keg. While the general quotation on nails among independents in the Pittsburgh district is 3.50c, Pittsburgh, this is merely a nominal quotation and would not be considered on new bookings. Actually small sales have been made at $4 to $5 and the companies that are taking any advance business are doing so with the stipulation that the tonnage shall take the price which prevails at time of delivery. The situation in other wire products is only slightly less acute. While all makers are running, including the Cambria Steel Co., more success has been maintained in getting the steel production up than in restoring normal conditions in the finishing mills. Galvanized barbed wire, although nominally rated at from 4.20c to 4.35c, Pittsburgh, recently has sold at 5.00c or higher and more than 4.00c has been obtained for galvanized wire. A number of makers have rods for sale because of the slack finishing mill operations and sales to domestic consumers have been made anywhere from $57 to $63, while $75 is said to have been obtained on some export tonnages.

Production On the Increase

New York, Nov. 24.—The principal wiremakers report that they still are unable to give consumers all the material they want. There is a continued great scarcity of nails and the other manufactured wire products. However, the mills are able to give better deliveries now than a week ago. In order to make the material go as far as possible, they are limiting the customers to actual needs. It is estimated that the mills affected by the strike now have at work about two-thirds of the number of workers engaged at the time of the walkout. Production is not yet at the rate of two-thirds of capacity, indicating that the forces are not producing as efficiently as will be the case when the men, many of whom are new, become accustomed to the work.

Nails Sell at 4.50c

Philadelphia, Nov. 25.—Due to scarcity of nails consumers are offering big premiums to tempt sellers. One lot of nails for spot delivery was sold at 4.50c Pittsburgh.

Demand is Strong in South

Birmingham, Ala., Nov. 25.—Southern manufacturers of wire and wire products cannot fill all the orders now in hand and those being offered. The Gulf States Steel Co.'s plant is now producing 100 tons of nails a day and shipping them almost as rapidly as produced, besides taking stock from warehouses. Stocks are being reduced in this effort to supply the most urgent needs.

Export Inquiries Are Excessive

Only Ten Per Cent of Requests For Steel Are Being Turned Into Orders—Japanese Wants Are Larger Than Usual—Impossible to Book Some Products For Delivery During the First Half of 1920

NEW YORK, Nov. 24.—November export sales probably will exceed those made during October but the volume is still below that of last summer. One important steel exporter declares his sales this month have been probably 30 per cent less than during last August. Another exporter says the market is filled with foreign inquiries but that it is practically impossible to place any orders on account of the lack of material. It was estimated that probably not more than 10 per cent of the current inquiries are being turned into orders. The large producers still hold to their preferential list of dealers. Most independent export houses have sold out their stocks in warehouses and have found it almost impossible to replace them. The large dealers will consent to accept orders up to 500 tons, and it is said that it is still possible to obtain plates.

The larger exporting interests, it is reported, are not yet willing to open their books freely to new business because they are anxious to keep down the price. The past week, however, saw a gradual improvement in the situation, as a greater volume of sales were booked, and although most of this is for early delivery some business has been signed up for 1920. The tendency toward higher prices is recognized on all sides. Even billets, which during the summer, were selling cheaper in the export market than in the domestic are now advancing close to the domestic price.

Four-inch billets were sold down to $40, f.a.s. New York, during the past summer. One of the latest sales reported was made at $44 f.a.s. New York. A recent inquiry for 2000 tons of billets brought forth a quotation of $43.50, Pittsburgh. England has been a consistent purchaser of billets but the increased export price coupled with the disparity in the exchange is gradually checking these sales. England has been buying bars and hoops, however. A British inquiry for 50,000 tons of plates met with discouragement in this market because it was felt that it would be impossible to place the order at a satisfactory price.

The United States Steel Products Co. is accepting limited orders for barbed wire for South America and orders for wire rope for the Orient. It has been found that England is competing in many of the markets on galvanized sheets, due to the fact that the English ton contains more sheets than the American ton. The effect of this competition is now being felt in South America.

Base Prices Advanced

In many cases it is no longer a question of paying premiums for the goods booked but the export houses declare the base prices have gone up. For instance wire is now costing from $4.39 to $5 f.a.s. New York. Nails cost from $3.55 to $5 f.a.s., and light rails including accessories sell from $57 to $60 f.a.s. New York. The higher prices and the scarcity of material have enabled the warehouses and the railroads to clean up the congestion which existed at the various ports the first of November.

European business is fairly well blocked although some few sales are reported from time to time. There have been no recent sales to France, although the French are in the market with inquiries for rails and cars. Italy has been making inquiries for nails and sheets and Spain also wants nails. Finland has been inquiring for rails and cars. One of the largest European inquiries was for 10,000 tons of pig iron from Italy. Rumania has been buying sheets and bars. The Rumanian orders filled have averaged 200 tons each.

The Dutch East Indies are back in the market, purchasing sheets, hoops and wire. These orders, generally, are placed through Holland. One of the orders recently placed called for 3000 tons of 26-gage galvanized sheets. A sale of 500 tons of hoops was reported last week to India. The Indian specifications are rather elaborate and at times confusing.

Holland has been purchasing shipbuilding material. Among the sales noted last week were 75 tons of bulb angles and 250 tons of plates. These sales were made by a new export house. Despite the disparity in the exchange it is said that American producers have been demanding 70 per cent of the purchase price of goods sold to Belgium. This has mitigated against sales there inasmuch as Swiss firms are extending credits and doing all they can to facilitate shipments on the Rhine from Basel to Antwerp. French duties on iron and steel have been nearly doubled by the tariff which became effective in July. Values having risen greatly, the former specific duties are multiplied by various coefficients from 1.1 to 3. Tool steel, which paid 15 francs before the war, is now paying 40½ francs per 100 kilos.

South American business has been holding up fairly well. It continues to consist chiefly of wire and similar products which the leading American interests are consenting to book. Among the orders booked were 23,200 reels of barbed wire for Cuba and South America. South America is also inquiring for bed-stead tubing, and has just placed an order for 200,000 feet of English standard pipe. Brazil has purchased 20,000 coils of barbed wire, and Argentine 275 tons of the same material. A small export house reported the sale of 500 tons of barbed wire to South America, and another sold 1000 reels of barbed wire.

Belgium is beginning to sell some products in South America and in these lines it is reported that Belgian prices are approximately 25 per cent below the American prices. An order from Cuba was booked in the United States for 200 tons of 60-pound rails, and it was said that 1500 tons more will be needed within the next two months. The bulk of the export business is being done with the Orient. The Japanese have sent in some tremendous inquiries and the Chinese are flooding the market with small inquiries for miscellaneous material. The Chinese appear to be especially anxious to obtain wire for bailing and similar purposes. The Japanese inquiries are today the feature of the market, however. The Japanese are asking for 100,000 boxes of tin plate, 20,000 tons of sheets and 17,000 kegs of nails, to mention only the most prominent inquiries.

Japan has been buying wire shorts. Among other sales to that country were 500 tons of sheets, 2500 tons of 60-pound rails and 3000 tons of 12-pound rails. Japan has placed a number of orders for hoops. One house reported the sale of 150 tons of hoops, 1500 cases of tin plate and a fair tonnage of galvanized wire. Another house reported the sale of 800 tons of sheets for prompt delivery, and 300 tons of sheets, 1200 tons of tin plate and a small

quantity of structurals for first quarter. This house is now trying to place a Japanese order for 50 miles of 12-pound rails and 3000 tons of billets. A sale of 2000 tons of wire rods was noted last week. Two Japanese inquiries, one for 7000 kegs and another for 4000 kegs of wire nails, have been shunted about the market and it now appears that they will be filled by a Canadian mill. An order for 3000 kegs, however, was taken here. One cable brought a Japanese order to a prominent exporter for more than $1,000,000 worth of goods, aggregating some 5000 tons of material, including light rails, sheets, plates, bars, pipe, wire and nails. An Oriental sale of 3000 cases of tin plate was reported last week. One house reported the sale of 400 tons of galvanized wire, 2000 kegs of nails, 3000 boxes of tin plate and 260 tons of tank plate to China.

Fuel Uncertainty

Delays Increase in Mill Operations, Although Men Are Available

Youngstown, O., Nov. 25.—Officials of Mahoning valley steel companies delayed placing additional equipment in operation this week on account of the impending fuel crisis. All plants, however, are running as near to capacity as possible. When the situation shows some signs of clearing up, officials plan to operate their mills at the maximum. Enough orders are on hand, and plenty of workmen are in the plants to warrant such action.

Old employes of the various steel plants here are applying for their former positions despite the recent assertion of S. T. Hammersmark, secretary of the American Federation of Labor in this territory, to the effect that the laborer's chance of victory never was brighter. Several hundred former employes of the Republic Iron & Steel Co. held a meeting Saturday and voted to return to work.

Few strike pickets were seen at mill gates Monday, the usual number of men changing turns without being molested. As an outcome of the large number of assaults on workmen who returned to work, the mayor has issued orders forbidding the holding of public meetings. John E. McCadden, secretary-treasurer of the Youngstown district for the national committee conducting the steel strike, has been arrested on a charge of violating the new law against syndicalism and is awaiting trial following his release on bond in the sum of $3000.

Forty-two out of 63 open-hearth furnaces in the Mahoning valley are in operation this week as compared with 41 last week, the additional unit having been placed in action at the plant of the Youngstown Sheet & Tube Co. Fifteen out of 25 blast furnaces also are blowing. Every plate mill in this district, with the exception of that of the Sharon Steel Hoop Co., is under power. Nine sheet mills, however, are rolling at this plant, which is two more than reported last week. All three bessemer plants here are active.

Plan Americanization

Chicago, Nov. 24.—Representative of every racial group of workers in Gary, Ind., numbering about 1800 people, met Sunday in the auditorium of the Froebel school and appointed committees to organize each group for Americanization purposes. This is the result of revelations during the steel strike when the menace of unassimilated foreigners was made plain.

Plants Conserving Coal

Cleveland, Nov. 25.—Although the steel strike in this district is to all intents and purposes at an end, operations are curtailed to some extent by a threatened shortage of coal. Most plants have stocks on hand but are conserving them. Because of this condition operations in the district are only at 85 per cent of capacity.

Metallurgical Medal is Awarded Schneider

Charles Eugene Schneider, head of the Creusot Steel Works and chairman of the French economic mission to the United States, was awarded the gold medal of the Mining and Metallurgical Society of America at a dinner in New York, Nov. 25, preliminary to his departure for France. It was the sixth annual award of the medal which is given for research work in metallurgy. Charles M. Schwab presided at the dinner, and among the speakers was Dr. Henry M. Howe, professor emeritus of metallurgy at Columbia university, who told of the importance of the work done by Mr. Schneider during the war. Earlier in the day Stevens Institute of Technology conferred the degree of doctor of engineering on Mr. Schneider.

The Dickey Steel Co., Inc., New York, has been appointed eastern sales and export representative of the Hammond Steel Co., Syracuse, N. Y.

Ordnance Plant

At South Charlestown Made Good Progress, Earle Reports

Washington, Nov. 25.—The first year's developments at the naval ordnance plant, as yet uncompleted, at South Charleston, W. Va., is told by Rear Admiral Ralph Earle, chief of the navy's ordnance bureau in his annual report just issued. War pressure forced speedy operation of the forging and hot-metal departments of the projectile plant, both being in use before the signing of the armistice, with the result that in the fiscal year ending June 30, 1919, the hot metal department produced 5217 gross tons of steel ingots, 228 gross tons of steel castings, while the forging shop turned out approximately 2000 gross tons of forgings.

The projectile plant buildings were completed at the beginning of the fiscal year, Admiral Earle said, and the installation of machine tools was practically completed a year ago. Three electric furnaces, each of six tons capacity, were put in operation in the third quarter of 1918, the department being on a operating basis in September, 1918. In the forging shop a 500-ton press was started on Oct. 2 and a 3000-ton press on Oct. 15, 1915. The heat-treatment department was able to meet the outputs of these departments in August. This completed portion of the plant, with an annual capactiy of 10,000 tons, was ready two months before the signing of the armistice.

Considerable progress has been made in the construction of the main plant. The pouring of foundations for the open hearth, forge and furnace, machine, and heat-treatment buildings was commenced last January and by the first of June this year the erection of the structural steel had commenced.

Admiral Earle's report states $30,000,000 worth of machinery furnished cost-plus ordnance manufacturers, located in 23 plants, has been disposed of by the bureau of ordnance. With the exception of 200 special gun boring and turning lathes sent to ammunition depots for storage, all of this equipment has been allocated to the various naval establishments.

To Corrugate Sheets

Complete ridge rolls and machinery for forming V-crimp and for corrugating zinc sheets have been installed at the plant of the American Zinc Products Co., Greencastle, Ind. With the operation of this equipment, the company engages in a new line of production as formerly its output was confined to zinc slabs and flat sheets.

Fuel Scarcity

Hurts Steel Plants More Than Steel Strike

Pittsburgh, Nov. 25.—Scarcity of fuel, due to the failure of the striking coal miners to observe the spirit as well as the letter of the mandate of the federal court at Indianapolis of Nov. 11, carriers with it a menace more threatening for the steel plants of the country than the strike of the steel plant workmen at its worst stage. That a number of them will be obliged to suspend for want of fuel is a foregone conclusion unless relief is forthcoming immediately in the shape of liberal shipments. Negotiations for a conclusion of the miners' strike still drag on at Washington and even if the trouble was settled by tomorrow, doubt is expressed that enough coal could be provided to help out the situation at the steel plants.

It will be recalled that when the strike was called the average coal stocks at the steel plants of the country were sufficient for about a month's normal consumption. More than four weeks have elapsed since the union miners went out and it is doubtful if the steel plant supplies today are sufficient on the average for another week. In the Pittsburgh district proper, the situation is not as bad as it is in other districts for here the plants are able to draw to some extent upon nonunion fields Plants in the valley district will suffer and in Gary, Ind., the shortage of fuel already is beginning to be felt. In the Wheeling district, it is a shortage of fuel more than a lack of desire on the part of the men to go back to work that is delaying a resumption of steel plant activities.

The steel plant strike is largely a thing of the past. Except for a slight shortage of common labor, Pittsburgh plants are running normally and at one plant here the results in steel production are more pleasing than they were with a full complement of men just before the strike started. The strike rapidly is crumbling in the Wheeling-Steubenville district and in Johnstown, Pa., the Cambria Steel Co., which a fortnight ago was down tight, now is running about 50 per cent. Official calling off of the strike is yet to come and may not materialize.

Actually, the strike is being maintained by the organizers and secretaries, who draw fat salaries during the period of the strike, and naturally will insist because of that fact that the strike exists so long as they have a handful of men to talk to. Privately, however, the leaders are admitting that the strike has been lost and also that the task of organizing the steel plant workmen was too big a task, especially for those who had charge of it. The national committee held a meeting here yesterday, but had no announcement to make at its conclusion other than that a committee had been appointed to investigate into the employment of negroes in the Youngstown, O. plants, and of another to lay the matter before Governor Cox of Ohio.

Shops Are Inadequate

Washington, Nov. 25.—Maj. Gen. C. C. Williams, chief of ordnance, war department, states in his annual report that ordnance shops and depots of the department are adequate to meet any demands. The industrial agencies of the department now include 14 manufacturing arsenals, all equipped to 100 per cent capacity and with sufficient reserves of dies and tools to outfit a score of additional plants.

The report states that the summit of achievement of American mechanical genius during the war was the successful production in quantity of French recuperators, the device which controlled the recoil of all cannon and brought the piece back into position for refiring. Germany's experts never succeeded in making this device, and even its originators, the French, continued to turn it out one by one.

Scotch Molders Fail to Join British Strike

(By Special Cable)

London, Nov. 25.—Molders in Scotland have decided not to join the British foundry strike. The strike in England is in its tenth week and the shortage of castings is serious, plants closing. One hundred thousand workers are involved in England. They are demanding an advance of 15 shillings a week. There is a possibility of an early settlement.

British coal output is steadily increasing. Production in the week of Nov. 8 was the highest yet. It amounted to 4,800,000 tons.

Conditions Are Favorable

Boston, Nov. 25.—In spite of strikes, local difficulties, and a market uncertainty, industrial conditions throughout New England are favorable. Probably no other section of the country is at present as well supplied with bituminous coal. A recent report by the New England coal commissioner of the railroad administration announces that the fuel situation here is now well in hand. This is in the face of a silent coal strike which is already cutting down railroad service and curtailing manufacturing in some other parts of the country. Good supplies of coal have been arriving recently by water from the New River and Pocohontas fields.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Nov. 19	19.50	52.87½	6.75	7.85	33.00	9.25	41.00
Nov. 20	19.50	52.87½	6.75	7.75	33.00	9.25	42.00
Nov. 21	19.50	53.12½	6.75	7.75	33.00	9.25	42.00
Nov. 24	19.25	54.25	6.75	7.85	33.00	9.25	42.00
Nov. 25	18.90	55.00	6.75	7.90	33.00	9.25	42.00

*Future shipment from Singapore.
† American Smelting & Refining Co.'s price.
‡Open market.

NEW YORK, Nov. 25.—Renewed possibility of intervention in Mexico precipitated another war cloud in the metal markets the past week. Accompanying this development have been higher rates of Sterling and other foreign exchanges, together with shap advances in the English metal markets. General opinion in the markets is that serious trouble would further stiffen exchange rates against the United States enabling increased export business in metals, thereby affecting the domestic markets. Intervention also might affect the Mexican silver output and thereby further influence the world monetary situation. Lead, coper and other metals are produced in large quantities in Mexico.

The copper market declined further the past week, nnder slack demand. Producers competed with outsiders in a wide open market and electrolytic copper prices dropped to 18.87½c and 19.00c Tuesday. Casting went to 18.25c and lake to 19.25c and 19.50c. One factor in copper was the less favorable export outlook, caused by the failure of the senate to ratify the peace treaty, thereby deferring the time when suitable financial arrangements could be made.

Tin prices advanced about 1½c to 2½c a pound the past week. Business was done a week ago in Straits tin for future shipment as low as 52.75c, New York, but the big advance in tin prices at London, plus the strengthening of exchange increased the cost of importation to 55.00c Tuesday. Banca tin prices are about a quarter cent below Straits. for all positions and 99 per cent tin about half a cent below Straits tin. Spot Straits tin advanced to 54.50c, exstore.

The prime western zinc market, after dropping from 8.00c to 7.75c, East St. Louis, recovered during the week to about 7.90c for shipment this year, 8.00c for shipment first quarter. Dealers showed active interest in the market and there was an increased galvanized inquiry. Less export interest was manifested.

The lead market remained strong, with outside interests asking 6.90c, New York, 6.70c to 6.75c, East St. Louis, as against the leading producers' quotation of 6.75c, New York, 6.50c, East St. Louis.

The antimony market is strong at 9.25c, duty paid, New York, for both prompt and futures.

The price of ingot nickel was advanced during the week to 42c, New York.

Aluminum is steady.

Welsh Steel Plant Self-Contained

Raw Materials Are Controlled by Company, Which Makes Diversified Line of Products—New Blast Furnaces Now Under Construction Will Give Company Annual Iron Output of 450,000 Tons

BY JOSEPH HORTON
British Correspondent of The Iron Trade Review

IT IS rare that coking coal, iron ore, limestone and dolomite are found in close proximity to a site suitable for an extensive blast-furnace and steelworks plant. In Lorraine, ore and coal are mined near the center of the steel industry, but the coal has poor coking properties. In the United States, except in the south, ore is in most cases carried hundreds of miles to the furnaces. In the Sheffield district of England, the furnaces and mills are built within city limits and receive iron and fuel from railroad cars.

South Wales, however, is rich in the essential materials for steelmaking. In the hills and valleys of Monmouthshire, rich mineral deposits are found close to the surface, and here the Ebbw Vale Steel, Iron & Coal Co. has developed mining, smelting and manufacturing properties which in the aggregate constitute one of the most complete steelmaking establishments in the United Kingdom.

The original iron works were acquired from the Earl of Pembroke in 1674; they came into the possession of Messrs. Harford, the Ebbw Vale partners, in 1780, and since then the fortunes made by the iron kings of Wales have reached fabulous amounts. In the middle of the nineteenth century the Ebbw Vale Co., whose operations were on a small scale compared with those of the present time, realized large profits for many years. Originally, the works were established for the production of iron, but at that time the vast mineral wealth of the district was not known. The coal was worked in drifts where it cropped out at the escarpments of the hills, a very cheap form of mineral extraction. It is stated that in the early days coal and iron ore could be placed at the furnace top for about $0.36 per ton. Wages were low, the furnace keepers' wages ranging from $2.88 to $3.60 per week.

The Ebbw Vale company is credited with having turned out the first iron rail ever made in South Wales. That was in 1830, and at the company's offices a rail made for the Stockton & Darlington railroad more than 80 years ago may be seen. It is claimed that the Ebbw Vale plant is the only self-contained iron and steel works in Great Britain, since the company possesses its coal and native iron ore mines and native limestone and dolomite quarries. It owns 3300 acres of freehold land and, with its subsidiary companies, has in addition 11,000 acres of leasehold property. When its present blast-furnace plant, which includes nine stacks, are completed, the company will be in a position to produce 450,000 tons of pig iron per year. Last year the company produced 2,800,000 tons of coal; employed over 20,000 men; paid $18,195,843 in wages and over $729,975 in imperial taxation. A 15 per cent dividend recently was declared.

The most important extension consists of two new blast furnaces which will cost about $4,866,650 and increase the prewar output approximately 50 per cent. During the war the labor difficulty was largely overcome by



FIG. 1—NOS. 1, 2 AND 3 BLAST FURNACES AT THE VICTORIA PLANT OF THE EBBW VALE STEEL, IRON & COAL CO., MONMOUTHSHIRE, SOUTH WALES. THE HOT METAL IS CAST IN OPEN PIG BEDS

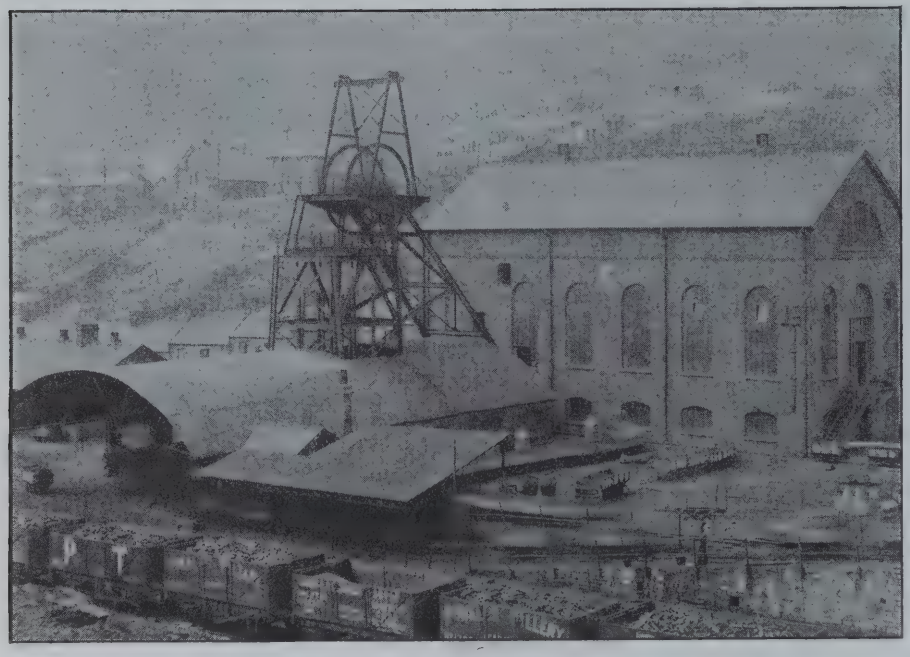


FIG. 2—HOISTING EQUIPMENT AT THE PRINCE OF WALES COLLIERY, EBBW VALE

employing about 3000 girls. Provision also was made for dependents, and approximately $827,305 was spent for this purpose. In addition to the Welsh lands there are about 1400 acres of ore mines at Irthlingborough, Northamptonshire, proved to contain a bed of ore at a depth of 80 feet below the surface which averages 9 feet in thickness. When calcined it yields a product averaging 46 to 48 per cent of metallic iron. The acquisition of this iron-ore mine has rendered the company independent of foreign ore which formerly was obtained from the north and south of Spain and from Algeria. The Northampton bed is computed to contain about 50,000,000 tons and is sufficient to serve all requirements for a considerable number of years. The ore production at this mine normally is about 2000 tons per 24 hours, and this would be maintained but for the unfortunate shortage of ore cars, from which all British trades are suffering at the present time. The necessary limestone is obtained from the company's quarries situated within 5 miles of the works on the crown of the neighboring range of hills. There is an area of at least 150 acres of limestone the depth of the stone being about 450 feet, and the supply of material of first class quality is practically inexhaustible.

Controls Extensive Coal Mines

The plant is surrounded by coal mines. The company can mine 6,000,000 tons per year when working at maximum production. Among the coal properties are the Prince of Wales pit, in the center of Ebbw Vale; the Waunllwydd, which is near by; the Marina, which is 2 miles south of the works; the Graig-Fawr and the Red Ash pits; the Abercarn pit, the name of which is unhappily familiar throughout Wales as the scene of a terrible explosion in 1878 when 280 persons lost their lives; and the Cwm Carn colliery, which is electrically equipped throughout. Associated with the company under the same directorate is the group of pits owned by the Powells Tillery Co., in the Abertillery district; and also the Taly-Wayn pit and various pits owned by Messrs. John Lancaster & Co., which were acquired within the past few years. A new pit is being sunk at Aberbeeg. To meet the dolomite requirements of steel manufacture a quarry at Risca, containing valuable quantities of first class dolomite rock, has been purchased.

An ample water supply is obtained from 2000 acres of gathering grounds north of the works. A reservoir, which will increase the storage capacity to 250,000,000 gallons, is at present in course of construction. The water is suitable for the boilers, and there is an arrangement with the local authorities by which the company's supplies can be drawn upon for public use when required.

One Stack Used as a Spare

At the blast-furnace plant four stacks are in operation, the oldest of these being 60 feet high with a 17-foot bosh and a 9-foot hearth. The practice followed is to operate three of the stacks while the fourth is being repaired. The total production is 2400 tons per week. The blowing engine is a beam-type unit and is one of the largest of its kind ever built in Great Britain, the blowing cylinders being 12 feet in diameter with a piston stroke of 12 feet. In spite of its age the blower continues to give good service. A more modern plant is situated at Victoria, about a mile down the valley. The plant includes two furnaces, 60 feet high, with 18-foot boshes and 10½-foot hearths, each furnace having a weekly output of 1100 tons. The third furnace which was built in 1902 is 75 feet high and is equipped with an 18½-foot bosh and an 11-foot hearth.

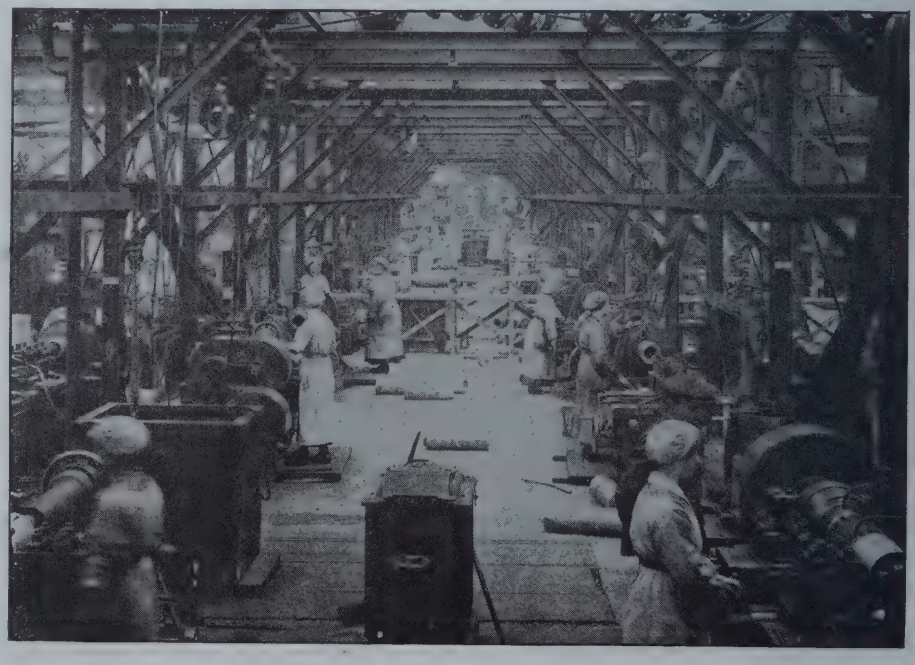


FIG. 3—INTERIOR OF THE PROJECTILE DEPARTMENT WHICH, IN 1918, PRODUCED 1000 SHELLS PER WEEK

This furnace is blown with 10 tuyeres and the blowing equipment is modern throughout. The furnace is served by a row of large bins for storing the raw material. The stock is transferred through an underground tunnel to the skips which charge it into the top of the furnace. The hoisting apparatus was built by the Brown Hoisting Machinery Co., Cleveland. The capacity of this furnace is 2200 tons per week. The gas from the furnace is passed through a Halberg-Beth type cleaning plant, prior to its delivery to the stoves and boilers.

The blowing equipment includes two compound, quarter-crank engines of American type, one built by Richardson, Westgarth & Co., Ltd., Hartlepool, Eng., and the other by Galloway, Ltd., Manchester, Eng. They are capable of blowing 20 pounds pressure per square inch. A third engine is of the Kitson type and in addition there is a Parsons-type, parallel-blow, turbo-blower. The latter two engines deliver the air at 10 pounds per square inch pressure.



FIG. 5—BESSEMER DEPARTMENT INCLUDES FOUR 25-TON CONVERTERS, AND ONE 750-TON AND ONE 250-TON MIXER

Collieries Will Be Electrified

The furnace gases are led to a power station where they are used for generating electricity. Part of the current is used at the steel plant, and part at the Ebbw Vale group of collieries. Arrangements for electrifying all of the collieries connected with the company's property and connecting the system throughout by means of ring mains now are being made. The generating equipment includes two 5000-kilowatt and two 2000-kilowatt turbo-generators which supply alternating current at 2200 volts; and a 1500-kilowatt generator which supplies direct current for lighting, crane operation, and various subsidiary requirements throughout the works. These generators, however, are being displaced by rotary converters which will use current from the more economical source. The boilers are fired chiefly with blast-furnace and coke-oven gas. An auxiliary installation, however, includes coal-fired boilers.

The current used for public lighting in the district is provided by this installation, the local urban council buying light from the company. Electricity is available for street lighting, general household and domestic purposes.

The coke plant before the war included 100 by-product ovens of the type designed by the Koppers' Coke Oven & By-product Co., Sheffield, Eng., but 50 additional ovens lately have been added and now are being placed in operation. Another battery of 100 ovens on a second site is in course of construction. All these ovens are built conveniently near the blast furnaces. Still another battery of 100 ovens is built near the Maune pitts. The company recently dismantled 150 ovens of the same type, which originally occupied the site of the latest erection. The ovens are served by washeries at Ebbow Vale, Marine and Abertillery. The company's entire output of small coal is coked, the total production now being from 8000 to 9000 tons per week.

The by-product plant is of the latest type adapted to the recovery of ammonium sulphate, tar and benzol. During the war large quantities of toluol were obtained from this plant. Connected with the by-product plant is a department for the manufacture of sulphuric acid. The surplus gas from the new ovens is led to the boilers adjoining the generating station, where it serves to augment the main gas supply.



FIG. 4—PART OF THE GENERATING EQUIPMENT AT THE VICTORIA PLANT

Steel Mill Equipment

The bulk of the pig iron produced at the furnaces is conveyed in ladles of 30 tons capacity to the steel plant which is midway between the two groups of furnaces. The bessemer

works include one 750-ton and one 250-ton mixer, both of which are heated by means of producer gas; and four converters each of 25 tons capacity. The department is served by two 50-ton overhead cranes. The casting pits are arranged on either side of the casting crane track which is parallel to the general line of the shop building. Approximately 100 tons of steel are poured in 24 hours. The ingots are removed from their molds by an electrically-driven overhead stripper built by Wellman, Seaver & Head, Ltd., now known as Wellman, Smith, Owen Engineering Corp., London, and are charged into soaking pits below the level of the mill floor by means of two 5-ton overhead cranes. As a rule, the ingots weigh 2½ tons.

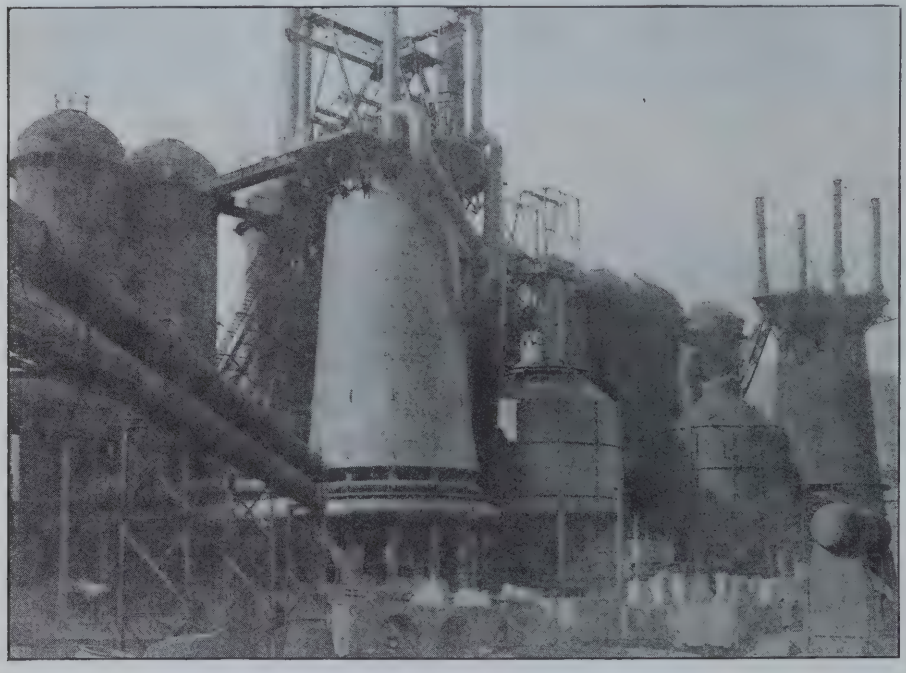


FIG. 6—NOS. 4 AND 5 STACKS AT THE VICTORIA PLANT ARE NOW IN THE COURSE OF CONSTRUCTION. THE FURNACE LINES CONFORM CLOSELY TO AMERICAN PRACTICE

The blooming department which is built parallel to the steelmaking plant includes a 40-inch, two-high reversing mill. A 36-inch roughing train, and a 30-inch finishing train of the two-high type, rolls the steel into rails, 4 and 2-inch billets, and sheet and tin bars ranging in width up to 12 inches.

Utilizes Steam Drive

The mills are steam driven and are well situated for loading purposes, the cooling beds being built on a level with the railway cars. The numerous railway lines intersecting the company's property embraces a mileage larger than some British railways. About 30 locomotives are necessary for intermill switching. Direct plant communication with the main railway lines, which lead to Newport and elsewhere, are to be had. The works are situated at a height of about 1000 feet above sea level, 21 miles by rail from Newport, the well-known Monmouthshire seaport. This facilitates the coasting of cars from the works to the sea, a matter of great importance, where large tonnages, a fair proportion of which is for export, have to be handled. Foreign ores, brought by sea, are unloaded at the company's wharves situated at the mouth of the River Usk at Newport. They are conveyed from there in the company's drop-bottom hopper cars to the blast furnaces and are dumped directly into the bins at a height of approximately 50 feet above the furnace yard.

A ropeway haulage system is used for conveying coal to the storage bunkers, a distance of three-quarters of a mile from a point close to the railway company's system. Another ropeway recently has been utilized for delivering ore to the furnace bins.

The steam required for plant operation is obtained from a battery of Lancashire coal-fired boilers, as well as from boilers served with waste gases from the soaking pits. These boilers, however, now are being displaced by modern water-tube boilers which are fired mechanically with coal from a system of storage bins. All cranes and part of the auxiliary equipment in the steel works are electrically operated. A large part of the sheet-bar production is utilized in a neighboring sheet-mill plant which rolls approximately 5000 tons of sheets per week.

Four Siemens-Martin type open-hearth furnaces of 25 tons capacity utilize the large quantity of scrap produced in the works. The steel from these furnaces is rolled on a two-high, reversing, 28-inch roughing and finishing mill into spring steel, plates, light-colliery rails, tube steel, rounds, and miscellaneous sections. Production usually averages from 800 to 1000 tons per week. When necessary this mill can be served from the blooming mill previously mentioned.

Sheet Mill Practice

South of the main steelworks and near the blooming mill department is a modern sheet-mill plant which was completed in 1913. The plant has a weekly output of 500 to 600 tons of light sheets. While rolling heavy gages during the war, production averaged 1000 tons a week. Sheets up to 60 inches wide of varying lengths can be rolled. The main trains consist of two sets of three hot rolls and one set of cold rolls, placed on each side of the center drive. The mill is operated by a 1000-horsepower, electric motor made by the British Westinghouse Co., Ltd. The motor operates at 185 revolutions per minute and by means of reduction gears, drives the mills at 30 revolutions per minute. The motor flywheel with its shaft weighs 180 tons. The drive is equipped with an automatic slip regulator which permits the motor to slow down under the impact of heavy peak loads, the load being taken by the flywheel. The shears are built to cut sheets in lengths up to 12 feet. After leaving the rolls the sheets are passed into a continuous-type annealing furnace. The plant is equipped with galvanizing and corrugating units, the product of which was in large demand prior to the war. The Great Western railway runs alongside the dispatching warehouse.

The production of springs for railway cars and locomotives has been an important item. At Pont-Newydd near Newport there is a small plant for manufacturing weldless tubes by the Mannesmann process.

The company has specialized on the production of ingot molds which have constituted a large proportion of the 500 tons of the weekly foundry output. Castings up to 40 tons and ingot molds up to 18 tons are made. The cranes used in the foundry are electrically operated. During the war a special shop was equipped for the production of 18-pound shells and this was followed by the manufacture of 60-pound, high-explosive shells and 8-inch shells, the total production of the latter being 1000 shells per week. This work was discontinued after the signing of the armistice.

As showing the varied character of the company's productions mention may be made of the two large works for making firebricks and ordinary building

bricks. The raw material comes from the used linings of blast furnaces and from clay rejected from the old iron ore workings operated many years ago. In Sirhowy at the head of the adjoining valley the company also operates a brickworks which utilizes the bricks from a blast furnace dismantled 20 years ago.

The new blast furnaces now being erected at Victoria embody the latest design. They are 85 feet high with boshes 22½ feet and hearths 14 feet in diameter. The charging apparatus is the product of the Brown Hoisting Machinery Co., Cleveland. Each furnace is equipped with five 90-foot stoves. The blowing equipment includes three turboblowers each capable of delivering 40,000 cubic feet of free air per minute at 25 pounds pressure. The gas-cleaning plant is being enlarged to deal with the gas from these furnaces, and additional generating equipment is being installed in order to utilize the surplus gases. These furnaces will be among the largest in the United Kingdom. The dust catchers are 36 feet in diameter. The storage-bin system which is in line with the existing plant is being extended to serve the new furnaces. It is believed each of these furnaces will have an ore smelting capacity of 2500 tons per week, a large increase over present conditions.

An important auxiliary of the furnaces is a pig-casting machine now approaching completion. The molten metal is transferred in ladles from the furnace to the pig machine where it is poured into a master trough. The latter directs it into traveling molds. The pigs are cooled under water prior to their discharge into railroad cars. It is believed this is the first introduction into England of this type of pig machine which was built by Heyl & Patterson, Pittsburgh. One of the new blast furnaces is ready to blow in now and it is expected the other will be in operation by the end of the year.

New Plant Construction

The character of the ore from the Irthlingborough mines will necessitate changing over to the basic process. To meet this requirement two additional 25-ton converters have been built in the bessemer department. A special plant has been provided for calcining, cementing and preparing the dolomite mixture. It has been found necessary to provide special apparatus for manufacturing dolomite brick for the lining of the vessels.

A ramming machine of the Lilleshall company's design is being installed for the purpose of fabricating the convertor bottoms. It is likely that a complete alternation of the rolling-mill department will become necessary. This now is under consideration. One change, perhaps, will be the substitution of electric power for steam except for the main units. These, no doubt, will continue to be operated by steam owing to the fact that greater economies can be affected by conveying power to the outlying portion of the company's property.

The tube plant during the war turned out 100 tons of weldless tubes per week. The company also manufactures a three-link weldless car coupling from a billet by means of Pilot's drop-forging process. Each coupling shows a breaking strain of 100 tons. Approximately 1000 sets of couplings are produced per week. This is the first time that the old method of producing the car coupling has been superseded in Great Britain by mechanical process.

At present the company is building a modern plant with equipment made by Ingersoll-Rand Co. at its limestone quarries for drilling shot holes for blasting purposes. Limestone is handled by means of steam shovels and from the crushing plant is loaded mechanically and conveyed to the works. The crusher, which was constructed by Hadfields, Ltd., Sheffield, Eng., and is said to be the largest unit of its type in Great Britain. It is anticipated that this plant will increase the output of stone to about 1000 tons per 8-hour shift.

A commodious canteen, where hot meals may be had at a moderate cost, was built recently by the company. It is fitted with the latest electrical cooking appliances and is under the control of a works committee. A large area near the works has been set apart for recreation.

Applying Electric Drive to Steel Mills

In a written discussion of the paper on the electrification of reversing steel mills presented by Wilfred Sykes at the recent general meeting of the American Iron and Steel institute, David B. Rushmore, General Electric Co., Schenectady, N. Y., declares that in the future, the present age will stand out distinctly for the enormous rate of progress of the development of what we call industry, the transformation of raw materials into the products that man wants for ultimate consumption, and the use of energy in other forms than manpower for the transformations thus brought about.

Unless we have taken especial pains to see it but few of us realize the importance of the fact that we are drawing our natural sources of energy for all of the products of industry from horsepower hours of energy; that every locomotive, every rail and every part of industry contains a certain number of horsepower hours of energy, and that without them civilization could not exist on the plane on which it does.

In applying electric power to the steel mills there necessarily has been, as in everything else, an evolution. The steel industry is made up of men desiring results and reliability, and accustomed in their minds to rapid changes in methods. If there is one word that applies to this condition it is "progress." Steelmakers have developed the habit of mind of rapid progress which involves throwing away the old and replacing it with the better. Engineers, presidents and operators all have contributed very largely to this condition.

Electrical manufacturers in the main industrial fields in which they work have been very fortunate in having the active and effective cooperation of the men in the industries, and as the necessity on the part of the electrical manufacturer for determining with accuracy and precision the facts concerning the application of electrical machinery has made itself apparent, he has had a very able and close co-operation from men in the industries.

The future of electrical machinery and its application to steel mills is very great. Motors are fairly well developed. Progress is being made continuously. The forms used in some of the mills require a very complete understanding of the electrical phenomena involved. The greatest opportunity for development in electrical machinery, as well as in human beings, is in the function of automatic control, so that the machinery runs, after it is once started in operation, stimulated by the load conditions and not by externally introduced forces of man. Progress along this line is rapid and the field of the future is very great.

With a view to relieving traffic congestion caused by a shortage of cars, the British ministry of transport is pressing the return of railroad material from France, according to a bulletin in *Commerce Reports*. At present cars are being returned at the rate of 500 a week and it is expected this number will be increased to 900 shortly, which would mean the return of all such material to the British isles in six months. Some of this railroad equipment came from the railway companies and will be returned. Locomotives and trucks are being allocated to the railroads according to priority of need.

Public's Interest is Paramount

Problem Before Americans is to Forestall Use of Autocratic Power by Either Labor or Capital, President of the Society of Industrial Engineers Declares—No Panacea for Labor Disputes—Urges Intelligence in Management

BY L. W. WALLACE

FROM time immemorial there have been labor problems, and it is our conviction that, since labor problems have always existed, they will continue to arise as long as humanity is constituted as it is. Therefore, I do not anticipate that at this time, or at any further period there will be evolved a panacea that will forever solve any and all problems that may arise between employer and employe. This is no more possible than that a plan can be evolved whereby there will be no more wars between nations. Indeed plans can be formulated and principles can be laid down which will greatly reduce the probability of labor disputes and which will eliminate the likelihood of many wars. Some form of industrial democracy on one hand and a league of nations on the other unquestionably will be an agent of great value and influence, but those agents within and of themselves will not eliminate labor troubles, nor make impossible future wars.

In recent weeks we have heard much about the efficacy of industrial democracy, of shop committees, of senate and house plan, of collective bargaining, as the panaceas for all labor problems. During the same period, we have had striking examples of the inadequacy of all these plans. Industrial democracy is a misnomer unless fairly and honestly applied. Collective bargaining is a great danger if wrongly applied and is used as an instrument of autocratic power.

There is no panacea, as industrial democracy, profit sharing, committee system, open shop, closed shop or collective bargaining. None of these agencies will accomplish or avail much unless there be behind them and disseminated through every fiber and thread, and spirit of fairness, honesty and justice. If these principles be present, there will be no labor trouble. And again, if they be present, it does not matter much what plan is used. This accounts for many striking examples of the successful management of labor through each of the plans named. Because these successful examples can be pointed out is the reason for the confusion in the minds of many, whereas if a close analysis be made, it would be found that the wholesome conditions existing in each case were not due to the plan in vogue, but to the fact that the employer and the employe, each in turn, was a believer in and a practiser of the cardinal virtues of honesty, fairness and justice. The unfortunate thing is that many employes, many employers, many associations of employes, and many labor organizations have violated and ignored these principles. Through the utter disregard of the principles great damage has been done, and, to quote: "Great powers have been used arbitrarily and autocratically, to exact unmerited profit or compensation by both capital and labor. This policy of exacting profit rather than rendering service has wasted enormous stores of human and natural resources, and has put in places of authority those who seek selfish advantage regardless of the interests of the community."

Must Curb Autocratic Power

The problem before the American public is to evolve those plans and to inaugurate those policies that will make such use of arbitrary and autocratic power a grave offense against the community, and to make it impossible for any such arbitrary power to evoke its wrath against the will and against the welfare of the masses. Such plans should provide severe and sure punishment for the autocratic employer or autocratic labor leader who wilfully violates the principles of honesty, fairness and justice, and by such violations brings hardships, despair and heartaches upon the masses. One is just as guilty as the other and we have had glaring examples of the evils of the financial trust and of the labor trust. Both are equally culpable, and both should be dealt with in like manner.

Many of the abuses have grown up through ignorance of cause and effect. Poor management, incompetent supervision, excessive equipment, large inventories, poor equipment, inadequate sales policies and other causes have resulted in reduced income and a loss of net profits. Ignorance of the causes leads to a misinterpretation of the reason for the effects. In arriving at a solution incompetency in management again shows itself; faulty analyses and incorrect conclusions follow. Wages are cut, demands increased, working conditions made less desirable; all of which is a disregard of the principles of honesty, fairness and justice, the result being strained relationships, strikes, bloodshed, destruction of property, no one being permanently benefited.

Ignorance of cause and effect on the part of labor leads to many misinterpretations and faulty conclusions, such as to believe that to limit production is to benefit the worker, to decrease the length of the workday is conducive to the prosperity and the wellbeing of society and of labor, to oppose the training of the worker, to place all workers in a given trade on a par, regardless of capacity or ability, to demand compensation for which no adequate service has been rendered and to deny the right of individual choice of employment. These policies inevitably lead to reduction of production, increased cost, to suspicion, to the disregard of the rights of property, rights of individuals and rights of society.

It is the function and province of the industrial engineer to make the correct analysis, to predict effects through known causes. It is purely the mission of the industrial engineer of wide experience, of great foresight and of unselfish motive to see to it:

FIRST: That every action is based upon the principles of honesty, fairness and justice to the employe, the employer and the public.

SECOND: To so formulate the plan of action as to eliminate all unfair privilege of the employer and employe and to make it possible for each to fulfill its responsibilities to the community.

THIRD: To so organize the plant or industry as to make it exceedingly difficult for an incompetent to hold a position of authority or to exert autocratic control.

It is exceedingly difficult to formulate the particular steps to be taken to accomplish this commission. In fact it is our thought that no definite and tangible plan of procedure can be formulated which will fit every requirement or occasion. Each plant, each industry, each problem must be aproached in a different manner. But to each must be applied the fundamental principles of

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From a paper presented at the Cleveland Conference of the Society of Industrial Engineers, Oct. 29-31. The author, L. W. Wallace, is president of the society, and general manager of the Red Cross Institute for the Blind, Baltimore, Md.

honesty, fairness and justice. Any plan of procedure that will insure the observance and enforcement of these principles is justified, and should be applied.

It is the industrial expert who must finally work out these problems. He is the specialist who understands causes and effect. He is the one to make an unbiased and detailed diagnosis and to prescribe the treatment. His treatment may at times be severe, may never be the same for any two cases. It must always be honestly and fairly given, and to be for the good of the employer, the employe and the community. And if the industrial expert is to have the great influence desired and required his conduct, his professional actions and attainments must be such as to merit the confidence and respect of the society in general, as is the case with the medical expert. The industrial expert has just as an important a mission as has the medical, and at the present time, a more critical one, perhaps. So it behooves him to watch closely, move cautiously and to act wisely in all matters.

How to Increase Production

The golden age of the industrial expert is here. The great problem of the world is production. The world is crying for increased production at a reduced price. The cry comes at a time when there is a great labor shortage brought about through the exigencies of war. This cry comes at a time when there is a lowered labor production due to lowered vitality, to a lowered morale and to a magnified spirit of unrest. This cry comes at a time when material required for production is scarce or cannot be easily obtained because of the results and influences of the war. This cry comes at a time when there is chaos in the physical, in the mental, in the spiritual, in the financial and in the material realms of industry.

The answer to the present situation is to increase the rate and to reduce the cost of production. To do so is to make it possible for human labor, scarce, inefficient and chaotic though it may be to produce more than ever before. To do so is to have human labor count for more than ever, in spite of shorter hours and higher wages.

It requires the services, the wisdom and the foresight of the industrial expert to accomplish this. The problem of the industrial expert is to raise the standard of intelligence, loyalty and skill of the workman. This means a detailed study and analysis of the human element that is to be dealt with. It means a clear understanding of the mental attitude, spiritual conception, physical and mental endowments, and the trade skill and appitude of the men. To this knowledge there must be added a detailed and careful analysis of the requirements of the job. Then the appitude and desires of the man must be fitted to the requirements of the job. With this done, a good start has been made toward the realization of efficient and full production. But there remains a very significant factor to be considered, and that is the mental attitude of the worker. You can fit a customer with a pair of shoes or a suit of clothes, yet if you "short change" him or violate any of his rights as a man, or fail to treat him as a human being you do not get a satisfied customer, nor do you obtain satisfactory results. Likewise, you may have intelligent workmen, you may carefully fit them to the job, but if you "short change" them by an adequate wage, or deny them the ordinary rights and privileges of human beings, nothing but disaster will result.

Aside from the purely labor aspects of the present industrial problem, the industrial engineer has a great apportunity. The scarcity of labor must be overcome by increased efficiency of management, of production, of transportation and of consumption. This means that scientific principles must be applied to the problems of management, that old and crude methods of management must be eliminated, that where things have been done by brawn they must be done by machinery, that the lathe that used to do must be scrapped and only those used that will give the largest output in the minimum of time and of cost. Labor-saving devices of every character must be developed and used. To transport material by man power cannot be, in its place, there must be gravity conveyors, automatic hoists, trolley lines.

Idle machinery is not to be tolerated. An 8 or 10-hour production period per day for equipment and plant is intolerable, it must be a 24-hour schedule. Millions of idle capital in raw and finished stores must not be. Quick movement, large turnovers, can only answer. To burn 10 tons of coal when only seven is required will not meet the problem. To have scrappage of 30 per cent when 10 per cent is attainable must cease.

Much Study Involved

It is the industrial engineer who must make the analysis, develop the plans and apply the methods that are required to accomplish these things and to meet the demand for more production at a cheaper cost in the face of high wages and shorter hours. It can be done and it is the only solution to the present industrial situation but it will require concentrated effort, long hours, deep thinking, and careful investigation.

All the problems cannot be solved by an individual engineer because they are too vast, too far-reaching, hence there is large work for the profession to do. United action must be had. The Society of Industrial Engineers offers that medium, and through it many problems must be worked out.

In the field of industrial research much can be done. We do not know all there is to know about the art of cutting metals, of the possibility of gravity conveying, of factory arrangement and construction. The scientific analysis of the mechanical, manual and mental requirements of typical jobs have not been largely worked out. Neither has the methods of selecting the worker for the job been developed to the degree that the conditions demand. These, and many other problems are open to investigation and to research.

The foreign element in American industry is a very grave matter. Much of the present unrest and apprehension is due to this element. A great amount of tact and of profound wisdom will be required to direct this phase of our industrial life into right channels.

Favor Sponsor Plan

Announcement recently was made by the United States bureau of standards of the result of balloting on the future procedure in formulating industrial safety codes. One of the plans proposed provided for the preparation of codes under the leadership of the bureau of standards with the co-operative effort of all interested organizations and under the general supervision of a representative conference committee. The other plan provided for preparing the safety codes by appropriate sponsor organizations under the auspices of the American engineering standards committee as enlarged under a revised constitution.

In conformity with a report of a committee consisting of C. A. Adams, H. W. Forster and E. B. Rosa, ballots were distributed for voting on the two plans. The vote resulted in a decided preference for the second plan. Of those voting in this manner, 75 per cent indicated a desire to join the American engineering standards committee.

The bureau of standards is calling another conference to be held in Washington on or about Dec. 5, 1919.

A merchant wire mill, which draws a diversified line of products, usually carries from 4000 to 5000 pounds of rods in assorted sizes and specifications and requires an accurate system of handling to prevent stocks becoming mixed.

Belgians Receive Foreign Orders

Ten Locomotives for Chinese Government Among Business Taken by Plants Now Rapidly Recovering—Shortage of Coal and Coke, However, Handicaps Entire Industry—Only 545 Out of 2246 Coke Ovens in Operation

BY FRANCIS MILTOUN

French Correspondent of The Iron Trade Review

BELGIUM'S iron and steel industry is making considerable progress toward recovery, all factors considered. The Rodermont plant at Haine-Saint Pierre and the "Metallurgie" at Nivelles and Tubize have received an order in common for ten locomotives for China.

The Metallurgique du Hainaut at Coullet and La Louviere has received an order for a large tonnage of ship plates from the Cockerill yards at Hoboken, presumably owing to the fact that the Cockerill plant at Seraing is not yet in a position to supply the needs of its shipbuilding subsidiary. The same companies have also received an order for rolling stock from the French Orleans railroad.

The Hainaut plants are thus getting outside business which the most optimistic would hardly have thought possible a few months ago. Belgium's trade ambassadors are doing good work. The Chatelineau Thy-Chateau and Marcinelle plants have already been able to light a good proportion of their blast furnaces and set up their rolling mills.

Statistics of Belgian foreign commerce for May and June indicate a very satisfactory situation. It is noted that imports of raw material have greatly increased, as have also the exports of finished products. In May iron ore was imported to the extent of 35,900 tons, and in June the imports increased to 42,052 tons. Imports of pig iron increased from 10,600 to 12,389 tons. Exports of plates increased from 600 to 944 tons, merchant bars from 1000 to 3037 tons and nails from 100 tons to 131 tons. Slight though the figures seem to be, the rate of progress may be accounted satisfactory and many foreign orders in hand are an indication that only the inability to produce in quantity will keep Belgium in the background as an exporter of iron and steel for some months. There is a certainty of a place for Belgium iron and steel in the world's markets. With labor abundant and wages 25 per cent lower than in France and England no one can foresee the possibility of Belgian manufacturers not being able to meet any European competition which may develop, at least after the German mark establishes itself at a level more nearly approaching par.

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Coke and Coal Lacking

Eighteen blast furnaces were in operation in Belgium on Oct. 1, and others ready for operation were only awaiting the arrival in sufficient quantity of coke. Before the war 54 blast furnaces were in full operation. Twenty-five were in the province of Hainaut, 21 in the province of Liege, and eight in Brabant and Luxemburg.

It is officially stated that the lighting of additional coke ovens is seriously hampered by lack of suitable coking coal. France, however, has agreed to furnish 120,000 tons of coking coal forthwith, which will relieve the situation.

On June 1, 1914, the coke ovens of Belgium were distributed as follows: 784 in the Borinage; 486 at Charleroi; 708 at Liege, and 576 in central Belgium. In June, 1919, they were distributed as follows: 666 in the Borinage; 426 at Charleroi; 578 at Liege, and 576 in central Beligum. The following are lighted: 334 in the Borinage; 77 at Charleroi; 77 at Liege, and 155 in central Belgium, of the total, 2246 ovens, all of which are ready for operation, but 545 ovens are actually in operation.

The loss is considerable, taking into account the immediate need of developing Belgium's resources. In May, 1919, ovens in the Borinage produced 29,272 tons, compared with 58,038 tons in 1914; central Belgium produced 16,937 tons, against 50,403; Charleroi produced 6732 tons, against 56,926; Liege produced 5980 tons, against 76,699. The total in May was 58,921 tons as compared with 245,966 in the same month in May, 1914.

* * *

Zinc Industry Picking Up

Belgium was to a large extent dependent on outside sources of supply for its zinc ore, and on foreign consumers for the sale of the zinc. During 10 years previous to 1914 Belgium produced 21.6 per cent of the world's supply of zinc manufactures, exportation being largely in the form of zinc sheets. Despite geographical and geological disadvantages Belgium was able to make the showing she did by reason of having cheap coal and labor.

It is generally considered in Belgium that the industry is sufficiently remunerative to warrant as great a development as possible. Of the eight zinc manufacturing plants in the Liege district three are in operation.

During 1913, 500,000 tons of ore were treated, producing 204,000 tons of zinc sheets of a value of 225,000,000 francs. In 1918, while Belgium was still under German occupation and control, production fell to 8000 tons. The principal source of ore treated in Belgium was Australian, but there is a possibility of obtaining ore from Mexico in the near future.

* * *

Plan Standardization

An effort toward standardizing specifications is being made by 14 steel plants of Belgium. The subject is being studied to determine the profiles to be adopted for standard shapes and rails, and their weights. What is more interesting still is the possible division of business among the firms interested. This is aiming at reduction in production costs and the unification of wages throughout the districts where the firms are located.

* * *

Improving Workmen's Lodgings

Belgium has formed a permanent committee for studying means to be adopted for furnishing dwellings at low rentals for the metallurgical workers of the valley of the Meuse. The need is great for good housing accommodation. In the six most important communes of the Liege district it was found that 4503 persons were lodged in 1079 houses, which is a far better showing than in many industrial centers of France or Great Britain. In 24 communes it was found that liquor was sold in 28 per cent of the buildings occupied by workingmen.

This is the fourth article of a series on the industrial situation in Belgium written by the Paris correspondent of THE IRON TRADE REVIEW after a tour of investigation through that country.

Standardizing Works Methods

System in Management as Well as in Mechanical Operations is of Great Advantage in Eliminating Friction and in Increasing Production—Useful Charts, Developed by Practical Experience, Are Presented

BY M. H. POTTER

SUCCESSFUL management must aim not only for maximum production at minimum cost but also must maintain a helpful relationship with labor.

Manufacturing standards as here outlined determine the principles of scientific management. No definite laws can be laid down, but the principles, if practically applied, will soon bring about the desired results.

It is necessary when installing a new system of production to consider one department at a time and systematize it thoroughly. In this way it is possible to maintain production under the old method and gradually develop the new.

Fig. 1 shows a plan of progressive management as developed in the standardization of a plant. In the average plant, a general scheme for securing maximum results often is determined on as a standard for the management, but the methods for attaining such results vary greatly. Fig. 2 sets forth the mediums through which efficient plant management may be secured. While the principles outlined apply to any practical industrial undertaking, the manner of securing results will be altered by circumstances. It is for the practical executive, trained in his particular line of work, to determine which is the most important plan from the viewpoint of his own organization.

THIS is the second article of a series on industrial management written for THE IRON TRADE REVIEW *by Mr. Potter. The author shows how much of the success of mechanical operations depends on the system employed for the handling of men, and how standardization may be applied to the duties of various departments, executives and employes to obtain the best results from the standardization of shop practice. In subsequent articles Mr. Potter will deal with other features of successful industrial management.*

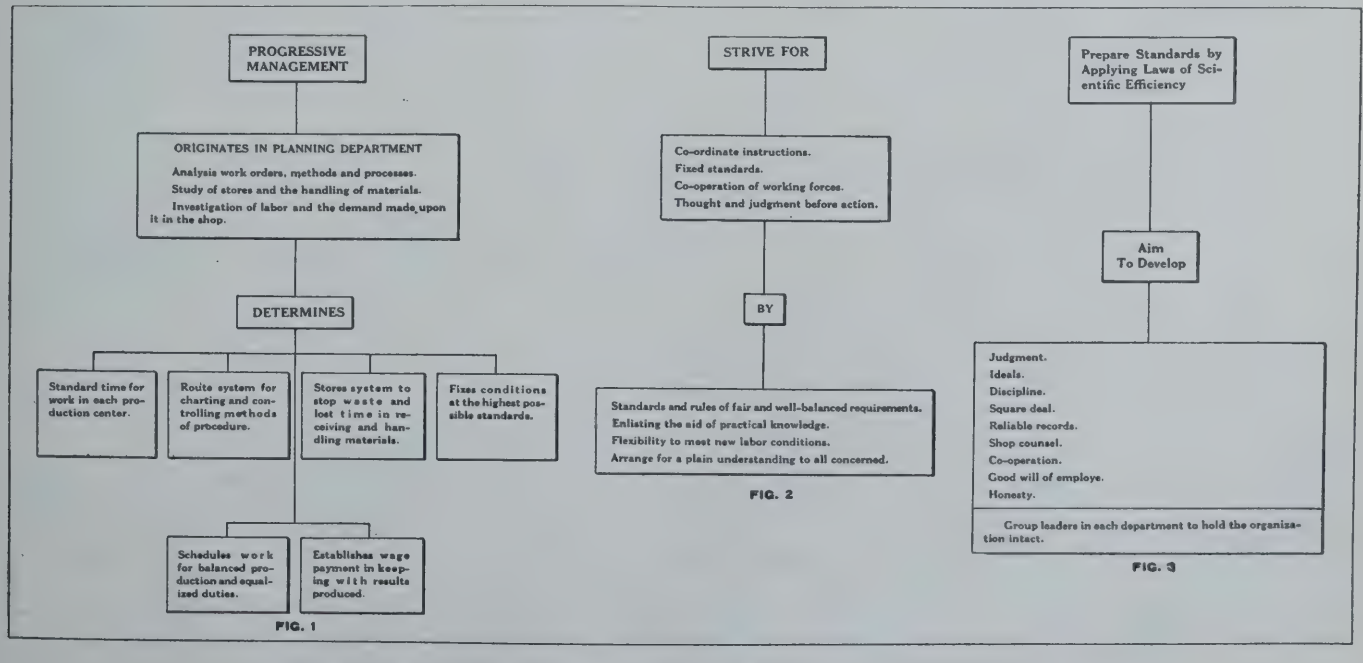
Must Develop Foremen

The planning of practical standardization must begin where the business begins, on the receipt of orders, and must follow through the plant, involving both personnel, material and equipment. There will be certain fixed ideals which the system must develop if a co-operative, co-ordinate working organization is to be maintained and if labor troubles and labor turnover are to be minimized. Furthermore it must be the aim of the system to develop leaders in every department, who may at some future time become foremen and superintendents. Fig. 3 further illustrates this feature of progressive plant standardization.

Means for establishing plant standards are illustrated in Fig. 4. Too much attention cannot be devoted to determining the duties of each subexecutive and in setting new standards for him to work to. One of the greatest advantages of the standardization of duties and responsibilities, is to balance the requirements of each executive and the work of each employe. It is also an advantage in developing departmental specialists, men who know one job and know it thoroughly.

Figs. 5, 6 and 7 show the departments concerned with the establishment and maintenance of standardization, and the subdivision of the various departments. The three principal divisions are control, manufacture, and inspection.

The division and subdivision of the various departments is important and should be done carefully in order that standards be set for every important point of the organization and



PLANS FOR PROGRESSIVE MANAGEMENT AS DEVELOPED BY STANDARDIZATION

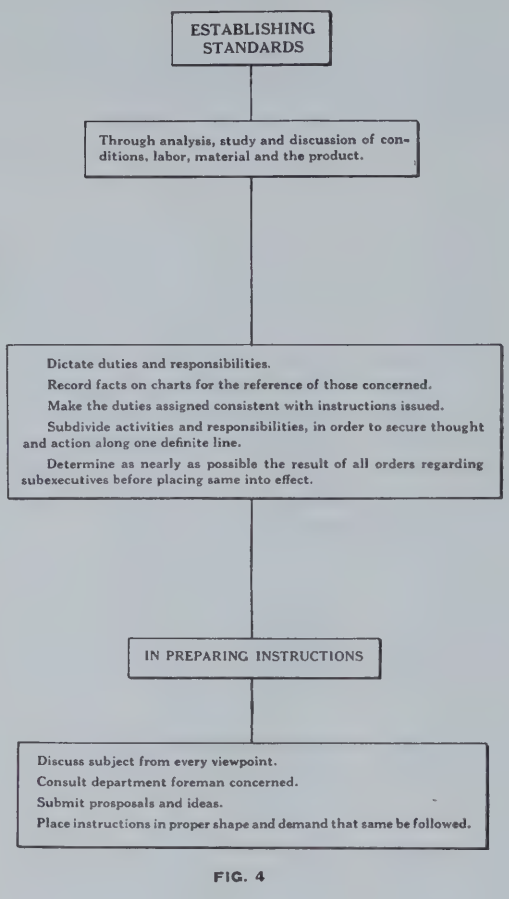


FIG. 4

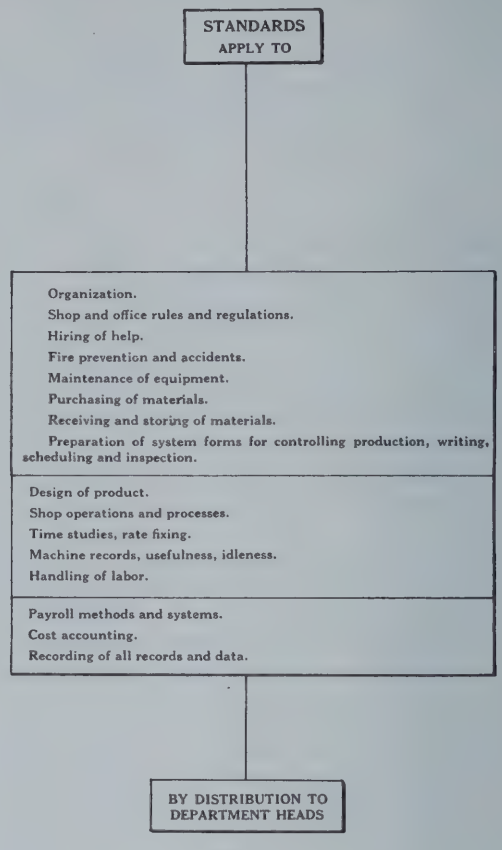


FIG. 5

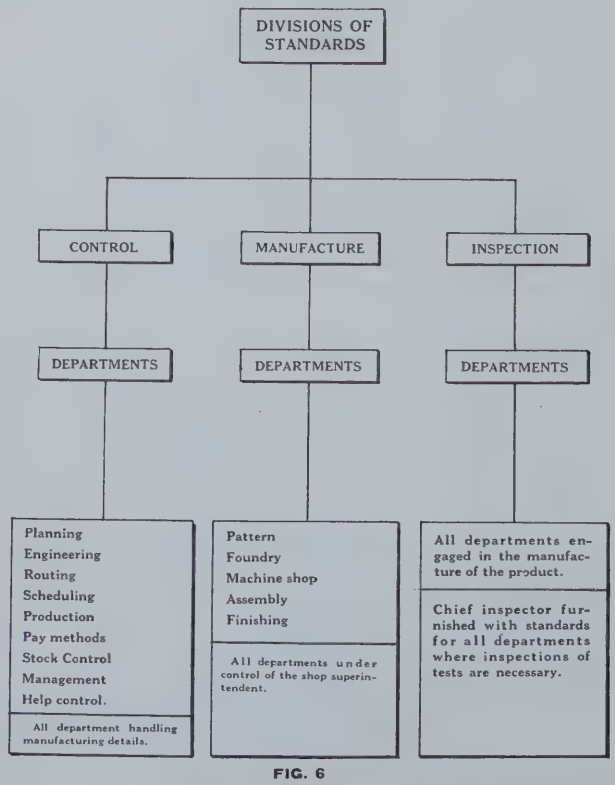


FIG. 6

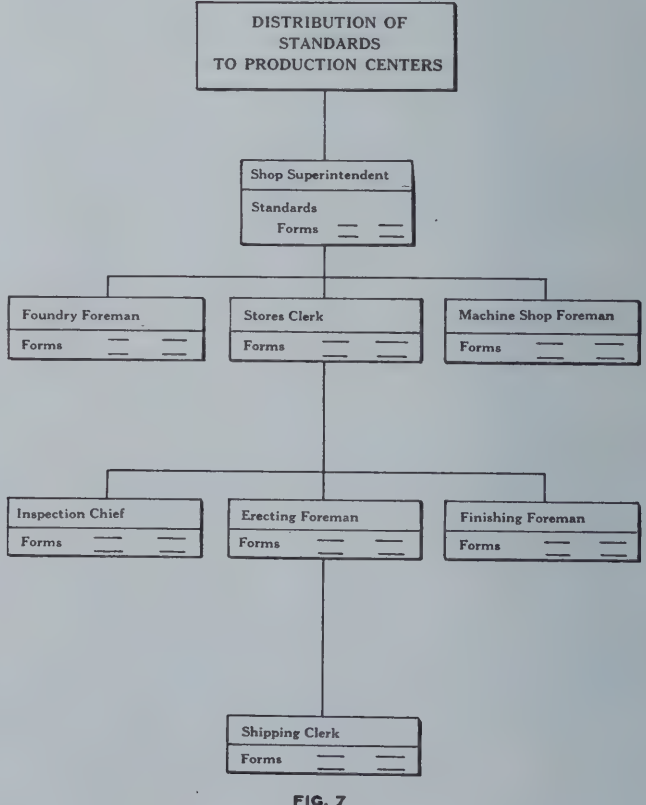


FIG. 7

MEANS FOR ESTABLISHING PLANT STANDARDS, AND THE RELATION OF DEPARTMENTS CONCERNED IN THEIR MAINTENANCE

that no subject be neglected. The forms covering standards should be numbered, a complete set of standards for each department being bound and indexed for reference.

Management Relieved of Details

Manufacturing standards are a definite and uniform means of distributing valuable information through the shop, relieving the management of details. By means of standardization the manager, superintendent and foremen have every detail under control. Plant executives are enabled to tabulate information regarding the business, to circulate it among the workmen in the various departments, and to see that the standards are followed. Furthermore, the executives are not so directly connected with the operation of the plant, and if one should drop out of the organization another might readily take up his duties. Established standards for records also are valuable. In fact, as standards are determined and put into practice many new applications will suggest themselves.

After the divisions and subdivisions of departments have been determined on the manager should consider the subjects to be covered by the standards, taking up one department at a time. In large plants it is important to index standards according to department and subject, and also to list various individuals who should receive the instructions. A careful record should be made of the details concerning the determining of subjects for standards.

Certain standards will apply to all departments and these should be separated from the special or individual standards which apply to but one department. It is a good plan to list standards of a general nature in one form in order to eliminate duplication and to assist in simplifying handbooks of shop standards. Special standards will require special and individual forms.

The application of this rule may vary in different instances. For example, the machine shop of a jobbing shop will fix standards for certain machine operations, which will be determined by the particular machines in the shop. The work of a jobbing shop will vary so that no set standards can be fixed. In a manufacturing plant, however, the standards will deal with the article manufactured.

Careful Analysis First Need

Standards as applied to processes of manufacture should be adopted after careful study and analysis. There is no reason why the best method of procedure should not be definitely recorded; and strict adherence to such standards should be demanded. This will increase uniformity of product.

In establishing standards as outlined in the charts it is important to consult the foreman who is to be responsible for putting them in effect. His views are worthy of consideration from the practical standpoint of wording the standards so that the workmen may readily understand them, and derive the fullest benefit from their use.

Duties of Shop Foreman

DEPARTMENT

Responsible for

1 ——
2 ——
3
4
5
6
7
8

Personally supervise

1 ——
2 ——
3
4
5
6
7

Special consideration as regards inspection and quality—

1 ——
2 ——
3
4

Rules relate to labor—

1 ——
2 ——
3
4
5

FIG. 8—GENERAL STANDARD FOR SHOP FOREMEN
An aid in preventing disputes, attending to routine details and in governing the quality of the product

Standards dealing with the supervision and the clerical routine of the plant will necessarily include many forms and cards. A specimen set should be included in the book of standards. Charts and diagrams will assist in making clear the use of the various standards and their relation to the plant as a whole.

Care should be taken not to incorporate in the foreman's or subexecutive's book of standards such charts and diagrams as will tend to divert his thought or action from the particular department with which he is concerned. At the same time neglect to make clear the relationship of his department with those with which it is directly connected will limit the real value of standardization.

Much Depends on Planning Department

If a careful study of the organization, the plant and the product is made prior to the attempt to fix shop standards the final result will be far better than otherwise. The labor element, and the desired standard of the product will have a direct bearing on the determination of standards capable of reducing the cost of manufacture. It is pointed out in the accompanying charts that progressive management has its origin in the planning department. While this is true, the fact must not be lost sight of that the planning must be separated from the execution and that it is only through the best practical planning that maximum results can be secured.

Furthermore, effective planning, especially in small industrial plants, must deal with more than one particular branch of management. The management must tie together several connected functional branches of management and cover all to the extent required by one. If this policy is not followed then the small plant which attempts to include all forms and branches of scientific management will be more of a recording center than a production center.

The management must determine the elements of scientific management which in his particular case may be corelated, and then work out its own plan. This is not extremely difficult if careful analysis is made and facts and figures are recorded and tabulated in charts and diagrams drawn to represent the work.

The principles of progressive management must be understood before their laws can be applied, but on the other hand such understanding often results in their rejection. This is due, in many instances, to the fact that the management fails to realize and appreciate how these laws apply to its particular case. It does not analyze sufficiently its particular case, workmen, product and the make-up of its organization.

"Dry Drawing" is a term used for drawing No. 20 or coarser wire through lime. The process is used for producing a bright-steel finish and is a much cheaper method of drawing than the wet wire-drawing process.

Pyrometry in Blast Furnace Work

Knowing the Temperature of the Slag and of the Metal it is Possible to Predict Analysis of Following Cast—Results of Temperature Measuring Tests at 32 Blast Furnaces

BY P. H. ROYSTER AND T. L. JOSEPH

FOR a number of years the United States bureau of mines has been investigating certain problems relating to the blast furnace. In the course of these investigations it was desirable to measure, with the optical pyrometer, the temperatures occurring in the hearth of the furnace. The data given in this paper were obtained at 32 blast furnaces operated by 17 companies; 20 of these furnaces were making iron, eight ferromanganese, and five spiegeleisen.

The blast furnace was, by long odds, the earliest piece of industrial apparatus operating above 1400 degrees Cent. It is a furnace, moreover, whose operation is believed to be extremely susceptible to small changes in hearth temperature. Blast furnace legend, in fact, may claim for itself the invention of the first high-temperature pyrometer; that is, if other conditions are the same, high silicon and low sulphur in the metal indicate a high hearth temperature and a drop in silicon while a rise in sulphur, not attributable to other causes, indicates a fall in hearth temperature.

A cloud of uncertainty often hangs over much that goes into and comes out of a blast furnace. Complete analyses of slag are not often made and gas analyses are almost rare, but the writers are not aware of any furnace now operating at which silicon and sulphur is not run on each cast, reported immediately, scrutinized carefully, and discussed earnestly. The furnace operator has found this theorem so satisfactory a guide to furnace operation that he has had no cause to worry over his inability to set down his knowledge of the temperature of his hearth in terms of such and so many degrees centigrade on the gas-thermometer scale. It is easy to understand, therefore, why no attempt at pyrometric control has been made, although instruments able to measure the temperatures encountered have been available for two decades.

Silicon-Sulphur Theorem is Indefinite

It was the writer's purpose in making the temperature measurements reported in this paper to establish, on as definite a quantitative basis as possible, the relation between the temperature in the furnace hearth and the analysis of the metal made. The silicon-sulphur theorem is unfortunately rather indefinite. The silicon, for example, is alleged to depend not only on the temperature but also on the slag composition and volume, the size of the furnace, the tonnage made per day, and the character of the charge. These factors are in doubt in that each can mean one or more of several things. The temperature of the hearth may mean the temperature of the metal or of the slag in the hearth, or it may mean the temperature of the solid stock in the combustion zone or of the products of combustion arising from that zone. By the composition of the slag one usually means its "basicity." This again doesn't meant anything in particular; it may refer to the percentage of lime or of bases, or to the ratio of lime to silica, of bases to silica, of lime to acids, or of bases to acids. The size of the furnace may mean its hearth diameter, its bosh diameter, or its volume; the "character of the stock" may mean anything.

A summary of the temperature measurements made and some of the operating data obtained from the furnace records for 20 iron furnaces are given in Table I. Temperatures measured with a set of Morse-type optical pyrometers are given in the second, third and fourth columns. Under the caption "Tuyere Temperatures," are given the temperature readings observed when the pyrometer was sighted through the tuyere stock and along the axis of the blowpipe, through the tuyere and into the furnace. These temperatures are cor-

Abstract of a paper presented at the one hundred and twenty-first meeting of the American Institute of Mining and Metallurgical Engineers, Chicago, Sept. 22-26. P. H. Royster is assistant physicist and T. L. Joseph is assistant metallurgical chemist, United States bureau of mines.

Table I

Temperature Measurements and Data From 20 Furnaces

Furnace Number	Temperature, Degrees C.			Metal Analysis				Slag Analysis					Blast Temperature Degrees C.	Pounds of Carbon per Ton of Metal	Pounds of Slag per Ton of Metal	Tons of Metal per Day per Square Foot of Hearth Area
	Tuyere	Slag	Metal	Si	S	Mn	P	CaO	MgO	Al_2O_3	SiO_2	S				
1	1463	1526	1463	2.40	0.033	0.56	0.081	41.5	3.1	17.6	35.0	1.58				
2	1629	1524	1467	1.99	0.025	0.62	0.080	42.5	3.1	16.6	35.4	1.77				
3	1627	1530	1462	1.97	0.026	0.71	0.082	43.0	3.1	16.4	35.0	1.77				
4	1648	1506	1470	1.32	0.034	0.33	0.089	46.3	3.5	13.0	35.9	1.60				
5	....	1473	1443	1.09	0.036	0.56	0.208	46.3	3.5	13.3	35.4	1.62				
6	1649	1531	1426	1.05	0.044	0.32	0.094	46.7	3.5	11.8	37.2	1.53				
7	1648	1473	1444	1.51	0.035	0.63	0.100	48.5	2.0	13.1	34.9	1.62	1150	2090	1412	2.81
8	1640	1451	1437	1.29	0.049	0.65	0.096	48.3	2.2	13.0	35.0	1.74	1025	1765	1500	2.57
9	1595	1437	1437	0.96	0.049	1.62	0.206	46.1	3.5	14.7	34.0	1.81	1000	1545	1183	2.28
10	1656	1449	1456	1.37	0.031	0.71	0.084	46.5	2.3	15.7	32.6	1.30	980	1645	890	2.97
11	1802	1469	1467	1.42	0.024	1.30	0.233	47.5	2.0	16.3	31.1	1.59	933	1678	932	2.68
12	1710	1493	1454	1.14	0.030	0.73	0.084	46.5	2.2	15.4	33.7	1.22	950	1631	985	2.70
13	1700	1511	1473	1.14	0.020	1.73	0.350	45.0	6.2	11.9	35.3	1.38	1150	1685	1020	2.44
14	1731	1481	1437	1.08	0.036	1.90	0.315	43.9	6.0	12.5	36.0	1.33	837	1720	1132	2.17
15	1862	1514	1468	1.27	0.034	1.34	0.131	43.0	2.3	17.4	34.2	1.43	1006	1518	1190	2.32
16	1821	1528	1459	1.59	0.032	0.80	0.085	38.9	7.3	15.5	36.0	1.70	1105	1502	971	2.52
17	1849	1543	1471	1.70	0.041	0.71	0.084	36.5	7.1	16.0	37.1	1.83	944	1720	1000	2.21
18	1800	1525	1471	1.76	0.029	0.76	0.084	37.3	7.3	16.6	36.6	1.84	971	1629	946	2.34
19	1712	1499	1463	1.57	0.040	....	.....	39.4	9.5	15.5	32.4	....	1023	1845	1030	3.40
20	1668	1501	1448	0.97	0.032	....	.....	42.5	9.4	12.8	33.0	....	758	1641	890	2.28

Table II

Furnaces Grouped by Tuyere Temperatures

Group	V	VI	VII	VIII
Furnaces included	11, 15, 16, 17, 18	12, 13, 14, 19, 20	1, 4, 6, 7, 10	2, 3, 8, 9,
Tuyere temperature, degrees C.	1827	1704	1649	1623
Slag temperature, degrees C.	1516	1497	1497	1491
Metal temperature, degrees C.	1467	1455	1452	1450
Silicon in metal	1.55	1.18	1.48	1.59
Slag temperature minus metal temperature,	49	42	45	41

rected, as well as was practicable, for the absorption of the glass screen in the tuyere sight. The slag and metal temperatures are those observed when the pyrometer was sighted on the surface of the slag and metal streams in their respective runners at flush and at cast. To the observed readings has been applied an appropriate emissivity correction. The figures in the last four columns were taken from the furnace records and have their usual significance. The fuel consumption is given in terms of pounds of carbon in place of the usual pounds of coke per ton of metal.

Determining Temperature

A casual examination of the figures in Table I reveals little to support the theorem that the temperature of the furnace can be determined from the silicon or sulphur in the metal or from any simple relation based on metal and slag analyses. The silicon varies from 0.92 to 2.40 per cent, the tuyere temperature from 1595 to 1862 degrees Cent., the slag temperature from 1437 to 1543 degrees Cent., and the metal temperature from 1426 to 1473 degrees Cent. The range of variation found in this limited number of furnaces is: Silicon, 1.48 per cent; tuyere temperature, 267 degrees Cent.; slag temperature, 106 degrees, and metal temperature, 47 degrees. The silicon in the hottest metal is 1.14 per cent and in the coldest metal 1.05 per cent; the silicon in the metal corresponding to the hottest slag is 1.70 per cent, and in the metal accompanying the coldest slag it is 1.05. The metal made by the furnace having the highest tuyere temperature carries 1.27 per cent silicon. The furnace showing the coldest tuyeres, however, made metal with the lowest silicon; that is, furnace 9, tuyere temperature 1595 degrees and silicon 0.92 per cent.

The 20 furnaces were arranged in the order of the increasing silicon content of the metal and were divided into four groups. The operating quantities for these furnaces were averaged by groups and the results are shown in Table III. It is rather difficult to establish any basis for the silicon-sulphur theorem from these data. The three temperatures that might possibly indicate hearth temperature are included in this table as well as the three expressions that might indicate the basicity of the slag; for the most part none of these six quantities vary markedly with the silicon in the metal. Group I has average basicity and a high hearth temperature; group IV has average hearth temperature and a low basicity; groups II and III have both average hearth temperature and average basicity.

In order to look at these data in the other direction, the furnaces were rearranged in the order of decreasing tuyere temperatures, and averaged in four groups. The results of this arrangement, as given in Table II, show that the slag is uniformly 45 degrees hotter than the metal and that the metal temperature is closely proportional to the tuyere temperatures, the metal temperature rising 8 degrees for every 100 degree increase in tuyere temperature. In this case group IV, with the coldest hearth, shows the highest percentage of silicon.

Calculation of Silicon in Metal

With the aid of more or less complete data on a number of furnaces, it is usually impossible to miss a relation existing between the various quantities once preconceived theories have been discarded. In the present case it can be shown that the silicon in the metal can be calculated from the following equation with an average error of 10 points of silicon and a maximum error of 20 points.

If S = per cent of silicon in metal;
t = temperature of slag, degrees Cent.,
T = tons of metal made in 24 hours;
D = hearth diameter, in feet;
F = pounds of coke per ton of metal;
M = per cent of silica in the coke,
then

$$S = \frac{FM}{47.7} \quad 0.238 + 0.143 \frac{T}{D^2} + 0.0012 \ (t - 1500) \qquad (1)$$

There are insufficient data from the first six furnaces to enable one to compare the actual results with the equation. For the remaining 14 furnaces sufficient data of sorts are available, and the silicon has been calculated from this equation; the results are shown in Table IV.

Calculating Silicon Values

In Fig. 1 the calculated and the actual values of the silicon are shown diagrammatically. It is rather difficult to attribute the agreement solely to coincidence; in fact, it is definitely evident from Table IV and Fig. 1 that the equation is an approximation of the true relation. It must not be concluded, however, that the equation can give the answer to the problem with any finality. It can be regarded as nothing more than the best quantitative expression that has so far been offered for predicting the silicon in the metal.

The interpretation of the equation 1 is rather simple. FM is the pounds of silica per ton of metal in the form of coke ash. This quantity, divided by 47.7, indicates the silicon the metal would carry if all the silica in the coke ash were reduced to silicon and entered the metal and if none of the silica from the ore or from the stone were reduced. Actually, the silica required to produce the silicon in the average metal, for these 14 furnaces, is about 54 per cent of the silica in the coke ash. The

Table III

Furnaces Grouped According to Silicon Content

Group	I	II	III	IV
Furnaces included	5, 6, 9, 14, 20	4, 8, 12, 13, 15	7, 10, 11, 16, 19	1, 2, 3, 14, 20
Silicon in metal	1.02	1.23	1.49	1.96
Sulphur in metal	0.038	0.034	0.033	0.031
Tuyere temperature, degrees C.	1656	1720	1732	1737
Slag temperature, degrees C.	1498	1505	1493	1539
Metal temperature, degrees C.	1448	1470	1468	1477
CaO/SiO_2	1.28	1.31	1.33	1.12
$CaO + MgO/SiO_2$	1.39	1.41	1.47	1.25
$CaO + MgO/SiO_2 + Al_2O_3$	1.04	1.01	1.01	0.86
Viscosity of slag	480	814	1048	690

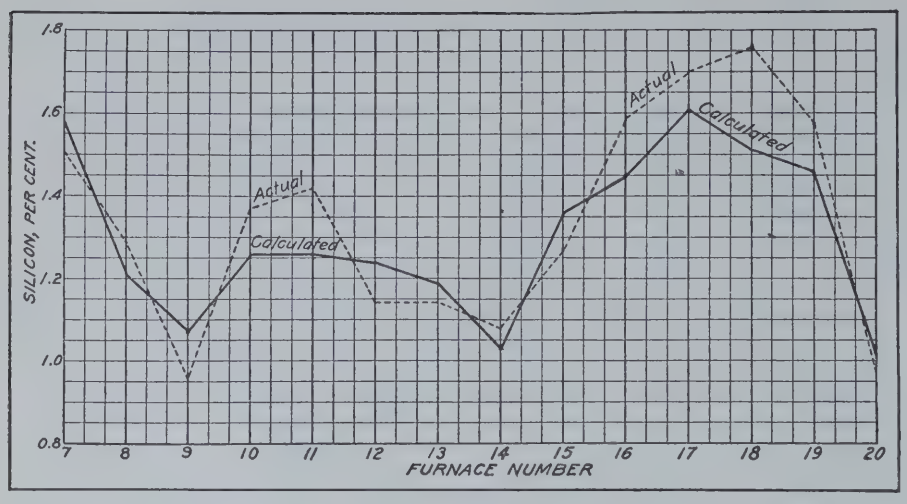


FIG. 1—COMPARISON OF CALCULATED AND ACTUAL CONTENT OF SILICON IN METAL

values for the individual furnaces vary from 47.4 to 66.5 per cent. The furnace "recovers" therefore something better than 50 per cent of the silicon in the coke ash. This silicon recovery varies largely, and almost exclusively, with the tons of metal made per square foot of hearth area. In addition, but to a much less important extent, it varies with the temperature of the slag. An increase of 100 degrees in slag temperature increases the silicon about 0.06 per cent. Since the silicon is thus so slightly affected by the slag temperature, it is obviously impossible practically to determine the slag temperature from the silicon in the metal.

Furnaces have been operated many years on the assumption that the silicon in the metal is a hearth thermometer, and it is undeniable that a cold furnace i. e., a furnace producing low-silicon metal) can be cured by increasing the coke charge per ton of metal. Equation 1 shows that the silicon can be raised by increasing the coke consumption, by virtue of the fact that such an increase in coke consumption increases the amount of silicon in the coke ash, quite independent of any change it might produce in the temperature of the hearth.

Sulphur in the Metal as a Pyrometer

If s = per cent sulphur in metal;
S = per cent sulphur in slag;
t = temperature of metal, in degrees centigrate;
B = ratio $CaO + MgO \div Al_2O_3 + SiO_2$

it can be shown that the empirical equation

$$s = 0.074 + 0.0183\ S - 0.00061\ (t - 1400) - 0.037\ B \qquad (2)$$

agrees with the facts shown in Table 1 within an average error of 0.0045 per cent sulphur. Unlike the expression found for the silicon in the metal, this relation between sulphur and the related operating quantities agrees in a general way with the usual ideas held by furnacemen. The values of the actual sulphur and of the calculated sulphur in the metal for the first 18 furnaces are given in Table V and are shown diagrammatically in Fig. 2.

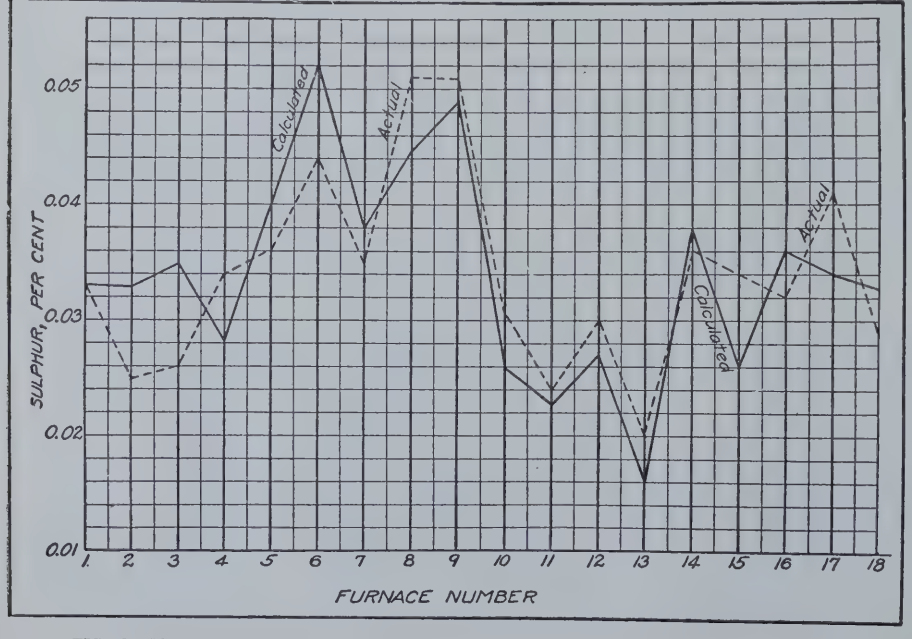


FIG. 2—COMPARISON OF CALCULATED AND ACTUAL CONTENT OF SULPHUR IN METAL

The sulphur is lowered by increasing the ratio of bases to acids, by raising the temperature of the metal, and by lowering the sulphur in the slag. This is the old story of sulphur control but for the first time in quantitative form, and substantiated by a certain amount of proof. The ratio of bases to acids is used as an independent variable here merely because it gives more concordant results than the ratio either of bases to silica, or of lime to silica. In the same way the temperature of the metal is used in preference to the temperature either of the slag or of the tuyeres, because the agreement is better. It must be remembered that both equations 1 and 2 are offered merely as empirical equations found by trial to agree with the observed facts with the consistency shown in Figs. 1 and 2. There will be ample time to theorize about these relations when their truth has been satisfactorily established. It may be of interest to notice, however, that of the three proposed expressions for the "basicity" of the slag the ratio of bases to acids seems to be the most significant.

The sharply defined effect of metal temperature on the sulphur in the metal suggests immediately the use of equation 2 for determining this temperature. If the equation is rewritten

$$t = 1521 + 30\ S - 61\ B - 1666\ s \qquad (3)$$

the temperature of the metal can be directly computed. Since from Table III the slag temperature averages 45 degrees hotter than the metal an approximation to the slag temperature can also be made. This has been done and the results are given in Table VI. It is observed that the maximum discrepancy between the observed and the calculated temperatures is 16 degrees and that the average discrepancy is 7.4 degrees. As the calculated value involves all the errors in chemical analyses for S in the metal, and for CaO, MgO, Al_2O_3, SiO_2, and S in the slag, the agreement is remarkably close. Moreover, the uncertainty in the pyrometer readings on the metal is easily 7 degrees. For any ordinary purpose, calculation gives perfectly satisfactory metal temperatures but the calculated slag temperatures may be 50 degrees in error; the average error for slag temperature is 19.5 degrees. As was shown by Table II a change of 8 degrees corresponds, in a general sort of way, with a 100-degree change in tuyere temperature. Hence it would be expected, and it is found to be true, that an attempt to trace back from

the sulphur in the metal to the tuyere temperature fails.

The facts presented and discussed previously appear to point to a number of conclusions many of which are contrary to what has heretofore been accepted, and which may be of importance to furnace operators. In summary form they may be stated:

1. The silicon in the metal is not dependent on the chemical composition of the slag; the temperature of the hearth; the silica content of the ore; the viscosity of the slag; the blast temperature.

2. The silicon in the metal is dependent on the silica in the coke ash; the speed of operation expressed as tons of metal per day per square foot of hearth area; the slag temperature, but to an almost negligible extent.

3. It is impossible, practically, to estimate the temperature of the combustion zone, of the metal, or of the slag from any simple expression involving silicon content of the metal.

4. The sulphur in the metal is not, in general, lower with high-silicon metal.

5. The sulphur in the metal is dependent on the sulphur in the slag; the temperature of the metal; the ratio of bases to acid.

6. The temperature of the metal can be calculated from the sulphur in the slag, the sulphur in the metal, and the ratio of bases to acids in the slag. The maximum error in this calculation is 16 degrees Cent. and the average error is 7.5 degrees. This error may easily be attributed to errors in chemical analyses, in pyrometric measurements, to both, or to the inaccuracy of the equation from which the temperatures were calculated.

7. The temperature of the slag can be calculated from the same variables with a maximum variation of 50 degrees and with an average error of 19.5 degrees.

To the extent that the furnace operator is satisfied with the production of metal that meets the silicon and sulphur specification, the pyrometer has little to offer. Knowing the temperature of the slag and of the metal it is possible to predict the analysis of the following cast.

There is more to the operation of the blast furnace, however, than controlling the silicon and sulphur content of the metal. The real furnace problem is the production of a given tonnage of metal in the shortest possible time and with the least expenditure of materials. The preceding discussion has not touched that problem. The existence of certain temperatures in the hearth has been shown and their effect has been discussed. A complete pyrometic study of the blast furnace should go further than this, it should attempt to find out the reason for the temperatures observed. Every furnaceman is trying to keep his coke consumption at a minimum; the mark of that minimum, the sign which says he shall not go further, is a cold hearth. It has been shown that a reduction in coke lowers the silicon in the metal without indicating a drop in temperature. There is a possibility, therefore—the writers insist, however, that it is only a possibility—that some furnacemen have stopped on the high side of the minimum from fear of low-silicon iron. It is where a serious attempt is made for a low-coke campaign that the pyrometer promises to be most useful. Take the case of furnaces 15 and 16 in Table I, which were burning 1518 and 1502 pounds of carbon per ton of metal. The pyrometer readings show that there was no danger here of a cold hearth. The metal and slag temperatures are above the average, and the tuyere temperatures are, respectively, the highest and the third highest observed.

Manganese oxide, like silica, is reduced at a higher temperature than iron oxide. It is generally believed, therefore, that a blast furnace making high-silicon pig, spiegeleisen, or ferromanganese must operate with a hotter hearth than a furnace making basic iron. The following figures will show

Table V

Calculated Sulphur Contents

Furnace Number	Sulphur, Actual Per Cent	Sulphur, Calculated Per Cent	Difference, Per Cent	Furnace Number	Sulphur, Actual Per Cent	Sulphur, Calculated Per Cent	Difference, Per Cent
1	0.033	0.033	0.000	10	0.031	0.026	+0.005
2	0.025	0.033	—0.008	11	0.024	0.023	+0.001
3	0.026	0.035	—0.009	12	0.030	0.027	+0.003
4	0.034	0.028	+0.006	13	0.020	0.016	+0.004
5	0.036	0.040	—0.004	14	0.036	0.038	—0.002
6	0.044	0.050	—0 006	15	0.034	0.026	+0.008
7	0.035	0.038	—0.003	16	0.032	0.036	—0.004
8	0.049	0.045	+0.004	17	0.041	0.034	+0.007
9	0.049	0.047	+0.002	18	0.029	0.033	—0.004

Table IV

Calculated Silicon Contents

Furnace Number	Silicon, Actual, Per Cent	Silicon, Calculated, Per Cent	Difference, Per Cent × 0^{-2}	Furnace Number	Silicon, Actual, Per Cent	Silicon, Calculated, Per Cent	Difference, Per Cent × 0^{-2}
7	1.51	1.58	— 8	14	1.08	1.03	5
8	1.29	1.21	8	15	1.27	1.36	— 9
9	0.96	1.07	—11	16	1.59	1.45	14
10	1.37	1.26	11	17	1.70	1.61	9
11	1.42	1.26	16	18	1.76	1.57	19
12	1.14	1.24	—10	19	1.57	1.46	11
13	1.14	1.19	— 5	20	0.97	1.01	— 4

Table VI

Calculated Metal and Slag Temperatures

Furnace Number	Metal Temperature, Degrees C. Actual	Calculated	Difference	Slag Temperature, Degrees C. Actual	Calculated	Difference
1	1463	1463	0	1526	1508	+18
2	1467	1480	—13	1524	1525	— 1
3	1462	1478	—16	1530	1523	+ 7
4	1470	1459	+11	1506	1504	+ 2
5	1443	1449	— 6	1473	1494	—21
6	1426	1436	—10	1531	1481	+50
7	1444	1448	— 4	1473	1492	—19
8	1437	1430	+ 7	1451	1474	—23
9	1437	1434	+ 3	1437	1479	—44
10	1456	1448	+ 8	1449	1494	—46
11	1467	1466	+ 1	1469	1511	—42
12	1454	1449	+ 5	1493	1494	— 1
13	1473	1464	+ 9	1511	1509	+ 2
14	1437	1441	— 4	1481	1486	— 5
15	1468	1456	+12	1514	1501	+13
16	1459	1465	— 6	1528	1510	—18
17	1471	1459	+12	1543	1504	—39
18	1471	1477	— 6	1525	1522	+ 3

Table VII

Results of Furnace Making Ferromanganese

Day	Pounds of Coke per Ton of Metal	Ratio Bases/Silica in Slag	Silicon in Metal, Per Cent	Temperature of Metal, Degrees C.	Temperature of Tuyeres, Degrees C.	Per Cent Manganese in Slag
1	7,718	1.34	2.20	1,412	1,571	11.0
2	8,826	1.35	2.30	1,426	....	7.8
3	7,974	1.38	2.05	1,450	1,611	6.1
4	8,109	1.52	1.58	1,475	1,622	4.9
5	8,333	1.45	0.61	1,456	....	9.3
6	8,154	1.48	0.77	1,456	1,598	6.3
7	7,885	1.48	1.78	1,460	1,614	6.1
8	8,534	1.45	0.40	1,514	....	8.8
9	10,326	1.42	0.41	....	....	9.9
10	8,669	1.33	0.40	1,480	1,546	8.5
11	8,579	1.40	0.93	1,480	1,633	6.6
12	6,797	1.52	1.85	....	....	4.9

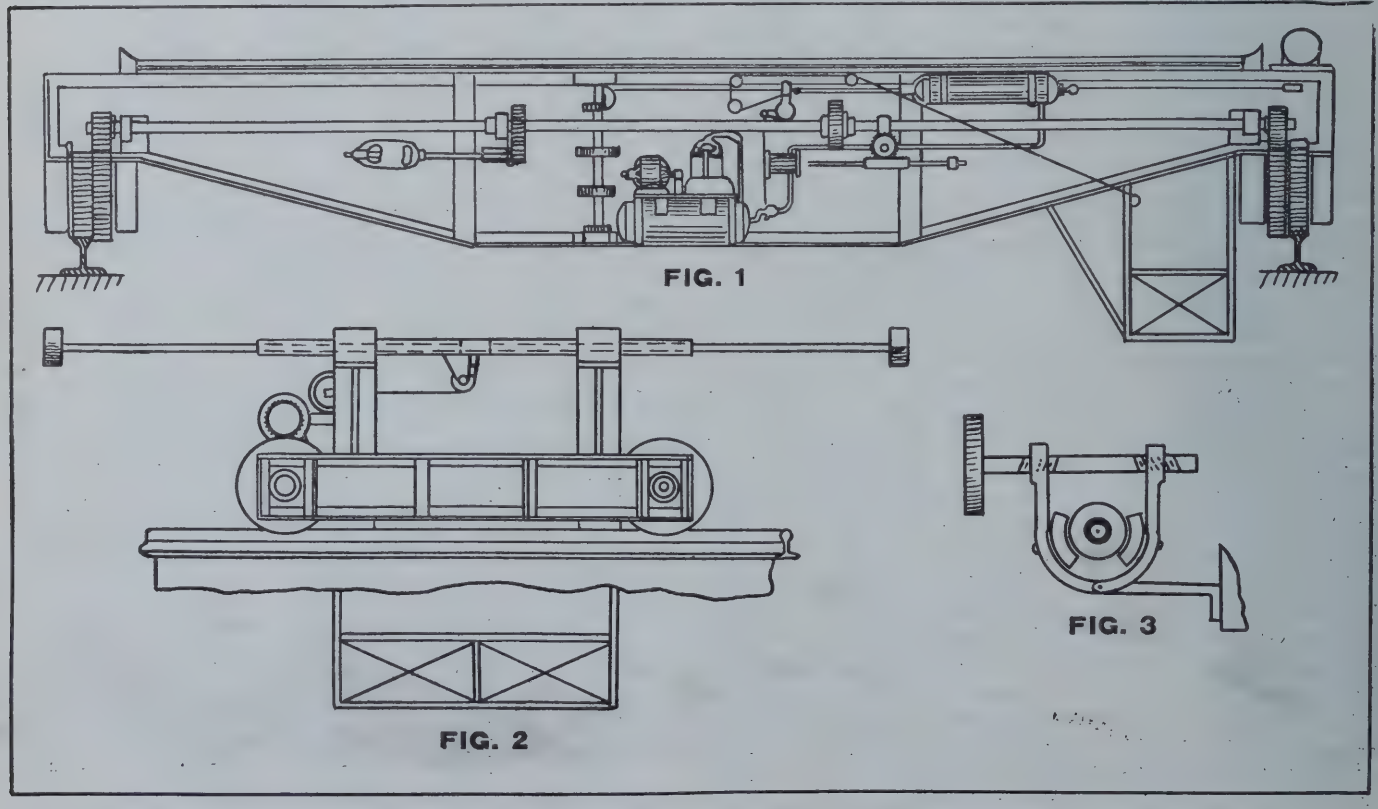
how the temperatures in the manganese alloy furnaces compare with the temperatures in the iron furnaces discussed above.

Furnace	Tuyere Temperature, Average, Degrees C.	Slag Temperature, Average Degrees C.	Metal Temperature, Average, Degrees C.
Iron	1706	1498	1455
Spiegeleisen	1597	1427	1392
Ferromanganese ..	1550	1426	1386

It was concluded as a result of the bureau's investigation of manganese furnaces that an improvement in practice would result from the use of less coke and from increasing the ratio of bases to silica in the slag. As an illustration of the use of the pyrometer in furnace control, the following figures may be of interest. The writers observed the operation of a furnace making ferromanganese for 12 days. Certain of the daily operating quantities are shown in Table 7. The charging of this furnace was done on the basis of the silicon in the metal and of the operator's judgment of the hearth temperature. The ratio of bases to silica was irregular, but in general much too low. It was only on the fourth and twelfth days that it was anything near what it should have been. On these two days the "basicity" was 1.52 and the manganese in the slag was 4.9. The coke consumption was in every case much too high, its effect being to increase the slag volume, lower the basicity, and increase the manganese lost in the slag. The coke consumption on the twelfth day was but 82 per cent of the coke used on the fourth day, but the results were much better, the per cent manganese in the slag being equally low and the slag volume lower. The failure of the silicon thermometric theorem to give the true temperatures or to serve practically as a guide to good operation is evident throughout. Bearing in mind that the average metal temperature in ferromanganese practice is 1386 degrees, it will be seen that this was a hot furnace. On the eighth day, the metal was extremely hot (1514 degrees Cent.) and yet the silicon had dropped over night from 1.78 per cent to 0.40 per cent. The operator, fearing a cold hearth, put on extra coke that day, which took about 24 hours to pass down the stack, running up the coke consumption on the ninth day to the remarkable figure of 10,326 pounds per ton but did not raise the silicon. The tons of metal made on the ninth day was only 38 compared with 47 on the eighth day and an average of about 50 tons per day for the first seven days. It can be shown that it cost the furnace profits about $3000 on the ninth day to conclude that the furnace was getting cold because the silicon dropped from 1.78 per cent to 0.40 per cent.

Invents Safety Brake for Traveling Cranes

For use in connection with overhead traveling cranes, Aaron Heisler, Pittsburgh, has invented and patented a new safety device which he claims will prevent wheeled cranes or the crane structures from traveling

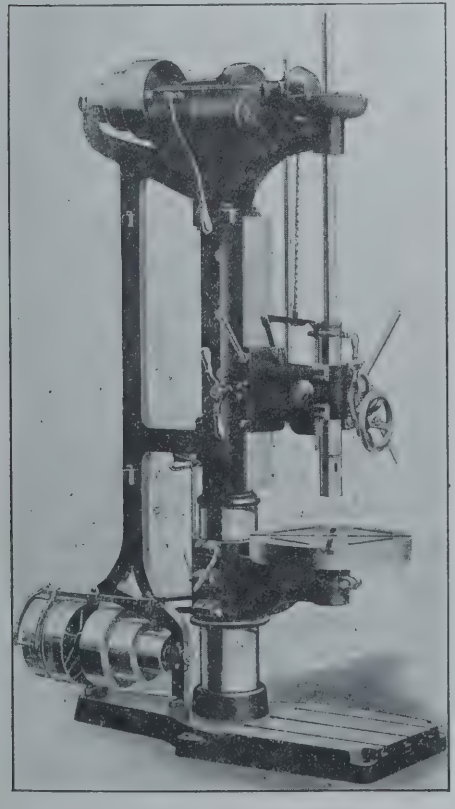


AIR OPERATED DEVICE FOR PREVENTING ACCIDENTS ON OVERHEAD TRAVELING CRANES DUE TO RUNNING PAST SAFE LIMITS

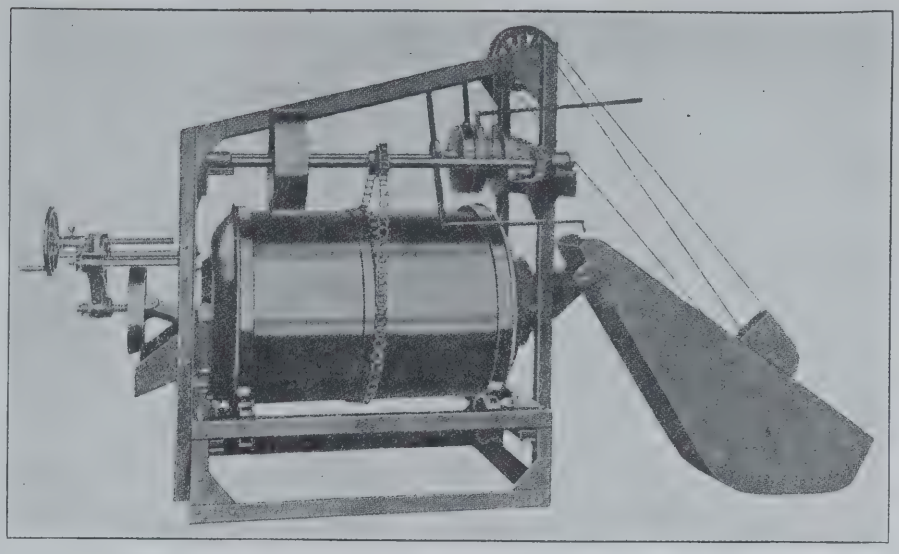
too far upon the supporting rails. As shown in the accompanying illustrations, the safety feature is a sliding bumper which upon contact with another crane or with the end walls of the crane runway applies a brake to the motor shaft.

When the bumper strikes an object in the path of its travel, it moves a wire cable attached to a bellcrank lever, which in turn opens a valve in the air line connecting an air reservoir with a brake cylinder. A rack mounted on the piston of the brake cylinder actuates a pinion on a right and left-threaded shaft of a clasp brake on the crane motor shaft. To release the brake, air is discharged from the brake cylinder through a valve controlled by the cab operator. In order to prevent sudden shock the cable is provided with an air cushioning cylinder which tends to absorb the jar.

To apply the device to the crane it is necessary to install an air tank and pump, piping and necessary fixtures, and a separate motor which, the inventor says, need not be of high power. Fig. 1 is a side view of the crane with the appliance attached. It shows the air tank surmounted by the motor and pump,, the brake cylinder, bell crank and clasp brake. Near the top of the crane is the air cushioning cylinder and the brake wheel. Fig. 2 is an end view of the carriage showing the safety bumper and the cable attached to it. Fig. 3 shows the principal of the brake wheel which is operated by the rack on the piston rod.



UPRIGHT DRILL WITH GEARED FEEDS



TUMBLING BARREL WHICH IS EQUIPPED WITH POWER LOADING DEVICE

Develops Sliding Head Drilling Machine

Selective speeds and feeds of wide range and positive geared feeds are salient features of the sliding head drilling machine shown in the accompanying illustration, which is a recent development of the Sibley Machine Co., South Bend, Ind. The base is ribbed and provided with three T-slots for strapping work in place. When the work is clamped directly to the base, the platen is readily swung aside.

The head and spindle are balanced by a weight in the column suspended by a chain which runs over large diameter sheaves. All gears are enclosed. Belt guards can be furnished as special equipment.

A novel feature of this machine is that all bearings are fitted with split die-cast bushings made of antifriction metal. As these bushings are located in machined seats, all that is required when undue wear develops is to replace the bushings thus assuring correct alignment. The driving pulleys and the 3-step cones are designed to accommodate wide-faced belts thus assuring ample power at all times. The long range of the head and spindle travel permits the use of large jigs. The back gears are of the sliding type, fully encased and operated by one lever. The spindle is equipped with ball thrust bearings.

The geared feed permits of four changes and a neutral position. The feed changes are obtained by moving a knob, located in the center of the hand wheel, in connection with a sliding spline, four feeds being provided for each spindle speed. The initial drive of the feed shaft is from the upper cone shaft through the medium of spur gears and 2:1 spiral gears. This arrangement is said to be compact and due to the fact that the gears run in oil, they are properly lubricated at all times. The spindle quill is actuated by a rack and spur gear, the spur gear shaft being driven through the medium of a worm gear and worm. The worm runs in an oil pocket and is thus self lubricating. An adjustable automatic stop is provided for tripping the power feed at any predetermined point. Quick return of the spindle is had by means of a 3-arm spider at the left of the operator. For hand feeding, a wheel of large diameter is provided.

New Tumbling Barrel Has Power Loader

A tumbling barrel recently developed by the Ideal Concrete Machinery Co., Cincinnati, loads automatically from the ground level and discharges the work directly into buckets or buggies without stopping the rotation of the barrel. To prevent over tumbling or insufficient tumbling, the operator can reach in and take out a sample of the work at any time without interrupting the process.

During the tumbling operation the plug, as shown in the accompanying illustration, is in and closes the barrel. When in this position the hinged chute hangs straight down in the drum so as not to interfere with the tumbling. To discharge, the screw is turned by means of the handwheel which withdraws the plug and brings the chute to the discharge position. A worm of 1½-inch angle iron placed in the inside of the barrel cleans the barrel when discharging.

Barrels are supplied with either a

solid shell, a shell perforated to screen out sand or sawdust or a shell equipped with axial slots to dispose of trimmings. The shell is of ¾-inch steel plate rolled to size and butt welded, while the drum heads are ⅞-inch castings protected from wear by steel bands shrunk around the running track. Chilled iron rollers 12 inches in diameter carry the drum. The power loader skip is raised by power transmitted through a 14-inch contracting band hoist. An automatic stop prevents the loading skip from being hoisted too late. Where an exhaust barrel is desired, the exhaust is taken care of by means of the hollow trunnion in the discharge plug to which a flexible steel tubing is attached. This type of barrel also can be adapted to wet tumbling.

To Sell Equipment

The Delta Equipment Co., 140-142 North Third street, Philadelphia, has just been organized to deal in electrical and steam equipment and new and used machine tools. George B. McClennen and P. J. McBride, both for seven years associated with Frank Toomey, Inc., and Andrew I. Mehan are the organizers. The establishment of the new company follows the purchase of the Delta Electric Engineering Co., which for some time past has been dealing in electric motors and generators. The business of the old company will be continued and broadened to include new and used boilers and other steam equipment and machine tools. In view of his past experience Mr. McClennen will be in direct charge of the machine tool department, while Mr. McBride, who for many years has dealt particularly with steam and electrical equipment, will devote his special attention to the other lines to be handled.

Better Letters Discussed at Convention

That higher standards of business will be attained by higher standards of business letters and the growing importance of letter writing as a phase of modern business, were the salient points brought out at the third annual convention of the Better Letters association, held at Hotel Cleveland, Cleveland, Nov. 20 and 21. More than 100 persons attended the sessions, 80 per cent of whom represented industrial institutions.

Papers read at the convention included: "Historical Sketch of the Better Letters Association," by H. N. Rasely, Norton Co., Worcester, Mass.; "The Business Letter—Its Importance to the Commercial World," by Sidney S. Wilson, Willoughby, O.; "Sales Messages or Letters as the Direct Method of Approach to the Buying Public," by M. G. Webber, Fisk Rubber Co., Chicopee Falls, Mass., and others.

Sidney S. Wilson, president Sidney S. Wilson Co., Willoughby, O., was elected president of the association; H. N. Rasely of the Norton Co., was re-elected secretary, and the following were made directors: R. B. Newton, Wilson & Co., Chicago; John P. Opdycke, New York; Douglas Johnson, Wilmington, Del.; Charles R. Wiers, Larkin Co., Buffalo; L. A. McQueen, B. F. Goodrich Co., Akron, O.; Dr. F. W. Dignan, LaSalle Extension university, Chicago; and E. P. Cramer, Goodyear Tire & Rubber Co., Akron, O. A permanent organization was formed at the meeting. W. O. Rutherford, Akron, O., is the retiring president of the association.

New Industries Springing up in Michigan

Detroit, Nov. 26.—Among the dozen or more industrial organizations which have procured sites in the 4200-acre townsite of Marysville, Mich., being developed by C. Harold Wills and John R. Lee, former officials of the Ford Motor Co., are the Holmes Foundry Co.; Port Huron Engine & Thresher Co., and the General Aluminum & Brass Co.

The Holmes Foundry Co. will be in operation by the end of the year with one of the largest gray iron foundries in the country. The engine and thresher company is preparing for an extensive export business and already is making large shipments of machinery to Argentina.

Announcement of the plans of the Wills-Lee organization will be made public soon. This new concern is planning to produce motor cars in large numbers under the direction of Mr. Wills.

The automobile trade school of the Flint Industrial Fellowship league has established classes in tool designing which are proving successful in meeting the shortage of skilled workers. Organization of the classes was perfected by George T. Merrill, supervisor of tools for the Dort Motor Car Co., and G. J. Doll, master mechanic, and H. E. Thompson, chief tool designer of Buick Motor Co. plant No. 31. The course is divided into two sections, one for designing and the other for practical toolmaking. The school is open to workmen of any factory.

Reduced Output

In Refractories Expected Because of Coal Strike—Ask Higher Prices

Pittsburgh, Nov. 22.—No material improvement has taken place in the shipments of refractories to steel plants and blast furnaces. A marked curtailment of production appears to be immediately ahead because of this condition and the fact that a number of manufacturers who do not own their own coal mines are beginning to get near the end of their reserve stocks. Most of the larger manufacturers have kept their plants going right through the steel strike notwithstanding that the steel manufacturers have been ordering only such supplies as they absolutely required and the result is that the former now are carrying pretty substantial stocks. Consumers are poorly supplied with refractory brick, but lacking the common labor necessary to handle them, they are ordering or specifying only for occasional carloads. No change is noted in prices, but the indications are that the next change will be toward higher levels due to the fact that the two reductions made since the signing of the armistice have carried selling figures in many instances below producing costs and there are no signs yet of any material decline in prices of raw material. It is reported that some makers of magnesite brick already have sought higher prices but this tendency is not general, although shipments of western magnesite east are much restricted by a scarcity of cars, etc.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 41.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent.	$ 40.00 base
76 per cent.	100.00 base

May Not Return Roads for Year

Senate Not Likely to Begin Discussion of Measure Until After Jan. 1, While Long Debate Over Reimbursement is Indicated—Government Refuses to Buy Material "to Keep Down Private Interests' Debt"

WASHINGTON, Nov. 25.—While opponents and supporters of the league of nations covenant and the peace treaty are divided as to whether or not these documents are dead as the result of the refusal of the senate to ratify them, it is the hope of many members of congress that when it convenes in regular session next Monday it will be possible to take up immediately important domestic legislation not reached during the special session which ended last Wednesday night. The senate was occupied almost entirely with the discussion of the league and the treaty, the primary reason for the calling of the session. The house made more progress, and enacted some measures which the senate hopes to take up soon after the new session begins. This is particularly true of the bill to return the railroads to their private owners and the bill for the upbuilding of an American merchant marine.

May Retain Railroads for Year

Considerable doubt exists, however, that the senate will be able to pass the railroad bill before the first of the year, when it was proposed the railroads should go back to private operation. As a result the opinion prevails that government operation of the railroads will be continued until July 1, 1920, if not for another year. This belief is heightened by reason of the fact that the President last week vetoed the bill restoring rate-making powers to the interstate commerce commission and removing the President's power to initiate rates while the railroads are under railroad control.

Retention of government control over the railroads for another six months, it is pointed out, will give the senate time to consider carefully a railroad regulation bill and to prepare legislation to deal with the labor situation among the railroads and the basic industries. While it has been denied that the senate committee on interstate commerce will withdraw the antistrike clause from its railroad bill, the report persists that this will be done and that if this and other labor legislation is taken up it will be done through a separate measure. In view of the fact that the house, which last week passed the Esch bill restoring the railroads to private ownership, removed from that measure its original labor legislation and inserted instead a mild proposal for voluntary conciliation, it is believed it would not be possible for the conference to agree on the antistrike clause even if it passed the senate. Because of this it has been thought more probable that an attempt to pass such legislation will be made in a separate bill so as not to delay passage of the railroad bill or bring about a hopeless deadlock.

Government May Take $400,000,000

The house, following previous action by the senate, passed the bill for reimbursement to the United States of approximately $400,000,000 from the railroads for new equipment, including cars and locomotives, bought by the government during federal control. The measure enables the President to make the necessary arrangements to finance the equipment, and relieves the government of a considerable obligation that will be taken over by the car equipment trust that is provided for in the bill.

The provisions of the arrangement which are permitted will be that title to all these engines and cars will be given to a corporation which is to be formed with the approval of the railroad administration, and the bankers have agreed to take enough of the trust certificates to provide the United States with $200,000,000 of cash, which otherwise the government would not have. It is expected that the United States will be reimbursed immediately in cash and will have obligations of the car trust corporation secured by the collateral of the engines and cars, so that the government will be repaid the entire debt of approximately $400,000,000 by the time the car trust matures.

Will Buy Minimum of Material

It is evident that the government, even if it does maintain control of the railroads after the first of the year, does not intend to buy any more material than it will absolutely need. When the government turns the railroads back to private management it desires that the debt owing it shall be as small as possible. On the other hand, if the measure providing for the return of the lines is liberal, it is reported the carriers will be prepared to come into the market on a large scale for equipment, and particularly for rails. The house bill differs in some important respects from the senate bill which has been reported, but both measures are accepted as doing justice on the whole to the railroads, and because of this large buying under private operation is expected.

The merchant marine bill passed by the house expresses the same general principles as the bill of the senate committee on commerce, both providing for private ownership and operation of an American fleet, and it is believed the senate soon after the next session will be able to pass a merchant marine measure, and that the two bodies can agree on legislation that will be approved by both branches of congress and accepted by the President.

Control of Dye Imports Extended

Both the senate and house last week passed a resolution extending government control of dye imports through the war trade board until Jan. 15. The measure is directed at proposed German importations. In discussing the bill, Senator Penrose, who introduced it, said the finance committee had unanimously decided that none of the special tariff bills should be taken up until the peace treaty is disposed of and, if administration forces are unsuccessful in efforts to call the treaty up in the senate at the next session, it is likely the bills soon will be taken up after the senate convenes. The bills include proposals for levying duties on importations of magnesite, zinc, tungsten, etc. A subcommittee of the finance committee has completed hearings on the measures carrying duties on zinc and tungsten.

The special senate committee which will present to the senate recommendations for the adoption of a budget system by congress will hold hearings beginning the second week of December. The committee is bipartisan and is headed by Senator

Medill McCormick, Illinois. It proposes to inquire into the budget system developed by foreign countries and by states of this country. The hearings probably will continue for about two weeks.

All Ready for Basing Point Inquiry

WASHINGTON, Nov. 25.—Everything is ready for the steel price basing point hearing before the federal trade commission here next Tuesday morning at 10 o'clock. Letters containing views of individual manufacturers and consumers, chiefly the latter, the majority of whom appear to be against the trade custom, are continuing to arrive, but will not affect arrangements which have been made to go forward with the investigation. Letters also are arriving indicating a large attendance of the representatives of various interests.

The inquiry will not be legal in any aspect in the early stages, the hearing being informal, but orderly and with all of the commissioners participating. Individuals will be given opportunity to be heard and to question. While the commissioners will be interested in hearing all views, it is likely that at first they will pay particular attention to that phase of the question which deals with jurisdiction. They have not made up their minds that they have jurisdiction and this will be determined before they decide whether a formal complaint should be issued.

So far all the parties directly concerned have signified their intention to have representatives present. This includes John S. Miller, of counsel for the Western Association of Rolled Steel Consumers, which instituted the proceedings, and counsel for the United States Steel Corp., the Steel & Tube Co. of America, the Inland Steel Co. and the Interstate Iron & Steel Co., parties defendant.

Among those expecting to be present are A. H. Chamberlain, secretary, the American Iron, Steel and Heavy Hardware association; Albert C. Taylor, secretary, the Eastern Bar Iron association; George I. McIlvaine, secretary, the Association of Tin Plate Manufacturers and the National Pipe and Supplies association; W. E. Dunn, secretary, the Southern Metal Trades association; Cravath & Henderson, attorneys, the Bethlehem Steel Corp.; L. E. Block, G. H. Jones, and H. P. Platt, the Inland Steel Co.; W. L. King, Jones & Laughlin Steel Co.; the Chattanooga Manufacturers' association; F. & G. Taylor Co., Philadelphia; L. D. Perry, the Central Iron & Steel Co.; Richard Jones Jr., the Republic Iron & Steel Co.; Lieut. Col. L. D. Miller, of the war department; James Bowron, the Gulf States Steel Co.; J. E. Frederick, the Kokomo Steel & Wire Co., and the Crawfordsville Wire & Nail Co.; Chadbourne, Babbitt & Wallace, attorneys, the Midvale Steel & Ordnance Co.; C. O. Hadley, the Alan Wood Iron & Steel Co.; W. H. Donner, the Donner Steel Co.; John M. Remsen, Stark Rolling Mill Co.; W. W. Corlett, the United States Steel Corp.; Charles M. Thorp, the Weirton Steel Co.; F. W. Beach, the Mansfield Sheet & Tin Plate Co.; W. O. Collings, Kansas City, Mo.; Charles L. Ortenfeldt, the Oscar Daniel Co.; C. R. Robinson, the Lackawanna Steel Co.; R. W. Poteet, the Stanley Works, New Britain, Conn.; John Donnan, secretary-treasurer, the Southern Hardware Jobbers association; W. J. Echman, the M. B. Farrier Lumber Co.; H. F. Knapp, the Carnegie Steel Co.; Chester W. Cuthell, the Birmingham Steel Corp.; L. A. Manchester, the Youngstown Sheet & Tube Co.; L. E. Thomas, the Reading Iron Co.; E. L. Herndon, the Eastern Steel Co.; J. G. Deericks, the Pittsburgh Steel Co.; Charles W. Howard, the Chattanooga chamber of commerce, and Newman, Poppenhusen, Stern & Johnston, the Interstate Iron & Steel Co.

Canada's Export Steel Trade Growing

Washington, Nov. 25.—Canadian foreign trade in iron and steel products in the year ending Sept. 30, 1919, surpassed that in the previous year by $22,476,943, according to Consul General Foster at Ottawa. Total imports in 1919 were $1,235,830 less than in 1918 while total exports were greater by $21,241,113. While figures are not available showing to what extent the United States participated in this iron and steel business, statistics for the total foreign trade show that of the $886,134,000 imports, which were $12,500,000 less than in 1918, the United States furnished $701,000,000, or $38,500,000 less than in the previous year. On exports, Canada's business this year was $1,201,801,000 in comparison with $157,000,000 more a year ago. In this the United States received $433,337,000, or $13,000,000 more than in 1918.

Surplus Property Worth $1,152,328,305 Sold

Washington, Nov. 25.—Credit sales of surplus property to France and the liberated countries made by the liquidation commission of the war department to Nov. 5 aggregated $550,328,305, not including sales to corporations and individuals in Europe. Sales in the United States reported to Nov. 8 total $602,000,000, or 9.5 per cent more than the total sales in Europe. The total for United States covers sales of real estate and improvements and includes $123,245,240 in sales made prior to the establishment of the office of the director of sales. The grand total of sales is $1,152,328,305.

The value of 22,596 contracts, reported liquidated to Nov. 1 was $2,091,426,000 as compared with $2,128,795,000 reported previously. This reduction of $37,000,000 is due to corrections in official reports.

Strike Retards Shipments of Steel to Canada

Washington, Nov. 25.—Shipments of steel to Canada have fallen off as a result of the steel strike, according to Felix S. Johnson, American consul at Kingston, in a report to the bureau of foreign and domestic commerce. Despite the shortage of steel for sheets, Canadian manufacturers have kept the price down, he said. One manufacturer is planning additions to his factory to provide for a 50 per cent increase in production of sheets. This will tend to lessen the normal quantity of sheets imported, he asserted, but until the additions are effected the present situation is embarrassed by the strike. Many jobbers have sheets contracted for at low prices, he said, and this will continue to have the tendency of keeping prices down.

March Describes Work of Industries Board

Washington, Nov. 25.—Importance of the work of the war industries board and other organizations dealing with the manufacture and procurement of supplies during the war is emphasized in the annual report of Gen. Peyton C. March, chief of staff of the army. The report describes the development of the board and methods used in planning and executing the military program during the war.

General March says that it was only because of the assistance of the allies that this country was given time to mobilize its forces. The country can never again expect to prepare for defense against the attack of a powerful enemy under such favorable conditions. The conclusion drawn is that the United States

should never be caught in such a state of unpreparedness.

To Sell Surplus Tools to Domestic Trade

Washington, Nov. 25.—The war department has reversed its policy of refraining from disrupting the market by disposing of its surplus stocks to the domestic trade. According to a statement, issued last week by the war department, surplus stocks of government-owned machine tools will now be sold to domestic users. The statement follows:

Attention has recently been invited to the pressure that is being brought by members of the National Machine Tool Builders' association upon members of congress to have the legislative branch of the government direct the war department to attempt to market as large a part as possible of its surplus of machine tools in European countries.

The war department has a large stock of surplus machine tools. It is attempting to market these tools to the best advantage of the government, and, with this object in view, is offering machine tools for sale both at home and abroad.

By contract, it sold to Belgian manufacturers more than 2500 machine tools. It is negotiating with the French government for the sale of an additional large number of tools.

But there is a strong demand on the part of American users for certain types of tools of which the war department has a stock. The department stands ready to sell its surplus to these domestic users.

Belgium's Imports

Washington, Nov. 25.—Belgium's imports of iron and steel during the first seven months of 1919 have been announced by the research division of the bureau of foreign and domestic commerce as follows: Pig iron, 68,206 tons; scrap, 20,660 tons; ingots, blooms and billets, 26,122 tons; tin plate, 5911 tons. No figures are available showing what portion of these tonnages was imported from the United States.

Tells of Flood Damage to Furnaces in 1862

A picturesque story of the great flood in the Lehigh river in 1862 which wrought much destruction to the blast furnace plants located along the course of the stream is told by H. Firmstone, of Longdale, Va., in a communication to Richard Peters Jr., of Rogers, Brown & Co., Philadelphia. Mr. Firmstone's attention had been directed to the interesting article entitled "Eastern Pennsylvania Rich in Romance of Iron," in the special convention issue of THE IRON TRADE REVIEW, of Sept. 25 of which Mr. Peters was the author. He refers reminiscently to the plant of the Glendon Iron Co., at Easton, Pa., which his family had operated for some years.

"Referring to the picture in the oval on page 115, entitled 'Original Plant of Glendon Iron Co., near Easton, Pa., as it appeared about 1870,' I wish to say that I had entirely forgotten the existence of this picture until it appeared in your article, when I at once recollected that my father had this picture taken after the great flood in the Lehigh river in the late spring or early summer of 1862, to show the destruction wrought by it on the works. At that time it was well recognized that there was more drift deposited on the flat where the Glendon Iron Works were situated than at any other place on the river. In that flood, all the dams on the upper part of the Lehigh, between Mauch Chunk and White Haven, were washed out, and almost every bridge, both county and railroad, from there to Easton, was swept away. I can very well recall, as a boy, the appearance of the flat at Glendon completely covered, sometimes to a depth of 30 feet, with bridges, houses, saw-logs and drift of every description. The boilers at the old works, as shown by the picture, were supported on cast iron columns, and the picture was taken especially to show where one set of columns had been knocked down by a canal boat. One end of the set of boilers can be seen resting on the columns, the other on the ground. Just in front is the canal boat, partly hidden by a pile of anthracite coal stocked from the canal boats, the crib work along the canal being shown in the foreground.

"At the time of the flood there were three furnaces at Glendon, only one of which was in blast (No. 1). That is the one on the left of the picture, showing the brick tunnel-head, all the furnaces at that time having open tops. No. 2 furnace is behind the right hand chimney in the picture, shedded over, while No. 3 furnace is behind the lefthand chimney and is likewise shedded over. The debris was not cleared away until late in the fall of 1862, when things were got ready and No. 1 furnace was successfully blown out.

"As your note in reference to the picture states, the engine house was circular and of red brick, and stood between No. 2 and No. 3 furnace, and the hemispherical blast receiver formed its top. At that time, all stock for these works was received by canal."

Opens Warehouse

The American Iron Products Co., Inc., 107 Liberty street, New York, has rented a large iron and steel warehouse at Bush Terminal, Brooklyn, N. Y., from which it will make stock deliveries to steamers for export and which it expects will enable it to enter the domestic field as an iron and steel jobber, beginning January, 1920.

Radiator Company Buys Boston Site

One of the largest transactions in waterfront real estate at Boston during the year is that just announced, wherein the American Radiator Co. acquires a large tract for the construction of a factory and warehouse. The new factory will cost over $1,500,000 and will cover 95,000 square feet. This is to be the first of several units. The output of the new plant will be between 40,000 and 50,000 tons per year.

Sintering Plant Starts

The new sintering plant of the Carnegie Steel Co. at Farrell, Pa., was placed in operation Nov. 19. The plant cost $275,000 and is one of the most modern in the country, its daily output being 300 tons. Bartlett & Snow, of Cleveland, had charge of the construction. The plant is electrically driven. O. J. H. Hartsuff is general superintendent.

Officers Elected

At a meeting of organization of the Replogle Steel Co., the following were elected directors: J. Leonard Replogle, chairman; W. H. Brevoort, Harry Payne Whitney, Mortimer L. Schiff, T. Coleman du Pont, Carl Schmidlapp, Charles MacNeill, L. W. Baldwin, and Harry F. Sinclair.

Strike is Called Off

Chicago, Nov. 18.—The strike at the plant of the Standard Steel Car Co., Hammond, Ind., which was virtually over early in September has been called off officially by the international representatives of the trades involved. None of the demands of the strikers was met.

Furnaces Resume

The Riverside Steel Casting Co., Newark, N. J., has completed and placed in operation a new 8-ton acid open-hearth furnace. In addition, this company has a 5-ton acid open-hearth furnace which has been in operation for several years.

The Maytag Co., Newton, Iowa, maker of washing machines, is erecting a large up-to-date foundry. G. W. Smith is works manager.

No Compromise With Radicalism

National Founders Association Calls For Vigorous Combating of Extreme Demands of Organized Labor—Rock Island Arsenal Plan of Operation is Analyzed—Americanization Problem of Aliens Are Considered

INDUSTRIAL unrest in this country during the past year, and the tendency toward radicalism among labor leaders have failed to shake the faith of the leaders of the foundry industry in the future of democratic institutions in this country or of their industry and this fact was reflected strongly at the annual convention of the National Founders' association, held at the Hotel Astor, New York, Nov. 19 and 20. As long as there are men at Washington who, when aroused, will take action to defend the government, speakers at the convention held, the country is safe, for the majority of its people are for the maintenance of law and order. At the same time, the convention felt that the present wave of radicalism and unrest would not be nearly as acute had the government from the first shown a firm hand. To the psychological effects of the circumstances under which the Adamson bill became a law were traced many of the radical demands of labor. Employers generally were cautioned at the convention against any compromise with labor unions as the lesser of two evils and it was shown how the course of labor unionism in recent years has been characterized by intimidation, murder, law-breaking and violence of all kinds and the recent declaration of the American Federation of Labor in support of the coal miners' union, and the declaration of President Gompers of that body that an antistrike law would not be obeyed, were pointed out as indications that any general recognition of the labor unions would be the first step in a headlong plunge toward sovietism in this country. Satisfaction was expressed at the convention over the fact that the recent steel strike was the means of bringing squarely before the public the question of the open and closed shop.

Condemns the Radicalism of Organized Labor

GEORGE F. MONAGHAN, general counsel of the National Founders' association, delivered an impressive address on the subject of "Industrial Unrest." As long as there are in Washington men, who when aroused, have the courage to take action such as that which has been taken in Washington recently, Mr. Monaghan said, the country's future is safe. A feature of the present industrial unrest, Mr. Monaghan said, is the character of the men who are preaching radicalism. The ranks of those who are working for syndicalism and sovietism in this country include men of brilliant minds who are in the ranks of the journalists and college professors. He read extracts from the recent productions of the radical writers to show their insidious character when brought to the attention of the average worker, and Mr. Monaghan deplored the fact that very little work is being done to offset the arguments of the radicals. He ventured the statement that the average employer in debate against the average socialist, would be worsted in 15 minutes, due to the fact that the latter is more skilled in the use of the arguments advanced by his side.

The fallacy of collective bargaining, which was the rock upon which the industrial conference at Washington split, said Mr. Monaghan, must be at once apparent to anyone who has an understanding of the factors involved, and who has followed the record of labor unionism in this country. That contracts with the American Federation of Labor are valueless, he said, is proved by the developments in the coal strike, and in the longshoremen's and printers' strikes in New York. As the declaration of independence was the prelude to the constitution, Mr. Monaghan said, so the general recognition of the American Federation of Labor would be the prelude to sovietism. To those who in the present troublous times would choose the unions as the lesser of two evils, Mr. Monaghan pointed out the record of trade unionism, covering continued intimidation, sabotage and murder, Harry Orchards' confessions, the developments in the McNamara trial, the refusal of Gompers to obey the injunction in the Buck Stove & Range Co. case, the declaration of the American Federation of Labor officials of sympathy with the mine workers, the declaration of Gompers that he would refuse to obey any antistrike law. He emphatically declared his objection to placing a crown of conservatism on the American Federation of Labor.

William H. Van Dervoort, president, Root & Van Dervoort Engineering Co., Moline, Ill., formerly treasurer of the National Metal Trades association, in an address entitled "Government Competition in Industry" told of an investigation of the system in vogue at the Rock Island arsenal. Although the workers there do not select their foremen and have nothing to do with the management of the plant as has been alleged, he said, they maintain a sales organization in Washington whose duty it is to see that there always is enough work at the arsenal to keep the men there employed. In making up bids on government work, it is customary to make no allowance for a profit. Each employe gets a month's vacation with pay, which, with legal holidays and Sundays, make a total of 43 days off per year. In making up bids, the arsenal, although representing an investment of $35,000,000, is not required to make any allowance for depreciation, and materials are figured at cost, although where materials have been bought at prices which are higher than the prevailing market, they are brought down by the action of the board of officers, in order to lower bids. The Rock

National Officers

President—William H. Barr, Lumen Bearing Co., Buffalo.

Vice President—J. Goslin, Joubert & Goslin Machine & Foundry Co., Birmingham, Ala.

Commissioner—A. E. McClintock, Chicago.

Secretary—J. M. Taylor, Chicago.

Treasurer—Chicago Trust Co., Chicago.

Island arsenal, Mr. Van Dervoort said, is about 90 per cent organized.

The situation at the Rock Island arsenal, Mr. Van Dervoort said, paved the way for efforts to unionize the shops in that district, but this movement met with little success. To further relations between employer and employe, Mr. Van Dervoort recommended the use of mass meetings upon necessary occasions, to give the employer an opportunity to state what is in his mind and to tell what is in the minds of his employes. Such meetings, he said, give an opportunity for submitting matters to a referendum of the employes, thus promoting co-operation between them and the management. Mr. Van Dervoort spoke of the necessity for proper remuneration of employes, saying that it is an object of his company to see that the condition of the workers is improved from year to year, and that remuneration is made as great as possible.

Says British Leaders Excel

Prof. J. Laurence Laughlin, economic advisor of the National Industrial conference board, in comparing British and American labor problems, characterized British labor leaders as being intellectually and culturally superior to the labor leaders of the United States. In England, labor is homogenous and is more highly organized than in this country. He estimated that labor in Great Britain is 40 per cent organized, whereas it is only 10 to 15 per cent organized here. The views of labor are more advanced in England than here, Professor Laughlin said, but while there is more socialism there, British workmen have a more widespread, inbred respect for law and order than the workers here. It is characteristic of British workers at this time that they expect, somewhere and through some agency outside of themselves, to get luxuries, and this outside influence generally is the government. Hence, labor agitation in England is a matter of politics, and so-called "direct action" is taken in order to force the government, through violence, to secure for the men what they cannot obtain legally. One characteristic feature of the wave of radicalism in England is the emergence of the theory of key industries and key groups of workers. The alliance between the coal miners and the railway and transport workers in Great Britain, Professor Laughlin said, was expected to prove invulnerable, but when the railway strike was called, the government and the general public united to break it, and he contended that any such alliance in this country similarly would be doomed to failure.

Professor Laughlin denied that British employers are in favor of general unionization of industry. This impression has resulted from the fact that the government, by skillful maneuvering, has been led to foster unionization on the theory that when dealing with union leaders, it must have the assurance that these leaders are representative of the great body of workmen and not a portion of it. Professor Laughlin deplored the psychological effects of the circumstances under which the Adamson law was passed and he stated that not coddling but quick and sharp impression of all disorder is essential in such situations as the present. If order is maintained, he said, strikes never amount to anything.

Deplored the Number System

Richard H. Waldo, manager of the Inter-racial conference, New York, spoke on the problems involved in Americanizing the foreign-speaking peoples in this country. His address was entitled, "The Man with a Number." He deplored the number system which is in use at a great many manufacturing establishments, saying it leads to many complications. Frequently, it has occurred that a man's identity has been lost because of the number system. He said that when leaving the country many men had been held up because they had paid their income tax as a number and were put to the necessity of proving their identity with that number. The numbering system represses individuality, and does not tend toward the fostering of loyalty. Mr. Waldo urged

District Committeemen Chosen For the Coming Year

First District

Enoch Shenton, chairman, Wm. Highton & Sons Co., Nashua, N. H.

C. E. Chesney, vice chairman, General Electric Co., Pittsfield, Mass.

Charles L. Taylor, Taylor & Fenn Co., Hartford, Conn.

H. B. Johnson, General Fire Extinguisher Co., Providence, R. I.

Fred F. Stockwell, Barbour-Stockwell Co., Cambridgeport, Mass.

Second District

H. P. Macdonald, chairman, Snead & Co. Iron Works, Jersey City, N. J.

Louis P. Willsea, vice chairman, the Willsea Works, Rochester, N. Y.

George C. Forgeot, Worthington Pump & Machinery Corp., Buffalo, N. Y.

James Eastwood, Benjamin Eastwood Co., Paterson, N. J.

W. H. Thomas, Straight-Line Engine Co., Syracuse, N. Y.

Third District

J. Turner Moore, chairman, Reading Steel Casting Co., Reading, Pa.

Alex. Jarecki, vice chairman, Jarecki Mfg. Co., Erie, Pa.

J. P. Allen, Union Steel Casting Co., Pittsburgh, Pa.

Charles W. Asbury, Enterprise Mfg. Co. of Pennsylvania, Philadelphia, Pa.

David Boies, Spencer Heater Co., Scranton, Pa.

Fourth District

Samuel Blackburn, chairman, John B. Morris Foundry Co., Cincinnati, O.

C. W. Russell, vice chairman, Russell Wheel & Foundry Co., Detroit, Mich.

William M. Taylor, Chandler & Taylor Co., Indianapolis, Ind.

J. M. Bashline, Star Drilling Machine Co., Akron, O.

I. A. Wyant, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.

Fifth District

John B. Strauch, chairman, More-Jones Brass & Metal Co., St. Louis.

A. H. Head, vice chairman, Waterloo Gasoline Engine Co., Waterloo, Iowa.

C. H. Cole, United Iron Works Co., Kansas City, Mo.

F. E. Place, Buda Co., Harvey, Ill.

Horace R. Culling, Carondelet Foundry Co., St. Louis.

Sixth District

Fred M. Prescott, chairman, the Prescott Co., Menominee, Mich.

John G. Osborne, vice chairman, Lakeside Malleable Castings Co., Racine, Wis.

L. R. Barrett, Vulcan Iron Works, Winnipeg, Can.

Oliver Crosby, American Hoist & Derrick Co., St. Paul, Minn.

F. L. Sivyer, Sivyer Steel Casting Co., Milwaukee, Wis.

Seventh District

H. Cockshutt, chairman, Cockshutt Plow Co., Brantford, Ont.

W. M. Gartshore, vice chairman, McClary Mfg. Co., London, Ont.

E. H. Jones, Canadian Yale & Towne, Ltd., St. Catharines, Ont.

M. P. White, Canadian Allis-Chalmers Co., Toronto, Ont.

C. L. Jobb, Canada Iron Foundries, Ltd., Montreal, Que.

Eighth District

Z. W. Wheland, chairman, the Wheland Co., Chattanooga, Tenn.

W. S. Mosher, vice chairman, Mosher Mfg. Co., Dallas, Tex.

W. D. Tynes, Hardie-Tynes Mfg. Co., Birmingham, Ala.

L. J. Black, Beaumont Iron Works Co., Beaumont, Tex.

George M. Morrow Jr., Birmingham Machine & Foundry Co., Birmingham, Ala.

Honorary Member

O. P. Briggs, Minneapolis, Minn.

the need for study of the personalities and individualities of racial groups as well as of individuals, and he thought that the application of the lessons learned from such a study would do much to settle the present undigested situation in this country. Investigations by the Inter-racial counsel, Mr. Waldo said, have shown that conditions in about 15 per cent of the plants of the country are very bad, while an additional 15 per cent is comprised of the closed union shops, thus leaving 70 per cent of the plants that are in good condition and beyond just criticism. He urged the necessity for maintaining good conditions at all plants, since the plants having bad conditions are pointed out as typical.

Mr. Waldo pled for adequate support of the foreign language press of the country, saying that the non-English speaking foreigner must depend on this press for the material upon which he bases his opinions. Of the 1232 foreign language publications in this country, he said there are 61 radical papers that ought to be suppressed, but he cited the failure of the German military authorities to suppress newspapers in Belgium as an example of the futility of trying to suppress the printing press. By far, the majority of the foreign language publications here are safe and conservative American newspapers, and they form the best media for reaching the foreign-speaking population. Unfortunately, Mr. Waldo said, these publications have not been adequately supported, plans are being worked out to remedy this condition.

James A. Emery, counsel of the national council for industrial defense, described at some length the Washington industrial conference. He stated there is no justification for the impression prevailing in some quarters that the failure of the conference was due to the bigotry of employers. It was the unreasonable and unamerican attitude of the American Federation of Labor, he said, that led to failure of the conference and he cited the refusal of President Gompers to reply to questions as to the resolution proposed by the American Federation of Labor, upon which the conference split. Mr. Emery expressed his gratification over the refusal of the employers' group to compromise with principles that are wrong, and he said that it should be a cardinal principle with employers that they never should give voice to anything but what they actually mean and that they should say it in a way that cannot be misinterpreted.

H. P. Bole, vice president of the Hydraulic Pressed Steel Co., Cleveland, described the industrial association in Cleveland, which affords opportunities for employers and employes to exchange their views upon a common ground.

L. R. Clausen, Deere & Co., Moline, Ill., delivered an impressive address on "The Right of Individual Contract." He attacked the principle of collective bargaining, saying that this principle tends to curb instinctive characteristics such as initiative, ambition, and the desire to own property. Each individual has certain inalienable constitutional rights, Mr. Clausen said, including life, liberty, the pursuit of happiness, the right to work and to obtain returns for his work and the right to bargain and contract individually. When men agree to bargain collectively, he said, they, in effect, surrender all of these rights, excepting the right to live. Mr. Clausen detailed the recent crisis at Waterloo, Iowa, where the American Federation of Labor conducted an aggressive campaign against open shops. This attempt, Mr. Clausen said, successfully was resisted by the employers at Waterloo, but not without a great deal of turmoil, and actual refusal of the constituted authorities to suppress disorder. One outcome of the struggle is that the employers of Waterloo now are hiring workers only on the basis of individual contracts. These contracts must be read carefully by the men before they sign them, and they provide that the employe will join no unions nor do anything to oppose the open shop principle while he is in the employ of the company. In other worrds, employers discriminate only against such workers as oppose the open shop. A feature of the system at Waterloo, Mr. Clausen said, is the interest of the employers in the welfare of the men. Records of pay are maintained constantly and every opportunity is extended to the workers to enable them to increase their pay and thus improve their condition. Where wages are not increased, the company at once conducts an investigation to determine the trouble, with the result that correctives generally are found

Professor Wells, of Sibley college, Cornell university, detailed plans which have been proposed at Cornell for furthering interest in foundry work as a profession, and it is proposed to give engineering students an opportunity during their vacations, to work in representative foundries. It further is proposed to provide a course which may be attended by foundry foremen and superintendents over brief periods.

M. P. White, Toronto, described the Ontario Foundrymen's association, which some time ago was organized to deal with labor, and its operation, he said, has been accompanied by highly successful results.

H. J. Boggis, chairman of the membership committee, reported 83 new members and a total membership at the present time of 652 plants.

A. E. McClintock, commissioner, detailed the association's resistance during the past year to the campaign of the molders' union under cover of its drive for an 8-hour day and 44-hour week with increased pay to extend the closed union shop. Mr. McClintock told of the difficulty in inducing boys to take up molding, with the result that while a great many laborers are being taught the art of machine molding, but few molders are being developed. Some members of the association, he said, are meeting this problem by employing one or more molders' instructors, whose duty it is to provide intensive training for recruits. It is a mistake, Mr. McClintock thought to leave the work of training molders to foremen who are overburdened with other work.

F. G. Smith, the Cleveland-Osborn Mfg. Co., Cleveland, was given an opportunity to tell about the newly organized Foundry Equipment Manufacturers' association. The foundry equipment manufacturers, Mr. Smith said, first came together at the call of the chamber of commerce of the United States, during the war, and it was decided to organize the association in order to make permanent the benefits of co-operation. Mr. Smith stated that a great deal of information of a helpful character concerning the operation of foundry equipment, has been gathered together and arranged in the form of bulletins and that with the consent of foundry operators, these bulletins will be distributed among the foundry foremen and superintendents. Mr. Smith explained that the foundrymen generally, will reap the benefit of the work of the Foundry Equipment Manufacturers' association, saying that all of the members are anxious to have all foundry equipment function efficiently. In undertaking such co-operation, Mr. Smith said, the manufacturers of foundry equipment are convinced there is going to be enough demand for all the product the manufacturers can turn out. Replying to Mr. Smith, President Barr gave the assurance that co-operation of this kind would be welcomed by the members of the National Founders' association and he tendered the Foundry Equipment Manufacturers' association the use of the National Founders' association's list of the more important foundries in this country.

Public to Work Out Labor Plan

No Distinctive Groups in New Industrial Conference Called by President Wilson —Present Strikes Will Not be Considered, But Attempt Will be Made to Devise Means for Averting Further Trouble

WASHINGTON, Nov. 25.—With the new industrial conference called by President Wilson to begin its sessions in Washington next Monday, considerable interest is being shown as to what it may accomplish in view of the failure of the first conference to agree on principles looking to industrial peace. In his letter to each of the 17 men whom he has invited to serve in the conference the President makes it plain that it shall not deal directly with any condition which exists today, but rather find "such ways as will avoid the repetition of these deplorable conditions."

It is evident that the President had in mind the fact that the breaking up of the first conference by the bolting of the labor group was due largely to the attempt to deal with existing troubles. It will be recalled that difficulties arose when the labor group attempted to have the conference adopt a resolution calling for arbitration of the steel strike. The labor group's resolution for collective bargaining, which was the immediate cause of the dissolution of the conference, was aimed to force the hands of steel employers and to make them accept the principle of the closed shop.

The new conference, it is proposed, not only shall avoid dealing direct with the steel or coal strike or other labor disturbances, but will be of a different character than the first one. Its makeup follows the suggestion of the public group of the first conference that there be only one body, thus eliminating distinctive lines.

May Follow War Labor Board's Plan

It remains to be seen, however, whether the new conference will accomplish any concrete results and whether it will be able to agree on common principles. By some it is maintained that organized labor's uncompromising spirit will make it impossible for the conference to determine on a plan that will be an effective force in industrial peace.

Reports are in circulation that the new body will seek to work out a scheme for the prevention of strikes and lockouts along the lines employed by the former war labor board. Creation of a body of this kind for peacetime purposes was recommended by the senate committee on education and labor in connection with the report of its investigation of the steel strike. The idea that the new conference might find a workable plan in the labor clause of the peace treaty has lost weight in view of the failure of the senate to ratify the treaty. Moreover, the labor clause was the object of vigorous opposition on both sides of the senate and a reservation has been adopted which practically nullifies it.

The general plan of the new conference, however, according to reports, will be the establishment of a new economic structure for capital and labor to meet the present urgent situation in industry and the creation of a national labor policy and adjustment board which would be given power to enforce the principles set up to do away with strikes and lockouts. There is some doubt, however, that the conference will strictly adhere to this plan because of opposition by organized labor. The board would not be invested with power for compulsory arbitration, but it would stand ready to serve either one or both bodies to a dispute and to make industrial investigations upon its own initiative, the outstanding aim being to serve the public. Its decision, according to those conceiving the idea, would not be legally binding, but would depend on public opinion to compel obedience.

The board would consist of three representatives of labor, three of capital and three of the public, and under it would be a series of industrial boards, apportioned according to the various industries, equally represented as between capital and labor. These boards would have original jurisdiction in all cases and be required to select an umpire from a list to be furnished by the labor policy board where there is disagreement, and the latter would be the source of appeal for interpretation of principles where dispute as to their meaning is existent.

Most of the men appointed to the board by the President are former federal and state officials. Some criticism has been heard that the list on the whole does not inspire confidence because it is not composed of practical men, experienced in industrial problems. Following are the members of the board:

Secretary of Labor William B. Wilson; T. W. Gregory, New York, formerly attorney general under the present administration; George W. Wickersham, New York, attorney general under the Taft administration; Oscar C. Straus, New York, former secretary of commerce; Henry M. Robinson, Pasadena, Cal., former member of the shipping board; Prof. Frank W. Taussig, Cotuit, Mass., former chairman of the tariff commission; Samuel W. McCall, Boston, former governor of Massachusetts; Herbert Hoover, New York, former food administrator; Martin H. Glynn, Albany, N. Y., former governor of New York; Henry C. Stuart, Elk Garden, Va., former governor of Virginia; Dr. W. C. Thompson, Columbus, O., president Ohio State university; Richard Hooker, Springfield, Mass., *Springfield Republican;* George T. Slade, St. Paul, Minn., railroad man; Julius Rosenwald, Chicago, Sears-Roebuck Co.; O. B. Young, New York, lawyer; Dr. H. J. Waters, Manhattan, Kan., agricultural economist, and Stanley King, Boston, shoe manufacturer, and former assistant to Secretary of War Baker in overseeing war contracts.

Hardly had President Wilson made known the names of the delegates whom he had selected for the new conference than organized labor protested against the personnel. The protest is based on the grounds that the conference chiefly represents capital and corporations, although the personnel, except in two or three instances, does not represent such interests. On the other hand it includes men who have strongly supported organized labor. This is what Frank Morrison, secretary of the American Federation of Labor, has to say about the new conference:

"Big business, investing capital, corporation executives, all the elements opposed to organized labor, will be protected by the members of the new conference. The interests of all groups and individuals except the wage-earners will be carefully safeguarded by these gentlemen in their conference work. That is all I have to say."

President Gompers, of the federation, may issue a statement along similar lines.

LABOR NOTES

Employes of the Chicago Ship Building Co., South Chicago, who went on strike just one hour after demanding increased wages and shortened workdays have returned to their places on former terms after being out 10 days. Orders from headquarters of their union sent them back

without explanation of why the strike was called off.

Automobile bodymakers in New York City have gone out on strike after having passed resolutions for a 44-hour week instead of 48 hours and for a wage increase of 15 per cent for workers receiving $35 or less a week and 10 per cent for those receiving more than $35.

The Clinton-Wright Wire Co. of Worcester, Mass., has adopted a program for the medical care of its employes. Dr. C. J. Byrne has been selected as chief surgeon and medical director. The company will have four hospitals, one at the Morgan, the National, the Wright and the Spencer divisions of the company.

Employes of the Westinghouse Electric & Mfg. Co. have opened a co-operative store where they can buy provisions at cost. A large storeroom has been secured at 709 Braddock avenue, East Pittsburgh, just opposite the general works of the company. The scheme is managed entirely by a committee of employes and is endorsed by the management of the company which has placed with the committee its facilities for placing orders with a standing credit where provisions can be purchased at a low cost.

Judge Charles P. Orr of the United States district court at Pittsburgh has decided that coal miners out on strike could not faithfully take the oath of allegiance and remain on strike in opposition to the express desires of the President and refused naturalization to several last week, among them a number who had served in the army during the war.

German Steel Earnings at Low Ebb

(*Special Correspondence*)

BIRMINGHAM, Eng.—Several German iron and steel companies lately have issued their returns of financial results for the year ending June 30 and it is possible to deduct therefrom some inference as to the measure of prosperity realized during the period. The full story is not told, because a portion of the output is distributed through the German Steel syndicate, which has to do with the sale of semifinished steel, railway material, joists and other shapes. All the companies referred to were in former times very well known in Great Britain as big exporters of iron and steel to that company.

Company Absorbs Reserve Fund

It will be noticed that in some cases dividends are being paid out of reserve. The Gutehoffnungs Hutte, of Oberhausen, has a syndicate allotment of 281,000 tons of steel. This company's accounts show that the gross profits earned in 1918-19 are only sufficient to defray the normal rate of depreciation, but by the absorption of the special reserve fund and the balance brought forward it is possible to propose a dividend at the rate of 6 per cent, as compared with 20 per cent in 1917-18.

The Rhenish Steel Works, whose share in the syndicate is 271,000 tons per annum shows gross profits on the prewar basis of conversion of £400,000, but the whole of this sum is required for depreciation. It is intended, however, to pay a dividend of 6 per cent as contrasted with 12½ per cent in the previous year, by the appropriation of the special reserve fund and its addition to the balance brought forward.

The Bochum association for mining and cast steel manufacture has an allotment of 205,000 tons. The directors find it necessary to devote the whole of the gross profits, amounting to £400,000, as compared with £975,000 in the preceding year, to depreciation, the provision for this purpose in 1917-18 having been £375,000. The balance brought forward, however, will permit of the distribution of a dividend of 5 per cent, as against 22½ per cent in the previous year.

The Hoesch Iron & Steel Works Co., of Dortmund, which has an apportionment of 170,000 tons, reports gross profits of £403,000, as contrasted with £1,381,000 in 1917-18. After setting aside £275,000 for depreciation, as against £350,000 in the former year, the accounts show a total loss of £887,000 on the prewar basis of conversion, whereas in the previous year it was possible to pay a dividend at the rate of 39 per cent. The special reserve fund has been drawn upon to the extent of £462,000, partly to cover the loss, while the remainder of the deficit has been carried forward.

In one or two exceptional cases, however, divisible profits have been earned in the past financial year. The Rochling Iron & Steel Works is able to distribute 5 per cent, as compared with 7½ per cent in 1917-18, and the Zypen and Wissen Steel Co. proposes to pay 10 per cent, but in the preceding year the rate was 25 per cent. On the other hand, one of the greatest colliery undertakings —the Harpen Mining Co. which has an allotment of 7,788,000 tons of coal in the Westphalian Coal Syndicate—has incurred a loss of £45,000, as compared with net profits of £770,000 in 1917-18. Nevertheless, the company intends to distribute 5 per cent as against 12 per cent in the previous year, out of the balance forward and by appropriations from the special reserve fund.

Statistics are reaching Great Britain with regard to recent production in the iron trade. The pig iron output was reduced from 576,000 tons in July to 569,000 tons and the average daily output from 18,579 to 18,348 tons. In the same period, the average daily steel output was reduced from 29,494 to 27,294 tons. This, however, shows a decided improvement over the critical month of February, when the pig iron output fell to 409,000 tons, the lowest production since Germany became a great iron producing country.

In her distressed condition, Germany finds some consolation in the restoration of her foreign trade. The *Frankfurter Zeitung* states that Britain is one of the first enemy states to import large quantities of iron goods from Solingen. There are plenty of signs that Germany is greatly hampered in her recovery by a fuel shortage.

Syndicate Provisionally Renewed

Already steps have been taken to make greater use than ever of her famous exporting syndicates. The great Stahlwerksverband syndicate has been provisionally renewed until March 1, 1920, mainly as a result of government intervention aimed at keeping down prices. The syndicate largely lost its reason for existence during and after the war, when the demand for iron and steel far exceeded the supply, so making its former anticompetition policy superfluous. But ultimately the Verband will probably be replaced by a syndicate embracing only the Rhenish-Westphalian steel works, though the Siegerland works, hitherto outside the Verband, will be later invited to join, and the Saar works will be invited to enter into a cartel agreement. The Machine Tool association has created a new organization for standardizing conditions of delivery, and so facilitating exports and home sales. A further tendency is toward combination between the chemical and metallurgical industries, as allied interests.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

R. C. ALLEN, recently elected vice president of the Lake Superior Iron Ore association, Cleveland, is a geologist and engineer of broad training and experience. After graduating from the University of Wisconsin in 1905, he spent three years in graduate study and field work for the United States geological survey and private interests in the West, Canada, and the Lake Superior iron ranges. From 1908 to 1913 he was special lecturer in mining geology in the University of Michigan, 1909-1919 state geologist of Michigan, 1913-19 appraiser of mines for the state of Michigan and technical advisor to the Michigan securities commission. During the war he served the government as a member of the tax advisory board, as chief mine valuer and head of the division of natural resources in the United States treasury.

In recent years Mr. Allen has devoted his attention chiefly to the economics of mining with special work in taxation and the theory and practice of valuation of mining property. He is a member of the special committees of the National Tax association and the American Institute of Mining and Metallurgical Engineers on the taxation of mines. The election of Mr. Allen as the vice president of the Lake Superior Iron Ore association is coincident with the broadening of the work of that organization in several directions, particularly in matters pertaining to federal and state taxation.

Mr. Allen is a fellow of the Geological Society of America, member of the American Institute of Mining and Metallurgical Engineers, Lake Superior Mining institute, various other scientific and professional organizations, and is the author of numerous publications on geologic subjects.

Comly B. Shoemaker Jr., has been appointed assistant superintendent of the Roe Puddling department of the Reading Iron Co., Reading, Pa.

O. K. Carpenter, formerly with the Bayonne Steel Casting Co., Bayonne, N. J., now is superintendent of the Millbury Steel Foundry Co., Millbury, Mass.

Paul E. Noe recently was made sales representative in the Cincinnati district for the McInnes Steel Co., Ltd., Corry, Pa. Mr. Noe has quarters at 220 Southern avenue, Cincinnati.

Frank T. Bentley, traffic manager of the Illinois Steel Co., Chicago, was the speaker at a luncheon meeting of the Cleveland Traffic club, Hollenden hotel, held Nov. 20. His subject was: "Railroads and Industrial Traffic Conditions as They Exist Today."

Capt. John Francis, who has been in command of the ordnance department at the United States armory, Springfield, Mass., for the past 17 months, has been transferred to Seven-Pines ordnance department, near Richmond, Va. He has been connected with the Springfield armory ordnance department 18 years and rose from a private.



R. C. ALLEN

G. W. Norris has resigned his position in the pricing department of the Youngstown Sheet & Tube Co. to accept a responsible place in the Cleveland office of the Liberty Steel Products Co.

J. Allen Dillon has been appointed manager of sales in charge of the new office established at 50 East Forty-second street, New York City, by the Pittsburgh Screw & Bolt Co., Pittsburgh.

H. K. Pollard has resigned as sales manager of the Bayonne Steel Casting Co., Bayonne, N. J., effective Dec. 1, to become sales manager of the Deemer Steel Casting Co., Newcastle, Del.

W. R. Dawson has been placed in charge of the branch sales office established in the Bowman building, Third avenue and Ross street, Pittsburgh, by the American Chain Co., New York.

William H. Haward has severed his connection with the sales department of the Youngstown Sheet & Tube Co., Youngstown, O., and has become connected with the Youngstown Boiler & Tank Co., that city, in an official capacity.

Rodney D. Chipp, formerly general manager of the Vulcan Tradings Co., New York, has been appointed to manage the New York office at 120 Liberty street, established by the Forbes-Perkins Co., 84 State street, Boston.

P. J. Walsh has resigned as mine inspector of the ninth bituminous district with headquarters in Connellsville, Pa., and has become general superintendent of mines for the Consolidated Coal & Coke Co., Uniontown, Pa.

William Wood, who was a government inspector during the war at the Rowe Calk & Chain Co., Plantsville, Conn., recently was made manager of the Diamond Chain Co., York, Pa., a subsidiary of the Rowe Calk & Chain Co., Southington, Conn.

Leonard Crooke, formerly with the Koppers Co., Pittsburgh; Lackawanna Steel Co., Buffalo, and the Central Iron & Coal Co., Holt, Ala., has been made general manager of the Montgomery Coal Washing & Mfg. Co., Birmingham, Ala.

P. G. Taylor, formerly with the Union Match Co., Chicago, and the Western Electric Co., Pittsburgh, has been named assistant treasurer of the Savage Arms Corp., Sharon, Pa. He will have charge of accounting in the general office.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

GEORGE R. WETTEN and Arvid E. Nissen have become affiliated with the force of the Hess Steel Corp., Baltimore. Mr. Wetten, until recently, was roll designer for the Cyclops Steel Co., Titusville, Pa., and formerly was identified with the Atlas Crucible Steel Co., Dunkirk, N. Y., and the Carbon Steel Co., Pittsburgh. While with the Cyclops company, he designed its new 12-inch mill for rolling carbon and high speed steels and work similar to this will be done by him for the Hess corporation. Mr. Nissen, who becomes assistant superintendent of the melting shop for the Hess corporation, formerly was with the Taylor-Wharton Iron & Steel Co., Highbridge, N. J., as assistant metallurgist. Prior to that he was employed in the open-hearth department of the Illinois Steel Co., Gary, Ind.

Arthur R. Jones, formerly in the Chicago general office of the Interstate Iron & Steel Co., 104 South Michigan avenue, Chicago, has been transferred to Milwaukee to take charge of the recently established office there in the First Wisconsin National bank building. Mr. Jones is assisted by Charles Belik, who also was in the Chicago office formerly.

Charles B. Ellis has become the general manager of sales of the Colorado Vanadium Corp., 30 Church street, New York. The company is just getting its mines at Sawpit, Colo., on a production basis. Mr. Ellis for about 15 years was associated with J. Leonard Replogle as secretary and assistant in Cambria Steel Co. and American Vanadium Co.

Richard M. Van Gaasbeek, head of the department of foundry, Pratt institute, Brooklyn, N. Y., was the speaker at a recent luncheon of the Gray Iron club of New York. Mr. Van Gaasbeek discussed the needs and possibilities for training foundry workers and urged the necessity for employers to co-operate and advise with the schools in their efforts to be of service to them in the training of men already employed and in attracting new men to the industry.

W. T. Hays, who has been general superintendent of the Dominion Steel Foundry Co., Ltd., Hamilton, Ont., for the past four years, recently was transferred to the company's new plant at Vatervliet, N. Y., known as the Adirondack Steel Foundries Corp., where he now is located as works manager. C. W. Sherman, president of the Hamilton company, serves the Vatervliet company in the same capacity. Prior to locating in Canada, Mr. Hays was for five years general superintendent of the Scullin Steel Co., St. Louis.

Arthur B. Mead has been appointed district sales manager for Peter A. Frasse & Co., Inc., 417-421 Canal street, New York, to cover Philadelphia, middle Pennsylvania, southern New Jersey, all of Virginia, Delaware and Maryland. His headquarters will be at 625 Arch street, the address of the Philadelphia office and warehouse. For several years Mr. Mead has been a member of the sales organization in the general offices of the company. Much larger stocks of electric and open hearth tool and alloy steels, polished drill rods, seamless steel tubing, etc., will be carried.

Dr. Clifford B. Connelley, formerly dean of the school of applied sciences, Carnegie Institute of Technology, Pittsburgh, who has been acting commissioner of the Pennsylvania state department of labor and industry, now has been given the full title of this office. Col. John P. Jackson, whose place Doctor Connelley was filling, resigned to enter the military service, but the resignation could not be accepted under the laws of the state while he was in the service. With the acceptance of Colonel Jackson's resignation, Governor Sproul announced the appointment of Doctor Connelley.

Duncan G. Stanblough, general superintendent of the Packard Motor Car Co., Detroit, spoke on ways and means to take care of the present industrial situation in the country before the Executive Club of Employment Managers, of Worcester branch, National Metal Trades association, and the Employers' Association of Worcester county, in Worcester, Nov. 17. The following day he spoke before the Springfield branch, N. M. T. A., and the Employers' Association of Hampden County, in Springfield, Mass.

Clarence E. Mason, for more than 25 years connected with the sales force of the Graton & Knight Mfg. Co., Worcester, Mass., has resigned.

George N. Jeppson, secretary and works manager of the Norton Co., Worcester, Mass., has been elected president of the Skandia Credit union, of that city.

E. M. Kinney, of the General Electric Co., Schenectady, N. Y., was the speaker at the regular monthly meeting of the Engineers Society of Western Pennsylvania, held in the Union Arcade auditorium, Pittsburgh, on Tuesday evening, Nov. 18. His subject was "Radio Apparatus for Aircraft and Ground Stations."

Oscar P. Wadock has resigned as district manager in Chicago for the Jas. Clark Jr., Electric Co., after a 12-year connection, to engage in the manufacture of electric drills, hammers, grinders, etc. He is president and treasurer of the Wodack Electric Tool Corp., 23-27 South Jefferson street, Chicago.

Russell W. Stovel, who recently returned from France, where as a lieutenant-colonel of engineers, he served as chief of the terminal facilities division of the army transport service, has been appointed a consulting engineer of Westinghouse, Church, Kerr & Co., Inc., New York City. He devoted his entire time to the company's electrical and mechanical work. He was graduated from McGill university in 1897 with the degree of electrical engineer. In 1898, he entered the employ of Westinghouse, Church, Kerr & Co. He soon was made assistant engineer and then successively, engineer in charge, mechanical engineer and managing engineer. In 1914, he resigned to become managing engineer for Gibbs & Hill, New York, consulting engineers. He entered military service in October, 1917, and arrived in France, Nov. 8, 1917. He is a member of the American Institute of Electrical Engineers and the American Society of Mechanical Engineers.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

PAUL M. LINCOLN, who for many years has been commercial engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., resigned recently to enter the consulting engineering field and has taken active charge of motor application engineering for the Lincoln Electric Co., Cleveland. Mr. Lincoln is credited with having designed and installed the first hydroelectric power plant at Niagara Falls, and subsequently directed its operation for six years. He developed the first high voltage transmission lines and is considered an authority on this subject. Among his inventions is a synchronizer for paralleling large electric alternators. He was elected president of the American Institute of Electrical Engineers in 1914.

His work with the Lincoln company will involve the entire problem of motor drive for machinery, particularly the determination of proper type, characteristics and size of motors best adapted for the service.

Theodore C. Greene, employment manager of the Graton & Knight Mfg. Co., Worcester, Mass., has resigned.

Alexander C. Brown, president of the Brown Hoisting Machinery Co., of Cleveland, has been elected president of the northeastern Ohio division of the National Safety council.

B. H. Lundahl has been appointed manager of the Detroit office of the Link Belt Co. L. W. Longan will continue in charge of drive chain sales in the Detroit district.

C. H. Brennen, formerly purchasing agent for the Hupp Motor Car Corp., Detroit, has become associated with Everitt Bros., Detroit, auto body builders.

Carl Edward Johansson, inventor of the Swedish gaging system, largely instrumental in the development of quantity production of motor cars, was a recent visitor in Detroit, as guest of the Charles A. Strelinger Co., machine and tool dealer. Mr. Johansson now is visiting in America for the first time since he left this country 35 years ago and gave a most interesting talk on his experiences since that time. He explained his latest achievement—a set of gage blocks which are said to be divided to the one-millionth part of an inch within an accuracy of two ten-millionths of an inch.

Capt. Percival Dodge has been appointed sales manager of the Denby Motor Truck Co., Detroit. Five years ago he entered the plant of the Denby company as a mechanic.

Charles D. Hastings, formerly vice president and general manager, has been elected president of the Hupp Motor Car Corp., Detroit, succeeding J. Walter Drake, who becomes chairman of the board.



PAUL M. LINCOLN

William T. Norton, formerly of the Republic Motor Truck Co., Alma, Mich., has been appointed assistant chief engineer of the engineering branch of the motor transport corps of the United States army.

George B. McClennen, who for the past seven years has been identified with the machine tool department of Frank Toomey, Inc., Philadelphia, resigned recently, as did P. J. McBride, who in the same period was in the steam and electrical department. They with Andrew I. Mehan have purchased the Delta Electric Engineering Co., and have changed the name to the Delta Equipment Co., 140-142 North Third street, Philadelphia.

R. H. Brown has been placed in charge of the Dallas, Tex., branch office in the Sam Houston Life building, of the Ingersoll-Rand Co., New York. He formerly was in the company's St. Louis office, and now will cover the Texas and Oklahoma territories.

William H. Nash, of the Timken-Detroit Axle Co., Detroit, becomes sales manager of the Beaver Mfg. Co., Milwaukee, Dec. 1. The company manufactures gas engines. He has been identified with the automotive industry in Detroit for 10 years.

E. A. Goodwin, formerly of Detroit, has been appointed advertising manager of the newly organized Bollstrom Motors, Inc., St. Louis, Mich. The company, capitalized at $300,000, will manufacture a 4-wheel drive motor truck in a building now being erected.

Robert F. Herrick, Milton, Mass., president of the Reed-Prentice Co., Worcester, Mass., who has been touring Europe with his son, has sailed from Liverpool for Brazil and will visit Rio de Janeiro and other South American cities to investigate business conditions before returning to the United States.

Fred W. Duemler, formerly with the Uniflow Boiler Co., Philadelphia, now is manager of sales in the Philadelphia, Pittsburgh and Chicago districts for the Bigelow Co., New Haven, Conn., manufacturer of fire tube and water tube boilers. His headquarters are at 515 Commercial Trust building, Philadelphia.

L. C. Griffin, Baltimore, has been advanced to the position of district manager, with headquarters in Philadelphia, of the Norton Co., Worcester, Mass. Walter Strong, Philadelphia, has succeeded Mr. Griffin as district manager in Baltimore and F. P. Hayes Jr., takes Mr. Strong's place in Philadelphia.

Shops Unite

Steel Fabricators Make Wartime Organization a Permanent Body

The National Steel Fabricators association, formed during the war for the purpose of assisting the government in its war program, became a permanent peacetime organization at a meeting held at the William Penn hotel, Pittsburgh, Nov. 20. Representatives of about 88 fabricating shops attended the meeting and the vote was unanimous in favor of continuing the organization as a permanent body.

An executive committee which will be the governing board of the organization was chosen with Thomas Earle of the Bethlehem Steel Bridge Corp., Bethlehem, Pa., as chairman. Other members of the committee are George P. Bard of the Petroleum Iron Works, Sharon, Pa.; C. J. McIntosh of the Federal Bridge Co., Waukesha, Wis.; G. A. Tretter of the Virginia Bridge & Iron Co., Roanoke, Va.; H. A. Fitch of the Kansas City Construction Co., Kansas City, Mo.; Paul Willis of the Kenwood Bridge Co., Chicago; C. G. Conley of the Mt. Vernon Bridge Co., Mt. Vernon, O.; Clyde MacCornack of the Phoenix Bridge Co., Phoenixville, Pa., and C. M. Denise of the McClintic-Marshall Co., Pittsburgh. Lewis D. Rights of the Shoemaker-Satterthwait Co., Pottstown, Pa., was chosen secretary-treasurer of the organization.

Meetings of the association will be annual affairs at which the problems of this branch of the steel industry will come in for formal and informal discussion. At the organization meeting there was some discussion of the labor situation and of the "fabrication in transit" matter.

Ship Steel by River

Birmingham, Ala., Nov. 25.—The largest shipment of fabricated steel so far made by way of the Warrior river from Birmingham to the plant of the Chickasaw Shipbuilding & Car Co., Mobile, recently was started. Ten carloads of fabricated steel were shipped by rail to Tuscaloosa, 60 miles south of Birmingham, and then placed aboard barges bound for Mobile. The Chickasaw company has taken over the Fairfield works at Birmingham, both being subsidiaries of the Tennessee Coal, Iron & Railroad Co. The Warrior river is to be used extensively in the hauling of steel. Terminals are to be built at Short Creek, within 30 miles of the Fairfield works, a corporation having been formed for that purpose. The river traffic now is almost exclusively coal, which is going down in quantity from mines of the DeBardeleben Coal Co. at Sipsey and Payne Bend. Steel tow boats, steel steamers and barges are being added to the transportation equipment by the government.

Oppose Basing Point

Birmingham, Ala., Nov. 25.—The state of Alabama, through Governor Kilby and Attorney General Smith, has filed a protest with the federal trade commission against the Pittsburgh basing point system. The protest is on the grounds of unlawful restraint of trade and price discrimination, contrary to the provisions of the antitrust act. The Birmingham Civic association is leading the protest from this state, having joined with the Western Association of Iron and Steel consumers some time ago.

Offers Steel Tonnage

Bids are being called for by the office of the zone supply office, war department, 461 Eighth avenue, New York on a large quantity of iron and steel products at the army supply base at Kearny, N. J. This material has been overseas and is now in open storage, so it is stated it is in a rusty condition. In the material offered for bids f.o.b. Kearny, are 1265 tons of flat, round and square steel bars, 7118 net tons of assorted I-beams, 4803 net tons of corrugated roofing sheets, not galvanized, and 480,935 square feet of expanded metal.

Inland Buys More Land

Chicago, Nov. 18.—The Inland Steel Co. has just purchased about 580 acres south of Indiana Harbor as a site for mill expansion. Part of the land has lake frontage, and most of it is marsh which must be filled before being suitable for building purposes. The company recently bought 350 acres at the edge of the city of Indiana Harbor which will be improved with homes for workers, housing conditions demanding attention before further plant expansion can be undertaken.

The Moak Machine & Tool Co., Port Huron, Mich., has opened a new gray casting foundry. E. H. Moak is general manager.

Obituaries

IRA B. HUBBARD, superintendent of the Hubbard Machine Co., Worcester, Mass., of which he was the founder, dropped dead from heart disease in the office of the Tilton Woolen Mills, Tilton, N. H., Nov. 20, aged 69 years.

Daniel T. Russell, for many years vice president of the Lackawanna Coal Co., Buffalo, is dead at his home in Buffalo.

John H. Bannan, for the past 10 years superintendent of the Chapman Valve Mfg. Co., Indian Orchard, Mass., died of pneumonia at his home in that town, Nov. 15, aged 59 years.

William H. Field, head of the William H. Field Co., Boston, builder of woodworking machinery, died suddenly, Nov. 14, aged 61 years. He was the son of William F. Field, who established the business.

Lacy S. McKeever, 58, treasurer and director of the Pittsburgh Testing Laboratory, died at his home in Pittsburgh, Nov. 18. He was born in Westmoreland county, Pa., and came to Pittsburgh about 30 years ago. He had been connected with the Pittsburgh Testing Laboratory for a number of years and also was secretary and treasurer of the Sterling Varnish Co.

J. J. Fisher, a director of the Parkersburgh Iron & Steel Co., Parkersburg, W. Va., and a conspicuous figure in the oil industry, died at his home in Pittsburgh, Nov. 12. He was 81 years old and a native of Pittsburgh.

Charles Burgess, identified for 50 years with the iron and steel industry, died at his home in Titusville, Pa., Nov. 18. He was born in England Oct. 2, 1841, and when a young man he became interested in the iron and steel business. He came to this country in 1866, locating in Pittsburgh and forming a company for the purpose of manufacturing steel under the firm name of Burgess, Aston & Co. In 1870 Mr. Burgess moved to Portsmouth, O., where he started the Burgess Steel & Iron Works. He went to Titusville, Pa., 14 years later and started the Cyclops Steel Co., which he operated for 32 years until March 1, 1916, when he sold it to Carl F. Boker & Sons.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE firm of Hamilton & Hansell, Inc., 13 Park Row, New York City, henceforth will devote its entire business to metallurgical and general engineering work. Development of foreign patents and enterprises will be conducted on a larger scale and a separate company, namely, the American Transmarine Co., has been formed to take over all the general export and import business not relating to engineering. For the past five years, Hamilton & Hansell, Inc., has been licensee and builder of the American Rennerfelt electric furnace for ferrous and nonferrous work. It also has designed a number of electric reduction and electro-chemical plants and work of this character will receive more attention in the future. Contracts closed recently include a 1000-pound furnace for special iron for the A. M. Byers Co., Pittsburgh; a special furnace for glazing fuzed silica for the General Ceramics Co., Perth Amboy, N. J.; a 4-ton furnace for tool steel for export to Sweden; a 300-pound furnace for aluminum alloys for the Bauch Machine Tool Co., Springfield, Mass., and two 1000-pound furnaces for high speed steel for cast tools for the United States High Speed Steel & Tool Corp., Albany, N. Y.

* * *

FORMED by Norman Tilly, 2670 North Sichel street, Los Angeles, and others, the Tilly Brass Mfg. Co. is to manufacture brass products at 145 Llewellyn street, that city.

* * *

CONTRACTS have been closed by the Osborne Casting Co., Layard avenue, Racine, Wis., for extensions and additions to its present plant which will practically double its capacity for 1920.

* * *

WITH its main office and eastern plant at Brooklyn, and a branch plant at Toledo, O., the Doehler Die Casting Co. has purchased a 7-acre tract in Chicago on which a new concrete structure will be erected. The company manufactures die castings in white metal, aluminum and brass alloys, bronze and aluminum backed babbitt line bearings. The new building of the company in Chicago will be completed about Jan. 1.

* * *

THE Superior Brass Foundry Co., Milwaukee, which was recently incorporated with $50,000 capital, by Philip Loeher, Frank Schedler and H. H. Wheeler, has taken over a shop building at 282 Lapham street, and is converting it into a brass and bronze casting shop.

* * *

ADDITIONS to the plant of the Wabash Foundry Co., Wabash, Ind., manufacturer of gray iron castings, have been completed, according to advices from the company. Improvements include installation of a large cupola, traveling cranes and molding machines. No additional improvements are contemplated at this time.

* * *

COMPLETION of an addition now being erected to the plant of the Apex Appliance Co., Chicago, will enable the company to manufacture from four to five times the number of machines it is manufacturing at present, according to O. H. Ehrhardt, secretary. The building will be 2 stories. Some new equipment has been obtained but more will be purchased.

* * *

THE Horizontal Hydraulic Hoist Co., established in Milwaukee several years ago, has transferred its plant and offices to Detroit. The company has been reincorporated in Michigan with a capital stock of $100,000, and the Wisconsin charter dissolved. Edward R. Bacon remains with the Michigan corporation as president and general manager.

* * *

UNDER the laws of Ohio, the Nichols Electric Co., 123-124 North Kenton (formerly Mill) street, Dayton, O., has been incorporated at $30,000, to conduct a wholesale electrical supply business. It now represents the following companies: J. H. Parker & Son, Bryant Electric Co., Ivanhoe Regent Works, Detroit Insulated Wire Co., Bryan Marsh Co., Monarch Electric & Wire Co., National Metal Molding Co., Barkelew Electric Mfg. Co., Chicago Fuse Co. and the Square D. Co. Officers are President and treasurer, M. W. Nichols; vice president, G. D. Carver; secretary, N. J. Meyers, all of whom formerly were connected with the Wm. Hall Electric Co., Dayton, for several years.

* * *

BY the merging of the George S. Good Fire Brick Co., Clearfield Clay Working Co. and the Clearfield County Mining Co., with a capital of $1,155,000, the Crescent Refractories Co., Lock Haven, Pa., has been formed. The officers are: President, A. P. Perley, Williamsport; H. T. Janney, Clarence L. Peaslee and J. B. Graham, Williamsport; and J. M. McKinney, Curwensville.

* * *

CONTRACTORS have started work on the erection of a new plant for the Walker Vehicle Co., 531 West Thirty-ninth street, Chicago. The building will be 1-story and contain about 100,000 square feet of floor space. The present plant of the company will be retained. Title to 20 acres at the new location has been taken by the company to provide for future growth.

* * *

WORK has been started on the first building of the 10 that are to comprise the new plant of the Stevens-Duryea Co., maker of automobiles, on the former Willimansett driving park in Willimansett, Mass. The first unit will be of brick and steel, one story, 300 x 320 feet. The company is planning to start in the spring the erection of 200 houses for workmen employed at the plant.

* * *

FOR the purpose of electro-galvanizing and enameling electric conduit, the Canadian Allis-Chalmers, Ltd., Toronto, Ont., is erecting a new 1-story plant, 65 x 150 feet. Electric monorail cranes will operate over the pickling and plating tanks. Three plating dynamos, each of 5000 amperes and other modern equipment will be installed. In addition to equipment used in zinc plating, baking furnaces and appliances for black enameling of conduit in all sizes will be installed. Approximately 12,000,000 feet of conduit per year will be produced.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

CONSTRUCTION of a new warehouse for Edgar T. Ward's Sons Co., 3604 South Morgan street, Chicago, steel merchants, has commenced, on a site recently acquired at 1455 West Thirty-seventh street, that city. The site has a total ground area of 52,685 square feet and the 3-story building to be completed as early as possible, will contain an aggregate of 77,000 square feet of floor space. The front of the building will be finished in face brick with terra cotta trimmings. A 10,000-pound capacity elevator will be installed as will all modern features of building construction. At the rear of the lot, a garage to contain 900 square feet will be erected. Vice President Jas. S. Winn of the company has been in charge of the necessary negotiations and S. Scott Joy is the architect who is supervising the work being done by E. W. Sproul Co.

* * *

STOCK deliveries will be made to steamers for export by the American Iron Products Co., Inc., 107 Liberty street, New York, from a large iron and steel warehouse, which it recently rented at Bush terminal, Brooklyn, N. Y. This company also expects to enter the domestic field as an iron and steel jobber shortly after the first of the year.

* * *

WITH new equipment throughout, the Clifford-Jacobs Forging Co., Urbana, Ill., an unincorporated company recently formed, expects to be on a production basis early in January. Its plant is 40 x 250 feet in size and will specialize in heavy forging. Hammer equipment ranges from 1500 to 4000 pounds. W. E. C. Clifford and D. B. Jacobs are the organizers. Mr. Jacobs has had a forging experience dating back 25 years and Mr. Clifford formerly was connected with the First National bank, Champaign, Ill.

* * *

ORGANIZED by Oscar P. Wodack, the Wodack Electric Tool Corp., 23-27 South Jefferson street, Chicago, will manufacture portable electric drills and grinders. It succeeds the Electric Tool Repair & Maintenance Co., which has been repairing and rebuilding electric tools of all kinds for the past three years. Mr. Wodack recently resigned as district manager for the Jas. Clark Jr., Electric Co., with which he has been affiliated for 12 years. A. K. Wodack is vice president of the new company and Albert T. Lochner is secretary and superintendent.

* * *

ERECTION of a new plant is under way for the Appleton Electric Co., Chicago, which when completed will provide 140,000 square feet of floor space. The building will be four stories and basement, and will cover an area of 45,000 square feet. When completed, modern equipment will be installed and it is expected the improvement will enable the company to greatly increase its production of conduit fittings. A power house will be erected as a separate unit of the plant. Officers of the company are: President, A. I. Appleton; vice president, F. H. Merrill, and secretary, J. V. Painter.

* * *

ALUMINUM vibrator plates and castings are to be manufactured by the Springfield Aluminum Plate & Casting Co., Springfield, O., recently organized. Those interested include William Jordan, E. A. Parker and Frank Hook, all formerly affiliated with the American Seeding Machine Co. Mr. Jordan was assistant to the foundry manager; Mr. Parker was foreman in the pattern and experimental department and Mr. Hook was head of the vibrator plate production department. Quarters for the new company have been established in the Duplex building, Springfield, but the construction of a new plant is contemplated at an early date.

* * *

ALTHOUGH the old American & British Mfg. Co., Providence, R. I., and Bridgeport, Conn., has voted to dissolve, the business will be continued under a reorganization plan under the name of the American & British Mfg. Corp. The new corporation makes guns, ammunition, steam and oil engines, automobile and marine motors and operates the former plant of the Corliss Steam Engine Works, Providence, and the American Ordnance works, Bridgeport. The old company went into the hands of a receiver five or six years ago but continued the business until recently when a reorganization was effected whereby the American & British Securities Co. succeeded the International Power Co. as the holding company.

* * *

PRESENT plant capacity of the Herschell-Spillman Motor Co., North Tonawanda, N. Y., of 45 4-cylinder motors per day is being increased to 100. Equipment and buildings also will be provided for an additional production of 100 6-cylinder engines per day. For this purpose a 4-story building of reinforced concrete and brick construction is being erected. It will be 70 x 160 feet and the J. W. Cowper Co., Buffalo, expects to have it completed by Dec. 15. It is stated that orders for approximately $500,000 worth of machinery, machine tools and equipment are being released for early delivery. The engines are supplied to passenger car and truck manufacturers.

* * *

CAHILL & DOUGLAS, consulting electric engineers and steam generating plant contractors, Gross building, Milwaukee, have started work on a large number of power plant improvement and enlargement jobs in Milwaukee and other Wisconsin cities. The various projects are: Briggs & Stratton Co., Milwaukee, 100 per cent increase in steam generating equipment; Mueller & Sons Box Co., Milwaukee, new prime mover and general electrification of plant; Port Washington, Wis., $35,000 addition to municipal plant; Nunn, Bush & Weldon Shoe Co., Milwaukee, future generating capacity; Koehring Machine Co., Milwaukee, power plant enlargement; Racine Auto Tire Co., Racine, Wis., steam heating plant enlargement and new steel stack; Phoenix Chair Co., Sheboygan, Wis., additional 100-horsepower, direct current unit; Chicago, Racine & Milwaukee Line, Milwaukee, remodeling of boiler plant and steam heating transmission system; Isaac Barnett Woolen Mills, Milwaukee, extension of boiler plant and dye house.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

ERECTION of a foundry, 100 x 200 feet, to be devoted to the manufacture of gray iron, is planned by the Haywood Foundry Co., Indianapolis, to be organized shortly. The building will be of brick and steel construction and will be equipped modernly, with traveling crane and monorail delivery of material from the cupola to the side bays. Provision will be made for the installation of two cupolas, but only one will be put in. The personnel of the organization will consist of the stockholders of the Haywood Tire & Equipment Co., Indianapolis.

* * *

THE Aetna Steel Castings Co., Cleveland, has advised that it has increased its capital stock in order to finance the purchase and equipping of a plant at Lorain, O. The company plans to install a 5-ton open-hearth furnace in the Lorain plant, which it is expected; will be ready for occupation about Feb. 1. The Lorain plant will take care of the overflow business of the company's main plant at Cleveland.

* * *

IN ORDER to care for its rapidly increasing business the Youngstown Boiler & Tank Co., Youngstown, O., recently increased its capital from $50,000 to $100,000. Although the company plans the erection of additional buildings which will triple the size of its plant, according to J. P. Keene, president, it is not in the market for additional equipment as all has been contracted for.

* * *

THE Raymond Engineering Corp., Puck building, 309 Lafayette street, New York City, manufacturer of typewriters, photograph motors, power tire pumps, automobile and tractor parts, etc., has purchased a 15-acre site at Farmingdale, L. I. Work will commence immediately on the first two units of a $500,000 plant and these will be followed by other units next summer. The company recently closed contracts aggregating in excess of $2,500,000.

* * *

WESTINGHOUSE, CHURCH, KERR & CO., New York, have begun construction of a portion of the plant to comprise a new gray iron foundry and other buildings for the George D. Roper Co., Rockford, Ill., which took over the plant of the Eclipse Gas Stove Co. Westinghouse, Church, Kerr & Co. are constructing also a new electric steel foundry for Pettibone, Mulliken Co., Chicago.

* * *

THE Forbes-Perkins Co. has been organized with a capital of $1,500,000 to engage in foreign trade. The home office of the company is at 84 State street, Boston. A branch house has been opened at 120 Liberty street, New York. Members of the firm are W. Cameron Forbes, Charles E. Perkins and John F. Perkins. The New York office will be under the management of Rodney D. Chipp, now general manager of the Vulcan Tradings Co.

* * *

THE Superior Steel Castings Co., Benton Harbor, Mich., contemplates erection of a malleable iron unit to its steel foundry. The main building will be 130 x 440 feet, with wings, 60 x 80 feet and 60 x 100 feet. Buildings and equipment will cost approximately $200,000. Construction work will be started at once and the building is expected to be ready for occupation about April 1. W. R. Gilmore, vice president and general manager, advises the company is in the market for equipment for this plant.

* * *

THE McClintic-Marshall Co., Pittsburgh, has purchased the Bole property consisting of 100 acres just east of the Leetsdale, Pa., station. Officials of the company state that no immediate use is to be made of the land and that the purchase was made solely for the purpose of being able to make extensions at its Leetsdale plant in case they are necessary. The property adjoins the site of the Leetsdale plant of the company. It is understood that the consideration of the sale was $300,000.

* * *

REAL estate, plant and machinery owned by the Knox Motors Co., Springfield, Mass., has been conveyed to the Militor Corp., New York, which will operate it for the making of motorcycles. Part of the premises are reserved for two years by the Knox Motors Co. to continue its own business there. The remainder of the plant will be used by the new owner. At the end of two years it will take over all the plant for its own use exclusively. The corporation also specializes in a four-wheel drive truck.

* * *

CAPITALIZED at $200,000, the Jackson Stove & Stamping Co., Jackson, Mich., recently was organized to manufacture oil heating and oil cooking stoves, steel ovens, baking ovens, etc., and has purchased the real estate, buildings and machinery of the Novelty Mfg. Co. and the Boeck Stove Co. The new concern expects to start operations Nov. 1. Officers of the company are: President, E. Barton Hall; vice president, B. M. Young; treasurer and general manager, W. V. Sherwood; secretary, Edgar Wells, and factory manager, Frank L. Hurd.

* * *

THE Kewaskum Aluminum Co., organized with $150,000 capital by local interests at Kewaskum, Wis., has elected the following officers: President, A. L. Rosenheimer; vice president, Dr. N. E. Hausmann; secretary, B. H. Rosenheimer; treasurer, A. L. Rosenheimer Jr. A 2½-acre site has been purchased for the new plant, the first unit of which, 60 x 200 feet, will be erected during the winter. Temporary quarters have been leased and are being equipped. Albert Hron, formerly with the West Bend Aluminum Co., West Bend, Wis., has been engaged as works manager.

* * *

ORGANIZED for the purpose of manufacturing woven wire fencing, steel fence posts, farm and lawn gates and fence weaving machinery, the Columbus Wire Fence Co., Columbus, O., contemplates the erection of a modern brick and steel factory building, 66 x 120 feet. It will require a milling machine and lathe among other equipment and three variable speed 5-horsepower motors. Its capital is $50,000 and S. G. Shaw is president and manager; G. W. Moore is secretary and treasurer. Present office and factory is located at 827 Reynolds avenue, Columbus.

October Exports Show Growth

Sterling Exchange Drops to New Low But Rebounds Later—Hope of Recovery to Par of European Exchanges Blocked by Three Strong Elements—Currencies Depreciated—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

THE completely upset condition of the international trade and financial situation could not have been more forcibly emphasized than by the drop of the currency of the proud British empire to $3.99, or a discount of more than 18 per cent, which occurred last week. That sterling would go below $4 was predicted by eminent authorities last spring when the support was removed from the exchanges, and the climax came when the senate rejected the peace treaty.

Both the foreign exchanges and the stock market had been discounting the probable unfavorable action of the upper chamber of congress for some days. The most remarkable part of the whole transaction, however, was the fact that once the "bad news" was out, recovery began immediately and has continued since. The collapse of the exchanges had sent all European currencies to new low levels, and the rebound took them all up again, even including Germany. The rise has not been remarkable, however, and is not likely to become so soon for a number of outstanding reasons.

Treaty Defeat Reduces Credit Hopes

First, the defeat of the peace treaty has reduced to a minimum hopes that adequate credits may be arranged to permit Europe to meet the tremendous winter needs for food, clothing, and raw materials with which to start industries. Without the stabilizing basis for credits which the treaty would supply, comprehensive plans in this direction will be difficult of accomplishment. In addition the senate adjourned without having taken final action upon the Edge export financing bill. The upward move of exchange from the extreme low level, however, has been induced by the announcement that President Wilson is considering the advisability of summoning an international conference on the matter of European credits and foreign exchange. Ample credits of course would not be a permanent cure, but might correct the temporary situation and give Europeans an opportunity to regain industrial prosperity, in order to pay their debts when exchange is more favorable.

The next important factor working against the recovery of European exchanges resides in the enormous paper inflation existing abroad and the consequent vast depreciation of the currencies. It is estimated that Europe owes $290,000,000,000 in paper circulation and funded debts against which she has a gold reserve of $5,500,000,000 or little more than 2 per cent. From this it is plain that much of the solution of the problem of the bringing of European exchange up to par depends upon the vigor and effectiveness with which the nations attack the stupendous task of liquidating the debt of the war and deflating the extraordinary war debt. Without intensive work, supreme economy and enormous taxes, this will be impossible and little evidence has filtered across the Atlantic that Europe has begun the application of these remedies.

The third and probably the most important phase of the question is the great excess of exports over imports which the United States maintains. Until Europe can reduce purchases and boost sales to America exchange cannot recover. The excessive exchange premium has served to cut down exports to France and Italy, but even these countries cannot stop buying—their needs for food and fuel are too pressing. Neither is Europe increasing her exports to America rapidly, the $128,000,000 gain in imports in September represented a gain of only $23,000,000 from Europe.

That America is still the huge storehouse for the world, to which the rest of the nations must come for foods and supplies at whatever cost, for a time at least, is made apparent from the report of October foreign trade made public a few days ago. Exports at $631,910,972 were $320,000,000 over the same month of 1918 and $35,376,000 more than September. Exports however are almost $300,000,000 less than the June high mark. Imports were $415,665,676 against $246,764,906 for the same month one year ago, but $19,719,000 less than imports for September. The excess of exports for October were $216,245,296 against $161,150,000 for the previous month, which shows that the process of correcting the upset exchanges by reducing this country's excess of exports is having a rocky path.

The 10 months excess of exports shows a striking increase over last year, with $3,388 536,522 for the current year and the $2,491,646 683 for the corresponding months of last year.

The stock market after its recent sensational letdown following upon the advance of rediscount rates on government obligation collateral, apparently is now in a sounder position. Governor Harding of the federal reserve board in defending the board's action against critics who charged it with conniving with bear raiders declares that the board will not "sanction any policy which would require federal reserve banks to withhold credit demanded by commerce and industry for the processes of production and distribution in order to furnish cheap money for speculative purposes." The board not only has taken definite steps against the overextended stock market speculation but also is preparing to strike at the speculation in commodities, such as cotton, grain, etc., by preventing the employment of reserve bank credits for this purpose.

Hydraulic Pressed Steel to be Reorganized

President James H. Foster, of the Hydraulic Pressed Steel Co., Cleveland, has announced a plan, subject to the approval of the stockholders for the refinancing of the company and its subsidiaries upon a permanent basis for the purpose of taking care of increased business.

Under the plan the assets and liabilities of the Hydraulic Pressed Steel Co., Cleveland Welding & Mfg. Co., the Hydraulic Steel Craft Co., all of Cleveland, and the Canton Steel Sheet Co., of Canton, will be assumed by the new Hydraulic Steel Co., which will be incorporated. Under this arrangement holders of the common stock in the company will receive three shares of common stock of no par value in exchange for each share of common stock now owned.

To make possible the redemption of the $3,500,000 of notes and the outstanding preferred stock of the Hydraulic Pressed Steel and the Canton Sheet Steel Co., it is proposed to issue $6,000,000 of 7 per cent cumulative preferred stock and 200,000 shares of common stock of no par value. Proceeds from the sale of these stocks will be sufficient to retire the notes and also the two preferred stock issues and will give the

company ample additional working capital.

The preferred stock can be converted into common stock at any time between April 1, 1920, and April 1, 1921, at $45 a share and thereafter at $50 a share for the common stock. The common stock will be offered separately at $44 a share. The Hydraulic Steel Co. will have three plants in Cleveland and one in Canton comprising 123 acres of land, 60 acres of which are covered by buildings.

Replogle Steel Assets Are Put at $12,121,288

The assets of the newly organized Replogle Steel Co. total $12,121,288, including cash of $5,732,679, bills receivable of $233,571 and inventories of $1,111,267, according to a statement sent to the subscribers to 250,000 shares of stock of no par value of the new company. The assets given include the company's subsidiaries, the Wharton Steel Co. and the Wharton Northern railroad. The report shows the company owns blast furnaces with 1000 tons daily capacity and a concentrating mill of 2500 tons crude ore daily capacity, while total plant and equipment are valued at $4,236,001.

Mr. Replogle's letter is accompanied by a report of James Gayley, formerly vice president of the United States Steel Corp., showing that the Wharton property is fully assured of reserves of 100,000,000 tons of high grade ore. Mr. Gayley recommends the modernizing of two blast furnaces which should produce 30,000 tons of pig a month at a cost of $24.05 per ton. The cost is based on the present market value of 60 per cent ore, and coke at $8.50 a ton and should yield a net profit of $1,000,000 per annum on prices of pig iron prevailing in recent months. Mr. Gayley says the market value today of 60 per cent ore at Wharton, compared with Lake Superior ores, in Eastern markets is $7.80 per ton. He regards the company's estimate of profits of $4 per ton on the 450,000 tons per year as very conservative.

Steel Foundries Tax Less

For the year ended Sept. 30 the American Steel Foundries reports a surplus of $2,462,573 after charges and federal taxes, compared with a surplus of $2,606,723 for 1918. Net earnings before taxes in 1919 were $3,754,696 against $6,858,017 in 1918. A decrease of $2,700,000 in reserve for federal taxes this year to $1,243,113 is shown. The comparative income account follows:

	1919	1918
Net earnings	$3,731,696	$6,858,017
Depreciation	210,826	305,860
Balance	$3,540,870	$6,552,157
Other income	330,118	142,063
Total income	$3,870,988	$6,694,220
Charges	*165,302	117,497
Federal tax res.	1,243,113	3,970,000
Surplus	$2,462,573	$2,606,723

*Includes $122,739 net earnings subsidiary companies applicable to stocks not owned by American Steel Foundries.

Fisher Ohio Body Elects

Fred J. Fisher, president of the Fisher Body Corp., Detroit, has been elected president of the Fisher Body Ohio Co., Cleveland. Charles F. Fisher has been chosen vice president of the company; — Mendelsohn treasurer and A. Mendelsohn secretary. Directors include E. F. Fisher and A. J. Fisher, of Detroit, and L. Fisher Sr., of Norwalk; Grovenor Hutchins, Hallgratten & Co., New York; John Sherwin and Joseph R. Kraus, the First National bank, Cleveland; Frank H. Ginn, member of the law firm of Tolles, Hoggsett, Ginn & Morley, Cleveland; Charles A. Otis, Richard Inglis and C. V. Crowther, of Otis & Co., and Norris J. Clarke, of the Lake Erie Bolt & Nut Co., all of Cleveland.

Buys Dominion Stock

Toronto, Ont., Nov. 25.—At a meeting of the board of the Dominion Steel Corp., at Montreal, it was decided that the Dominion Iron & Steel Co. would sell to a London syndicate 50,000 shares of common stock of the Dominion Steel Corp. at $70 per share. This is to be new stock to be acquired from the parent corporation.

President Mark Workman in making this announcement stated that the transaction was the culmination of plans which he had conceived when in England last spring with the object of extending the business by securing the co-operation of men influential in steel, coal and shipping circles. An advisory committee from the British Syndicate will be formed to cooperate with the Dominion Steel board in connection with British business, including such men as Viscount Furness, Sir William Beardmore, Sir Trevor Dawson, Sir Harry McGowan, Benjamin Talbot and Henry Steel, all of whom are outstanding figures in their respective

Lowered Supply

Shown in Various Coal Tar Products —Prices Are Firm

New York, Nov. 24.—The market on sulphate of ammonia continues strong, as supplies are increasingly difficult to obtain. Little contract business is being attempted, producers being well sold up over the next six or seven months and it is only on an occasional spot lot that buyers are attempting to figure. Spot domestic material may be quoted at $3.75 to $3.80; on futures prices are nominal. Export business, involving only spot sales, is small and is being done at $4.25 to $4.50, eastern seaboard. There is a good volume of export inquiry. Production is improving.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plant

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	3.75 to 3.80

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plant

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Naphthalin continues to move freely, although sales are falling off somewhat as the buying season for the drug trade comes to a close. The market still holds at 6½ to 7½ cents for flakes and 8½ to 9½ cents for balls. Phenol is in steady demand. The government price is 12 cents, f.o.b. eastern stores. Special grades of phenol are holding 3 and 4 cents higher.

No change has appeared on benzol though some interests are looking for an advance. Production largely is being applied on old contracts. As a result, little spot material is available. Contract business is not being offered freely. Pure benzol is quoted at 25 to 29 cents, and 90 per cent, 22 to 24 cents.

Toluol is unchanged at 26 to 30 cents. Demand remains steady and is not of large volume. Much the same can be said of solvent naphtha.

Tool Sellers Meet Active Demand

Some Buyers Who Cannot Wait for Deferred Deliveries Buy Used Equipment—Quickened Market is Noted in the East—Few Purchasers Await New Year Before Closing—Crane Demand is Limited

NOVEMBER'S closing week finds machine tool sellers in practically every district, busily engaged endeavoring to satisfy their customers' demands. Used machines find many takers among manufacturers who must have equipment and cannot wait for deferred deliveries. The approach of inventory-taking time and the condition of the labor market apparently are having but little effect upon the situation, although here and there a few companies state they will not buy until after Jan. 1.

In the East, a decided improvement in machine tool demand is in evidence. Three of the largest buyers are the American Car & Foundry Co., the General Electric Co., and the Otis Elevator Co. An unidentified list calls for $125,000 worth of miscellaneous equipment. If the Submarine Boat Co., Newark Terminal, N. J., obtains a certain contract, it will probably purchase additional equipment. The Palmer Electric Co., Cambridge, Mass., and the Greenville Steel Car Co., Greenville, Pa., both issued small lists.

In Pittsburgh, one item of importance is noted, namely the purchase of crane and hammer equipment by the Pittsburgh Knife & Forge Co., Coraopolis, Pa. Mill equipment will probably be bought by the Erie Crucible Steel Co., Erie, Pa., and the Atlas Crucible Steel Co., Dunkirk, N. Y.

Cleveland dealers are receiving numerous inquiries but like sellers elsewhere they report that requests mainly are for prices on one or two tools. The Jordan Motor Car Co., Cleveland, bought tool room equipment and soon will close on production machinery, dividing its business among several dealers. The Day Machinery Co., Buffalo, is endeavoring to locate eight machines. The Kent-Ownes Machine Co., Toledo, O., and the Carlton Machine Tool Co., Cincinnati, each have issued small lists. One inquiry at Cleveland of interest is for shipment to China, issued by the Yung Lee Soda Co., Ltd., Tang-Ku, Chili, China, and calls for three fair-sized tools with attachments.

While demand is undiminished in Chicago, buying is somewhat restricted. However, the Continental Machine Co., Chicago, Williams, White & Co., Moline, Ill., and the Ilg Electric Ventilating Co., Chicago, all made purchases. The Haskell & Barker Car Co., Michigan City, Ind., wants bending rolls for plates.

Canadian dealers are busy supplying present demand but expect their activity to increase after the first of the year, when many building projects now up will give attention to equipment needs. The Standard Equipment & Tool Works, Montreal, is in the market for four machines.

Cranes continue to move slowly in the United States, most of the current inquiries call for one or two. The Otis Elevator Co., bought one each for Harrison, N. J., and Quincy, Ill. One is to be purchased by the Standard Oil Co., for Toledo and the Concrete Steel Co., New York City, already has closed on two for Chicago. Prospective crane purchasers include the International Motors Co., New Brunswick, N. J., Westinghouse, Church, Kerr & Co., Sun Shipbuilding Co., Chester, Pa., and the Submarine Boat Co., Newark Terminal, N. J.

Machine Tools Active in East; Cranes Quiet

INCREASING activity is noted in the eastern machine tool market. Inquiries are coming out in better volume and buying is of a more substantial character. Among the larger buyers of the past week have been the American Car & Foundry Co., the General Electric Co., and the Otis Elevator Co. The purchases of the General Electric Co. now aggregate more than 100 machines, all for Schenectady, N. Y. A similar number still is to be bought. Business placed by the American Car & Foundry Co. includes a list of 10 or 12 fabricating tools. It is understood that there now is some question as to whether this company will buy at this time all of the equipment originally contemplated.

Although no exceptionally large lists were issued last week, several sizable inquiries came out, possibly the most notable of which involved about $125,000 worth of miscellaneous machines. The Submarine Boat Co., Newark Terminal, N. J., is contemplating the issuance of a large list of equipment, contingent, it is said, upon the receipt of a shipbuilding contract upon which it now is figuring. The Palmer Electric Co., Cambridge, Mass., is inquiring for a small list of tools. The Western Maryland railroad is in the market for several machines, including a small lathe and a grinder, for a repair shop. Some equipment is to be purchased by the Greenville Steel Car Co., Greenville, Pa., for a machine shop addition.

Although several sizable inquiries are pending, trading in the eastern crane market during the past week has been light, only a few scattered contracts being reported. One contract awarded is that placed by the Otis Elevator Co. with the Bedford Foundry & Machine Co., involving two 5-ton overhead cranes. One will have a span of 48 feet and will go to Harrison, N. J., and the other is to have a span of 50 feet and is to go to Quincy, Ill. The.



14-inch Mills at Work in the Ludlum Plant

ESTABLISHED LUDLUM 1854

The Great Demand

for LUDLUM HIGH SPEED STEEL has kept our mills constantly on-the-go.

The mills shown above are our 14-inch mills used for reducing LUDLUM TOOL STEEL to a size suitable for rerolling. This is but one of the many operations which Ludlum Steel must undergo before it becomes *consistently* uniform.

Constant operation has enabled us to pile up a reserve from which we can ship you promptly your requirements.

Shipments from warehouse stock at Watervliet, N. Y.; Detroit, Mich.; Chicago, Ill.; or Cambridge, Mass., handled thru our Branch Offices.

LUDLUM STEEL CONSISTENTLY UNIFORM

Mohawk Extra
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Albany
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Pompton
Carbon Tool Steel

Oneida
Oil Hardening Tool Steel

Teton
Ball Bearing Steel

Yuma
Chrome Magnet Steel

Ludlum Steel Company

General Office and Works

WATERVLIET, N. Y.

Branch Offices

Chicago Cambridge, Mass. Detroit Buffalo New York City
Cincinnati Cleveland Philadelphia Pittsburgh

Standard Oil Co. is to close shortly on a 2½-ton grab-bucket crane with 20-foot span and 90-foot lift, for a power plant at Toledo, O. The Concrete Steel Co., 42 Broadway, New York City, is reported to have placed one each 10 and 7½-ton electric cranes with the Whiting Foundry & Equipment Co. for shipment to Chicago. Follansbee Bros. have bought a number of cranes for their plant at Follansbee, W. Va. The Pawling & Harnischfeger Co., Milwaukee, was awarded the smaller cranes and an Alliance, O., manufacturer is reported to have received the remainder.

The International Motors Co., New Brunswick, N. J., is in the market for a 5-ton overhead crane. Westinghouse, Church, Kerr & Co., 37 Wall street, New York City, are expected to be in the market soon for electric cranes for a fertilizer plant in Baltimore for Armour & Co. The report appearing in last week's issue that the Sun Shipbuilding Co., Chester, Pa., was in the market for approximately 12 cranes was in error. The Sun company had inquired for five 15-ton overhead cranes, one to have a span of 78½ feet and the remaining four to have spans of 115 feet. It is understood now, however, that the company is considering a revisal of its list. Some interest is being manifested by the trade at this time in the future plans of the Submarine Boat Co., Newark Terminal, N. J., which has just recently decided to build 9900-ton vessels. The company has been building 5500-ton ships for the shipping board, and although a number were canceled a short time ago, the company, nevertheless, plans to finish these also.

An interesting development in the locomotive crane market is the sale of late of several locomotive cranes at Hog island, Philadelphia, by the government. Further cranes are to be disposed of, it is stated. Inquiries are said to be fairly numerous for new equipment of this type; nevertheless few awards are being reported at this time.

Buying Postponed Until January

WHILE the market for machine tools continues active in the Chicago district, some indication is being met that the approach of inventory season is restricting buying. The effect of this position is not apparent in any diminution of demand, but some prospective buyers have said they would delay placing further orders until after the first of the year. This has affected some business already pending. The Nash Motors Co., Milwaukee, is preparing a list of production equipment which may be placed before long. The Continental Machine Co., 2002 Clybourn avenue, Chicago, is a manufacturing concern just formed for the manufacture of special machinery and general machine work, and has placed its equipment orders. Fairbanks, Morse & Co. is building additions to its plant at Beloit, Wis., for which it will require additional equipment. Williams, White & Co., Moline, Ill., builder of machine tools, has placed orders for considerable additions to its planer equipment. The Ilg Electric Ventilating Co. has begun to buy equipment for the new plant it is building at Chicago. The Samson Tractor Co., at Janesville, Wis., has ceased buying for the present, but is expected to place further orders later. Railroads still hesitate about placing business, and the inquiry recently revived by the Burlington road is now definitely put over until after the beginning of next year.

Unusual demand for tank cars is bringing out inquiry from carbuilders for machinery, especially adapted to this purpose. The Haskell & Barker Car Co., Michigan City, Ind., is inquiring for an especially heavy set of bending rolls for plate work. Presses of all kinds are scarce and difficult to buy. Strong demand is being met for radial drills, which move actively.

The Excel Motor Truck Co. has been organized to build motor trucks and tractors and has bought a site in Chicago on which it will build a plant at once. The city of Chicago is building a new pumping station in the southwest part of the city and will require pumping machinery, running to several million dollars. The Chicago Electric Mfg. Co., Chicago, is building a factory, for which it will require equipment.

Pittsburgh Knife & Forge Buys Equipment

THE Pittsburgh Knife & Forge Co. has just closed for a crane with the Toledo Bridge & Crane Co., Toledo, O., for its new forge plant at Coraopolis, Pa., and with the Chambersburg Engineering Co., Chambersburg, Pa., for seven steam drop hammers. Otherwise, no important business has been done recently in the Pittsburgh district in machinery and tools. The volume of inquiries, however, keeps up and with the coal strike adjusted, a number of orders are likely to be closed shortly.

The Pennsylvania railroad, lines west, has put out an inquiry for two large presses for its new car shops at Stark, O., and the Erie Crucible Steel Co., Erie, Pa., is understood to be contemplating the installation of a new 10-inch mill, while the Atlas Crucible Steel Co., Dunkirk, N. Y., is considering adding a 20-inch mill. Prosperity in the forge industry is reflected in an active demand for drop hammers and second hand ones are being sought since delivery of new hammers cannot be made promptly.

Makers of machine tools are pretty heavily booked and on the lighter lines are not promising deliveries short of eight weeks while on some of the heavier machines six and seven months are the dates. Makers of rolling mill equipment also are well sold ahead and not inclined to quote on business calling for early deliveries.

All Cleveland Machinery Sellers Busy

LITTLE effect so far has been noticed by Cleveland machine tool and equipment sellers of the approach of inventory-taking time. Some buyers have signified their intention to hold back orders until after the first of the year but these are few comparatively and almost everybody wants new equipment as soon as it can be delivered to them. Many buyers are in urgent need of equipment and these are filling their requirements from used machinery offerings. Deliveries on new equipment stretch from two to six months, many makers offering April, 1920, as the earliest possible date. This has sent machinery dealers into the open market in an effort to fill their customers' wants. One of the largest inquiries from dealers current in Cleveland, has been issued by the Day Machinery Co., Buffalo, for eight machines, namely, three shell-boring lathes, 24-inch swing, 12-foot bed; two 6-spindle sensitive drill presses; one 12-inch gear hobber; one 6-inch Gleason bevel gear planer and one 12-inch Heald or Walker rotary surface grinder. Used machines in good condition will be taken.

Sizable lists are lacking. However, one is expected soon from the Jordan Motor Car Co., Cleveland, which, it is stated, is to become a manufacturing instead of an assembling proposition. It recently purchased tool room equipment comprising one each lathe, drill, milling machine, broaching machine, grinder, etc., and now is receiving quotations on multiple spindle drills and other equipment. Additional equipment is being bought by the


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Dayton Pneumatic Tool Co., Dayton, O., and the Progressive Tool & Engine Co., that city. Punch presses, etc., are being purchased by the Educational Toy Mfg. Co., Dayton, while automatics and other equipment are to be closed upon soon by the Dayton Computing Scale Co., that city. The S. H. Thompson Co., Fourth and St. Clair streets, Dayton, recently closed on a No. 4 milling machine and some other machinery but now is increasing its facilities to manufacture fire extinguishers and automobile starters. The B. F. Goodrich Co., Akron, O., is receiving revised quotations on some equipment, including one 36-inch x 18-foot engine lathe. The Apex Motor Co., Ypsilanti, Mich., is in the market for machinery for a new truck plant.

Small inquiries for one or two tools continue numerous, one dealer expressing himself as being "snowed under." This condition at this season of the year is unprecedented and in view of prevailing labor unrest in practically all lines of activity, is all the more strange. The Steiner Bros. Co., Lima, O., wants one centering machine. The Cleveland Graphite Bronze Co., Cleveland, is understood to be in the market for a 15-ton press and a Rockford drill press. Kraeuter & Co., Inc., Newark, N. J., are endeavoring to locate a Bradley upright helve hammer, 200 to 300-pound capacity. The Borden Co., Warren, O., wants a surface grinder, and the Carlton Machine Tool Co., Cincinnati, is taking quotations on No. 0 Giddings & Lewis No. 3 and No. 3-A and No. 33 Lucas horizontal boring mills; No. 2, 3 and 4 Lapointe broaching machines and 14-inch x 6-foot Lodge & Shipley lathes. The Kent-Owens Machine Co., Toledo, O., is in the market for equipment to increase its facilities. The Richarde Motor Co., Cleveland, which went into the hands of a receiver some time ago, again is taking up the manufacture of automobiles and is understood to be in the market for some equipment. It recently purchased a large Kempsmith maxi-miller.

One of the interesting inquiries to reach Cleveland, calls for machinery to be shipped to China. Miller & James, engineers and architects, 604 Bangor building, Cleveland, are receiving quotations for T. Y. Chen of the Yung Lee Soda Co., Ltd., Tang-Ku, Chili, Republic of China, on the following equipment: One new 84-inch Bickford vertical boring mill; one new 7-foot Lynd-Farquhar wall type radial drill for 7/8-inch holes with one new Jarvis tapper, 5/8-inch capacity to fit it and one new 16-inch x 6-foot Cincinnati engine lathe, with taper attachment and double back gear.

The Jones Gear Co., Cleveland, which bought equipment about a month ago, has announced its intention to double its capacity. This will doubtless mean additional orders for machinery. The Ohio Body & Blower Co., Cleveland, formerly the Ohio Blower Co., is preparing an expansion program. The Automotive Corp., Spitzer building, Toledo, O., is erecting the first of six units of a new plant and so far as is known, has not closed on its equipment requirements. Plant additions are contemplated by the Commerce Motor Car Co., Detroit, and the Hackett Motor Car Co., Grand Rapids, Mich. Contracts already have been placed for a 4-story plant by the Von Briggle Motor Device Co., Indianapolis, and the Kalamazoo Railway Supply Co., Kalamazoo, Mich., is to manufacture a gasoline motor car and will erect a plant addition, 100 x 310 feet. Machinery for the coffee industry is to be manufactured by the John A. Reynolds Co., Inc., 403 Greenwood avenue, Detroit, recently incorporated at $1,000,000. Half of the $500,000 expansion program of the Nichols & Shepard Co., Battle Creek, Mich., has been completed.

Canadian Activity Continues Unabated

ACTIVITY in the Canadian new and used machinery and machine tool market continues unabated. Dealers are unable to promise delivery of new equipment in most lines inside of four to six months and as fast as second-hand machinery can be rebuilt it is picked up by those who are unable to wait. Many Canadian concerns are building additions to their plants, while others are erecting new plants or contemplate doing so. Several of these will place lists after Jan. 1.

The H. A. Wood Mfg. Co., Royal bank building, Toronto, is in the market for brass working machinery and equipment for the manufacture of auto valves at Belleville, Ont. W. A. Kribs, Hespeler, Ont., is in the market for a No. 1 Farwell gear hobber, or its equivalent. The Standard Equipment & Tool Works, 179 St. James street, Montreal, is in the market for a universal milling machine, equivalent to No. 1 or No. 2; also planer, shaper and bolt cutter. Acton, Ont., will be in the market shortly for machinery and equipment for waterworks plant. J. Alpaugh & Son, Fergus, Ont., are in the market for stoneworking machinery. The Canadian Woodenware Co., St. Thomas, Ont., will purchase equipment for an addition to its factory. The Adelaide Oil Co., Adelaide, Ont., is in the market for oil drilling equipment. The Dominion Glass Co., Redcliff, Alta., is building a plant addition and will install machinery to cost $90,000.

Construction and Equipment

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Among New England Plants

BANGOR, ME.—The Penobscot Foundry Co. will erect a machine shop, 2-stories, 50 x 100 feet, in the spring.

BELFAST, ME.—The Penobscot Bay Electric Co. will install a water gas plant to replace the present gas plant at a cost of $25,000.

BIDDEFORD, ME.—The Saco Lowell Works has had plans drawn for a foundry.

PORTLAND, ME.—The N. D. Cobb Co., Inc., has been incorporated to build boats and marine hardware with $100,000 capital, by M. D. Cobb, V. M. Cobb and Harry L. Cram.

BURLINGTON, VT.—The warehouse of the Vermont Hardware Co. recently was damaged by fire.

BOSTON.—The M. Fred Hirsch Co. has been incorporated to make silverware with $6000 capital, by H. V. Foulke and A. C. Smith.

BOSTON.—The Calef Gas Burner Co. has been in-

corporated with $5000 capital by Michael L. Fahey, M. C. Greeley and E. B. Calef.

BOSTON.—The Electrol Co. has been incorporated to make storage batteries with $100,000 capital, by Charles Farrow, S. B. Condit Jr. and Robert Cushman.

BOSTON.—The Roto Oil Burner Co. has been incorporated with $75,000 capital, by F. D. Minyard, Frank G. Watrous, Brookline, Mass., and C. L. Simmons.

CAMBRIDGE, MASS.—Charles N. James has let the contract for a 1-story, 100 x 125-foot plant for the manufacture of automobile wheels, to cost $40,000.

EAST SPRINGFIELD, MASS.—The New England Westinghouse Co. has let the contract for a 1-story, 110 x 250-foot building.

HOLYOKE, MASS.—George W. Prentiss & Co., makers of wire, have let the contract for a 3-story addition to the former plant of the G. Haarmann & Co., Inc., to cost $50,000, a 60 x 100-foot storage building and a 30 x 48-foot acid building.

LUDLOW, MASS.—The Ludlow Mfg. Co. will build a 2-story addition to its present machine shop.

LYNN, MASS.—The Sampson Axcess System, Inc., has been incorporated to make machines with $500,000 capital, by A. T. Sampson, J. M. Cotter and A. G. Wadleigh.

MALDEN, MASS.—The Union Spring Mfg. Co., Inc., recently was incorporated with $10,000 capital, by Abraham Blatt, David Yessin and Abraham S. Goldman.

NATICK, MASS.—The Northway Motor Co. will build a 3-story, 70 x 500-foot building.

EAST CAMBRIDGE, MASS.—The National Casket Co. contemplates a boiler house addition, to cost $12,000.

ORANGE, MASS.—The O. J. Howe Treeing Machine Co. has been incorporated with $50,000 capital, by R. C. Evarts, F. G. Mahoney and S. C. Woodworth.

PALMER, MASS.—The Otis Co. will erect a machine shop here in connection with its mill.

SOMERVILLE, MASS.—The Boston Pen Co. recently was incorporated with $5000 capital, by Charles Brant, C. E. Brant and Thomas P. Miller.

SPRINGFIELD, MASS.—Bids have closed for a storehouse for bar stock at the United States arsenal.

SPRINGFIELD, MASS.—The Smith-Springfield Body Co. will build a plant for the manufacture of metal automobile bodies.

WORCESTER, MASS.—The American Steel & Wire Co. plans an addition, two stories, 14 x 40 feet.

WORCESTER, MASS.—The Worcester Press Steel Co. has started work on an addition to be 90 x 150 feet.

WORCESTER, MASS.—The Worcester Lathe Co. is moving its plant to the buildings of the A. H. Steele Co.

WORCESTER, MASS.—The construction of a new building will be started soon to house the C. J. V. Critchley Mfg. Co., the Park Mfg. Co. and a Boston manufacturer, name not yet made known. All concerns manufacture automobile parts.

ANSONIA, CONN.—The Dew-Tone Co., Inc., has been incorporated to make attachments and needles with $25,000 capital by F. T. Terry, A. C. Turner and L. F. Anschutz.

BRIDGEPORT, CONN.—The Singer Mfg. Co. has let the contract for a 1-story, 61 x 23-foot forge shop, a 12 x 25-foot pump house and an oil tank.

BRIDGEPORT, CONN.—The Bridgeport Worm & Gear Mfg. Co. has been incorporated with $100,000 capital by J. N. Bayus, Stratford, Conn., Leonardo Mainiero, John Hissich, Stephen Erhardt, Andrew Demosko, Peter Hibjan and Joseph M. Ondek.

EAST BERLIN, CONN.—The Connecticut Metal & Chemical Co. has let the contract for a 1-story, 120 x 300-foot building.

HARTFORD, CONN.—Plans are being prepared for a plant, 5 stories, 50 x 310 feet, with a wing, 50 x 63 feet, for the Royal Typewriter Co., to cost $200,000.

NEW HAVEN, CONN.—The New Haven Machine Co. has awarded a contract for a plant.

NEW HAVEN, CONN.—The Kelly Tire & Rubber Co., 262 Chapel street, is having plans drawn for a factory and power house, 1-story, 75 x 200 feet, and 1-story, 25 x 260 feet, to cost $500,000.

WINDSOR, CONN.—The General Electric Co. will build a factory of about 40,000 square feet to cost $75,000, exclusive of machinery and equipment.

North Atlantic States

BROOKLYN, N. Y.—The Lehruod Metal Bed Corp. recently was incorporated with $8000 capital, by B. Gurian, A. Levine and H. Rodstein, 1769 Park place.

BROOKLYN, N. Y.—The Vernon Automobile & Welding Works has been incorporated with $10,000 capital, by A. Adams, B. Komarow and D. Price, 372 East Tenth street.

BINGHAMTON, N. Y.—The Kroehler Mfg. Co. has had plans drawn for a power house, 1-story, 34 x 100 feet.

CHEEKTOWAGA, N. Y.—The Buffalo Steel Car Co. recently was incorporated with $80,000 active capital, by J. C. Bradley, J. G. Dudley and R. H. Parks.

DUNKIRK, N. Y.—The Continental Heater Works will build an addition to its plant.

ENDICOTT CITY, N. Y.—The International Time Recording Co. contemplates a plant addition.

LOCKPORT, N. Y.—The Dittmer Gear & Mfg. Corp. recently was incorporated with $71,500 active capital, by E. O. and A. H. Dittmer and G. W. Riley.

NEW ROCHELLE, N. Y.—The Crescent Washing Machine Co. has been incorporated with $500,000 capital, by T. D. Verseles, H. E. Verseles and I. L. Inglehard.

NEW YORK.—The Republic Auto Radiator Co. has been incorporated with $10,000 capital, by A. Krisch, A. Kriegel and S. Kamiel, 689 Wales avenue.

NEW YORK.—The Amalgamated Automotive Factories, Inc., has been incorporated with $20,000 capital, by H. Bobker, N. and M. Simmons, 309 West Ninety-ninth street.

NEW YORK.—Rolls-Royce of America, Inc., 15 Broad street, has selected Springfield, Mass., for its new plant.

NEW YORK.—The Standard Spring Motor Co. has purchased a 4-story building at 239 East 127 street, which it will alter for its own occupancy.

NEW YORK.—The Red Head Spark Plug Corp. recently increased its capital from $80,000 to $100,000.

NEW YORK.—The Robert-Irwin Mfg. Co., auto pumps, recently was incorporated with $30,000 capital, by I. and A. Berkowitz and M. Rappaport, 177 Wooster street.

NEW YORK.—Holgan Bros., Inc., machine and repair shops, has been incorporated with $10,000 capital, by P. Balantine, J. E. and P. H. Holgan, 11 Baxter street.

NEW YORK.—The American Galco, Inc., machinery and tools, has been incorporated with $100,000 capital, by H. Carlson, J. Hellstrom and G. H. Kline, 8 West Fortieth street.

NEW YORK.—The Schramm & Bursch Mfg. Co., Inc., recently was incorporated with $100,000 capital, to manufacture metal products, by M. Padtry, D. M. Freedman and C. N. Kaplan, 233 Broadway.

NEW YORK.—The Sterling Car Body Corp. has been incorporated with $50,000 capital, by S. W. Woodruff, D. H. Fessenden and C. E. Lussenhop, 153 Madison avenue.

NEW YORK.—The Electrical Copying Machine Corp. recently was incorporated with $25,000 capital, by H. Steingard, J. Baum and A. A. Walter, 120 Broadway.

NEW YORK.—The All Metal Lighting Fixture Corp. has been incorporated with $20,000 capital, by M. Berkowitz, S. and W. Splesinger, 2043 Washington avenue.

NEW YORK.—The National Safety Razor Corp. recently was incorporated with $15,000 active capital, by W. Dubilier, C. Marshall and E. A. Gersbach, 5 Beekman street.

NEW YORK.—The General Carbonic Co. has awarded a contract to the Austin Co., Cleveland, for a plant, 100 x 200 feet, a boiler house, 40 x 40 feet, and miscellaneous small buildings.

NEW YORK.—Contracts have been awarded to the H. D. Best Co., 949 Broadway, for an addition to the plant of the American Machine & Foundry Co. of Brooklyn. The proposed building will be 5-stories, 100 x 192 feet, with an ell of 30 x 40 feet.

ROCHESTER, N. Y.—The Bastian Bros. Co., Clinton avenue, will build a power house.

ROCHESTER, N. Y.—The John Anstice Co., Inc., will build a foundry, 145 x 216 feet.

ROCHESTER, N. Y.—The Rochester Railway & Light Co. has increased its capital stock from $17,250,000 to $18,250,000.

ROCHESTER, N. Y.—The Eastman Kodak Co., 343 State street, contemplates a plant addition, 5-stories, 60 x 90 feet, to cost $80,000.

ROCHESTER, N. Y.—The Kellogg Mfg. Co. has had plans drawn for a machine shop, 1-story, 200 x 800 feet, to cost $200,000.

ROCHESTER, N. Y.—The Multipost Co., 69 Allen street, has awarded a contract for a plant, 2-stories, 30 x 58 feet, to cost $50,000.

UTICA, N. Y.—The Lewis & Weller Mfg. Co. is drawing plans for a plant addition, 2-stories, 39 x 101 feet, to cost $15,000.

CHESTER, PA.—Enlargement of the Tindel-Morris Co.'s steel plant at Eddystone is contemplated. The company plans to increase its capital from $1,500,000 to $5,000,000 in order to care for the expansion.

ERIE, PA.—The Erie Art Metal Co. will erect an addition to its plant, 120 x 190 feet.

ERIE, PA.—Plans have been completed by the Lakeside Forge Co. for an addition to its forge shop, which will be equipped with 12 hammers.

FRANKLIN, PA.—A charter has been granted the Empire Oil & Grease Co. which plans to erect a large plant. The company, which is capitalized at $50,000, was incorporated by A. R. St. Clair, C. H. Mattern and A. L. Confer.

HAZLETON, PA.—The Hazleton Tin Mfg. Co. will start operations here for the manufacture of tinware, copper and galvanized iron specialties.

PHILADELPHIA.—A $10,000 addition will be erected at the wagon plant of Adam Frederick.

PHILADELPHIA.—The Standard Tinfoil Co. is erecting a building, 130 x 260 feet, to be used for rolling mill purposes. The Austin Co., Cleveland, is in charge of the project.

PITTSBURGH.—The Pittsburgh Valve Foundry & Construction Co. will build a shop to cost $60,000.

PITTSBURGH.—The Gearless Motor Corp. will build a testing station.

PITTSBURGH.—The Federal Spring Co. has been incorporated with a capital of $5000 by R. T. Rossell, E. C. McHugh, L. R. Martin, C. J. Nicklas and E. J. Young, Pittsburgh.

PITTSBURGH.—The Fort Pitt Die & Mfg. Co. has been incorporated with $5000 capital by C. O. Henry, C. H. Sallada, J. A. Cullison and W. M. Lea, Pittsburgh.

BAYONNE, N. J.—The Bell Electric Engineering Co., 970 Broadway, recently was incorporated with $25,000 capital.

BLOOMFIELD, N. J.—The H. J. Moehler Motor Corp. has awarded contracts for a plant, to cost $80,000.

CAMDEN, N. J.—The Public Service Electric Co. and the Delaware Ship & Repair Co. were recently damaged by fire to the extent of nearly $100,000.

GARWOOD, N. J.—The C. & C. Electric & Mfg. Co. has purchased the business of the Burke Electric

Co., Erie, Pa., and is now engaged in moving its equipment to that city.

HARRISON, N. J.—A 2-story factory, 50 x 100 feet, will be erected here by the Vant Woud Rubber Co.

HOBOKEN, N. J.—The Atlas Railway Signal Co., 88 River street, recently was incorporated to manufacture railway signals with $200,000 capital.

IRVINGTON, N. J.—The Die Casting Co. has awarded contracts for a plant addition, to cost $15,000.

NEWARK, N. J.—A $45,000 factory building, 2-stories, 50 x 100 feet, will be erected here by Blanchard & Co., manufacturers of jewelry.

, NEWARK, N. J.—The Terminal Pattern & Model Works has awarded contracts for a plant addition.

NEWARK, N. J.—The Cellulose Products Corp., 187 Magazine street, will erect a 1-story workshop.

NEWARK, N. J.—The Donner & Smith Chemical Co. have purchased property for the purpose of extending its plant on Mulberry street.

NEWARK, N. J.—Diamond Electric Specialties Co. has been chartered with $100,000 capital by William Abramson, Frank Evans and F. Klang.

NEWARK, N. J.—Katzenbach & Stephens, 56 Bigelow street, will erect a boiler and engine house to cost $38,750.

NEWARK, N. J.—Roth & Co., Plane street, will erect a 2-story storage and heating plant, 60 x 150 feet and an office building at an estimated cost of $100,000.

NEWARK, N. J.—The American Writing Machine Co. has purchased the plant of the Jewell Tea Co. The property covers 50,000 square feet. The company will remove its factory to the site.

NEWARK, N. J.—A 71 x 80-foot power house will be erected here by P. Ballantine & Sons. Plans provide for the installation of four 500-horsepower boilers and additional space for four similar power units.

NEW ROCHELLE, N. Y.—The Crescent Washing Machine Co. has been incorporated with $500,000 capital, by T. F. and H. E. Merseles and F. L. Holt, 165 Broadway.

TRENTON, N. J.—The Hoblim Tool Mfg. Co., New York, has purchased the plant of the Trenton Bay & Burlap Co., and will equip the same for manufacturing purposes.

WALLINGTON, N. J.—The Mexican Petroleum Corp., 120 Broadway, New York, is reported planning a pump and boiler house here, to be 1-story, 33 x 68 feet.

BALTIMORE.—The Union Shipbuilding Co. will build additions to its plant.

HAGERSTOWN, MD.—The Modern Mfg. Corp., Bridgeport, Pa., has purchased the property of the Pacific Coast Stamping Co., a California corporation, with a capital of $400,000.

Central States Activity

ANTIGO, WIS.—The Antigo Tractor Co. has perfected its organization and will erect a machine shop and assembling plant, at a cost of $150,000.

FT. ATKINSON, WIS.—The James Mfg. Co. has increased its capital from $500,000 to $10,000,000. The company recently awarded contracts for plant additions, including a machine shop and foundry to cost $500,000.

KIEL, WIS.—Stoelting Bros., manufacturers of steel barn equipment, will build a machine and sheet metal working shop, at an estimated cost of $25,000.

MENASHA, WIS.—Ground has been broken for a new plant for the Whitmore Machinery & Foundry Co. The plant will be 60 x 116 feet. It will be equipped with a traveling crane.

MENOMINEE, WIS.—Work on an addition to the Litnum Bronze Co., ground for which was broken recently, is progressing.

MILWAUKEE.—The Auto Truck Service Co., 946 Third street, is contemplating a new plant. Theodore Hollnagel is president. The capital will be increased.

MILWAUKEE.—Fairbanks, Morse & Co. are reported contemplating a foundry, 550 x 990 feet, to cost $1,500,000.

MILWAUKEE.—The Chas. Abresch Co., Fourth and Poplar streets, machinist, has increased its capital from $250,000 to $350,000 and will enlarge its plant.

MILWAUKEE.—The Flexible Coupling Co. recently was incorporated with $25,000 capital, by S. R. Sette, Henry H. Otjen and James T. Drought. The company will manufacture metal goods.

MILWAUKEE.—The Milwaukee Reliance Boiler Works, 1102 Thirty-second street, has awarded contracts for an assembling shop, 1-story, 40 x 80 feet, to cost $12,000.

MILWAUKEE.—The capital stock of the Briggs & Stratton Co., 1047 Louis avenue, has been increased from $250,000 to $1,700,000, and the firm plans additions in addition to those now under construction, are contemplated.

MILWAUKEE.—Articles of incorporation have been filed by the Standard Sheet Metal Works. The company is capitalized at $10,000 and the incorporators are Henry Bloedow, Jacob Schaffner and John G. Mattee.

MONROE, WIS.—The Monroe Electric Co. will build a power plant addition. L. A. Turner is general manager.

RICE LAKE, WIS.—The New Idea Potato Machinery Co. has purchased the former Automatic Trip Carriers factory building and is moving into it.

SOUTH MILWAUKEE, WIS.—The Universal Aniline Dyes & Chemical Co. has let contracts for a new plant, 2-stories, 50 x 110 feet, to cost $75,000.

ALMONT, MICH.—The Almont Mfg. Co. has been incorporated with $25,000 capital, and has taken over the Almont Foundry, for the production of light gray iron semisteel castings. Charles D. Ferguson is president.

BATTLE CREEK, MICH.—The Union Steam Pump Co. is expending $200,000 for new buildings and equipment. Extensions include a machine shop and foundry.

BAY CITY, MICH.—The United States Bridge & Culvert Co. contemplates a new plant.

BAY CITY, MICH.—The Union Motor Co. has started on the second unit of its plant, to be 100 x 500 feet.

DETROIT.—The Detroit Gray Iron Foundry is erecting an addition.

DETROIT.—The Puritan Machine Co. has purchased a plant at Eighth and Fourth streets, which it will use as a machine and gear shop.

DETROIT.—The Canfield Tool & Die Co. has been chartered with $10,000 capital to manufacture tools and dies, by Jacob L. Summers and others.

DETROIT.—The Horvath-Arndt Mfg. Co. recently was incorporated with $10,000 capital to manufacture metal products, by Kurt Arndt and others.

DETROIT.—Jacob Shevitz, 195 East Ferry street, plans a tool and die shop, 2-stories, 80 x 150 feet, to cost $40,000.

DETROIT.—The Monarch Foundry Co. has awarded a contract to the Austin Co., Cleveland, for a foundry, 100 x 200 feet, a cupola building, 40 x 40 feet and core oven building, 40 x 40 feet.

DETROIT.—The M. M. W. Co. recently was incorporated with $3000 capital, by David R. Moisselle, Ismar Mueller and Henry N. Weinstein. The company will engage in a general metal manufacturing business.

GRAND RAPIDS, MICH.—Bernard C. Putnam, H. Monro Dunham and Eugene Jordan, all of this city, recently chartered in Delaware, the Welded Products Co. to manufacture cast iron, bronze, etc. The company is capitalized at $100,000.

JACKSON, MICH.—The American Gear & Mfg. Co. is erecting a plant addition, 169 x 280 feet, at an estimated cost of $180,000.

JACKSON, MICH.—The Robert Automatic Screw Co. has been chartered with $10,000 capital to manufacture screw products, etc., by Charles T. Cline and others.

KALAMAZOO, MICH.—The Humphrey Co., manufacturer of water heaters, will erect a 3-story plant addition.

MT. CLEMENS, MICH.—The Reynolds Motor Truck Co., recently incorporated, will erect the second unit of its plant next spring. Louis F. Wolf is president of the company.

WAYNE, MICH.—F. A. Volbrecht plans a machine shop, 1-story, 50 x 75 feet.

CHICAGO.—The Federal Electric Co. has awarded a contract for a plant to cost $150,000.

CHICAGO.—The Hurley Machine Co., 24 East Jackson boulevard, contemplates plant improvements.

CHICAGO.—The plant of the Chicago Toy Mfg. Co., 1815-19 Orchard street, recently was damaged by fire.

CHICAGO.—The Fairbanks, Morse & Co. has chosen a site here on which it plans a warehouse to cost $315,000. It will be 150 x 210 feet.

CHICAGO.—The Junkin Hydraulic Hoist Co. recently was incorporated with $12,000 capital, by John B. Junkin, Floyd I. Clark and Frank W. Fries.

CHICAGO.—The American Bosch Magneto Co. has voted to offer 30,000 shares of additional stock, the proceeds to be used for business expansion.

CHICAGO.—The Johnson Sheet Metal & Furnace Works, Inc., 751 West Seventy-ninth street, recently was incorporated with $5000 capital, by George Johnson, Louis Cohen and Max Cohen.

DECATUR, ILL.—The General Electric Co., according to a report, will erect a plant here to be 1-story, 200 x 300 feet.

DIXON, ILL.—The drawing mill at the plant of the Reynolds Wire Co. recently was damaged by fire.

EAST ST. LOUIS, ILL.—The machine shops of the St. Louis, Troy & Eastern railroad recently were damaged by fire.

ROCK ISLAND, ILL.—The Rock Island Stove Co. plans a building, 50 x 144 feet.

AUBURN, IND.—The Auburn Water & Electric Light Co. will install a 480-horsepower boiler, build a brick stack 125 feet high, equip its plant with an automatic coal conveyor, install an automatic underfeed boiler stoker and make other improvements.

ELKHART, IND.—The Godfrey Conveying Machinery Co. has started work on an office building addition, to cost $14,000.

EVANSVILLE, IND.—The Schroeder Headlight & Generator Co. will erect an addition.

FT. WAYNE, IND.—The Chalfant Can Co. recently was incorporated with $50,000 capital, by E. W. J. Yergens, A. D. Zuber and Albert G. Hughes.

FT. WAYNE, IND.—The Ft. Wayne Battery Mfg. Co. is completing a 2-story building, 54 x 196 feet and a boiler house, 50 x 57 feet. The company has taken options on several vacant lots adjoining the plant, which will be utilized for future extensions.

INDIANAPOLIS.—The Cole Motor Car Co. plans an automobile assembly plant.

INDIANAPOLIS.—The H. C. S. Motor Car Co. will erect two 4-story factory buildings, each to be 80 x 205 feet.

INDIANAPOLIS.—The Volta Battery Co. has been incorporated with $10,000 capital to manufacture electric batteries.

INDIANAPOLIS.—The Van Briggle Motor Device Co. has awarded contracts for a plant, 4-stories, 53 x 150 feet, to cost $100,000.

VINCENNES, IND.—The Indiana public service commission has granted permission to the Indiana Power Co. to issue bonds to take over the property of the Indiana Power & Water Co. It is reported new additions will be built.

AKRON, O.—The Franz Foundry & Machine Co. has been incorporated with $400,000 capital, by C. Franz, John A. Brittain and others.

CANTON, O.—Work has started on a foundry

building for the Hinderer Bros. Co., Twentieth street and the Wheeling & Lake Erie railroad tracks.

CLEVELAND.—The American Stove Co. has a permit to erect a warehouse, 45 x 211 feet.

CLEVELAND.—The Central Steel Castings Co. plans an addition, 21 x 35 feet.

CLEVELAND.—The Electric Steel & Forge Co. is selling additional stock to finance plant additions now in process of construction.

CLEVELAND.—The Guide Motor Lamp Co. has awarded contracts for a plant, 1-story, 50 x 126 feet, to cost $200,000.

CLEVELAND.—A permit has been taken out by W. H. Smith, 66 Taylor road, to erect a foundry and machine shop, 100 x 121 feet, at an estimated cost of $25,000.

CLEVELAND.—The Ohio Body & Blower Co. recently was incorporated with $550,000 capital, by Leslie Nichols, T. H. Hogsett, Williamson building, and others.

CLEVELAND.—The Victory Burner Co. has been incorpo ated with $10,000 capital by C. P. Diemer, F. L. Zimmerman, 914 American Trust building, and others.

CLEVELAND.—The Jones Gear Co., which recently completed a gear manufacturing plant, contemplates an additional unit which will double the capacity. Frank H. Jones is president of the company.

DAYTON, O.—The Lincoln Tool Co., recently incorporated with $10,000 capital, has purchased machinery and has leased a plant.

DAYTON, O.—Additional machinery will be purchased and a plant addition erected by the Davies-Young Soap Co.

DAYTON, O.—The Computing Scale Co. is said to be behind in orders and plans to purchase additional equipment.

DAYTON, O.—The Huffman Recording Pump Co recently incorporated is seeking a plant for the manufacture of gasoline measuring tanks.

DAYTON, O.—The Dayton Pneumatic Tool Co. recently increased its capital from $50,000 to $250,000, and contemplates the purchase of additional machinery.

DAYTON, O.—The Progressive Tool & Engineering Co. recently was incorpo ated with $25,000 capital, by William A. Thompson, H. W. Bonbright and others.

DAYTON, O.—Additional machinery will be purchased by the Educational Toy Mfg. Co., which plans to establish a plant either here or at Springfield, Mass. G. A. Eurbank, Springfield, Mass., is one of the directors of the company.

DAYTON, O.—The Progressive Tool & Engine Co. has been incorporated by Edward A. Reese and others, and has taken space in the Custer building, where it will manufacture dies, jigs, tools and special machinery. The company is capitalized at $10,000.

DAYTON, O.—The United Engineering Co., incorporated with a capital of $10,000, has purchased the stock and assets of the Special Tool Engineering & Mfg. Co. and will specialize in the production of a gasoline gage for automobiles.

DAYTON, O.—To produce tow lines and locks for automobiles, the Dayton Tow Line & Tire Lock Co., which was recently incorporated with $10,000 capital, has taken space in a building in the rear of 128 North Main street. John T. Rose, James Coffield and H. H. Kahn are among the organizers of the company.

DAYTON, O.—Most of the engineering research work of the General Motors Co. may be transferred to this city. The plant of the Dayton Metal Products Co. is being enlarged, including a boiler room and two 1-story plant units. The erection of buildings for the manufacture of an air cooled motor automobile is contingent upon the government's purchase of the Dayton-Wright Airplane plant. The General Motors Co. wil take over McCook field, and erect a large plant if the government buys the plant.

FREMONT, O.—The Auto Wood Stock & Ladder Co. is the name of a new concern which will start operations here in the manufacture of spokes and rims and automobile parts.

FREMONT, O.—The National Razor Mfg. Co. has been incorporated with $25,000 capital, by H. D. Petty, C. A. Ream, William H. Schwartz, W. A. Heyman and A. C. Yingling.

LIMA, O.—The Lake Erie & Western railroad is reported planning a new power plant.

MARIETTA, O.—The Safe Cabinet Co. has leased a 4-story building formerly occupied by the Leidecker Tool Co.

MT. VERNON, O.—The Williamson Hydraulic Clutch Co., according to a report, plans to increase its capital stock, and contemplates an addition.

TOLEDO, O.—The Ames Bonner Co. has awarded the Austin Co., Cleveland, a contract to erect a building, 3-stories, 60 x 192 feet, to cost $87,000.

TOLEDO, O.—The Maumee Malleable Castings Co. has awarded contracts for plant additions to cost $175,000.

TOLEDO, O.—The Threm & Davis Co., machine shop, 1514 Oakwood avenue, has been incorporated with $10,000 capital, by William B. Threm and C. A. Davis.

TOLEDO, O.—Contracts have been closed by the Automotive Corp., Spitzer building, for the first unit of its proposed plant. The building will be 1-story, 90 x 300 feet, and will be erected at an estimated cost of $60,000. Five similar buildings will be erected later.

WOOSTER, O.—The Wooster Implement Co. recently was incorporated with $20,000 capital by F. C. Stillinger, Charles L. Schaffter, J. F. Jones and O. P. Byers.

ZANESVILLE, O.—Organization of the Standard Radiator Co. is being perfected. The company will build a large plant here for the manufacture of radiators and boilers.

LOUISVILLE, KY.—The Swiss Machinery Corp. will build a gasoline plant in this city.

LOUISVILLE, KY.—E. N. Cruse and James E. Miller recently were named as the incorporators of the Fred Franke & Co., with $40,000 capital, which will engage in the manufacture of machinery.

CHARLESTON, W. VA.—The Charleston Pritchard Steam Tractor Co. has taken over the plant of the Grayson Tool & Mfg. Co. at Dunbar, Pa., and will remodel it.

MOUNDSVILLE, W. VA.—The Cameron Tool Co. has let the contract for a plant.

MOUNDSVILLE, W. VA.—The United Zinc Smelting Co. will build a plant to cost $500,000. O. Proells is president.

Throughout the West

DAVENPORT, IOWA.—Bids for an addition to the Frank Foundry & Machine Co. were taken recently. The building will be 22 x 35 feet.

DUBUQUE, IOWA.—A building of the International Harvester Co. recently was damaged by fire. The loss has been estimated at $260 000.

CARTHAGE, MO.—The Carthage Planing Mill plans a plant, 1-story, 44 x 90 feet.

ST. LOUIS.—The Bayer Steam Soot Blower Co. is having plans drawn for a foundry to cost $40,000.

ST. LOUIS.—The building occupied by the American Mfg. Co. and the Beall Pressed Steel Co. recently was damaged by fire. Total loss has been estimated at $200,000.

HOUSTON, TEX.—The Lucey Mfg. Co. contemplates a plant here, to cost $1,000,000. It will include a forge shop and will consist of eight units. The company manufactures oil-well machinery.

OKLAHOMA CITY, OKLA.—The Fountain & Fixture Co., 23 East Fifth street, has awarded contracts for a plant, 2-stories, 50 x 68 feet.

CENTRALIA, WASH.—The Washington Light & Power Co. is considering the erection of a plant here.

EVERETT, WASH.—The Sumner Iron Works is establishing a plant for the manufacture of tractors. F. L. Powell is general manager of the company.

SPOKANE, WASH.—The city is having plans prepared for a bridge across Hangman's Creek at West Riverside avenue to cost $45,000. J. R. Butler is city engineer.

WALLA WALLA, WASH.—The Gilbert-Hunt Mfg. Co. plant has been purchased by the H. H. Harris Mfg. Co., Stockton, Cal., which is reported planning to equip it and enlarge it by several new structures.

WENATCHEE, WASH.—The Wenatchee Valley Gas & Electric Co. is reported contemplating the erection of an addition to its power plant at Chelan Falls.

ASTORIA, OREG.—The plant of the Pacific Power & Light Co. recently was damaged by fire. The loss has been estimated at $20,000.

PORTLAND, OREG.—The Portland Tinware Sheet Metal Mfg. Co. has been incorporated with $4200 capital, by F. J. Martin, P. Hogenfeld and R. Schulsted.

PORTLAND, OREG.—The Albina Engine & Machine Works will dismantle its shipbuilding plant and resume its prewar work as a general machine and repair shop.

Business in Canada

MONTREAL, QUE.—The Rex Oil Burner, Ltd., has been incorporated with $750,000 capital to manufacture oil engines, etc., by Frank Callaghan, Percy A. Gregory and D. Patterson.

MONTREAL, QUE.—The Engineering Equipment Co., Ltd., has been incorporated with $20,000 capital, to manufacture mechanical, electrical, mining and contracting machinery, by P. J. Wolf, John Kerry and others.

BRIDGEBURG, ONT.—The Reliance Fuse Co. of Canada, Ltd., has been incorporated to manufacture electrical goods, with $500,000 capital, by Howard H. Baker, H. S. Southall and Albert W. Plumley.

HAMILTON, ONT.—The F. W. Corey Needle Co. is establishing a plant at 13 Ferguson avenue north.

TORONTO, ONT.—The Ransome Canada Products, Ltd., has been incorporated with $10,000 capital to engage in business as machinists, founders, etc., by Thomas Gibson, J. G. Gibson and Ernest P. Seon.

LEVIS, QUE.—The St. Lawrence Dock & Shipbuilding Co., Ltd., has been incorporated with $100,000 capital, by William H. Hutchinson, Charles A. Chauvean and others.

TORONTO, ONT.—The Curran Motor Radiators, Ltd., has been incorporated to manufacture radiators, etc., with $250,000 capital, by James W. Bicknell, Frank Richardson and John F. Lucas.

TORONTO, ONT.—The Canadian Carbon Co., associated with the Prest-O-Lite Co., has purchased a site of 10 acres, on which a large plant will be erected.

WINDSOR, ONT.—The Peninsula Machinery Co. of Canada, Ltd., has been incorporated to manufacture machinery, tools, etc., with $10,000 capital, by John A. Flynn, Stewart Hanley and Alexander R. Bartlett.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bes., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.52c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.365c
Iron bars, Boston	3.55c
Iron bars, Buffalo	3.95c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.52c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.665c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.95c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Phila.	5.00c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	4.47c
No. 10 blue anl. sheets, Boston	5.15c
No. 10 blue anl. sheets, Buffalo	4.565c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.79c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	5.75c
No. 28 black sheets, Phila.	6.00c
No. 28 blacfl sheets, Cleveland	5.27c
No. 28 black sheets, Boston	6.65c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.69c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.865c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.00c
No. 28 galv. sheets, Phila.	7.50c
No. 28 galv. sheets, Boston	8.09c
No. 28 galv. sheets, Cleveland	6.62c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.215c
No. 28 galv. sheets, St. Louis	7.04c
Bands, Boston	4.85c
Bands, Detroit	4.03c
Hoops, Buffalo	4.065c
Bands, Buffalo	4.065c
Hoops, Boston	4.95c
Hoops, Detroit	4.03c
Cold rolled shafting, Buffalo	4.85c
Cold rolled shafting and screw stock, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28, 30 and 36 inches wide by 72, 84, 96 and 120 inches long.

Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklin (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40

Chicago to:

St. Louis	4.25
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Dertoit	.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	1.25
Pacific coats (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
⅛-inch	1	+14
¼-inch	24½	+ 2½
⅜-inch	25½	+ 1½
½-inch	29½	11½
¾ to 1½-inch	34½	18½

Lap Weld

2-inch	28½	14½
2½ to 6-inch	30½	17½
7 to 12-inch	27½	14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼-inch	+21	+36
⅜-inch	23½	6½
½-inch	28½	15½
¾ to 1½-inch	34½	19½

Lapp Weld

2-inch	29½	16½
2½ to 4-inch	31½	19½
4½ to 6-inch	30½	18½
7 and 8-inch	22½	10½
9 and 12-inch	17½	5½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Balck	Galv.
½-inch	15½	3½
¾ to 1½-inch	20½	8½

Lap Weld

2-inch	16½	4½
2½ to 4-inch	18½	9½

Lapweld Boiler Tubes

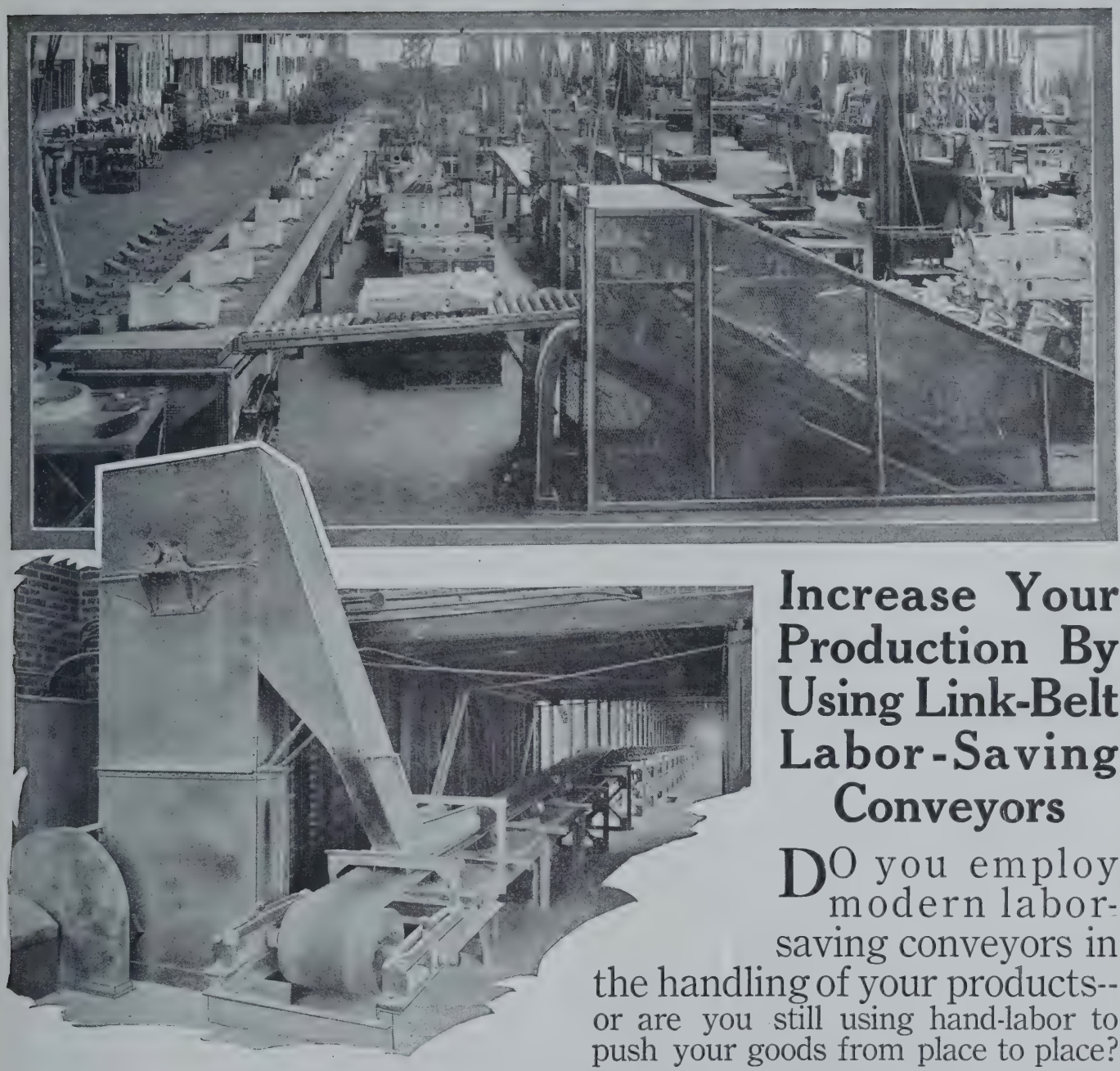
Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16



Increase Your Production By Using Link-Belt Labor-Saving Conveyors

DO you employ modern labor-saving conveyors in the handling of your products--or are you still using hand-labor to push your goods from place to place?

Production can be increased, manufacturing costs reduced and more contented workers developed by employing efficient modern Link-Belt labor-saving conveyors. Labor is scarce; therefore, employ YOURS to the best advantage.

We are specialists in designing and building mechanical conveyors for handling all materials, under practically all conditions. Our equipment can be found in almost every American Industry. Probably we can help you, as we have helped others. Get in touch with our nearest office. Catalog on request.

LINK-BELT COMPANY 375

PHILADELPHIA		CHICAGO		INDIANAPOLIS	
New York	299 Broadway	Kansas City, Mo.			306 Elmhurst Bldg.
Boston	49 Federal St.	Seattle			57 Firs. Ave. S.
Pittsburgh	1501 Park Bldg.	Portland, Ore.			First and Stark Sts
St. Louis	Central Nat'l Bank Bldg.	San Francisco			582 Market St.
Buffalo	547 Ellicott Square	Los Angeles			163 N. Los Angeles St.
Wilkes-Barre	2nd Nat'l Bank Bldg	Toronto, Can.			Canadian Link Belt Co., Ltd.
Huntington, W. Va.	Robson-Prichard Bldg	Denver,	Lindrooth, Shubart & Co.,		Boston Bldg
Cleveland	429 Rockefeller Bldg.	Louisville, Ky.			F. Wehle, Starks Bldg.
Detroit	922 Dime Bank Bldg.	New Orleans	C. O. Hinz, Hibernia Bank Bldg.		
Birmingham, Ala.	S. L. Morrow, 720 Brown-Marx Bldg.				

LINK-BELT
LABOR-SAVING CONVEYORS

Say you saw it in THE IRON TRADE REVIEW

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$23.00 to 23.50
Chicago	21.00 to 21.50
Eastern Pennsylvania	22.00
Cleveland	20.50 to 21.00
St. Louis	20.50 to 21.00
Buffalo	20.00
New York (dealers)	17.50 to 18.00
Cincinnati	18.50 to 19.00
Birmingham	20.00 to 21.00
Valleys	22.00 to 22.50
Boston (dealers)	16.00 to 17.00

BUNDLED SHEETS

Pittsburgh	17.50 to 18.00
Eastern Pennsylvania	18.50 to 19.00
Cleveland	18.00 to 18.50
Buffalo	15.50 to 16.00
Cincinnati	13.50 to 14.00
St. Louis	13.50 to 14.00

STEEL RAILS, SHORT

Chicago	$25.00 to 25.50
Boston (dealers)	15.50 to 16.00
Cleveland	19.00 to 20.00
St. Louis	24.50 to 25.00
Birmingham	20.00 to 21.00
Cincinnati	22.00 to 22.50
Eastern Pennsylvania	22.00

STOVE PLATE

Pittsburgh	$22.00 to 23.00
Chicago	27.00 to 27.50
Eastern Pennsylvania	22.50
Cleveland	22.00 to 23.00
St. Louis	26.00 to 26.50
Buffalo	22.00 to 23.50
New York	18.50 to 19.00
Cincinnati	20.50 to 21.00
Birmingham	23.00 to 24.00
Boston	22.00 to 23.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$27.00 to 28.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	26.00 to 27.50
Buffalo	24.50 to 25.00

SHOVELING STEEL

Chicago	$20.50 to 21.00
St. Louis	19.00 to 20.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$23.50 to 24.50
Chicago	24.50 to 25.00
St. Louis	23.50 to 24.00

BALED SHEETS

Pittsburgh	21.00 to 21.50
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	21.00 to 21.50
St. Louis	21.00 to 21.50
Eastern Pennsylvania	20.50 to 21.50

BOILER PLATE, CUT

Chicago, No. 1	$18.50 to 19.00
St. Louis	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$24.00 to 24.50
St. Louis	20.00 to 20.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$25.00 to 26.00
Pittsburgh, No. 2	23.00 to 23.50
Chicago, No. 1	27.00 to 28.00
Chicago, No. 2	23.50 to 24.00
Eastern Pennsylvania, No. 1	28.00 to 29.00
Cleveland, No. 1	24.50 to 25.00
St. Louis, No. 1	23.00 to 23.50
St. Louis, No. 2	22.50 to 23.00
Buffalo	24.00 to 24.50
Cincinnati, No. 1	21.50 to 22.00
Birmingham, No. 1	17.50 to 18.50
New York, No. 1 (dealers)	27.00
Boston (dealers)	22.00 to 23.00

WROUGHT PIPE

Eastern Pennsylvania	$19.50 to 20.50
Eastern Pennsylvania, ungraded	17.00 to 18.00
Buffalo	18.50 to 19.00
New York (dealers)	17.50 to 18.00
Boston (dealers)	14.00 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$24.00 to 25.00

CITY WROUGHT

New York, long (dealers)	20.00 to 21.00

BUSHELING

Chicago, No. 1	$22.00 to 22.50
Chicago, No. 2	15.50 to 16.00
Cleveland, No. 1	18.50 to 19.00
Cleveland, No. 2	15.00 to 15.50
St. Louis, No. 1	21.50 to 22.00
Buffalo, No. 1	17.50 to 18.50
Cincinnati, No. 1	16.50 to 17.00
Eastern Pennsylvania, No. 1	19.00 to 20.00

MACHINE SHOP TURNINGS

Pittsburgh	$15.50 to 16.00
Chicago	12.00 to 12.50
Eastern Pennsylvania	18.50 to 19.50
Eastern Pennsylvania (blast furn.)	17.00 to 18.00
Eastern Pennsylvania (chemical)	22.50 to 23.00
Cleveland	13.00 to 13.50
Buffalo	14.00 to 15.00
New York (dealers)	14.00 to 14.50
St. Louis	15.00 to 15.50
Cincinnati	7.50 to 8.00
Birmingham	14.00 to 15.00
Valleys	13.50 to 14.00
Boston (dealers)	13.00 to 13.50
Boston (blast furnace) (dealers)	11.00 to 12.00

CAST IRON BORINGS

Pittsburgh	$18.50 to 19.00
Chicago	13.50 to 14.00
Eastern Pennsylvania	20.00 to 21.00
Eastern Pennsylvania (chemical)	21.00 to 22.00
Cleveland	16.00 to 16.50
St. Louis	14.50 to 15.00
Buffalo	17.00 to 17.50
New York (dealers' price)	17.50 to 18.00
Cincinnati	11.00 to 11.50
Birmingham	14.00 to 15.00
Valleys	17.50 to 17.75
Boston (dealers)	15.00 to 16.00
Boston (blast furnace) (dealers)	14.00 to 15.00

IRON AXLES

Pittsburgh	$43.00 to 44.00
Chicago	36.00 to 37.00
Eastern Pennsylvania	40.00
Cleveland	35.00 to 36.00
St. Louis	36.00 to 36.50
Buffalo	33.00 to 34.00
Cincinnati	23.00 to 23.50

IRON RAILS

Chicago	28.00 to 28.50
Cleveland	27.00 to 28.00
St. Louis	26.50 to 27.00
Buffalo	25.00 to 26.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	21.00 to 21.50
Cleveland	17.50 to 18.00
St. Louis	20.00 to 20.50
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	$27.50 to 28.00
Cleveland	22.00 to 23.00
Buffalo	21.00 to 21.50
New York	17.50 to 19.00
Eastern Pennsylvania	24.00 to 25.00

FORGE FLASHINGS

Cleveland, large	$16.75 to 17.25
Cleveland, small	18.00 to 18.50
Chicago, small	16.50 to 17.00
Boston (dealers)	13.00 to 13.50

FORGE SCRAP

Chicago	23.50 to 24.00
Eastern Pennsylvania, No. 1	17.50 to 18.50
Boston	14.00 to 14.50

ARCH BARS AND TRANSOMS

Chicago	31.00 to 31.50
St. Louis	29.00 to 30.00

ANGLE BARS—IRON

Chicago	$30.00 to 30.50
St. Louis	26.00 to 26.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$18.50 to 19.50
Eastern Pennsylvania	19.00 to 20.00
Boston (dealers)	13.00 to 14.00
St. Louis	14.00 to 15.00
Cleveland	19.00 to 19.50
Buffalo	17.50 to 18.00
Chicago	$17.50 to 18.00

STEEL CAR AXLES

Pittsburgh	$31.00 to 32.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	35.00 to 35.50
Buffalo	33.00 to 34.00
Chicago	33.00 to 34.00
New York (dealers)	27.00
Birmingham	21.50 to 22.50
Boston (dealers)	24.00 to 25.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	30.50 to 31.00
New York (dealers)	24.00 to 25.00
Chicago	30.00 to 30.50

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$30.00 to 31.00
Pittsburgh, steel	24.00 to 24.50
Chicago, iron	29.50 to 30.00
Eastern Pennsylvania, iron	29.00 to 30.00
Cleveland, iron	26.00 to 27.00
St. Louis, iron	25.50 to 26.00
Buffalo, iron	27.00 to 27.50
Birmingham, iron	20.50 to 21.50
Birmingham, tram car	20.00 to 21.00
Boston	25.00 to 26.00
Cincinnati	21.50 to 22.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$30.00 to 31.00
Chicago, cupola	33.00 to 33.50
Eastern Pennsylvania, cupola	29.00 to 31.00
Cleveland, cupola	30.00 to 30.50
New York, cupola (dealers)	25.00 to 26.00
Cincinnati, No. 1, cupola	24.50 to 25.00
Birmingham, cupola	25.00 to 26.00
St. Louis, railroad	30.00 to 30.50
St. Louis, agricultural	29.50 to 30.00
Buffalo	27.00 to 27.50
Boston	30.00 to 31.00
Valleys	30.00 to 31.00

HEAVY CAST

New York (dealers)	23.50 to 24.00
Buffalo	21.00 to 22.00
Pittsburgh	28.00 to 29.00
Cleveland	20.00 to 21.00
Boston	23.00 to 24.00

MALLEABLE

Pittsburgh, railroad	$25.00 to 26.00
Pittsburgh, agricultural	22.00 to 23.00
Chicago, railroad	27.50 to 28.00
Chicago, agricultural	27.50 to 28.00
Eastern Pennsylvania, railroad	20.00 to 21.00
Cleveland, railroad	25.50 to 26.00
Cleveland, agricultural	18.50 to 19.00
St. Louis, railroad	24.50 to 25.00
St. Louis, agricultural	23.50 to 24.00
Cincinnati, railroad	17.00 to 17.50
Cincinnati, agricultural	16.50 to 17.00
Boston, railroad	23.00 to 24.00
Buffalo	22.50 to 23.50

Miscellaneous Scrap

Gross Tons Delivered to Consumer

RE-ROLLING RAILS

5 feet and over

Pittsburgh	$30.00 to 31.00
Chicago	31.50 to 32.00
Eastern Pennsylvania	32.00
Cleveland	28.50 to 29.00
St. Louis	30.50 to 31.00
Birmingham	24.00 to 26.00
Boston (dealers)	21.00 to 22.00

LOCOMOTIVE TIRES

Chicago	23.50 to 24.00
St. Louis	22.50 to 23.00

BOILER PUNCHINGS

Chicago	$25.00 to 26.00
Eastern Pennsylvania	25.00 to 26.00

An Invitation

If you are interested in the purchase or sale of:—

Scrap iron and Steel
Relaying rails
Billets for rerolling or forging

Write or phone us your inquiries—
And when in Chicago we would
be pleased to have you call on us.

See us
Concerning your
Requirements
And our
Prices

Sell
Carloads
Right
And be
Pleased.

The James D. Miller Company
McCormick Bldg.- Chicago.

New Trade Publications

NEW CONSTRUCTION.—Westinghouse, Church, Kerr & Co., New York, are circulating an illustrated folder, entitled "Shops," in which views of a number of plants which it has erected, are given.

RECORDER.—A folder entitled, "Your Foremen Are Paid From the Neck Up," which is being circulated by the Gisholt Machine Co., Madison, Wis., calls attention to the use of a recording machine in manufacturing plants.

ELECTRIC TOOLS.—The Black & Decker Mfg. Co., Baltimore, recently published a booklet in which electric air compressors, portable electric drill and electric valve grinders are described and illustrated. Data pertaining to each are given in full, as well as specifications.

PHOTOGRAPHIC LENS.—A booklet has been issued by the Bausch & Lomb Optical Co., Rochester, in which the line of work adapted to various lenses is outlined. The booklet should be of value to purchasers in determining the proper lens for difficult work.

MECHANICAL EQUIPMENT.—The Wellman-Seaver-Morgan Co., Cleveland, has published a 16-page booklet in which dock cranes, at the United States army supply base at Boston, are described and illustrated. Line drawings of this equipment, numerous illustrations, and a complete description are presented.

TOOL CENTER.—A 4-page circular is being distributed by the Federal Steel Co., Detroit, in which an inserted tool center is described and illustrated. This center consists of two parts, a center or point and a steel sleeve. The sleeve acts as a holder of the center, which is held in place by the use of a tapered hole. The sleeve is of carbon steel.

ACETYLENE FLARE LIGHT.—A portable lighting apparatus, weighing 40 pounds, is described and illustrated in a folder being distributed by the Davis-Bournonville Co., Jersey City, N. J. It consists of a generator, 12 inches in diameter and 30 inches in height, carrying a pipe standard, which supports a reflector and three burners. Acetylene gas is conveyed to the burner through a hose from the generator. Other details are given.

RIVET FURNACE.—A furnace designed to meet the requirements of fabricators of structural steel and general forge work, is described and illustrated in a 4-page folder being circulated by the Champion Kerosene-Burner Co., Kenton, O. This furnace does not require any fuel or air connection, and can be moved about at will, even while operating. It produces a temperature of from 2500 to 3000 degrees Fahr., and uses kerosene for fuel. Other data pertaining to the furnace is given.

ELECTRIC DRILLS.—The Wodack Electric Tool Corp., Chicago, is circulating a 4-page folder, in which it describes and illustrates a new type of portable electric drill. Specifications are given, and the various parts of the tool are fully described. It is equipped with chrome nickel steel gears and aluminum alloy castings; has self-oiling ball bearings; and the gears run in a liquid tight grease compartment, which protects the motor windings. The switch is operated with the palm of the hand as pressure is applied, and when the pressure is released, the current shuts off automatically.

TUMBLING BARRELS.—A 4-page illustrated folder has been published by the Ideal Concrete Machinery Co., Cincinnati, in which automatic tumbling barrels are described and illustrated. These barrels are supplied with either a solid or perforated shell. The drum heads are castings ⅞ of an inch in thickness and are protected from wear by steel bands. The drum travels on iron rollers, which are rigidly fastened. The frame of the machine is of angle iron. The loader skip is raised by power transmitted from the counter shaft, though a 14-inch contracting band hoist, and an automatic stop prevents the skip from being hoisted too far. Other parts are described.

OPEN-HEARTH FURNACE.—An 18-page booklet is being circulated by the McLain-Carter Furnace Co., Milwaukee, in which open-hearth furnaces are described and illustrated. These furnaces are designed for both acid and basic melting, and a complete unit consists of a hearth, uptake flues, checker chambers, reversing valve, stack and charging floor. The hearth is built upon heavy cast iron plates supported on structural I-beams, and the walls and roof are securely held in place by structural I-beam buck stays. The door frames are made in sections and are easily removed. Other details are given and the illustrations show various parts of the furnaces.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A firm in Spain desires agencies for the sale of steel, electrical materials and supplies, copper, steel and iron wire, office supplies, etc. Correspondence should be in Spanish. Opportunity No. 31269.

An engineer in Belgium desires to purchase an agency for the sale of industrial materials and machines, turbines, boiler equipment, lathes, planers, shapers, etc. Correspondence should be in French. Opportunity No. 31271.

A firm in Switzerland desires an agency from an American copper refinery. Opportunity No. 31273.

A merchant in Spain desires agencies for the sale of axles, wheels, steel beams for railway cars, sheet iron, angle bars, round and T iron, and small motors for cultivators and pumps. Opportunity No. 31281.

An engineer in Lettland desires to secure the representation of exporters of agricultural machinery and tools, etc. Opportunity No. 31282.

The representation is desired by a merchant in Belgium for the sale of agricultural machinery. Correspondence should be in French. Opportunity No. 31283.

An agency is desired by a firm in the Netherlands for the sale of iron and steel goods, engines, tools and mechanical articles. Opportunity No. 31284.

A civil and mechanical engineering firm in India desires to represent manufacturers and exporters for the introduction into India of American machinery and engineering and structural materials. Opportunity No. 31312.

A firm in Canada desires to secure the sole agency for the sale of gas engines for fishing boats and other products. Opportunity No. 31314.

A company in Scotland desires to purchase one automatic wire-mattress weaving machine. Opportunity No. 31319.

An American firm having a branch office in England is about to open an office in Italy and desires an exclusive agency from manufacturers of agateware, machinery and other materials. Opportunity No. 31320.

An American exporter with an office in Italy desires to purchase and secure an agency for the sale of coal, copper, sheet and wire, and chemicals. Opportunity No. 31321.

A wholesale drug company in the Dutch East Indies, desires to receive catalogs and prices of optical supplies, lens-cutting instruments, etc. Opportunity No. 31322.

A firm of manufacturers' agents in Australia desires to secure agencies for the sale of all kinds of manufacturers' machinery, such as measuring and wrapping machinery, etc. Opportunity No. 31324.

A company in China desires to purchase hardware and tools, a list of which may be obtained from the bureau or district offices. Opportunity No. 31325.

A firm in Spain desires to purchase blacksmiths' anvils, etc. Opportunity No. 31327.

An engineer in Italy desires an agency for the sale of agricultural and industrial machinery, metals, etc. Correspondence should be in Italian or French. Opportunity No. 31330.

An American concern which is soon to install machine shops in Russia desires to secure an agency for the sale in Southern Russia of machine tools and overhead equipment for machine shops. Opportunity No. 31331.

Samples, catalogs and price lists are desired by a man in Spain with a view to representing firms for the sale of electrical supplies, carpenters and cabinet-makers' tools and accessories, etc. Correspondence should be in Spanish. Opportunity No. 31332.

The purchase or exclusive agency is desired by a firm in Spain for the sale of leather belting, hand-machine tools, etc. Opportunity No. 31339.

The purchase is desired by a manufacturer in Belgium, whose plant was looted during the war, of lathes, shears, forging presses for bolts and nuts, bolt-cleaning machines, and screw-cutting lathes for bolts and nuts. Catalogs and price lists are desired. Opportunity No. 31341.

A former machinery manufacturer in Hungary desires to secure an agency for the sale in Hungary and the Balkan states of machine manufactures. Opportunity No. 31342.

A manufacturer in Spain desires an agency for the sale of motors and dynamos, electric-heating apparatus, electrical conductors, insulated and copper wire on bobbins, etc. Correspondence should be in Spanish. Opportunity No. 31345.

An American firm in Poland, which is planning to erect a machine shop, desires an agency, purchasing goods outright, for the sale of machine tools, agricultural machinery, machinists' tools and electrical equipment. Catalogs and price lists are requested. Opportunity No. 31346.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, December 4, 1919 *No. 23*

Coal Dominates Steel Market

Substantial Reduction of Mill and Furnace Output Appears Inevitable Under Restrictions Placed on Fuel Supplies—Material Scarcer and Prices Advance Further in Various Lines—November Pig Iron Production Grows

BOTH production and trade in iron and steel are dominated completely by the question of coal supply. Although the direct interference with furnace and mill operations as yet has been slight, the stage where extensive dislocation of plant activities may be expected is approaching rapidly. With more than 50 per cent of the iron and steel industry dependent for coke upon these plants, the action of the central coal committee in cutting supplies of coal to the beehive ovens, 25 per cent will have far-reaching effects. This curtailment represents a shrinkage of 65,000 tons of coke weekly in the Connellsville regions alone and over 100,000 tons weekly in the whole country. Since every ton of coke is needed at present in blast furnace and foundry activities, the enforced reduction of pig iron and castings output may be large. It is of great importance to the general industry, however, that the operations of by-product ovens are not to be interfered with, because of the large number of the steel works, blast furnaces and metallurgical plants which draw upon this source of coke supply.

Under the order, concerning beehive coke, of the fuel administration, the point of greatest effect probably will be the Pittsburgh district, and surrounding territory because of the heavy demands of that section upon the Connellsville operations. The steel department of one Mahoning valley works already is down due to a lack of coal and a large Youngstown steel works will close this week unless relief is forthcoming. The Bethlehem Steel Co. has banked six blast furnaces and is using a higher mixture of anthracite coal in its other stacks.

All Material Is Scarce

The coal stringency following on the heels of the loss of production occasioned by the steel strike, now past, has intensified the already strong position of the market. Selling has been driven into extremely narrow limits both because of the lack of material and the increased uncertainty of manufacturers over future costs. Sellers are able to name their own prices on virtually all products as buyers still are exceedingly anxious to get their wants under cover. The scarcity of wire nails remains acute. The 1920 requirements of this product are estimated at 20,000,000 kegs. The carryover of undelivered 1919 tin plate orders into next year will reach about 8,000,000 base boxes. The demand for line pipe for oil field purposes is tremendous. One order just placed involves 400 miles of 8-inch. If the Standard Oil Co., as reported, connects up its California and northern Texas holdings with a pipe line, this will require approximately 140,000 tons of pipe.

Iron Output Is Larger

November added greatly to the recovery of blast furnace operations from strike effects. Pig iron production in that period was 2,381,327 tons, a gain of 516,903 tons. This represented an average daily increase of 32 per cent. The gain in the number of active furnaces over October was 35, and the total of 251 blowing on the last day of November was only 15 less than in August, a pre-strike period.

Coke prices are following the expected course. Spot fuel is up 50 cents to $1 in the week. Eastern buyers are offering $8, Connellsville ovens, for both spot furnace and foundry coke. One Connellsville maker sold his entire 1920 output at $7, ovens.

Railroad business, actual and prospective, is mounting into big figures. The East estimates 375,000 tons of rails definitely are under negotiation for 1920 and 300,000 tons remain in the same position in the West. The Great Northern is inquiring for 1000 cattle cars and another 3000-car inquiry is up at Chicago.

Iron Advance Continues

As the demand for pig iron far exceeds the restricted tonnage which the makers are willing to offer, prices continue their weekly advance. No. 2 foundry is selling at $38, Buffalo, at $35 to $36 in the valleys, and at $35 in Alabama and Virginia. In the East No. 2X has been sold at $40 and $41. Recent basic sales at Pittsburgh total 40,000 tons or more, the last of which were at $33, valley furnace. Of bessemer sales aggregating 15,000 tons at Pittsburgh, the most recent were at $33.50 to $34, valley.

DECEMBER 4, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - - - York St. and Western Ave.
NEW YORK - - - - - - - 2203-2206 No. 220 Broadway
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LONDON, ENG. - - - - - - - 16 Regent St., S. W. I.

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Effect of Mexican Intervention

WITH the strain in the relations between the United States and Mexico again near the breaking point, some consideration is being given in the nonferrous metal markets to the possible economic effects of intervention in the latter country. The extent of government buying of materials for munitions, obviously would depend upon the course and consequences of such intervention, something which cannot be foreseen.

A prompt reflection of military action undoubtedly would be seen in the foreign exchanges, with recovery in the pound sterling, the franc and other exchange values as measured in dollars. A recovery in exchanges would facilitate exports of copper, lead and zinc, and accordingly would strengthen the American markets. The financial situation would be further affected by the elimination of Mexico as a silver producer. Mexico long was the largest silver producing country in the world, but in recent years, due to the chaos there, has been second to the United States. Mexican lead production contributes an important part of the world's lead supplies, especially at present, when bitter strikes are in progress in Spain and Australia. In 1918 the United States imported 78,600 tons of lead from Mexico and thus far this year, 45,000 tons. This lead, which would carry a duty of 25 per cent if imported, is smelted and refined in bond and applied on export orders. Withdrawal of Mexican lead from the world's markets would result in foreign buying competition for domestic lead, with consequent higher prices. Mexico also is an important producer of copper, but world stocks of this metal are sufficient to meet immediate needs.

However, there are other, more abstruse but probably more important by-products of intervention which may enter into metal market calculations. Armed conflict might serve to awaken the public to a clearer view of realities and responsibilities. It might restore a true perspective to that part of labor which lately has been misled by a few pigmy-souled leaders. In other words, it might stimulate the country to get back to work, which is the only remedy we need for our present economic ailments. With the memory of the world war fresh in our minds, no sane citizen craves trouble with Mexico, but intervention might not be an unmixed evil.

Plotting Crane Business of 1919

IF THE shipments and orders figuring in this year's business in overhead cranes were roughly charted, the resulting graph would reveal conditions of unusual interest. The line representing shipments would start at its highest point in January, while that corresponding to bookings would begin in that month at its lowest mark. The line indicating orders probably would run along at this minimum for about five months and then shoot abruptly upward until in July it would reach its highest point. Following this line further, a slight drop in August would be noticeable but the level reached in that month would be maintained during the following two months, after which another slight drop would be indicated. It is problematical just where the line would end at the close of the year but it is quite certain that the volume of orders for December will be well above the low point of January.

Following the line of shipments from its high mark of January, no change would be perceptible during the period of the first four months, after which a sharp depression would indicate the decided slump which took place in May. Since shipments continued in this volume until August, the line would run parallel to the eighth month where it would rise slightly and then gradually descend to the year end.

Briefly summarizing, this chart would reflect large bookings at the beginning of the year which were to be completed; light bookings during the first five months with a heavy gain in the last half of the year; and light shipments as the shops made headway with their new business. Slight interruptions in the volume of shipments undoubtedly were caused

by labor trouble. However, it is safe to assert that even though orders in December fall still further, new business in the last half of the year will treble that of the preceding period.

Taking Dividends Through Esteem

IDEALS in business surely are working toward a higher level than ever before. Simply getting the money no longer is the only aim of the seller. To gain and hold the respect and esteem of the consumer is deemed no less desirable or necessary to a perfect business transaction as a profit. The time was when a monopoly was regarded simply as an opportunity and the buyer was made to pay whatever the traffic would stand. Now a monopoly is not only an opportunity but a responsibility. Both sides of the shield are con-

If conditions offer the opportunity to exact from the buyer the responsibility of the situation becomes an influential factor in determining what the seller may ask and prevents oppression. There comes to mind the attitude of a certain large producer of a raw material in the iron and steel industry which has come in recent years to a virtual domination of a large consuming field. Yet notwithstanding the opportunity to profit largely from this favorable situation prices have been held lower than would have been the case had there been competition in that field.

This interest has taken the lead in restraining rising quotations and has sold much below the level at competing products from other fields, when at least the same price could have been obtained In this case the responsibility has weighed heavier in the scale than the opportunity. This is a far-sighted policy which should build a deep foundation for the future and gain an esteem and trust from the consumer that will be a valuable asset to the producer in the years to come.

Is Open Hearth Gaining Favor?

UP TO the present time the most reliable and satisfactory information regarding the post-war status of the iron and steel industry in Lorraine, the Saar valley and the occupied districts of Germany have come from the report made by the commission appointed by the British minister of munitions. In an article appearing in this issue of THE IRON TRADE REVIEW, which is the third of a series based upon the report, the interesting statement is made that nearly all of the steel for high explosive shells was made by the open-hearth process. Furthermore, it is stated that only one company was able to satisfactorily produce high explosive shell steel in basic bessemer converters without heavy rejections.

In view of the fact that by far the greatest part of the steel made in the districts visited is produced by the bessemer process, the enforced employment of open-hearth furnaces is significant. European steelmakers have defended the converter because of the high cost of producer gas and the absence of scrap. They also point to the fact that 30 blows per 12-hour shift are averaged by converters in the Lorraine district, whereas the normal number of heats from an open-hearth furnace is three or four per 24 hours. Yet in spite of these apparently good reasons for preferring the bessemer process, the report of the commission contains numerous instances of building and contemplated additions to plants in which open-hearth furnaces are specified. In one German plant all of the steel is made in open-hearth units and in several new plants under construction on the west bank of the Rhine extensive open-hearth equipment is being installed.

It probably is premature to state that the turning point in the production of steel in Europe is in sight, yet there is strong evidence of a tendency on the part of steelmakers to look more favorably upon the open-hearth process. The output of open-hearth metal first surpassed that of bessemer steel in the United States in 1907 and 1908, and since that time the converter process steadily has lost favor. Possibly the experience with the open-hearth process gained by European steelmakers during the war may have a noticeable influence on the choice of melting equipment for the new steel plants which will rise as part of the reconstruction program of European countries.

Henry Clay Frick, Master of Steel

HENRY CLAY FRICK and his great talent which gained for him a mastery in big business represented an influential personality in the American iron and steel industry up to the day of his death. Unlike Andrew Carnegie, when he disposed of his interests in the Carnegie Steel Co. to the United States Steel Corp., he did not retire from the business world but placed his ability and knowledge in the iron and steel industry at the disposal of the giant and untested enterprise. All these years he has been one of the vital forces in the shaping and advancement of the Steel corporation to its present position of maturity and power. His work done and counsel given quietly in the high and inner administrative circles of that organization were no less effective and invaluable both to his direct interests and to the whole American iron and steel industry.

Henry Clay Frick, a power in the formative days of American steelmaking as a national industry, by his eminent qualities commanded for himself the signal privilege of becoming an outstanding figure in the era of great development that followed and which he no doubt foresaw.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1552 AND 1554

Pig Iron

Bessemer, valley	$34.00
Bessemer, Pittsburgh	35.40
Basic, valley	33.00
Basic, Pittsburgh	34.40
Basic, delive.ed, eastern Pa.	33.00
Malleable, Pittsburgh	35.90 to 36.65
Malleable, Chicago, furnace	35.50
Malleable, Buffalo, furnace	39.25
Malleable, delivered eastern Pa.	36.00 to 38.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$40.10 to 42.10
No. 1X, Buffalo	41.00
No. 1 foundry, Chicago, furnace	36.25
No. 2 foundry, valley, Pittsburgh	35.40
No. 2 foundry, Buffalo	38.00
No. 2 foundry, Boston	35.00 to 36.00
No. 2 found y, Chicago furnace	35.00
No. 2 foundry, Ironton furnace	35.75 to 36.75
No. 2 foundry, Cleveland furnace	35.00 to 36.00
No. 2X, eastern del., Phila.	37.10 to 39.10
No. 2X, eastern, N. J., tidewater	37.10 to 39.10
No. 2X, eastern, Boston	39.90 to 40.90
No. 2X, foundry, Buffola furnace	39.25
No. 2 foundry, del., Philadelphia	35.10 to 37.10
No. 2 foundry, N. J. tidewater	35.10 to 37.10
No. 2 southern, Birmingham	34.00 to 35.00
No. 2 southern, Cincinnati	37.60 to 38.60
No. 2 southern, Chicago	37.00 to 38.00
No. 2 southern, Phila.	38.50 to 39.50
No. 2 Southern, Cleveland	37.00 to 38.00
No. 2 southern, Boston	41.00 to 42.00
No. 2 southern, St. Louis	38.25
Virginia, No. 2X, furnace	36.25
Virginia, No. 2X, Philadelphia	40.35
Virginia, No. 2X, Jersey City	40.65
Virginia, No. 2X, Boston	40.95
Gray forge, valley, Pittsburgh	34.40
Gray forge, Buffalo	32.00 to 33.00
Gray forge, eastern Pa.	34.50
Silveries, 8% furnace	47.25 to 48.25
Ohio Silveries, 8%, Chicago	46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	43.50 to44.00
Low phos. Lebanon, furnace	37.00
Low phos. standard, Pittsburgh	41.40
Charcoal, Superior, Chicago	35.50 to 38.00
Charcoal, Superior, Chicago first quarter 1920	35.50 to 37.50

Coke

(At the ovens)

Connellsville furnace	6.50 to 7.00
Connellsville foundry	7.00 to 7.50
Pocahontas furnace, nominal	5.75 to 6.00
Pocahontas foundry, nominal	6.50 to 7.00
New River foundry, nominal	11.50 to 12.00
New River furnace, nominal	9.50 to 10.00
Wise county furnace, nominal	8.00 to 9.00
Wise county foundry, nominal	10.00 to 11.50

Ferroalloys

Ferromanganese, 80 per cent. delivered, domestic metal	$120.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	110.00
Spiegel, 18 to 22 per cent furnace spot	37.00 to 38.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.20
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's plant	27c to 29c
Ferrovanadium, 35 to 40 per cent per pound contained, according to analysis	$5.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 pe cent	54.75 to 56.75
Bessemer, ferosilicon, 11 per cent	58.05 to 60.05
Bessemer, ferrosilicon, 12 per cent	61.35 to 63.35

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	42.00 to 44.00
Open-hearth, Philadelphia	52.00 to 54.00
Open-hearth, Youngstown	42.00 to 44.00
Bessemer, Pittsburgh	42.00 to 44.00
Bessemer, Youngstown	42.00 to 44.00
Forging, Pittsburgh	51.00 to 53.00
Forging, Philadelphia	60.00 to 64.00

SHEET BARS

Open-hearth, Pittsburgh	$45.00
Open-hearth, Youngstown	45.00
Bessemer, Pittsburgh	45.00
Bessemer, Youngstown	45.00

SLABS

Pittsburgh and Youngstown	43.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$60.00 to 63.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c to 2.925c
Structural shapes, New York	2.72c to 3.00c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.50c to 2.65c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c to 3.045c
Tank plates, New York	2.92c to 3.07c
Bars, soft steel, Pittsburgh	2.35c to 2.50c
Bars, soft steel, Chicago	2.62c
Bars, saft steel, New York	2.62c to 2.87c
Bars, saft steel, Philadelphia	2.595c to 2.845c
Bar iron, common, Phila.	2.995c to 3.245c
Bar iron, common, Chicago	2.77c to 3.00c
Bar iron, common, Cleveland	3.25c
Bar iron, common, New York	3.02c to 3.27c
Bar iron, common, Pittsburgh	3.25c
Hard steel bars, Chcago	2.85c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 46.00
Relaying rails, Pittsburgh	40.00 to 43.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	5.00c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 5c more)

Wire nails, Pittsburgh	3.50c
Plain wire, Pittsburgh	3.10c to 3.25c
Galvanized wire, Pittsburgh	3.80c to 3.95c
Barbed wire, painted, Pitts.	3.50c
Barbed wire, galvanized, Pitts.	4.20c
Cut nails, Pittsburgh l. c. l.	5.195c
Coated nails per count keg, Pitts.	3.10c to 3.25c
Polished staples, Pittsbugh	3.50c
Galvanized staples, Pittsburgh	4.20c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1⅛ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.00c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.994 to 4.095c

Full sheet schedule page 1552.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	34½	18½

Full pipe schedule page 1552.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B.

Four-inch, Chicago	$65.80
Six-inch and over, Chicago	62.80
Four-inch, New York	61.30
Six-inch and over, New York	58.30
Four-inch, Birmingham	58.00
Six-inch and over, Birmingham	55.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.50c
Cold finished steel bars, Pitts., base	3.60c

Rivets

Structural rivets, Pittsburgh	3.90c to 4.15c
Boiler rivets, Pittsburgh	4.00c to 4.25c
Rivets ⅞ in. and smaller Pitts.	.50 to 50—10 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	45–5 to 50–10 off
Cut thread	40–5 to 50–10 off
Larger and longer	30–10 to 40–10 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–7½ to 60 off
Cut thread	40–10–5 to 50–10 off
Larger and longer	40 to 40–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	70–10–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c to 2.70c off
Hot pressed, square tapped	2.25c to 2.45c off
Hot pressed, hexagon blank	2.50c to 2.70c off
Hot pressed, hexagon tapped	2.25 to 2.45c off
Cold pressed, square tapped	2.25c to 2.45c off
Cold presed, square blank	2.50c to 2.70 off
Cold pressed, hexagon blank	2.50c to 2.70c off
Cold pressed, hexagon tapped	2.25c to 2.45c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Dec. 3, 1919	Average prices Nov. 1919	Sept. 1919	Dec. 1918
Bessemer valley, del., Pittsburgh	$35.40	$32.00	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	34.40	30.40	27.15	34.40
*No. 2 Foundry, Pittsburgh	36.40	33.15	28.15	35.40
*No. 2 Foundry, Chicago, furnace	35.00	31.75	26.75	34.00
Lake Superior charcoal, Chicago	35.50	35.50	32.75	38.70
Malleable, valley	35.50	31.75	28.65	35.90
Malleable, Chicago	35.50	32.25	27.25	34.50
*Southern, No. 2, Birmingham	35.00	30.65	26.75	35.25
*Southern Ohio, No. 2, Ironton	36.00	31.75	26.75	34.00
Basic, eastern del., eastern Pa.	33.00	33.00	27.00	36.90
**No. 2X, Virginia, furnace	36.25	33.40	29.25	38.00
*No. 2X, eastern del., Philadelphia	38.10	35.85	29.95	39.15
Gray forge, valley del., Pittsburgh	35.40	31.80	27.15	34.40
Ferromanganese, 80 per cent, delivered	120.00	110.00	105.00	240.00†
Bessemer billets, Pittsburgh	42.00	40.90	38.50	47.50
Bessemer sheet bars, Pittsburgh	45.00	45.00	42.00	51.00
Open-hearth sheet bars, Pittsburgh	45.00	45.00	42.00	51.00
Open-hearth billets, Pittsburgh	42.00	40.90	38.50	47.50
Steel bars, Pittsburgh	2.50c	2.45	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	2.995	2.895	2.595	3.745
Iron bars, Cleveland	$3.25	$3.00	$2.52	$3.64
Iron bars, Chicago mill	2.77c	2.73	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.60	2.60	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.245
Tank plates, Pittsburgh	2.65c	2.65	2.60	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.895	2.895	2.845	3.395
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.70	5.70	6.25
Wire nails, Pittsburgh	3.50	3.45	3.25	3.50
Connellsville furnace coke	6.50	5.80	4 60	6.00
Connellsville foundry coke	7.50	6.95	5.50	7.00
Heavy melting steel, Pittsburgh	24.50	21.90	20.50	27.50
Heavy melting steel, eastern Pa.	22.50	20.80	19.00	24.75
Heavy melting steel, Chicago	21.00	20.65	19.00	26.50
No. 1 wrought, eastern Pennsylvania	30.00	27.85	27.00	33.50
No. 1 wrought, Chicago	27.00	26.50	21.25	29.65
Rerolling rails, Chicago	31.50	31.15	25.40	30.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

No Halt In Rising Iron Prices

Threat of Curtailment of Furnace Output by Coal Situation Intensifies Already Strong Market—Pittsburgh Basic Sales Total 40,000 Tons and Price Reaches $33 —Northern No. 2 at $35 to $38—Southern at $35

Pittsburgh, Dec. 2.—Recent trading in the pig iron market here was featured by some big sales of basic. One merchant interest in November made sales aggregating more than 36,000 tons of this grade, of which 26,000 tons were sold during the last few days of the month at $32, valley furnace. This company also made sales of approximately 15,000 tons of bessemer last month, the most recent of which were from $33.50 to $34, valley furnace. Another merchant producer in the past few days has sold several thousand tons of basic to a Canton, O., steel manufacturer, at $53, valley furnace. Although recent transfers of basic grades are well up to 40,000 tons, shipments of which begin immediately, and run over the first quarter of 1920, only a part of the known inquiries have been covered. The Carbon Steel Co. is believed to have bought a portion of the 15,000 tons for which it recently inquired and it is not believed that either the Trumbull Steel Co. or the United Alloy Steel Corp., which also put out inquiries for substantial tonnages, have been covered in full. As far as can be learned the N. & G. Taylor Co. has not yet closed for the 3600 tons it asked for first quarter. The basic market now appears well established at $33, valley, and bessemer at $34, valley. A small tonnage of the latter recently was sold at $37, valley furnace for prompt shipment and an inquiry is out from a Pittsburgh district consumer for 500 tons for early 1920 delivery. Average prices in November for bessemer and basic iron in lots of 1000 tons or more as compiled by W. P. Snyder & Co., Pittsburgh, show a price of $30, valley, on bessemer and $30.16 on basic. This is the first change in the averages since last March. As to sales, the market has been somewhat quieter on foundry iron than it was recently, but this condition reflects the fact that makers are heavily committed against first half production and are unwilling to take on further tonnages. Several small lot tonnages of No. 2 foundry for prompt delivery recently have been sold from $35 to $36, furnace, and a sale of 800 tons for first half is noted to a Pittsburgh district structural company at $36, furnace. Two inquiries from 2500 to 300 tons of foundry iron for first half are before makers. The interest which sold the 800 tons of No. 2 grade at $36 for first half delivery has withdrawn from the market. Another merchant producer with furnaces in the valley and along the lake fronts also has withdrawn. Both of these makers have little or no tonnages unpledged for first half. A steady decline in merchant production over the last seven months, coupled with the loss of output occasioned by the strike, has produced a serious shortage of all grades of iron. The Cherry Valley furnace recently went into blast after being down for a little over two months for relining and rebuilding. This furnace has been considerably enlarged and now has a rated capacity around 400 tons per day. The Carnegie Steel Co. has 47 of its 59 stacks in blast, or only one less than just before the strike.

Upward Move Gains Momentum

New York, Dec. 1.—Now that pig iron prices are advancing so swiftly and the supply of iron is so thoroughly sold up, the question has arisen whether this is merely one of the periodical boom markets, or whether conditions for sometime to come will be dictated by the insufficiency of producing capacity. Where steel capacity has undergone a big expansion since 1914, it is pointed out that there has been no such expansion in pig iron capacity. Furthermore while the number of foundries throughout this district has not greatly increased in the past two or three years foundries generally have greatly increased their melting capacity. Hence, it is believed, the normal consumption of iron now is at a much greater rate than in prewar times. Eastern blast furnaces are well sold up. Makers in the Buffalo district and in central Pennsylvania, whose furnaces have been idle by reason of the strike or by lack of assurance as to fuel supply, will carry over into next year large undelivered tonnages on old contracts. Some of the furnaces which have been operating have disposed of the major portion of their first half output. A few makers either have taken only a little tonnage for first half or none at all. It is safe to say, however, that at least one-half of the total tonnage to be made by eastern furnaces during the first half of 1920, already has been sold. In view of this situation, demand during the past couple of weeks has involved a good deal more tonnage than the furnaces have been willing to book. It is this situation which is resulting in steadily rising prices. Eastern Pennsylvania foundry iron has been sold during the past week for first half delivery at $37 and $38 furnace, for 2.25 to 2.75 silicon, and at $39 to $41 furnace, for 2.75 to 3.25 silicon. The asking price on eastern Pennsylvania foundry in some cases now is

$40 furnace for 2.25 to 2.75 silicon. Central Pennsylvania iron has sold in round tonnages for first half at $37.50 furnace, for 2.25 to 2.75 silicon, and with some makers the minimum now is $39 furnace. The Virginia Iron, Coal & Coke Co., after being in the market for first quarter during the past week, withdrew today after booking what is said to have been a large tonnage in the aggregate. Other Virginia makers who still have some tonnage to sell for this year have advanced to the level that the Virginia company was asking on first quarter. The minimum on Virginia iron for any delivery now seems to be $35 furnace for 1.75 to 2.25 silicon and $38 furnace on 2.75 to 3.25 silicon. No Virginia 2.25 to 2.75 silicon is being offered now as far as known. Southern prices are advancing, and after sales at $35 Birmingham for 1.75 to 2.25 silicon one southern maker, in connection with some tonnage in this district, now is quoting $36.70, Birmingham, on 1.75 to 2.25 silicon, and $37.80 Birmingham, on 2.25 to 2.75 silicon. One lot of 1500 tons was sold by a Birmingham district maker reecntly for shipment into this territory this year.

Buffalo Prices Again Up

Buffalo, Dec. 2.—Still further increases in pig iron quotations marked the opening of the week in the Buffalo district. The market is flooded with an exceptionally large volume of good inquiry. All three grades of foundry have advanced in price due to the heavy demand as has basic and malleable also. There is no malleable being made, but there is a strong and insistent demand for it. The base price on No. 2 foundry (1.75 to 2.25 silicon) now is $38. The price on No. 2X (2.25 to 2.75 silicon) is $39.25 and for No. 1X (2.75 to 3.25 silicon) $41. Basic has gone to $36 and offers of $39.25 for malleable have found no takers. The prices quoted were definitely established this week by one producing interest with considerable first half capacity unsold, but were not announced by the other producing interest until early this week. Then the latter's old prices of $36, $37.25 and $39 were withdrawn in favor of the advanced figures, so heavy was the business on this level. Foundries which have seldom come into this district for iron, are inquiring and are willing to absorb the freight differential against them. December iron is practically a negligible quantity, except for very small lots from one furnace. Inquiry during the past week has totaled nearly 50,000 tons with many 1000-ton and some 5000-ton lots. One Susquehanna furnace is in operation of a battery of three. The others are being relined. This interest, due to the strike, has lost 80,000 to 85,000 tons of production, and it is doubtful when it will be in the market again. A producer sold 100 tons of No. 1X at $41 Monday and quoted $40 on 1000 tons of No. 2 foundry subject to immediate acceptance.

Prices Increase Rapidly

Cleveland, Dec. 2.—Extreme strength characterizes the pig iron market and as the demand far exceeds the available supply or the willingness of makers to sell, prices have continued to show rapid rise. Cleveland high silicon foundry iron was sold in the week at $36 for the base grade and the ideas of local makers now are not less than $35 to $36 for No. 2 (1.75 to 2.25 silicon). These prices largely are nominal, however, as Cleveland makers are not selling at present. Ironton makers have quoted $38 base furnace this week but have made no sales as yet at this figure.. Inquiries are coming from districts which have never before drawn iron from this territory. Basic iron is higher, a lot of 3000 tons for December having been sold this week at $33, valley furnace. This followed a sale of 5000 tons for the next several months' delivery at $32, valley furnace. The United Alloy Steel Corp., Canton, O., has been a buyer of considerable tonnage of basic and still is in the market. The Trumbull Steel Co., Warren, O., still is figuring on 10,000 to 15,000 tons. The coal strike rapidly is reaching the stage where it promises to affect the operations of both blast furnaces and iron consumers. Nothing of this kind yet has happened in this territory but coal supplies are becoming dangerously slow. Local blast furnace operations are unchanged.

Few Producers Will Sell

Chicago, Dec. 2.—Where to place contracts for pig iron is a difficult problem and of far more importance to holders than cost. As far as can be learned all southern producers are now out of the market with final sales before their retirement usually at $35, Birmingham. Northern producers have not been able to offer any iron for several weeks and see no prospect of taking further business until after the first of the year. The present quotation of $35, furnace, 1.75 to 2.25 silicon is purely nominal, as no sales are being made at that or any other figure. The only source of iron at present seems to be from producing centers east of Chicago. The Virginia Coal, Iron & Coke Co. has retired from the market after selling 2.25 to 2.75 silicon at $36.75, furnace, subject to freight rates of $4.10 and $4.90. This figures back to $35, base, for silicon 1.75 to 2.25, but none of that grade was available. One seller in the Chicago district is offering a small tonnage from a Virginia furnace at $36, furnace, subject to $5 freight rate, and full manganese differentials, which would mean $1.50 additional for 2 per cent manganese. An offer recently was made to a consumer of 1000 tons of foundry at $39, Buffalo furnace, with $5.30 freight. A sale of 1000 tons of malleable was made recently at $36, valley furnace, with freight of $3.80 for delivery any time before March 31. An inquiry is current for 4000 tons of malleable for second quarter and another for 1500 tons of malleable with silicon 2.25 or over. A southern Wisconsin tractor manufacturer is seeking for 1000 tons of foundry and another southern Wisconsin foundry wants 500 tons of foundry. In addition to the inquiry which is active, a much larger total would come out if melters saw any possibility of placing their orders. Producers of Lake Superior charcoal iron are receiving much inquiry but local representatives find it difficult to obtain a quotation as most of this business is being handled direct. One producer of silvery in Jackson county is taking business on the basis of $50, furnace, for 8 per cent, with $3.80 freight to Chicago. A Tennessee stack offers some tonnage for December at $50.25, furnace, for 8 per cent, with $3.40 freight to Chicago.

Southern Iron Again Advances

Cincinnati, Dec. 2.—Southern foundry iron has registered a sharp advance for first quarter delivery. The average quotation made by furnaces now willing to take on first quarter business, is now around $35, Birmingham, for 1.75 to 2.25 silicon. Practically no foundry iron of this analysis can be had in the South for prompt shipment, although some off-grade iron can be had. Southern Ohio has practically been cleaned out and no open offers are made for any shipment. However, some first quarter iron was disposed of during the past few days above $36, Ironton, for first quarter. It is currently reported that the production of malleable is being cut off on account of the coal shortage. Malleable is very strong and only a limited quantity can be had in southern Ohio. Definite quotations on malleable can not be obtained, but it is understood producers are watching foundry iron closely and such business as is taken is booked at the usual 50 cents advance over the base foundry price. The melting of iron by all foundries in this territory is very heavy. The stove foundries are probably consuming more metal than at any time heretofore. Consumers who are well provided for the future, are trying to get under cover, as the general impression seems to be that prices will go higher before Jan. 1.

Southern Production Off

Birmingham, Ala., Dec. 2.—Pig iron production is lower in the South. This is bound to bring about more caution among producers selling into next year. Quotations are attractive to the furnaces but apprehension is felt as to ability to deliver and to the cost of production. An advance in the wages of coal mine workers will bring about an increased cost in pig iron. The market is strong at $33 to $34 for No. 2 foundry (1.75 to 2.25 silicon) and there are indications that a further advance is likely. One furnace reports some sales as high as $35. Two furnaces are under repairs while the fires in three stacks have been banked for several weeks. Railroad car supply has not been up to expectations and as a consequence the reduction of accumulated stocks has not been as rapid as desired. Inquiries continue numerous and from all directions.

One maker of foundry iron in this district has advanced his price to $35 for No. 2 and is selling only to the second quarter. Considerable tonnage was closed formerly at $34. The advance of $1 per ton was made to take care of future conditions which

it is believed may include an advance in freight rates.

No Spot Iron Available

St. Louis, Dec. 2.—The demand for pig iron continues well in excess of available supplies. All classes of consumers are endeavoring to cover their requirements, both immediate and future. Inquiries are being turned down in wholesale especially those for early shipment. Apparently there is no more spot iron to be had. Spot sales during the week were confined to small lots of offgrades, or a few cars held by brokers, which brought premiums. The larger interests, it develops, are pretty well covered for this year, and through the first quarter but little iron has been contracted for the second quarter. Furnaces refuse to sell until something more definite is known as to probable production costs after this year.

Bank Stacks Because of Coal

Philadelphia, Dec. 2.—Effects of coal situation already are visible in the eastern blast furnace industry. The Bethlehem Steel Co. because of the fuel shortage has banked four stacks at South Bethlehem and two at Lebanon and is using a 10 per cent anthracite mixture at the remainder of its South Bethlehem furnaces. The pinch is beginning to be felt by other furnaces. One Central Penna stack unable to get steam coal is using coke under boilers. In view of the fuel situation as well as the sold-up condition, the furnaces are even less willing than before to book new tonnage. Frightened consumers have some large inquiries out. Several users would buy all way up to 15,000 tons of foundry iron each for first half. The avidity to purchase is shown by the fact that the Virginia Iron, Coal & Coke Co. in brief period it was in market sold 5000 tons for spot and 15,000 tons for first quarter. Most makers now are out of the market altogether without any price since they find any quotation they name is eagerly snapped up and they do not want additional business since orders now on books seem sufficient to take up 50 to 75 per cent of their first half output. One eastern Pennsylvania maker asked $40 furnace for No. 2 (2.25 to 2.75 silicon) and sales resulted. When he asked $41, business resulted. A small lot of No. 1X (2.75 to 3.25 silicon) offered at $43 eastern Pennsylvania furnace was snapped up immediately. On the other hand some eastern Pennsylvania foundry iron was sold the past week at $36 and $37 furnace for No. 2X. Some central Pennsylvania iron was sold for first quarter at $36 furnace for No. 2 plain (1.75 to 2.25 silicon), $37.25 for No. 2 X and this is minimum. The lowest for Virginia iron for any shipment now is $35 furnace for No. 2 plain, $37.25 to $38 for No. 1X and only December-January shipment is obtainable. Malleable has been sold for first half at $37 eastern Pennsylvania furnace. Several thousand of basic for next year were sold at $32 eastern Pennsylvania furnace; also a couple thousand tons were sold at $35 eastern Pennsylvania furnace. Some inquiry is out for basic. The Midvale Steel & Ordnance Co. has blown in another stack on basic. From 4000 to 5000 tons of copper-bearing low phosphorus were sold at $37 furnace.

Coke Market Moves Up

Spot Furnace and Foundry 50 Cents Higher—Sliding Scale Contracts Net More—Fixed Price Agreements Made Subject to Costs

Pittsburgh, Dec. 2.—Beehive furnace coke is decidedly stronger both on prompt and contract shipments. Several good-sized first half contracts have been closed on sliding scale agreements carrying a ratio of 5 to 1 on basic pig iron, valley furnace. On the present price of $33, for basic iron, shipments against these contracts, would carry a price of $6.67, ovens. The advance in basic also has materially enhanced the theoretical value of first half contracts made on a basis of 5½ to 1, which today would carry a price of $6, ovens. It is understood that 40,000 tons were closed by one interest on the basis of 5 to 1 for first half and also that 6000 tons for first half have been sold at a flat price of $7.50, ovens, without wage increase clause. Fixed price contracts have passed from favor, due to the inclusion by operators of a clause providing the buyer shall pay 50 per cent of any increase in coal or coke producing costs during the life of the contract. Notice has been posted in the Connellsville regions of the 14 per cent increase in wages; although this is a nonunion field, operators made the increase as a protection to their working organizations. Assuming a labor charge of $1.50 per ton of coal mined, the increase is 21 cents per ton, and on a basis that it requires 1½ tons of coal to produce a ton of coke, the increase in coke is 31½ cents per ton, and with buyer and seller sharing equally in the increase, the fixed price contracts made at $6, containing this provision, now will carry $6.15¾, ovens. It is stated that the labor cost in the Connellsville region averages considerably less than $1.50, this price being used merely for purposes of illustration, since it has the authority of government statisticians. It is feared a further advance will be necessary to bring about a return of the union miners and normal coal production. The nonunion fields, among them the Connellsville regions, will continue to be drawn on heavily for coal so long as other districts are not operating normally. Meanwhile, steel companies are not yet able to secure coal from their own mines, athough there has been no seizure of coal moving by water. Lacking coal for their coking plants, some of these companies are in the market for coke and it is the presence of these requirements that largely accounts for a sharp advance in the spot price. It has taken but a few new demands to send the price of spot 48-hour fuel up 50 cents. No standard furnace coke today is available under $6.50, ovens, and $7 is freely quoted. Prompt foundry coke also has stiffened about 50 cents now being rated at $7 to $7.50. The contract foundry coke market is nominal. Connellsville production of coke in the week ended Nov. 22, is estimated by *the Connellsville Courier* to have been 231,204 tons, against 253,024 tons in the previous week.

Coke Supplies at Low Ebb

Boston, Dec. 1.—Deliveries of coke from all sources are falling behind and several foundries have been anxiously endeavoring to get at least partial deliveries in order to keep their plants running. The New England Coal & Coke Co. has announced the price of $11.40 to govern December sales under its sliding scale contracts. The spot price on any coke it may have outside of contracts is $11.90. Some Connellsville coke has reached this territory at $11.40, delivered. The Everett, Mass., by-product plant recently has placed in operation another bank of ovens.

Some Makers Stop Selling

New York, Dec. 2.—An exceedingly active business has been done in coke here during the past week. Western Pennsylvania foundry coke has been booked for first half at $6.50 to $7, Connellsville. In some cases the contracts specify an advance in the cost of labor is to be added to the price. Numerous large lots were included, one being 5000 tons. Because the government may cut off the supply of coal to coke ovens, a number of the beehive interests have withdrawn from the market. The last price on spot foundry quoted by one of these interests was $7.25, Connellsville. The northern New Jersey by-product maker is ranked in the public utility class. Hence, this interest continues to receive a supply of coal. However, its receipts have been cut down and its operations now are around 85 per cent.

Virginia Fuel Higher

Cincinnati, Dec. 2.—Coke prices in the Wise county and New river fields especially, are higher. The nominal figure named for Wise county foundry ranges from $10 to $11, depending upon the shipment. Some spot foundry was offered in that field yesterday as high as $11.50. Connellsville furnace ranges from $5.75 to $6.25 ovens and foundry from $6.75 to $7.50. Pocahontas producers have practically sold no coke in this territory during the past few weeks. New River foundry coke is very scarce and as high as $13 has been asked, but the nominal quotation ranges from $11.50 to $12.

Buyers Covering at Advances

St. Louis, Dec. 2.—All grades and varieties of coke continue in excellent demand, with a well defined upward trend in values. There was some contracting in the week for first half at from 50 to 75 cents higher than for this year. There is a disposition on the part of all users in this district to hasten to cover. Foundry coke is bringing from $7 to $7.50 ovens according to quality.

Scrap Market Is Varied

Some Districts Show Little Effect of Coal Situation—Unsettled in Others—Bid $24.50 to $25 For Steel

FOR COMPLETE SCRAP PRICES SEE PAGE 1554

Chicago, Dec. 2.—Although lack of fuel, due to the miners' strike, has caused a number of scrap consuming plants to close down and probably they will not resume operation during the present year, the effect of this shortening of consumption has not yet been felt in the market for iron and steel scrap. Foundry grades are exceptionally strong, with prices advancing as pig iron goes to higher levels and supply inadequate to meet demands. No 1 wrought has been in heavy demand in spite of the fact that most bar iron mills are shut down from lack of fuel. Rerolling rails are quiet but all this material offered is taken readily. As to heavy melting steel, mills are not taking heavy tonnages at present, as they have bought freely recently. Dealers, however, are taking whatever is offered and will hold it for future needs. The Chicago & Northwestern has offered 5460 tons in which is included 1000 tons of No. 1 rails and 500 tons of No. 1 wrought. The Chicago, St. Paul, Minneapolis & Omaha offers 825 tons, the Kansas City Terminal 320 tons, and the Chicago, Burlington & Quincy 150 tons.

High Prices in New England

Boston, Dec. 2.—Last week marked the close of the best scrap iron and steel month of the year for New England brokers. Blast furnaces, steel mills and foundries all have continued to make strong demands. No. 1 machinery continued to advance until it reached $34.50, delivered. Other grades have advanced. Chemical borings sold at $18, shipping point, and turnings at $15. A sale of 1000 tons of rerolling rails was made at $27, shipping point. Pennsylvania steelmakers, particularly in the South Bethlehem district, have been large buyers of heavy melting steel, and although the price of this grade has not advanced proportionately, the market has remained firm and dealers are ready to pay $17.50 for the right quality. Several large sales of wrought pipe advanced the price to $18. The Boston district ordnance office continues to sell scrap brass and steel.

New York Buying Subsides

New York, Dec. 2.—Buying by the mills which featured the local scrap market last week has subsided and at present activity is being confined principally to brokers. These interests are not only buying for future speculation, but are covering, in some instances, on sales already contracted. Holders, however, are parting with their material slowly, and as a result the actual volume of trading in the past week has not been large. Prices on some descriptions continue to advance steadily. Heavy melting steel is now holding at $18 to $18.50, f.o.b. New York, an advance of 50 cents. It has been reported Pittsburgh consumers have been shopping around in the East, and have offered $25, Pittsburgh.

Steel Tonnages Sold

Philadelphia, Dec. 2.—The Alan Wood Iron & Steel Co. bought 5000 tons of heavy melting steel past week at $22.50, delivered. The American Bridge Co. at Pencoyd also bought heavily but the size of this tonnage is not known. This interest has been buying direct from producers and has been bidding as high as $24.50, delivered, and thus is advancing the market and making it still harder for other consumers to buy at lower prices. Generally the

Coal Shortage Effective

Pittsburgh, Dec. 2.—Although the scrap iron and steel market has been showing a strong upward tendency and materially higher prices have been established on a number of grades by actual sales, the coal shortage has become so acute at a number of steel plants as to result in suspension orders against shipments and in the past day or two the market has lost much of its buoyancy. It has been rumored that a Pittsburgh district steel company recently closed on 10,000 tons of heavy melting steel in excess of $26, delivered, but confirmation is lacking. The steel companies who have been in the market for supplies, however, admit making bids of $24.50 to $25, delivered, without securing any considerable amount of material. Dealers are asking from $26 to $27, delivered on this grade. A valley maker of sheets is among those who have stopped shipments against orders, as a result of the coal shortage and a valley blast furnace interest also has suspended shipments. A good market exists in steel axles, which can be rerolled into merchant bars, of which there is an acute shortage. Rerolling rails are not bringing more than $27 in this district, but are readily salable at much higher prices to West Virginia and Ohio makers of light sections.

Offer $23.50 For Steel

Buffalo, Dec. 2.—There is practically no heavy melting steel to be bought in this market, despite the fact that $23.50 is being offered for it. One mill in this district which has practically covered for three months, apparently has taken all the available scrap, and the broker handling the transaction is having a great deal of difficulty in obtaining the 25,000 tons for which $23.50 is being paid. Dealers are expecting a further advance in heavy melting steel. They are holding on to their stocks and are not inclined to let it go at that figure.

Market Looks Softer

Cleveland, Dec. 2—The outlook here for scrap iron and steel is unsettled. So far any weakness is not pronounced—it is more sentimental than actual—but most dealers do not look for a strong, healthy market until after the middle of January. Practically all of the local consumers of heavy melting steel have dropped out of the market. Buying in the valleys also has ceased. Up to $25.50 is reported having been paid for shells, on long delivery, and up to $24 for No. 1 railroad steel, but steel now can be bought in the valley for $23. Prices in the main are unchanged, but many are nominal in the absence of trading, and practically all are soft.

Cincinnati Market Backward

Cincinnati, Dec. 2.—The scrap market is not so firm and advances in pig iron have not yet been reflected in it. While the foundries are consuming large quantities of scrap, a number of steel mills supplied by this center, have been closed down for want of coal. This has necessarily cut down outside shipments materially and dealers' stocks now are increasing at a fairly rapid rate.

St. Louis Market Recovers

St. Louis, Dec. 2.—The iron and steel scrap market has run into a typical spell of watchful waiting. The scare which overtook dealers and yardmen last week and caused them to desire to ship material on contracts and sell, disappeared almost as suddenly as it came. Prices have held firm, with two or three advances noted, but business during the week has been extremely light. The position of consumers still is that they can not accept shipments, because of inability to get coal. The leading rolling mill interest has closed down on that account, and unless things improve, others will follow soon. This is a discomfiting influence. However, dealers see that the coal strike must end presently, and that demand be returned to the point where present fuel trouble found it. Steel is in fair demand, and heavy melting is quoted $1 higher at $21.50 to $22. Some fair sales of this grade have been made, one of 1000 tons to a local melter. Rolling mill grades remain in status quo. The mills still running have enough on hand for immediate needs, and do not care to take on more at present. Rerolling rails were marked up $31 to $32. Cast scrap is wanted and the same is true of malleable, but transactions are at a minimum. The railroads had no lists before the trade. One dealer in Texas was offering 3000 tons of railroad scrap in this market. Country dealers are beginning to offer tonnages. They are anxious to clean up their stocks.

Southern Inquiry Active

Birmingham, Ala., Dec. 2.—Old material is in demand and liberal inquiries are being received by dealers in Birmingham. The belief is now strong that there will be a strong market for scrap in quantity during the coming year. Foundries and machine shops, steel mills, cast iron and sanitary pipe plants and others who use more or less tonnage are well supplied with orders and there will be constant operation for an indefinite period. Scrap prices not only

are strong but are up considerably over 30 days ago. Heavy melting steel is not so firm however, consumers offering less than the published figures and apparently getting a supply.

Little Tin Plate

To be Available in Open Market For First Half

Pittsburgh, Dec. 2.—In view of the fact that the 1919 business which will constitute a prior lien on early 1920 production amounts to about 8,000,000 base boxes, or about 400,000 tons and is equivalent to 25 per cent of the theoretical annual capacity of the country, it is evident that makers will have only extremely small tonnages available for other than their regular customers. As a matter of fact, the American Sheet & Tin Plate Co. accompanied the announcement of the opening of its books for first quarter and first half of 1920 with an announcement that it would be obliged to allot its production and this company is known to have about all the business it can meet for the first three months of next year. It appears that the independent manufacturers are heavily committed and the best that manufacturers possibly can do will be to look out for the requirements of their regular customers. Although considerably more than $7 per base box, Pittsburgh, could be obtained today for standard tin plate for early delivery, makers generally are disinclined to consider inquiries from other than their usual customers and are not deviating from the $7 base. Independent tin plate manufacturers generally regard $7 as a fair price on domestic business. On export inquiries most makers are quoting $7.50, Pittsburgh, and talk of an $8 market is heard.

Allotted Entire Output

Buffalo, Dec. 2.—So insistent is the demand for tin plate that one manufacturer is said to have allotted the entire output for first half in less than two days from the time he announced his willingness to accept contracts.

Inquiries Are Heavy

Youngstown, O., Dec. 2.—Tin plate inquiries are extremely heavy at Mahoning valley mills. Books are closed, however, and no tonnages are to be had. According to export buyers, tin plate is commanding $8 per base box for foreign shipment and is hard to get at this figure. Considerable tonnage is being absorbed by canmakers and by meat-packing companies.

Strip Orders Large

Pittsburgh, Dec. 2.—Makers of strip steel practically have no tonnage available for delivery during the remainder of this year and the carry-over of 1919 business into 1920 promises to be so heavy that little tonnage will be available during the first quarter. One company in this district which was unaffected by labor troubles is naming February as the earliest time at which it can consider new demands in either hot or cold-rolled steel.

Shape Supply is Less

Mills No Longer Able to Make Early Deliveries—Plain Material Sells at Higher Prices—Awards Are Fair

New York, Dec. 2.—Few awards of consequence were reported in the local structural market in the past week, although inquiries came out at a fair rate. The largest inquiries noted were two lots of 800 tons for a hotel for the Y. W. C. A. in Washington, and a storage house in Baltimore. Mill quotations are tending upward. It is reported that as high as $5 a ton over the Pittsburgh base of 2.45c has been quoted on nearby shipments. As yet, however, the majority of the mills are adhering to the old level. It is expected that by the first of the year all of the independents will have advanced their offerings. What the leading producer will do is problematical but according to the best advices now obtainable, there will be no change.

New England Demand Grows

Boston, Dec. 2.—An active demand for structural steel is reported by Boston dealers. Prospective builders have been waiting in the hopes of finding reduced prices for steel construction work, but with the present rising market and the uncertainty ahead they are now becoming anxious and contracts for New England construction in the early spring are heavier.

Difficult to Place Tonnage

Philadelphia, Dec. 2.—Very few structural mills are in a position to take shape business for anything but deferred delivery. It is difficult to place any tonnage for anything this side of four to six weeks. Some eastern makers are taking on no new tonnage that does not net them 2.60c to 2.65c mill and some small lots are being taken at higher figures.

Prospective Business Big

Pittsburgh, Dec. 2.—While only a few structural projects of any size have come to fabricators in this district recently, it is stated that the volume of inquiries still is rising and expectations run strong that the turn of the year will see a large number of them closed. The McClintic-Marshall Co. has been awarded 4000 tons for the new turbine plant of the Westinghouse Electric & Mfg. Co. at Essington, Pa.

Building Tonnage Steady

Chicago, Dec. 2.—Placing of structural shapes is going forward in good volume, the largest project closed recently in the West involving 4370 tons for a storage and manufacturing plant for the A. O. Smith Corp. at Milwaukee. The Scottish Rite temple at Bloomington, Ill., requiring 319 tons, which was first awarded to the Decatur Bridge Co., has been given to the Bloomington Construction Co., on a revised bid. Plain material is quoted at 2.72c, Chicago.

CONTRACTS AWARDED

Extension to turbine plant Westinghouse Electric & Mfg. Co., Essington, Pa., 4000 tons to the McClintic-Marshall Co.

Building for Scio China Co., Scio. O., 100 tons to the Jones & Laughlin Steel Co.

Second unit of shop extensions for A. O. Smith Corp., Milwaukee, 4500 tons to Worden-Allen Co.

Manufacturing building for American Skein & Foundry Co., Racine, Wis., 175 tons to Worden-Allen Co.

Hide house for Pfister & Vogel Leather Co., Milwaukee, 500 tons to Worden-Allen Co.

Skip hoist and ore bin for Thomas Furnace Co., Milwaukee, 300 tons to Worden-Allen Co.

Washing plant for Cleveland-Cliffs Iron Co. at Hibbing, Minn., 300 tons to Worden-Allen Co.

New buildings and general alterations for Newport Chemical Co. at Carrollville, Milwaukee county, Wis., 400 tons to Worden-Allen Co.

Building for the Coca Cola Co., New Orleans, 409 tons, to Virginia Bridge & Iron Co.

Scottish Rite Temple for Bloomington consistory, Bloomington, Ill., 319 tons, to Bloomington Construction Co.

Building for the Post Printing & Publishing Co., Denver, Colo., 254 tons, to Denver Steel & Iron Co.

Warehouse for the Russell Grader Co., Cicero, Ill., 107 tons, to Midland Structural Steel Co.

Building for Upjohn Co., Seventh avenue, New York City, 300 tons, to Geo. A. Just & Co.

CONTRACTS PENDING

Trusses for Drake Hotel, Chicago, 200 tons, bids asked on revised plans.

Y. W. C. A. hotel, Washington, 800 tons, pending.

Telephone exchange in Bronx, New York City, 300 tons, bids in.

Church in Holyoke, Mass., 200 tons, bids pending.

Proof shop at Washington navy yard, 300 tons, general contract to Stang & Mitchell, Philadelphia.

Power house for Leaver Bros., Cambridge, Mass., 300 tons, bids pending.

Storage house for fertilizer plant of Guano company, Baltimore, 800 tons, bids pending.

Sellers' Market

Rules Completely in Wire Products—Higher Nail Extras Agitated

Pittsburgh, Dec. 2.—The market for wire products, particularly for nails, is purely a sellers' affair. Practically all companies in this district are out of the market and quotations for that reason merely are nominal. It is understood, however, that one of the smaller companies recently took an order for 5000 kegs for delivery over the first quarter at 6.60c, base, Pittsburgh, and there are unconfirmed rumors that one of the larger independents has taken business as high as 7.00c, base Pittsburgh. In the opinion of some makers a famine of nails is probable, not because of a lack of productive capacity so much as because prices have been so unprofitable that much machinery has been allowed to remain idle. Only through an increase in the base price or the introduction of a new card quoting higher extras, it is stated, will the larger independent companies resume production on the scale warranted by the demand. Next year's requirements of nails are estimated at 20,000,000 kegs. The present nail card was established in 1896. Demand for wire is only slightly less insistent than for nails. Little progress has been made in cutting down the accumulation of orders piled up as a result of the strike. One company not affected materially by the steel plant strike has withdrawn from the market owing to the possibility of being obliged to suspend from a scarcity of coal.

Bar Orders Very Heavy

Buyers Continue to Seek Position on Mill Books Despite Deferred Deliveries—Making Sales on Higher Basis

Chicago, Dec. 2.—Consumers of soft steel bars find difficulty in placing their orders, as the leading independent is entirely out of the market, having little remaining tonnage for first half, and the leading interest is accepting contracts subject only to delays. Orders for bars are heavier than for any other form of finished steel, and books are heavily loaded. In spite of this fact, new business is coming in large volume and consumers show much anxiety to get a position on mill books for as early delivery as possible. The leading interest is nearly sold out on its entire tonnage for first half of 1920. No difficulty has been experienced yet on account of the coal strike, and consumers have not asked to have deliveries delayed, apparently being willing to take in their raw material even though forced to shut down for lack of fuel. The quotation is steady at 2.62c, Chicago.

All mills producing bar iron in the West are shut down for lack of fuel and none of this product is being turned out. The idleness forced on these mills is the more irksome because of the excellent tonnages on books and the heavy demand which would have given steady operation for many weeks. In spite of inability to produce, mills are able to take on additional tonnage, subject to delay. The quotaton ranges from 2.77c to 3.00c, Chicago mill.

Several producers of rerolled high carbon bars have been forced to shut down by lack of coal with large tonnages on their books. Practically no new business in this material has been booked for some time, the most recent quotation being 2.85c, Chicago.

Impossible to Buy Tonnage

Philadelphia, Dec. 2.—With the developments in fuel situation, it is almost impossible to buy steel bars from the mills. Considerable tonnage for next year has been sold the past week at 3.00c and 3.25c Pittsburgh for commercial quality and at 3.50c for forging quality but the mills now are out of the market having sold about all they can make for the first half.

Shortage Still Unrelieved

Pittsburgh, Dec. 2.—A shortage of merchant steel bars bordering on the famine stage still exists and buyers in need of early tonnages are naming extremely high prices in an effort to cover. On a small tonnage of small size oval bars a price of 7.00c base Pittsburgh recently was offered and on squares and rounds, bids of 2.75c and 3.00c Pittsburgh have been common. The market actually is quotable anywhere from 2.35c to 3.25c Pittsburgh, for the Carnegie Steel Co. still is taking some business at the lower figure although shipments against such orders cannot be made until well into 1920 because of the business backed up as a result of the strike. As yet little headway has been made in cutting down accumulating bookings. Small sales by independent companies are being made at 2.75c to 3.25c for prompt shipment. Forging bars are in extremely scant supply since because of scarcity of labor and the extra work required in making forging billets, production of the latter is extremely low. Makers of iron bars still are flooded with business and most of them now are so heavily committed as to be indifferent to demands except from regular customers. The recent price of 3.25c Pittsburgh for common bars is firmly maintained. The Pennsylvania railroad, lines west, recently closed on 650 tons of iron bars at 2.75c base Chicago, for common bars and 2.90c base Chicago for specification iron.

Demand is Strong

Buffalo, Dec. 2.—There is a strong demand for bars, particularly for forging purposes. Bar mills here are operating and are getting fair production.

Acute Shortage Exists

Pittsburgh, Dec. 2.—The past week has seen little or no improvement in the supply situation in merchant steel bars and makers of cold-finished steel bars dependent on outside sources for their merchant bars still are operating on a much curtailed program. New demands, especially for the smaller sizes of rounds, flats and squares, cannot be entertained by these manufacturers. One company here which makes its own merchant bars recently withdrew from the market until it ascertains whether the scarcity of coal is going to affect plant operations. While all companies are quoting 3.60c, base Pittsburgh, buyers will pay much more to secure desired material.

Bar Shortage Prevails

Chicago, Dec. 2.—In the face of unusually heavy demand for bolts and nuts and larger inquiry than mills could handle were they able to operate at full capacity, most producers face the possibility of a shut-down from lack of bars.

Prices Still Headed Higher

Pittsburgh, Dec. 2.—Still higher prices have been established on both bolts and nuts because demands continue heavy and makers already are so heavily committed as to be indifferent to new business except at more attractive prices. Current production is far behind contract requirements due to the scarcity of bars and much business has been backed up by this condition. Carriage bolts now are not being booked for less than 45 and 5 off for round thread and 45 and 5 off for cut thread in the smaller sizes, while larger sizes are taking flat discounts of 30 and 10. Rolled thread machine bolts are quoted at 50 and 7½ to 50 and 10 off and cut threads at 40, 10 and 5 off for the small sizes and 40 off on the larger sizes. Nuts are quoted at 2.50c off on blanks and 2.25c on capped. Track bolts have been sold at 5.00c Pittsburgh in carloads and 5.50c plus one cent a pound extra for less than carloads. Rivets are holding at 4.15c for structurals and 4.25c for boilers but some makers still are selling at 4.00c and 4.10c respectively.

Sheet Tonnage Is Scarce

Pittsburgh, Dec. 2.—While much talk is heard of premium business in sheets for early delivery, this refers to only a small tonnage compared to the whole. The American Sheet & Tin Plate Co. is not deviating from the March 21 prices for the first half of 1920 and while some of the independents have accepted some business at an advance, it is declared that the average on all bookings is close to the old figures. Regular customers are having such business as the mills can take placed on the books at the regular basis. Neither the leading interest nor the independents can take on much additional business, for the loss of production during the strike was considerable and this tonnage must be accommodated out of production for the early part of next year. Making up this loss, it is figured, will take the better part of the first quarter and this only if no further disturbance of labor occurs and the coal scarcity does not interfere. The latter danger is imminent and it is reported that some western mills already have been obliged to suspend. While the American Sheet & Tin Plate Co. is taking orders for the first half, the independents are not committing themselves beyond the first quarter. On most of the business being booked, 4.35c, Pittsburgh, is the base on black sheets, 5.70c on galvanized and 3.55c on blue annealed.

Holds No. 10 at 3.75c

Philadelphia, Dec. 2.—The leading eastern maker now has minimum on No. 10 blue annealed of 3.75c Pittsburgh. Some first quarter contracting has been done on this basis although business is being turned away in volume. Premiums continue to be paid on all kind of sheets.

Large Premiums Are Offered

Youngstown, O., Dec. 1.—Sheets continue extremely difficult to obtain from Mahoning valley plants. Virtually all mills are booked through the first quarter and are not offering beyond that period. Dealers who have combed this territory for any grade find material almost unobtainable. Despite this sold-up condition buyers continue to send in heavy inquiries, with blue annealed and galvanized in the greatest demand. Premiums are running wild, almost every inquiry having an offer of this character attached. So far as can be

learned little business of this class has been entertained by valley mills.

While no mills have been forced to close on account of the fuel shortage, still this condition must be considered. The steelmaking department of one sheet producer already is idle and part of another is expected to close this week unless the situation improves. A shortage of steel means a shortage of sheet bars and perhaps another jump in the price of semifinished material. Consequently sheetmakers here are going slow not knowing what is before them.

Sheet quotations in the Mahoning valley are nominal. In many instances buyers have offered $15 per ton premium for light-gage blue annealed and galvanized for spot delivery and yet have been unsuccessful in obtaining these. A certain buyer is in the market for about 1500 tons of galvanized, No. 26 and lighter, and is willing to pay considerably over $20 a ton premium. If sheets were available at valley mills blue annealed would carry a quotation between 3.90c and 4.25c; black, between 4.65c and 4.85c; and galvanized around 7.50c. One large automobile maker in the Detroit district has bought sheets on a premium basis on several occasions recently and in as large a quantity as he could get. Few wasters are to be had. Buyers have been eager to obtain any kind of sheets and have absorbed waster stock along with primes. Consequently, prices of nearly all sheet mill by-products have stiffened. Galvanized seconds are quoted between 5.50c and 5.70c; fine finished seconds, between 4.60c and 4.75c; and pickled seconds, between 5.25c and 5.50c base.

Ferro Selling At $120

Round Tonnage Sales Establish Market at Recent Advance—English Metal Offered at $115 Delivered—Spiegel Also Higher

New York, Dec. 1.—Domestic makers of ferromanganese who put up their price on 78 to 82 per cent metal a week ago, to $120 delivered, have made sales of round tonnages during the past week for next year at this figure, and it is believed that this now represents the market on domestic standard metal for any delivery. However, English metal now is offered at less than this figure. One importer has been cabled by his English principal, an authority to sell 76 to 80 per cent English metal for first quarter at $110 tidewater, which is equivalent to around $115, delivered at consuming plants. English makers, however, during the week refused to consider bids of $110 delivered from domestic consumers for large tonnages. Domestic inquiry now amounts to 4000 to 5000 tons. In addition, there is an inquiry for 1000 tons for shipment to South America.

Spiegeleisen advanced during the past week. About 1500 tons of 20 per cent metal were sold for domestic use at $37 to $38 furnace, and there are inquiries for several thousand tons from domestic sources. There are also big inquiries from abroad involving many thousands of tons. These inquiries come from Holland, Belgium, France and Germany. The unfavorable exchange situation acts as a bar to the closing of this business.

Some additional inquiries for small tonnages of ferrochrome for next year, in addition to the 12,000 tons recently reported, have appeared. The price of standard ferrochrome, containing 6 to 8 per cent carbon, is 27 to 29 cents per pound contained, although it is rumored there has been some cutting. Alloy containing 1 to 2 per cent carbon is quoted 70 to 75 cents per pound.

The market for ferrotungsten is extremely dull. Foreign alloy still is available at $1 a pound contained and lower, while domestic makers continue to ask $1.10 to $1.20 a pound contained, at which they are taking a little business.

The 50 per cent ferrosilicon market is dull. While a few consumers of this metal have contracted for next year, the majority appear to be waiting, possibly intending to buy from hand to mouth. The market on 50 per cent remains about $80 to $85, delivered, and on 75 per cent, $145 to $150. A quotation of $250, Montreal, recently was paid on some 90 per cent, to which would be added freight and 15 per cent duty.

Ferro Sales Made at Advance

Pittsburgh, Dec. 2.—The recent advance in 80 per cent domestic ferromanganese to $120 furnace, freight allowed, has been paid in several small lot sales in the past week and this price represents the minimum figure of all makers. At the moment, English makers are not a factor. The strong pig iron market now is a factor in ferromanganese. Since this material is produced largely in blast furnaces, makers, in the failure to profitably produce ferromanganese, can turn to pig iron at remunerative figures.

Spiegeleisen is held at $40 to $45, furnace, for 18 to 21 per cent material but the last business of any account in this material was around $35, furnace.

Recent stiffening in the price of 50 per cent ferrosilicon appears to have been only partly sustained, for buyers seem to have been frightened. There is a lack of sales at the higher asking prices. The asking price runs from $85 to $90 furnace, freight allowed, generally, but it is known some Canadian material is in the hands of middlemen bought at a price at which it could be profitably turned over at less than $85.

Bessemer ferrosilicon remains in light demand but prices are firm in the lack of big production or large free stocks. Jackson county, O., makers whose furnaces have been down for several months are resuming.

Demand and Price Up

Chicago, Dec. 2.—Considerable activity has developed in ferroalloys, and two sales of 500 tons each of ferromanganese recently were made in this district at $120. There is some other inquiry which has not yet been satisfied. A sale of 300 tons of 50 per cent ferrosilicon was made recently at $90, delivered. Spiegeleisen is now quoted at $45, eastern furnace.

Car Plates In Demand

New York, Dec. 1.—About 80,000 tons of rolled plain material largely plates will be required for the 5500 tank cars recently distributed by the Union Tank Car Co. With the axles and wheels 100,000 to 110,000 tons will be required for these cars.

Eastern Demand is Huge

Philadelphia, Dec. 2.—Plate makers are swamped with demand and some say they could sell enough to take entire 1920 output. Practically every eastern shipyard has out inquiries. A Baltimore yard placed 5000 tons with the leading interest at price reported to be 2.50c Pittsburgh which compares with 2.75c Pittsburgh done by some eastern makers on first quarter contracts and 2.85c eastern mill done on some small tonnage. The Standard Oil Co. of California is in the market in New York for four to 10 tankers requiring about 15,000 to 40,000 tons of steel.

Most Makers Hold to 2.65c

Pittsburgh, Dec. 2.—Although the plate market must be quoted from 2.50c to 2.65c, Pittsburgh, in view of the fact that the lower price recently was named by the Carnegie Steel Co. against a shipbuilding inquiry, makers in this district generally are holding to 2.65c and claim ability to obtain that price on tank plates. The Standard Oil Co. is reported to have put out an order for 20 oil storage tanks, the first part of a total for 200. Builders of oil and gas tanks are extremely busy at present, not only on domestic, but on foreign orders. Demand for plates in connection with this business is large and urgent and all makers have substantial bookings. Pittsburgh district car builders have only a moderate amount of business before them at present.

Plate Mill Operating

Buffalo, Dec. 2.—The Donner plate mill now is in operation. It went into production last week for the first time, since the tie-up as a result of the steel strike.

Demand Continues Strong

Chicago, Dec. 2.—Inquiry and sale of steel plates continue strong, most of the demand resulting from continued activity in the production and transportation of oil. Demand for shipbuilding has been held up and not much business is being booked from this source. Most of the plates now needed are for tank cars and oil tanks, although other users of plates are in the market for their usual requirements.

Railroad Demand

On Increase—Orders Pending in East —Car Inquiry Heavy

New York, Dec. 2.—It is estimated that the rail tonnages which now are under negotiation for 1920 in this district total about 375,000 tons. Of this total, the New York Central is expected to take 150,000 tons, having cut down its requirements to that figure. Practically as much, it is expected, will be taken by western roads who do their purchasing in New York and the remainder will be taken by the Erie, Lackawanna, New York, Ontario & Western, Lehigh Valley, Central of New Jersey, Delaware & Hudson and smaller roads having their headquarters in this territory. The Erie already has placed 28,000 tons and the New York Central is expected to distribute its tonnage this week.

The orders for tank cars just placed by the Union Tank Car Co. constitute the biggest business which has been closed by one interest at one time in the history of the tank car trade. The Union Tank Car Co. just has added another 1000 cars to its order with the Standard Steel Car Co., making a total of 3500 to be made by the latter interest. As the business now stands, the Standard Steel Car Co. will build 3500 cars, the Pressed Steel Car Co. and the Cambria Steel Co., 750 each, while the Union Tank Car Co. will build 500 cars in its own shops at Lima, O., thus making a total of 5500.

Many Rail Orders Pending

Philadelphia, Dec. 2.—Since the Pennsylvania placed its order for 186,000 tons of rails which may be increased, many other roads have given an idea as to their tonnage needs for 1920. The Reading is expected to buy about 25,000 tons for itself and the Jersey Central. The Baltimore & Ohio is expected to buy 75,000. The Norfolk & Western took bids on 26,000 tons but has reached no decision. The Virginian wants 16,000 to 18,000 tons.

While some makers still are willing to book rails on basis of $47 mill for open-hearth, one mill is asking $57 mill.

Rail Tonnage Still Open

Cleveland, Dec. 2.—The Pere Marquette railroad has reached no decision on 37,000 tons of rails on which it took bids week or 10 days ago.

More Car Inquiry

Chicago, Dec. 2.—The Great Northern railroad is inquiring for 1000 cattle cars requiring about 350 tons of plates and shapes, and 1600 tons of axles. An inquiry is now current for 3000 freight cars requiring 35,000 tons of plates, shapes and bars and 5000 tons of axles. It develops that the contract for 1000 tank cars recently placed in the West and supposed to be a portion of the purchase by the Union Tank Line Co. is for 1000 tank cars for the Gulf Refining Co., which went to the Standard Steel Car Co.

Negotiations for about 300,000 tons of standard steel rails for western railroads are practically complete but the sales are contingent on the roads being turned back to their owners at the end of the year.

Heavy Tonnages

Involved in New Line Pipe Orders— Western Cast Pipe Up

Pittsburgh, Dec. 2.—Several inquiries for line pipe recently have come before makers in this district and one involving 400 miles of 8-inch pipe for delivery next spring has been placed. This came from the White Oil Corp. and is for shipment to the southwest. The National Tube Co. took 225 miles of the order, the Youngstown Sheet & Tube Co. 100 miles and the remainder was scattered among other producers. It is reported that the Standard Oil Co. is planning to connect up its California and northern Texas holdings with an 8-inch pipe line which would involve the purchase of approximately 140,000 tons of pipe. Another inquiry from the southwest calls for 750 miles of 8-inch pipe and in view of the fact that manufacturers also have before them a number of inquiries from the United States of Columbia and Mexico, it is more than likely that before Jan. 1 they will be booked to capacity on this class of tubular goods for the whole of the year. Pressure of inquiries for oil goods are heavy. Although demands for merchant pipe are small in comparison with those for the larger sizes, four to five months is the best delivery that the National Tube Co. is offering on buttweld sizes and other producers are naming even longer dates due to the fact that they have been more seriously affected by the strike.

Premium Prices

Rule on Limited Sales of Semi-finished—Report $50 Billets

Pittsburgh, Dec. 2.—Good demand is noted for billets and sheet bars with buyers prepared to pay substantial premiums in order to obtain tonnages, but actual transactions are much restricted because of the lack of supplies. Makers generally are committed against practically all of their current production and are inclined to meet these obligations before entertaining new inquiries. As nearly as the market can be gaged, sheet bars are quotable at $45, Pittsburgh or Youngstown, and 4 x 4 billets at $42 to $44 with the usual extras for size above and below these dimensions. It is reported that one steel company recently opened its books for first quarter business and named $50 on standard sized billets and on slabs.

Wire rods appear to be quite plentiful, but sales continue to be reported at from $60 to $63 for base grade.

East Sells Still Higher

Philadelphia, Dec. 2.—Sales of billets and slabs the past week in this district apparently totaled more than 15,000 tons. Rerolled billets brought $48 to $50 Pittsburgh or $52 to $54 Philadelphia, slabs brought $50.50 to $52.50 Pittsburgh and forging billets $56 to $60 Pittsburgh. Sales involved mostly rerolling billets and slabs. Large inquiries for rerolling billets are before trade as are also a number of moderate sized lots of forging billets.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Nov. 26	18.87½	54.25	6.75	7.95	33.00	9.25	42.00
Nov. 27	Holiday	.....	....	....	.....	....	.....
Nov. 28	18.50	54.75	6.75	8.00	33.00	9.25	42.00
Dec. 1	18.00	54.25	6.75	8.20	33.00	9.25	42.00
Dec. 2	18.25	54.25	6.75	8.20	33.00	9.25	42.00

*Future shipment from Singapore.
† American Smelting & Refining Co.'s price.
‡Open market.

NEW YORK, Dec. 2.—The coal crisis, the threat of trouble with Mexico, the steel strike, the erratic movement of foreign exchange, the continued unrest among labor in various trades and districts and the failure of the peace treaty to be ratified constituted conflicting but generally depressing factors which the nonferrous metal markets spent another week in digesting. The lack of goods, abroad and in this country, however, is such that a steady bull force is behind the markets and even the serious obstacles to business at present experienced are not sufficient to stop this force.

The copper market has taken further count of the failure of the peace treaty, on which had been based hopes of renewed large exports of the red metal and copper prices have been pegged lower, until today brought a little reaction and hope, at 18.25c. The lead of the market has passed to the large producers, who have so far departed their recent aloof policy as to develop lower prices than second hands. On Monday electrolytic copper could have been had from large sellers at 18.00c a pound, and possibly a shade lower. Casting copper now is 17.75c to 17.87½c. Lake is 18.50c to 18.62½c. Some second hands have supplies of copper for which they paid more than the current market; these sellers are not now offering freely.

The tin market has been extremely confused by the erratic movements of the markets at London and Singapore. These markets have been chasing each other up, until on Dec. 1 the Singapore price was £299, c.i.f. London. The New York price for Straits has ranged from about 54.00c to 54.50c for spot and futures the past week. Banca was quoted about a quarter cent lower and 99 per cent about half a cent below Straits.

The zinc market recovered still further, on fair inquiry from galvanizers and active demand for export, England, France and Japan being in the market. Producers have not been keen to sell and dealers have been experiencing some little difficulty in obtaining supplies. The market for prime western zinc reached 8.15c to 8.20c East St. Louis, for December and first quarter shipment by Dec. 1, and was firm today at 8.20c.

The lead market was steady at 6.90c, New York basis, for tonnages of more than one carload the past week, held by outside sellers. The leading producer continued to quote 6.75c, New York. The world lead situation continues acute.

The antimony market is unchanged at 9.25c, duty paid, New York.

The price of seamless brass tubing was reduced two cents a pound to 30.50c Dec. 1; seamless copper one cent a pound to 32c base; and today sheet brass was cut one cent to 24.25c, rod to 22.75c, sheet copper 1½ cents to 28.50c, and wire to 21.75c.

Henry Clay Frick

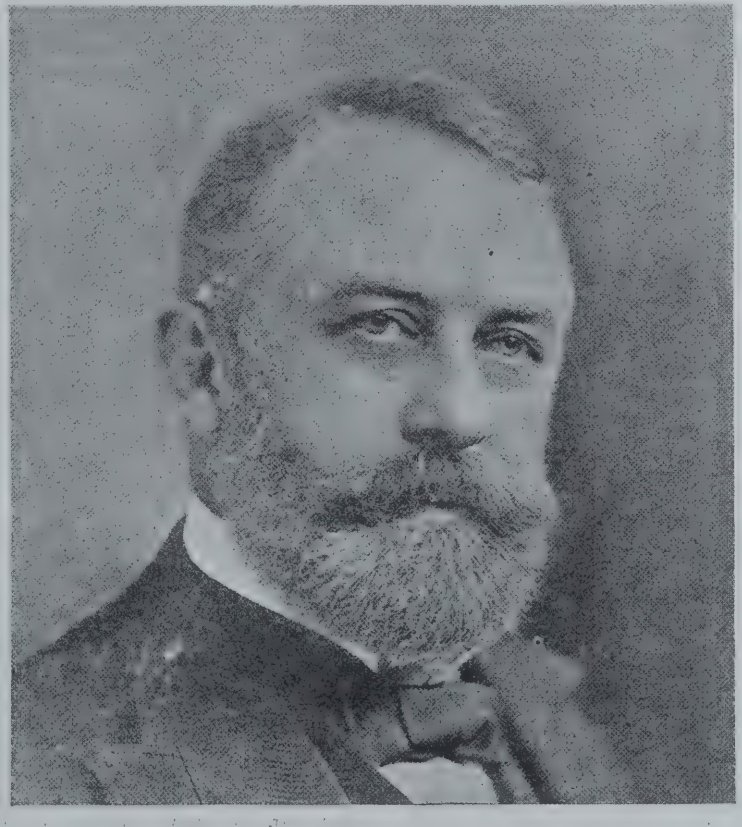
Dec. 19, 1849—Dec. 2, 1919

HENRY CLAY FRICK, whose name and career have been joined with the development of the American iron and steel industry as those of few other men of his generation, died at his home, 1 East Seventieth street, New York City, Dec. 2, from the effects of ptomaine poisoning, from which he had been ill since early in November. Although his illness had been considered serious, his death came as a surprise to his friends and business associates, as he had almost recovered and undoubtedly would have regained his health but for complications which set in. His death was not made public until several hours after he had died. At one time he was the world's largest producer of coke and operated almost 40,000 acres of coal land. Mr. Frick's death brings to a close the life of one of the country's leading business men and great industrial geniuses, who have risen from the ranks through constant effort and untiring energy. He was almost 70 years old, having been born at West Overton, Westmoreland county, Pa., Dec. 19, 1849, the son of John W. and Elizabeth Overholt Frick. His father was a farmer, while his mother was the daughter of Abraham Overholt, a leading miller and distiller of southwestern Pennsylvania at that time. Mr. Frick's early education was received at West Overton, being a pupil at the common school. He later attended for a short term classes at the Chester Military academy, and for a few months was a student at Otterbein university, Westerville, O. When 14 years old, he obtained work in a store at Mt. Pleasant, Pa., receiving small wages and in 1869 he accepted a more attractive position as bookkeeper in the office of his grandfather at Broad Ford, Pa., where his attention was called to the value of coking-coal properties in that section. He interested a number of friends in these deposits and by combining their money a tract of land was bought and 50 coke ovens built.

In the panic of 1873 the price of coke declined but Mr. Frick did not lose faith in the value of what now are the Connellsville coke regions. After considerable deliberation, he appealed to Judge Thomas Mellon, Pittsburgh, from whom he borrowed $20,000, returned to Mount Pleasant and bought out his partners. He then organized the H. C. Frick Coke Co. Immediately after the panic, coke began to advance by leaps and bounds. Not many years later Mr. Frick owned 40,000 acres of coking coal land and 12,000 ovens in Fayette and Westmoreland counties and employed more than 11,000 miners and operators.

Andrew Carnegie purchased the Frick coking-coal properties in 1882, and retained Mr. Frick as manager. It was the purchase of these properties that brought Mr. Frick into direct contact with the iron and steel industry, and despite the fact that he claimed to know little about the manufacture of steel, he became one of the most influential factors in the steel business of the United States. When Mr. Carnegie temporarily retired in 1889, he appointed Mr. Frick active manager of his interests and, with Henry Phipps, Mr. Frick directed the policies of the company. He served as chairman of the board of the Carnegie Bros. & Co., from 1889 to 1892 and later was chairman of the board of managers of the Carnegie Steel Co. He was in active charge of the Carnegie interests until 1900. Much has been written about the so-called "split" between Mr. Carnegie and Mr. Frick, but little ever was

(*Continued page* 1504)



Began Business Life in Country Store.
Foresaw Future of Connellsville Coke.
Started Operations With 50 Ovens.
Finally Owned and Operated 12,000 Ovens.
Became Partner of Andrew Carnegie.
Rounded Out Career as Steel Corp. Power.

Railroad Congestion Hits British

Traffic Troubles Eclipse Coal Shortage as Market Factor and Various Iron and Steel Products Are Scarce—Exports at a Standstill—American Discard Steel is Purchased—Tin Plate Strong

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
16 Regent Street, S. W. I.,
London, Dec. 1.

CONGESTION of the railroads and the shortage of cars and locomotives is the dominating factor in the British iron and steel industry. All iron and steel products are scarce, especially pig iron, billets and sheet bars. The fuel situation has been confused by government price meddling which has lowered the market on household coal and is threatening to advance it on industrial fuel. Nevertheless coal supplies are larger, but this improvement is offset by the railroad congestion.

Pig iron prices are unchanged generally and very firm. The car shortage is compelling many furnaces to pile iron while the melters are becoming short of supply. Middlesboro pig iron exports for November were 11,300 tons compared with 10,300 tons in October.

Thousands of tons of skelp have been placed with Staffordshire mills at £24 ($96.06), which represents an advance of £1 10s ($6.00) due to the inability of consumers to obtain American material. Brisk demand for Welsh tin plate from the continent is current. There is virtually no exporting of British iron and steel materials at present, except pig iron and tin plate.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation Street,
Birmingham, Eng., Nov. 14.

Rate of Exchange—4.13¼

CLEVELAND had a little surprise this week in the arrival in the Tees of a cargo of pig iron, understood to be Luxemburg basic iron, coming by way of Antwerp. At the present time the vessel is discharging at Stockton and is to take back a quantity of Cleveland iron to Antwerp. It appears that fair quantities of this Luxemburg iron have been sent to Scotland, and the prices, when freight is added, work out at about the same price as Cleveland iron, plus the railway charges of 10s 8d ($2.40) per ton. The taking of Continental iron into Cleveland is rather like bringing coals to Newcastle, and though the details are not known, it is believed that this is an isolated sale at a cut price, to get rid of surplus stock. The incident emphasizes the great demand for iron, especially basic, and Cleveland makers are not much disturbed, as they have a great many more orders than they can fill. In fact, refusals of business are constant.

Basic is particularly scarce just now and consumers are disposed to criticize the authorities who, they say, have taken off too many furnaces from basic to make foundry iron. If the scarcity of this class of material continues, more Continental importations are considered very likely. The great trouble is coal scarcity, aggravated by the shortage of trucks. All the blast furnaces could handle a great deal more business, if they could get the coal and the trucks. It appears that railway trucks are coming back from the Continent at the rate of several hundred a week, and it is hoped that this will gradually reduce the railway difficulties. But already the rigors of an early winter, with their usual effect in hampering transport are being experienced.

A lot of foreign business is held up by the confusion over prices. Foreign buyers, especially, dislike the clause requiring them to pay for any increase in railway rates, and they are disposed only to do business on a fixed basis. Consequently, foreign trade is badly hampered, while the rate of exchange tells very heavily against Italy, France, and Belgium, who will not be good customers until the financial situation has greatly improved.

Business in the Midlands is on a strictly moderate scale. Derbyshire and Northamptonshire prices for forge iron are slightly easier. This is in consequence of a few purchases from Cleveland, where an undue proportion of low quality forge is being turned out by the furnaces, chiefly as the result of the inferior fuel. Some of the northern furnaces are getting rather heavy stocks of forge material. The chief factor discouraging business is the uncertainty as to railway rates and the future price of coal. The authorities have announced that a reduction in the price of coal is pending, but no definite decision has been reached. The Midland furnacemen are not greatly disturbed by the importations from Cleveland, as the quality in that district is not very suitable for Midland purposes. The molders' strike still continues, the men being dissatisfied with the arbitrator's recent award of 5s ($1.03) per week. It is remarkable that the demand for foundry material has scarcely been affected, as iron founders everywhere are buying foundry iron wherever possible, and putting it into stock.

At the Birmingham meeting yesterday there was plenty of new business in steel on offer but makers are accepting orders very cautiously, in view of the impossibility of estimating their costs. When the new price of coal and the alterations in railway rates are known, the whole list of finished material prices will be revised. The high price of coal and its great scar-

Current British Prices

	Home consumption	Export prices
SEMIFINISHED STEEL		
Billets, soft steel	15:10:0 to 16:0:0	15:10:0*
Sheet bars	14:10:0	14:10:0*
FINISHED STEEL		
Steel bars, England, ⅝ to 3 inch	18:10:0	18:10:0*
Ship plates, England	18:5:0	18:5:0*
Ship plates, Scotland	21:5:0	21:5:0*
Beams, England	17:10:0	17:10:0*
Beams, Scotland	18:5:0	18:5:0*
Sheets, black, 24 gage	28:0:0	28:0:0*
Sheets, galvanized, 24 gage	37:10:0	37:10:0*
Rails, 60 lbs. and over	16:10:0	16:10:0*
Tinplate, base box, 108 lbs.	2:06:0	2:06:0*
*Export steel prices are nominal.		
PIG IRON		
Hematite, East Coast Mixed Numbers	10:0:0	10:5:0
Hematite, Scotch	10:10:0	10:15:0
Middlesborough Basic	8:5:0	8:10:0
Middlesborough No. 3	8:0:0	8:5:0
No. 3 Foundry, Derby, Leicester, Nottingham	9:0:0	9:5:0
No. 3 Foundry, Northamptonshire	8:08:0	8:13:0
No. 3 Foundry, Staffordshire	9:00:0	9:5:0
Scotch Foundry	9:15:0	10:0:0
Ferromanganese, 80 per cent	25:0:0	23:0:0
COKE		
Midlands furnace	2:10:6	.....
Midlands foundry	3:6:0	.....

city are injuring the trade, causing frequent stoppages of production in the Black country.

A peculiar shipment of American steel this week has attracted some attention. One merchant was offered 2000 tons of billets at £10 ($41.20) which he promptly accepted, and another merchant is negotiating for 5000 tons. One cargo of this steel is reported to have already reached a British port. The term billet appears to be rather a misnomer, as the metal is described by the buyers as discard steel. The sizes are irregular and some of the cuttings will be too bulky for use in any mill accustomed to deal with billets. Moreover, the quality has a very limited range of usefulness. The buyers intend to use it for fencing hoops, builders' hoops, and for reinforced concrete purposes, for which there is a very good demand. The present British prices range between £15 ($62.24) and £16 ($66.36).

The molders' strike is beginning to affect the steel trade very seriously. Many of the steel mills cannot go on much longer without renewals of rolls which come from the heavy iron foundries now on strike. Engineering works in all directions are reducing their production daily for lack of castings. The fading of the American steel strike has been quickly followed by a renewal of quotations for American bars. Some American houses are quoting for next quarter's delivery at £19 17s 6d ($81.19) c.i.f., an advance of about 7s 6d ($1.53) on their former terms. Adding transport charges from the port, the price comes out at about £20 17s 6d ($86) delivered in the Black country. Some offers of Belgian material have been made for which £21 ($86.52) would about cover delivery. These prices take no account of rates of exchange, and it is clear that this business would only be possible where delivery is urgently needed.

Although prices in many branches remain nominal, manufacturers find no difficulty in getting advances. Some users of billets who bought very favorably some time ago have had to pay increased charges on their contracts, bringing the value of the billets practically up to the present figure, as they found this was the only way of getting deliveries.

The tin plate boom in South Wales continues, enabling makers to add a further shilling to the price, making the selling figure 45s 6d ($9.31), as against 44s 6d ($9.24) a week ago and 14s $2.88) before the war. The Welsh makers are overwhelmed with orders, chiefly from the Far East and the Continent, where it has been found impossible to obtain American deliveries on current contracts. Galvanized sheets are dearer, orders having been placed this week at the high figure of £37 ($148.44), a rise of 2s ($0.41) on last week's quotation. For galvanized sheets, as for tin plate, the demand is such that buyers are inclined to place contracts regardless of price.

Priority Revived for Fuel Distribution

Washington, Dec. 2. (By Wire)—The central coal committee at a meeting with the beehive coke producers has decided to curtail production of coal for beehive coke ovens on an average of 25 per cent for all regions. Specific averages for the different beehive coke regions are to be given out later. The estimated output in the Connellsville region is to be cut approximately 65,000 tons weekly as a result of this decision. By-product coke output is not affected since no action on this production has been determined upon as yet. The decision is made applicable to beehive rather than by-product coke because the former production is wasteful while the latter affords a supply of by-products for other industries.

WASHINGTON, Dec. 1.—Fuel Administrator Harry A. Garfield today declared that "as far as practicable until the conditions warrant a change, the distribution of coal will be limited to the first five classes of the priority list," which was promulgated by him Oct. 31. Steel industries and other manufacturers, including coke ovens, are not among first five classes except where engaged in production of materials for war, navy and other government departments, which are second on the priority list. This means that the railroad administration will not supply coal to steel and coke industries except where manufacturers' requests are approved by the government department acting as a party to the contract.

Steel manufacturers have been having trouble in getting coal and unless output of mines increases this week and continues so that production approaches normal, there is no hope in sight.

Mine Situation is Cloudy

Only meager reports have been received today as indicating activities at the mines following the strike negotiations here last week and these reports are so scattered as to leave no clear idea of what if any improvement is being made. Manufacturers in the east where coal supply is said to have been better than elsewhere during the strike, report dwindling supplies and except for the production of steel for the government, mills likely will be forced greatly to curtail operations if not to shut down entirely.

Mr. Garfield's statement while not actually in the form of an order so places the burden upon the railroad administration that it has the effect of an order. The statement follows in full:

Since it is necessary that coal shall be used only for essential purposes, public utilities consuming coal should discontinue to furnish power, heat and light to nonessential industries and should only consume sufficient coal to produce enough light, power and heat to meet the actual urgent needs of the people. Advertising signs and displays of various kinds necessitating the use of coal should be curtailed and no coal should be distributed for such purposes. Pursuant to this policy I have requested the railroad administration in the distribution of coal now or hereafter in its possession to limit distribution to these essential and urgent uses, as far as practicable and until the conditions warrant a change, the distribution of coal will be limited to the first five classes of the priority list. Retail dealers who distribute coal for household requirements, hotels, buildings, hospitals, etc., should take every precaution to see that coal only is delivered where it is absolutely required and then only in such limited quantities that the supply may be distributed widely and prevent suffering.

The state and other local authorities can materially aid in inspecting and supervising such distribution by retail dealers and the United States government will be glad to leave the supervision and control of such distribution by retail dealers entirely to any state, county or municipality which may make provision therefore. The distribution to the retail dealers must necessarily be administered by the railroad administration in pursuance of the orders already made by the United States Fuel Administration in carrying out the priorities which have been prescribed under the Lever act.

Pig Iron Output Gains Rapidly

November Blast Furnace Statistics Show 35 Stacks Were Relighted During the Month, 30 of Which Were Steel Works Furnaces—Daily Production Shows Increase of 32 Per Cent

PRODUCTION of coke and anthracite pig iron, which was seriously retarded by the recent steel strike, is climbing to its normal output rapidly as shown by the blast furnace figures compiled for November. Although the total tonnage and the average daily tonnage fall below

AVERAGE DAILY PRODUCTION

	1919	1918	1917	1916	1915
Jan.	106,654	77,523	101,930	102,319	51,323
Feb.	105,270	82,794	94,641	106,157	59,521
March	99,614	103,548	105,026	107,343	66,009
April	82,479	109,112	110,936	107,517	70,484
May	67,991	111,351	110,119	108,535	72,747
June	70,467	110,538	108,675	107,127	78,998
July	78,200	109,954	107,659	103,907	82,687
Aug.	88,453	108,983	104,483	103,156	89,510
Sept.	82,692	113,774	104,691	106,935	94,478
Oct.	60,142	112,335	106,332	113,167	100,656
Nov.	79,377	111,595	106,620	110,593	101,174
Dec.	.....	110,602	93,077	102,715	103,278
Av.	83,758	105,293	104,562	106,610	81,022

the same figures for August and September, which was a highly productive month in spite of strike disturbances during the last few days, the rapid recovery is marked by the fact that at the close of November 251 stacks were in blast, only 15 less than were in blast on Aug. 31.

The total output in November was 2,381,327 gross tons, a gain of 516,903 tons over the October figure of 1,864,424 tons. Reduced to a daily basis, 79,377 tons was the average per day during November while the previous month averaged only 60,140 tons. The difference is 19,237 tons. The gain of November represents 32 per cent, thus carrying the figure to a safe distance from the October average which was the lowest since February, 1915. With this rate of gain indicated production during the present month should easily pass the September figure and possibly the August total but it is feared that the coal strike may offer complications.

Steel works or nonmerchant stacks produced a total of 1,716,448 tons compared with 1,269,667 tons in October, the gain being 446,781 tons. On a daily basis, the November output shows an average of 57,214 tons per day, 16,257 tons greater than the October average of 40,957 tons. The gain in steel works pig iron capacity amounted to 39.7 per cent and is indicative of the rate at which the steel industry recuperated. Merchant production after better than holding its own during October showed improvement during November. The merchant output was 644,189 tons, an increase of 69,670 tons over October production of 574,519 tons. The average daily output was 21,473 tons compared with 18,533 tons during the previous month. The gain was 2940 tons and amounted to 15.9 per cent.

Active stacks in blast on Nov. 30 numbered 251, a gain of 35 stacks over the 216 in blast on Oct. 31. Again significant of the recuperation of the steel industry is the fact that 30 stacks of the total gain were steel works stacks. Thirty-two stacks of this class were blown in and only two were put out of blast, making a net gain of 30. Of the merchant class, nine stacks were blown in and four were blown out or banked, making a net gain of five.

Spiegeleisen production with 4500 tons shows a loss of 574 tons from the 5074 tons made in October. Ferro production, however, showed an improvement, the November total being 16,190 tons, a gain of 1026 tons over the October figure of 15,164 tons.

Death of H. C. Frick

(*Concluded from Page* 1501)

known of the exact nature of the differences between these two business masters. It appears, however, that they were too unlike in business aims, methods and ideas, to be associates for a great length of time, and reports indicate that Mr. Frick left the company when it was reorganized. Apparently realizing he was in a position to wield considerable financial power, Mr. Frick negotiated to buy out Mr. Carnegie, from whom he obtained a 90-day option. He failed, however, having been unsuccessful in securing the necessary funds to complete the purchase. Mr. Frick later appealed to J. P. Morgan, who with a number of associates finally bought out Mr. Carnegie and merged the Carnegie Steel Co. with the United States Steel Corp.

At the time of Mr. Frick's death, he was a director of the Steel corporation having served in this capacity since the organization of that enterprise. Likewise he was a member of the finance committee, the controlling body of the Steel corporation management.

MONTHLY PRODUCTION

	1919	1918	1917
January	3,306,279	2,403,227	3,159,839
February	2,947,555	2,318,242	2,649,935
March	3,088,023	3,209,996	3,255,813
April	2,474,374	3,273,355	3,328,061
May	2,107,729	3,451,884	3,413,677
June	2,114,028	3,316,148	3,260,234
Total 1st half.	16,037,988	17,972,852	19,067,559
July	2,424,212	3,408,584	3,337,442
August	2,742,081	3,378,479	3,238,970
September	2,480,790	3,413,223	3,140,742
October	1,864,424	3,482,392	3,296,286
November	2,381,327	3,347,844	3,198,597
Total 11 months	27,766,664	35,003,374	35,279,596
December	.....	3,434,114	2,885,380
Total 2d half..	.....	20,464,636	19,097,417
Grand total..	27,766,664	38,437,488	38,164,976

NOVEMBER PIG IRON

States	No. of Stacks	No. in blast last day of month: Nov.	Oct.	Total tonnage made: Merchant	Nonmerchant	Totals: Nov.	Oct.
Pennsylvania	160	112	97	215,818	859,078	1,074,896	959,642
Ohio	79	48	33	97,447	356,075	453,522	257,376
Alabama	45	24	25	111,123	84,073	195,196	209,944
Virginia	19	6	6	22,654	.....	22,654	21,572
New York	28	16	13	66,659	64,278	130,937	96,012
New Jersey	5	1	1	5,000	.....	5,000	5,340
Illinois	25	11	10	23,819	158,396	182,215	87,790
Colorado	6	0	0				
Indiana	16	11	12	42,642	173,224	215,866	130,248
Maryland	4	4	3				
Wisconsin	6	3	3				
Kentucky	7	4	3				
Tennessee	16	5	6	33,667	8,589	42,256	45,023
West Virginia	5	1	1				
Washington	1	0	0				
Georgia	2	0	0				
Texas	1	0	0				
Minnesota	3	3	2	25,360	12,735	38,095	31,239
Michigan	3	2	1				
Missouri	1	0	0				
Spiegel—All states	..	..	..	.....	.....	4,500	5,074
Ferro—All states	..	..	..	.....	.....	16,190	15,164
Totals	432	251	216	644,189	1,716,448	2,381,327	1,864,424

Fuel Rules Foreign Steelmaking

Basic Bessemer Process Generally Employed Because of Cost of Fuel and Lack of Sufficient Amount of Scrap for Open Hearth—Electric Drive Favored Except for Blooming Mills

IN THE accompanying article, which is the third of a series based upon information found in the report of the commission appointed by the British minister of munitions to visit steel works in France, Belgium, Luxemburg and Germany, gives an idea of the present development of the steelmaking and rolling equipment of the iron and steel industry in those countries. The entire report was summarized in the Sept. 18 issue of THE IRON TRADE REVIEW, *following the receipt of the first copy of the report to reach this country. The second article, which analyzed German iron practice appeared in the Oct. 23 issue.*

The most noticeable difference between steel practice in the districts visited by the commission and that in the United States, is in the melting process employed. In Europe most of the plants are of the basic Bessemer type, while in this country the open-hearth furnace predominates. Although steelmakers claim that with the ore available and under the conditions existing in Europe, the basic Bessemer process is preferable, still a slight tendency to adopt the open-hearth was noticeable during the war. The fact that the steel output of Germany and England exceeded the production of pig iron in those countries in 1914 and 1916, respectively, a development which took place in the United States as early as 1911, indicates that there is a tendency to use more scrap and that open-hearth is used more extensively than before. Germany, it is pointed out, may adopt the open hearth process more generally.

The rolling mills in the districts visited seem to be well laid out and equipped with modern machinery. In most cases the electric drive seems to be used for roughing and finishing mill rolls but in only a few cases have electric motors been applied to blooming mills.

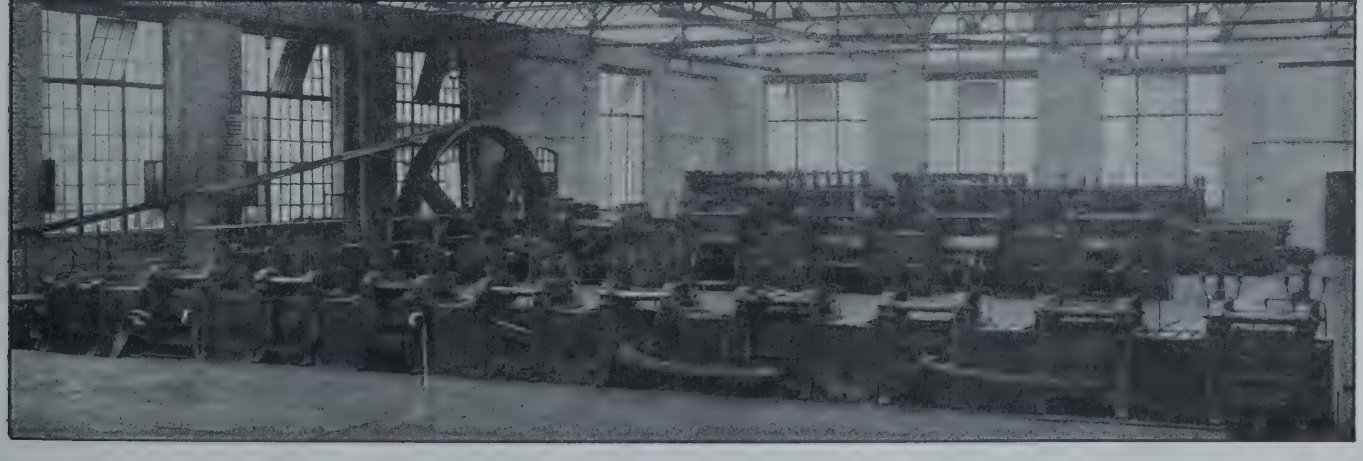
THAT the basic bessemer process of steelmaking predominates in Europe is clearly indicated by the fact that of the more than 200 steel furnaces in plants visited, 123 were basic-lined bessemer convertors. Of the remainder, 67 were basic-lined open hearths, three were acid-lined open hearths and about a dozen were electric furnaces. In the Lorraine and Saar valley districts, the ratio of converters to open-hearth furnaces was 54 to 25, while in the Cologne district of Germany only 10 bessemer units were mentioned as compared with 23 open hearths. In Luxemburg, including Longwy, 30 converters and 10 open hearths were noted. Almost the same relation existed in Belgium where the count was 28 bessemer and 12 open-hearth furnaces.

From this information it is evident that in the Lorraine, Luxemburg and Belgium districts, the basic bessemer process is firmly intrenched, but that in the limited area visited in Germany, the open hearth seems to find favor. In one of the plants near Cologne, four 80-ton tilting basic open hearth units were installed during the war. This, coupled with the fact that the only acid furnaces noticed by the commission were in this district, gives rise to the question as to whether or not Germany is on the verge of more generally adopting the open hearth process. It will be remembered that soon after bessemer practice began to decline in America, the annual output of steel increased and in five years passed the output of pig iron. In Germany, this change took place in 1914, as shown in the chart appearing elsewhere in this article.

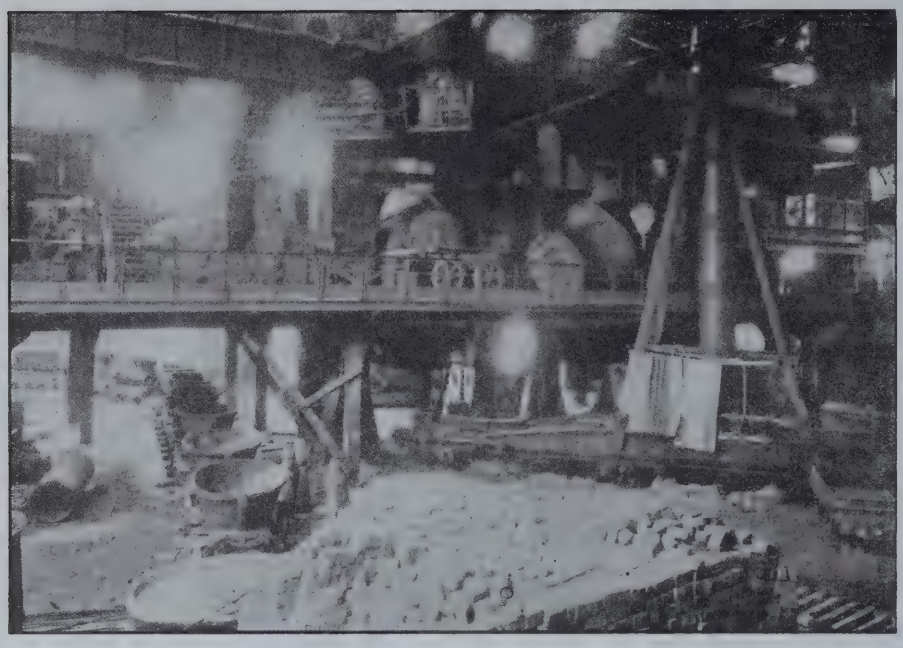
Several reasons are advanced by European steelmakers for the large proportion of bessemer converters employed. It is pointed out that with the present practice in Lorraine, the average number of blows per 12-hour shift is 30 whereas the normal number of heats from an open hearth is three or four per day of 24 hours. The high cost of producer gas and the absence of scrap are factors which also influence steelmakers in their choice of methods.

Where open hearth steel furnaces are installed they work with charges containing 75 to 80 per cent of scrap and 25 to 20 per cent of pig iron. Moreover, they attempt to get three or four, and even five tappings per 24 hours, all of which conditions, compare favorably with the average English practice.

The bessemer plant at the Burbach Steel works, near Saarbucken, is typical of those in the Lorraine-Saar valley district. The equipment consists of three 150-ton mixers and five 25-ton converters. At the present time these units are being operated



GUIDE MILL WHICH IS TYPICAL OF LUXEMBURG PRACTICE. THE ROUGHING TRAIN CONSISTS OF FOUR STANDS OF ROLLS AND THE FINISHING TRAIN NINE STANDS OF ROLLS



BESSEMER DEPARTMENT IN A LARGE BELGIAN STEEL PLANT. TRANSFER LADLE CRANE IS OPERATED HYDRAULICALLY

slowly, 30 minutes being taken for the fore blow and 1½ minutes for the after blow. A tar-fired furnace and a 5-ton electric furnace are employed for melting ferromanganese. The converters are blown by a 4200-horsepower Nurnberg engine capable of blowing up to three atmospheres per square inch.

Use Anthracite in Ladle

With the object of saving as much ferromanganese as possible during the war, about 50 pounds of anthracite was added to the steel ladle after the bottom had been covered with steel. After reaction had subsided and the metal deoxidized the manganese was added. It is stated that 18 per cent of ferromanganese was saved by this expedient. At the present time a mixture of ferromanganese and spiegel is used, the mixture containing about 20 per cent of manganese.

At the Adolf Emil Hutte works, Esch-Beles, Luxemburg, the following reasons were given for the preference of the basic bessemer prices in continental Europe: First, the amount of gas required in open-hearth furnaces necessitates larger quantities of coal being transported long distances by rail; second, the number of men per ton of steel made is greater; and third, the Lorraine ore is sufficiently high in phosphorus to furnish the necessary heat in blowing and to yield a marketable slag for fertilizing purposes.

In one German works visited by the commission all of the steel was being made in fixed open-hearth furnaces. The equipment of this plant consists of three 15-ton acid-lined units; and one 50-ton, four 40-ton, one 30-ton and three 15-ton basic furnaces. The pig iron comes from furnaces at Wissen, on the Sieg, and contains about 1 per cent of manganese and from 0.2 to 0.3 per cent of phosphorus. The charge for the larger furnace consists of 70 per cent scrap, 25 per cent pig iron and 5 per cent iron containing from 2 to 6 per cent manganese. The number of charges per furnace in a week of six full working days varies between 20 and 24. Two men are employed on the charging side and one man on the tapping side of each pair of furnaces.

Open Hearth Used for H. E. Shell Steel

According to the report of the commission, there is but little doubt that nearly all of the high explosive shell steel was made in open-hearth furnaces and that basic bessemer steel was rolled down for sections, light rails, wire rods, reinforcement bars and other materials used in the field. It was said that the Burbach plant was the only one in which satisfactory steel rounds for high explosive shells were made from basic bessemer steel without a heavy percentage of rejections. At Volklingen in the Saar valley three small basic open-hearth furnaces were erected during the war for the express purpose of making high explosive shell steel. About 1000 tons per week were produced.

It is possible that the wartime use of the open hearth process may exert some influence in the selection of steelmaking units for new plants. The extensions contemplated at the steel works at Rombas, France, include one 1200-ton and one 500-ton mixer, six 30-ton converters and four 60-ton tilting open-hearth furnaces. Another new open hearth melting plant is under construction at Neunkirchen near Saarbrucken. The three 35-ton furnaces in this works are now nearing completion. They were specially designed by the works engineers and will be operated on gas from nine Poetter-type producers.

Electric Furnaces Built During War

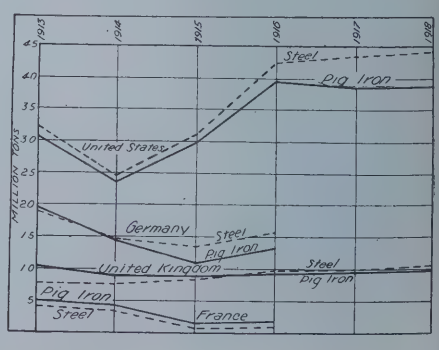
Comparatively few electric furnaces were noticed by the commission in comparison with other types. In several instances, electric units were installed during the war for the purpose of making steel for high explosive shells. One of these, a 12-ton furnace at Neunkirchen, averaged 60 tons per 24 hours and during 1918 produced about 15,000 tons of this material. Molten converter steel was charged in this furnace.

The electric steel equipment at the Thyssen works, Hagondange, Lorraine, in addition to a small unit for

Steel Output Overtake

ACCORDING to the accompanying chart, which was plotted from the figures shown in the table the steel output overtook and passed the output of pig iron in Germany in 1914. *In* 1916 *the same change took place in England, while in France during a four-year period the production of pig iron exceeded that of steel by a fairly uniform margin.*

These comparisons are interesting in that the changes which took place in Germany in 1914 *and the United Kingdom in* 1916 *correspond to the experience of the American steel industry in* 1911, *when the annual steel output first surpassed that of pig iron. It is quite probable that the rapid development of the open-hearth furnace, with the accompanying increased use of scrap, caused the change to occur earlier in the United States than in Europe.*



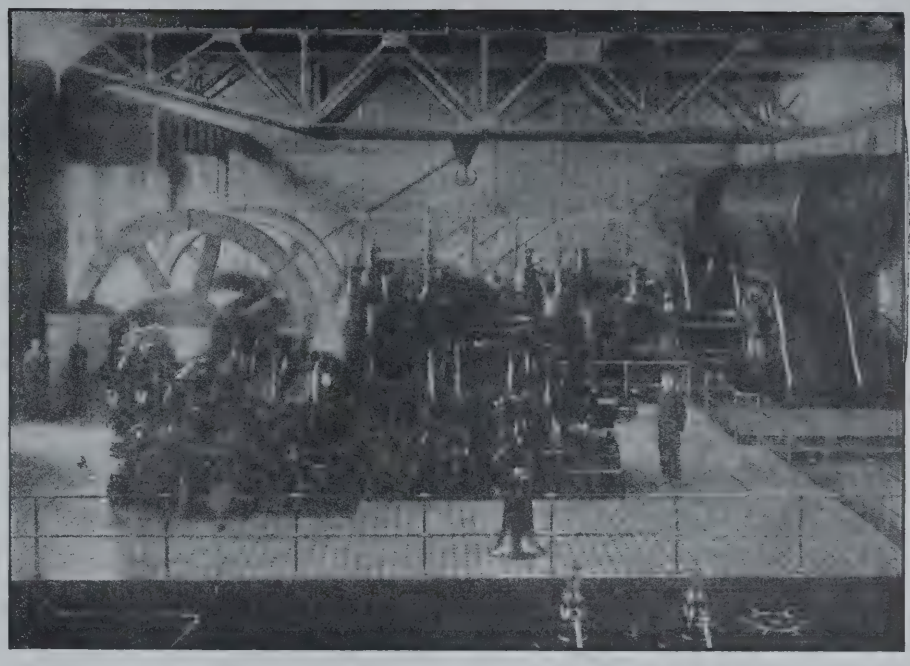
COMPARISON OF IRON AND STEEL OUPUT

melting ferromanganese, consists of one 10-ton and one 15-ton heroult furnace. The large furnace is arranged to handle metal from either the converter or open-hearth plants, a plan similar to that employed by the Illinois Steel Co. at South Chicago. The time of working the charge was said to be 90 minutes with a current consumption of 200 units per ton.

Crucible Process Discontinued

Indications point to the fact that in the districts visited, electric furnaces are fast superseding crucible furnaces in the manufacture of tool steel. At the plant of the Arbed company, Dommeldange, Luxemburg, basic pig iron is first melted in two open hearth tilting furnaces of the Wellman-type and the metal is transferred to four 3½-ton Rochling-Rodenhauser electric furnaces. Special steels are made for castings and for ingots, which afterwards are forged to various sizes of tool steel.

The Stahlwerk Becker Co., Willich, Germany, specialists in making alloy, high quality carbon steel, high-speed tools, ball bearings and thin armor plate has discontinued the manufacture of crucible steel and now is employing the electric furnace. Most of the ingots are group cast from the bottom, but for the best steels top casting is adopted, the molds having the wide end up and a "dozzle" being introduced when the mold is nearly full. These molds are circular in section and the skins of all the ingots are turned off in lathes before rolling or forging. Most of the ingots weigh about 200 pounds.



COMPOUND, GAS-DRIVEN BLOWING ENGINES WHICH SUPPLY THE AIR FOR THE BLAST FURNACES AT A LARGE BELGIAN PLANT

Rolling Mills Well Arranged

According to the report, the layout and equipment in nearly all the steel works are excellent. Many useful devices were seen and some of the mills are very economical and give large outputs. Electrical cranes and labor saving devices are employed wherever possible.

Duplicate mills have been installed in many plants to insure that time is not lost while changing rolls. Some cogging mills are provided with duplicate drive, to preserve the continuity of work in case of one engine breaks down at any time, and also to secure regularity of output in the bessemer shop, where there are many unheated soaking pits, which are only suitable for a continuous and regular flow of hot ingots from the bessemer shop to the blooming mills.

Those rolling mills which are steam driven are nearly all equipped with reversing and continuous running compound engines, and the most modern reversing engines are three crank.

The mechanical appliances for handling the piece at the cogging mill were practically identical at all works and consist of long heavy moving guides operated simultaneously on both sides of the rolls, each guide being kept in alignment with its fellow guide on the opposite side of the mill. On the side nearest the soaking pits one guide is provided with tilting fingers for turning the bloom over. The advantage of this arrangement over the ordinary type of manipulator found in England is that the bloom is kept straight the whole time during rolling, the guides being worked so close to the piece that bending towards the cooler side in the case of an ingot unevenly heated is impossible. As a result, cogging is performed rapidly while the piece is at a good heat, with a corresponding reduction in the power required per ton of output. A similar manipulator has just been built by Davy Bros., Sheffield, for a new cogging mill in the north of England, and will be the first of its type to be used in the United Kingdom.

Cranes Used Extensively

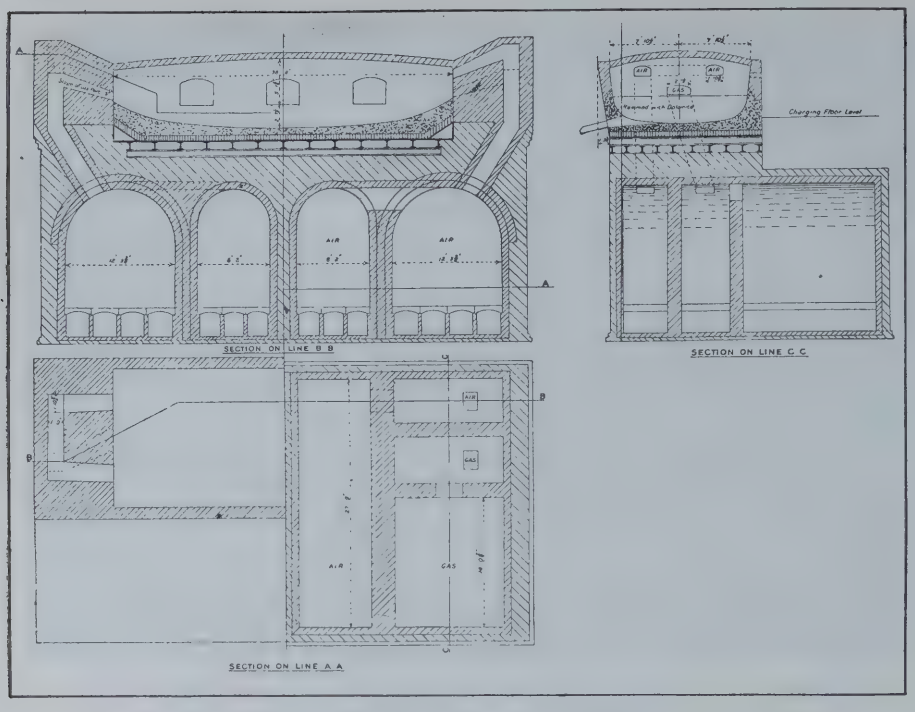
The mill housings are of heavy construction and modern appliances are installed for satisfactory economical finishing of products, including modified Morgan hot banks, straightening, sawing and shearing machines. Overhead cranes are provided over hot banks, and extend out over the covered stock yard and open stock yard beyond, so as to obviate unnecessary handling. This reduces handling costs.

Lead Held by Pig Iron

PRODUCTION OF PIG IRON AND STEEL

Year		Pig iron	Steel
1913	United States	30,966,152	32,321,618
	United Kingdom	10,260,315	7,663,876
	Germany	19,291,920	18,958,819
	France	5,207,197	4,686,866
1914	United States	23,322,244	24,206,276
	United Kingdom	8,923,733	7,835,113
	Germany	14,391,611	14,973,106
	France	4,500,000	3,250,000
1915	United States	29,916,213	32,151,036
	United Kingdom	8,793,659	8,550,015
	Germany	11,789,931	13,258,054
	France	1,300,000	870,000
1916	United States	39,434,797	42,773,680
	United Kingdom	9,047,983	9,196,457
	Germany	13,259,000	16,035,000
	France	1,400,000	1,000,000
1917	United States	38,647,397	43,500,000
	United Kingdom	9,420,254	9,804,079
1918	United States	38,500,000	44,000,000
	United Kingdom	9,782,525	10,411,801

In Lorraine, Belgium, Luxemburg and Germany basic bessemer furnaces are used more extensively than open-hearth units because of the high cost of imported fuel and the absence of scrap iron and steel. Where basic open-hearth furnaces have been installed, the output is small compared with that of the basic converters and the works depend largely upon local mill scrap for the necessary charges. In Germany, however, open-hearth plants were more in evidence. The commission reports that open hearth steel seemed to be used for high explosive shell steel because rejections were excessive when the rounds were made from bessemer metal.



SECTIONAL VIEW OF A TYPICAL OPEN-HEARTH FURNACE IN THE SAAR VALLEY

In most of the mills which have been installed recently the electric drives having been provided for practically all of the roughing and finishing mills. Where this practice is followed, it is customary to run one or a number of turbo generators parallel with the gas engines for generalization of power on account of the great flexibility of the turbine and its capacity for taking varying peak loads more readily. At Hagondange 36.45 per cent of the total generating capacity is by turbo-generator which, according to the report, is a fact tending to confirm the opinion expressed at other works visited, that electric drive for large reversing mills, particularly blooming mills, is not as economical in practice as in theory.

Steam engines were seldom seen except in connection with blooming and heavy section mills. Wherever they are used, however, surplus blast furnace gas is generally utilized to generate the steam in the boilers which are installed in connection with these rolling mill engines. In a few cases hand-fired Lancashire boilers were seen.

The larger part of the production of mills in the Lorraine and Saar valley districts consists of ordinary merchant steel sold without guarantee or test. The production includes plates, sheets, light and heavy rails, steel sleepers, hoops, wire rods, joists, channels, tees, angles, flats, bars, etc. The number of plate mills is comparatively small. A new tin plate mill under construction at Dillingen was all but completed at the time of the commission's visit. All the material is cold straightened before being placed in stock, no extra charge being made for this service. Apparently the steel works execute from stock a large number of orders which they receive, by this means insuring prompt delivery to their customers and eliminating the merchant. Acting as their own warehousemen they can readily execute orders for any number or size, presumably securing the merchant's profit for themselves.

It is pointed out that in England steel making and stock hold are separate branches of the business but that in Lorraine especially they are carried on by the same concern and judging from the large stock held the combination appears to be regarded as profitable.

Nearly every place visited has a slag brick works. The bricks are made in machine presses, each press producing about 10,000 ordinary bricks per day. The slag is granulated by being run while molten into water. About 5 per cent of lime is added to this granulated slag to act as a binder, and the mixture remains for 24 hours before being pressed. After pressing the bricks are simply air-dried. They are in large demand in the district for building purposes. Before the war the sale price at the works was about 18 to 20 marks per 1000; while today it is 60 to 65 francs per 1000. Some of the steel works have a slag cement works attached.

Hints on Packing

Manufacturers and exporters to the Near East will be interested in the following remarks submitted by Major Kennard, the Federation of British Industries commissioner for the Near East, in connection with the packing of goods exported to that district.

There are always a certain number of tin plates to the box according to size and weight of sheets ordered. These boxes are invariably thin. Owing to the weight of the contents

Operating Costs Soar in Germany

PRODUCTION AND COSTS OF STEEL AND FINISHED MATERIAL

THE ADOLF EMIL WORKS OF THE GELSENKIRCHENER BERGWERKS-AKTIEN-GESELLSCHAFT AT ESCH-BELLES IN LUXEMBURG

(*Figures taken by the Commission from the Company's Cost Books*)

Steelworks

(*Conversion of Pig Iron to Steel*)

	1913 Average per month	1918 Average of June and August
Production	30,060 tons	31,084 tons
	Kilograms	Kilograms
Materials used per ton of ingots:—		
Luxemburg pig	1107	1073
Spiegel	2	7
Ferromanganese	5	7
Steel scrap	10	57
Total	1124	1144
Less scrap recovered	6	4
Net total of metals	1118	1140
Coke	6	
Coal	3	
	Marks per ton	Marks per ton
Costs:		
Wages	1.19	2.64
Material	0.21	1.64
Spare parts (molds), etc.)	0.66	1.89
Repairs, etc.	0.12	0.45
Electricity, etc.	0.37	1.22
Overhead charges	0.77	1.50
Refractories:		
(a) acid	0.21	0.66
(b) basic	0.46	1.15
Laboratory	0.10	0.34
Lime	2.14	5.90
Gas and water	0.07	1.50
Total	6.43	18.89

Rolling Mills

(*Conversion of Ingots to Rolled Sections*)

	1913 Average per month	1918 Average of June and August
Production	24,581 tons	24,944 tons
	Kilograms per ton	Kilograms per ton
Consumption of ingots per ton of rolled section	1208	1248
Waste produced for scrap	165	186
Net	1043	1062
Consumption of coal and coke	17	18
	Marks per ton	Marks per ton
Costs (Mks. per ton of finished material)—		
Finishing after rolling	3.03	8.31
Roll turning—		
(a) Replacement	0.29	0.42
(b) New rolls	0.04	0.09
Consumption of rolls owing to wear, breakages, etc.—		
(a) Replacement	0.31	1.77
(b) New rolls	0.01	....
Wages and salaries	1.87	5.01
Materials (lubricants, etc.)	0.67	4.39
Spare parts	0.81	0.68
Repairs	0.37	0.93
Electricity, etc.	0.90	2.84
Administrative charges	1.08	2.25
Overhead charges	0.83	1.57
Alterations and extensions to plant	0.22	....
Gas and water	0.23	0.36
Total	10.66	28.62

they usually arrive broken, and it is not unusual for them to be discharged loose, which leads to damage often and to pilfering invariably. It cannot be too strongly recommended that these boxes be iron-hooped. The extra charge for iron-hooping should be quoted originally and charged on invoice, or, better still, should invariably be allowed for when c.i.f. price is quoted.

The usual packing of bedsteads by British makers is satisfactory. It is most important, however, to note that all brass parts should be removed from the bedsteads and packed in separate cases, for if the brass parts are attached to the beds, entry dues (which are governed by weight) are charged on the full weight of the bedsteads at the full rate for brass, which is much higher than that for iron. Thus a saving is effected in handling quantities of these goods.

Workmen Demanding Self-Expression

BY CYRUS McCORMICK JR.

IT HAS been suggested that the difficulties under which employers and employes are operating are due to the nervous tension resulting from the war; to the high cost of living; to the fear of unemployment; to insufficient wages; to desire to share in the profits of industry; to a revolt against the old order of things whatever that may have been, etc. Each critic has, however, been more or less in agreement that the war taught nations once and for all time that individual workmen must be regarded as human beings.

In agreement with many critics of the present industrial situation, I believe that the most significant feature in labor conditions of the day is the expressed desire of labor to share in the management of business. This desire has taken on various forms in different parts of the world. In Russia we see it as Bolshevism, which is nothing more or less than a practical application of the doctrines put forth some years ago by the I. W. W. in this country.

It has been said that 65 per cent of the strikes which have taken place in Central Europe since the war are of purely syndicalist origin. In this country we have had demand after demand cataloged generally under the term of "better conditions." In England we have seen a complete disruption of industry from which has grown up the so-called Whitley plan and, more recently, the ever-widening clamor for nationalization of industry.

The underlying significance of all these movements is the final realization that the relations of employers and employes must from now on be formed on something besides a cash basis. The workman is as interested as ever in his wages and in his hours, but he is asking for more. Sometimes the demands are not well understood even by those putting them forward. What the workman really wants is self-expression. They are asking the right to discuss and adjust matters affecting their own interests.

Many employers in this country, sensing this situation, are admitting the right of their employes to discuss in joint conference, matters affecting the mutual interests of capital and labor. This, of course, has involved a recognition of the principle of collective bargaining. Economists of the older school tell us that collective bargaining is detrimental to the best interests of the employes and that any artificial interference with wages will result in an artificial attempt to regulate prices. They claim that values are regulated by economic laws. This, of course, is true to a certain extent, but on the other hand it can be argued that collective bargaining is an aid to humanity and that it allows other economic laws to operate which might otherwise be held in abeyance.

Favor Collective Bargaining

Not many years ago the doctrine of *caveat emptor* ruled every economic transaction and the business world was permeated with the ethics of David Harum. Just as that doctrine has vanished, so now is vanishing the fear of collective bargaining, and we find ourselves not only admitting the right of workmen to participate in the determination of working conditions but also discussing how this right may be most surely exercised. The method finding most favor in this country can perhaps best be classified by simply calling it employe representation.

There appear to be four main reasons why employers are seriously considering the adoption of employe representation.

Syndicalism has made such rapid strides in eastern Europe that some men, not recognizing the fundamental solidarity of the American people are afraid that this country is about to deliver itself to bolshevism; therefore they are seeking to head off this unrestrained development and to provide a saner method by which the legitimate desires of the workmen for self-expression may be granted without at the same time completely ruining our present industrial fabric.

There is a close parallel existing between the movement in favor of employe representation and the growth of democratic government.

It is easy to point a finger of scorn at our present civilization and condemn it as being overly materialistic. Metaphysicians from Aristotle to the present day have argued against materialism. Phrasing their thoughts in the vernacular and adapting their theories to modern times we may say that we must find some new cause for our existence beside the worship of the almighty dollar. The joy of doing things rightly will in the end give men a more real satisfaction than the material results of their efforts. Applying metaphysics to employe representation, we may describe it as a concrete effort to introduce moral right into industry.

Looked at superficially, employe representation is expensive. It costs a certain amount of money to pay the added salaries, to do the clerical work involved, and the like; but those employers who have had the best experience say that it is really economical and efficient. They believe it pays; they believe the added interest a man must have in his work when he knows he has a share in the control of it, will go a great way toward bringing about the final efficiency of production which must be secured if the present pace of manufacturing is to be maintained. Scientific management has just one more step to take. It must become endowed with soul in order to become more efficient; and its savings must depend not upon force or will, but upon the consent of the governed. The war has proven that democratic society, while superficially less efficient than autocracy, is in the end far stronger in the face of the most awful competition human ingenuity can devise.

From a paper presented at the eighth annual congress of the National Safety council, Cleveland, Oct. 1. The author, Cyrus McCormick Jr., is works manager of the International Harvester Co., Chicago.

Applying Depreciation Equitably

Depreciation is Operating Expense Which Must be Systematically Handled in Accordance With Preconceived Plan—Present High Costs May Affect Rates on New Industrial Buildings and Equipment

BY D. C. LOWLES

PROBABLY no subject within the limits of modern accounting practice is worthy of more study and capable or more contradictory interpretations than that of depreciation. No item of costs has received greater attention than has this in the last few years and upon no item has there been placed so many varying values.

In general, the items of capital upon which depreciation should be figured can be grouped under three headings: *First,* plant of permanent character including land and buildings, with the usual engineering and legal charges incidental to construction and title; *second,* equipment of all kinds, machinery, tools, appliances, furniture, autos, etc., necessary to production or to business operation; and *third,* capitalized general expenditures such as those for legal expenses, patents, development, plans and processes, that have a continuing value considerably beyond the fiscal period in which they were incurred.

All of these items decline in value as time goes on due to the operation of various causes and it is extremely important therefore that proper provision be made in the operating accounts for such value losses and that all costs properly include a fair proportion of these "value" expenditures.

Is an Operating Expense

Authorities on accounting are very emphatic in maintaining that depreciation is an operating expense. One accounting expert, commenting on this phase of the problem, declares that often statements in published reports show that a corporation has realized net profits amounting to a certain sum, and that out of these profits an allowance for depreciation has been made. It would be just as logical to state that a pig iron manufacturer had earned a net profit of $100,000 and that out of the $100,000 there had been set aside $20,000 to pay for the ore consumed in the manufacture of the product.

It is obvious that the profit or loss of an undertaking for any period cannot be simply the difference between the receipts and expenditures for that period, neither can it be assumed that the current value of plant and equipment will be always equal to the amount expended upon. Depreciation must be considered. There are times of course when entirely extraneous influences may cause fluctuation in the value of fixed assets, but as the actual manufacturing or trading profits are not affected thereby, either way, these fluctuations need not be considered in this connection. Depreciation is altogether distinct from fluctuation and is due to the possession and use of the assets and is therefore part of the cost of operation.

Elements of Depreciation

The principal elements of depreciation follow:

1. Wear and tear due to and varying with the use of the building or equipment. Part of this may be offset by repairs, renewals, etc., but there will always be eventually a diminished efficiency with a consequent decline in value.

2. Physical decay from exposure to the elements, rust or other causes and due often to lack of use or neglect of maintenance and repairs.

3. Accident, usually a very sudden depreciation, in many cases entailing expenditures materially in excess of maintenance and sometimes producing a permanent value loss.

4. Obsolescence caused by improvements in machines and methods necessitating substitution of the plant or equipment with new in order to keep abreast of the times and meet competition.

5. Inadequacy, somewhat allied to obsolescence but due rather to enlargement of business, and increased output, or in the case of motor trucks, freight cars to an increased load requirement.

It is said that obsolescence cannot be foreseen and that any attempt to reduce the contingency to a definite allowance to form part of current costs would defeat its own purpose. A reserve should be created to meet the possibility, but the reserve should be provided for out of profits before stating the surplus applicable to dividends and never as an item of prime cost.

The factors governing the determination of the amount of depreciation include:

1. The cost of asset, whether building, machine, or other item. This may be either the actual cost price or in the case of a transfer of a business or group of assets, its estimated value.

2. Its estimated life, regard being had to its functions and the conditions under which they are performed.

3. The extent and value of repairs and renewals made from time to time.

4. Its value in use or its present earning power, relatively and comparatively, to other like assets used for similar purposes.

5. Its residual value, either as scrap or as an article which, though possibly applicable to other uses, is no longer fit for its original purpose.

Depreciation may be classified as unit depreciation, relating to individual machines, buildings, motor trucks or other units of plant; group depreciation, covering groups of like units such as office furniture, machines of various kinds in one or more groups, permanent tools, trucks, etc.; and composite depreciation which is the resultant effect upon the whole plant of unit or group depreciation. The total depreciation of the plant is therefore the composite depreciation, equal to the sum of the detailed depreciation amounts.

Methods of Applying Depreciation

Absolute accuracy in the determination of depreciation is impossible. The past effects of wear and tear, physical decay, obsolescence and inadequacy can be determined with reasonable accuracy, while the future effects of wear and tear and decay may also be estimated from experience satisfactorily close, and even inadequacy may oftentimes be foreseen, but obsolescence can only be predicted with much uncertainty. Yet given a sufficiently comprehensive grouping of large numbers of plant items the law of averages will apply and it will therefore be possible to establish a reasonable ratio of decline in value.

The methods used in applying depreciation have varied considerabdy, probably the simplest and most easily applied being what is known as the straight line method. This is free from interest or other complications and is simply the application of a standard percentage rate per year to the original or book cost.

A method often used though less frequently is the reducing balance method by which a certain percentage deduction is made from the original cost, each year's percentage being applied to the balance remaining after the previous depreciation amount has been deducted. It is apparent that by this method the asset is never entirely depreciated.

The sinking fund method, which provides for setting aside annual sums of money that will accumulate at compound interest to a certain sum in a given time, is not often used in ordinary business because of the complications involved in the necessary calculations and be-

From a paper presented before a recent meeting of the accounting manager's group, Cleveland chamber of commerce. The author, D. C. Lowles, is auditor, Cleveland Metal Products Co., Cleveland.

cause any kind of a sinking fund is rarely advisable owing to the greater earning power of capital used in the business.

A fourth method and one coming more generally into use for certain classes of equipment is called the unit of production method, by which a certain amount of depreciation is charged off according to the output produced or in the case of autos and trucks according to the miles run or the tonnage carried. Some machines are good for a limited output only and this being known, it is a simple matter to apply the correct depreciation to the product.

There are other methods of depreciation used such as the periodical appraisal, which is good only if the appraisal can be relied upon and if basic values do not fluctuate from one appraisal to another, and the hit and miss method with which all are familiar and which is still in use by many.

Showing Depreciation on the Balance Sheet

Depreciation is usually taken up on the balance sheet by reducing the asset value to show in one figure the net remainder, or by showing the reserve for depreciation as a liability and the asset at full value, or by showing on the asset side, first the full value, then the depreciation deducted as a separate item, with the net asset extended.

All three methods are correct under certain conditions. For all practical purposes it is not necessary to separate the depreciation reserve and where it relates to plant and equipment it is therefore preferably shown by the third method which is standard American practice.

It is when we come to ratio of depreciation that the experts disagree, and this is only natural since every business of industry has its own peculiarities. Even buildings of the same type depreciate differently if used for different purposes and sometimes the rate varies when used for the same purpose but in widely separated localities. Then again land may depreciate rapidly in one place and appreciate in another. Machinery if of standard design and make and readily adaptable to more than one industry has a lower depreciation and a higher second-hand selling value than machinery specially designed for a particular process in one industry and not saleable at all except for scrap. An automobile that is well advertised and made by a large company has a higher second hand value and therefore a lower depreciation rate than an "orphan" or one made by a small company and not well known.

Another factor governing depreciation rates that is of particular importance at this time is that of excess or abnormal costs. It is a question whether a double rate would not be justified in the case of a building for instance which due to abnormal conditions cost far in excess of a reasonable amount. By this I mean the use of a higher rate of depreciation for the first five or 10 years with a normal rate after that time.

Obviously no general rate will apply to buildings as methods of construction, the materials used, the use to which it is to be put, etc., all affect the result. The bureau of internal revenue suggests that the average usable lifetime of a frame building is 25 years, a brick building 35 years, and a stone or steel and concrete building 50 to 100 years. Very few accountants feel safe in adhering strictly to rates based on such averages. While 35 years is a reasonable life for a first class brick building, 25 years seems too long for the average frame structure used for manufacturing purposes, and to project one's imagination 100 years as the estimated life of a steel and concrete building is a difficult task. Generally rates should run on frame buildings about 5 per cent, on brick 3 per cent or where unusual strain or vibration is present not less than 4 per cent, and on the highest type of concrete and steel construction 1½ per cent to 2 per cent.

Equipment varies so materially that no general rate can apply. In the case of machinery for instance so many factors enter into the problem that it seems almost necessary for each machine to carry its own individual rate. The setting of the machine, the solidity of its foundation, the expenditures upon repairs and renewals, the degree of cleanliness and lubrication and the skill of the operator all affect its life and final value. Yet it is not practical, except for very large machines operated as an independent unit, to maintain detailed records and to figure separate depreciation. A grouping for each industry of machines of like kinds and approximately equal life will give entirely satisfactory results.

The rates shown in the accompanying table are indicative only of individual opinion and are subject to all of the variations so far mentioned, and are taken from various authorities. The list obviously is very incomplete, but the individual experience of each manufacturer will readily supply additional information.

Average Rates of Depreciation

	Per cent
Engine, turbines, etc.	3 to 8
Boilers and auxiliaries	3 to 10
Generators	5 to 8
Electrical wiring and cables	4 to 8
Switchboards and instruments	5 to 7
Motors	4 to 8
Piping, steam and water	5 to 7
Light machinery, fast running	7 to 10
Heavy slow moving machinery	5 to 8
Machinery subjected to heavy use, vibration, etc.	10 to 12½
Special machinery for particular processes	10 to 25
Miscellaneous shop appliances and equipment	7 to 10
Dies and special tools (Depending upon the plan followed in charging additional items to this account.)	10 to 20
Furnaces (If all repairs and renewals are charged to operation.)	8 to 15
Motor trucks (Or preferably on a mileage basis as used.)	15 to 25
Automobiles	15 to 25
Wagons	8 to 10
Office machinery, including typewriters, adding machines, etc.	at least 20
Office furniture and fixtures (Or in some cases it is wise to follow the practice of financial institutions and charge all office furniture and equipment to current operation.)	at least 10

Book Review

Development of Iron Ore Into Iron and Steel, by S. C. Dickerhoff Jr.; heavy paper, 15 x 25 inches, price $1, postpaid; blue print, 30 x 50 inches, price $1.50, postpaid; for sale by The Iron Trade Review.

This is an excellent chart which graphically describes the steps in the manufacture of various grades of steel. The author begins with the blast furnace and distributes the product, pig iron, to the open-hearth furnace, the bessemer converter; the electric, puddling and air furnaces; and, the cupola. At this point he discusses the various grades of steel made by each melting process and then outlines the channels into which each particular grade of steel passes for the manufacture of marketable products.

The chart includes a glossary and general notes on pig iron and steel, the latter of which deals with malleable and wrought iron; simple, weld, alloy, ternary, complex, raw, natural, normalized, annealed, hardened, tempered, soft-centered, blister, cold-rolled and high-silicon steels. Under bessemer, electric, open-hearth and crucible steels the numerous products into which these grades of steel are made, are given, followed by practical notes on the individual processes of manufacture. A box in the right-hand corner of the chart includes typical analyses of iron ore, pig iron, wrought iron, billets and sheet bars, tool steel, rails, steel castings, boiler plate and rivet steel, and structural steel for buildings.

Wire is tinned by a process similar to that of hot galvanizing. A method commonly used for preparing wire for tinning is to draw the product with a copper coating, which is made by dissolving blue vitriol in water with a small percentage of free acid. This effects a greater adhesion of the tin.

Studying Strains in Rolling Steel

Economy is Gained by Using Strip as Wide as Possible Consistent With Dimensions of Rolls, Power of Mill and Degree of Uniformity Desired in Thickness of Product

BY ALFRED MUSSO

WHEN a piece of metal is put through the rolls in a rolling mill, its linear dimensions are strained and the whole piece itself is deformed. In other words, the thickness of the piece becomes smaller while its length and width are increased.

Let $ABCD$ in Fig. 1 be the cross-section of a piece of metal as subjected to the pressures P and P_1 normal to the faces shown in cross-section as AB and CD. When the compression is carried beyond the elastic limit of the material, the two faces AB and CD will come closer together as shown by the dotted lines A_1B_1 and C_1D_1, while the two side faces AO and BD will bulge outward as shown by the dotted curved lines A_1C_1 and B_1D_1, and if the forces P and P_1 are still increased the piece ultimately will fail by shearing along its diagonals.

The ultimate behavior of the failing piece is influenced by the structure of the metal itself. In fact, experience shows that ductile metals possessing a homogeneous structure, such as copper, aluminum, etc., will become plastic and flatten down to a disk, while fibrous metals, such as steel, wrought iron, etc., where strength across the grain is much lower than with the grain, are not susceptible of any plastic state at all and will ultimately fail by splitting sideways. However, it is sufficient to regard the piece as shown by Fig. 1 as divided into six pyramids having as a common vertex its pressure center O, and as bases its six faces.

It is obvious that while the compressive forces P and P_1 are tending to telescope into each other along the pressure line PP_1 of the upper and the lower pyramids, the other four pyramids will be pushed outside by the expulsive forces R_1 and R_2 consequently set up by the aforesaid pressures P and P_1. The value of the expulsive forces evidently depends on the two angles AOB and AOC, ordinarily known as the *pressure angle* and the *expulsion angle*, respectively. We will now apply the foregoing considerations to the rolling-mill process, and begin our investigation of the effects of the roll pressure at any point of the surface of the piece.

Fig. 2 represents a cross-section of a

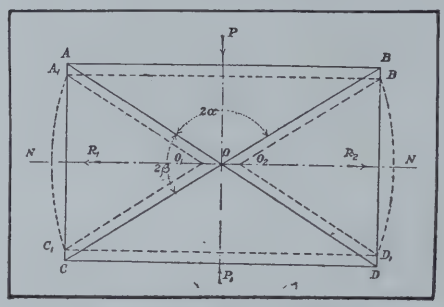


FIG. 1—CROSS-SECTION OF A PIECE OF METAL SUBJECTER TO PRESSURES P AND P

rolling mill through the rolls. NN_1 is the piece of metal going through the rolls C and C_1. Inasmuch as the pressure is exerted radially, it may be considered at any point, say at A, which is the initial point of the contact arc AMB. The pressure P may be resolved into two components, one normal to the piece and the other parallel to its surface, thus $n = P \cos \phi$, normal component and $a = P \sin \phi$, parallel component, ϕ representing the angle ACB, known as the *approach angle*. The directions of the components clearly show that while n is the force which actually compresses the piece, a is the component of the pressure which hinders the piece from entering the rolls, and unless n is larger than a, the rolls will not grip the piece.

The useful limit of ϕ is easily found. The force n is greater than a, and $P \cos \phi$ is greater than $P \sin \phi$. Eliminating P, $\cos \phi$ is greater than $\sin \phi$, and therefore ϕ is less than 45 degrees. The actual value of ϕ for metals is given by $\tan \phi = m$, the coefficient of friction between roll and piece, but for metals m equals approximately 0.577; therefore, ϕ equals $\tan^{-1} 0.577$ or 30 degrees, which according to actual practice is the maximum value of the approach angle for which the rolls will grip the piece.

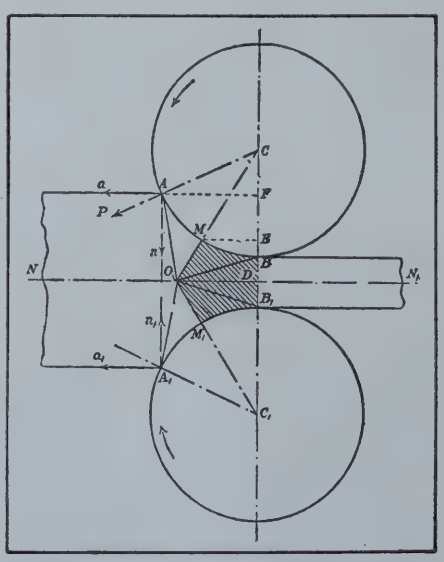


FIG. 2—CROSS-SECTION OF A ROLLING MILL THROUGH THE ROLLS

Let us now deal with the effect of the pressure on the whole arc of contact AB. We may consider the pressure as applied to the middle joint M and the whole piece represented in cross-section by ABB_1A_1 will be divided into pressure pyramids with a common vertex at O. In accordance with previous remarks concerning the behavior of a piece under compression, we deduce that the part of the piece bounded by the contact arcs and shown shaded in the figure is pushed outward by the rolls in the direction of the pass.

To determine, therefore, the elongation of the piece we will proceed as follows:

The area $OMBB_1M_1$ equals the area of the triangle COC_1 minus twice the area sector of CMB; but the area of the triangle $COC_1 = \frac{CC_1 \times OD}{2}$ and the area of the sector CMB = area of circle C / 360 × angle MCB.

In order to symbolize these equations we will use r to denote the radius of the roll; p the pass (BB_1); t the original thickness of the piece (AA_1); and ϕ the approach angle (ACB).

The the area of the triangle COC_1 equals

$$\frac{(2r + p)^2 (t - p)}{8 r \sin \phi}$$

and the area of the sector CMB equals

$$\frac{\pi r^2}{360} \phi$$

The shaded area will be given by $OMBB_1M_1$ equals

$$\frac{(2r + p)^2 (t - p)}{8 r \sin \phi} - \frac{\pi r^2}{360} \phi$$

As we have noted above, this must be equal to the area of a rectangle of height p and base of length l, the value of which latter quantity is given by equation [1] in the accompanying table of formula. The value of the average base l_0 of the shaded area is indicated by equation [2] in the same table.

Presented at the annual meeting of the American Society of Mechanical Engineers, New York, Dec. 2-5. The author, Alfred Musso, is general manager, the Coast Cooling & Engineering Co., New York.

The elongation Δ of the piece will evidently be $l - l_0$, and referring Δ thus found to the total length of the piece gripped by the rolls, we will have the elongation per unit length Δ_1. Also referring to Fig. 2, the total length of the piece gripped by the rolls is as in equation [3]. The percentage of elongation is

$$\frac{100\,\Delta}{r \sin \phi}$$

This equation besides showing the elongation obtained by rolling a piece of metal, furnishes also other valuable information, namely, a check on the safety of the rolling operation, by comparing the $\Delta\%$ with the tensile-strength test of the material in question. In the event that the value of $\Delta\%$ is too large for safely straining the piece, or should it happen to be too conservative, it will always be possible to readjust the pass of the rolling mill to suit, because Δ is a function of ϕ.

In order to find the side spread (σ) of the piece caused by the roll pressure we will refer to Fig. 3, which is a longitudinal cross, section through the rolls. Let CC and C_1C_1 be the axes of the rolls, $AA_1 = t$ the original thickness of the piece, and $BB_1 = p$ the pass. In this case, since the expulsion angles AOA_1 are equal for both sides of the piece, the total spread will be twice the spread of one side.

By reasoning the same as in the case of Fig. 1, we can easily see the amount of side spread is given by the shaded areas, namely, AOA_1 and B_1O_1B. In this case the shaded area is given by the difference of the areas of the triangles AOA_1 and BO_1B_1, which depend upon the value of the pressure angle α because angle $DAO = \alpha/2$. The value of α may be found by returning to Fig. 2 and noting that the angle COD equals angle DBO minus angle OCB. However, tan DBO equals OD/DB and OD equals $(CB + BD)$ tan OCD. Working further and substituting for the angle DBO, and then symbolizing the resulting equation in accordance with the notation already adopted, equation [4], which gives the value of the pressure angle, is obtained.

It should be noted that the pressure angle is also a function of the approach angle ϕ, and once the value of the pressure angle has been calculated it is easy to find, by referring to Fig. 3, the area of the shaded portion, which divided by the pass will give the amount of the side spread σ of the piece. The side spread at each side of the piece is as indicated by equation [5]. If w is the width of the piece, the total spread per unit of width will be 2σ divided by w and the percentage spread will be as shown in equation [6] in the accompanying table of formula. Equation [5] shows that the side spread is independent of the width of the piece, but it depends entirely on the values of the original thickness t and the pass p.

Formula for Rolling Mill Data

ROLLED LENGTH

$$l = \frac{1}{p}\left[\frac{(2r+p)^2(t-p)}{8r\sin\phi} - \frac{\pi r^2}{360}\phi\right] \quad \text{.....[1]}$$

AVERAGE BASE l_0 OF SHADED AREA, FIG. 2

$$l_0 = \tfrac{1}{2}\left[\frac{(2r+p)\ (t-p)}{4\,r\sin\phi} + r\sin\frac{\phi}{2}\right] \quad \text{.....[2]}$$

ELONGATION PER UNIT LENGTH

$$\Delta_1 = \frac{\Delta}{r\sin\phi} \quad \text{.....[3]}$$

PRESSURE ANGLE α

$$\frac{\alpha}{2} = \tan^{-1}\left(\frac{\left[r+\frac{p}{2}\right]\tan\frac{\phi}{2}}{\frac{p}{2}}\right) - \frac{\phi}{2} \quad \text{.....[4]}$$

SIDE SPREAD OF METAL

$$\sigma = \frac{(t^2-p^2)}{p}\tan\frac{\alpha}{2} \quad \text{.....[5]}$$

PERCENTAGE SIDE SPREAD

$$2\sigma\,\% = \frac{200\,\sigma}{w} \quad \text{.....[6]}$$

In conclusion the author wishes to present a practical application of the foregoing formulæ by solving the following problem: In the cold-rolling operation a strip of 0.20 per cent carbon steel is put through a 10-inch mill. The strip before rolling is 2 inches wide and 0.065 inch thick. The pass is 0.050 inch. Find the percentage elongation and side spread.

The first step is to find the approach angle. The fundamental equation of a rolling mill is

$$t = p + 2r(1 - \cos\phi)$$

Solving for ϕ.

$$\cos\phi = 1 - \frac{t-p}{2r}$$

and from the data above

$$\cos\phi = 0.9985$$

or $\phi = 3$ degrees 8 minutes

From the above data and equation [4] $\alpha/2$ equals

$$\tan^{-1}\left(\frac{\left[r+\frac{p}{2}\right]\tan\frac{\phi}{2}}{\frac{p}{2}}\right) - \frac{\phi}{2}$$

$$= \tan^{-1}\left[\frac{5.025 \times \tan\ (1\text{ deg. }34\text{ min.})}{0.025}\right]$$

$= 1$ degree 34 minutes

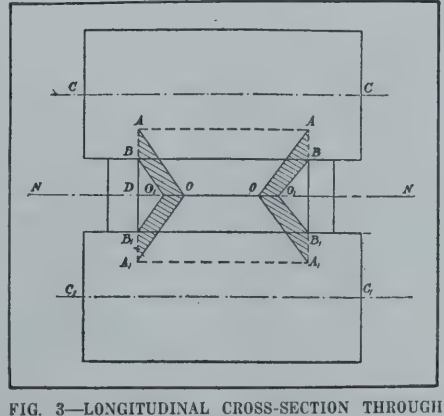


FIG. 3—LONGITUDINAL CROSS-SECTION THROUGH THE ROLLS

$= 78$ degrees 7 minutes

The data in full is as follows:

Roll radius, $r = 5$ in.
Original thickness, $t = 0.065$ in.
Pass, $p = 0.050$ in.
Width of strip, $w = 2$ in.
Approach, $\phi = 3$ degrees 8 minutes $= 3.133$ degrees
$\sin\phi = 0.05466$
$\cos\phi = 0.9985$
$\frac{\phi}{2} = 1$ degree 34 minutes
$\sin\frac{\phi}{2} = 0.02734$
$\frac{\phi}{360} = 0.0087$
Area of roll cross-section, $\pi r^2 = 78.5$ in.^{2}
Pressure angle, $\alpha = 156$ degrees 14 minutes
$\frac{\alpha}{2} = 78$ degrees 7 minutes
$\tan\frac{\alpha}{2} = 4.75219$

To find the elongation, using equations [1], [2] and [3], we obtain

$$l = \frac{1}{0.050}\left[\frac{(10.05)^2 \times (0.015)}{8 \times 5 \times 0.05466} - 0.0087 \times 78.5\right]$$

$= 0.2$ in.

$$l_0 = \frac{1}{2}\left[\frac{10.05 \times 0.015}{4 \times 5 \times 0.05466} + (5 \times 0.02734)\right]$$

$= 0.13725$ in.

and $\Delta = l - l_0 = 0.06275$ in.

or in percentage,

$$\Delta\% = \frac{6.275}{5 \times 0.05466} = 24.6 \text{ per cent of the}$$

original length of the piece gripped by the rolls.

To find the side spread on either side, using Equations [5] and [6] we obtain

$$\sigma = \frac{(0.065)^2 - (0.050)^2}{0.05} \times 4.75219 = 0.164 \text{ in.}$$

The percentage spread is

$$2\,\sigma\% = 16.4 \text{ per cent}$$

The result thus obtained evidently shows that $\sigma\%$ is inversely proportional to w, the width of the piece. Now, because of the fact that in rolling-mills practice we are interested only in obtaining the highest possible value of the elongation Δ, the best economic operative conditions will be furthered by using a strip as wide as possible consistent with the dimensions of the rolls, the power of the mill and above all the degree of uniformity desired in the thickness of the finished strip.

French in Conflict Over Tariff

Comite Des Forges Accused of Conducting Campaign to Erect Barrier Against Cheaper Products From United States—Lorraine Steel Shipped to Germany at Half the Price Government Permits it to be Sold in France

BY FRANCIS MILTOUN
Paris Correspondent of The Iron Trade Review

THE famous Comité des Forges is still in the public eye. Some of tacks upon it are manifestly unfair. In the chaos of the war some powerful institution was needed to take the reins and co-ordinate the efforts of the iron and steel industry, and if the effort was not altogether successful, the actual benefits were appreciable.

The committee now declares that a campaign is being waged to discredit it. It denies that it is seeking to influence the country against foreign products which might be imported at less expense than they can be made in France. Its policy seems to be to supply all that it possibly can for the reconstruction of northern France, and the encouragement of the export of the excess, when there is any needed, which is not yet.

The point is of interest to the American manufacturers of iron and steel for the bearing it may have on the remaking of French tariffs, and it is advisable to watch legislation and also watch for 1919 statistics when they are made public.

If the Comité des Forges goes to pieces it may be to the advantage of American manufacturers. If it holds together, and is able to carry out the economic tariff program, it may mean the closing of the door to American iron and steel.

The various steel works represented in the committee are said to have already received orders from the French bureau of industrial reconstruction for products to the value of 550,000,000 francs.

What is less explicable is how and by what means the government was induced to allow Lorraine steel to come into France only at 60 francs for 100 kilos (220 pounds), whereas the same product is being shipped into occupied Germany at the base price of 30 francs.

"How," writes Gustave Tery, editor of *Work*, "is France to have an export business in steel products if she is to be eternally handicapped by this 30 francs a hundred kilos for raw material from its own mines and furnaces?"

* * *

Rail and Plate Output Increase

The following statistics of iron and steel production in France for the first four months of 1917, 1918 and 1919 are particularly interesting as showing the increase in the output of rails as a result of efforts to get new railroad lines in operation throughout the industrial districts of northern France. The only other line in which production has increased is plates.

	1917	1918	1919
Pig iron, tons.....	235,281	116,059	56,542
Blooms, billets and bars.	550,134	350,498	230,141
Machine steel and iron...	17,348	22,345	7,940
Plates	83,402	57,006	77,550
Iron and steel wire.....	43,942	7,375	14,233
Iron and steel rails.....	38,937	39,372	90,563
Tin plate	13,982	19,479	7,498

* * *

Production of Lorraine Plants

The iron and steel plants concentrated in the region of Metz-Thionville include the following equipment: Sixty-eight blast furnaces, 27 converters, 10 open-hearth furnaces, distributed as follows:

The de Wendel plant at Hayange, Societe des Petits-Fils de Francois de Wendel: Nine blast furnaces of 100 to 200 tons capacity; six converters of 13 tons; four open-hearth furnaces of 30 to 45 tons; rolling mills for sheets and shapes.

Acieries de Wendel at Moyeuvre: Eight blast furnaces of 120 to 190 tons; four converters of 12 tons; rolling mills for shapes.

Acieries Thyssen at Hagondange (German, Stahlwerke Thyssen), Hagondang plant: Six blast furnaces of 300 tons; five converters of 30 tons; two open-hearth furnaces of 60 and 80 tons, rolling mills for shapes. Maizieres plant: Three blast furnaces of 12 tons, not in operation.

Acieries de Rombas (German, Rombacher Huttenwerke), Rombas plant: Six blast furnaces of 200 tons; six converters of 22 tons; four open-hearth furnaces of 20 tons; rolling mills for shapes. Mazieres (Mosellhutte) plant: Four blast furnaces of 180 to 200 tons.

Acieries de Knutange (German, Lothringer Huttund Bergwerks Verein): Ten blast furnaces of 200 tons; six converters of 30 tons; rolling mills for shapes. In this enterprise Belgian interests have 11,000,000 francs of the 72,500,000 capital.

Hauts Fourneaux d'Uckange (German, Gebruder Stumm de Neunkirchen, Sarre): Six blast furnaces of 150 tons.

Hauts Fourneaux de Thionville (German, Gewerkschaft Roechling): Four blast furnaces of 150 tons.

Hauts Fourneaux d'Ottange (German, Deutsch Luxemburgische): Three blast furnaces of 120 tons.

Hauts Fourneaux d'Audun le Tiche (German, Gelsenkirchen): Four blast furnaces of 180 tons.

Hauts Fourneaux de Redange (German, Dillinger Huttenwerke): Three blast furnaces of 100 tons. Forty per cent of the capital of this company is owned by Frenchmen.

The foregoing statistical summary is compiled from "The Reconstituted, North and East," and may be considered as the first official statement as to the working facilities of the region, which with Briey proper forms the kernel of the Lorraine industry.

The *Bulletin des Metaux* gives the production of iron ore in Lorraine for the month of July as 650,000 tons. Shipments from accumulated stocks for the month were 800,000 tons, the stocks on hand at the mines exceeding 1,500,000 tons. France, including Lorraine, consumed 350,000 tons and 200,000 tons were shipped to German plants across the Rhine, while 155,000 tons were consumed by the plants of the Saar and the occupied regions of Germany. The surplus went to Belgium and Germany.

* * *

Prices in France Going Up

La Metallurgie Francaise states that the metal market recently has been considerably affected by the coal shortage. Coal and its transportation dominates the economic situation.

Iron and steel prices in France will soon have to be increased all along the line. The 60 francs per 100 kilos, base, established by the ministry of industrial reconstruction has already given way in many instances to 70 francs, base. This applies to rolling mill output. Thus French plants are seriously handicapped as regards to contiguous competitors. Coke for France now costs 105 francs a ton as compared with the equivalent of 65 francs for plants in Lorraine and in the occupied districts of Germany.

* * *

Foreign Labor in France

In late August a decree was signed regulating the formalities for the introduction of Spanish labor into France, to aid those industrial establishments which demanded a new bureau of immigration. Spanish labor was largely used before the war in Southwestern France, as was Italian labor in Southeastern France, and Belgian in Northeastern France. Of all foreign labor in France the Belgians came first in numbers, the Italians second and the Spaniards third.

Advances Theory on Arc Welding

Investigations Show Electric Current Merely Furnishes Heat in Form of Arc While Welding is Accomplished by Metal Expelled From Electrode in Form of Metallic Vapor—Short Arc is Best

BY RALPH G. HUDSON

Theories Conflict

THERE are many theories as to how the electric current acts in arc welding and how it should be controlled. In the accompanying article, the author presents the results of investigations which seem to show that minute liquid particles are shot from the electrode by the pressure of quickly formed vapors and gases under the intense heat of the arc. The particles striking fluid metal solidify with it but others which strike solid metal bounce off or adhere without fusion. The article is from the October number of the Journal of the American Welding society, the official organ of the American bureau of welding, in which many of the national engineering and scientific societies are represented.

ALTHOUGH metallic arc welding fully for a considerable period had been employed successit was appreciated that its application was based upon empirical methods, and to make greater use of such welding in shipbuilding it was evident that its basic principle should be investigated as thoroughly as possible so that inferior methods of metallic arc welding might be eliminated. The object of this article is to present the results of an investigation of this character conducted in the laboratories of the Massachusetts Institute of Technology by the welding committee of the Emergency Fleet corporation in the summer of 1918.

It should be noted that at the beginning of this investigation no satisfactory explanation had been given for the transmission of metal from electrode to plate. In downward welding the deposition of metal might be attributed to gravitational force but in upward welding no such explanation could be offered. The fact that an electric current is employed in the process suggested the possible existence of forces of electrical origin which might pull metal from the electrode to the plate. Calculations of the magnitude of the electrical forces that may exist during metallic arc welding indicate that they are negligible and may therefore be eliminated as possible causes of the action. This view is further substantiated by the fact that satisfactory welding may be performed with current flowing in either direction or with alternating current and that such differences as may exist with different directions of the current may be explained by consideration of the relative heating properties of such currents at the terminals of an electric arc. In conducting this investigation an attempt was made to obtain a photographic record of successive phases of the welding arc by means of a high-speed motion picture camera. The camera was specially constructed and when set up was found to operate satisfactorily at a rate of 32 pictures per second; the ordinary camera operates at 16 pictures per second. One thousand feet of film were exposed with this camera, the character of the arc being varied by changing the direction of the current, length of arc, type of electrodes, etc. In photographing an electric arc of any kind the luminosity of the arc itself is so great that the other parts of the apparatus including electrode, plate, molten drops, etc., do not appear on the film except as they may appear in silhouette against the arc.

The principal use made of these films was to examine them one by one with a low-power microscope with transmitted light. A systematic examination of 16,000 pictures in this manner disclosed certain important features mentioned later. Although the photographic difficulties were evident, the writer decided to take further magnified pictures of the arc with a short exposure focal plane shutter. A camera was set up which would magnify the arc about eight diameters. Instantaneous photographs of the welding arc obtained with this camera suffered from the same domination of the plate by the arc to the exclusion of all other phenomena.

While focusing this camera it was realized, however, that more could be seen with the eye on the ground glass than could be obtained photographically or by direct observation through dense glasses, and the writer therefore began an extended study of metallic arc phenomena as seen in magnified form on the ground glass. With this device the action of the arc could be examined without screening the eyes and with the further advantages offered by magnification and observation of the action in its true color. When an arc is struck between a steel electrode and a steel plate the end of the electrode and a spot on the plate are heated to a high temperature and metal is transferred from the electrode to the plate. The electrode is heated to a higher temperature than the



FIG. 1—EFFECT OF LENGTH OF ARC UPON SIZE OF ELECTRIC GLOBULE
At the right is globule developed with a very short arc; in the middle with a moderate length arc; and at the left, with a very long arc. These are $\frac{3}{16}$-inch electrodes magnified about 5 diameters



FIG. 2—SURFACE OF AN ELECTRODE ON THE INTERIOR ELECTRODE END OF A LARGE GLOBULE

plate because the heating action of the arc is more concentrated in the case of the electrode and because the heat conduction away from the hot spot is greater in the case of the plate. An analysis of steel electrodes usually reveals the presence of at least 10 elements: Iron, carbon, manganese, copper, sulphur, phosphorus, silicon, oxygen, nitrogen, and hydrogen. Since the melting points and other thermal constants of these elements and their compounds vary widely and their chemical affinities are quite different, it is to be expected that the constituents of an electrode subjected to a high temperature will change from solid to liquid or gaseous form successively and not at the same instant. Since the melting point of iron is higher than that of any other constituent of an electrode with the exception of carbon, which combines rapidly with oxygen at welding temperatures to form carbon monoxide, it is furthermore to be expected that in the welding process the iron constituent of the electrode will melt last.

The thermal changes just described are known to take place during the application of heat to any complex substance. In metallic arc welding the temperature changes which take place differ, however, to a marked degree from the changes incident to the usual methods of heating metals in that a small mass of the electrode in welding is subjected to a high temperature for a very short interval of time. The distinctive thermal feature of metallic arc welding is then the sudden rise and fall of temperature in the metal transmitted to the plate. Under the circumstances it may be seen that the melting of the iron is delayed by the heat absorbed by the other constituents of the electrode and that this fact together with the limited time of application of high temperature disproves the possibility that the iron is completely vaporized in the welding process. When a projectile is fired from a large gun, for example, the initial temperature of the gas behind the projectile is believed to range between 3000 and 4000 degrees Cent. Although this temperature greatly exceeds the melting point of the material of the projectile, there is little evidence of melting on the surface of the projectile because the projectile is not heated by the adjacent gas for a period long enough to melt its surface.

Gases Form in Electrode

An increase of temperature in most materials is accompanied by a marked increase in volume and in chemical changes resulting in the formation of gases the reaction is usually accompanied by an immense change in volume. While various changes in volume may take place among the constituents of the electrode during metallic arc welding, the greatest possibility for such expansion may be found in the formation of carbon monoxide. It is therefore to be expected that a globule will be formed by such expansion on the end of the electrode during welding. Typical electrode globules developed in this manner by various lengths of arc during the welding process are shown in Fig. 1. Each globule contains a cavity which may be seen clearly during welding on the ground glass of the camera described above and is also present in the cold contracted globules shown in the illustration. In the smaller globules the cavities are usually open and resemble small drill holes, while in the larger globules the cavities are usually closed and are surrounded by a thin skin of metal.

An electrode globule maintained in continuous contact with the plate to prevent formation of the glaring arc and heated by a heavy current may be seen under magnification on the ground glass to expand and blow out minute particles at high velocity from the thinnest side walls, a contraction of the globule occurring after each expulsion of particles. The particles appear to originate in the inner electrode surface of the globule. If the globule is suddenly detached and the arc interrupted at the same instant in ordinary long arc welding, the inner electrode surface of the globule presents the appearance shown in Fig. 2. The pitted electrode surface suggests irregular fusion due to different temperatures of fusion, vaporization and chemical combination of the ingredients under the influence of rapid changes in temperature.

Constituents of Vapor Unknown

Owing to the complex structure of the electrode, it is not easy to determine the exact nature of the vapor content of the globule. That the vapor consists partly at least of carbon monoxide gas is suggested by the fact that such globules do not form in general when the end of the electrode is heated in a reducing atmosphere. It is also found impossible to weld with an electrode containing practically no carbon in a reducing atmosphere. In welding under water it was observed that bubbles of gas rise continuously to the surface of the water and burn, indicating the possible dissociation of the water with the absorption of oxygen by the electrode and the rejection of hydrogen to the surface of the water. After a globule has been maintained for several minutes at high temperature in contact with a plate in air, it was observed that all expulsion of particles ceased. It may be inferred from this that all of the vapor forming constituents of the globule had been burnt out.

An examination of the motion picture films which show successive views of the arc, each with 0.0005 second exposure, reveal occasional pro-



FIG. 3—METAL PROJECTED FROM A HOT ELECTRODE TO A COLD PLATE
The incandescent electrode was moved at speed of 4 feet per second over surface of electrically insulated plate. Magnification approximately 6 diameters

tuberances on the electrode globule within the crater region and the paths of projected particles may also be seen silhouetted against the arc itself. That these phenomena are only found at intervals in examining the film is undoubtedly due to the fact that such particles in the arc stream are rendered invisible by the luminosity of the arc and that such protuberances and projectile paths are only visible when they happen to screen the arc. The expelled particles found about the work when welding—the familiar bluish-gray dust of the welding room—or when collected under water are found to be spherical shells indicating that a portion of the vapor within the globule is carried away with the projected particles. A photograph of these projected particles, magnified 20.7 diameters, is shown in Fig. 5.

If the electrode while welding is suddenly swept across an adjacent flat insulated surface, small spots of metal are found on the surface at regular intervals over the surface traversed by the hot electrode. A photograph of a small portion of such a path is shown in Fig. 3, and a more highly magnified view of one of the spots in Fig. 3. The regularity of spacing of these spots when the differences are not magnified is quite striking. The same effect was observed by holding an incandescent electrode, just removed from ordinary welding, over the rim of a revolving iron wheel. It was determined in this way that the average frequency of projection was 50 per second. The duration of such a projection was approximately one-fifth of a second; the projection terminating with the cooling of the electrode.

Particles Expelled by Vapor

It would appear from the observed facts that the metal deposited during metallic arc welding is transmitted in part at least in the form of minute particles which are projected from the electrode globule by the internal expansion of some vapor, possibly carbon monoxide. The expelled particles pass through the arc too rapidly to become vaporized and reach the plate in a fluid state. If the expelled particles strike solid metal they either ricochet along the surface, which explains the accumulation of iron dust in the welding room, or flatten out without fusion, the most common cause of poor welds. If the particles strike a fluid metal they penetrate the fluid and solidify with the molten surface of the plate.



FIG. 4—NUCLEUS OF METAL PROJECTED ON A COLD PLATE FROM INCANDESCENT ELECTRODE

It is a well-established fact that the best welding is obtained with the shortest arc and the worst welding with the longest arc. It will be noted in Fig. 1 that the size of the electrode globule also increases with the length of arc, the best welding being obtained with the smallest globule. A small globule implies greater concentration of projected particles in the direction of the opposite fluid spot. In downward welding a large globule becomes elongated by gravity. The lower part of the hollow globule becomes thickened by downward flowing metal; the side walls become stretched and thinned; and particles are projected wastefully through the side walls at right angles to the arc. The globule as a whole frequently breaks away from the electrode and drops without fusion on the plate. Electrode ends rejected by a welder and presenting the appearance shown in Fig. 2, or of the large globule in Fig. 1, constitute substantial evidence of infective long-arc welding. In upward welding a large globule tends to fall to one side or the other by gravity and prevents the efficient projection of metal.

Any material which serves to increase the melting point of the surface of an electrode must, in accordance with the stated theory, improve the conditions under which particles are projected from the electrode globule. The cup shaped surface formed at the end of such an electrode will reduce the amount of indirect projection of particles to a minimum and the increased stability of the arc will reduce the difficulty of manipulation of the electrode, since the length of the arc may be varied over a greater range without interruption. It appears that most of the coatings suggested for electrodes perform the function of cooling the surface of the electrode by vaporization, and in some instances, owing to the rapidity of the action, remain in a fluid condition about the sides of the electrode globule. It should also be noted that since iron oxide has a higher melting point than steel, rust should not be removed from electrodes and that



FIG. 5—DUST WHICH ACCUMULATES AROUND WORK DURING WELDING. MAGNIFIED ABOUT 19 DIAMETERS

rusty electrodes usually work better than bright clean ones. In many cases the outside layer of bare electrodes may be changed by drawing and heat treatment so that it has a higher melting point than the interior. The ideal electrode would have a high melting point shell, tungsten for example, surrounding a lower melting point interior containing sufficient vapor forming constituents to eject metal constantly when heated by the electric arc.

Recommends Further Study

The writer suggests the following promising subjects for further study: *First*, a determination of the character of the vapor found in an electrode globule; *second*, a determination of the best surface material for electrodes, first cost and effect on the finished weld to be considered; *third*, the effect of welding in a reducing flame upon the character of the weld; *fourth*, an investigation of the value of welding under water as in the case of ships, tanks, etc.; and *fifth*, the use of materials other than steel in metallic arc welding. It will be noted, for example, that the zinc constituent of brass under the influence of a rapid increase in temperature may melt and vaporize before the copper constituent begins to melt. If the theory outlined above is correct, it would appear quite probable that satisfactory welding could be done with brass electrodes.

Foundrymen Hear Talk on Labor Problem

In addition to Eugene S. Willis of the Safety First Supply Co., Pittsburgh, who gave a talk on "Safety First as Applied to the Foundry," members of the Pittsburgh Foundrymen's association at a meeting held

Nov. 18, heard Col. Cameron C. Smith, chairman of the Union Steel Casting Co., Pittsburgh, who during the war served as production manager of the New York district army ordnance office and after the war was a member of the war claims board. Colonel Smith's topic was: "Industrial Unrest; Cause, Effect and Remedy."

Considerable discussion followed Mr. Willis' paper, much of it in connection with the use of goggles and leggings in the foundries. It was brought out that the workmen generally are opposed to wearing goggles at first, but that shop and foundry officials by perseverence can induce the men to see the advantage of this means of protection to the eyes. A plea for leggings that are cooler and more comfortable was made by those who have had experience with the men in the foundries.

Colonel Smith urged fairer treatment by employers of their workmen and traced the causes leading up to the present unrest. Until recently labor was regarded as the "underdog" by the public and enjoyed its sympathy. Public sympathy and political support coupled with thoughtlessness on the part of the employers in their treatment of the men created in the minds of the workmen the belief that they had a greivance and with the backing of the public and the politicians, they could do as they pleased.

Abuses Authority

Power in labor ranks is falling into the hands of irresponsible leaders, who have no respect either for law or for the rights of others and even today, there is a disposition on the part of the public to either wink at or excuse some of the violations of the law by labor. The speaker drew attention to the influence of the radical newspapers, printed both in English and foreign tongues and also the sullenness of labor in obeying the mandate of the courts as in the case of the coal miners' strike.

In offering a remedy for the situation, Colonel Smith drew attention to the lack of confidence of the men in their employers and of the employers in their men. It is his belief that while concessions should be made on both sides, the employers should hold out the olive branch in an effort to effect a reconciliation.

Making the shop an attractive place to work, by the introduction of recreation periods during the day, such as moving pictures during the noon hour, was one suggestion of Colonel Smith, who also favors shop stores where employes may buy necessaries at cost. He also stated that the employment of a trained nurse to look out not only for the welfare of the men but of their families is helpful in making the men more contented.

Getting Together With The Employes

BY A. B. WEEKS

THE clamor by labor organizations for increased wages, shorter hours, better working conditions, collective bargaining, and their attempt at industrial control through recognition of unions, and the closed shop have been especially insistent since the signing of the armistice. Our industries, both great and small, for economic reasons and to increase production have granted one demand after another in the way of wage increase and curtailment of hours, at the behest of labor organizations.

This clamor by organized labor is becoming louder, and the demands more insistent and we have reached that stage in our industrial life where not only our prosperity but our very existence is threatened, at least temporarily, through our disregard of the laws of business economics, particularly as they relate to international trade.

For many years there has been a contest between employers and outside forces, namely the labor unions, for the control of the men in various industrial establishments. Much has been said in meetings of the manufacturers' and employers' organizations of the necessity for a campaign of public education. The writer grants that the necessity for such a campaign exists, but that a campaign of this character would of itself cure the present labor unrest is doubtful. In the writer's opinion the time has arrived for an active campaign for the control of labor by the plant executive. The campaign on the part of labor leaders for the control of labor is so persistent, that the average workman is inclined to accept the teachings of the labor leader and classify the occasional remarks of his employer as "hot air from the boss." If the contest on the part of the labor leader for control is continuous, then employers' efforts must be continuous, collective and persistent.

In the writer's opinion much may be accomplished to gain the confidence and control of our men by closer co-operation with them; by a series of thoroughly organized round-table conferences, regularly held whereby the employer may gain a better understanding of the workman's viewpoint, his necessities, and the conditions surrounding his life, and at the same time show the workman that the matter of wages and hours of work are not governed by the mere arbitrary ruling of the "boss," but are, on the other hand, governed by the economic laws which control our national and international trade relations.

The average workman is an intelligent, fair-minded, and patriotic citizen, and by instructing him in the fundamentals of the natural economic laws governing industry, his viewpoint toward wages, hours of labor and production will be changed through his ability to analyze cause and effect. And in place of the present misunderstanding and unreasonable demands we shall soon have co-operation and harmonious relations, without the intervention of labor unions.

Cannot the employers get together along these lines and effect a solution of our present vexing labor questions? This lack of co-operation and understanding between the employer and his employe in the years past paved the way for the labor union. Is it not worth while, by endeavoring to establish confidence, co-operation and understanding between employer and employe, to arrive at those better relations which will make the labor union unnecessary and undesirable?

The answer to the question "In whose hands shall industrial control rest, the plant executive or the labor leader?" lies with the employer himself. Which shall it be? Are you going to answer the question, or allow the labor leader to answer it for you?

The author, A. B. Weeks, is general manager, Canadian Northwest Steel Co., Vancouver, B. C.

Leslie E. Freeman, according to announcement by the American Chamber of Commerce of Brazil, 37 Liberty street, New York, has arrived in this country to open trade relations be-

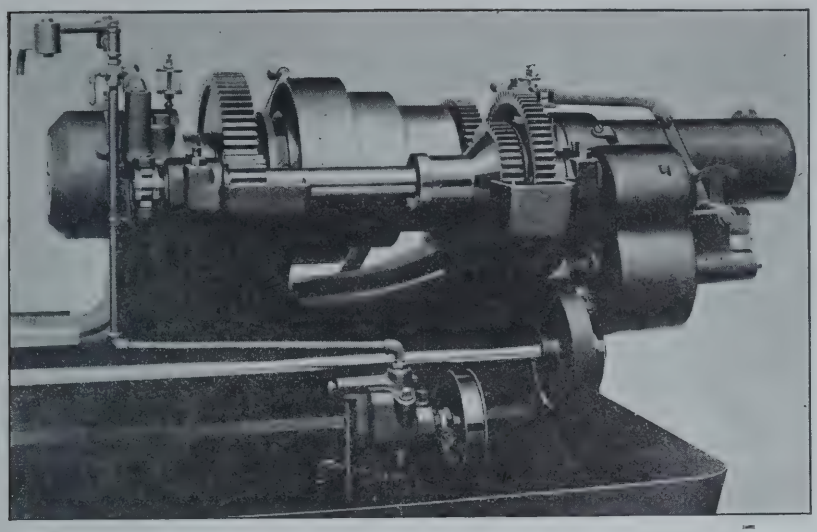


FIG. 1—REAR VIEW OF THE HEAD WITH GUARDS REMOVED SHOWING BACK GEARS

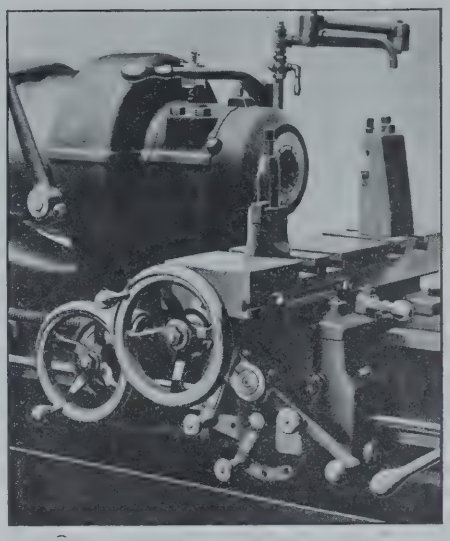


FIG. 2—HEAVY DUTY CARRIAGE

tween the United States and Brazil. Mr. Freeman is equipped with data concerning the markets of Brazil and will supply this information as requested to manufacturers. The chamber is affiliated with the Rio de Janeiro chamber and plans are being made for the publication of a Brazilian-American trade review which is to be printed in this country every month. Brazil offers an excellent market for American products.

Equips Turret Lathe With Double Friction Gears to Insure More Power

THAT machine tool builders recognize the necessity of designing tools of greater production capacity to meet present-day conditions is evidenced by the turret lathe shown in the accompanying illustrations. This tool, which is a recent development of the Warner & Swasey Co., Cleveland, is designed to meet the demand for a machine of great power and strength for finishing gear blanks, forgings and tough, alloy steel parts of various kinds.

The bed and headstock are box section, cast integral, while the turret saddle and carriage travel on flat ways. Both units are equipped with gibs for compensating for wear.

The machine is equipped with double-friction back gears which transmit ample power for heavy forming and facing cuts on bar and chucking jobs and provide a wide speed range. Nine speeds are available, three for each step on the driving cone.

The machines are equipped with either a standard or heavy duty carriage. The heavy duty carriage is equipped with a power cross feed and manually operated longitudinal feeds. The cross feed also can be operated by hand as occasion requires. Six power cross feeds and traverse are obtainable in the apron. The gears in the apron run in oil.

The cross slide is equipped with a setting dial and adjustable stops also are provided to work while the slide is traversing in either direction. The front tool post is round and has an adjustable wedge arranged to be swiveled at any angle. A cutting-off

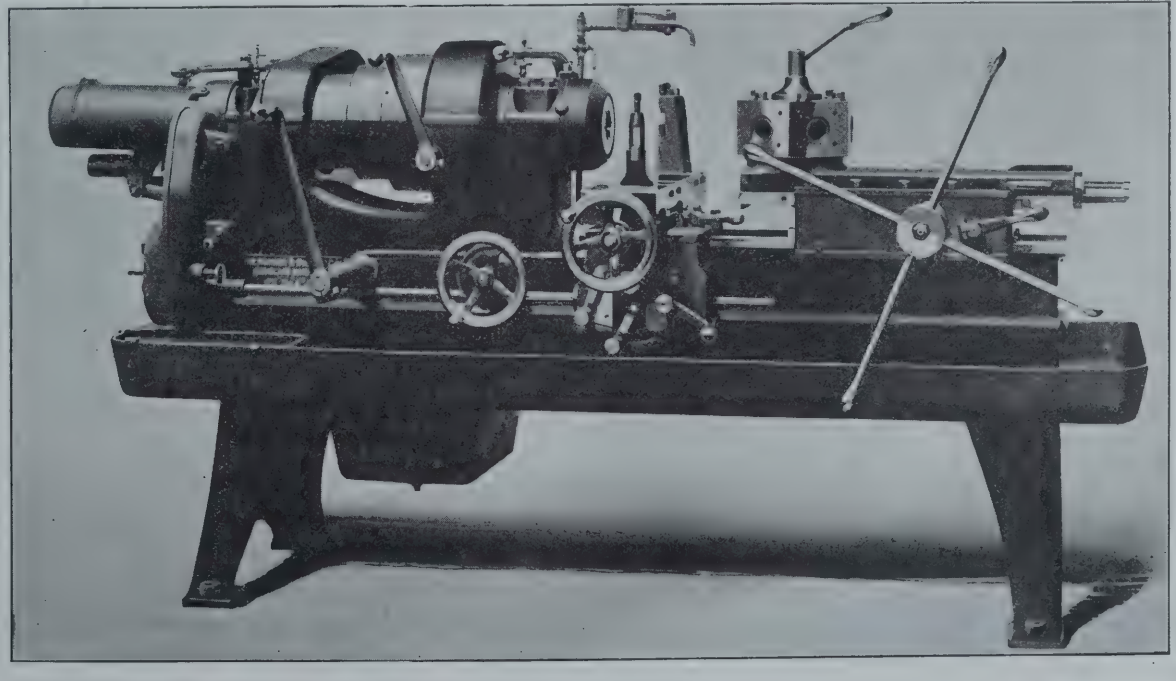


FIG. 3—HEAVY-DUTY, DOUBLE-FRICTION, BACK GEARED TURRET LATHE FOR MAXIMUM PRODUCTION

tool holder is located at the back side of the slide. Either of these tool holders may be removed to permit special forming tool holders to be substituted.

The standard type of carriage is of the design that has been furnished by the company for a number of years. Hand longitudinal and cross feeds are embodied in this carriage. Adjustable stops are provided for the cross slide on this type of carriage while the

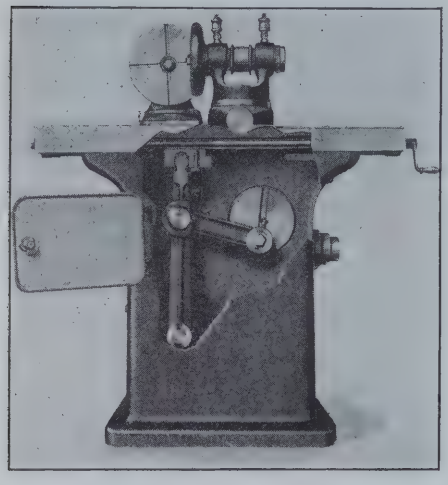


FIG. 1—AN ADJUSTABLE CRANK DISK ACTUATES THE PLATEN

tool posts are the same design as used on the heavy duty carriage.

The automatic chuck and bar feed are operated by a long lever in front of the headstock. A stepped wedge automatically adjusts the collet for slightly varying diameters of stock. A master collet and bushing pads are regularly furnished for holding 2¼-inch round stock unless otherwise specified. Bushings for hexagonal stock can also be accommodated by this collet. Square stock requires a square stock master collet and bushing pads. Extra capacity collets can be used for holding short lengths of stock, larger in diameter than the hole in the spindle.

The hexagon turret is arranged for holding tools with or without shanks. The six tool holes are counterbored for centering plate tools and are fitted with draw bolts.

The turret is revolved automatically by the backward movement of the slide. The locking bolt is at the front end of the slide and works into steel tapered bushings inserted in the bottom of the turret, close to the outside, directly under the cutting tool. Independent adjustable stops operate automatically for each position of the turret. They are disengaged by power feeds. They are readily adjusted for the length of each cut.

The turret saddle has a supplementary taper base to adjust the tool holes in the turret to insure correct alignment with the spindle. Taper gibs, fitted the entire length of the saddle on each side, provide a ready means for adjusting the slide sidewise. Any one of four feed changes, 38, 64, 107 and 190, is instantly obtained by moving a lever. The automatic trip operates in connection with independent adjustable stops for each hole in the turret.

An oil pump of the rotary type, which operates when the machine is running in either direction, is provided.

New Face Grinding Unit is Self Contained

A compact, self contained face grinding machine designed to expedite production on routine work recently was developed by the Cleveland Machine Tool Co., Cleveland. The base is a one-piece box section casting, provided with a door at the front for inspection and oiling of the working parts, and a door at the side for access to a part of the column that can be utilized for tool storage.

The platen is 42 inches long and 9¾ inches wide and travels on one V and one flat way. Due to the fact that the platen is longer than the ways, these are always covered which reduces the wear caused by lodgement of particles of abrasive material. The platen, which is equipped with a crank handle for adjusting the relative position of the stroke, is fed back and forth by means of a crank disk driven by a worm and worm gear. The throw of oscillation can be quickly adjusted from no motion to a stroke of 6 inches. Thus, work 12 inches in diameter can be handled by the machine. Six changes of feed are obtained by a 3-step cone pulley and a 2-speed countershaft. Provision for carrying away cutting fluid from the platen is made in cases where it is desirable to employ wet grinding.

The head carrying the grinding wheel is fitted to a saddle, which is located on the main part of the base through the medium of a dove-tail slide. Gibs are provided to take up wear. The saddle adjusting screw is equipped with a micrometer dial for making close settings while taking finishing cuts. The grinding wheel head rotates on a king pin and can be swiveled to any desired angle.

The grinding wheel spindle is hardened and ground and runs in phosphor bronze boxes, adjustable for wear. The driving pulley is located between the bearings and the grinding wheel flanges are of ample size to insure gripping the wheel properly. A wheel guard is provided.

The work head is secured to the back of the column through the medium of a dovetail slide. It rests on its own saddle which has a longitudinal adjustment of 6 inches. The saddle is secured to the column by a hand clamping screw to permit quick adjustment.

The work driving spindle is hardened and ground and runs in phosphor bronze bearings which are adjustable for wear. The spindle nose is threaded to accommodate a 10-inch faceplate which has two ⅞-inch T-slots located at right angles. Two draw bolts and two collets, ½ and 1-inch, form part of the regular equipment. The machine is clearly shown in the accompanying illustrations.

Warns of Danger Lurking Around Oil Room

Gasoline throws off an explosive vapor even at extremely low temperatures, according to an article prepared by S. D. Rickard, consulting engineer of the Wayne Oil Tank & Pump Co., Ft. Wayne, Ind. Five gallons of gasoline will generate 8000 cubic feet of gas, which, when ignited, expands to 4000 times this space. It is stated that the explosive force of one gallon of gasoline properly mixed with air and compressed, is

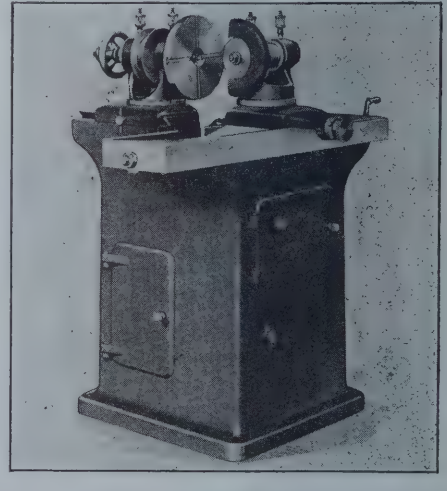


FIG. 2—WHEEL AND WORK HEADS HAVE READY ADJUSTMENTS

equal to 83 2/3 pounds of dynamite. The vapor from gasoline is heavier than air and it settles on the floor much as a stream of water, except that it is invisible. This vapor will remain in a depression for days and even weeks, unless disturbed by a circulation of air. The records show that under certain atmospheric condi-

tions spontaneous combustion will occur in this vapor.

Kerosene, the article states, is not as dangerous as gasoline, yet at a temperature of 70 degrees or over, it throws off an explosive vapor. At a higher temperature, in order to properly ventilate a room in which there is an open tank of kerosene, a circulation of air equal to 200 cubic feet per minute for each gallon exposed should be kept up. These figures vary with the volatility of the oil and the temperature of the air and oil. All petroleum products, including lubricating oils, produce an explosive vapor. The danger from lubricating oils is chiefly from spontaneous combustion.

The gravest danger which confronts the consumer of oils, aside from the gasoline danger, is from paint oils, such as linseed oil and turpentine. A piece of cotton waste saturated lightly with equal parts of linseed oil and turpentine, will if left in a closed room, such as an oil house or storeroom burn from spontaneous combustion within three hours.

Builds Large Oil Engine

A fuel oil engine made by the Nordberg Mfg. Co., Milwaukee, a 5-cylinder 2-cycle engine developing 1250 horsepower, is claimed to be the largest oil engine in America. The main cylinders are 30¾ inches in diameter and have a 26-inch stroke.

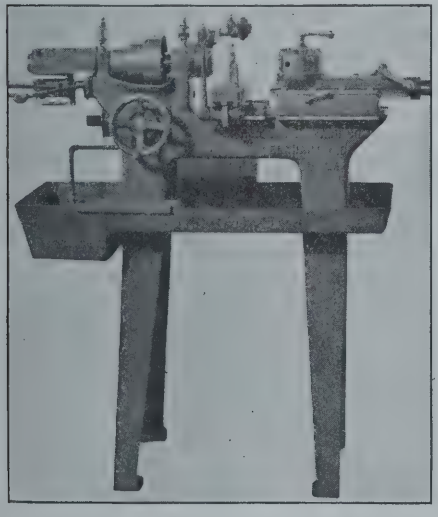


FIG. 1—SMALL SCREW MACHINE WITH LEVER FEED CUT-OFF

Total weight of the engine is about 400,000 pounds.

A scavenging pump driven from one end of the crankshaft furnishes air for cleaning the cylinders of burnt gases. A high-pressure air compressor is bolted to the side of the scavenging pump and driven from the crosshead through beams and links. Each cylinder has four scavenging valves to give good distribution of the air from the air space in the cylinder head to the working cylinder. The fuel oil is injected through a needle valve designed to thoroughly atomize fuel up to 14 degrees Be.

Three of the cylinders are equipped with starting valves cam operated and so arranged that as the air starting valves are thrown out of action, the fuel valves are thrown into action. The fuel is pumped to the atomizer valves by five separate fuel pumps, one for each cylinder. They are required to pump against a pressure of 1500 pounds.

The regular 36-hour shop test, which was run recently, showed that the fuel consumption of the engine at full speed was about 0.42 pound of oil per brake horsepower per hour. The lubricating oil consumption for the 36 hours was about 5½ gallons, which included the oil for every part of the engine. The engine was required to start and reach full speed in six seconds and be ready to take full load immediately.

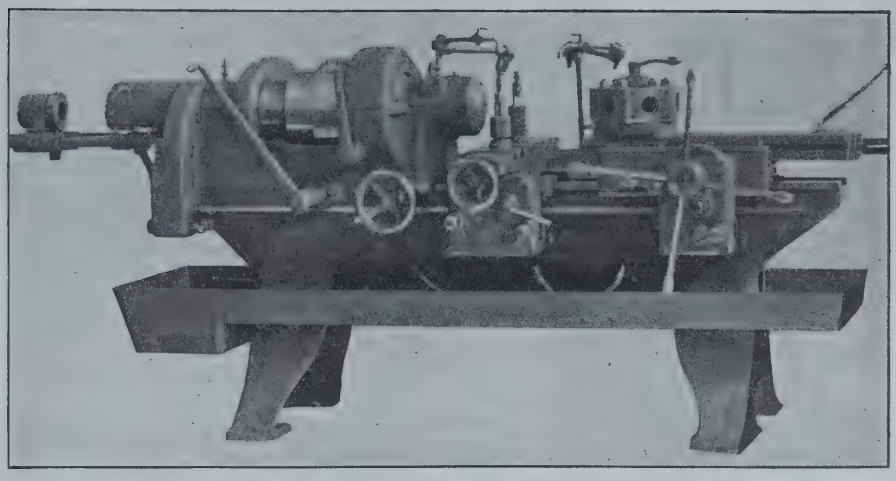


FIG. 2—LARGE SCREW MACHINE ON WHICH UNITS ARE INTERCHANGEABLE

Units of Screw Machines Are Interchangeable

A new line of handscrew machines, embracing 5 sizes ranging from $\frac{7}{16}$-inch to $2\frac{5}{8}$ inches, was recently designed by the Foster Machine Co. Elkhart, Ind. The unit principle of design has been carried out in the machines, many of the parts being interchangeable and independent. In accordance with this idea three different styles of cut-off units have been designed: One with lever feed, one with end screw feed, and the other with power feed. The power feed to the turret also is a separate unit and therefore, a machine may be built with either power feed or with hand feed to the turret slide. The automatic chuck and bar feed also are built as independent units.

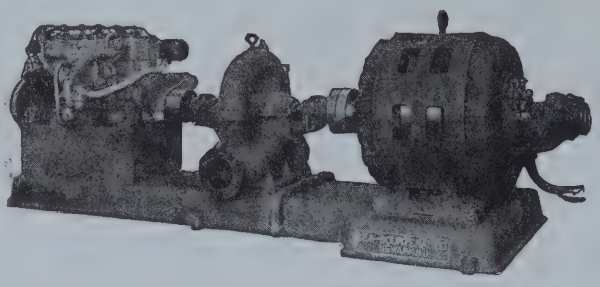
The two largest machines are equipped with friction clutches mounted on the spindles between the cone pulley and the friction gear thus serves to engage the spindle in the driving connection direct with the cone pulley on one side or with the bank gears through a large diameter spindle gear on the other side. The frictions are of the cone type and are operated by a hand lever.

The vertical lock bolt of the index mechanism is mounted underneath the front side of the turret almost directly beneath the working tool. The end of the lock bolt lever, which intermittently engages the tumbler for withdrawing the lock bolt preliminary to the indexing of the turret is equipped with a roll for the sake of sensitiveness and reduction of wear.

The cross feed apron is similar in design to the saddle apron with the difference, however, that different sliding gears are introduced in the train to obtain the reverse of the feed movement. The feed friction which works in conjunction with the two large intermediating gears, is operated by rapid acting cam manipulated by a hand lever.

For applying the proper amount of cutting compound to the cutting tools, the larger machines are supplied with a double system of piping, one working in conjunction with the turret slide and the other with the cut-off. On the smaller machines where a smaller amount of the compound is required, a single system of piping is used. The accompanying illustrations show the largest and smallest of the five machines.

The Westinghouse Electric & Mfg. Co. has just announced the award of four annual war memorial scholarships



FIRE PUMP WITH DOUBLE DRIVE

The pump has a capacity of 1500 gallons per minute and is driven by a 150-horsepower alternating current motor and a 140-horsepower gasoline engine.

of $500 each established as a memorial to those employes of the company and its subsidiaries who went to the service of the country during the war. The successful candidates for the scholarships are Herbert S. Pahren, Cincinnati, and Arthur Marthens, Paul O. Laugguth and Andrew P. Lesniak, East Pittsburgh, Pa.

New Fire Pump has Motor and Engine Drive

A pump equipped with double drive, each unit of which depends on a separate source of power, is shown in the accompanying illustration. Double drive for a fire pump is always desirable and in some states is required by underwriters' regulations. The usual form of drive consists of a steam engine and electric motor, or where two separate sources of current are available, two motors are used.

The pump illustrated has a capacity of 1500 gallons per minute and is manufactured by the Lea-Courtney Co., Newark, N. J. The pump is coupled at the left to a 140-horsepower gasoline engine and at the right to a 150-horsepower alternating current motor made by the Westinghouse Electric & Mfg. Co., Pittsburgh.

Builds New Screw Cutting Bench Lathe

The tool shown in the accompanying illustration is a direct motor-driven bench lathe, recently developed by the Urban Machine & Tool Co., Cleveland. The head stock encloses all moving parts, including the driving motor. The gears are alloy steel, heat treated, and run submerged in oil. The spindle is carbon steel, finished by grinding to insure accuracy. End thrust is supported by radial thrust bearings.

The bed, which is cylindrical, is finished by grinding and is equipped with a hardened and ground takeup gib. The tail stock is of heavy design and fits over the bed, a feature, which it is claimed permits of rigid clamping. The tails tock may be set over for taper turning.

The carriage, which also travels over the cylindrical bed and is ground internally has a wearing surface. This tends to reduce chattering. The compound rest is equipped with taper gibs and graduations are provided for readily setting it at any angle. The longitudinal motion of the carriage is easily controlled and can be stopped instantly by throwing out the clutch lever on the head stock.

The lead screw with a ¾ x 10 acme thread is inside of the bed and therefore is protected from chips and dirt. The change gears permit the cutting of standard threads from 8 to 64, including 11½. The lathe weighs approximately 200 pounds and is a self-contained unit.

The Bethlehem Steel Co. has placed two blast furnaces in operation last week; one stack at Lebanon is making foundry, the other at Sparrows Point, is making basic. The Topton furnace, of the Empire Steel & Iron Co. has gone in on foundry iron. The Temple, Pa., stack may resume soon on foundry iron.

Schwab States Steel Is Industry's King

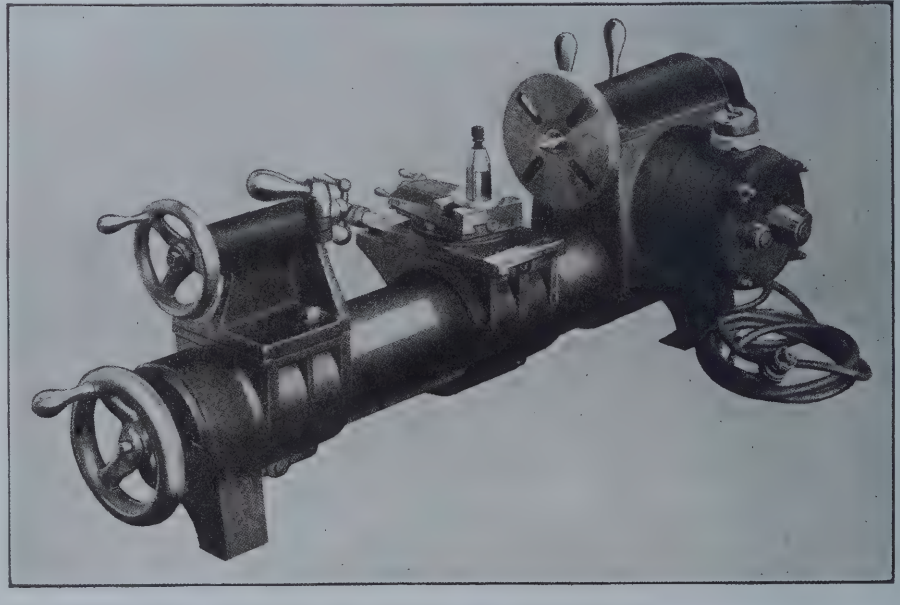
That normal conditions will not prevail until the country has gone through a greater crisis than that brought about by present labor conditions, is the opinion of Charles M. Schwab, chairman of the Bethlehem Steel Corp., according to an interview given by him at Pittsburgh, where he attended the Carnegie memorial services at the Carnegie institute.

"Steel is industry's king at present," Mr. Schwab is quoted as saying. "Cotton had its day. Wheat had its day. It's steel now. Steel is greater than any other single thing. This year there will be a production of 40,000,000 tons, which will produce a greater revenue than the corn crop."

Several subjects, including labor unrest, the peace treaty, international trade, etc., all vital questions of the hour were discussed by Mr. Schwab. At the memorail services he paid a tribute to the life and character of Andrew Carnegie.

Takes Over Shop

The Jones Structural Steel Co., Ravenna, O., has been incorporated to take over the business of the former partnership of Jones Bros., and improvements will be made at the plant which is equipped for fabricating structural steel. J. A. Jones, formerly of the Alliance Structural Steel Co., is president, and G. G. Jones, formerly of the Penn Bridge Co., Beaver Falls, Pa., is vice president. B. F. Jones is secretary.



SELF-CONTAINED BENCH LATHE WITH CYLINDRICAL BED

Industry Backs Coal Proposal

Manufacturers Urge Government to Stand Firm in Attitude Toward Unreasonable Demands of Miners Notwithstanding Probability of a Curtailment of Operations —Railroad Administration May be Obliged to Curtail Priority List

WASHINGTON, Dec. 2.—With the production of coal at a low ebb, one month after the strike was begun, the government is standing firmly behind its rejected proposal for a 14 per cent increase in wages, made through Fuel Administrator Harry A. Garfield last Wednesday night. That it intends to remain steadfast has been made plain in emphatic terms by Dr. Garfield. He is supported not alone by the government, which is prepared to exert all its powers to break the strike, but also by the great consuming public, including many manufacturing interests. Telegrams and letters coming to the fuel administration from these interests say that, rather than pay any more for their coal, or to have the government yield to the miners, they prefer to close down. That widespread closing down of industries, especially in the Middle West, is imminent unless quick relief in the way of supplies is afforded, is evident from messages also received by the administration, both from government sources and from private manufacturers. Despite this the latter have approved the government's position and are ready to see that it is vindicated at whatever sacrifice and suffering may be necessary. To do otherwise, it is recognized, is to concede the utter failure of organized government and the domination of a relatively few radical labor leaders. Such a condition, it is pointed out, inevitably would lead to chaos sooner or later.

While miners have not returned to work freely, some have drifted back, receiving the 14 per cent increase in wages, which operators through notices posted at the mines, said they would pay in accordance with their acceptance of the government proposal. It is confidently believed that there will be a progressive increase in the number of workers who return inasmuch as they have been officially advised through both Fuel Administrator Garfield and Assistant Attorney General C. B. Ames that they will be protected. To do this troops will be sent wherever and whenever needed by the war department. The department of justice is also prepared to take any legal action that is necessary and will obtain injunctions or take other courses to prevent strikers and union officials from interfering with production. Moreover, where operators may show any inclination not to open their mines, they will be seized by the government, Mr. Garfield has stated, but it is not believed this plan will have to be resorted to, unless it be in isolated cases. A number of mines are closed at present, but not through the action of operators, but because of the failure of miners to return to work. The operators plainly are not satisfied with the proposal of the government, inasmuch as they are to afford the entire 14 per cent increase in wages, but nevertheless they have accepted the suggestion and, with perhaps few exceptions, are cooperating fully with the government. Labor leaders, including Acting President John L. Lewis, whose scornful rejection of the government plan was made immediately after Dr. Garfield read it, continue to defy the government, but whether or not any action will be taken against them under present conditions remains to be seen.

Work on Best Distribution

With the alarming shortage of coal, and the comparatively small production existing, government officials are devising means to work out a solution that at least will afford a minimum of the requirements to prevent an industrial calamity and widespread suffering by the people. It is considered probable that the railroad administration, unless quick further improvement is made in mine operations, will resort to curtailment of the priority list, and cut off supplies entirely from so-called nonessential industries, although actually there are no such industries. Obviously this would cause idleness of many workers and it is said that the iron and steel industry may be one of the heavy sufferers through this reported plan.

While these suggestions looking to conservation of coal may be adopted, and workers may return in increasing number, appreciable relief is not expected without considerable suffering. Acting President Lewis and other officials of the United Mine Workers apparently are determined to do nothing to have strikers resume work. However, hope is seen in the fact that the government, through the injunction granted by Judge Anderson, has tied up the benefit funds of the miners, and after they have missed a pay day or so, it is thought many of them will be ready to return to work. It is held to be certain that they will not be able to obtain credit for living necessities long in the absence of being at work, and should any attempt be made from an organized source to give benefits to the miners this would be construed as part of the conspiracy charged by the department of justice and be punished accordingly.

The miners, after bombastic claims that a 40 per cent increase in wages was the "irreducible minimum," stood ready to accept the suggestion of Secretary of Labor William B. Wilson, who holds cards of membership in the miners' union, that they be granted an increase of 31.6 per cent. When Dr. Garfield and members of the cabinet refused to accede to this proposal, Lewis and other union officials protested that the government had repudiated its word. This, of course, was not so. Secretary Wilson, who has been bitterly criticised for the favoritism he has shown to the miners, merely was a mediator and conciliator, as Dr. Garfield stated before the meeting of operators and miners when he announced the proposed 14 per cent increase. Dr. Garfield said that, according to his figures, gathered from the bureau of statistics, department of labor, the federal trade commission and the railroad administration, it would take an average increase of 14 per cent to bring the scale of the miners up to the highest figured increased cost of living and no one has yet been able to dispute his figures.

Lewis returned to Indianapolis last Friday night after conferences on that day with Secretary Wilson and President Samuel Gompers of the American Federation of Labor, and said that he had arranged with Gompers to have the federation's lawyers assist counsel for the miners in their appeal from the ruling of Judge Anderson demanding cancellation of the strike order. Gompers issued a statement purporting to describe the interview with Lewis and said the award of 14 per cent increase had been discussed, Lewis declaring it would not be accepted. After conferring with Secretary Wilson, Lewis said: "Dr. Garfield represents the government Mr. Wilson told me that." Previously Lewis and other union leaders pretended to believe that Mr. Wilson represented the government.

A meeting is to be held here Wednesday by the operators' wage scale committee to determine details to preserve the existing differentials in putting the 14 per cent wage advance into effect.

In view of the defiant attitude of

the miners, doubt is expressed that they will approve the recommendation of Dr. Garfield that the government create a permanent consultative body, with purely advisory powers, consisting of the secretary of the interior as chairman and of an equal number of representatives of the operators and mine workers. Provision would be made for collecting definite and trustworthy data concerning the coal and coke industry as to production, cost, distribution, cost of living in different districts, selling prices and export requirements. While the miners could not conceivably oppose the plan on logical grounds, their attitude indicates that they would not accept it at this time simply because it was proposed by Dr. Garfield, if for no other reason. Nevertheless congress may act upon the suggestion.

Government Issues Huge Machinery List

WASHINGTON, Dec. 2.—The machine tool section, office of the director of sales, war department, has prepared and is distributing comprehensive bulletins listing approximately 2500 machine tools, valued at about $4,000,000, which are being offered for sale. The tools are listed according to their class, type, size and maker, together with the address of the district offices having the tools for sale where copies of the bulletins are obtainable. A brief description of each tool is given, including its "service condition." The bulletins will be revised from time to time, and issued every 15 days, as sales are made or as additional machines are declared surplus.

The tools listed consist of boring, broaching, centering, cutting off and drilling machines, furnaces, gear cutting machines, grinders, hammers, milling machines, pipe machines, planers, presses, riveters, screw machines, shapers, sheet metal machines, slotters, small tools, lathes, nailing machines, routing machines, trimmers, shop equipment, single purpose and special machines and miscellaneous machines.

The information carried in the bulletins, it is announced, has been obtained from the best sources available. The government invites inspection before purchase and assumes no responsibility as to condition or completeness of machines. The service condition is an approximate rating subject to change from further detailed information or inspection. All prices are subject to change without notice, f.o.b. cars, point of location and all machines and equipment are listed subject to prior sale. Prospective buyers are requested to communicate with their nearest bureau and district office.

Tools for Schools Omitted

None of the tools listed include those which are to be disposed of by the government to educational institutions, as provided in recently enacted legislation. The equipment to be sold to the schools, upon a basis of 15 per cent of their original cost, soon will be inventoried and a list prepared with an announcement as to their location and plans for their disposal.

Copies of bulletins issued and to be issued may be secured from the following various district offices:

AIR SERVICE—MATERIALS DISPOSAL BRANCH

811 Little building, Boston.
2050 Elmwood avenue, Buffalo.
230 East Ohio St., Chicago.
Care Maxwell Motor Co., East First street and Baltimore & Ohio railroad, Dayton, O.
Care aviation general supply depot, Springwells, Detroit.
Postal Telegraph building, San Francisco.
360 Madison avenue, New York City.

ORDNANCE SALVAGE BOARD, COMMISSION ON SALE OF BUILDING AND EQUIPMENT

Columbia avenue and Baltimore & Ohio railroad, Baltimore.
19 Portland street, Boston.
945 Main street, Bridgeport, Conn.
Seventy-fourth and Ashland avenue, Chicago.
Walsh building, Third and Vine streets, Cincinnati.
Twenty-second and Prospect avenue, Cleveland.
35 Washington boulevard, Detroit.
1107 Broadway, New York City.
1710 Market street, Philadelphia.
Fortieth and Butler streets, Pittsburgh.
82 North St. Paul street, Rochester, N. Y.
Missouri State Life building, St. Louis.
Room 21, 43 Victoria street, Toronto, Ont.

MACHINE AND ENGINEER MATERIAL SECTION, SURPLUS PROPERTY

Transportation building, Atlanta, Ga.
Coca Cola building, Baltimore.
108 Massachusetts avenue, Boston.
1819 West Thirty-ninth street, Chicago.
Jeffersonville, Ind.
461 Eighth avenue, New York City.
Audubon building, New Orleans.
Omaha, Nebr.
Twenty-first street and Oregon avenue, Philadelphia.
Second and Arsenal streets, St. Louis.
Fort Mason, San Francisco.
San Antonio, Tex.
El Paso, Tex.

SIGNAL CORPS

Textile building, Boston.
Army building, 230 East Ohio street, Chicago.
8-10 Bridge street, New York City.

Navy Tells of Its Price-Fixing Methods

WASHINGTON, Dec. 2.—How the navy department is able to carry minimum stocks of materials at the various navy yards is explained by Rear Admiral Samuel McGowan, paymaster general of the navy and chief of the bureau of supplies and accounts, in his annual report to Secretary Daniels. His report also summarizes the situation as to the sale and disposition of surplus material, that of canceled contracts and the use by the navy of its commandeering powers after the signing of the armistice.

Navy yards were well stocked with materials when the war demands disappeared with the signing of the armistice, Admiral McGowan said. In order that these might be used and further purchases be kept at a minimum, a system was adopted by which reports of all inactive and excess stocks are forwarded to the bureau of supplies and accounts. Requirements submitted are checked against these stores and dispositions made where specifications permit. This clearing house method has, according to the bureau chief, resulted in the interbureau exchange of $7,312,296 worth of material from the signing of the armistice to June 30, last. In addition, cancellation of contracts for materials worth $3,845,279 was ordered as a result of this system.

Due to standardization of material to a large extent many items are being eliminated in yard stocks, resulting in considerable reductions in the money tied up in material, the admiral reported. In order, however, that stocks will not be too scanty or too great under this plan, minimum and maximum quantities are being established at the navy yards covering the different items of material carried in the naval supply account. While not noted in the admiral's report it may be said this system has won the admiration of officials in other government departments and, as stated in the report, the navy is in constant touch with other departments, particularly the Emergency Fleet corporation, with a view to their utilizing navy stocks and vice versa.

Since the signing of the armistice sales of navy surplus materials have aggregated $20,500,000. The report says:

"Paralleling the customary navy procedure in the purchase of supplies, every effort is made in connection with sales to obtain the widest possible competition by advertising." The recovery here, however, is second only to that achieved in the canceling of contracts. This method saved the government $23,800,000, the admiral reported. On these cancellations the navy paid $3,200,000 "to cover raw and partly finished material and special tools taken over by the government overhead expenses, decline in market price or difference between cost and salvage value of material retained by contractors, machinery and buildings taken over or amortized by the government and profit allowed on work in process."

"In making the settlements for damages for the cancellation or partial cancellation of contracts," the report said, "the navy has allowed the actual cost to the contractor on the canceled portion, plus a fair profit on any work done on that portion, but no profit was allowed on the unperformed portion of the contract."

There has been considerable criticism of the navy for its continued use of war powers, particularly those of commandeering, in the months following the cessation of hostilities. In discussing this Admiral McGowan said:

"Although the navy commandeering powers were in nowise curtailed by the cessation of hostilities, it was thought that the navy should lend its influence toward the resumption of normal business conditions, and accordingly navy orders have since been issued as a last resort and only when it appeared that real competition is lacking and that unfair prices are being demanded.

"Prompt steps were taken to effect final settlement of all outstanding navy orders before the detachment of the commodity specialists who were conversant with the details of each transaction. Final prices were fixed only after exhaustive investigation of the costs and other conditions. Out of 6200 navy orders issued 339 now await final price fixing and in most of these cases delay is due to causes beyond the control of the navy. It is estimated that not more than 10 cases of price fixing by the navy will require final adjudication in the court of claims."

Why Brokers Were Barred

Concerning the elimination of brokers the report said:

"During the period of the war, the activities of brokers, commission men and contingent fee agents were curtailed to a minimum due to government regulation of industries and other causes. The navy was especially free from their importunities, owing to the fact that firms of this nature had not been placed on the mailing lists for many years past and there remained only a small number of them on the navy lists at the outbreak of the war.

"Of the latter, many were debarred during the period of the war for default in delivery and other causes, including attempted fraud. Following the armistice, however, the few remaning brokers on the mailing lists immediately submitted bids in large numbers and covering all kinds of supplies. At one opening a considerable percentage of the bids was from these concerns.

"It was obvious that the acceptance of such bids would result in an intolerable condition wherein a few firms of this sort, owing to their being the only brokers on our lists, would be in the position of having a preference over other firms of the same character. Further, such a condition would tend to destroy the confidence and prestige which the navy had earned among reliable and legitimate contracting concerns in all lines of industry.

"The navy, therefore, refused to accept any further bids from such agencies and eliminated all of them from the bidding lists, thereby complying implicitly with the plainly mandatory requirements of section 3722 of the revised statutes that 'No person shall be received as a contractor who is not a manufacturer of, or regular dealer in, the articles which he offers to supply.' Following this action, persistent efforts were made by these brokers, agents, etc., to be restored to their former status as bidders, their principal argument being based on the interpretation under the statute of the term 'regular dealer'."

Country's Industry Great War Factors

WASHINGTON, Dec. 3.—The smoke of American factories, reaching from the Atlantic to the Pacific, contributed as much to the defeat of the Germans as force of our blows on the Marne and Meuse.

This point is made by Maj. Gen. William J. Snow, chief of field artillery, in his annual report made public today. The co-ordination of the output of guns and material, with the development of artillery units fell on the office of the chief of field artillery. At first, it is pointed out, to further the ends of training, this consisted of a redistribution of the scant material on hand; later it developed into not only supplying all our combatant troops in France and America with the necessary equipment and reserve, but in following up closely all improvements and inventions in ordnance and equipment.

During the early part of 1918, General Snow states, the material output dragged woefully behind the training of the personnel, but as the year drew to a close these two great factors for the successful conclusion of the war drew abreast, forcing Germany, as much as any one thing, to sue for an early peace.

The report, like those from other branches of the war department, however, takes occasion to sound warning against the United States ever again being caught utterly unprepared in material for war, and it reviews the condition at the entrance of this country into the war in its negligible supplies, the pathetic makeshifts, such as wooden guns, used to train soldiers, and the lack of accomplishments even up to the time of the armistice.

In the list of recommendations made, General Snow says:

"It is indispensable that an adequate reserve of material and equipment, particularly of ordnance, for our needs upon the outbreak of war be accumulated and maintained in time of peace. Had we not been able to obtain ordnance from the French and the British we would have been a negligible factor in the war until the end of 1918. When the armistice went into effect, 19 months after we entered the struggle, with the exception of 24 eight-inch howitzers made from British plans by the Midvale Steel & Ordnance Co., we had in line not one single piece of divisional, corps, or army artillery manufactured in America after our entry into the war."

The report also recommends that the development of the motorization of artillery of all calibers, including that of caterpillar mounts, be pushed energetically.

The question of material is declared to have been a most serious one and its lack has had a highly injurious effect upon the efficiency of the divisional artillery. The French government was to completely equip the American divisional artillery until such time as American material could be manufactured and shipped. This material consisted of artillery, 75-millimeter guns, 155-millimeter howitzers, vehicles and fire-control equipment. Although the first brigade was promptly and completely equipped, various causes made it difficult to provide the necessary equipment, especially as regards the 155-millimeter howitzers and limbers, fire-control equipment and horses. In many of the 155-millimeter howitzer regiments not even guns were available in sufficient numbers for purposes of instruction. During nearly the entire training period of the regiments after Aug. 1, 1918, there were available but four howitzers for the use of the entire regiment.

"One of the great lessons that our people should learn from this war is that it requires much time to

manufacture guns," it is stated. "* * * Had it not been for the material furnished us by the French and the British, it is believed that the war would have been lost."

General Snow says that while the facts as to shortage are as stated, he does not wish to leave the impression that the ordnance department was negligent in providing. It takes months to make a gun and carriage, it is explained, and the facilities for accomplishing this on a quantity-production scale, such as was needed in this war, did not exist in this country.

"Plants for this purpose had to be created from the ground up—the buildings had to be erected, the machinery for installation had to be manufactured, the skilled personnel had to be gathered together, the factory organization created, etc.," General Snow says. "It is a monument to American genius that we did as well as we did. Nevertheless the fact still remains that there was this tremendous shortage, and it rendered doubly hard the task of training the field artillery."

The field artillery, it is declared, suffered far greater than any other arm of the service the lack of equipment absolutely essential in the training of its units. On March 31, 1917, one week before the declaration of war, material for the training of field artillery units in the United States consisted of only 930 pieces, ranging from 2.95-inch mountain guns and howitzers to 6-inch howitzers. On April 1, 1919, production had reached the following figures: 1281 75-millimeter guns, 33 3-inch guns, 395 4.7-inch guns, 334 155-millimeter guns, 521 155-millimeter howitzers, 213 8-inch howitzers and one 9.2-inch howitzer.

Speaking of the lack of material for training purposes, General Snow says at one point:

"Entire brigades were furnished with from one to four guns for the training of the entire unit, with other necessary material distributed in like proportion. Wooden guns were improvised as were radio and telephone sets. Ingenuity was displayed in the construction of sights, scales, trench mortars, and fire-control equipment, but these improvizations in no way made up for the deficiencies in material which threatened at all times to limit the efficiency of these units."

General Snow adds that "the efficiency of the new units may be attributed to the guiding hand of the few regular officers, to the magnificent spirit and earnestness of the newly-commissioned officers from civil life, and to the interest, 'pep', intelligence, and business-like seriousness of the drafted men."

English Steel Industry Becomes More Active

Washington, Dec. 2.—The first two weeks of November showed a tremendous increase in new orders in English iron and steel industry, particularly for foreign countries, according to Wilbur J. Page, American trade commissioner at London, in a report to the department of commerce. Many manufacturers, he said, have had to refuse sufficient business to keep their mills running full capacity and as a result of this most merchants are able to dictate terms of settlement for foreign orders. The usual procedure is payment against document, he reported.

"Users of American billets are complaining about the slow delivery owing to shipping difficulties," Mr. Page wrote. "In many cases they are placing orders locally for bars, puddle bars, gas strip, etc. If United States producers could only increase production and assure reasonable delivery orders for billets and bars would be placed in large quantities in spite of the adverse rate of exchange."

One English concern was reported ready to place business here for 20,000 tons if there was any likelihood of getting reasonable delivery. In Staffordshire many of the re-rolling mills were hard pressed for material and as a result several of the mills were idle except for such small lots of stock as they were able to purchase from government supplies held over from the war.

Since the close of the strike in Wales, Welsh mills have been flooded with orders, Mr. Page said, but the largest of these has not yet started its blast furnaces and there was no prospect of making deliveries short of the New Year. Producers of billets have advanced their prices well over £15 5s. One firm in South Wales was offering a small lot of billets at £15 15s which represents an advance of 7s 6d on previous quotations.

"The molders' strike has now lasted so long that its effect is being made manifest on the iron and steel trade," continued Mr. Page. "It is becoming more and more difficult to effect renewals on plants and repairs. New machine equipment, especially rolls, are almost unobtainable."

English merchants and manufacturers recently reported an improvement in inquiries for high speed steel. This, Mr. Page interpreted, is an indication that the stocks accumulated by the British government for war purposes have become somewhat depleted, although there are considerable government stocks still left. Some sizable foreign orders for high speed steel recently were accepted, he said.

The call for tungsten has also shown a decided improvement and carbon crucible steel can only be said to be in fair demand. The shortage of ferrovanadium was reflected in a recent advance price to 30s per pound. Ferrochrome and ferrosilicon were in abundant supply with demands quiet. Ferrosilicon of 45 per cent quality was quoted at £18 per gross ton.

War Liquidation About Four-Fifths Done

Washington, Dec. 2.—To Nov. 2, a total of 27,923 war department contracts valued at $3,868,417,000 had been reported suspended, as compared with 27,752 suspended contracts valued at $3,877,095,000 reported the preceding week. These changes are due to corrected reports.

The present status of contract liquidation is as follows:

	Number	Value
Total suspended	27,923	$3,868,417,000
Total liquidated	22,804	2,106,738,000
Per cent liquidated of total suspended	81.7	54.5

On the 22,804 contracts liquidated, the saving effected was $1,857,095,000. It cost $249,643,000 to secure the relinquishment of these contracts. In addition, partial payments in liquidation on other contracts amounted to $85,838,000, making a total of $335,481,000 paid in liquidation to Nov. 8.

The present status of contract saving is as follows:

Value of contracts liquidated	$2,106,738,000
Saving effected	1,857,095,000
Per cent saving effected	88.2

There are 5119 contracts remaining to be liquidated. Of these, the value of 2211 is known and amounts to $1,761,679,000. Assuming that future liquidation in each bureau can be effected at the same rate of cost as has obtained in the past, the cost of liquidating these contracts may be estimated at $224,496,000.

Lifts Pig Iron Ban

Washington, Dec. 2.—Pig iron has been removed from the British export embargo list, according to a cable under date of Nov. 22 from Consul General Hollis at London, to the bureau of foreign and domestic commerce.

The S. F. Bowser Pump & Tank Co., Ft. Wayne, Ind., has purchased the plant of the Menefee Foundry Co., that city. The Menefee company has made castings for the Bowser company for the past 30 years.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

HENRY PENTON, Great Lakes district manager for the Emergency Fleet corporation, resigned Nov. 30, his war work having been completed. Mr. Penton is the only district executive of the 12 appointed in August, 1917, who remained from start to finish, and with his associates he has left a record of great accomplishment. The first vessel requisitioned for the government was delivered from the Cleveland or Great Lakes district, as was also the first vessel built under direct contract with the Emergency Fleet corporation. Great Lakes builders already have delivered one-fourth of the total number of merchant vessels contemplated by the corporation for the entire United States. In the 27 months prior to Nov. 30, the Great Lakes district completed and sent to sea 374 cargo vessels of 1,396,890 tons, total deadweight tonnage, and 30 tugs. On its contracts, 54 cargo ships and 18 tugs remain to be delivered from the Cleveland district, all of which will be ready for the opening of navigation in 1920.

Mr. Penton's eminent success as district executive for the Emergency Fleet corporation, doubtless can be accredited to his many years of training as a naval architect, marine engineer and practical shipbuilder. Before the war he had spent many years in executive positions with various shipyards around the Great Lakes. and was a designer and builder of high standing. His familiarity with shipbuilding problems from an executive standpoint fitted him especially to expedite the government's effort in connection with shipbuilding on the lakes during the war.

For many years he was a member of the firm of Babcock & Penton, New York and Cleveland, marine architects.

In a statement to his staff upon his resignation, Mr. Penton said:

Without your assistance and co-operation the enviable record and unique standing of the Great Lakes district would have been utterly impossible. The elder members of this force have taken part in a performance which stands without a parallel in history. I do not think it is too much to say that without the assistance of the Great Lakes district and the revelation of its resources the outcome of the war might have been very different.

Of the efforts of the builders, Mr. Penton made the following statement:

The builders of the Great Lakes showed the stuff they are made of, by expanding their capacity to meet the national need, even during the stress of war times, almost without governmental assistance. Out of over $225,000,000 advanced by the Emergency Fleet corporation for shipyard construction and expansion, less than $2,225,000 came to the Great Lakes. The builders in this district demonstrated beyond a doubt that but for canal limitations between the lakes and seaboard the shipping center of the United States would be on the Great Lakes. The lake yards outpointed the rest of the country at every stage; speed of construction, riveting output, tonnage per man, number of ships per berth, cost of supervision and other details. One yard, with only three berths, delivered 14 completed 4200-ton ships in the past 11 months. Others were not far behind.



HENRY PENTON

M. P. Emmerich has been made purchasing agent of the Duquesne Steel Foundry Co., Pittsburgh and Coraopolis, Pa., to succeed J. G. Hallas, resigned.

Edward F. Sise recently resigned as president of the Northern Electric Co., Montreal. In 1890 Mr. Sise organized the Wire & Cable Co., of which he was managing director until its amalgamation with the Northern Electric Co., at which time he became president of that company. He is succeeded by Paul F. Sise.

J. H. Nead now is metallurgist for the American Rolling Mill Co., Middletown, O., having served as captain in the ordnance department in this country and in France, during the recent war.

William H. Haywood, formerly associated with the Youngstown Sheet & Tube Co., Youngstown, O., in its sales department, has accepted a position with the Youngstown Boiler & Tank Co., that city.

Herbert Du Puy, who recently retired as chairman of the Crucible Steel Co. of America, following a serious surgical operation at the French hospital, New York, again was operated on there, Nov. 26. Following the operation, it was said that Mr. Du Puy's condition was regarded as encouraging.

William S. Boyd, who has been for a number of years purchasing agent of the Page Steel & Wire Co., Monessen, Pa., has severed his connection with that company to become manager of the steel and iron scrap department of the Thomas D. Prosser Co. Mr. Body's headquarters will be at the main office, Wooster, O.

B. Frank Hiestand has been elected vice president of the Pulaski Iron Co., Real Estate building, Philadelphia, taking the place of W. H. Gibbons, who resigned. Mr. Hiestand has been identified with the Marietta Casting Co., Marietta, Pa., and is connected with a number of enterprises in that city. Harry C. Griefzau has been made secretary and treasurer of the Pulaski Iron Co., succeeding Mr. Gibbons who also held these offices. Mr. Griefzau has been connected with the Pulaski company for 12 years. N. G. Kamerer has been made assistant secretary and treasurer, succeeding Mr. Griefzau. The company's blast furnace, coal mines and coke ovens are located at Pulaski, Va.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

FREDERICK W. SINRAM, who recently was elected president of the Van Dorn & Dutton Co., Cleveland, specialist in gears and gear cutting, has been acting head of the company with the title of vice president since the death of H. H. Hodell, about two years ago. This recognition of his services comes after a period of nine years of service with the company, which began in 1910 when he was made secretary and manager of sales. In 1911 when Mr. Dutton resigned from the company, Mr. Sinram was elected treasurer, retaining the duties of secretary. He also is treasurer of the Van Dorn Electric Tool Co., and since its organization about three years ago, has been president of the American Gear Manufacturers' association. T. B. Van Dorn one time vice president of the Van Dorn & Dutton Co., now becomes chairman of the board and Franklin Schneider, who formerly was factory manager, has been elected vice president. Mr. Schneider also is president of the Van Dorn Electric Tool Co. The present treasurer of the Van Dorn & Dutton Co. is F. G. Hodell.

J. Franklin Fort resigned as chairman of the federal trade commission, Washington, Dec. 1, because of ill health. He formerly was governor of New Jersey.

George F. Fuller, president and treasurer of the Wyman-Gordon Co., Worcester, Mass., and Cleveland, has been elected president of the Worcester Country club.

D. J. Burns, with headquarters at 1340 East Ninety-first street, Cleveland, has been appointed Ohio sales representative of the Miller Saw-Trimmer Co., Pittsburgh.

C. G. Ugguas has been appointed assistant chief engineer of the Cleveland Machine & Mfg. Co., Cleveland. Mr. Ugguas formerly was identified with the Youngstown Sheet & Tube Co., Youngstown, O., in the drafting department.

A. E. Nordwall has been placed in charge of the branch office established at 201 Maynard building, Seattle, by the Black & Decker Mfg. Co., Towson Heights, Baltimore. Mr. Nordwall will have charge of the distribution of the company's products, namely portable electric tools, etc., in the state of Washington, under the direction of the main Pacific coast office, 918 Hearst building, San Francisco.

W. J. Riley recently resigned as buyer of machinery and tools, etc., for the Covert Gear Co., Lockport, N. Y., to become efficiency engineer for the Dittmer Gear & Mfg. Co., that city.



F. W. SINRAM

Oakley S. Walker, head of the O. S. Walker Co., Worcester, Mass., manufacturer of grinding machines and magnetic chucks, retired from business upon the reorganization of the company recently. Mr. Walker is the inventor of the magnetic chuck and of many other machine parts. He organized the O. S. Walker Co.

J. A. Tarkington, superintendent and consulting engineer of the Kissel Motor Car Co., Hartford, Wis., will leave the company on Jan. 1 to become directing head of the Tarkington Motor Car Co., organized at Rockford, Ill., to manufacture passenger automobiles. Mr. Tarkington has been connected with the Kissel company for nearly 14 years.

Frank H. Willard, assistant general manager of the Graton & Knight Mfg. Co., Worcester, Mass., has been elected general manager and vice president of the company. Mr. Willard became affiliated with the Graton & Knight company in 1882. Since then he has held successively the positions of foreman, superintendent and assistant general manager.

Matthew Finn is no longer treasurer of the Federal Tool Co., 453 Michigan avenue, Detroit, manufacturer of precision tools, the duties of that office being combined with those of the secretary, Thomas T. Tierney. At the recent reorganization meeting, Victor Fabry was elected vice president. J. Larkins remains as president.

Francis J. Reilly, formerly with the Brown & Sharpe Mfg. Co., Providence, R. I., and later with the service departments of *Machinery* and *Railway Mechanical Engineer,* New York, has been appointed assistant advertising manager of the Norton Co., Worcester, Mass., to succeed Russell S. Coe, resigned. During the war Mr. Reilly was with the United States aircraft production board.

W. E. Seymour, of Beloit, Wis., has become associated with the A. O. Smith Corp., Milwaukee, as vice president and general manager. Mr. Seymour for six years has been general superintendent of the Eclipse works of Fairbanks, Morse & Co., at Beloit, previously having been with the Ford, Cadillac and Buick automobile factories and later going to the Fairbanks-Morse works at Three Rivers, Mich. He goes to the Milwaukee company to take charge of the enlargement of its works at a cost of more than $3,350,000, the first unit of which, 160 x 740 feet, is now being completed. Contracts for a second unit will be awarded shortly. The Smith company ranks as the largest producer in the world of pressed steel automobile frames and furnishes some of the largest makers of cars and trucks with pressed, forged and stamped parts. Before retiring from the Fairbanks-Morse organization, Mr. Seymour completed plans for a new $1,500,000 gray iron foundry with a capacity of 400 tons a day with eight cupolas. This will be built early next year.

Trade Pouring in on Germany

Iron and Steel Companies Making Remarkable Recovery, Although Profits Are Being Sacrificed—British Makers Demanding Protection Against "Dumping"—Lifting of Import Restrictions Disastrous for Some Concerns

European Headquarters,
THE IRON TRADE REVIEW,
16 Regent Street, S. W. I.,
London, Nov. 20, 1919.

THE German *Frankfurter Zeitung* makes a remarkable boast as to the ability of Germany to dump her materials abroad at prices below her competitors. It says:

"As the present low exchange of the reichmark is operating as an export medium of the heaviest kind, German wares are in a position to force their way in foreign markets with ease, and at prices which will yield the German producers and exporters large profits, while creating for foreign producers the most serious, sometimes even an intolerable competition."

This statement hardly is justified by the facts, and there is some evidence that although the iron and steel companies are showing a remarkable recovery in output, they are feeling severely the financial strain. With regard to German production, the low water mark was reached in February last when the output of pig iron fell to 469,000 tons as compared with 892,788 tons in February, 1918, and 1,494,000 tons in February, 1913. But after February, 1919, the output increased steadily to July, when it reached 576,000 tons. The total output of pig iron in Germany in the first eight months of the year was 4,140,000 tons, as against 7,460,000 tons in the same months of 1918, and 11,220,000 tons in the same months of 1913. For the ten months, Germany's output was 5,160,000 tons.

Nominal prices of iron and steel products and coal in Germany are rapidly rising. On Oct. 1 prices of iron were raised by various amounts, ranging between 112 and 162 marks per ton. The German Stahlwerksverband has just added 250 marks a ton to its price for mine rails, making the present price 1050 marks a ton. On Oct. 7 300 marks per 1000 kilos were added to the cost of heavy rivets, and other rivets have been advanced 300 per cent. Generally, the finishing mills are adding from 300 to 400 per cent to their prices. Leading German manufacturers claim that Germany, taking exchange into account, remains the cheapest country in the world. It appears that prices of German pig iron are about ten times as high as in 1914. At present a ton of German hematite costs 735 marks, but taking exchange into account this represents an actual increase of only about 50 per cent, whereas in Sweden advances are from 100 to 200 per cent above the peace rate.

Apparently Germany is greatly elated over her prospects of international trade. "If Germany could produce steel sufficiently," says the *Handelstidning*, "she would wipe out all competitors." This paper points to the fact that the Solingen steelwares makers, all 25 of whom were represented at the Frankfurt fair, were besieged by English, Scandinavian, French and American buyers, and "could have sold ten times as many knives and scissors as they produce normally in 10 years." It so happens however, that Germany's productivity is limited, and, further prices have not stopped advancing. That is shown by the fact that nearly all the German steel and iron companies report vanishing profits for 1918-19. The Hohenlohe Co. made a profit of 6,000,000 marks last year, but this year lost that amount. Thyssen, of Muelheim, has had to suspend his 10 per cent dividend; the Hoesch Smelting Co., of Dortmund, reports a deficit of 17,000,000 marks; and the Dusseldorf Rhenish Steel Works, the Hasper Iron and Steel Works, and several minor industries report a slump in profits. All complain of high wages, coal prices, diminished output, and higher prices paid for Swedish ore. It follows that if Germany's iron and steel industry is not to suspend home prices must be put up still further, and she will ultimately lose most of her present advantage from the depreciated reichsmark exchange.

British competitors after carefully comparing German and British conditions are not greatly alarmed, although they are not disposed to ignore the possibility that Germany, following her old policy, will send out a lot of stuff at a very cheap rate, with the intention of raising her price afterwards.

* * *

"America Come to Stay"

George Carrington, president of the Staffordshire Iron and Steel institute, devoted a portion of his presidential address at the recent meeting to a consideration of the question of foreign competition, and especially that of America. He said the 8-hour system adopted in the Black country industry had not proved satisfactory.

The world's prewar iron and steel capacity was about 60,000,000 tons. It is now 80,000,000 tons, but whereas Germany was formerly second in the world's production with a capacity of about 19,000,000, or about three times the British tonnage, the war has reduced her to an equality with Great Britain and France. America had a prewar capacity of 45,000,000 tons, and with her natural resources, there is no reason why she should not more than double her present output. Present capacities, according to Mr. Carrington, are: America, 45,000,000; England, 11,000,000 to 12,000,000; Germany, 12,000,000 to 13,000,000.

"America and France," he said, "come to stay, and it will need long, continued, and persistent effort to retain the former high position of Great Britain. America's output is once more on the increase, and, in the words of Mr. Layton, the director of the National Federation of Iron and Steel Manufacturers, "by merely selling 10 per cent of her output into the markets of the world she can swamp Great Britain."

With regard to exports the British monthly average in 1913 was 411,000 tons as compared with America's 231,000 tons. Great Britain in June last exported 194,000 tons, while the American figure for March was 408,000 tons. Mr. Carrington pointed out that two countries had changed places.

* * *

Prewar Contracts Defaulted

A number of interesting legal cases have arisen recently in Great Britain as a result of defaults on prewar contracts for raw material carrying low prices. In many cases the defendants reside in other countries and some delicate questions of jurisdiction are involved. One of the most important of these disputes, recently adjudicated before the lord chancellor, is the case of an English company operating a foundry at Leeds and a railway tire and axle plant at Manchester versus A. Johnson & Co., a Swedish concern doing business at Axmaz, near Stockholm, Sweden.

On May 23, 1908, A. Johnson & Co. contracted to furnish the English plaintiff with its requirements of Swedish pig iron from 1908 to 1920 inclusive, delivered at Leeds or Manchester for £4 17s 6d and £4 13s 9d

per ton, respectively (about $24 at then prevailing exchange). This was subsequently increased by agreement to £5 and £4 18s 3d. The defendant defaulted and has failed to present shipping documents or to forward any pig iron since 1916.

The decision was to the effect that since the arrangement was an ordinary c.i.f. contract, in the execution of which the tendering of shipping documents in England was a supplementary and not an independent proceedings, the British courts are without jurisdiction. This decision is of great practical importance to American exporters to Great Britain, since the rule of no jurisdiction has been laid down by the highest legal authority in the empire, and exporters have been constantly seeking to obtain judgments on the ground that the mere submission of shipping documents within British territory makes the sellers responsible to the British courts.

* * *

New Syndicate Formed

A great syndicate has been established in Great Britain with a capital of £5,000,000, the object of which is to secure co-operative production between several kindred industries. At a meeting held in London in October, John Slater, who presided, said the syndicate is composed of producers of coal, and they have modern collieries fully equipped for profitable operation when the government relinquishes control. The representative of the pig iron interests in the syndicate, Mr. Whitwell, said it is now negotiating for certain steel works. It now has shipbuilding yards, but they are suffering from the lack of raw material.

* * *

Appeal for Protection

A letter and memorandum have been sent to the British board of trade by the director of the Federation of British Industries. The main subject relates to the withdrawal without proper notice of restrictions on imports which action, it is claimed, has inflicted serious injury on certain industries. Instances are given of industries carefully nurtured during the war which have received a deadly blow. The government is asked to consider a series of industries which it already has declined to regard as "key industries entitled to special protection. Among these are the plants manufacturing steel balls and ball bearings, and producers of the ferroalloys, molybdenum, chrome and silicon, manufacturers of drop forgings and stampings, rolled steel wire rods, and wire nails. In addition it is pointed out that the bridge and structural iron works, marine engineering shops and iron and steel wire mills are particularly affected by the dumping of foreign goods.

Regarding competition through underpaid labor, the federation hopes that the work of the international labor bureau may lead to a clearer knowledge of the difference in wage costs in various countries. If steps can be taken by the countries in the league of nations to prevent goods produced by underpaid labor from being sold in other countries, much will be done to attain the object at which the league is aiming. This is of prime importance, the federation believes, since Great Britain seems now destined to rank permanently as a high-wage country.

* * *

Britain Short of Cars

An official explanation has been given with regard to the serious shortage of British railroad cars. It is pointed out that during the war from 10,000 to 20,000 British cars were sent overseas, and have not yet been returned. From 30,000 to 40,000 private cars are out of use awaiting repairs, and this has caused an unprecedented demand on the railroad companies' cars, especially for conveyance of coal. In addition to this, there is an unusual output of manufactured goods, especially from firms who have changed over from war to peace production.

Several Factors Affect Fuel Shortage

European Headquarters,
THE IRON TRADE REVIEW,
16 Regent Street, S. W. I.,
London, Nov. 20, 1919.

FROM the famous French coal mines of the Pas de Calais region, which were for four years in the zone of fire, water is now being pumped out at the rate of 1,000,000 cubic meters per 24 hours. Forty-five large pumping plants are in operation. This coal field is within the zone of operations of the British army and the British authorities still are giving all the assistance they can in the work of rehabilitating the mines. However, at least 20 shafts are still blocked and considerable time must elapse before coal shipments in any quantity can be expected.

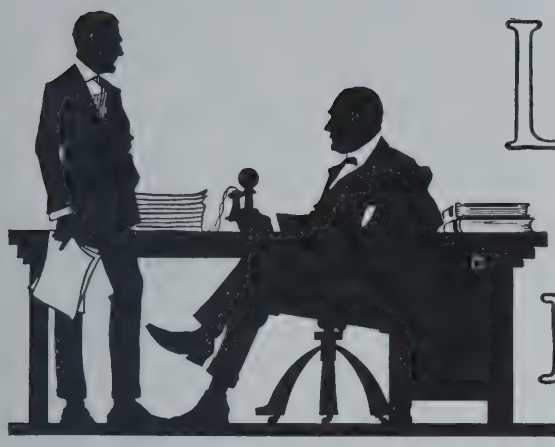
These conditions, coupled with the failure of the Germans to deliver the quantities of coal and coke stipulated by the armistice, are aggravating the fuel shortage which has reduced many of northwestern Europe's iron and steel plants to a state of partial paralysis.

But little foundry pig iron is being produced in Lorraine at present owing to coke shortage, which is accentuated by the lack of railroad equipment, including both locomotives and cars. As a result, although 50 cargoes of coal arrived at French ports during the first week in November, largely from the United States, nearly 150,000 tons still are lying on the docks owing to lack of rolling stock. Therefore, unless the curtailment of production resulting from the American miner's strike extends for a long period, this disturbance will have little effect on the European fuel situation.

Labor difficulties are complicating the situation both in France and Belgium. In the coal mines at Briey 18,000 men now are employed, compared with 23,000 during the war. The daily production of this important group of mines is between 8000 and 9000 tons. The importation of Italian labor is being considered, to which the French miners strenuously object.

As cabled to THE IRON TRADE REVIEW today, the iron works at Roubaix and Tourcoing, just behind the old German lines in northern France, are shut down from lack of fuel. Bringing in coal by motor truck has been considered but rejected as being too expensive. What is wanted is a daily train of 400 tons from the Saar or Lorraine. The alternative is for 33 plants to remain closed or to operate in a limited fashion.

Every effort is being made to encourage the shipment of Saar and Lorraine coal to other districts, but Alsace-Lorraine with its consumption of 17,000,000 tons annually must first be supplied from these sources. The German mines now under French control can produce 13,900,000 tons annually, but in October German mines furnished France only 17,000 tons of coal and coke. Coal freight rates from Strassburg and the Saar to Nancy are 8.50 and 8.35 francs per ton respectively (about $1). The rate is satisfactory to the iron and steel interests but the tonnage is lacking.



Little Stories of Business Life



Saving His Job

ILLUSTRATIVE of the contention of steel plant officials that it is the unthinking rather than the thinking toiler who has gone out is the following story told about a couple of men of one of the plants of the American Sheet & Tin Plate Co.

Bill, who did remain at his work was accosted by Joe, who thought he had a grievance and stayed out.

"Bill," said Joe, "I understand you went to work today and that you took my job. Do you think that was a nice way to treat a fellow you've known as long as you have me?"

"We have been friends for a long time, Joe," said Bill, "and it is true that I went to work today, but I haven't taken your job; I'm holding it for you till you come back. I have stayed on the job because I want to help keep the old works going, so that when you and some of the other fellows who have not been using your heads, come to your senses and start looking for a job you'll have one to go to."

Joe reported for work the next day.



How It Works Out

THAT Judge Gary was proceeding along the right line in contending before the senate committee that no shop which recognizes the labor union can continue as an open shop is borne out by experience in a strike of fabricators in Chicago. Two policies had been followed by the shops, one class paying no attention to a man's union membership while the other saw to it that no union men were allowed to remain on the payroll. When the strike came the former class of employers found the number of union men in some cases was larger than they had thought, but regardless of the proportion the strike caused the entire shop to go out, nonunion men remaining away through fear. The only shops remaining active were those which had excluded organized labor. Not the least trouble was experienced by them and operation was not interrupted.



And It Rained Coke

WHEN the steel strike was called, and operations at a good many plants suspended, coke producers found themselves in a serious dilemma. Shipments of large tonnages of coke were held up by reason of the banking or blowing out of furnaces for which the coke was intended. In a good many cases the coke already had been loaded on cars, so that, in order to escape demurrage, the coke operators immediately began rustling up buyers of this coke for spot delivery at cutprices. One of these buyers was an eastern Pennsylvania pig iron maker who, needing the coke, and finding the price attractive, closed for a large block offered to him. He specified that the coke was to be shipped to his furnace at the rate of five cars per day, so as to enable him to unload conveniently. Either his stipulation was overlooked or it was ignored. The coke company had 43 loaded cars on its sidings and demurrage charges were accumulating. Hence it sent forward the 43 cars in one consignment. When the solid train of 43 cars was delivered to the furnace company, the latter refused to accept more than 20 cars, until it had been assured by the seller that the latter would take care of any demurrage charges that might develop.



"Many a True Word—?"

POSSESSED of an unusual amount of common sense, Vice President Marshall, nevertheless, has a sense of irrepressible Hoosier humor. While President Wilson was on his western tour, the President's "only vice," Mr. Marshall, as the latter once inscribed in a book he presented to the chief executive, went to the union station in Washington as acting chief magistrate to welcome General Pershing. As his automobile neared the entrance to the White House grounds, only used by the President and distinguished visitors, the Vice President remarked:

"Now we'll see if we can get into Gompers' annex."



Bacteria Form Iron

YEARS ago Pasteur revealed the significance and dealiness of bacteria in disease, and the function that they perform in fermentation. It has remained for living scientists to discover the extent to which bacteria are engaged in tearing down and building up the earth's crust. It recently has been demonstrated that bacteria not only aid in the decomposition of rocks and in the formation of beds of chalk and limestone, but it now is evident that they are active agents in the deposition of iron ore. For instance, it is learned that much of the trouble which occurs in the operation of city water supply systems is due to iron-depositing bacteria, which clog the pipes with hard, thick crusts, and slimy layers of rust which are composed of millions of bacteria.

E. C. Harder of the United States geological survey, who has examined deposits of iron ore in many countries for the special purpose of determining their mode of origin, has recently made close studies of the action of bacteria in forming iron ores. He has found the so-called iron bacteria actively engaged in the deposition of compounds of iron not only in surface iron-bearing waters

but in mine waters to depths of several hundred feet and has made laboratory cultures of various iron-depositing bacteria. Mr. Harder describes the iron-depositing bacteria, gives the results of his laboratory experiments in bacterial iron deposition, considers the probable extent of the influence of bacterial action in forming deposits of iron ore, and gives a bibliography containing the titles of many papers on the work of bacteria in rock and ore deposition.



Purpose vs Rapacity

IN THESE days of high cost of living, Senator William S. Kenyon, of Iowa, who was in charge of the steel strike investigation, recalls that when he started to practice law in Fort Dodge he allowed himself 20 cents a day for food, a dime about 10 o'clock in the morning for coffee and rye bread, and a dime for two fried eggs and more rye bread about 4 o'clock in the afternoon. The senator could not avoid thinking of those days of rigid economy when he heard steel workers tell of wages they are being paid which by no means restrict them to such a modest diet.



Using Pipe for Frames

A NEW market for standard steel pipe is being developed among manufacturers of automobile starting and lighting equipment. It has been found that this pipe, when cut into 6-inch lengths, serves more satisfactorily than many other materials for starting motor and generator frames. After being cut to the required length the pipe is accurately bored on the inside. Recently a prominent manufacturer of automobile starting equipment in Indiana purchased 4000 feet of 4½-inch pipe for this purpose.



Unbusinesslike Methods

AN ILLUMINATING illustration of the intricacies of the red tape that enfold the efforts of buyers to obtain machine tools on sale by the government has just come to light. A manufacturer has a straight-sided press on order for a user on which six weeks delivery was promised but this time has expired and the best promise now is February. The user needs the equipment and will place it at once in production. In the tools offered by the ordnance department at Chicago is one that fills the bill exactly.

A dealer seeking to obtain it for the user was asked to submit a bid, which must be 80 per cent of the market price. This bid is to be sent to Washington where it will be compared with the bureau's idea of what the price should be and eventually a decision will be made whether this buyer will be allowed to take the machine. Meanwhile it is being withheld from production.

A business concern under similar circumstances would have a price set on the tool so that the buyer could decide at once, the transaction could be completed and the tool shipped all on the same day.



Opportunity In Steel

THE *New York Globe* sends out a reporter every day to ask a certain definite question of five people whom he selects at random in public places. A few days ago the question that he put was "What business or profession affords the best opportunity for young men?" The reporter went to the Pennsylvania railroad station in New York and put the question to a steel man, a superintendent of stevedores, a tailor, an actor and a draftsman. Of these men, the actor selected the profession of electrical engineer, and the tailor that of lawyer. The superintendent of stevedores selected the steamship business and the draftsman the profession of engineer in the erection of big buildings. The steel man, who was J. C. Williams, vice president of the Weirton Steel Co., Weirton, W. Va., came out unqualifiedly for the steel industry.

"There is no better business today," he said, "for a young man than the steel business. We need young blood more and more but its possessors must start at the bottom. The great trouble with our young men today is that they want to start at the top."



Stimulus of Victory

C. S. KOCH, new president of the American Foundrymen's association, vouches for this strike story:

A Lancaster, Pa. jewelry man, returning home from a business trip to New York, found that a strike had been called during his absence. He asked the elevator man, who happened to be an Irishman, why the men had struck. The latter replied: "I guess 'twas because they won the last one."



A Smokeless "Smoke House"

EDWIN F. SWEET, acting secretary of commerce, tells the following story on Sir Arthur Shirley Benn, head of the British mission, now on tour of the industrial centers of the United States, under auspices of the national chamber of commerce.

Mr. Sweet was host to the four foreign missions on a visit to Mount Vernon. After visiting the tomb of Washington and going through the historic mansion, Mr. Sweet and Sir Benn strolled over the grounds. As they approached some of the outbuildings, Mr. Sweet asked Sir Benn if he wanted to smoke, offering him a cigar. Sir Benn said yes and Mr. Sweet pointed out the smoke house of the old estate on which the words "smoke house" appeared as a guide to visitors. Sir Benn, who had spent much time in America and who Acting Secretary Sweet thought was familiar with American institutions like smoke houses, immediately started for the building, apparently intending to go inside and "light up."

It was not until Mr. Sweet explained that Sir Benn smilingly admitted it was "one on him."

Holds Unusual Meeting

An unusual meeting of the Newark Foundrymen's association, Newark, N. J., was held Dec. 3. It was participated in by the membership of the Gray Iron club and the Metropolitan Brass association of New York, and was called to bring the foundrymen of the Newark and New York districts closer together. The meeting was addressed by A. O. Backert, editor of *The Foundry,* whose subject was "Some Recent Experiences in England and France," particularly relating to the iron, steel and foundry industries in those countries. The meeting was held at the Downtown club, Kinney building, Broad and Market streets, Newark, and was preceded by a dinner.

The Russell Motor Car Co., Toronto, Can., reports a net profit for the year ended July 31 of $457,878 compared with $628,581 for the previous year. Cash on hand dropped to $183 from the $175,461 of the previous year, but investments in war loans were increased from $321,947 to $556,079.

Industry Quiet in Northwest

Shipbuilding Active But Expected to Slacken Soon—Expansion in all Lines Contemplated—Labor Unrest is Big Factor Hindering Production But Conditions are Tending to Improve Markets—Iron and Steel Strong

SEATTLE, Nov. 25.—With war work practically completed, industrial conditions in the northwest have materially quieted down. There is some contention that shipbuilding will continue to a considerable degree at the chief ports but the consensus of opinion is that early in 1920 the yards will have finished their contracts and only plants doing repair work will be maintained. An exception however, is the G. M. Standifer Construction Co., of Vancouver, Wash., which recently obtained a contract with the Green Star Steamship Corp. of New York for five 9500-ton steel cargo carriers. At present practically all the jobbing foundries are running five days a week with reduced crews, the reduction in the number of men employed being from 10 to 75 per cent. This situation is expected to change for the better about the first of the year. Assurance of an improvement over prewar times is indicated by the fact that many companies are taking up new lines to utilize the extensive facilities and equipment installations made for war purposes, while others are constructing new plants and additions.

At Everett, Wash., the Sumner Iron Works, which filled extensive war orders, is adding to its lines the manufacture of tractors. It has grown steadily since its plant was erected and recently filed notice of its intention to redeem $100,000 of preferred stock, leaving its capital stock at $200,000.

Expansion is in Progress

The Vulcan Mfg. Co., Seattle, has added to its line steel dump bodies for trucks. To better operate and increase output, the Rex Metal Works, Seattle, has purchased the Mars Smelting Co., which has been engaged in the manufacture of brasses and bronzes while the former has been smelting and refining babbitt, or antifriction metals, solders, type metals and special mixtures. The Western Rolling Mill Corp., recently organized at Seattle, will soon start the erection of a 60 x 700-foot steel plant with three open-hearth furnaces of 50 tons capacity each and two continuous furnaces. Installation of an experimental electric furnace is also a probability. The installations will include nine and 22-inch mills for turning out bars, rounds, flats and small angles.

The Consolidated Mining & Smelting Co. with headquarters at Trail, B. C., is reported considering plans for two concentrating plants, one at Rossland and the other at Kimberley. The Kimberley installation will have a capacity of 10,000 tons of copper ore daily. Plans for the Rossland installation have been under consideration for several months. The capacity considered at the outset was 1500 tons, but the quantity of low grade ore to be dressed is said to warrant the use of a 5000-ton plant. The cost of a 1500-ton plant is estimated at $500,000.

The largest magnesite mill in the United States is in operation at Chewelah, Wash., where American engineers discovered one of the largest known magnesite deposits in the country, lying in a belt 18 miles long and a quarter of a mile wide. More than $3,000,000 are now invested there and large quantities of the mineral are being shipped. While the demand for domestic manganese ore has slackened, Montana contributed more than 1/3 of the high grade ore shipped during the first six months of 1919, or 16,026 tons.

Lumber Industry Most Active

Lumbering is the greatest industry of the Northwest. The demand for lumber, especially for rail shipment, now is well under way among the mills of western Oregon and western Washington and gives every prospect of continuing with increased proportion. This is the one exception to the quiet prevailing. The 125 mills contributing to the report of the West Coast Lumbermen's association accepted orders during a recent week for 6,447,843 feet more than actually cut. Inquiries are brisk and the sales movement which usually sets in about the first of the year is making good progress. The prevailing car shortage is preventing the mills from keeping shipments on a level with new business. The rail movement for one week of November was 1495 cars—1111 cars less than the rail orders. The mills now have an aggregate of 8723 cars of unfilled rail orders on their books and no immediate relief from this shortage is in prospect, although more cars will probably be available toward the first of the year. The industry is running almost at capacity.

Congress has agreed upon $6,000,000 for construction work on the Alaska railroad during the coming year. This is of interest to the Northwest as the ports of the section handle all shipments to and from that territory. It is anticipated that opening of the coal, timber, mineral, oil and agricultural sections is not far distant. This means industrial prosperity not only for Alaska but for the Northwest as it assures an unlimited supply of raw materials.

Northwest centers are looking well to the supply of power necessary to operate industries. At the present time Seattle is constructing a 35,000-kilowatt unit of the Skagit river project. This is a small fraction of the horsepower available from this source and development will be continued as the power is needed. At the same time the city is adding largely to its existing plants and private concerns have well developed properties. Tacoma recently voted to acquire the Lake Cushman power site with an ultimate capacity of 75,000 horsepower. At Spokane and Portland private enterprise has developed large units with large reserves of power possibilities to draw from. The Pacific Power & Light Co. is spending $750,000 at Astoria, Oreg., in the construction of a power, light and gas plant. The Sherman County Light & Power Co. is installing a $150,000 steam plant at Centralia, Wash. The Idaho Power Co. has placed orders for machinery necessary for the installation of an 8000 horsepower addition to its power plant at the Thousand Springs on the Snake river. The potential water power of the Northwest is practically without limit and the industrial future of the section in this respect is secure. It has been found necessary however to speed up development in some centers as the demand already exceeds present facilities.

Strikes Hinder Production

One of the chief reasons for the failure of the Northwest to get more fully under way during the past year with a program of reconstruction has been the numerous strikes that have followed in rapid succession. The radical elements have been directing labor union movements for some time, and through their activities contracts have been broken and demands made that are impossible for employers to meet. These leaders and their organs openly announce that it is not a question of better wages and better working conditions, but that they are not so concerned in winning strikes as they are to bring about intolerable conditions in

the hope that eventually the industries will be turned over to the workers for operation. The strike which started labor on this rampage was that which began in the shipyards at Seattle and out of which grew an attempt to carry through a general strike last February. The latest strike involving between 4000 and 5000 men, was that of the building trades in Seattle, which was recently called off by the complete surrender of the union and the return of the men to work under the old scale, and by an open shop policy going in effect.

By reason of the difficulties being experienced by employers throughout the district in getting business under way where union labor is concerned, the open shop is becoming a very attractive proposition to these foremen and this is why the outlook for a better condition in the district is becoming more satisfactory. The United Metal Trades association, employing in normal times more than 7000 men in Oregon and Washington since it was organized, 18 years ago, has stood for and maintained the open shop policy. Numerous attempts have been made to unionize its shops but all have failed. The going wage with additional compensation for efficiency is the rule. The result is industrial peace with satisfactory output.

The iron and steel market is not very active. One dealer reports No. 1 foundry pig iron at $49.20 to $50 a ton Seattle. Another reports the market strong and rising, giving a price of $51 for No. 1 foundry, Seattle. The demand for iron on the coast is not as great as it should be. Business is being done on a strong competitive basis. Uncertainty in shipbuilding and the fact that the usual normal channels are not functioning to full capacity are causes for the dull period.

Prices Tending Upward

Coke is hard to get because of the inability to procure rolling stock. The government will not allow shipments west of the Mississippi river in open top cars and others are scarce. The coke market is firm and prices are going up. The proportion of eastern coke used varies but little from other times and it is holding its own with local coke.

A limited amount of steel bars is moving at 3.60c Seattle for domestic use and at 2.95c Seattle for export. There has been little movement of recent date in cast iron pipe but there are some indications of a revival in the demand. Seattle is to substitute iron mains for wood in a considerable section of the city at a cost of approximately $460,000 and Bellingham, Wash., is asking bids for 81 tons of 8-inch and 55 tons of 12-inch cast iron pipe for watermains. Foundry iron scrap, broken to 150 pounds and less, is being quoted at $35 a ton with the tendency upward. There is considerable moving. The market in steel scrap is upset but some was sold recently for export at $24.

The Seattle representative of the Kawasaki Dockyard Co., Kobe, reports that 30,000 tons of steel material representing an expenditure of $2,700,000 and ordered from the United States Steel Corp. is to be handled through the port of Seattle.

Approximately 1500 tons of steel produced at the Seattle plant of the Pacific Coast Steel Co. was recently booked for shipment to the Orient. Other shipments have been made and more are contemplated.

Tin Plate Mill

Being Built in Canada Making Progress—Want Tariff Body

Toronto, Dec. 2.—Good progress is being made in the construction of the tin plate plant of Baldwins, Ltd., on the site formerly occupied for the manufacture of munitions by the British Forgings, Ltd., under the supervision of J. C. Davies, managing director. The work will cost approximately $1,250,000 and the first unit to be installed provides for eight mills. This will be doubled at a later date and the company intends ultimately to have 42 mills in operation with a view to an annual output of 200,000 tons of tin plate, sufficient to provide for all Canadian requirements. It is hoped to commence actual production by next summer with a working force of about 1800 men. It will be necessary to bring from England a number of skilled workmen as a nucleus of the force. A power wheel of 125 tons is being installed and the company will be a large user of electricity, although it is uncertain whether it can be secured at a sufficiently low cost to render it economical for steel manufacture. The Canadian branch of Baldwins, Ltd., will be known as the Baldwins Canadian Steel Co.

On Nov. 25 deputation from the executive of the Canadian Manufacturers' association had an interview at Ottawa with Sir George Foster, Canadian minister of trade and commerce, and other members of the government. They strongly urged the creation of a permanent tariff commission of experts to act in an advisory capacity in connection with tariff revision. Last session Sir Thomas White, then finance minister, proposed an inquiry into the workings of the tariff by the cabinet to which the government has apparently committed itself. The manufacturers strongly opposed this proposition urging that were the government itself to undertake the investigation it would have the effect of stirring up political agitation and accomplish no beneficial results. It is understood that the government adheres to its plan for a cabinet inquiry, but may eventually appoint a permanent tariff commission.

The Canadian board of commerce has rendered a decision in the case of the Laco-Phillips Co. which charged the Canadian General Electric Co. of Toronto with making use of its patent rights for the manufacture of tungsten wire filaments to restrain trade and commerce in relation to the manufacture of incandescent electric lamps. The board finds that the Canadian General Electric Co. has a monopoly by patent of tungsten wire filament, but not of ordinary electric tungsten lamps, that the company has not operated its monopoly fairly, and that the Laco-Phillips Co. is entitled to have the case reported to the minister of justice under the Combine act, which will be done unless the parties can come to an agreement. The law provides that when patents have been used in restraint of trade the minister of justice shall apply to the Exchequer court for a revocation of the patent.

The United States government has been settling with Canadian companies which had entered into contracts for the manufacture of war material. The process of making adjustments has been rather lengthy in many cases, and there was a good deal of impatience in connection with the delay. The work has been proceeding slowly, however, and several adjustments of importance have been announced. A final settlement was made with the directors of Motor Trucks, Ltd., Brantford, Ont. The plant was erected in the final months of the war, and had barely commenced production when the armistice was signed. Expensive equipment was installed and the plant was regarded as one of the finest of its kind in Ontario. The United States government retains possession of the building and an effort will be made to dispose of it.

The Electric Steel & Forge Co., Cleveland, through A. B. Leach & Co., Inc., is offering $500,000 of 7 per cent preferred stock at 98 accompanied by a bonus of common shares. The proceeds will be used to complete buildings now under construction, the purchase of equipment and to supply additional working capital.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Booth Electric Furnace Co., Monadnock building, Chicago,has opened the following district offices in a number of cities for the sale of electric furnaces for melting steel, iron and nonferrous metals.

For New York and New England, Edward B. Stott & Co., Flatiron building, New York City, with E. F. Tweedy, secretary of the company directly in charge; for eastern Pennsylvania, New Jersey, Maryland, Delaware and southern Atlantic coast states, the Northern Engineering Co., 308 Chestnut street, Philadelphia, with F. W. Doran in charge; for northeastern Ohio, western Pennsylvania and western New York, Charles L. Foster, formerly sales manager of the Electric Furnace Co., Alliance, O., with offices at 879 The Arcade, Cleveland.

* * *

THE Louisiana Steel Co. is to be organized with works in Shreveport, Louisiana, through the Louisiana Finance Co. of the same city, which is to purchase half of the proposed $10,000,000 capital stock. Col. L. P. Featherstone of Beaumont, Tex., and associates in the Texas Steel Co., are the organizers. In connection with the steel plant it is proposed to mine the iron ore in 7000 acres of land purchased in east Texas.

* * *

WHEELOCK LOVEJOY & CO., INC., Cambridge, Mass., announce the opening of two new branch warehouses. One which will be located in Chicago will open Jan. 1, and will be in charge of E. P. Gaffney. The other, located in New York, will open Dec. 15 and will be in charge of W. H. Wallington. The company deals in tool steel, and other high-grade alloy steels.

* * *

THE Pittsburgh Knife & Forge Co., Pittsburgh, recently purchased 16 acres at Coraopolis, Pa., on which it will erect two steel frame buildings, 100 x 700 feet each. The company plans the expenditure of $500,000 on the construction and equipment of these buildings, and is in the market for a crane, seven steam drop hammers, as well as a complete line of forging machinery. When completed this plant will be used in the production of large forgings and the present plant of the company in Pittsburgh, North Side, will be devoted exclusively to the making of the lighter forgings.

* * *

THE Fort Worth Drilling Tool Co., Forth Worth, Tex., is planning to invest several hundred thousand dollars for building and equipping a tool works in that city. The organization is new and was formed with $400,000 capital, of which $350,000 is estimated as the cost of the buildings, machinery and site. Numerous contracts are reported already signed with companies operating in the Texas oil fields.

* * *

SINCE Dec. 1, the American Iron Products Co., Inc., 107 Liberty street, New York, has been operating its nonferrous department. It is in charge of a trained brass and copper man. The purpose of the department is to take over and handle direct, the brass and copper business, heretofore originating through the company's branch offices in foreign countries, which has been diverted through another company, specializing in nonferrous metals.

* * *

THE Rolls-Royce of America, Inc., which has decided to locate in Springfield, Mass., has announced plans for its first plant and engineers are now at work on the details. Five buildings will constitute a group, the first unit occupying 74,000 square feet. They will be of sawtooth type of construction, one story high each. The machine shop will have 32,000 square feet, assembly shop 20,000, test shop 11,000, hardening shop 5000, and office building 6000. The latter will be of steel, wood and brick construction.

* * *

ORIGINALLY formed in 1917 for the purpose of specializing in the manufacture of high speed steel, the Syracuse Alloy Steel Co. has found it necessary to reincorporate. The name of the new company is the Syracuse Alloy Steel Co., Inc., and property has been purchased in the eastern part of Syracuse on which a plant now is being built which will permit of bringing production more in keeping with demand for its output. The plant will be equipped with a sufficient number of additional hammers and rolls. In addition to manufacturing the high speed steel itself, the company manufactures forged side and end milling cutter blanks, etc., as well as forged cutter blanks for special shapes of cutters as required by individual customers. The new plant will allow the company to enter further into the production of intricate forgings, to which it is giving considerable attention. The plant will be ready early in 1920.

* * *

SALES representatives of the Independent Pneumatic Tool Co., Chicago, from all over this country and Canada, met in convention recently at the company's general office, 600 West Jackson boulevard. The meeting was in charge of R. S. Cooper, vice president and general sales manager, other officials assisting being: John D. Hurley, president; F. W. Buchanan, secretary; Adolph Anderson, assistant to president; F. B. Hammerly, works manager; Axel Levedahl, consulting engineer, and R. A. Norling, C. D. An entire day was spent at the company's plant, visiting the different mechanical departments. Ways and means for improving the output as well as service to customers were discussed.

* * *

PLANS have been completed for erection of a plant for the Bridge & Beach Mfg. Co., St. Louis, stove manufacturer, which will embrace all modern improvements in the line of industrial construction. The plant will be comprised of a molding shop, 150 x 322 feet, a cleaning and grinding building, polishing and nickeling building, japanning room, a 3-story mounting building, 54 x 318 feet and a 3-story warehouse, 120 x 255 feet. A center group of buildings will comprise the boiler house, engine house, enameling building, pattern storage building and pattern shop. A storage yard for pig iron, coke, sand, etc., will be provided. The entire plant will be electrically operated from power generated at the plant. The total floor area of the buildings will be 240,000 square feet. The company will employ 700 men and expects to manufacture approximately 100,000 stoves a year, including furnaces.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

OCCUPYING the entire top floor of the Telford building, Waterbury, Conn., the Holaday-Telford Co., Inc., designer and manufacturer of metal patterns, core boxes, pattern plates, tools, jigs, etc., will erect its own plant early in 1920. Incorporated at $10,000, the company announces it will increase the capitalization at an early date to permit of expansion and additions to equipment. A. E. Holaday is president and manager; Joseph Telford is treasurer and W. S. Brakenridge is secretary. For about 12 years prior to Oct. 1, 1919, Mr. Holaday had charge of the pattern department of the Eastern Malleable Iron Co., which operates plants at Bridgeport, New Britain and Naugatuck, Conn. The Holaday-Telford company's shop superintendent formerly was with the Singer Mfg. Co., in charge of the pattern, tool and jig departments. V. J. Richardson, who has been with the Sargent Co., New Haven, Conn., in the experimental department, is an expert on builders' hardware, locks and keys.

* * *

WORK recently was started on the construction of a new machine shop for the Whitmore Machinery & Foundry Co., Menasha, Wis. It is to be a modern building 60 x 116 feet and will be located west of the company's new foundry. Outer walls will be of brick to a height of five feet, from which point construction will be of steel frame and glass. The contract for the work was awarded to the C. R. Meyer & Sons Co., Oshkosh, Wis. A traveling crane will be installed, which will operate the full length of the shop.

* * *

THE Gerstner Boiler Works, Pittsburgh, has doubled its capital to $200,000, to take care of increasing business. Additional steel buildings, 100 x 220 feet, are being erected. The company is working on an order of 152 portable boilers for the western oil trade, for immediate delivery. It also is building 30 steel locomotive tender tanks for export and has booked a large order for steel ship masts for 16 vessels now under construction, as well as a number of smaller orders. Its McDonald plant, which is equipped for the re-ending of boiler tubes exclusively, by a patent process controlled by the Gerstner company, is running 100 per cent.

* * *

FOR the present, the Danielson Tool Co., Wausau, Wis., will devote its attention to the manufacture of a line of 200 different tools and devices for special purposes designed for Ford garages and repair shops. The concern is incorporated in Wisconsin with a capital stock of $100,000 and is a reorganization of the Danielson Engine Works of Chicago, founded in 1915 by Frank Danielson, who becomes vice president of the new company. T. H. Jacob, of Wausau, is president; John M. Lull, secretary, and George Stolze, treasurer. A one-story, fireproof shop, 70 x 200 feet, has been acquired. Castings are being purchased from Wausau foundries, but later the Danielson company intends to install its own casting facilities.

* * *

WITH the Vulcan Plow Co., as its parent company, the Vulcan Implement Factories, Inc., Evansville, Ind., recently was organized to manufacture and sell a complete line of tractor-drawn tillage tools for all makes of tractors. A 4-story plant is being erected for the new enterprise, adjacent to the Vulcan Plow factory, as well as a 1-story forge shop, etc. The Vulcan Plow Co. will continue to manufacture horse-drawn tillage tools, turning over to the new company the line of tractor plows it has been manufacturing for some time. This new plant will probably be in operation by Jan. 1, 1920. Richard Rosencranz is president of the new company; J. H. Berryhill, secretary, and G. A. Trimble treasurer. It is capitalized at $300,000.

* * *

AMONG recent incorporations noted is that of the Kuniholm Mfg. Co., Riverside street, Gardner, Mass. This company, capitalized at $50,000, will manufacture children's vehicles, specializing in hardware, wheels, gears, etc. A plant now is being erected and is expected to be ready for installation of machinery about Nov. 1. This machinery and equipment will include a forge furnace, 13-inch lathe, 16-inch shaper or crank planer, three or four different sized presses, automatic wire cutting and straightening machines, welding machines, bench drills, motors, etc. Officers are: President, Hugo M. H. Kuniholm; secretary and treasurer, C. Harry Kuniholm. In addition to these, Martin Kuniholm and W. Gardner Kuniholm form the board of directors.

* * *

STARTING with sizes from 1 to 7½ horsepower, the Zobell Electric Motor Corp., Garwood, N. J., will manufacture both alternating and direct current motors. Although incorporated last April with a capital of $250,000, the company only recently completed its designs and now announces its intention to incorporate in small motors, many of the refinements found in the larger sizes. Shafts will be removable without disturbing either the core or commutator. If necessary the commutator may be removed without disturbing the shaft or core. The company intends to specialize on special purpose motors, designed for the machine on which they are to be used and present equipment permits an output of from 200 to 300 motors monthly. Fred G. Bell is president; A. T. Zoebisch is treasurer and F. E. Bucker, secretary and superintendent.

* * *

AS PARTNERS, consulting engineers Robert D. McCarter and William L. Cooper, will operate at 165 Broadway, New York City, under the name of McCarter & Cooper. Purchasing for clients will be conducted from 50 Church street, New York City. Mr. McCarter was chief engineer for the General Electric Co., in London, England, prior to 1902. From that time until 1914, he maintained a consulting engineer's office in London, serving the European Westinghouse companies. He also was president and managing director of the Russian Westinghouse Co. He opened an office in New York in 1914. Mr. Cooper who established an office in New York in 1917, was European manager and chief engineer for Robert W. Hunt & Co., for the 15 years preceding that time.

Market Tightens

In Coal-Tar Products Because of Strike—Sulphate Advanced

New York, Dec. 2.—Strength in the coal tar products market is being further accentuated by developments in the coal situation. The refusal of the miners to accept the wage increase proposed by fuel administrator has discouraged the hope that a normal output at the mines will materialize soon. As a result the ovens are dipping into their coal stocks more sparingly, thus influencing production.

Prices generally are tending upward, and in sulphate of ammonia quotations have advanced. The little spot material available is quoted at $3.85 to $4, f.o.b. producers' plants,

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$3.85 to 4.00

Contract

Pure benzol	$0.25 to .29
Toluol	.26 to .30
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

for domestic consumption, a rise of about 20 cents, and $4.75 to $5 in double bags at the eastern seaboard, for shipment abroad. Owing to the extent producers are booked up, little contract business is being offered, and future prices are more or less nominal.

There has been no change in offerings and of benzol an advance is regarded likely in the near future. Pure benzol is quoted at 25 to 29 cents, and 90 per cent at 22 to 24 cents. These prices apply to both spot and future material.

Dye interests are coming forward as the largest buyers of naphthalin. The drug trade has now practically brought its buying season to a close. Naphthalin is scarce, at 6½ to 7½ cents in flakes, and 8½ to 9½ cents in balls. Solvent naphtha and toluol are in steady demand. Supplies are fairly plentiful. Solvent naphtha is holding at 22 to 27 cents, and toluol at 26 to 30 cents.

Southern Plants Active

Birmingham, Ala., Dec. 2.—Steel mills operations in the South are steady and there is a strong demand for the various products. Some export steel is moving, the Gulf States Steel Co. having shipped during the past week 1700 tons of billets from the Gadsden plant, bound for Liverpool, via Pensacola. Statement is made in this section that no effort is being made to get export business, as the active demands of domestic consumers will be supplied first. The fabricating plants of Tennessee Coal, Iron & Railroad Co. and the Birmingham Steel Corp. both are working on shapes for ship construction at Mobile. The latter company is taking on commercial work and the expectations are that tanks for use in the Texas and Oklahoma oil fields will bring some round tonnage to the district in the near future.

Erecting New Foundry

Erection of a new foundry building for Richard Roberts & Son, proprietors of the Delta Foundry & Machine Works, Delta, Pa., is expected to be completed by Dec. 10, and will be put into immediate operation. This building replaces one which was destroyed by fire Nov. 2. Efforts of the firemen prevented the blaze from spreading to other buildings of the plant, which include a machine shop, warehouse and pattern shop. The company manufactures steam and electric hoists and canning machinery, and has been in business for the past 35 years.

Opens District Office

The Hyatt Roller Bearing Co. has opened a district office in Cleveland, located at 309 Marshall building. It will conduct a general application department which will consider roller bearing specifications for everything but automobiles and tractors. C. L. Newby, who has represented the company for the past year in the Cleveland territory, is in charge.

Strikers Vote to Return

Striking employes of the H. W. Johns-Manville Co., Manville, near Somerville, N. J., held a meeting on Nov. 25 and decided to return to work at the same wages and under the same conditions as prevailed before the strike was called. The strike lasted 15 days and kept 1500 workers out of employment. It was characterized by considerable violence and 16 of the strikers are in jail serving terms for offenses committed during the trouble.

Steel Strike Handicaps Canadian Industries

Washington, Dec. 2.—Consumers of American steel products in Canada are pinched by shortage of material more now than at any time during the course of the steel strike in the United States, according to Felix S. S. Johnson, American consul at Kingston, Ont., in a report to the bureau of foreign and domestic commerce under date of Nov. 17. Deliveries have been retarded from the different producing areas of the United States, this being particularly true with regard to bars, sheets and tubes, he reports. All available warehouse stocks have been drawn upon to relieve the situation. He says there appears to be no assurance of an approximate date at which improvement will be made. Shipments continue to go through but in insufficient quantities to meet requirements. Buyers of sheets probably will be unable to obtain any sizable shipments until the second or third month of the next quarter. Some fair sized shipments, known to be on the way to Ontario customers, will ease the situation somewhat and distributors are making efforts to get together all supplies of sheets that are available in order to keep customers supplied. Such stocks are for the most part very meager, Mr. Johnson says.

Plates have been going through occasionally and up to Nov. 17, Ontario shipyards were able to proceed without interruption in the initial stages of the construction of vessels ordered for the Canadian merchant marine.

Expect Award Soon

Washington, Dec. 2.—Decision is expected shortly on the award of contracts for 7440 tons of special treatment steel plates and 3960 tons of nickel steel plates for battleships Nos. 49, 50, 51 and 52. The navy's bureau of supplies and accounts last week opened tenders submitted by the Carnegie Steel Co. and the Carbon Steel Co., the only bidders, whose quotations were, respectively, 11.12c and 8.84c and 11.50c and 9.25c per pound on the two lots.

What Does Share Drop Portend?

Stock Market Slump Was Due to Collapse of Over-Expanded Loan Position and Does Not Forecast Depression of Business is Belief—Wall Street Not Functioning Normally—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

DOES the recent stock market crash and the consequent subdued tone of speculative activity forecast within a few months a letdown in commodity prices and industrial prosperity? Or if not, then is the share market to be discredited as a prognosticator of developments in the broader business world? These are questions which have formed themselves in the minds of observers since the November epidemic of liquidation began. In normal times they would be more easy to answer, but the war has left conditions in finance and business uncertain in the extreme.

Those who have equal faith in Wall street's ability to discount the future and in the undimmed prospects for continued industrial activity, assert that the stock market for some time has not been normal—but rather suspended its forecasting functions while surrendering itself completely to an orgy of unreasoning speculation.

With the unhealthy elements "shaken out" and with banking credit under reasonable control, it is asserted that the market may be expected once more to begin to reflect in a normal way the real financial sentiment. Accepting this view, it would be folly to attach undue importance to the recent collapse of share values as a forerunner of what may happen in the business world within the next few months.

Speculative Bubble Pricked

The speculative bubble was pricked by the federal reserve board in causing rediscount rates on war paper collateral to be advanced, which together with the tying up of millions of banking credits in goods held in New York harbor while the strike was on, curtailed available money for stock market purposes. The call loan money rates advanced to as high as 30 per cent and as a consequence the over-extended situation, the speculative position of the market was corrected in large measure.

An interesting feature of the situation is the fact that for weeks the share market seized upon the most disquieting news such as industrial unrest, and possibility of peace treaty rejection, and professed to see in them only sources of cheer. That was while prices were still singing upward. Then when the crash came every wire served to sink Wall street's spirits into deeper gloom.

No Price Drop Seen

For the same thing to happen to industry as has taken place on Wall street would necessitate a drop in prices. A number of the strongest possible reasons militate against such an eventuality within the near future, at any rate. In the first place the world's production is sadly in arrears of demand and consumption; next the tremendous inflation of currency and circulating credits both in this country and in Europe, toward deflation of which no step has been taken, will help keep prices high; and last the influence of taxes upon prices is of great importance. Although the importance of taxes as a factor in prices is becoming more and more to be recognized, the problem of how to reduce them will remain unsolved so long as the government needs are so vast.

Perhaps the two most serious problems facing the country are those of the industrial unrest and of demoralized foreign exchange. Were it possible for the cost of living to be kept where it is for a few months the labor question, with industries going and good wages prevailing, the unrest should subside appreciably during the winter. While wages are an overwhelming factor in the prices of commodities another element which grows out of the shortage of goods and which has been exercising a powerful influence on the cost of living in recent months, is that of speculation. Commodity speculation sending prices out of reason and tying up banking credit is just as harmful as stock market speculation and the federal reserve board is believed to be contemplating means of curtailing credits for this purpose.

The European missions which came to the United States to stimulate interest in the extension of credits abroad have returned home, leaving behind them a newly formed committee of powerful American bankers pledged to do all in their power to help Europe. Although the delay in the peace treaty ratification is discouraging to plans in this direction, it would seem that the main obstacle in the way of successful flotation of foreign securities in this country, lies in the indifference of American investors.

So pronounced is this attitude that many bankers believe that it will be necessary for the government to step in the breach and save Europe with credits and raw materials. The state of the foreign exchange doubtless will increase imports to America and reduce exports, yet the demand for commodities in this country is so great that there is little danger of a damming up of goods and a break in prices. Respecting foods, however, export curtailment may operate to reduce prices, a development which would greatly aid the industrial situation through reducing the cost of living. The head of the hog buying department of Armour's has predicted $12 hogs for the winter months, due to decreased exports.

Confirm Sale of Assets of J. V. Thompson

Sale of the assets of Josiah V. Thompson, Uniontown, Pa., bankrupt, was confirmed provisionally recently by William R. Blair, referee in bankruptcy. In one order the referee authorizes the sale of certain specific properties of J. V. Thompson to William M. Hudson and others. In the second order he authorizes the sale of the remainder of the real and personal property of Mr. Thompson to the Piedmont Coal Co. for $5,000,000. In this sum was included $2,600,000 personal property and $2,000,000 in real estate and coal lands in Pennsylvania and $1,000,000 in real estate and coal lands in West Virginia. Possibility of a hold up of the sales still remains for the orders of the referee and do not finally become effective until next week, time being allowed for filing exceptions in the United States district court of Pittsburgh. Sale of the West Virginia property recently was opposed by Thompson creditors in that state and the possibility of further contest is not yet past.

Savage Arms Net Falls

The Savage Arms Corp., Utica, N. Y., for the three months ended Sept. 30 reports surplus, after charges, federal taxes and preferred dividends of $168,704 as compared with $443,611

earned in the preceding quarter and $249,918 for the corresponding quarter last year. For the nine months ended Sept. 30 the surplus available for common dividends amounted to $1,455,097.

Replogle Steel Elects

New York, Dec. 1.—Officers of the newly organized Replogle Steel Co. have been elected as follows: Chairman, J. Leonard Replogle; president, W. H. Brevoort; vice president, Charles MacNeill, who is president of the Utah Copper Co.; secretary, S. H. Bell; treasurer, L. K. Diffenderfer.

W. S. Pilling, Pilling & Crane, Philadelphia, will be added to the board of directors of the Replogle Steel Co., as well as to the board of the Wharton Steel Co., and the executive committee of the Wharton Steel Co., a subsidiary of the Replogle Steel Co., will be comprised of J. Leonard Replogle, W. H. Brevoort, F. K. Sheesley, and W. S. Pilling.

The present directorate of the Replogle Steel Co. is as follows: J. Leonard Replogle, W. H. Brevoort, Harry Payne Whitney, General T. Coleman du Pont, Charles MacNeill, L. W. Baldwin, president of the Empire Trust Co., H. F. Sinclair, president of the Sinclair Consolidated Oil Co., Mortimer L. Schiff, Kuhn, Loeb & Co., and Carl J. Schmidlapp, vice president Chase National bank.

Stock Is Offered

To complete buildings now under construction, for the purchase of equipment, and to acquire additional working capital the Electric Steel Forge Co., Cleveland, is offering $500,000 of 7 per cent preferred stock accompanied by a bonus of common. Upon completion of contemplated additions the company will have an annual capacity of 14,000 tons of electric steel ingots. Three new heating furnaces are being installed. In 1918 the company purchased the Crucible Steel Forge Co., Cleveland.

Plans New Financing

Directors of the General Motors Corp. have authorized a new issue of 7 per cent debenture stock in exchange for the present 6 per cent debenture stock and an issue of 50,000,000 shares of common stock of no par value, of which 14,800,000 will be issued in exchange for the present shares of $100 par value. The plan is subject to the ratification of the stockholders at a special meeting called for Dec. 20. The holders of the 6 per cent debenture shares now outstanding will be given the privilege of subscribing to the new debenture stock at par on the basis of two new shares for one old share, which will have the effect of doubling the outstanding debenture stock and represents financing of $90,000,000 for the corporation. A statement issued by the company says that a careful forecast of the future "indicates that for the company to continue occupying its leading position in the automobile industry large capital investments will be required. The plan will give the company $85,000,000 in cash, which added to present cash assets will give it a total of $175,000,000, "ample to provide for normal expansion to properly develop recently acquired lines and to maintain cash reserves sufficiently large to care for a gross business for 1920 of $800,000,000.

Canadian Car Will Drop Ship Construction

Shipbuilding will be dropped as one of the activities of the Canadian Car & Foundry Co., Montreal, following discouraging results from the construction of one steamship since the armistice, according to the statement of President W. W. Butler, in the annual report of the company. The report shows that for the year ended Sept. 30 gross sales were $33,000,000 as compared with $45,233,000 in 1918. Earnings last year were $2,993,470 against $4,617,390 for the previous year. The company net working capital was $10,363,976 showing a gain over the $9,028,964 of the year before. Because of the necessity of pursuing a conservative course and the fact that taxes, as yet undetermined, will prove a strain on the company's cash position, directors have decided to make no payment of preferred dividends in arrears at present.

Colorado Fuel Earnings Show Some Slump

Without allowance for depreciation but after interest, sinking fund and tax charges, the Colorado Fuel & Iron Co., Denver, reports a surplus of $544,099 for the quarter ended Sept. 30, compared with $627,154 earned in the preceding three months and $959,404 in the corresponding quarter last year. For the nine months ended Sept. 30 the surplus amounted to $1,572,637.

Increases Capital

For the purpose of developing its business of installing and manufacturing electro plating equipment, the Galvanizing Corp. of America, 244-252 Eagle street, Brooklyn, N. Y., recently increased its capital. The company expects to be in the market shortly for gears, machine tools, electric generators and motors.

To Enlarge Business

In order to care for increased business, the Rotospeed Co., Dayton, O., manufacturer of duplicating machines and supplies, contemplates increasing its capital. J. A. Oswald, president and treasurer of the firm, stated that none of the increase will be used for the erection of plant additions or the purchase of additional machinery and equipment.

Will Make Springs

Capitalized at $10,000, the Union Spring Mfg. Co., 101-105 Bryant street, Malden, Mass., recently was incorporated to manufacture and deal in springs of all kinds. Officers of the company are: President, Abraham Blatt; treasurer, David Yessin, and clerk, Abraham S. Goldman.

Financial Crop Ends

VALENTINE WINTERS, president of the Winters National bank, Dayton, O., has been appointed receiver for the Barney & Smith Car Co., on petition of Ballman & Irvin, Cincinnati. Suspension of the business of building and equipping both freight and passenger cars, the chief activity of the company, has brought about its difficulties.

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Stockholders of the Reading Car Wheel Co., Reading, Pa., re-elected their officers as follows: President, H. H. Huyett; secretary and treasurer, W. C. Mullett; general manager, John W. Bowers; directors, H. H. Huyett, W. C. Mullett and E. J. Coleman, of Buffalo, and J. B. Bowers and L. B. Shofer.

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An offering of $5,000,000 of 7 per cent cumulative preferred stock has been announced by the Timken Detroit Axle Co., the portion not taken by the stockholders to be offered to the public at 100 and accrued dividends. The company's sales are said to have increased from $3,263,518 in 1910 to $34,033,564 in 1918.

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Stockholders of the American Bosch Magneto Co., Springfield, Mass., will be given the right to subscribe to 30,000 shares of new stock at $100, it is announced, as a result of a decision to increase the number of shares from 60,000 to 80,000. The right to subscribe is on the basis of one share of new stock for each three now held. Proceeds will be used to retire $1,500,000 of outstanding notes and to expand the company's capacity.

Greatest Year

In Steel Industry's History Coming, Says President of Interstate

Improvements and extensions by the Interstate Iron & Steel Co., especially at its plant at the Calumet river and 118th street, Chicago, will involve the expenditure of about $2,500,000 during the coming year. The company recently disposed of its rerolling mill at Marion, O., to the Pollak Steel Co and will center its activities in the three plants it operates in Chicago. The proceeds of the sale of this mill will assist in financing the Chicago extension.

This could have been done readily from earnings and surplus resources had it been desired as the company has the proceeds of an issue of preferred stock totaling $1,400,000. The company has treasury certificates, Liberty bonds and other investments to a total of about $1,400,000, this item having been increased about $500,000 during the present year. Its surplus was $1,635,536 at the close of the last fiscal year and it has been increased by $483,769 in the interval since. In additions to a liberal allotment of reserves, substantial increase in plant account and writing off of abnormal war costs in inventories. The company has outstanding $4,000,000 common stock, $2,260,200 of cumulative 7 per cent preferred stock and $2,017,800 of 6 per cent serial bonds.

Silas J. Llewellyn, president of the company, says: "The next year should be the greatest in the steel business that was ever known. The labor situation within the industry is clearing rapidly and the only danger is of a serious coal shortage. In any event the cost of fuel will be high as is everything else. I do not see, however, how we can progress toward a lower level of prices in the face of contrary conditions all over the world. There is an enormous demand for commodities of all kinds and the bidding that results from this pressure to buy makes downward revision almost out of the question. We have passed the stage of regulation and will have to work out of the situation as best we can—principally by means of increased production."

To Operate Furnace

Stanton S. Freeman, receiver for the Seaboard Steel & Manganese Corp., has been authorized by the court to operate one of the blast furnaces of this company at Temple, Pa., in the production of foundry pig iron. The furnace is to go in blast immediately and the output is expected to be 4000 to 5000 tons per month. The iron will be disposed of by the Debevoise-Anderson Co., and by Philip E. Wright.

Strike Called Off

The employes of the Globe Iron Co., Jackson, O., manufacturer of high silicon metal, who have been on a strike since July 7, have returned and the furnace has resumed. None of the demands of the men were granted. They returned under the same conditions and wage scale which prevailed when they went out.

Placing Skip Hoists

The Empire Steel & Iron Co. has placed a contract for the erection of a skip bridge at one of its blast furnaces at Catasauqua, Pa. The Thomas Iron Co. is in the market for a skip bridge to be erected at its blast furnace plant at Hokendauqua, Pa.

New Foundry Equipment Company Formed

The Foundry Equipment Export Corp., New York City, has filed articles of corporation with the federal trade commission with an authorized capitalization of $50,000. The officers follow:

T. S. Hammond, Whiting Foundry Equipment Co., Harvey, Ill., president; L. L. Munn, Arcade Mfg. Co., Freeport, Ill., first vice president; E. J. Woodison Co., Detroit, Mich., second vice president; V. E. Minnich, American Foundry Equipment Co., New York City, treasurer; S. T. Johnson, Obermayer Co., Chicago, secretary. The other directors are W. C. Norcross, American Molding Machine Co., Terre Haute, Ind.; R. S. Buch, Buch Foundry Equipment Co., York, Pa.; George L. Grimes, Grimes Molding Machine Co., Detroit.

Obituaries

JOHN F. BARKER, former president and one of the founders of the Gilbert & Barker Mfg. Co., Springfield, Mass., died at his home in that city of heart failure on Nov. 21. Mr. Barker was born in Newton Upper Falls, Mass., Dec. 16, 1839, and located in Springfield in 1862. He began work at the United States armory there in charge of the pipe department at the water shops, where he remained until the founding of the Gilbert & Barker Mfg. Co., in 1865, which was incorporated in 1870. He was treasurer and manager of the company until 1884, when he was elected president, which position he held until he retired in 1911. He was succeeded by R. H. McNall, the present incumbent. For 46 years, Mr. Barker was the dominating personality in the business of the Gilbert & Barker company. He held the affection and esteem of his associates and employes throughout his period of service.

Peter P. O'Horo, secretary and treasurer of the Excelsior Cycle Co., Michigan City, Ind., died on Nov. 24, at that city.

Frank B. Montgomery, traffic manager for the International Harvester Co., Chicago, died Nov. 24, at his home in that city. He became traffic manager of the McCormick Harvester Machine Co. in 1900, and from the formation of the International Harvester Co., in 1902 until his death he was president and general manager of the corporation's industrial railroads.

Edward E. Dwight, 68, president of the E. A. Kinsey Co. and the Tool Steel Gear & Pinion Co., Cincinnati, died on Nov. 16, at his home in Cincinnati.

John F. Koepke, aged 41, foundry superintendent of the Traylor Engineering & Mfg. Co., Allentown, Pa., died Nov. 8 at the Allentown hospital, from burns received at his work on Oct. 13.

Thomas J. Livezey, aged 38, assistant superintendent of the open hearth department of the Alan Wood Iron & Steel Co., Ivy Rock, Pa., died at the Charity hospital, Norristown, Pa., Nov. 18. He had been connected with the Alan Wood company for the past 13 years.

Meinrad Humeltenberg, superintendent of the Golden State & Miners' Iron Works, San Francisco, died Nov. 12 in a hospital in that city. He had been in the employ of the one company for the past 59 years, gradually rising from a minor position until 10 years ago he was made superintendent. He was 71 years old.

November Tool Inquiry was Keen

Machinery Sellers Chief Difficulty is in Obtaining Satisfactory Deliveries From Manufacturers—General Electric Largest Buyer in East—Truck and Tractor Builders Lead in West—Steel Companies Take Cranes

UNABATED and steady though scattered, the demand for machine tools and metalworking equipment continued throughout the month of November. This was true in Canada as well as the United States. As has been the case for many months past, the automotive and allied industries led in requests for prices and in orders closed, although car builders are fast forging to the front as important factors among prospective tool users. It is true that some contraction in buying was experienced because of steel and coal strikes, but these factors did not hamper inquiries. A slight lull was experienced in the East the first part of the month but later came a period of keen activity. This was not as large as it would have been could satisfactory deliveries have been made. This likewise was true in other districts where sellers' efforts were hampered by the fact that builders' delivery dates are set so far into the future. Manufacturers here and there are postponing their purchases of machine tools, cranes, etc., until after Jan. 1, 1920, but so much equipment is needed quickly, this is the exception rather than the rule. Some price advances were noted and some lines have price tags above wartime levels. Complaint is heard from tool builders about under-production. On the other hand, some shops which reduced their payroll some months ago have not put on any more men. Makers of heavy machinery in the Pittsburgh district complain of a scarcity in cleaning room labor.

Truck Manufacturers Taking Many Tools

TRUCK and tractor business has superseded the passenger car demand for tools in the automotive industry. The H. H. Franklin Co., Syracuse, N. Y., is to produce a 1-ton truck, has purchased some equipment and is understood to be preparing a large list. The Acme Motor Truck Co., Cadillac, Mich., purchased a few tools and the Apex Motor Co., at Ypsilanti, Mich., is in the market for truck plant equipment. Extensive buying was done by Milton A. Holmes for the Transport Truck Co., Mt. Pleasant, Mich., and the Reliance Motor Truck Co., Appleton, Wis., will buy $80,000 worth soon.

Activity among the manufacturers of tractors featured the past month's buying. Perhaps the largest purchaser was the General Motors Corp. for the Samson Tractor Division, Janesville, Wis. One order for gear cutters is said to have a value of $160,000. The Four Drive Tractor Co., Big Rapids, Mich., bought $10,000 worth of equipment; the International Harvester Co., Chicago, among other equipment, purchased four 21-inch turret lathes for its tractor plant; and the Allis-Chalmers Mfg. Co., Milwaukee, issued a list.

Passenger car manufacturers have been well equipped during the past few months but continue to take their quota. The Nash Motors Co., Milwaukee, bought $60,000 worth of tool room equipment and will start soon on purchases of production machinery. Dodge Bros., Detroit, issued a comprehensive list, as did the Chevrolet Motor Car Co., Bay City, Mich., and the Hudson and Essex companies, Detroit.

Miscellaneous Demand Keeps Up at Splendid Rate

WIDESPREAD demands for tank cars is given as one of the reasons for the suddenly increased number of inquiries from carbuilders. These lead the requests from miscellaneous manufacturers. The Haskell & Barker Car Co., Michigan City, Ind., issued a sizable inquiry; the American Car & Foundry Co., bought 10 or 12 fabricating tools; the Atlas Car & Mfg. Co., Cleveland, inquired for some equipment and the Magor Car Corp., Passaic, N. J., issued a sizable list. The Greenville Steel Car Co., Greenville, Pa., is to buy equipment for a machine shop. The largest inquiry, numerically, however, came from the General Electric Co., Schenectady, N. Y. It aggregated about 200 tools, over half of which are said to have been purchased. Other large inquiries for equipment were the Akron, O., tire manufacturers. The Goodyear Tire & Rubber Co. revived its inquiry; the Firestone Tire & Rubber Co., issued a list of 36 machines, bought some equipment and postponed closing on the remainder until after Jan. 1. The B. F. Goodrich Co., also is looking for machinery. The Otis Elevator Co., bought equipment for Quincy, Ill., as did the Standard Oil Co., for Bayway, N. J., and Toledo, O. The Perfection Heater Co., Cleveland, issued a list of about 20 machines and a smaller list came out from the Lewis Steel Products Co., Toledo.

Transportation Companies Are Stirring

SOME stir is noted among the railroads. In some quarters this is not expected to develop much for machine tool sellers, since no real buying is anticipated before the return to private ownership and this now seems to be deferred. The Pennsylvania bought cranes for Crestline, O., and Logansport, Ind. The Chicago, Burlington & Quincy railroad, Chicago, revived its list of 50 tools. The Santa Fe and Rock Island railroads, that city, each made some small purchases. The New York Central issued some tentative inquiries in Cleveland and in the east the Western Maryland railroad entered the market for several machines for a repair shop.

Purchases by shipbuilders are more prospective than actual. The Union Shipbuilding Co., Baltimore, is to spend $4,000,000 on new facilities, and the National Concrete Boat Co., Norfolk, Va., is to build a $500,000 yard. The Submarine Boat Co. will buy extensively if it lands a shipbuilding contract. The Robert Dollar Steamship Co., New York, purchased 700 feet frontage on Long Island, N. Y., for a pier.

With Few Exceptions Crane Sales Are One Each

DESPITE the fact that the iron and steel industry recently went through the throes of a general strike, most of the crane business of the past month has come from that branch of manufacturing. With the strike practically ended, some sizable awards are expected soon. The Midvale Steel & Ordnance Co., closed on nine cranes for Johnstown, Pa., however, and the Superior Sheet Steel Co., Canton, O., bought five. The Slick-Knox Co., Pittsburgh, asked for three for Wheatland and the Firestone Steel Products Co., Akron, O., revised its recent inquiry to read six overhead and two hand-operated cranes. The largest inquiry current at present is said to be the one from the Bethlehem Steel Co., calling for 11 cranes for Lebanon, Pa. The Follansbee Bros. Co., Pittsburgh, is taking bids on seven cranes for its new plant at Toronto, O., and the National Tube Co., Pittsburgh, is expected to issue a considerable list soon for its new plant at Gary, Ind. In addition to the seven hammers wanted by the Pittsburgh Knife & Forge Co., Coraopolis, Pa., this company wants some crane equipment. The Concrete Steel Co., New York City, the Newton Machine Tool Works, Inc., Philadelphia, and the Aluminum Co. of America, Marysville, Tenn., each bought two cranes and the Blaw-Knox Steel Co., Hoboken, Pa., took three. Several companies bought or inquired for one crane each.

Tool Purchases Held Until 1920

Users Disinclined to Increase Equipment Stocks During Inventory Time—Pennsylvania Buys for Stark, O., Shops—Brown Hoisting Machinery Books Cranes for Chile — Foote-Burt Wants 17 Cranes

DISINCLINATION on the part of users to add to stocks of equipment at inventory time is holding up sales in various districts. While for the most part November was a satisfactory selling month, particularly in Chicago, some Cleveland dealers find their total sales far below October. No improvement is expected before the middle of January.

Buying of machine tools by brass manufacturers is featured in the eastern market report, the American Bronze Co., Philadelphia, and the Oxweld Acetylene Co., Jersey City, N. J., being mentioned among purchasers. The Pennsylvania is the only railroad reported to be buying. Tools for Stark, O., shops went to eastern builders. The Sun Shipbuilding Co., Chester, Pa., closed on about a dozen tools and the Worthington Pump & Machinery Corp., New York, issued a sizable list, to apply on its 1920 budget.

While there is a lull in buying in Chicago, this is not a slump, since there is an active demand for machinery. Forge shop equipment is being purchased for the tractor plant of the Allis-Chalmers Mfg. Co., Milwaukee. Because of coal strike, some users in the Chicago district are installing oil-burning equipment.

Issuance of a list of 17 cranes by the Foote-Burt Machine Co., Cleveland, is thought to be the forerunner of its machine tool list for its new plant. Machine tool activity is at a low ebb in the Cleveland territory because so many users are holding back orders until after the new year. Inquiries are fairly frequent and presage much business for January. Keen interest is manifest in the latest list issued by the government, comprising 2500 tools, inventoried at $4,000,000. It is claimed that users can buy direct at prices far below prevailing markets. Stocks at the government warehouse of the Symington-Chicago Corp., Chicago, soon will be available for users there. Buying has been slow since prospective purchasers have been held up in favor of Belgium. One list was increased from 84 to 340 tools.

Motor equipment for the Toronto, O., plant of the Follansbee Bros. Co., Pittsburgh, went to the Allis-Chalmers Mfg. Co. and the Westinghouse Electric & Mfg. Co. Cranes have not been awarded as yet. Three hoists were purchased by the Koppel Industrial Car & Equipment Co., Koppel, Pa. The McConway & Torley Co., Pittsburgh, closed on a 7½-ton crane and a crane bridge.

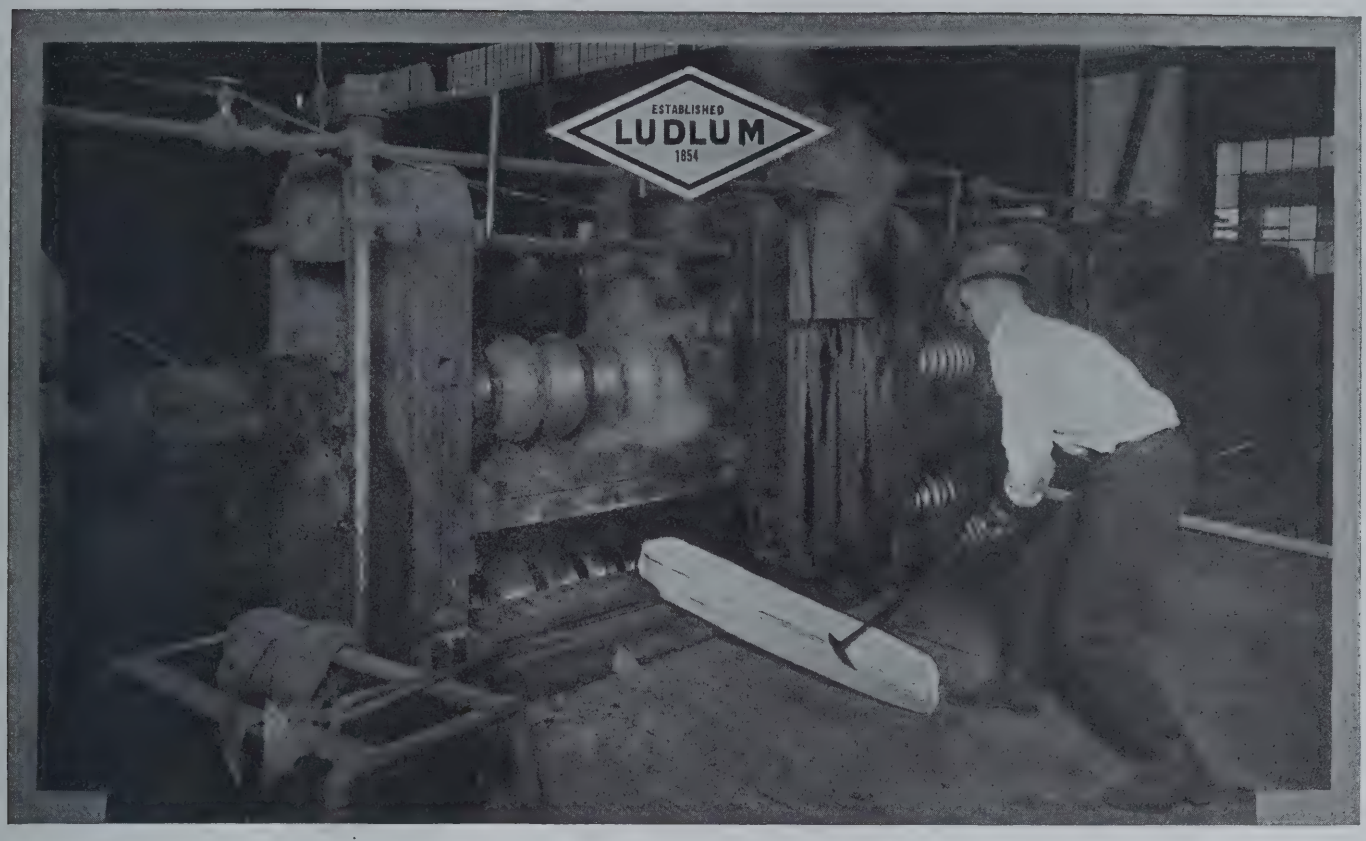
While the lull in overhead cranes continues, some activity is reported in the locomotive crane market. One of the largest export orders placed in recent months went to the Brown Hoisting Machinery Co., Cleveland, for six 15-ton cranes for shipment to Chile. Westinghouse, Church, Kerr & Co., New York, are to close one overhead and a small electric crane for the fertilizer plant of Armour & Co., Chrome, N. J., having already purchased a locomotive crane. These engineers also will buy crane equipment for Armour's fertilizer plant at Baltimore. Prospective crane purchasers include Hudson Iron & Metal Co., Bayonne, N. J.; Stone & Webster, Boston, for Jeannette, Pa.; Bessemer Limestone Co., Bessemer, Pa.; Van Dorn Iron Works and the Superior Foundry, Cleveland; the Du Pont Engineering Co., New York, and the Upson Co., Lockport, N. Y. The Anaconda Copper Co., New York, is to buy a special overhead crane and bids will close Dec. 23 on four special gantry cranes for the New York state barge canal terminals in New York City.

Brass Makers Buy Tools; Chile Awards Cranes

BRASS manufacturers are figuring actively in the eastern machine tool market. The American Bronze Co., Philadelphia, the Oxweld Actylene Co., Jersey City, and a number of other such interests have been recent buyers, closing in the aggregate on a sizable amount of equipment. This activity, however, was featured by no large individual orders, and, in fact, few if any large contracts recently were noted in any quarter. Possibly one exception may be made in the instance of the Pennsylvania lines west, which has bought a number of miscellaneous tools for its shops at Stark, O., a substantial portion of which went to eastern builders. Inquiries for this equipment have been coming out over a number of weeks. The Sun Shipbuilding Co., Chester, Pa., has also been a buyer, closing on a fair list, including a shaper, slotter and a half dozen or so other machines. The Worthington Pump & Machinery Corp., 115 Broadway, New York City, is asking for figures on about $120,000 worth of machine tool equipment for its 1920 budget. The company also is considering one overhead crane in this budget.

Outstanding among developments in the locomotive crane market is the award of six 15-ton cranes to the Brown Hoisting Machinery Co., Cleveland, for shipment to Chile. This is one of the few sizable export orders to be placed this year and therefore is especially notable. That more export business has not developed has been a source of disappointment to locomotive crane builders, for foreign requirements are believed to be heavy, but until there is an improvement in the foreign exchange rate situation no large buying is expected.

Other business in the locomotive crane market includes a 25-ton Ohio crane for the fertilizer plant of Armour & Co.,



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at Chrome, N. J. The business was placed through Westinghouse, Church, Kerr & Co., 37 Wall street, New York City. For Armour's Baltimore fertilizer plant, this company wants one each 5 and 10-ton bucket-handling cranes. These interests are also to buy one overhead electric crane, with 100-foot span, to operate a 3-yard clam shell bucket, and a 5-ton electric crane, with 60-foot span, for the Chrome plant. The Hudson Iron & Metal Co., Bayonne, N. J., is inquiring for a used 10-ton locomotive crane. Stone & Webster, Boston, contracting engineers, are in the market for a 20-ton locomotive crane for Jeannette, Pa. Of interest to locomotive crane builders is a large cement plant to be erected near Bessemer, Pa., by the Bessemer Limestone Co. The plant is to have a capacity of 3000 barrls daily. The Atlantic Refining Co., Philadelphia, is inquiring for a 50-ton shear-legged derrick. Revised inquiry from the Sun Shipbuilding Co., Chester, Pa., calls for one 15-ton crane with 76-foot span and two 15 or 20-ton cranes with 112-foot span.

The lull in overhead crane buying continues. The Du Pont Engineering Co. has recently bought a 5-ton overhead crane, and the Upson Co., Lockport, N. Y., has purchased a 3-ton electric crane, with 38-foot span, from the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y. Few other awards have been reported. The Anaconda Copper Co., New York City, is receiving preliminary figures on a special overhead crane, of about 70 tons capacity. There is, however, little likelihood of this business developing in the near future. Bids will be closed Dec. 23 on four special gantry cranes for the New York state barge canal terminals in New York City.

Inventory Time Holds Up Tool Inquiries

SOMETHING of a lull in activity of demand for machine tool equipment is noted by some dealers in the Chicago district, probably due to the approach of inventory time. This does not mean that the market has slumped, but there simply is a little slowing down of active inquiry for the small lots and single tools that have been extremely noticeable for some time.

November promises to be one of the best months of the year in total sales. Many dealers find they have much more equipment on back orders with manufacturers now than at any time recently, deliveries being extended until now comparatively little business can be placed for delivery this side of February and much is even more deferred.

Government selling from the warehouse at the plant of the Symington-Chicago Corp. is slow, at present being held up in favor of shipments to Belgium. A list of 84 was being figured from that collection of tools and this has been increased to 340 by a recent change. Assurances are being given to local dealers that arrangements are being made to move this equipment without red tape and that it will be available for domestic buyers shortly. This will assist greatly in the case of many prospective buyers who cannot obtain their needs from manufacturers without a long wait. The new tractor plant of the Allis-Chalmers Mfg. Co., Milwaukee, is being equipped and is already on a production basis. Some drop forge equipment now is being figured. As a result of the present coal shortage some users are installing oil burning equipment.

Follansbee Cranes Not Yet Awarded

CONTRACTS for the equipment for the new sheet mill at Toronto, O., of the Follansbee Bros. Co., Pittsburgh, steadily are being closed, although it is stated at the company's offices that the cranes for the plant have not as yet been let. Eastern advices had it that the Alliance Machine Co., Alliance, O., had been awarded the heavy duty cranes and that the Pawling & Harnischfeger Co., Milwaukee, was the successful bidder for the lighter cranes. The fact that the present plant of the company is equipped with these makes of cranes no doubt explains the report. The Allis-Chalmers Mfg. Co., West Allis, Wis., has been awarded the sheet mill motors for this plant, which are of liquid control type, while the reversing set has been placed with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Hubbard & Co. has placed a 10-ton, 46-foot span crane for its new Chicago plant with the Milwaukee Electric Crane Co., Milwaukee, and this company also has been awarded three 4-ton monorail hoists by the Koppel Industrial Car & Equipment Co., Koppel, Pa. The McConway & Torley Co., Pittsburgh, has ordered a 7½-ton Shaw crane through the Pittsburgh office of Manning, Maxwell & Moore, Inc., and has awarded a crane bridge to the Pawling & Harnischfeger Co. Inquiries continue to pour out for cranes and other heavy lines, but for some reason, possibly the coal strike, actual orders are few. Not much activity lately has been noted in machine tools.

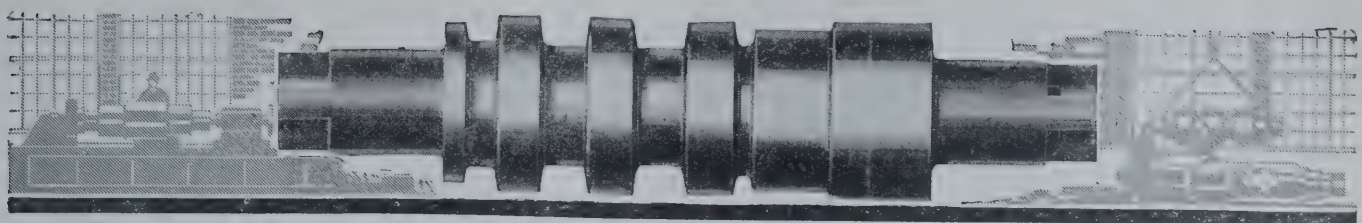
Sales and Inquiries Drop Off in Cleveland

COMPILATION of business transacted during the past month by Cleveland machinery dealers, show considerable of a reduction as compared with October. One dealer states his sales for November were approximately half of what they were the preceding month. In some quarters this was not unexpected, since it is a common thing among users of equipment to postpone purchases at the end of the year. Other users, however, who require equipment quickly, have placed their orders for the best possible delivery which will not be until well along in 1920. Some are postponing awards because they are taking or are about to take inventory but these are not so numerous as formerly because of the increasing practice to maintain perpetual inventories. Both sales and inquiries, however, are at a low ebb.

One of the biggest lists to come out in recent weeks is issued by the Foote-Burt Machine Co., Cleveland, which is erecting a new plant. Negotiations are being conducted for the plant's crane equipment and prices are being asked on 17 electric cranes. These mostly are for small capacities, 1, 2 and 3-ton with two or three 10-ton machines included. No formal list of machine tool equipment has come out, although it is known that the company is lining up its requirements along this line and has made a few decisions. The Superior Foundry Co., Cleveland, still is in the market for a small crane, and the Van Dorn Iron Works, that city, likewise requires crane equipment.

Recent purchasers in the Cleveland market include the Adams Axle Co., Findlay, O., which purchased a centering machine, and the Adams-Bagnall Electric Co., Cleveland. The former company announces its intention to replace with new tools later when better deliveries are possible, the equipment it has purchased since the armistice which does not meet its exact requirements. Another purchaser in Cleveland recently is the Hydraulic Steel Co., that city, which closed on some hammer equipment. It now is taking quotations on 2500 and 3000-pound single frame steam hammers. Hammer equipment likewise is required by the Truscon Steel Co., Youngstown, O., which is taking quotations on No. 4 and No. 5 Nazel power hammers. The Lakeside Forge Co., Erie, Pa., recently closed on 12 hammers for its shop.

Among the smaller inquiries current in Cleveland is one from the Cleveland Metal Products Co., that city,





Say, Fella's—

I find there aint sich a H— of a difference between men an' metal after all. The less there is in 'em, the more kick an' fuss they kin make, an' the better they are the easier to git along with. Take those HUBBARD ROLLS—good all the way through. Ya never hear a squeak or squawk out of 'em.

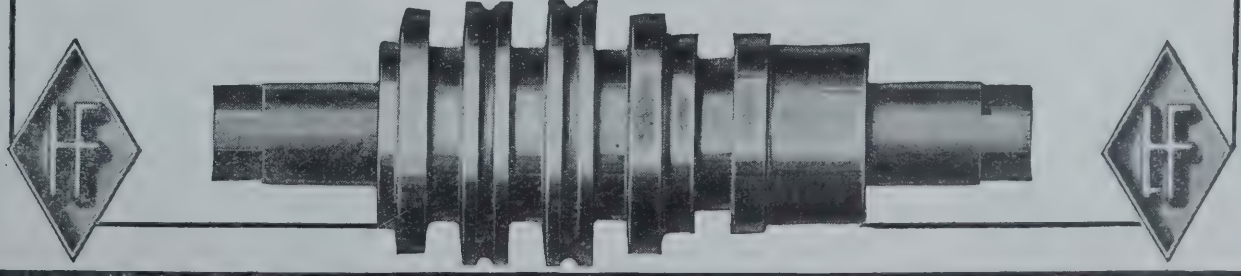
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



and one from the Holt Mfg. Co., Peoria, Ill. The latter calls for one vertical Gould & Eberhardt gear cutter, 36 to 48-inch capacity. A San Francisco dealer, namely the H. F. Lyon Co., is endeavoring to satisfy a customer's requirements in Cleveland. The list calls for one large planer, 48 x 48-inch, one 24-inch shaper, one 24-inch or larger keyseating machine, one 24-inch x 12-foot and one 26-inch x 18-foot lathe. Another California concern soon to be in the market for equipment is the Pacific Iron & Steel Co., Inc., Los Angeles. Its list comprises a large boring mill, several large sized lathes and a few small punches in addition to foundry equipment. This company is to equip a foundry and machine shop as additions to its steel plant.

While the auction sale of approximately 700 government-owned machine tools as well as other equipment at the Eddystone rifle plant, Eddystone, Pa., scheduled for Dec. 4 and 5, arouses but little interest on the part of Cleveland sellers, considerable attention is being paid to the issuance of the latest government-owned equipment list by the war department. As outlined elsewhere in this issue, this list comprises 2500 machine tools with an inventory value of approximately $4,000,000. Interest is manifested in this equipment, mainly for the reason that sales direct to users are militating against the efforts of dealers. Some cases are known where sales at prices far below the market for new tools, have been consummated direct with users, who previously had been endeavoring to supply their wants through dealers. Other prospective purchasers have told the dealers they have an opportunity to buy government-owned equipment but want their quotations, apparently for their comparative value only. Several have said that if unsuccessful in obtaining government-owned machines, they would then be in the market for the equipment in their inquiries.

Contingent upon the successful outcome of some financial arrangements now being planned, some large users are expected to come into the market. The Shelby Tractor & Truck Co., Shelby, O., will buy more equipment, it is understood, when it has sold additional stock. The Timken-Detroit Axle Co., Canton, O., and Detroit, has increased its capital from $4,550,000 to $45,000,000 and some of the proceeds are to be used for additional equipment and buildings, including a machine shop at Canton. If the government purchases the Dayton-Wright airplane plant, at Dayton, O., the General Motors Corp. will take over the McCook field and erect a plant for the manufacture of an air-cooled motor automobile. Two 4-story buildings for the H. C. S. Motor Car Co., Indianapolis, will require considerable equipment. Woodworking machinery probably will be purchased by the Rubay Co., Cleveland, which contemplates a 1-story addition, 100 x 200 feet.

The Union Steam Pump Co., Battle Creek, Mich., is to spend $20,000 on machine shop additions and equipment. The Humphrey Co., Kalamazoo, Mich., will probably make sizable purchases of machinery for a 3-story plant in which it will manufacture water heaters. The Standard Register Co., Dayton, O., will doubtless add to its equipment after its new addition is completed. A machine shop and office building costing $125,000 for the Seibold, Mien Co., Dayton, O., will mean some machinery orders soon. Presses, etc., will be purchased by the Lima Sheet Metal Products Co., Lima, O., early in the spring. Others who are expanding include the Union Motor Co., Bay City, Mich.; the American Gear & Mfg. Co., Jackson, Mich.; The Goodyear Tire & Rubber Co., Akron, O.; the Ames Bonner Co., Toledo, O., and the Franz Foundry & Machine Co., Akron, O.

Canadian Sellers Report Splendid Demand

KEEN demand for machinery and machine tools continues in Canada. The delivery of tools, however, is an adverse factor in trading, and on this account the demand for used and rebuilt equipment is increasing. General machine shop equipment is in demand and the requirements of automobile plants, etc., are almost impossible to fill without considerable delay. Gillies Bros. who are having a sawmill erected at Braeside, Ont., will install electrically-operated machinery and equipment. Soren Bros., Toronto, shortly will be in the market for equipment for a tinware manufacturing plant. Ernst Bros. Co., Mount Forest, Ont., is in the market for one punch and shears, a milling machine and an 8-foot engine lathe. Rahm & Watt, Pelee Island, Ont., are in the market for machinery for mixing cement for the manufacture of cement tile. Appleon & Chipman, engineers, room 11, 68 Wellington street, east, Toronto, are asking for catalogs, prices and information on milling stones, corn-oil machinery, including hydraulic presses, feed dryers, copper converters, vacuum pans, filter presses, attrition mills and spiral conveyors, etc.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

AUGUSTA, ME.—The Dirigo Equipment Co. has been incorporated to make window metal weather strips and screens with $10,000 capital, by A. F. Parrott, B. S. Viles and E. M. Thompson.

KENNEBEC, ME.—The Waterville Mfg. Co. has been incorporated with $100,000 capital to manufacture and deal in machinery.

WATERVILLE, ME.—The Waterville Mfg. Co. recently was incorporated to build machinery and make tools and implements with $100,000 capital, by G. W. Wiseman, N. H. Burrows and Carroll N. Perkins.

BOSTON.—The Boston Merchant Marine Sealing Co. has been incorporated to repair vessels, ships and boats, with $25,000 capital, by John J. Collins, Ralph C. Christensen and S. J. Christensen.

BROCKTON, MASS.—The H. F. Crawford Mfg. Co. recently was incorporated with $25,000 capital to manufacture machinery.

CAMBRIDGE, MASS.—The Houde Co. recently was incorporated to make shock absorbers, etc., with $10,000 capital, by James N. Scully, Francis P. Scully and W. J. Goggin.

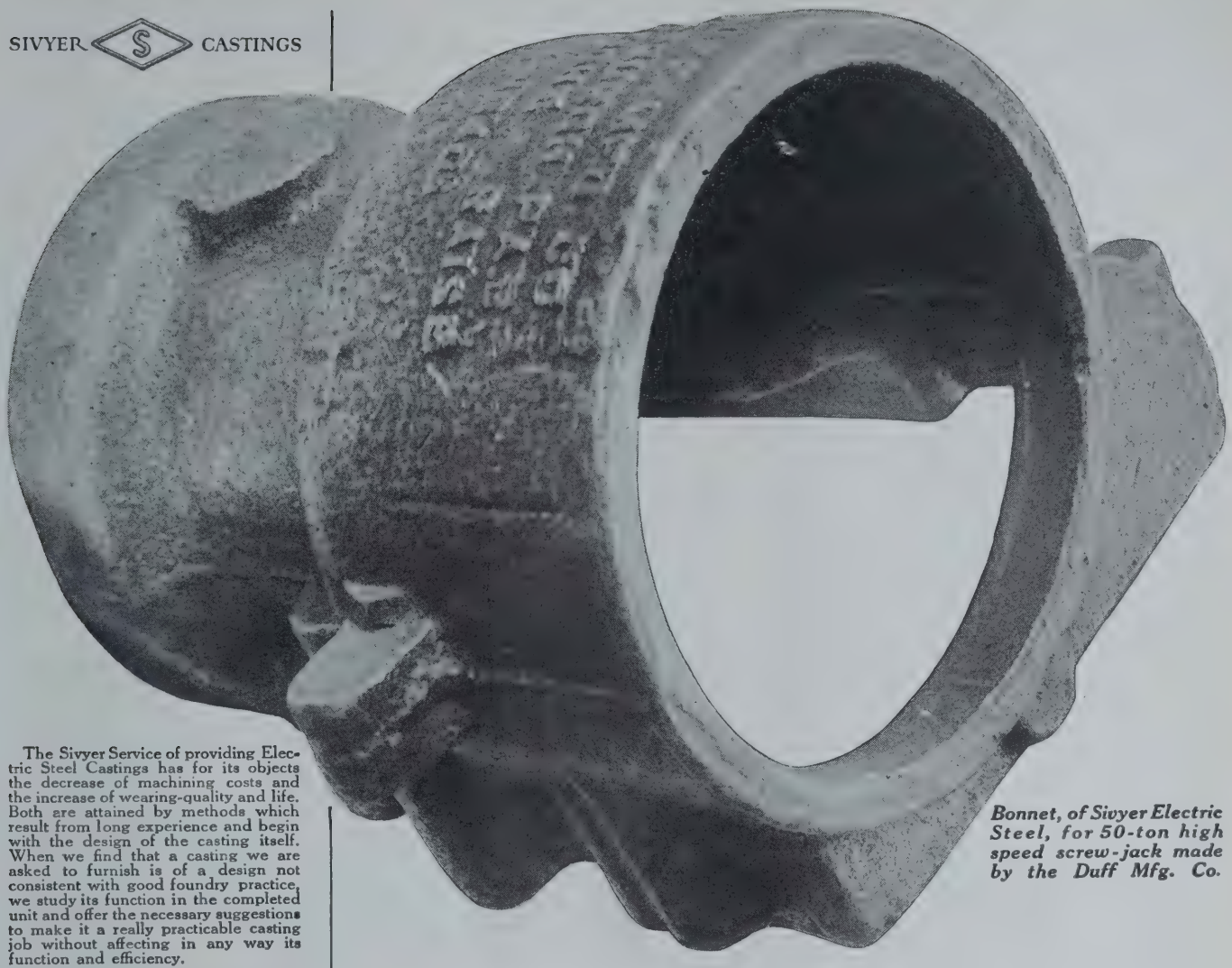
CAMBRIDGE, MASS.—The Eco Mfg. Co. contemplates a manufacturing building, 50 x 110 feet.

HOLYOKE, MASS.—The Cowan Truck Co. plans a plant addition, 2-stories, 100 x 200 feet.

SPRINGFIELD, MASS.—The Vitrified Wheel Co. contemplates a 2-story, 40 x 80-foot addition.

PAWTUCKET, R. I.—The W. H. Haskell Mfg. Co.,

SIVYER CASTINGS



Bonnet, of Sivyer Electric Steel, for 50-ton high speed screw-jack made by the Duff Mfg. Co.

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly: Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly: Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly: Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

WHERE the design is such that ordinary castings tend to develop cracks and strains in cooling, the Sivyer method of gating and heading assures castings of unquestioned strength. Lifting-jacks used under heavy railway cars and locomotives must be made of metal known to be dependable, for a failure might mean costly damage, and endanger the lives of the workmen. Also the jacks must be reasonably light to facilitate handling. The toughness of Sivyer Electric Steel, combined with the Sivyer system of gating and heading, produces a light and strong casting that will function unfailingly in the most severe service. The widespread recognition of Sivyer methods and metal has won for Sivyer Castings their national market.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

24 Commerce street, plans a machine shop addition, 2-stories, 85 x 150 feet, to cost $75,000.

BRIDGEPORT, CONN.—The Bridgeport Worm & Gear Mfg. Co. recently was incorporated with $100,000 capital.

BRIDGEPORT, CONN.—The Bridgeport Hardware Mfg. Co. is expected to start work soon on a plant, 2-stories, 40 x 125 feet, to cost $35,000.

HARTFORD, CONN.—The Royal Typewriter Co. has let a contract for a 5-story, 55 x 308-foot addition.

PROVIDENCE, R. I.—The Master Tool Co. recently was incorporated with $25,000 capital.

SOUTHINGTON, CONN.—The Bristol Brass Co., Bristol, Conn., is reported to be considering property as a site on which to build a plant.

WESTPORT, CONN.—The American Safety Device Co. has been incorporated with $100,000 capital.

North Atlantic States

BROOKLYN, N. Y.—J. G. Kessler & Bros., smelting and refining zinc, has been incorporated with $10,000 capital, by G. J. Goldberg, J. G. and M. Kessler, 649 Manhattan avenue.

BUFFALO.—The Lover Top & Converter Co. is having plans prepared for an addition. Edward Lover is president.

BUFFALO.—Swan & Finch, New York, have bought the property of the Cadillac Refining Co. and will make improvements.

BUFFALO.—The Erie County Traction Corp. has been incorporated with $450,000 capital, by R. B. Austin, E. L. Frost and J. L. Cummings.

BUFFALO.—The Miles Electric Car Lock Corp. recently was incorporated with $500,000 capital, by G. G. Canute, S. Johnston and J. R. Kingsley.

ELMIRA, N. Y.—The Elmira Foundry Co. is reported planning a foundry, 80 x 80 feet, to cost $10,000.

ENDICOTT CITY, N. Y.—The Endicott Johnson Co. contemplates a power house.

JAMESTOWN, N. Y.—The Jamestown Metal Desk Co. has been incorporated with $300,000 capital, by W. R. Reynolds, J. H. Dasher and E. E. Wellman.

LOCKPORT, N. Y.—The Harrison Radiator Corp. let a contract for an addition, 100 x 300 feet.

MIDDLETOWN, N. Y.—The Reinhalter Corp., machine shop, has been incorporated with $50,000 capital, by R. Reinhalter, W. D. Maguire and D. E. Stuart.

NEW YORK.—The Firestone Tire & Rubber Co., according to advices received here, will build a $5,000,000 plant at Hamilton, Canada.

NEW YORK.—The Proctor Automatic Projector Co. has been incorporated with $200,000 capital, by N. Ruttenberg and M. Frank, 165 Broadway.

NEW YORK.—The Economy Hoist & Body Co., Inc., recently was incorporated with $50,000 capital, by L. N. Miller, G. Mayer, 32 Broadway, and others.

NEW YORK.—The Sterling Car Body Corp. recently was incorporated with $50,000 capital, by J. J. Flannery, L. S. Dumensnil and J. J. Meehan, 140 Broadway.

NEW YORK.—The United Metal Spinning Co., 103-105 Mott street, has had plans drawn for a loft building, 5-stories, 50 x 100 feet, to cost $16,000.

NEW YORK.—The Economy Hoist & Body Co. recently was incorporated with $50,000 capital, by L. H. Miller, B. L. Erlman and A. G. Mayer, 32 Broadway.

NEW YORK.—Arthur B. Hennech, Ltd., machines, implements, etc., has been incorporated with $20,000 capital, by A. B. Hennech, I. Neuwirth, 179 Marcey avenue, and others.

NEW YORK.—The Hemco Electric Mfg. Co. recently was incorporated with $100,000 capital, by A. M. Bergenthal, G. Price and W. S. Allen, 55 East Fifty-fifth street.

NEW YORK.—The Empire Tube & Steel Corp. has been incorporated to manufacture cast iron and steel pipe castings, forgings, etc., recently was incorporated with $450,000 capital, by H. V. Craford, G. C. Sprague and A. H. Warren, 120 Broadway.

NEW YORK.—The Rollston Co., auto bodies, has been incorporated with $16,000 capital, by H. Lonschein, S. Plotkin and B. Davis, 1156 East Twelfth street, Brooklyn, N. Y.

NEW YORK.—The Standard Ship Repair Co. has been incorporated with $50,000 capital, by S. M. Louis, T. M. Constable and F. J. Nolan, 216 President street, Brooklyn, N. Y.

NEW YORK.—The A. P. Miller Supply Co., refrigerating machinery, recently was incorporated with $25,000 capital, by E. R. and G. A. J. Mager and A. P. Miller, 137 East Thirty-fifth street.

NIAGARA FALLS, N. Y.—The Carborundum Co contemplates an extension.

NYACK, N. Y.—The Ofeldt Gas Fired Boiler Co. recently was incorporated with $100,000 capital, by M. V. Bryant, E. G. and F. A. Ofeldt.

ROCHESTER, N. Y.—Josiah Anstice Co. is having plans drawn for a machine shop, 1-story, 200 x 200 feet, to cost $125,000.

ROCHESTER, N. Y.—The National Fire Escape Corp. has been incorporated with $250,000 capital to manufacture fire escapes, elevators, etc., by W. E. Turner, J. G. Ideman and W. G. Bell.

SCHENECTADY, N. Y.—The General Electric Co. has announced it will double the capacity of its plant at Windsor, Conn., by a building of 40,000 square feet.

SYRACUSE, N. Y.—The Smith Wheel Co., Inc., has had plans drawn for a plant addition, 29 x 92 x 109 feet, to cost $35,000.

SYRACUSE, N. Y.—For the purpose of manufacturing automatic melting machinery, the Nu-Way Milker Co., Inc., has been organized with a capital of $100,000.

TONAWANDA, N. Y.—The King Electric Mfg. Co. recently was incorporated with $25,000 capital, by L. Smith, B. Kibler and V. F. King.

WATERVLIET, N. Y.—The Troy Iron Works contemplates a foundry, 108 x 200 feet, to cost $35,000.

BESSEMER, PA.—A 3000-barrel-a-day cement plant will be erected near here by the Bessemer Limestone Co.

BRIDGEPORT, PA.—The Diamond State Fibre Co. plans a factory and machine shop, 1-story, 60 x 520 feet, at an estimated cost of $75,000.

CONNELLSVILLE, PA.—The Yough Electric Co. is having plans prepared for a plant.

ELLWOOD CITY, PA.—Thomas Dugan, D. E. Frew and Harry E. Fisher have bought a site here on which they plan a manufacturing plant.

ERIE, PA.—The Erie Tool Works has bought the plant of the Brown Folding Machine Co., and will remodel it.

ERIE, PA.—The Erie Motor Truck Mfg. Co., 205 Commerce building, plans a plant, 1-story, 60 x 250 feet, to cost $125,000.

MERCER, PA.—The Reznor Mfg. Co. contemplates an addition to its stove factory.

PHILADELPHIA.—The Perseverance Foundry Co. has let a contract for a foundry.

PHILADELPHIA.—The General Carbonite Co. will build a 2-story factory, 100 x 219 feet.

PHILADELPHIA.—A power house will be built at a cost of $60,000 at the Frankfort arsenal.

PHILADELPHIA.—Contracts have been awarded by M. Boyle for a 1-story machine shop addition, 29 x 30 feet.

PHILADELPHIA.—The Keystone Wagon Works, 1949 West Second street, plans a plant, 3-stories, 75 x 100 feet.

PHILADELPHIA.—Hurley Bros. have the contract to erect a wagon factory building addition, 54 x 61 feet, for Adam Frederick, to cost $10,000.

PHILADELPHIA.—The Philadelphia Textile Machine Co. has awarded the general contract for an addition. The building will be 1-story, 20 x 80 feet.

PHILADELPHIA.—Plans are being prepared for a factory and office building for the Wicaco Screw & Machine Works, to be one and two-stories, 82 x 206 feet.

PHILADELPHIA.—The general contract for a $500,000 warehouse for the Edward G. Budd Mfg. Co. has been awarded. The building will be 4-stories, 100 x 300 feet. In addition, there will be a 1-story steel storage house.

PHILADELPHIA.—Alterations and additions, costing $50,000, will be made at the plant here of the Tabor Mfg. Co., Wissinoming. A 1-story addition will be erected to the office building and a 1-story factory building, 89 x 100 feet, will be constructed.

PITTSBURGH.—The Allegheny Gear Works contemplates a plant addition, 1-story, 80 x 135 feet, to cost $50,000.

READING, PA.—The Gray Iron Foundry Co. will erect an addition, 60 x 92 feet, estimated to cost $22,000.

Central States Activity

BARABOO, WIS.—Moeller Bros. plan a blacksmith and wheelwright shop, 3-stories, 30 x 60 feet, at an estimated cost of $20,000.

BELOIT, WIS.—The Dowd Knife Works, manufacturing cutlery, has awarded contracts for a 1-story shop addition, 60 x 100 feet.

BRUCE, WIS.—A bond issue of $12,000 has been approved for constructing a municipal lighting system.

CAMPBELLSPORT, WIS.—A special election has been called on Dec. 19 to decide the question of issuing $35,000 in bonds for the construction and equipment of a municipal water works and sewerage plant.

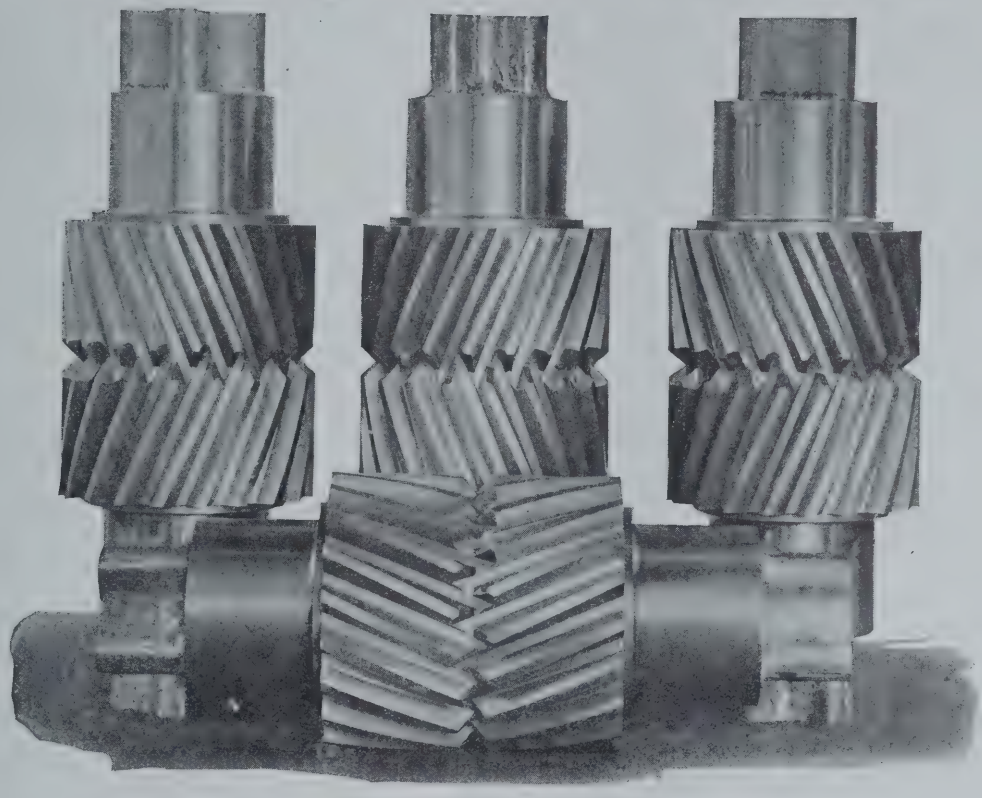
EAU CLAIRE, WIS.—The city will start waterworks improvements shortly and will expend $125,000.

EVANSVILLE, WIS.—Architects Perkins, Fellows & Hamilton, 814 Tower court, Chicago, are preparing plans for a new $150,000 high school, which will include a complete manual training school.

FOND DU LAC, WIS.—Architect J. E. Hennen is preparing plans for a 3-story factory and shop addition, 100 x 100 feet, for the Northern Casket Co., manufacturing wooden and metal caskets. The work will cost about $100,000 including new machinery. William Mauthe is president.

GREEN BAY, WIS.—Plans for a 2-story factory

Gears for All Types of Rolling Mill Service



Open Hearth Steel Castings
FALK HERRINGBONE GEARS

Combine high efficiency, great reliability and long wearing quality with low upkeep.

These advantages, and many others can be derived from an installation of Falk Herringbone Gears.

Steel Castings from 1 to 100,000 lbs.

Write for Particulars

The Falk Company **Milwaukee, Wis.**

REPRESENTATIVES:

PITTSBURGH, W. O. Beyer, 1007 Park Building
SAN FRANCISCO, F. W. Grimwood, Rialto Bldg.
NEW YORK, M. P. Fillingham, 50 Church Street
DENVER, COLO., Denver Engineering Works
WILKES-BARRE, PENNA., Vulcan Iron Works

addition are being made for the Northern Corrugating Co. The new building will be 100 x 110 feet, and cost about $90,000. H. W. Krueger is president.

HARTFORD, WIS.—The Lohr Auto Co., Ford dealer, will build a 1-story addition, 66 x 100 feet, for machine shop use.

JANESVILLE, WIS.—Articles of incorporation have been filed by the Automotive Machine & Tool Co. to engage in the manufacture of tools, machines, jigs, etc. The organizers are J. R. Culhoun, B. S. Harder and B. W. Fitch.

KENOSHA, WIS.—Louis Schiffman, dealer in scrap metal, junk, etc., has purchased a site for a new scrap handling plant and yard representing an investment of about $35,000.

KEWASKUM, WIS.—The Kewaskum Aluminum Co. has let the general contract for its factory to John L. Stanage Co., 144 Oneida street, Milwaukee. It will be 2-story, 80 x 152 feet. A. L. Rosenheimer is president.

KIEL, WIS.—Stoelting Bros. Co., manufacturer of hardware specialties, has awarded a contract for a plant, 3-stories, 60 x 120 feet, to cost $50,000.

MADISON, WIS.—Contracts have been awarded by the Scanlon-Morris Co., maker of machine shop supplies, for a 2-story addition, 55 x 62 feet.

MADISON, WIS.—Articles of incorporation have been filed by the Johnson Specialty Co., Madison. The capital stock is $10,000 and the objects to manufacture and deal in mechanical appliances. The incorporators are T. C., J. A. and Orvey Johnson.

DETROIT.—The Monarch Foundry Co. will build a foundry, 100 x 200 feet, costing $100,000.

DETROIT.—The National Smelting & Refining Co. plans a foundry, 62 x 106 feet, to cost $30,000.

DETROIT.—The Halley Kerosene Carburetor Co., 145 Willis street, plans a plant addition, 1-story, 60 x 220 feet.

DETROIT.—The General Carbonic Co. will build a 1-story plant 100 x 120 feet, a boiler house 40 x 50 feet, costing $150,000.

DETROIT.—The Mutual Electric & Machine Co., 232 West Fort street, plans a plant addition, 3-stories, to cost $12,000.

CHICAGO.—The Doehler Die & Casting Co., 4129 North Campbell avenue, is building a plant.

CHICAGO.—William Ganschow Co., 1001 West Washington street, will build a 2-story machine shop, 32 x 175 feet.

CHICAGO.—The Ursus Motor Co. is building the first unit of a new plant, 60 x 300 feet, to house an automobile shop, paint shop, engineering and executive offices, and will cost $80,000.

CHICAGO.—The Continental Can Co., 111 West Washington street, has had plans drawn for a plant to cost $200,000.

CHICAGO.—The American Foundry Equipment Co., 110 South Dearborn street, contemplates a machine shop, 1-story, 100 x 200 feet.

CHICAGO.—The Advance Machinery Co., 4645 Ravenswood avenue, contemplates a plant addition, 58 x 100 feet, to cost $10,000.

CHICAGO.—The Jenkins Hydraulic Hoist Co. recently was incorporated with $12,000 capital, by John R. Junkin, Floyd I. Clark and Frank W. Fries.

RANKIN, ILL.—This city plans to start work shortly on a power house, 1-story, 30 x 86 feet.

AKRON, O.—The Goodyear Tire & Rubber Co. is having plans drawn for a machine shop, 5-stories, 160 x 520 feet.

AKRON, O.—The State Foundry Co., 116 Atlas street, is reported contemplating a foundry, 80 x 100 feet, to cost $30,000.

AKRON, O.—The India Machine & Rubber Mold Co. has been incorporated with $100,000 capital, by Walter C. Wenk, Thomas Cline, Jess Letherby, Nat Williams and Russell E. Baer.

CANTON, O.—The Canton Slag Co. recently was incorporated with 50,000 capital, by Richard D. Logan, H. M. Sharp and others.

CINCINNATI.—The Cincinnati Shaper Co. is reported planning an addition, 2-stories, 90 x 240 feet.

CINCINNATI.—The Production Machinery Co. recently was incorporated with $53,750, by E. R. Grossman, Robert Ellison and others.

CLEVELAND.—The Hydraulic Pressed Steel Co., James H. Foster, president, plans to enlarge.

CLEVELAND.—The Rubay Co., 1328 West Seventy-eighth street, is planning an addition, 1-story, 100 x 200 feet.

CLEVELAND.—The Standard Wire & Spring Co., 5915 Bonna avenue, contemplates a building, 90 x 145 feet, 2-stories. The company manufactures coil springs.

CLEVELAND.—The Cleveland Appliance Co. recently was incorporated with $1500 capital, by C. F. Shuler, K. Murman, C. E. Curphen, Thomas P. Schmidt and E. E. Kinnison.

DAYTON, O.—The William Dennick Foundry plans an addition.

DAYTON, O.—The Dayton Castings Co. according to reports contemplates a plant.

DAYTON, O.—Standard Register Co. is erecting an addition affording 8000 square feet of floor space.

DAYTON, O.—The Dayton Metal Bodies Co. plans a plant addition, 1-story, 60 x 100 feet, to cost $35,000.

DAYTON, O.—The Seibold, Mien Co. plans an office building and machine shop, at an estimated cost of $125,000.

DAYTON, O.—Domestic Engineering Co. has purchased the 4-story plant of the Mutual Mfg. Co., Taylor street, and will use it for making farm lighting systems.

DAYTON, O.—Barkalew Metal Products Co., 131 East Second street, has purchased the former car barns of the Green line railroad, Richard street. The company makes automatic screw machine parts.

DAYTON, O.—The Duriron Castings Co., 110 West Bayard street, will take bids soon for an office building, 2-stories, 40 x 97 feet, to cost $25,000.

DAYTON, O.—Assets of the Stone Propeller Co. have been sold to members of the Stinson family, aviators, including Catherine and Marjorie, and James R. Stinson and the family will form a company for the manufactrue of airplanes.

ELYRIA, O.—The City Metal Casting Co. recently was incorporated with $4000 capital, by C. A. Dawson and James Melet.

ELYRIA, O.—The R. & S. Non-Deflecting Valve Co. has been incorporated with $200,000 capital, by Ralph Murbach, Carl Ingwer and others.

FINDLAY, O.—The Findlay Engineering & Mfg. Co. has increased its capital from $25,000 to $60,000.

FINDLAY, O.—The property of the Findlay Iron & Coal Co. has been purchased by the Findlay Engineering & Mfg. Co., and the new owners plan a foundry building.

GREENVILLE, O.—The Daisy Fence & Post Co. recently was incorporated with $100,000 capital, by C. A. Stoltz, G. W. Rhodes, H. P. Stocker and T. M. Stoltz.

MASSILLON, O.—The Peerless Machine & Steel Co. is said to have made arrangements for an addition, 1-story, 109 x 400 feet, to cost $150,000.

PIQUA, O.—The French Oil Mill Machinery Co. is erecting a power house, 1-story, 82 x 84 feet, at an estimated cost of $25,000.

Business in Canada

LES FORGES RAPIDS, QUE.—The Shawinigan Water & Power Co., Shawinigan Falls, Que., plans hydroelectric development here.

MONTREAL, QUE.—Construction has started in connection with an addition to the bolt and nut plant of the Steel Co. of Canada, here.

MONTREAL, QUE.—Moore, Cameron & Hill, Ltd., has been incorporated to manufacture railway, marine and contractors supplies, with $100,000 capital, by A. Wainwright, A. H. Elder, Felix W. Hackett and others.

MONTREAL, QUE.—The Crescent Motors, Ltd., have been incorporated to manufacture motors, engines, automobiles, etc., with $100,000 capital, by Francis G. Bush, Herbert W. Jackson, George R. Drennan and others.

MONTREAL, QUE.—La Compagnie de Glacieres C. P. Fabien, Ltd., has been incorporated to manufacture refrigerators, machinery, cold storage equipment, etc., with $100,000 capital, by Jean M. Fraser, Joseph Lavoie, Joseph N. Chabot and others.

BELLEVILLE, ONT.—The Elliot Machinery Co., Ltd., has been incorporated with a capital of $250,000 to take over the plant and business of the Elliot Woodworker Co., and the plant and property of the Burrell Rock Drill Co., Ltd., Belleville, Ont. The incorporators are Wilson S. Morden, 172 Roxboro street east; Carroll D. Dyke, 768 Shaw street; and others.

BRANTFORD, ONT.—The Brantford Roofing Co., Sydenham street, will build a factory addition to cost $10,000.

BRIDGEBURG, ONT.—The Reliance Mfg. Co., capitalized at $500,000, will establish a plant on Lewis street, for the manufacture of electrical goods.

GALT, ONT.—McCaskey Systems, Ltd., Carlaw avenue, Toronto, Ont., will move its plant to Galt. The company will take over the plant of the Roelofson Machine Tool Co., Beverley street, and will equip it for the manufacture of counter checkbooks, credit registers, and professional systems.

HAMILTON, ONT.—The International Plow Works, Ltd., has awarded the general contract for a plant to cost $200,000.

HAMILTON, ONT.—The Universal Battery Co., Ltd., has been incorporated with $40,000 capital, by William F. Bayliss, Arthur J. Lainchburg, John P. Douglas and others.

MILVERYON, ONT.—The town has employed the E. A. James Co., Excelsior Life building, Toronto, Ont., to prepare plans for waterworks installation.

OTTAWA, ONT.—The Ottawa Car Co., Slater street, has awarded the steel contract to the Dominion Bridge Co., Spark street, in connection with a brass foundry to cost $25,000.

OTTAWA, ONT.—The Celex Mfg. Co., Ltd., has been incorporated with $30,000 capital to manufacture metal and wood specialties, by Frank R. Burgess, Robert H. Pringle and George F. Perley.

STRATFORD, ONT.—The Canadian Phonograph Motors, Ltd., has been incorporated to manufacture motors, etc., with $100,000 capital, by William Preston, David Wright and John R. MacDonald.

TORONTO, ONT.—The Canadian National Carbon Co., 265 Adelaide street west, has a site and will build a plant.

TORONTO, ONT.—The Hopkins Auto Top Renew Co., 200 Gerrard street east, is building a factory addition to cost $10,000.

TORONTO, ONT.—The Canadian General Fire Extinguisher Co., 2440 Dundas street west, will erect a plant to cost $500,000.

TORONTO, ONT.—The Canadian Fairbanks-Morse Co., 1383 Bloor street west, let contracts in connection with a manufacturing building to cost $35,000.

TORONTO, ONT.—The National Steel Car Corp. has been incorporated by James S. Lovell, 25 King street west; George G. Paulin, 76 Grosvenor street;

and others with $500,000 capital. The company will take over the plant of the National Steel Car Co.; and will carry on the manufacture of cars, railroad equipment, machinery, tools, etc.

TORONTO, ONT.—The Baldwin's Canadian Steel Corp., Ltd., has been incorporated by James S. Lowell, 25 King street west; William Bain, Robert Gowans and others with $500,000 capital. The company took over the plant of the British Forgings, Ltd., Ashbridges Bay, Toronto, Ont., and is putting it in order and building an addition for the manufacture of iron, steel, castings, bars, blooms, billets, tin plate, etc.

WALKERVILLE, ONT.—The Hills-Jansen Co., Ltd., has been incorporated with $40,000 capital to manufacture automobile accessories, by C. A. Hills, William B. Jansen and others.

WOODSTOCK, ONT.—The Delong Hook & Eye Co., will establish a plant here for the manufacture of hooks, eyes, safety pins, dome fasteners, and all kinds of steel and wire products.

Business Changes Recently Announced by the Trade

RECENTLY reorganized with J. F. Hines as president, the Madison Pattern & Flask Works, Cleveland, has removed its headquarters to a new plant at 10108 Detroit avenue, that city. Facilities for the production of wood, plaster and metal patterns and for the manufacture of flasks, have been increased by the addition of equipment, etc. A cupola is being installed together with suitable molding and pouring facilities to melt the plant's own nonferrous metals.

* * *

Henry T. Parsons, 309 Hostetter building, Pittsburgh, has changed the name of his general machinery business to Parsons-Moorhead Machinery Co., William L. Moorhead having become affiliated with him.

* * *

The Pacific Coast Steel Co. announces the removal of its Portland, Oreg., office to the Multnomah hotel building. W. J. Maguire is sales agent.

* * *

The Battery Park Trading Co., Inc., has been located at 50 Broad street, New York City, since Nov. 1.

* * *

Following the death of W. P. Sparks, formerly manager of the Indianapolis office of the Cleveland Milling Machine Co., Cleveland, that office has been discontinued. The Indianapolis territory will be covered by D. B. Clark, manager of the company's Chicago office,, 435 Stock Exchange building, Chicago.

* * *

The Federal Bridge & Structural Co., Waukesha, Wis., has reopened its Chicago office, 1228 Peoples Gas building, in charge of M. E. Allen, contracting engineer.

* * *

The Kol-Ben Wire Wheel Co., Detroit, will move to Cadillac, Mich., as soon as a new plant is erected there.

* * *

The Gairing & Needham Tool Co., Detroit, capital $25,000, has changed its name to the Gairing Tool Co.

* * *

The O. S. Bearings Co. has moved into new quarters at 214-18 Artillery avenue, Detroit.

* * *

The Wolf Emery Wheel Co., Meriden, Conn., has recently incorporated under the new name of Wolf New Process Emery Wheel Co., with a capital stock of $500,000. The present plans contemplate expansion of the business to at least three times its past capacity. A new concrete factory will be built to the north of the present factory.

* * *

The name of the Delta Electric Engineering Co., Philadelphia, has been changed to the Delta Equipment Co., 140-142 North Third street, that city.

* * *

The Ohio Blower Co., Cleveland, has changed its name to the Ohio Body & Blower Co.

* * *

The Reading Iron Co., Reading, Pa., has opened new district sales offices in Pittsburgh and Chicago, in charge of F. M. English and R. A. Griffin, respectively.

* * *

The Ingersoll-Rand Co., New York, has opened a branch office in the Sam Houston Life building, Dallas, Tex., to handle the Texas and Oklahoma territory. It is in charge of R. H. Brown, formerly of the St. Louis office.

* * *

The Black & Decker Mfg. Co., Towson Heights, Baltimore, has opened a branch office at 201 Maynard building, Seattle, in charge of A. E. Nordwall.

* * *

The American Chain Co., New York, is opening a branch sales office in Pittsburgh, in charge of W. R. Dawson. It is located in the Bowman building, Third avenue and Ross street, Pittsburgh, and will be ready for business shortly after Dec. 1.

* * *

The Hills, McCanna Co., Chicago, brass and aluminum castings, has acquired a plant at 2025 Elston avenue, Chicago.

* * *

Peter Beck, dealer in railroad and manufacturers' supplies, has moved his offices from 50 Church street to 105 Chambers street, New York City.

* * *

Offices have been opened at 702 First National Bank building, Cincinnati, by Maynard French & Co., who will engage in business as agents for the sale of iron and steel products on a commission basis.

* * *

The Worcester Lathe Co., Worcester, Mass., of which Alonzo W. Whitcomb, formerly president of the Whitcomb-Blaisdell Machine Tool Co., of that city, is the owner, has removed from 68 Prescott street, to the rear of 35 Hermon street, Worcester, its lease of the former premises having expired. It has taken two floors in the A. H. Steele Co. factory, which has moved to its new plant.

* * *

W. M. MacCleary has acquired the entire interest of W. M. MacCleary & Co., 2 Rector street, New York City, and will operate solely under his own name. The company deals in iron and steel products.

* * *

The Interstate Iron & Steel Co., 104 South Michigan avenue, Chicago, has opened an office in the First Wisconsin National Bank building, Milwaukee, in charge of Arthur R. Jones, assisted by Charles Belik, formerly of the head office. The Interstate company has appointed the Certes Supply Co., St. Louis, as its sales representative in that territory.

* * *

The Pittsburgh Screw & Bolt Co. has opened branch offices in New York City, at 50 East Forty-second street, with J. Allen Dillon in charge as manager of sales.

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron.....$6.45
Mesabi Bessemer, 55 iron..... 6.20
Old range non-Bess., 51½ iron..... 5.70
Mesabi non-Bes., 51½ iron..... 5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	3.40c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.37c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.52c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.365c
Iron bars, Boston	3.55c
Iron bars, Buffalo	3.95c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.52c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	3.50c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.665c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.95c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c
No. 10 blue anl. sheets, Phila.	5.00c
No. 10 blue anl. sheets, Chicago	4.57c
No 10 blue anl. sheets, Cleveland	4.47c
No. 10 blue anl. sheets, Boston	5.15c
No. 10 blue anl. sheets, Buffalo	4.565c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.79c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	6.00c
No. 28 black sheets, Phila.	6.00c
No. 28 blacfl sheets, Cleveland	5.27c
No. 28 black sheets, Boston	6.65c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.69c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.865c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New Yor	7.25c
No. 28 galv. sheets, Phila.	7.50c
No. 28 galv. sheets, Boston	8.09c
No. 28 galv. sheets, Cleveland	6.62c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.215c
No. 28 galv. sheets, St. Louis	7.04c
Bands, New York	4.22c
Bands, Boston	4.85c
Bands, Detroit	4.03c
Bands, Buffalo	4.065c
Hoops, Buffalo	4.065c
Hoops, Boston	4.95c
Hoops, New York	4.47c
Hoops, Detroit	4.03c
Cold rolled shafting, Buffalo	4.85c
Cold rolled shafting, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inc., 24, 26, 28, 30 and 36 in. wide by 72, 84, 96 and 120 in. long. Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklin (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40

Chicago to:

St. Louis	4.25
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Dertoit	.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	1.25
Pacific coats (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
⅛-inch	1	+14
¼-inch	24½	+ 2½
⅜-inch	25½	+ 1½
½-inch	29½	11½
¾ to 1½-inch	34½	18½

Lap Weld

2-inch	28½	14½
2½ to 6-inch	30½	17½
7 to 12-inch	27½	14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼-inch	+21	+36
⅜-inch	23½	6½
½-inch	28½	15½
¾ to 1½-inch	34½	19½

Lapp Weld

2-inch	29½	16½
2½ to 4-inch	31½	19½
4½ to 6-inch	30½	18½
7 and 8-inch	22½	10½
9 and 12-inch	17½	5½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Balck	Galv.
½-inch	15½	3½
¾ to 1½-inch	20½	8½

Lap Weld

2-inch	16½	4½
2½ to 4-inch	18½	9½

Lapweld Boiler Tubes

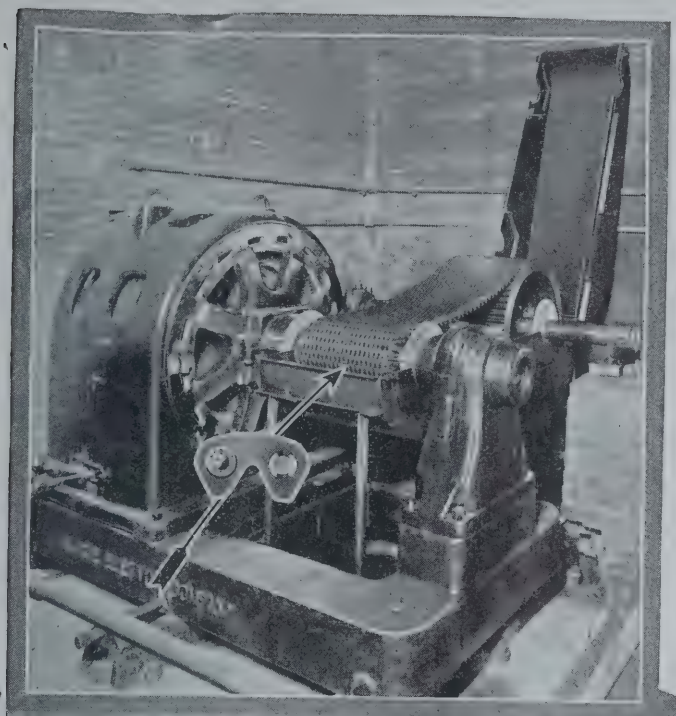
Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16



Why Link-Belt Silent Chain is the Correct Drive

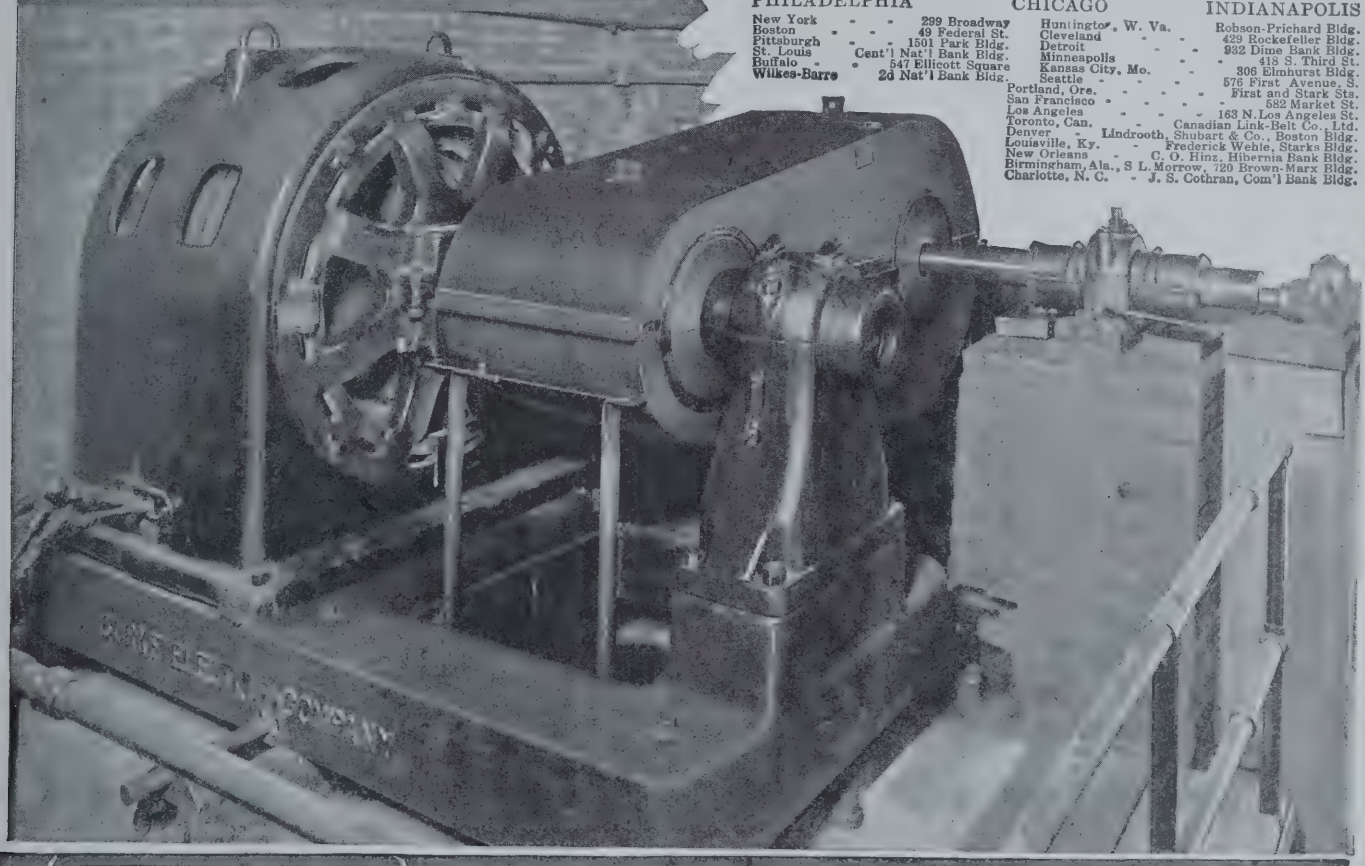
COULD any other form of power transmission operate with efficiency on the short centers shown in these illustrations? This drive like hundreds of others, is operating almost continuously—it has never been shut down for repairs. The plant in which it is installed depends upon its constant daily performance.

Note the drive is enclosed in the patented Link-Belt oil-tight, dust-proof casing. Lubrication automatically reaches the chain. Safety to employees is assured. And the drive is, like all Link-Belt Silent Chain Drives, 98.2% efficient.

Let us show you where you can use an efficient Link-Belt Silent Chain Drive in your plant.

LINK-BELT COMPANY 384

PHILADELPHIA		CHICAGO		INDIANAPOLIS
New York	299 Broadway	Huntington, W. Va.		Robson-Prichard Bldg.
Boston	49 Federal St.	Cleveland		429 Rockefeller Bldg.
Pittsburgh	1501 Park Bldg.	Detroit		932 Dime Bank Bldg.
St. Louis	Cent'l Nat'l Bank Bldg.	Minneapolis		418 S. Third St.
Buffalo	547 Ellicott Square	Kansas City, Mo.		306 Elmhurst Bldg.
Wilkes-Barre	2d Nat'l Bank Bldg.	Seattle		576 First Avenue, S.
		Portland, Ore.		First and Stark Sts.
		San Francisco		582 Market St.
		Los Angeles		163 N. Los Angeles St.
		Toronto, Can.		Canadian Link-Belt Co., Ltd.
		Denver	Lindrooth, Shubart & Co.,	Boston Bldg.
		Louisville, Ky.		Frederick Webb, Starks Bldg.
		New Orleans		C. O. Hinz, Hibernia Bank Bldg.
		Birmingham, Ala.,	S. L. Morrow,	720 Brown-Marx Bldg.
		Charlotte, N. C.		J. S. Cothran, Com'l Bank Bldg.



We Also Make

- ☐ Elevators and Conveyors
- ☐ Link-Belt and Sprockets
- ☐ Silent Chain Drives
- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Locomotive Cranes
- ☐ Portable Loaders
- ☐ Coal and Ashes Systems
- ☐ Coal Pockets

Write for Catalogs
Place X in Square

LINK-BELT
SILENT CHAIN DRIVES

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$24.50 to 25.00
Chicago	21.00 to 21.50
Eastern Pennsylvania	22.50 to 23.00
Cleveland	20.50 to 21.00
St. Louis	21.50 to 22.00
Buffalo	23.00 to 23.50
New York (dealers)	18.00 to 18.50
Cincinnati	18.50 to 19.00
Birmingham	20.00 to 21.00
Valleys	22.75 to 23.00
Boston (dealers)	16.50 to 17.50

BUNDLED SHEETS

Pittsburgh	18.50 to 19.00
Eastern Pennsylvania	18.50 to 19.00
Cleveland	13.50 to 14.00
Buffalo	15.50 to 16.00
Cincinnati	13.50 to 14.00
St. Louis	13.50 to 14.00

STEEL RAILS, SHORT

Chicago	$25.00 to 25.50
Boston (dealers)	15.50 to 16.00
Cleveland	19.00 to 20.00
St. Louis	24.50 to 25.00
Birmingham	22.00 to 23.00
Cincinnati	22.00 to 22.50
Eastern Pennsylvania	22.50 to 23.00

STOVE PLATE

Pittsburgh	$22.00 to 23.00
Chicago	29.25 to 29.75
Eastern Pennsylvania	22.50 to 23.00
Cleveland	22.00 to 23.00
St. Louis	26.00 to 26.50
Buffalo	23.00 to 23.50
New York	19.50 to 20.00
Cincinnati	20.50 to 21.00
Birmingham	23.00 to 24.00
Boston	22.00 to 23.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$27.00 to 28.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	26.00 to 27.50
Buffalo	27.00 to 28.00

SHOVELING STEEL

Chicago	$20.50 to 21.00
St. Louis	20.00 to 20.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$24.50 to 25.00
Chicago	24.50 to 25.00
St. Louis	23.50 to 24.00

BALED SHEETS

Pittsburgh	22.00 to 22.50
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	21.00 to 21.50
St. Louis	21.00 to 21.50
Eastern Pennsylvania	21.00 to 22.00

BOILER PLATE, CUT

Chacigo, No. 1	$19.00 to 19.50
St. Louis	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$24.50 to 25.00
St. Louis	20.00 to 20.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$25.00 to 26.00
Pittsburgh, No. 2	23.50 to 24.00
Chicago, No. 1	28.00 to 29.00
Chicago, No. 2	23.50 to 24.00
Eastern Pennsylvnia, No. 1	29.00 to 30.00
Cleveland, No. 1	24.50 to 25.00
St. Louis, No. 1	23.00 to 23.50
St. Louis, No. 2	22.50 to 23.00
Buffalo	24.00 to 24.50
Cincinnati, No. 1	21.50 to 22.00
Birmingham, No. 1	20.00 to 21.00
New York, No. 1 (dealers)	27.00 to 27.50
Boston (dealers)	24.00 to 28.00

WROUGHT PIPE

Eastern Pennsylvania	$22.00 to 23.00
Eastern Pennsylvania, ungraded	17.00 to 18.00
Buffalo	18.50 to 19.00
New York (dealers)	18.00 to 18.50
Boston (dealers)	14.00 to 15.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$25.00 to 26.00

CITY WROUGHT

New York, long (dealers)	20.00 to 21.00

BUSHELING

Chicago, No. 1	$22.00 to 22.50
Chicago, No. 2	15.50 to 16.00
Cleveland, No. 1	18.50 to 19.00
Cleveland, No. 2	15.00 to 15.50
St. Louis, No. 1	21.50 to 22.00
Buffalo, No. 1	20.00 to 21.00
Cincinnati, No. 1	16.50 to 17.00
Eastern Pennsylvania, No. 1	19.00 to 20.00

MACHINE SHOP TURNINGS

Pittsburgh	$15.00 to 16.00
Chicago	12.00 to 12.50
Eastern Pennsylvania	18.50 to 19.50
Eastern Pennsylvania (blast furn.)	17.00 to 18.00
Eastern Pennsylvania (chemical)	23.00 to 25.00
Cleveland	12.50 to 13.00
Buffalo	14.50 to 15.00
New York (dealers)	14.00 to 14.50
St. Louis	15.00 to 15.50
Cincinnati	7.50 to 8.00
Birmingham	11.00 to 13.00
Valleys	13.50 to 14.00
Boston (dealers)	12.50 to 13.50
Boston (blast furnace) (dealers)	11.50 to 12.00

CAST IRON BORINGS

Pittsburgh	$18.50 t o19.00
Chicago	13.50 to 14.00
Eastern Pennsylvania	20.00 to 21.00
Eastern Pennsylvania (chemical)	23.00 to 25.00
Cleveland	16.00 to 16.50
St. Louis	13.00 to 13.50
Buffalo	17.50 to 18.00
New York (dealers' price)	17.50 to 18.00
Cincinnati	11.00 to 11.50
Birmingham	11.00 to 13.00
Valleys	17.50 to 17.75
Boston (dealers)	15.00 to 16.00
Boston (blast furnace) (dealers)	11.50 to 12.00

IRON AXLES

Pittsburgh	$44.00 to 45.00
Chicago	39.50 to 40.50
Eastern Pennsylvania	40.00
Cleveland	35.00 to 36.00
St. Louis	36.00 to 36.50
Buffalo	33.00 to 34.00
Cincinnati	23.00 to 23.50
Birmingham	29.00 to 30.00

IRON RAILS

Chicago	28.50 to 29.00
Cleveland	27.00 to 28.00
St. Louis	26.50 to 27.00
Buffalo	25.00 to 26.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	21.00 to 21.50
Cleveland	17.50 to 18.00
St. Louis	20.00 to 20.50
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	28.50 to 29.00
Cleveland	22.00 to 23.00
Buffalo	21.00 to 21.50
New York	17.50 to 19.00
Eastern Pennsylvania	24.00 to 25.00

FORGE FLASHINGS

Cleveland, large	$16.75 to 17.25
Cleveland, small	18.00 to 18.50
Chicago, small	17.50 to 18.00
Boston (dealers)	13.00 to 13.50

FORGE SCRAP

Chicago	23.50 to 24.00
Eastern Pennsylvania, No. 1	17.50 to 18.50
Boston	14.00 to 14.50

ARCH BARS AND TRANSOMS

Chicago	32.50 to 33.00
St. Louis	29.00 to 30.00

ANGLE BARS—IRON

Chicago	$30.00 to 30.50
St. Louis	26.00 to 26.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$18.00 to 19.00
Eastern Pennsylvania	19.00 to 20.00
Boston (dealers)	13.00 to 14.00
St. Louis	15.00 to 16.00
Cleveland	19.00 to 19.50
Buffalo	17.50 to 18.00
Chicago	17.50 to 18.00

STEEL CAR AXLES

Pittsburgh	$32.00 to 33.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	33.00 to 33.50
Buffalo	33.00 to 34.00
Chicago	33.50 to 34.50
New York (dealers)	27.00
Birmingham	28.00 to 29.00
Boston (dealers)	26.00 to 27.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	30.50 to 31.00
New York (dealers)	24.00 to 25.00
Chicago	30.00 to 30.50

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$31.00 to 32.00
Pittsburgh, steel	24.50 to 25.00
Chicago, iron	29.50 to 30.00
Eastern Pennsylvania, iron	29.00 to 30.00
Cleveland, iron	26.00 to 27.00
St. Louis, iron	25.50 to 26.00
Buffalo, iron	27.00 to 27.50
Birmingham, iron	26.00 to 27.00
Birmingham, tram car	26.00 to 27.00
Boston	25.00 to 26.00
Cincinnati	21.50 to 22.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$30.00 to 31.00
Chicago, cupola	34.00 to 34.50
Eastern Pennsylvania, cupola	30.00 to 32.00
Cleveland, cupola	30.00 to 30.50
New York, cupola (dealers)	25.00 to 26.00
Cincinnati, No. 1, cupola	24.50 to 25.00
Birmingham, cupola	26.00 to 27.00
St. Louis, railroad	30.00 to 30.50
St. Louis, agricultural	29.50 to 30.00
Buffalo	27.00 to 27.50
Boston	30.00 to 31.00
Valleys	30.00 to 31.00

HEAVY CAST

New York (dealers)	23.50 to 24.00
Buffalo	21.00 to 22.00
Pittsburgh	27.00 to 28.00
Cleveland	20.00 to 21.00
Boston	23.00 to 24.00

MALLEABLE

Pittsburgh, railroad	$25.00 to 26.00
Pittsburgh, agricultural	22.00 to 23.00
Chicago, railroad	28.00 to 29.00
Chicago, agricultural	28.50 to 29.00
Eastern Pennsylvania, railroad	22.00 to 23.00
Cleveland, railroad	25.50 to 26.00
Cleveland, agricultural	18.50 to 19.00
St. Louis, railroad	24.50 to 25.00
St. Louis, agricultural	23.50 to 24.00
Cincinnati, railroad	17.00 to 17.50
Cincinnati, agricultural	16.50 to 17.00
Boston, railroad	23.00 to 24.00
Buffalo	22.50 to 23.50

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS
5 feet and over

Pittsburgh	$30.00 to 31.00
Chicago	31.50 to 32.00
Eastern Pennsylvania	32.00
Cleveland	28.50 to 29.00
St. Louis	31.00 to 32.00
Birmingham	27.00 to 28.00
Boston (dealers)	26.00 to 27.00

LOCOMOTIVE TIRES

Chicago	23.50 to 24.00
St. Louis	22.50 to 23.00

BOILER PUNCHINGS

Chicago	$26.00 to 27.00
Eastern Pennsylvania	25.00 to 26.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

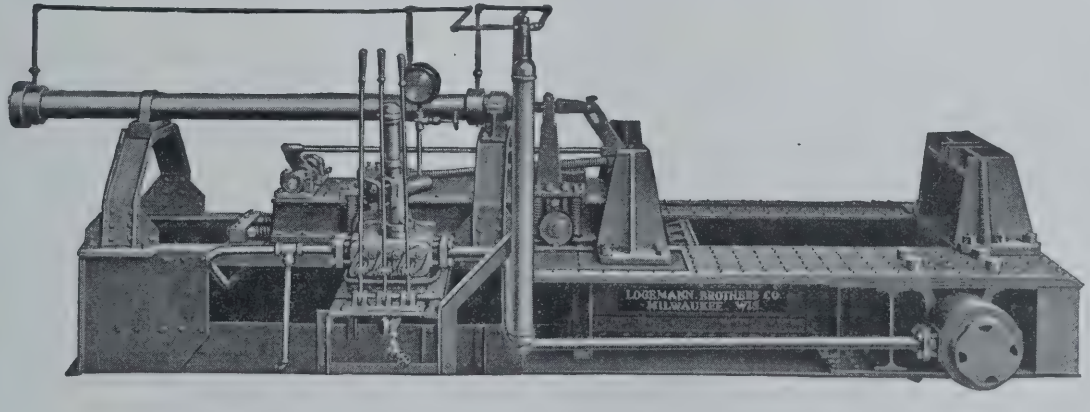
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Builders of Baling Presses and Hydraulic Machinery

New Trade Publications

SAND-BLASTING.—The W. W. Sly Mfg. Co., Cleveland, has published the November issue of its pamphlet, and in it a description of a "baby" sandblast barrel is given.

DRILL STEEL.—The Ingersoll-Rand Co., New York, is distributing a 28-page booklet in which steel for rock drilling purposes is described and illustrated. Specifications, etc., of steel for various drilling purposes are given.

METAL HOSE.—The United Metal Hose Co., Inc., New York, is circulating a 4-page cardboard circular in which two kinds of flexible metal hose are described and illustrated. Specifications, etc., are given.

STOPEHAMMERS.—A drill for stoping, raising and other work in which holes are above the horizontal is described and illustrated in a booklet recently published by the Ingersoll-Rand Co., New York. This drill is all steel and is furnished with three styles of air feeds and supplied in light and heavy patterns.

DRILL.—A powerful drill designed for shaft sinking and capable of drilling holes of comparatively large diameter to a depth of 12 feet, is described and illustrated in a booklet recently published by the Ingersoll-Rand Co., New York. The drill is of all steel construction.

TOOLS.—Catalog No. 17 has been issued by the Clark Equipment Co., Buchanon, Mich., in which twist drills, reamers, countersinks, flue cutters, lathe tools and chucks are described and illustrated. Specifications are given as well as other data including, drill feeds and speeds, decimal equivalents, tap sizes, etc.

GAS MEASUREMENT.—Pamphlet P, an 8-page leaflet in which Pitot tubes and orifices for measuring the flow of gases in connection with flow meters, are described and illustrated, is being circulated by the Bacharach Industrial Instrument Co., Pittsburgh. The leaflet contains a number of line drawings of these instruments, and the data given shows how they are employed in measuring the flow of gas.

ROLLING MILL MACHINERY.—The Youngstown Foundry & Machine Co., Youngstown, O., has published a booklet in which rolling mill and steel works machinery is described and illustrated. The equipment described includes roll lathes, lever shears, vertical shears, automatic spike machines, boat spike machines, charging box cars, ingot cars, straightening machines, sand-chilled and semisteel rolls.

HEAT INSULATIONS.—The Franklin Mfg. Co., Franklin, Pa., is circulating a large booklet in which pipe coverings such as magnesia, asbestos, etc., are described. The first part of the booklet is devoted to a description of the company's products. The second part consists of sales data and a third section serves as a reference department and contains much valuable information to purchasers of this material. The booklet contains a number of illustrations.

PRESSURE INDICATOR.—A 4-page leaflet has been published by the Bacharach Industrial Instrument Co., Pittsburgh, in which a pressure volume indicator for the control of air delivery to cupolas, is described and illustrated. The instruments consist of a pitot tube installed in the blast pipe and connected to the indicator, which is an inclined tube gage, inclosed so as to be dust proof. The scale is graduted so as to read in cubic feet of air delivered per minute.

AIR COMPRESSORS.—A 10-page booklet is being distributed by the Ingersoll-Rand Co., New York, in which air compressors for belt drive, are described and illustrated. The type described is of the vertical, single stage, single acting, self-oiling, enclosed, center crank design, and is equipped with a heavy main frame, which encloses the main bearings, crankshaft and connecting rod. The air compressing cylinder is on the top of the main frame, to which it is secured by suitable stud bolts. Full details are given.

HOT-BLAST HEATER.—Robert Gordon, Inc., Chicago, has published an 8-page booklet in which a mechanical hot-blast heater is described and illustrated. This heater is designed for use in heating, large or small buildings, foundries of all sizes, factories, garages, temporary buildings, schools, etc., and can be used for drying clay products, asbestos, magnesia, textiles and other products dried by warm air up to a temperature of 400 degrees Fahr. Specifications are given as well as a description of the construction.

FOUNDRY SUPPLIES.—A cloth-bound catalog has been published by Frederic B. Stevens, Detroit, in which complete foundry supplies are listed, described and illustrated. The book not only is a catalog but serves as a reference book, containing valuable information relating to foundry materials, electroplating supplies, firebrick and their respectives uses. The foundry supplies described are: Oils, sand, etc.; cupola furnace; pressure gages; blast volume meter; blowers; elevators; general foundry tools; sand mixers; molding machines, etc. Complete data pertaining to each article or material are given and all equipment is illustrated.

OIL ENGINES.—J. Samuel White & Co., Ltd., East Cowes, Isle of Wight, is circulating an illustrated booklet in which heavy oil engines are described and illustrated. These engines are manufactured by the company in two types and range in power from 150 boiler horsepower to 2000 boiler horsepower. The heavy slow running type is for mercantile marine and land installations. The light type is for special service, including submarines. All marine engines are directing reversible and can be reversed from full ahead to full astern in a few seconds. The starting and reversing gears are simple and readily accessible. The full-speed revolutions can be reduced ⅓ in number for slow running or cruising speeds. Both types work on the 2-cycle principle. The booklet contains a complete description of the engines and besides a number of halftone illustrations, 10 line drawings, showing the various parts of the engines are given.

Opportunities Abroad

Requests for information should be forwarded to district or co-operative office in your district, of the Bureau of Foreign and Domestic Commerce. Each request should be on a separate sheet and be accompanied by the opportunity number

DISTRICT OFFICES

New York, 734 Customhouse; Boston, 1801 Customhouse; Chicago, 504 Federal bldg.; St. Louis, 402 Third Nat'l Bank; New Orleans, Hibernia Bank; Seattle, Henry bldg.; San Francisco, 307 Customhouse

CO-OPERATIVE OFFICES

Cleveland, Chamber of Commerce; Cincinnati, Chamber of Commerce; Los Angeles, Chamber of Commerce; Philadelphia, Chamber of Commerce; Portland, Oreg. Chamber of Commerce; Dayton, Ohio, Chamber of Commerce; Pittsburgh, Chamber of Commerce

A commission agent from Egypt who has been in the United States for several years, is about to return to his native country and desires agencies for the sale of agricultural implements and machinery. Opportunity No. 31353.

An agency is desired by a party in Spain for the sale of mechanical toys, electrical goods and dental supplies. Correspondence should be in Spanish or French. Opportunity No. 31358.

An American Firm of purchasing agents for a manufacturing company in Brazil desires catalogs and quotations in duplicate for the purchase of machinery for the production of bottles. window glass, insulators, etc. Opportunity No. 31364.

A company in Greece desires to purchase and secure an agency for the sale of machinery for building purposes, such as cranes, wagons, aerial wagons for transporting coal, etc., and other machinery. Iron and steel mchinery used in building, railway rails, motor trucks, etc. Opportunity No. 31378.

An Austrian railway company desires to purchase monthly about 30 tons of copper needed in locomotive production, especially such copper as is used in making bars, plates and tubes. Offers should be accompanied with an anlaysis of the copper. Opportunity No. 31380.

A company in Denmark desires an agency for the sale of pig iron metals, especially steel, tool steel, machine tools, mining machinery, etc. Opportunity No. 31385.

A commercial agent in France desires to secure an agency on a commission basis for the sale of electrical apparatus, such as wire, insulators, switches, lamps, reflectors, etc. Opportunity No. 31386.

The purchase of 7-foot radial drilling machines for drilling rivet holes in boiler plates, is desired by a firm in England. Opportunity No. 31387.

A firm in England having a branch office in this country, desires to be placed in touch with manufacturers of electrical labor-saving appliances, with a view to their sale in England. It is particularly interested in washing machines, vacuum cleaners, dish-washing machines, electrical clothes dryers, motor-driven sewing machines and electrical water-heating apparatus. Opportunity No. 31394.

An importer in France desires to secure an agency for the sale of hardware, enameled ware, household appliances, electrical supplies, novelties, etc. Opportunity No. 31395.

A company in Honduras desires to purchase machinery for an ice plant, capable of producing 3500 pounds a day. Quotations wanted on both electric and steam machinery. Complete information should be furnished with first communication. Opportunity No. 31396.

A firm in France desires to purchase annealed mild steel; unleaded, 15 to 100 millimeters; leaded, 20 to 100 millimeters; length from 80 to 100 meters; width from 41 to 22 millimeters. Sixty tons of this steel are desired at once and are to be used in making tubing for electrical fixtures. Opportunity No. 31397.

The purchase is desired by a firm in China of tinplate suitable for making cans, wire nails, iron wood screws, steel butts, padlocks, rotary shears, etc. Opportunity No. 31401.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, December 11, 1919 *No. 24*

Coal Relief is Sorely Needed

Impending Strike Settlement Finds Iron and Steel Industry in Initial Stage of Sweeping Curtailment of Production—Scarcity of Material Grows and Makers Decline New Business—Coke Control Stays Feverish Rise

PROMISED settlement of the coal strike has come at the critical moment for the iron and steel industry when a sweeping contraction of production has seemed unescapable. Even now, it is a serious question whether the curtailment of operations already well under way can be arrested in its first stage before a free movement of coal and coke supplies to crippled plants can be restored. The past week has shown a spread of the paralyzing effects of a restriction of fuel requirements, to a degree where the loss of output, in many cases, has been more extensive than during the steel strike. Various plants which had managed to maintain operation at or only slightly below a normal basis, against direct labor disturbance, have been forced to yield sharply to the narrowed distribution of fuel. It is apparent that a few weeks more of present conditions and the iron and steel makers literally would have been swamped with deferred obligations which would have made a clearing of their books a tremendous problem.

Many Plants Crippled

The list of additional shutdowns of plants for the week as the result of the coal crisis, is a lengthy one. Many sheet mills have been forced to close and others have been crippled at a time when the shortage in this product is pronounced to be the greatest the country ever has known. The additional loss of output in tin plate and wire has been heavy. Tubular goods have been affected considerably and the largest maker has been obliged to lighten up production in its various plants. In the Youngstown district several large plants have suspended completely. A leading Pittsburgh independent has been reduced from practically 100 per cent to not over 60 per cent operations. Eight out of 12 blast furnaces at Gary, 5 out of 11 at South Chicago and one out of four at Joliet are running. The Joliet mills are down. Few merchant furnaces have been forced to bank or go out.

Under present conditions of shortage, export business is severely restricted. Some sizable sales have been made, however, including 16,000 tons of rails to Chile, and 12,000 tons of tank plates and 21,500 boxes of tin plate to Japan. The steel for a 3500-ton zinc smelter for India has been placed tentatively.

Coke Under Control

A return of government price control over coke is the culmination of a feverish week in that product. Spot coke had been sold at $10 to $12, ovens, just before the fuel administration intervened. Fixed prices now in force are $6 for furnace and $7 for foundry beehive coke, Connellsville ovens, with modifications for other districts and $6.70 for by-product selected foundry grade The 25 per cent curtailment of coal supplies to beehive ovens ordered by the fuel administration went into effect Monday. A further cut of 25 per cent is slated to follow Thursday, depending whether the miners accept the government's offer of settlement.

New steel orders, no matter how attractive in size or price, have been going begging. Many mills have closed their badly congested order books to every importunity or device of buyers. A Detroit automobile manufacturer has been seeking in vain to place 100,000 tons of strip steel. A 10,000-ton steel bar inquiry at Pittsburgh has elicited little interest. In the East mills have enough tonnage of steel bars to run into the third quarter and are selling considerable tonnage at 3.50c, Pittsburgh, against the regular level of 2.35c, Pittsburgh. Semifinished material can scarcely be had. A sale of sheet bars has been made at $50, Pittsburgh. In the East rerolling billets have brought $50, Pittsburgh, and slabs, $52.50.

No Stop In Iron Rise

The pig iron market is steadier though exceedingly strong and the great majority of the sellers are declining further tonnage. Valley basic and bessemer have advanced another $1 to $34 and $35, furnace. Eastern basic has reached $35, furnace. Standard low phosphorus is up to $45, furnace, in the East and to $42, valley. Chicago producers are quoting $40, furnace, on No. 2 foundry, based on $45, Birmingham, and have made various sales at this figure. The base foundry grade in other districts ranges from $36 to $38, furnace.

DECEMBER 11, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - - - York St. and Western Ave.
NEW YORK - - - - - - - 2203-2206 No. 220 Broadway
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LONDON, ENG. - - - - - - - 16 Regent St., S. W. I.

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Who Shall Lead the Engineers?

SELDOM, if ever, does the reader who glances casually at the list of newly elected officers of an organization go to the trouble of analyzing the occupations of the office holders unless it is plainly evident from cursory examination that one profession, trade, or branch of industry is represented by an unusually large percentage of the new incumbents. Therefore, it would be interesting to know how many persons who read the names of men recently elected to office in the American Society of Mechanical Engineers, are struck by the fact that of the seven in the list, four or 60 per cent are identified with institutions of learning or technical branches of departments of the federal government.

Were this high percentage an exception to the general rule, it would not be significant. However, there always has been a tendency to place theoretical engineers, scientists, etc., at the head of and in charge of the policies of so-called engineering societies. Notwithstanding the fact that the names of many notable, practical and successful engineers and manufacturers, such as Henry R. Towne, Charles E. Billings, John Fritz, Worcester R. Warner, S. T. Wellman, Ambrose Swasey and George Westinghouse, appear on the list of the past presidents of the society, the majority of the presidents have come from the laboratories and classrooms of technical and engineering schools.

The preponderance of college men is even more noticeable in the activities of the engineering societies. Most of the committee work is undertaken by men associated with educational institutions, and in recent years, investigators with the United States bureau of mines and bureau of standards have carried a particularly heavy part of the burden imposed upon the members of the technical societies.

In view of these facts, one is tempted to ask why engineers and manufacturers who daily apply their technical training to practical problems do not take a more active part in the affairs of the societies. Can it be possible that the men who practice engineering as an adjunct to business do not have time to indulge in these activities, or is it true that the work of the engineering societies has acquired the hallmark of the class room, and therefore no longer interests practical men? These questions merit close attention, particularly by those who are charged with the successful guidance of the policies of the large engineering organizations. It should be possible to bring theoretical and practical men together on common ground, and any tendency which seems to point toward the domination of the engineering field by one faction to the detriment of the other should be checked before harm is done.

When Sanity Finally Returns

RESTORATION of the governmental wartime prices and regulations on coke have been the inevitable result of a continuance of the present acute shortage of coal which for the nation at large is becoming more desperate daily. This has followed quickly upon the pronouncement of the central coal committee to sharply restrict the supply of coal to beehive ovens, starting Dec. 8. The effect of this order plus the increased shortage of coal was to precipitate a violent rise in the spot coke market at the close of last week. Spot Connellsville coke then, it is understood, readily bought from $10 to $12 per ton as compared with $6.50 to $7 in the week preceding. The taking over of the control of the market by the fuel administration under the Lever act, which still is in force, then was announced. Under these regulations the beehive product is fixed at $6 ovens for 48-hour or furnace fuel and at $7 ovens for 72-hour or foundry coke subject to such modifications as fit local conditions. Under these latter Wise county Virginia furnace coke is listed at $7.25 ovens and foundry at $8.25 and New River and Pocohontas coke in West Virginia, at $8 ovens for both furnace and foundry grades. Selected by-

product foundry coke is placed at $6.70 base and run of oven, $5.70 base. To these base prices on by-product coke there is added the freight rate from the competing beehive coke district which takes the lowest rate to the point where such by-product coke is produced.

The return of the coke market to a fixed price basis under government control, reflects clearly the critical stage to which the stubborn attitude of the coal miners has brought the iron and steel industry and all other commercial and manufacturing activities of the country as well. This week has seen the beginning of a slowing down of production of iron and steel mills and blast furnaces on a large scale. If this situation is to continue unrelieved for an indefinite period, the consequences which would be freed could be nothing but disastrous for the country at large. Added to the large loss of output occasioned by the steel strike, it would pile up the arrearage of supply so overwhelmingly that it would be practically impossible for the mills ever to catch up, in view of the present excessive demand.

From the standpoint of business stability and the well-being of the whole country, the situation has reached the point where drastic measures are warranted and demanded. It is well that the coal miners at last have come to their senses and have appreciated this fact. In accepting the government's final offer of settlement they have spared themselves from a responsibility that would have become so heavy that no class or set of men lucidly could care to assume it before an outraged public. And they have avoided jeopardizing whatever of their honest dues and rights are tied up in the present controversy.

Pig Iron Registers Comeback

AS WAS predicted, failure of the steel strike was accompanied by a spectacular comeback in pig iron production, which was particularly noticeable during November. Inasmuch as the effect of any disturbance or impetus to production usually is not registered until the following month, the pig iron output of October indicated the degree to which blast furnace operation was affected during the early days of the strike, while the November record measures the recuperation after the breaking of the strike in October.

The production for November was 2,397,175 tons, a gain of 532,751 tons over the preceding month, bringing the total to within 84,000 tons of the September figure. But while October registered a large loss, merchant production increased over September, indicating that the steelmaking stacks suffered a loss greater than that represented by the total net loss. It is significant, therefore, that 87 per cent of the gain of November was made by the steelmaking stacks. These furnaces produced 1,732,296 tons, or 462,629 tons more than were produced in October, while merchant furnaces with 644,189 tons made a gain of 69,670 tons.

More noteworthy is the fact that of a net gain of 36 stacks placed in blast during the month, 32 were steelmaking stacks while only four were merchant stacks. Only 14 fewer furnaces were in blast on Nov. 30 than on Aug. 31 when the third highest number during the year was in operation. These figures prove conclusively that the steel strike affected the industry seriously for only a brief period and were it not that the coal shortage now is curtailing production, the December pig iron output would be practically normal.

Independents Rise to Power

THAT preponderant influence in the steel industry has not been used to repress competition and destroy rivals for trade is clearly shown in the wonderful growth of independent companies which have sprung up and prospered since the formation of the United States Steel Corp.

Taking an outlying province of the steel area as an illustration, the same situation being true of other localities, the Chicago field indicates that the presence of the stronger competitor has been no bar to success of other companies. Though represented in the Chicago district by four plants, two of which are among the largest and most efficient in the country, with an immense annual output, the leading interest has seen its competitors organize and grow rapidly. The Inland Steel Co., starting 17 years ago as little more than a rerolling proposition, now is fully integrated from ore mines to finishing mills and has grown to a capitalization of $30,000,000. This growth has been made since the Steel corporation was organized.

The Interstate Steel & Iron Co. is another example of the growth of a small bar iron mill to a position where it assumes rank with the larger steel interests. This company has three well equipped plants and a large capitalization, enjoys widespread trade, and markets a broad line of products. It is still growing and promises soon to occupy an even larger field.

That such expansion has gone on during the past few years in direct competition with the largest interest indicates that the steel business is conducted on lines which give every manufacturer freedom for initiative and development. The records of establishments which have grown into powerful organizations form significant proof of the stability and integrity of the iron and steel industry and of the men whose counsel wisely prevails.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1616 AND 1618

Pig Iron

Bessemer, valley	$35.00
Bessemer, Pittsburgh	36.40
Basic, valley	34.00
Basic, Pittsburgh	35.40
Basic, delivered, eastern Pa.	33.00 to 35.00
Malleable, Pittsburgh	37.65
Malleable, Chicago, furnace	35.50
Malleable, Buffalo, furnace	39.25
Malleable, delivered eastern Pa.	36.00 to 38.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$42.10 to 44.10
No. 1X, Buffalo	41.00
No. 1 foundry, Chicago, furnace	36.25
No. 2 foundry, valley, Pittsburgh	37.40
No. 2 foundry, Buffalo	38.00
No. 2 foundry, Boston	41.50 to 42.50
No. 2 foundry, Chicago furnace	35.00
No. 2 foundry, Ironton furnace	35.75 to 36.75
No. 2 foundry, Cleveland furnace	35.00 to 36.00
No. 2X, eastern, del., Phila.	40.10 to 41.10
No. 2X, eastern, N. J., tidewater	40.10 to 41.10
No. 2X, eastern, Boston	41.90 to 42.90
No. 2X, foundry, Buffalo furnace	39.25
No. 2 foundry, del., Philadelphia	39.10 to 40.10
No. 2 foundry, N. J. tidewater	39.10 to 40.10
No. 2 southern, Birmingham	34.00 to 35.00
No. 2 southern, Cincinnati	37.60 to 38.60
No. 2 southern, Chicago	37.00 to 38.00
No. 2 southern, Phila.	38.50 to 39.50
No. 2 Southern, Cleveland	37.00 to 38.00
No. 2 southern, Boston	43.00 to 44.00
No. 2 southern, St. Louis	38.25
Virginia, No. 2X, furnace	38.25
Virginia, No. 2X, Philadelphia	42.35
Virginia, No. 2X, Jersey City	42.65
Virginia, No. 2X, Boston	43.70 to 44.70
Gray forge, valley, Pittsburgh	34.40
Gray forge, Buffalo	32.00 to 33.00
Gray forge, eastern Pa.	34.50
Silveries, 8%, furnace	50.00
Ohio Silveries, 8%, Chicago	46.80
Tennessee Silveries, 8%, Chicago	48.65
Low phos. standard, Phila.	48.80
Low phos. Lebanon, furnace	40.00
Low phos. standard, Pittsburgh	43.40
Charcoal, Superior, base grade, Chicago	42.50 to 44.50

Coke

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

Ferroalloys

Ferromanganese, 80 per cent, delivered, domestic metal	$120.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	110.00
Spiegel, 18 to 22 per cent furnace spot	38.00 to 40.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.20
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's plant	27c to 29c
Ferrovanadium, 35 to 40 per cent per pound contained, according to analysis	$5.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	59.50
Bessemer, ferrosilicon, 11 per cent	62.80
Bessemer, ferrosilicon, 12 per cent	66.10

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	43.00 to 45.00
Open-hearth, Philadelphia	54.00
Open-hearth, Youngstown	43.00 to 45.00
Bessemer, Pittsburgh	43.00 to 45.00
Bessemer, Youngstown	43.00 to 45.00
Forging, Pittsburgh	51.00 to 56.00
Forging, Philadelphia	64.00

SHEET BARS

Open-hearth, Pittsburgh	$48.00 to 50.00
Open-hearth, Youngstown	48.00 to 50.00
Bessemer, Pittsburgh	48.00 to 50.00
Bessemer, Youngstown	48.00 to 50.00

SLABS

Pittsburgh and Youngstown	43.00 to 45.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$60.00 to 63.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c
Structural shapes, Philadelphia	2.695c to 2.925c
Structural shapes, New York	2.72c to 2.95c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c to 2.75c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c to 2.995c
Tank plates, New York	2.92c to 3.02c
Bars, soft steel, Pittsburgh	2.35c to 2.50c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c to 3.77c
Bars, soft steel, Philadelphia	2.549c to 3.745c
Bar iron, common, Phila.	3.245c
Bar iron, common, Chicago	2.77c to 3.00c
Bar iron, common, Cleveland	3.25c
Bar iron, common, New York	3.27c
Bar iron, common, Pittsburgh	3.25c
Hard steel bars, Chicago	2.85c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 46.00
Relaying rails, Pittsburgh	40.00 to 43.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	5.00c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 5c more)

Wire nails, Pittsburgh	3.50c
Plain wire, Pittsburgh	3.10c to 3.25c
Galvanized wire, Pittsburgh	3.80c to 3.95c
Barbed wire, painted, Pitts.	3.50c
Barbed wire, galvanized, Pitts.	4.20c
Cut nails, Pittsburgh l. c. l.	5.195c
Coated nails per count keg, Pitts.	3.10c to 3.25c
Polished staples, Pittsburgh	3.50c
Galvanized staples, Pittsburgh	4.20c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1⅛ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.00c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.995c to 4.095c

Full sheet schedule page 1616.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black	Galv.
	Per cent off	
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	34½	18½

Full pipe schedule page 1616.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40⅛
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B

Four-inch, Chicago	$65.80
Six-inch and over, Chicago	62.80
Four-inch, New York	65.30
Six-inch and over, New York	62.30
Four-inch, Birmingham	59.00
Six-inch and over, Birmingham	56.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c
Bands, Pittsburgh	3.05c
Hot rolled strip steel, Pitts. stamping quality	3.50c
Cold finished steel bars, Pitts., base	3.60c

Rivets

Structural rivets, Pittsburgh	3.90c to 4.15c
Boiler rivets, Pittsburgh	4.00c to 4.25c
Rivets ⅞ in. and smaller Pitts.	50 to 50—10 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	45–5 to 50–10 off
Cut thread	40–5 to 50–10 off
Larger and longer	30–10 to 40–10 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–7½ to 60 off
Cut thread	40–10–5 to 50–10 off
Larger and longer	40 to 40–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–5 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	70–10–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c to 2.70c off
Hot pressed, square tapped	2.25c to 2.45c off
Hot pressed, hexagon blank	2.50c to 2.70c off
Hot pressed, hexagon tapped	2.25 to 2.45c off
Cold pressed, square tapped	2.25c to 2.45c off
Cold pressed, square blank	2.50c to 2.70c off
Cold pressed, hexagon blank	2.50c to 2.70c off
Cold pressed, hexagon tapped	2.25c to 2.45c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Dec. 10, 1919	Average prices Nov. 1919	Sept. 1919	Dec. 1918
Bessemer valley, del., Pittsburgh	$36.40	$32.00	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	35.40	30.40	27.15	34.40
*No. 2 Foundry, Pittsburgh	37.40	33.15	28.15	35.40
*No. 2 Foundry, Chicago, furnace	40.00	31.75	26.75	34.00
Lake Superior charcoal, Chicago	42.50	35.50	32.75	38.70
Malleable, valley	36.25	31.75	28.65	35.90
Malleable, Chicago	35.50	32.25	27.25	34.50
*Southern, No. 2, Birmingham	35.00	30.65	26.75	35.25
*Southern Ohio, No. 2, Ironton	36.00	31.75	26.75	34.00
Basic, eastern del., eastern Pa	34.00	33.00	27.00	36.90
**No. 2X, Virginia, furnace	38.25	33.40	29.25	38.00
*No. 2X, eastern del., Philadelphia	40.60	35.85	29.95	39.15
Gray forge, valley del., Pittsburgh	35.40	31.80	27.15	34.40
Ferromanganese, 80 per cent, delivered	120.00	110.00	105.00	240.00†
Bessemer billets, Pittsburgh	45.00	40.90	38.50	47.50
Bessemer sheet bars, Pittsburgh	48.00	45.00	42.00	51.00
Open-hearth sheet bars, Pittsburgh	48.00	45.00	42.00	51.00
Open-hearth billets, Pittsburgh	45.00	40.90	38.50	47.50
Steel bars, Pittsburgh	2.50c	2.45	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	3.245c	2.895	2.595	3.745

	Prices Dec. 10, 1919	Average prices Nov. 1919	Sept. 1919	Dec. 1918
Iron bars, Cleveland	$3.25	$3.00	$2.52	$3.64
Iron bars, Chicago mill	2.77c	2.73	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.60	2.45	3.00
Beams, Philadelphia	2.695	2.695	2.695	3.245
Tank plates, Pittsburgh	2.70c	2.65	2.60	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	2.995c	2.895	2.845	3.395
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.55	4.25
Sheets galv., No. 28, Pittsburgh	5.70	5.70	5.70	6.25
Wire nails, Pittsburgh	3.50	3.45	3.25	3.50
Connellsville furnace coke	6.00	5.80	4 60	6.00
Connellsville foundry coke	7.00	6.95	5.90	7.00
Heavy melting steel, Pittsburgh	24.50	21.90	20.50	27.50
Heavy melting steel, eastern Pa	24.00	20.80	19.00	24.75
Heavy melting steel, Chicago	21.00	20.65	19.00	26.50
No. 1 wrought, eastern Pennsylvania	31.00	27.85	27.00	33.50
No. 1 wrought, Chicago	27.00	26.50	21.25	29.65
Rerolling rails, Chicago	31.50	31.15	25.40	30.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Pig Iron Market Grows Steadier

Advance of Prices Continues But Situation is Less Excitable—Chicago Producers Sell No. 2 Foundry at $40—Valley Basic Reaches $34 and Bessemer $35—Low Phosphorus in East Sells at $45

Pittsburgh, Dec. 9.—Another $1 per ton has been added in the past week to the price here on the three base grades of pig iron. Sizable sales of No. 2 foundry (1.75 to 2.25 silicon) for the first half from a valley furnace are noted at $36 furnace; of 3000 tons of standard bessemer for first half, at $35 furnace; and of a tonnage of basic, at $34 valley furnace. Lots of less than 1000 tons of both No. 2 foundry and standard bessemer have been made at least $1 above these quotations, but on basic $34 seems to be the top even on small tonnages. Where there is no lack of demand from consumers of this grade, many seem hesitant to pay more than that price. The market from certain indications has lost some of the excitement which recently characterized trading but this condition reflects unwillingness on the part of producers to accept much business at current levels rather than because buyers have fully covered their requirements. A number of consumers of all grades have not yet contracted for their first half of 1920 requirements and the remaining unpledged supplies have been reduced still further by the fact that a number of merchant furnaces, because of recent suspensions, will carry over considerable 1919 business into next year. In this connection, it is reported that one valley furnace has obligations amounting to 35,000 tons of basic, equal to about three months' production by this furnace. A Wheeling sanitary ware manufacturer is in the market for 2000 tons of No. 2 foundry and an equal tonnage of the same grade is being sought by one of the radiator companies in Johnstown, Pa. It is reported that about 2000 tons of No. 2 foundry is under negotiation by a Pittsburgh district consumer at $38 with a western Pennsylvania furnace interest. Most of the producers of foundry iron already are committed for all but a small portion of their first half production. A sale of 3000 tons of standard bessemer for first half was made to a Paden City, W. Va., maker of melting bars, and the buyer it is understood was quoted as high as $39 against this inquiry. Curtailment of production of beehive oven coke has not yet seriously affected the operation of blast furnaces in this district. The Carnegie Steel Co. has banked one of its city stacks for want of fuel. Three furnaces of the Jones & Laughlin Steel Co. have been banked because of coke shortage and one stack at Aliquippa has been blown out for relining.

Virginia Makers Sell Tonnage

Boston, Dec. 8.—Pig iron prices continue to mount in the New England market. The feature of the week was the opening of books by two Virginia furnaces for sales for prompt delivery. Both of these furnaces came in at a $35 price for the base grade (1.75 to 2.25 silicon) and both rapidly raised prices until in one case an advance of $3.50 was made in three days. One of the furnaces sold approximately 10,000 tons for New England delivery, and the other about 5000 tons. Both are now out of the market. Prices from all districts have advanced and available supplies have been continuously tightening until at present there is scarcely any to be had for first half delivery, and comparatively little for prompt. Some southern iron has been sold but Alabama furnaces still are out of the market except in unusual cases. An eastern Pennsylvania furnace sold several hundred tons to a Massachusetts consumer at $37 furnace for No. 2X (2.25 to 2.75 silicon) for prompt shipment. Another furnace from the same territory sold 500 tons of No. 2X at $39 furnace for prompt shipment. One central Massachusetts consumer bought a special analysis iron (silicon 2.00 to 2.50 and manganese 2.00 to 2.50) at $41 Virginia furnace. Another consumer bought 1000 tons of 2.75 to 3.25 silicon iron at $39 Virginia furnace for spot shipment. Another prompt order placed in Virginia was for 400 tons of 3.25 to 3.75 silicon at $41 furnace. A prominent textile machinery manufacturer came into the market during the week for part of its first half requirements and purchased a round tonnage, partly southern and partly northern iron. Prices continue to be secondary in many transactions, the consumer's chief question being whether he can secure the iron rather than what he will have to pay. Malleable has been particularly scarce for several weeks and a consumer who wanted 400 tons during the week carried his request as far west as Ohio and even then was unable to secure the amount required.

Speculators Expect Higher Prices

New York, Dec. 8.—As an indication of their faith in higher pig iron prices, speculative interests for some weeks have been trying to pick up tonnages to be held for a profit. It is understood that the iron which has been bought during the past two to three weeks, by speculators, amounts to more than 25,000 tons, for delivery mainly next year. It is said that a

rise of $2 to $3 a ton would serve to bring out much of this tonnage. Very little iron now is to be had from the furnaces. In fact, practically the only orders makers now are taking are those which the consumers are forcing upon them. There are some exceptions. One central Pennsylvania maker now is quoting $39, furnace, on 1.75 to 2.25; $40 on 2.25 to 2.75, and $41.25 on 2.75 to 3.25 silicon. Some eastern Pennsylvania foundry was sold during the week at $38 to $40, furnace, for 2.25 to 2.75 silicon. Some moderate-sized lots of 1.75 to 2.25 silicon were sold at $38, eastern Pennsylvania furnace. As an illustration of the tendency of prices, one round tonnage of Buffalo 2.25 to 2.75 silicon foundry for first quarter was sold at $40.25, Buffalo. The top was blown off the Pulaski Iron Co.'s furnace a few days ago and the opportunity during repairs will be utilized to reline this stack. A considerable tonnage of Virginia foundry for 1920 has been sold during the past week at as high as $38.50, furnace, for 2.25 to 2.75 silicon and $40, furnace, for 2.75 to 3.25 silicon. Some business in basic has been done in this district during the past week at $35, eastern Pennsylvania furnace, and this price is the minimum on the new inquiry now before sellers here.

Fair Tonnage is Sold

Buffalo, Dec. 9.—The heavy demand for all grades of iron continues in this district, but sales are few for first half because there is very little second quarter capacity left. First quarter iron is practically not to be hand, and prompt iron is a matter of a few tons to help out a hard-pressed foundryman. One furnace sold about 10,000 tons during the past week, but this is the only instance of so heavy a tonnage being contracted for. This interest still has iron to sell for first half. Another furnace interest reports the sale of a fair aggregate tonnage of No. 1X at $41 furnace. This is the first week in about a month that there has been no advance in the price of all three grades of foundry. The $38 to $41 schedule remains in effect. Malleable is being heavily sought in this market, but none is being made. One maker reports inquiries of 2000 tons, 3000 tons and 10,000 tons. This interest is out of the market for the first half. The nominal price for malleable is $39.25.

Basic Sells at $34

Cleveland, Dec. 9.—Sales of pig iron virtually are at a standstill since the uncertainty over the coal situation is keeping the furnaces, with few exceptions, out of the market. An active inquiry from consumers continues and wherever producers care to offer any material, even off-lots, this is speedily snapped up without regard to the price. The market is very strong but at just what point it rests at present is not clearly shown because of the absence of sales. It is indicated, however, that No. 2 foundry (1.75 to 2.25 silicon) is around $36 local furnace. Sales of valley No. 2 at $36 and $36.25 furnace are noted, in one case 1000 tons being involved. Early malleable also has been sold at $36.25 furnace and No. 1 foundry at $37 valley furnace. A lot of 4000 tons of basic for shipment this month to a northern Ohio steelmaker was placed at $34 valley furnace. A southern Ohio steel company is sounding the market on about 5000 tons of basic monthly for the first half of the year and will also consider second half. An Indiana foundry interest is inquiring for 5000 tons of foundry iron. The furnace of the United Furnace Co., Canton, O., has been forced out of blast on account of the coal situation at an earlier date than expected when recently it was planned to put out the stack for relining. The furnace will be out a number of weeks for relining.

Sells Misfit Tonnage

Youngstown, O., Dec. 9.—Consumers of pig iron find it practically impossible to obtain tonnages for spot shipment and consequently are turning their attention to misfit grades. Considerable business in this direction was done recently by one furnace interest in this district which disposed of 14,000 tons of off-grade basic iron at $32 valley furnace. A Cleveland dealer took about 1000 tons for resale in the East while 4000 tons were purchased by an open-hearth steelmaker in the Cleveland district. Considerable tonnages of misfit iron are available at certain valley furnaces due to irregular operation of blast furnaces after the recent suspension of several weeks.

Refusing Further Orders

Cincinnati, Dec. 8.—Producers in the South as well as in the Ironton district are very reluctant as to taking on any further business for future shipment. They claim there is no way to arrive at approximate future production costs at the present time and those whose order books are not filled for the first quarter, have decided to await developments before selling any more iron. In the South, occasional small tonnages of high silicon or off-iron for December shipment are being made to melters in need of the metal, but the total tonnage is very limited. The usual schedule of prices is not being maintained and a premium is generally paid for any iron that can be had for prompt shipment. Although $35 Birmingham, is a nominal quotation for first quarter, only a favored customer could obtain any iron at that figure or even $1 a ton higher. The last quoted price on Northern iron was $36.75 Ironton, but no recent transactions are to be noted in that district with the exception of a little silvery iron. The silvery furnaces in Jackson county are rushing repairs and all of them will be in full operation within a short time if able to get coke. Silvery iron of 8 per cent quality is quoted at $50 furnace.

Offerings Quickly Snapped Up

St. Louis, Dec. 6.—With a number of the leading producers out of the market, the demand for pig iron in this district is still a long way from satisfied. Offerings have been extremely light and are quickly snapped up. One maker at Birmingham had 1000 of off-iron for sale, but no standard grades, while several reported they had nothing of any description. Consumption, despite the coal strike, has kept up on an enormous scale. Foundries which have managed to keep in operation, are crowded with business, and could book more, were it possible to secure raw materials. Virtually nothing in the shape of spot iron is to be found and the difficulty experienced in purchasing for first half would indicate that heavy sales have been made for that period. Real apprehension is being felt by melters who have failed to provide for their needs. Deliveries from the South have been fairly good, all things considered. Some tonnages are filtering in from Chicago and other lake points, which fact has served to relieve the pressure to some extent. It is difficult to decide just what the price of No. 2 Southern foundry (1.75 to 2.25 silicon) is here. The representative of a leading Birmingham interest, which withdrew from the market early in the week, said the last price was $35 furnace for first half, but what the next would be he could not guess. It is difficult to quote a price to a customer, for the reason that it may be changed by telegraph before a sale can be closed.

Uncertainties Are Predominating

Birmingham, Ala., Dec. 9.—Uncertainties predominate in the pig iron market in the South. Many furnaces continue out of the market and numerous inquiries being received, are being passed by. In addition requests are piling in for deliveries on old contracts. The fuel situation gives promise of affecting not only the production of iron in this section during the week but also the train service, which will interfere with shipments. Sales last made were at $35 for No. 2 foundry (1.75 to 2.25 silicon). The need for iron in some sections apparently is acute. Many consumers are far from being covered for the first half. The aggregate of business booked for future delivery by Southern producers is large and the furnaces will have to be kept in steady operation to meet the demands. Local consumption is likely to become affected this week by reason of the fuel situation. The Alabama Co. started its second Gadsden furnace the past week but with short coke supply banking again may have to be necessary. Three furnaces may be out of commission by the end of the week if there is no relief.

Chicago Iron at $40

Chicago, Dec. 9.—Sales by two producers in this district seem to indicate that $40, furnace, for silicon 1.75 to 2.25, is the prevailing level. This is just equal to the delivered price of southern iron at $35, Birmingham. One interest which is practically out of the market is sometimes forced to accommodate a regular customer with a small tonnage and on such sales $39 and $40, furnace, has been quoted recently, with sales resulting. Another producer has taken about 1000 tons of foundry iron on the basis of $40, furnace, for 1.75 to 2.25 silicon. Aside from this selling local producers are out of the market.

Southern makers with one exception

are not willing to take further tonnage and none is willing to make contracts for future delivery. The exception noted above is that one producer has a small tonnage of iron for delivery during December on which $35, Birmingham, is being quoted. Not only are southern and local makers out of the market, but the Algoma Steel Co. now is not willing to sell, although it is believed it has some production for first half which has not been covered. A seller in the Chicago district has some southern iron for spot delivery running about 4 per cent silicon, which it is offering on the basis of $35, Birmingham, for 1.75 to 2.25 base. A recent sale involved 500 tons of bessemer iron at $36, valley, with $3.80 freight to Chicago, which was taken by a foundry interest. Under the fuel regulation limiting industrial operations to three days per week, demand for iron has lessened somewhat and if blast furnace operation is not curtailed equally, producers may be able to catch up to some degree on their deliveries. No interference has been made so far with deliveries of coke to blast furnace, but no one is clear as to whether they will be able to continue uninterruptedly. Although Jackson county producers of silveries are back in the market and quoting $50, furnace, for 8 per cent silicon, demand is not heavy, the price apparently being considered too high.

Low Phosphorus is Higher

Philadelphia, Dec. 9.—Low phosphorus iron has advanced sharply. About 3000 tons of standard iron for first half has been sold half at $42, furnace, and the rest at $45. The latter price now is minimum. Several thousand tons of copper-bearing iron were sold at $39 furnace. Sales since have been made at $40 and latter figure now is minimum. Basic has been sold only in small tonnages the past week, some at $35 eastern Pennsylvania furnace. The market now is $33 to $35 on the basis of recent business although the asking price now is $35 in all cases. The market on foundry iron on the basis of recent sales is $39 to $40 eastern Pennsylvania furnace for No. 2X (2.25 to 2.75 silicon) with $1 differential for No. 2 plain (1.75 to 2.25 silicon) and differential of $1 to $2 on No. 1X (2.75 to 3.25 silicon. Sales of good sized tonnages at the outside figure have been made. The minimum in central Pennsylvania now is $40 furnace No. 2X and minimum Virginia $38.25 furnace for No. 2X. Considerable inquiry continues to come out although not as much as before. The Stanley G. Flagg Mfg. Co. wants 2000 tons of basic and malleable for second quarter.

A sale of standard malleable has been made at $39 eastern Pennsylvania furnace and a liberal inquiry for this grade iron is being received by eastern makers.

The Scottish shipbuilding workers have made an application for a uniform minimum wage of 2s 2d (about 44 cents per hour).

Coke Has A Wild Week

Spot Fuel Reaches $10 to $11 Before Wartime Prices Control is Restored—May Cut Coal Allottments Further

Pittsburgh, Dec. 9.—After several weeks of exciting trading with prices moving up constantly, and culminating in sales late last week to a Pittsburgh steel company of furnace fuel at $11 ovens, the fuel administration again is functioning and has restored the wartime price of $6 for this grade and $7 for selected 72-hour coke. Announcement of the restoration of the old government maximum was made late Saturday night and applies on all new business on and after Dec. 8. Actual orders placed last week will be allowed to go forward at the prices settled on, but in the event of any reconsignment of shipments, the restored maximums are to govern the business. Contracts for first half coke already made also are unaffected by the change. Contracting for first half tonnages has ceased with the establishment of the new prices, for while a considerable tonnage still is unsold, those who have it, are loath to close at the new figure. This is because fixed price contracts closed as high as $7.50 ovens for furnace coke on sliding scales, based upon the valley price of basic pig iron, today have a value of $6.80 ovens on the present price of $34 for that grade of iron. Curtailment of the beehive oven production of coke began effective yesterday and it is rumored it may be necessary to make a further cut in the allotment of coal for the beehive ovens, even though the strike should be called off in a day or two. Officials of the Pennsylvania railroad, lines west, and the Pittsburgh and Lake Erie railroad have been instructed to stop their cars from loading coke on Wednesdays and Saturdays while the Pennsylvania railroad, lines east, is placing cars every day but only to the extent of 75 per cent of the number placed last week. Under this arrangement, ovens in the western end of the Connellsville region will not be drawn on Wednesdays and Saturdays while at the eastern end of the district, though cars will be available every day and daily drawing of ovens will be possible, there will not be sufficient cars to permit of full operations. The impression prevails here that the fuel administration will cease to function in both coal and coke once the production of the former reaches 75 per cent of normal. the supply. Sales of early foundry coke were made last week at about $10 ovens. The production of coke in the Connellsville region for the week ending Nov. 29 is estimated by the *Connellsville Courier* to have been 237,455 tons as compared with 231,304 tons in the previous week.

Deliveries Fall Behind

Boston, Dec. 8.—The government regulations on sale of bituminous coal has had the effect of increasing the demand for coke among industrial plants. Foundries in the majority of cases are fairly well supplied for this year, either through stocks on hand or by contracts. Coke deliveries however, in many cases, are falling behind due partly to car shortages and partly to the large demand for shipment. The Everett, Mass., producer reports an ample supply of coal on hand and good deliveries being made by water. None of the restrictions put into effect on account of the coal shortage have reached the by-product producers as yet and the price for spot coke still holds at $11.90 delivered.

Unusually Heavy Demand

New York, Dec. 8.—Demand for foundry coke during the past week has been unusually heavy and big sales have been made for first half involving both beehive and by-product fuel. Beehive sales were at $7, Connellsville, and in some cases at $7.50. The northern New Jersey by-product maker, who booked a large portion of the business, continues to quote $7, Connellsville, to this district, while to New England, it is quoting on the same basis as the New England producers, namely $7.50, Connellsville. It is reported that as high as $11 and $12, Connellsville, have been asked for spot foundry coke, and it is heard here that $8.75 to $9, Connellsville, was paid for spot furnace coke.

Demand Far Exceeds Supply

St. Louis, Dec. 8.—The demand for coke in this district well outstrips the demand, and with the proposed reduction in beehive product, the scarcity is likely to grow more acute. Dealers are beset with inquiries which they are unable to fill. Deliveries on contracts continue fairly good, but are arriving in a rather unusual and ragged assortment of equipment. Some contracting for the first half of 1920 has been reported, most of which has been on a basis of $7.25 ovens for foundry coke. All this business is subject to change in the present mining scale. The leading by-product distributor early in the week announced an advance of $1 on his coke, but reconsidered this action upon protest of the coal service bureau.

Production Greatly Curtailed

Birmingham, Ala., Dec. 9.—Fuel administration regulations have brought about a 50 per cent curtailment of coal supplies for beehive coke ovens in this district and by the end of the week the output of the ovens will be cut materially. Contracts are far behind. Some of the furnace companies have a supply of coke on hand that will last them 10 days or two weeks; others are not so fortunate. By-product coke ovens will not be interfered with. Prices advanced sharply in the week, foundry coke selling as high as $10, while furnace coke went to $8.

Scrap Exhibits Firmness

Effects of Enforced Reduction of Consumption Are Minimum—Cast Grades Are Scarce—Market Advances in Several Districts

FOR COMPLETE SCRAP PRICES SEE PAGE 1618

Philadelphia, Dec. 9.—Eastern steel mills lately have been eliminating dealers to some extent and been buying direct from producers. At least 2000 to 3000 tons of steel scrap were bought by mills from producers the past week at prices ranging $23 to $25 delivered which compares with $23 delivered the last price at which sizable tonnage was sold by the dealers. What the dealers now would do on any large tonnages that might be offered is not determined. Dealers say their minimum is $25 delivered on ordinary-sized tonnage. Whether dealers would offer concessions to retain their regular trade has not yet developed. There is a fair demand for railroad wrought and substitutes and higher is being paid. While there is strong upward trend in scrap prices there is greater spread due to present uncertainties. The coal strike is holding up some buying because the mills do not know whether they can operate. Cast scrap, car wheels and malleable are stronger with pig iron.

Various Grades Sell Higher

Boston, Dec. 8.—Following the unusual advance in pig iron, scrap iron and steel continues to rise. No. 1 machinery has been sold as high as $36 to consumers. A large Massachusetts foundry is offering $34 for 2000 tons, but so far has been unable to make the purchase. The large stocks of heavy melting steel piled in dealers' yards during the early summer now are finding their way in round tonnages to the Pennsylvania market centers. Dealers have paid as high as $18 for this grade in some cases. Borings and turnings have advanced. All grades of foundry scrap are in active demand. A sale of 400 tons of No. 1 cast was made during the week to an eastern Massachusetts consumer at $34.50. Heavy cast while not accumulating in large quantity is selling at $28 to $28.50. Malleable practically does not exist, and in the absence of sales the price remains nominally at $24 delivered to consumers. One Boston broker reports the past week as the best in his history.

Most Grades Advance

New York, Dec. 8.—Excepting clean cast borings, the market on scrap remains exceptionally strong. Cast borings, due to dull demand, has fallen off $1, now holding at $16.50 to $17, f.o.b. New York. But, aside from this and two instances where prices are unchanged, other materials have advanced. Heavy melting steel has gone up 50 cents, holding at $18.50 to $19, f.o.b. New York, and mixed borings and turnings have made a similar gain. City wrought and wrought pipe, grate bars, steel axles and shafting are up $1. In machinery cast, the market appears especially strong, prices having risen $2 to $27 to $28, f.o.b. New York.

Prices Show Much Firmness

Pittsburgh, Dec. 9.—In spite of the fact that the coal scarcity is affecting the operation of steel plants throughout the greater part of the country and in this market dealers have been getting a large number of suspending orders on contracts. Scrap prices are extremely slow to yield. The warning given by the intimations of a possible shutdown of the steel plants was sufficient apparently to cause a material curtailment of shipments by the dealers before actual contraction came on. While only small lots of heavy melting steel lately have been changing hands and these generally around $24.50, delivered, no round lot tonnages for the future could be obtained at less than $25 at that price. Dealers having held to their stocks through the period of the steel strike, are inclined to see through the present disturbances rather than make any sacrifices. In this attitude they are supported by some extremely high prices which evidently were paid on the December offerings of scrap by the Pennsylvania railroad, lines east. Several consumers and dealers here entered bids of as high as $24.50 for the heavy melting steel and failed to obtain a pound. The market is a shade easier on bundled and baled sheets for a little more of these grades is available than the present demand can absorb. No weakening is observed in railroad wrought for steel works use, but machine shop turnings and cast iron borings are slightly easier. Cast remains in extremely scant supply.

Uncertainty Causing Easing Up

Buffalo, Dec. 9.—Demand for all the grades on the scrap list keeps up in good volume. Heavy melting steel which began to ascend rather sharply, is stationary this week at $23.50, but large tonnages of this material are not available. Dealers still believe the market is on the rise, though the latter part of the week a lull was experienced due, it is believed, to the uncertainty over the coal supplies. The feverish demand of four or five days ago is showing a tendency to ease off. The satisfactory solution of the coal strike, will leave the market in the healthiest condition since before the steel strike. Prices remain unchanged on all grades.

Activity Has Subsided

Cleveland, Dec. 9.—Activity arising in the scrap iron and steel market a few days ago through the buying by dealers has subsided considerably, and little trading is in evidence. All the larger melters in the Cleveland district are out of the market. Many melters are hard hit by the coal shortage, and consumption of scrap has been reduced probably 25 per cent for this reason. The latter part of last week dealers were doing considerable buying of railroad steel—couplers, coiled spring, knuckles and the like—at Massillon, O., for $24.50 to $25. Almost any quantity of scrap can be bought by dealers, but little can be sold. Some negotiations are current on contracts for first half of 1920; in most cases the prices are about the present levels. Prices are unchanged with the exception of heavy cast, which has been marked up to $23 to $24.

Famine in Cast Grades

Chicago, Dec. 9.—Cast scrap is the feature of the present market and virtually a famine exists in this grade as foundries are seeking to buy more than the market offers. This condition results from uncertainty as to the delivery of pig iron, various hindrances to continued operation having reduced the supply of that material. Foundries are busy and in need of much raw material, and are turning to scrap to supply the deficiency. Dealers not able to figure all the inquiry for this class of scrap. Rolling mill grades are somewhat weaker on account of the absence of demand, all iron mills in the Chicago district being closed for lack of fuel. Steel grades are holding up well and some buying is being done in spite of reduced operation. A sale was made recently of melting steel for delivery during first quarter. Railroad offerings are unusually small. The Wabash offers 2300 tons, the Chicago, Milwaukee & St. Paul 500 tons, and the Burlington 315 tons.

Foundry Scrap in Demand

Cincinnati, Dec. 8.—Foundry scrap continues to gain strength and No. 1 cast is selling freely in carload lots to local and nearby foundries around $25.50. Mill scrap is still very slow, as the consumption has been reduced considerably, not only in the Pittsburgh district but elsewhere. A number of mills in Indiana are closed down on account of the coal shortage and a large local melter's plant is also idle for the same reason. Heavy yard accumulations of some grades of steel scrap are reported.

Upward Trend is Shown

St. Louis, Dec. 8.—The market for scrap iron and steel continues extremely irregular and nervous, but with a decidedly strong undertone. While there has been no heavy buying, the trend of prices is upward, and several material advances were marked in dealers' lists in the week. Eastern mills, according to advices received here, are buying heavily, and prices in that direction on certain materials have reached a point where it is possible to purchase here and ship at a profit. Holders are not pressing their stuff for sale. It is admitted that the immediate future of the local market is dependent largely upon the outcome of the coal strike, but regardless of how long that trouble is drawn out, scrap is scarce. Sales in the week largely were of material held on track by dealers. Cast grades, stove plate and grate bars especially

are in strong demand, with the supply virtually nil. Stove plate and light cast have been advanced $1 and No. 1 railroad cast is up $2. Rerollers are in good demand, with few coming out. Some scrap is coming in from the country. Offerings by the carriers in the week were as follows: Wabash, 2300 tons; St. Louis Terminal Railway association, 225 tons and the Missouri, Kansas & Texas, 1000 tons. All this material brought top prices.

Southern Market Very Firm

Birmingham, Ala., Dec. 9.—Dealers in old material in the Birmingham district report the market very firm. The demand for cast especially is strong. Car wheels are similarly active. Country scrap is lagging again. Consumers are urging deliveries as the shortage in pig iron continues more apparent.

Lost Tonnage

In Wire Products Now Further Increased—No Selling Being Done

Pittsburgh, Dec. 9.—Whatever gain recently has been made in the output of wire products with the passing of the strike of the steel workmen, largely has been lost in the past week through the fresh restrictions upon production imposed by the scarcity of coal. While all plants in this district are in operation, it is on a much more modified scale than recently and all makers have withdrawn from the market on new business for the present. Buyers are making persistant attempts to secure nails and both plain and barbed wire, but particularly the first named product. Quotations on nails of anywhere from $4 to $6 per keg, base Pittsburgh, are heard, but almost no business is going on and all quotations are nominal. No more attention is being paid to specifications against old orders than to new inquiries.

Supplies Still Insufficient

New York, Dec. 8.—Although output of the wire mills which were tied up by the strike is improving, there still is a great scarcity of all kinds of wire products. This is particularly true of nails and of wire for manufacturing purposes. Consumers using wire for manufacturing various kinds of goods continue to be forced to close down their plants or departments occasionally because of lack of material.

Mills Cease Selling

Chicago, Dec. 9.—After having been unable to take more than a small portion of the business offered, because of interference with production by the steel strike, wire mills have met the added handicap of fuel shortage and have retired from the market entirely. They will not sell further until the situation clears. Mill operation is being continued as far as possible, and shipments are being made on former orders to the full extent of production. Need for nails is the outstanding feature and demand for this product is unusually heavy.

Sheet Output Is Reduced

Coal Shortage Shuts Down Various Mills and Cripples Others—Valley Scarcity of Material Worst Ever Known

Pittsburgh, Dec. 9.—The coal shortage finally has resulted in the shutdown of a number of the sheet mills in various parts of the country and not a few of those still in operation are merely hobbling along, due to the fact that fuel stocks are so low that absolute economy is essential. This condition means a further backing up of business and a consequent delay in relief from the present shortage of early tonnage. Early settlement of the coal strike, however, will permit of fairly prompt resumption and since the coal strike is affecting those who buy sheets for further manufacture, as well as the manufacturers, it cannot be said that the prompt market is any tighter than it has been. Demands, however, remain large and insistent. There is no doubt that on a small part of the business substantial premiums over the regular market basis are being offered and are being accepted by some makers. At the same time the fact that both the American Sheet & Tin Plate Co. and many independent mills still are taking business from regular customers at the old basis and the premium sales involve a relatively small fraction of the total production, quotations of more than 4.35c, 5.70c and 3.55c, respectively on black, galvanized and blue annealed in the base grades hardly are warrented.

Demands Greatly Enlarged

Buffalo, Dec. 9.—The sheet demand in this district is very heavy. The mills are unprepared to cope with the demand. Five hundred tons is a minimum inquiry. One sales agency states that manufacturers seem anxious to cover on unheard of tonnages. The consumer that formerly came into the market for 100 tons for a quarter now is asking 400 to 500 tons.

Scarcity Worst Ever Seen

Youngstown, O., Dec. 9.—Not a pound of any grade of sheets is available at mills in the Mahoning valley for spot shipment and every mill is out of the market indefinitely. Never in the history of steelmaking here have the various grades of sheets been so scarce. During the war buyers found it difficult to obtain sheets but never so difficult that a few odds and ends could not be had. Conditions now however, are beyond comparison. Wasters and other sheet mill by-products have disappeared from the market, buyers taking these grades along with prime stock. No overage is being rolled which perhaps is best explained by the fact that mills for several weeks back have been taking on attractive specifications only. Consequently, present mill schedules are confined practically to merchant sizes. Any overage that is rolled, therefore, is applied on succeeding orders thus destroying all chances for a buyer to purchase any pick-up tonnages. Prices between 7.00c and 8.00c for spot black, without regard to sizes, are heard. Normal quotations for any grade of sheets are hard to determine. Large automobile companies are paying anywhere from $10 to $14 premiums for the scant tonnages they are fortunate enough to locate. The enormous demand for one-pass galvanized in light gages continues unsatisfied.

Few Mills Are Selling

Chicago, Dec. 9.—Local producers of steel sheets are entirely out of the market, and Ohio mills which have been selling some tonnage in the West find it difficult to proceed because of shortage of sheet bars. Consumers have difficulty in placing further tonnages, although demand is heavy.

Higher Prices for Blue Annealed

Philadelphia, Dec. 9.—The leading eastern maker of blue annealed sheets is sold up for the first quarter and is out of the market. Its list price was 3.75c, Pittsburgh, for No. 10. Some blue annealed has been sold in this district at 3.85c, Pittsburgh, and some consumers have offered to place tonnage at 4.00c, Pittsburgh, but the mill refused.

Reduced Scale

Of Operations is Shown Among the Tin Plate Mills

Pittsburgh, Dec. 9.—Scarcity of coal due to the strike of the miners is beginning to be felt by the makers of tin plate and where mills actually have not suspended, they are running on a reduced scale in order to make their moderate stocks of coal hold out as long as possible. One Pittsburgh independent is out of the market because of the danger of being obliged to suspend operations entirely, owing to the lack of coal and others are not anxious for new business, not only because of the insufficient fuel supply, but also because of the fact that present obligations cannot possibly be completed much before the end of the first quarter of next year. No let-up is noted in the demand and on early deliveries no trouble would be had in securing considerably more than the regular market basis of $7 per base box, Pittsburgh, for standard cokes.

To be Honor Guests

Isaac W. Frank, chairman of the executive board of the United Engineering & Foundry Co., Pittsburgh, will be the guest of honor, and E. Lowry Humes, United States district attorney for western Pennsylvania, will be the principal speaker at the annual Christmas meeting of the Pittsburgh Foundrymen's association, which will be held this year at the Elks' club, on the evening of Dec. 15.

Bar Shortage Now Acute

Many Mills Out of Market and Attractive Business Goes Begging—10,000 Tons Up at Pittsburgh—Deliveries in Doubt

Chicago, Dec. 9.—Steel bar mills are out of the market in the Chicago district and will not accept further business at present. This is due to the cumulative effect of various delays to production, the coal strike being the latest and most demoralizing. Orders for soft steel bars have been booked in unusual volume and most producers have sufficient business to cover practically all their first half production under ordinary operating conditions. With the delay incident to fuel difficulties, which is an unknown quantity at present, it is difficult to estimate how much bar tonnage may remain unsold. Under these circumstances, it is practically impossible to promise delivery and it is considered best to remain out of the market. Holders of contracts are specifying freely and not allowing any tonnage on books to lapse. The quotation is 2.62c, Chicago. All bar iron mills in this district are idle for lack of fuel and demand for this product is strong without possibility of placing business definitely. One producer already has sufficient tonnage on books to insure six weeks continuous operation, but prospects are that nothing can be produced before the first week in January, as coal cannot be obtained before that time under the best combination of circumstances. One producer is understood to be booking new business on the basis of 2.87c, Chicago, for first quarter while others are not willing to take anything further at present.

Mills producing hard bars from old rails are closed down on account of fuel shortage and in the face of heavy demand. Most mills are willing to accept contracts for delivery at convenience, with the price specified as that prevailing at the time of delivery. The last quotation on sales was 2.85c, Chicago.

Running Into Third Quarter

Philadelphia, Dec. 9.—Steel bar orders continue virtually to rain in on mills and in a good many cases latter have enough tonnage to run into third quarter of next year. Sales of round tonnages for first and second quarters have been made the past week at 3.50c, Pittsburgh, for commercial steel bars and at 3.75c for forging quality.

Shortage is More Acute

Pittsburgh, Dec. 9.—No relief yet is apparent from the shortage of merchant steel bars which has existed for several weeks; on the contrary, it is more acute than ever as production is feeling the effect of the coal scarcity and this spells a further backing up of live obligations of the manufacturers. The fact that the jobbers who entered the strike period with fairly large stocks of bars have become sold down to bare boards under the heavy demands of the past few months makes it extremely difficult for buyers to secure early tonnages at any price. Jobbers as well as the larger users of bars are making frequent inquiries for supplies but their demands are getting almost no attention regardless of price. An inquiry for 10,000 tons of bars from a Pittsburgh district maker of cold-finished steel is current but is getting no more attention than some of the smaller lots. The Carnegie Steel Co. continues to quote 2.35c base Pittsburgh, and is taking business at that figure although from the condition of its order books, deliveries hardly can be made against new bookings before the second quarter of 1920. Few of the independent companies would consider business at less than 2.50c and offers of 2.75c from buyers recently have been numerous. Illustrative of the tight situation in bars, a Detroit automobile manufacturer recently called for 2500 tons rolled from shell billets at a price of 3.50c, base Pittsburgh. Makers of iron bars are heavily sold up and while no change has been made in prices there are intimations of a further advance. Much business in iron bars is being turned away.

Business Still Backing Up

Pittsburgh, Dec. 9.—Due to the coal scarcity, production of merchant steel bars here is not making much headway and lacking supplies, the makers of cold-finished steel bars dependent upon outside sources are not able to increase operations or to materially reduce their obligations. Actually there has been a further backing up of business, especially in the smaller sizes of rounds and squares in which the scarcity of merchant bars is most acute. While the steel strike virtually is over, the coal strike looms up as a fresh restrictive influence. Makers still are quoting a base of 3.60c, Pittsburgh, for cold-finished bars although some sales have been made to manufacturers at warehouse quotations who ordinarily have enjoyed the jobbers' price.

Buying 1920 Bolts

Chicago, Dec. 9.—Production of bolts and nuts is somewhat uncertain under present fuel conditions as this industry is not regarded as essential and many producers are unable to operate their plants because of inability to obtain power. Demand is heavy and as this is the season when contracts for first quarter usually are made, the volume of business offered is unusually heavy. Makers expect to be able to care for the requirements of their regular trade, but have not figured on inquiries from outsiders. Prices prevailing are those which have been in effect for the past month.

Still Turning Away Business

Pittsburgh, Dec. 9.—Makers of nuts and bolts in this district have so much business before them and are having so much difficulty securing early shipments of bars that they are unable to give any attention to new demands and in fact, are turning away a large number of orders. The situation in rivets is not quite so acute but because of the raw material situation the Pittsburgh district makers are not taking business at less than 4.15c for structural rivets and 4.25c for boiler rivets.

Premiums are Obtainable

Pittsburgh, Dec. 9.—While makers of hoops and bands generally are holding to the old base of 3.05c, base, Pittsburgh, on both products and the Carnegie Steel Co. is taking business at that figure, it is stated that buyers willingly would pay 4.05c, Pittsburgh, to secure early tonnages. Makers are heavily committed, especially on bands, on which manufacturers of automobile accessories ordered freely some time ago. Pressure for delivery against these contracts is heavy, but buyers still are getting only a portion of their commitments, for even before the coal strike began to restrict production, new business was running ahead of output.

More Rails Are Sought

Chicago, Dec. 9.—While none of the contracts for standard steel rails now under negotiation has been definitely closed, due to the difficulty of determining whether the railroads themselves or the railroad administration will be charged with buying for 1920 delivery, the tonnage for western roads under consideration is growing steadily and now involves about 400,000 tons. Some of the contracts have been carried to a point of completion, requiring only a final signing and mills regard them as binding on themselves, realizing that the railroads cannot commit themselves definitely under present circumstances. Demand for light rails is strong and until the last few days tonnages were being booked for both export and domestic use. No inquiries for cars are being put out at present, but an inquiry has been received recently for 3000 tons of steel, largely plates, for repair work by a carbuilder.

Mills Fairly Busy

Pittsburgh, Dec. 9.—Makers of standard rails have a fair amount of business before them although recent orders have been entirely in small lots. Just when orders for the rails for which the Pennsylvania railroad recently entered reservations will be placed is considered problematical. There seems to be an impression, however, that even though the railroads now under governmental direction go back to private management on Jan. 1 it will be some time thereafter before the question of finances will be ironed out and few are looking for the

orders until well after the turn of the year. Not much is going on in splice bars nor in track bolts at present and inquiries for standard spikes are merely for the purpose of locating supplies. Although standard spikes still are quoted at 3.35c, Pittsburgh, small spikes have moved up further.

Form Sand Company

Youngstown interests have formed the Youngstown Silica Sand and Sand Products Co., capitalized at $200,000, for the purpose of developing the company's holdings of 114 acres situated about four miles south of Mercer, Pa. A recent survey of the company's deposit indicates that the silica rock formation is about 90 feet deep and extends over 50 acres. In addition, the holdings include molding sand, gravel and building sand. A plant, having a capacity for crushing 500 tons of silica rock per day, is to be built soon. The directors of the company include G. E. Burke, R. C. Krause, R. E. Holway, F. M. Van Esbeck, R. T. Miller and J. R. Riley. Offices are located at 909 Home Savings & Loan building, Youngstown.

Japan Buys Tank Plates

Placed 12,000 Tons at Pittsburgh at 2.65c—Sell in East at 2.75c—Shipbuilders Still Get 2.50c From Some Mills

Pittsburgh, Dec. 9.—Huge demands are being made upon platemakers in this district from the builders of tanks who are heavily crowded with business, both foreign and domestic. The Treadwell Construction Co., Midland, Pa., recently booked 60 tanks for export to Japan, each calling for 200 tons of plates. It is understood this business was placed at the full market price of 2.65c, Pittsburgh. Another order for 10,000 tons of tank plates also was placed here at that price. Not much business is coming out in ship or car plates but the mills are well filled up and one maker is not quoting against new inquiries for the present because of the possibility of being obliged to shut down on account of the coal scarcity and also because this manufacturer wants to keep up operations in those products where the backlog of business is heaviest, with an idea of reducing the obligations.

Much Tonnage is Refused

Philadelphia, Dec. 9.—Plate orders continue at a brisk pace and eastern mills, due to full boks, are turning away more tonnage than they are accepting. The minimum price for eastern mills continues 2.75c, Pittsburgh, at which figure sales have been made for first quarter. Some shipbuilding tonnage is being taken occasionally at 2.50c, Pittsburgh, by mills making a special drive for this work. Export orders continue in most cases to be refused.

Sells Tonnage at 2.75c

Youngstown, O., Dec. 9.—Increased demand for plates is coming out in this district. Approximately 2000 tons of tank stock were sold last week at 2.75c, Pittsburgh. Plate mills here are well booked and indications are that before the end of the year, little tonnage will be available for first quarter distribution.

Could Sell More Plates

Chicago, Dec. 9.—While demand for steel plates has been heavy during the past several months, producing capacity of this form of steel has been enlarged so materially that mills are able to care for a tremendous tonnage, and recent demand has not been sufficient to take the entire output to the extent that has obained in some other products. However, under present conditions of fuel supply, mills now are not willing to book further tonnage until they are able to estimate their remaining production for the first half of 1920. After the situation clears, it is assumed the inquiries for this material can be given consideration. The leading interest recently closed 7000 tons of ship material, mostly plates, for tankers to be built by a Pacific coast yard. An inquiry is current for 3000 tons of steel, mostly plates, for car work.

English Ferro Withdrawn

New York, Dec. 8.—Sales of ferromanganese made by interests in this district during the past week total 4000 to 5000 tons, and probably more. At least 2000 tons involved English metal guaranteed to contain 76 per cent or more of manganese, for shipment over the first quarter. This English metal was sold at $110, c.i.f. tidewater, and since these sales, further offers have been withdrawn. The remainder of the tonnage sold included domestic 78 to 82 per cent metal which went at $120, delivered. There is considerable inquiry still before the trade. The impression prevails generally in the ferromanganese trade that liquidation of the large stocks held earlier in the year has been thorough, and that there now is an under-production. The advancing trend in spiegeleisen prices became more pronounced during the past week, and the minimum price quoted has been $38, furnace, for 20 per cent metal. Sales aggregating more than 1000 tons have been made both at this figure and at $39, furnace, and some business has been done at $40, furnace. A fair amount of domestic business is pending. No action yet has developed on the large foreign inquiries reported a week ago.

A fair inquiry has been in the market for 50 per cent ferrosilicon for first half, but the tendency to close has not been very broad. Bethlehem Steel Co. contracted for 1000 tons. The market shows little change, quotations ranging from $80 to $85 a ton, delivered, with business reported at $82 to $83. Demand for 75 per cent ferrosilicon remains light.

Competition remains rather keen among domestic sellers in ferrochrome for next year's delivery. Quotations are unchanged at 27 to 29 cents a pound contained for alloy containing 6 to 8 per cent carbon. Chrome ore supplies are scarce and importers are slow in contracting for futures owing to high and uncertain ocean freight rates. A few hundred tons of spot New Caledonian ore recently was sold at $1 a unit

Some Sales of English Ferro

Pittsburgh, Dec. 8.—While a number of small-lot sales of domestic 80 per cent ferrosilicon have been made in this district recently, the largest transaction reported is in English material running 76 to 80 per cent. The latter sale involved 1000 tons for February-March delivery and carries a price of $110 c.i.f. Baltimore. This order was taken subject to ability of the producer to deliver as specified. All sales of domestic metal have been at $120 furnace, freight allowed, for 80 per cent with the transactions running 50 or 100 tons and usually for prompt shipment. Not much has been doing in spiegeleisen lately.

Demand for 50 per cent ferrosilicon has dwindled to small proportions and while occasional small sales are being made at $85 furnace, freight allowed, the bulk of the business is believed to have been below that figure as some sellers who quoted it have not obtained the orders. Ending of the strike at Jackson, O., furnaces has been accompanied by a revision upward of prices of bessemer ferrosilicon produced at these stacks. A basis of $59.50, furnace, for 10 per cent now is quoted by all makers in that district although none of them yet has resumed operations. It is understood some consumers have heavy stocks purchased during the closing months of the war and makers have substantial supplies on their yards against which shipping instructions are coming forward slowly.

Chain Prices Down

Pittsburgh, Dec. 9.—Prices of steel chain show marked firmness, due to the fact that makers are heavily sold up and are unable to secure supplies of merchant bars for early shipment except at substantial premiums over the old base price. Much business is piling up as production is interfered with through the scarcity of raw material and shipments naturally are falling behind the orders. Pound chain is unchanged on a base of 5.75c, Pittsburgh, for 1-inch proof coil and the recent advance in steel loading chain resulting from an adjustment in the wage scale for making this class is firmly maintained. The advance in this class of chain was 6 cents a pound in ¼-inch, 5½ cents in $\frac{3}{32}$-inch, 4½ cents in $\frac{5}{16}$-inch, 1 cent in ⅜-inch, 2½ cents in $\frac{7}{16}$-inch, 2 cents in ½-inch and ½ cent in ⅝-inch.

Early Shapes Are Scarce

Fabricators Obliged to Draw on Warehouses—Awards Numerous But Not Heavy—Smelter For India is Placed

Pittsburgh, Dec. 9.—Shape mills in this district are falling behind in their deliveries against orders for strutural shapes and because of this situation some of the fabricating interests have been obliged to draw upon warehouse stocks in the meeting of their obligations. Such purchases mean payment of $15 a ton over the mill base. The position of the mills as far as small shapes are concerned is even tighter than in the larger lines and delivery against current bookings are not being promised before the first of February, and even later. This condition in part is due to the fact that small shapes are rolled on bar mills and in the desire to reduce the backed-up tonnage of merchant bars, manufacturers are not devoting much capacity to the rolling of the smaller shapes. No trouble would be had in making sales of the latter for prompt delivery at substantially above the regular market base of 2.45c, Pittsburgh, but as a general rule this quotation is being generally observed.

New England Demand Steady

Boston, Dec. 8.—The demand for structural steel throughout New England, contrary to the usual tendency at this time of the year, is holding firm. Inquiry is strong for 1920 delivery and actual orders for prompt delivery continue to be placed in favorable numbers. The contracts awarded during the week, although in most cases small, included many buildings of steel construction. A storehouse let for construction in Boston will take 300 tons of steel. Warehouse supplies of structural shapes are holding up better than other grades.

India Smelter Takes Tonnage

New York, Dec. 8.—Although large tonnages are lacking, there is a fairly good sprinkling of orders in the eastern structural market. The largest contract of the week to be made tentatively called for 3500 tons for a zinc smelter at Janshedpur, India. A number of other fair sized awards were made. While new inquiry was light, there continues to be considerable tonnage pending, and fabricators are confident that the great bulk of this business will be placed. Another lot expected to be let most any day involves 800 tons for the Biltmore Country club, Rye, N. Y. Action on the Newtown high school in Brooklyn, requiring about 800 tons, has been postponed indefinitely. Owing to belated mill shipments, eastern fabricators are not accepting business for delivery much under three to four months. Were it not for the delay in getting material from the mills, the majority of eastern fabricating shops could handle orders in eight and nine weeks, it is asserted.

Orders Exceed Shipments

Philadelphia, Dec. 9.—Shape orders, while mostly small, form a steady stream and eastern mills are adding new tonnage faster than they can ship. Several important lots were placed the past week. A Japanese interest bought several thousand tons from an eastern mill and a Pittsburgh mill which is making a special drive for ships tonnage, took a big lot of ship shapes for Baltimore yard at 2.40c, Pittsburgh. The minimum figure at present with one eastern maker on new tonnage now is 2.75c, mill.

Most Tonnages Small

Chicago, Dec. 9.—Construction work in the west at present is confined to small tonnages, the largest project closed recently involving 660 tons for three buildings for the American Steel Foundries at Detroit. The Hotel Sherman Co. is inquiring for 600 tons for additional stories on its hotel at Chicago. The inquiry for 400 tons for a Y. M. C. A. building at Columbus, O., has been withdrawn, as has the inquiry for 200 tons for trusses for the Drake hotel at Chicago. Plain material continues unchanged at 2.72c, Chicago.

CONTRACTS AWARDED

Theater building, Baltimore, 1100 tons, to the Harris Structural Steel Co.

Zinc smelter at Janshedpur, India, 3500 tons, placed tentatively with United States Steel Products Co by Lawrence Addicks, consulting engineer, 6 Church street, New York City.

Building for Standard Guano Co., Baltimore, 800 tons, to the Shoemaker-Satterthwait Bridge Co.

Building for Hartford Times, Hartford, Conn., 260 tons, to Levering & Garrigues.

Plant addition for American Chain Co., York, Pa., 250 tons, to independent shop.

Building for Southern New England Telephone Co., Hartford, Conn., 300 tons, to the American Bridge Co.

Addition to Bush Terminal office building, New York, 650 tons, to the American Bridge Co.

Public school No. 43, New York City, 190 tons, to the Phoenix Bridge Co.

Plant addition for Stevens-Duryea Co., New York, 660 tons, to the Phoenix Bridge Co.

Factory buildings for Berlin Construction Co., Berlin, Conn., 1130 tons, to the Phoenix Bridge Co.

Extension to mill for Inland Steel Co., Chicago, 1200 tons to Worden-Allen Co.

Foundry and core-room addition for Janesville Machine Co., Janesville, Wis., 100 tons to Worden-Allen Co.

Extension to power house of the Goodyear Rubber Co., Akron, O., 400 tons to the McClintic-Marshall Co.

Factory building for the Gear Grinding & Machine Co., Hamtramck, Mich., 250 tons to the McClintic-Marshall Co.

Factory building on Waldon Ave., Buffalo, 250 tons to the Jones & Laughlin Steel Co.

Buildings A, B, and C at Detroit, for the American Steel Foundries, 600 tons, to Whitehead and Kales Co., Detroit.

Foundry building for the Buda Co., Harvey, Ill., 236 tons, to Worden-Allen Co.

Steel for waste heat boiler room at the plant, for the Marquette Cement Mfg. Co., La Salle, Ill., 126 tons, to Federal Bridge Co.

Addition to building for Albert Pick & Co., Chicago, 120 tons.

Sanitarium building, for the Daily News Fresh Air Fund, at Lincoln Park, Chicago, 115 tons, to American Bridge Co.

CONTRACTS PENDING

Biltmore Country club, Rye, N. Y., 800 tons, award expected soon. Geo. A. Fuller Co., general contractors.

Newton high school, Brooklyn, 800 tons, postponed indefinitely.

Additional stories on its hotel for the Sherman Hotel Co., Chicago, 600 tons, bids asked.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead, New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Dec. 3	18.25	53.50	6.75	8.30	33.00	9.25	42.00
Dec. 4	18.25	53.75	6.75	8.30	33.00	9.25	42.00
Dec. 5	18.37½	53.75	6.75	18.32½	33.00	9.50	42.00
Dec. 8	18.37½	54.50	6.90	8.40	33.00	9.50	42.00
Dec. 9	18.55	54.50	6.90	8.40	33.00	9.50	42.00

*Future shipment from Singapore or London.
†American Smelting & Refining Co.'s price.
‡Open market.

NEW YORK, Dec. 9.—Higher prices for lead, zinc and tin have been recorded in the American markets the past week, due to advances abroad. Broad export inquiry has been reported, particularly for lead and zinc. Great Britain has been in the market for large tonnages of zinc, also lead; France for zinc and copper; Japan for zinc, lead and copper; Scandinavian countries for lead. Domestic demand, on the other hand, has been held back by the shortage of fuel. Some important consumers have been forced to close down, including many automobile plants. The American Sheet & Tin Plate Co., Gary plant, which consumes large tonnages of zinc and tin, is closed, and shutdown of some of the company's other works was threatened. The Chicago plant of the National Lead Co. was reported closed. The Anaconda Copper Mining Co. closed its Montana copper mines and smelter, and refinery and operations of its other Montana properties were threatened. Many other smelters and refiners have only small supplies of fuel and if the fuel shortage is protracted production will be much further protracted.

The copper market appears to have reached bottom at 18c, as a vastly improved demand has appeared since the market reached that level. Business was done in electrolytic copper for first quarter delivery the past week at 18c, but more recently consumers bid 18.25c, and today the market was 18.50c to 18.62½c. The producers seem to have determined to keep the reins of the market and have been trying to keep out the speculative element. Second hands have bid as high as 19.50c for copper for March delivery, when consumers were offered metal for that position at 18.25c. Casting copper is scarce at 18.12½c to 18.25c; lake is nominally quoted at 18.75c to 19c.

Prime western zinc advanced further under the leadership of the London market, despite falling exchange. Sales for export were aided by the London market. East St. Louis market advanced about 25 points from Dec. 1 to Dec. 8, to 8.40c, for prompt and first quarter shipment. High grade zinc was quoted 9c to 9.12½c, delivered, Dec. 8.

The American Smelting & Refining Co. advanced its lead price to 6.90c, New York; 6.65c, East St. Louis. Slightly higher prices prevail in the outside market. The American lead market is being forced upward against the judgment of the producers, by the rise abroad, due to curtailed world supplies.

The tin market, after declining to a low point of 53.25c last week, for Straits tin, spot New York, responded to a sharp rise in London and advanced to 54.50c to 55c on Monday, but today was 54.25c to 54.50c. The first named prices also applied to futures, which were steady today. Spot 99 per cent was available about half a cent below Straits. Demand has been light, owing to recent heavy deliveries and reluctance of consumers to buy ahead during the present coal shortage.

Antimony advanced a quarter cent to 9.50c for both spot and futures. Business was done at this price. Aluminum and nickel are steady.

Semifinished Is Higher

Scant Tonnage Open to Sale Makes Market Indefinite—Sheet Bars Bring $50—Slab Bids of $50 Declined

Pittsburgh, Dec. 9.—Not much trouble is experienced in the sale of either billets or sheet bars at substantial premiums over the March 21 quotations when any tonnages are available for the open market. This occurs, however, only occasionally and usually as a result of an uneven distribution of finishing mill activities. Small tonnages of 4 x 4 billets occasionally reach the market and have found ready sale from $43 to $45. While considerable tonnage still is moving to consumers at the old base of $38.50 on contract, such tonnages as are offered on the market bring $43 to $45 frequently enough to make this the quotable range. A sale of 1000 tons of sheet bars which became available because an original buyer could not use them, is noted at $50 and it is doubtful if other tonnage could be bought for less than $48. In fact, business has been done at both $48 and $50 recently and the current market on the small prompt tonnages available is quotable at these figures. It is reported that wire rods have gone as high as $65 on recent sales.

Billets and Slabs Higher

Philadelphia, Dec. 9.—More than 5000 rerolling billets were sold in this district the past week at $54, delivered, or $50, Pittsburgh, and some slab tonnage was sold by adding a differential of $2.50. More than 1000 tons of forging billets were sold at $60, Pittsburgh, or $64, delivered eastern Pennsylvania. There is inquiry for semifinished material for Europe but it does not appear active.

Higher Prices Are Paid

Youngstown, O., Dec. 9.—Semifinished material is scarce in this district and is becoming more so steadily. A tendency toward higher prices prevails. One lot of 1500 tons of slabs and another of 300 tons, brought $48, mill, last week. Sheet bars practically have disappeared from the market. If they could be had, it is believed a quotation of $48 would about represent the market. A recent inquiry put out by one valley consumer brought several quotations ranging from $47 to $51.

Offer $50 for Slabs

Cleveland, Dec. 9.—Producers of semifinished material in this district have been offered $50 for open-hearth slabs but have declined to accept the business because they are unable to offer any tonnage at present in view of their contract obligations. Semifinished material continues exceedingly scarce and various buyers who would take on tonnage are willing to pay higher prices.

Wants Strip Tonnage

Pittsburgh, Dec. 9.—Some makers of strip steel who opened their books for first quarter 1920 business, already are booked to capacity. Those who have not been taking new business have obligations accruing from the strike interruption to keep them engaged during the first three months of the year. Huge inquiries are pouring out for early tonnages, particularly of hot-rolled, while a Detroit automobile company is seeking to place approximately 100,000 tons of cold-rolled strip steel for delivery in equal monthly tonnages over the whole of next year. This steel is wanted for brake bands. Tendency of buyers to overbuy as a measure of protection against possible shortages next year has led some manufacturers to limit orders for the first quarter to the same tonnages placed by the individual buyer for the present quarter. Much business is being turned away by makers at present because of their lack of tonnages over and above contract obligations.

More Advances

In Cast Iron Pipe—Large Tonnages Are Pending in Chicago

New York, Dec. 8.—With pig iron advancing rapidly and private demand coming out in heavy volume, cast iron pipe in the East has gone up $4 a ton. Class B pipe 6-inch and over now is holding at $62.30, New York, and 4-inch at $65.30. Class A pipe is quoted $2 higher. An advance has been expected for several weeks. Owing to heavy private buying, deliveries on 6, 8 and 10-inch pipe can not be had before eight weeks, and at least in one or two instances before 12 weeks. Shipments on some of the larger sizes, such as 24-inch pipe, are scarcely available before a month. Bids have been closed on 2000 tons for New York City. John Fox & Co. were low bidders. Other than this there is little public demand.

Large Tonnage Pending

Chicago, Dec. 9.—Although bids were opened several days ago at Elyria, O., on 5000 to 7000 tons of cast iron pipe, no award has been made as those in authority have been unable to agree on their course. Bids will be opened Dec. 15 at Sandusky, O., on a small lot. Aside from these lots the market affords little prospect of business, aside from routine and contractors' orders which have been coming in sufficient volume to give shops good operations.

Pipe Mills Also Affected

Pittsburgh, Dec. 9.—The coal shortage is doing something which the strike of the steel plant workmen failed to do and that is to restrict appreciably the production of the National Tube Co. This company still has in operation all of its plants, except the Riverside works at Benwood, W. Va., which has been down since the first day of the steel strike, but coal supplies are so short that it has been necessary to restrict production to the lines in most urgent request and where the orders are heaviest in order to prolong the fuel and also plant operations. The production situation is getting bad in tubular goods, for the lack of coal is holding in check the operation of the Youngstown, O., plants, while Pittsburgh independent plants are going along at a reduced rate and in the Wheeling district all steel plants, it is believed now could be operated if coal were plenty. Marketwise the situation is as it has been for some time past, with big demands coming out for oil well and line pipe and business again backing up because of the inability of makers to bring production to a point in keeping with the requirements.

Another Advance in South

Birmingham, Ala., Dec. 9.—Demand for cast iron pipe continues strong in the South and some makers are withdrawing from the open market. Another advance in prices has been made, 4-inch now being quoted at $59 and the 6-inch and over at $56.

Jobbers Advance

Higher Prices Shown at Boston, Cleveland and New York

Boston, Dec. 8.—With climbing pig iron, coke, and scrap markets, and the continued difficulty in obtaining deliveries, warehousemen in Boston have made advances effective this week. Warehouse prices in most cities in New England have advanced at different times ever since the steel strike was called, but the larger Boston houses have, until the last few weeks, doggedly stuck to the old schedule. Recently this uniform schedule has been broken up and today it is hard to give the going market value of any one warehouse grade. One of the largest Boston interests this morning announced the following advanced schedule: Steel bars, 4.00c; iron bars, 4.10c; shapes, 4.00c; plates, 3.95c; No. 10 blue annealed sheets, 5.30c; No. 28 black sheets, 7.65c; No. 28 galvanized sheets, 9.00c; bands, 5.20c; hoops, 5.45c. The demand in all lines except plates continues unusually active.

Prices Show Range

New York, Dec. 8.—A wide range of prices characterizes the local warehouse market in sheets and steel bars. On the latter, one large interest is quoting 3.37c, New York, another 3.52c, and still others 3.62c. In sheets the divergence in prices is more marked. No. 10 blue annealed is quoted from 4.82c to 6.00c; No. 28 black sheets from 6.00c to 7.50c; and No. 28 galvanized sheets from 7.25c to 9.50c.

Some Cleveland Jobbers Advance

Cleveland, Dec. 10.—Flat increases of $5 a ton on all warehouse stocks of steel have been put into effect here by certain jobbers. This brings the quotations to 3.52c on steel bars, 3.62c on structural shape, 3.82c on plates, 4.72c on No. 10 blue annealed, 5.52c on No. 28 black and 6.87c on No. 28 galvanized sheets.

Material Shortage Slows Exports

Japan a Heavy Buyer of Tin Plate and Railway Material — Oriental Demand For Pipe is Larger—Delayed Deliveries are Diverting Inquiries to England — Chile Purchases 18,000 Tons of Rails

NEW YORK, Dec. 8.—Buying for export daily becomes more difficult. While considerable material has been sold during the past week the outlook is not bright. A number of the well established houses complain that they are finding it difficult to place orders with mills, not only because of labor deficiencies but also because of coal shortage. So long as this situation obtains the mills hesitate to book future business. The demand from abroad continues to be active, however, and some sales constantly are being made to the Orient and South America. This is a sellers' market exclusively and practically any material offered finds a ready taker at prices far above the former schedule.

The big agencies are attempting to keep prices down, and they have informed purchasers that the 1919 schedule is going to prevail during 1920. But when an effort is made to buy from them they declare they have no material to quote on. This has thrown the market into the hands of the independent and the small producers, the warehousemen and the jobbers who are less considerate about the price level. Japan, the largest buyer today, is beginning to show a hesitancy in placing contracts.

This desire of the Japanese to have steel shipped before March 1, 1920, is believed to be prompted by the fact that they are convinced freight rates in this country will be advanced at that time and such a change materially would raise the price of the material delivered. Furthermore, it was explained by one Japanese purchaser, if material is to be contracted for on the basis of future delivery they may as well place their requirements with England. Taking into consideration the rate of exchange, supplies can be purchased in England at prices approximately those prevailing here. The chief drawback to buying from England heretofore has been the long delay in deliveries.

Unprecedented Tin Demand

One of the recent Japanese inquiries was for 10,000 boxes of tin plate. The Japanese expressed a willingness to pay $8.50 c.i.f. but the quotation was far beyond this. One American jobber offered to fill the order at approximately $10 c.i.f. The offer was refused. One house reported it has sold Japan within the past week or so a total of 21,500 boxes of tin plate. The sales ranged from 1000 to 5000 boxes each. The price on this business varied from $7.50 to $7.60 per base box, Pittsburgh. The Japanese have been taking all the tin plate they could find. It was estimated by one exporter that the Japanese inquiries for tin plate today total 40,000 boxes.

There has also been an extremely active demand from Japan for bessemer black plates for tinning. The specifications named on most of the inquiries are 30 Birmingham gage, 36 x 72 inches. It is practically impossible to obtain the material. According to well authenticated reports the United States Steel Corp. refused to consider an inquiry for 20,000 tons. The failure to place any of this business is not due to high prices but more particularly to the inability to find a mill which is willing to sell or to accept a contract for reasonable future delivery.

A number of small sales of other material to Japan have been reported. A new export house has just closed for 1700 tons of bars. A Japanese order for 3000 kegs of nails also was taken at an advanced price. A new inquiry is out for 7000 tons of plates and sections for shipbuilding. Japan also inquired for 300 tons of light rails, and was quoted an advance of $7. The quotation was rejected. Japan has been buying heavily for the Manchurian lines. A sale of 800 freight cars of 60,000 pounds capacity to Manchuria is in prospect.

The trade of China is somewhat different from that of Japan. China depends upon silver to make her balances and the only large nation of the world having a fair stock of silver is the United States. As a consequence American companies have been able to initiate avenues of trade by purchasing Chinese goods and paying cash therefor. The English trading houses, nevertheless, have branches all over China and they are holding on strongly. Among the Chinese sales during the past week were 600 tons of mild steel plates at 2.75c, Pittsburgh base. This sale was made through a British agency. The current Oriental purchases consist of pipe, bars, sheets and galvanized goods. One of the largest inquiries calls for 6,000,000 feet of pipe for deliveries to start in April and extend over 15 months.

India purchased 800 feet of pipe at a price said to be 43 per cent under the English list. Australia took 400 tons of mild steel plates at 2.75c. Pittsburgh. A small Australian order for bars was also placed at 3.20c f.a.s. Canadian mills are reported to be pushing the American producers close for some of this business.

A number of American builders have closed for some 20 marine engine units to be shipped to Manila. The deal was handled for the Yangco Shipbuilding Co. of the Philippines by Ambrosia Magsagsay, general manager for the company, which proposes to go into ship construction at Manila on a big scale.

Some of the American export business would not have been placed had it not been for the offices of certain British houses which are making every effort to hold their customers in world markets. An American mill has contracted to deliver to England 4500 tons of sheet bars. England also has purchased 8000 tons of billets. One house reported that it had sold England between 15,000 and 20,000 tons of plates during the past 30 days. The price was equal to the domestic. It is learned a very large English order for pig iron is pending.

Rail Sales Are Features

Resumption of production in Belgium apparently increases the wants of that country. Investigators report an insistent and growing demand for materials for lining the pits of coal mines, as well as cables, beams, and machinery of all sorts, also high resistance galvanized steel wire for cable manufacture.

It was reported last week that the Submarine Boat Corp. has sold to Italy four "unassembled" ships.

South American business largely comes in dribbles. The United States Steel Products Co., is reported, however, to have accepted an order from Chile for 12,000 tons of rails. A minor house sold Chile 6000 tons of rails.

Advance Steel Prices in Britain

Increases Affect Semifinished Material and Small Finished Products — Molders Strike Continues 100,000 Being Idle—Steelmakers' Stocks of Steel Mount to New Record Because of Car Shortage

Weekly Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
16 Regent St., S. W. I.,
London, Dec. 8.

PRICE increases feature the British iron and steel market. This especially applies to semifinished material and to small finished iron and steel products. Iron skelp has been advanced to 24s, steel skelp to £25 10s, and hoops to £25 10s. Billets and sheet bars are up from 5 to 10 shillings. Middleboro No. 3 is higher. Puddling rates have been advanced 7½ per cent and other iron works averages 5 per cent. The supply of coal has improved but still is below the normal rate. The November output will approximate 19,000,000 tons. Railroad car shortage remains the big factor. Stocks of steel at Middleboro works have reached large proportions and in fact are the greatest ever known.

The demand for pig iron is excellent. A few furnaces which have been idle are resuming.

The idleness of many plants caused by the molders' strike may terminate next week. Negotiations which were scheduled for last week failed because the men still are unwilling to accept arbitration, proposing an increase of 5 shillings per week. In the meantime the stoppage of plant operations has reached an alarming stage. Manufacturers of automobiles, machinery, locomotives, marine engines, cast rolls and rolling mill machinery are especially hard hit. Many plants are being forced to close. The total unemployment is now well over 100,000.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Nov. 21.

Rate of Exchange—4.01½

KEEN buying, which is typical of the last two months of the year, is now in full swing. Pig iron prices are firm, and would be increased but the for the safeguarding clause which commits the buyer to responsibility for any addition to railway rates. This clause is insisted upon, whether for raw or finished material. The state of suspense covers not only railway rates, which most people expect will be put up 50 per cent, but also includes coal which should be reduced if ministers carry out their promises. The iron and steel trades are so strongly interested in both matters that it is hoped that both changes will be declared at once. When the declarations are made, it will be possible to rearrange prices generally.

It is quite possible that the iron trade will fail to get under the coal reduction any real compensating advantage for the sacrifices it must make under the head of railway rates. Coke makers are much dissatisfied with their prices, although they have reached unprecedented heights. The makers of the best coke, in particular, are very bitter because, under the cast iron system of coal control, they are unable to charge more than the makers of fuel admittedly inferior. Then, since the prices were fixed various additions to the cost of production have been made under the head of labor and materials. The coke makers hope to satisfy the coal controller that no equivalent reduction in coke ought to take place if and when coal is reduced.

The great scarcity of basic material may lead to the resumption of imports from America if sources of supply can be found.

The production of pig iron generally is insufficient, but the principal difficulty is with foundry and best iron generally, so many circumstances are keeping down the quality. The effect of this is some little shading of prices of forge iron in Cleveland, where supplies are fairly plentiful. The Cleveland market suffers very severely in its foreign business from exchange difficulties, which restrict buying by Italy, Belgium and France to the barest necessities. Enormous difficulties arise from the insufficiency of transport. Railway wagons are unobtainable and the molders' strike has placed a great obstacle in the way of engine repairs, and may eventually cause extensive stoppages on certain sections. Output is restricted enormously by the combined effect of wagon and coal shortages. Although the molders' strike continues, iron foundries are buying keenly. The only cheerful feature of the iron molders' strike is that the workmen are seeking to reopen negotiations. This is an entirely new attitude, indicating that the men are feeling the pinch. On the other hand, the Scotch iron molders are proposing to strike tomorrow, and this will greatly aggravate the position as some English mills have been renewed and repaired with castings obtained in Scotland.

Owing to the comparatively low production of steel, the conditions of west coast hematite, and to some extent the east coast, is much less serious. Everything points to a huge demand for pig iron when the iron molders' strike is settled.

Demand is strengthening in all departments of iron and steel. The activity in the finished iron trade is very great. There is not an ironmaster in South Staffordshire who has not within the past week or two, re-

Current British Prices

In Pounds, Shillings, Pence

	Home consumption	Export prices
SEMIFINISHED STEEL		
Billets, soft steel....	16:10:0	16:10:0*
Sheet bars .....14:0:0 to 15:0:0		15:0:0*
FINISHED STEEL		
Steel bars, England, ⅝ to 3 inch.....	20:0:0	20:0:0*
Ship plates, England.	21:0:0	21:0:0*
Ship plates, Scotland.	21:0:0	21:0:0*
Beams, England	18:0:0	18:0:0*
Beams, Scotland	18:5:0	18:5:0*
Sheets, black, 24 gage	28:0:0	28:0:0*
Sheets, galvanized, 24 gage	38:0:0	38:0:0*
Rails, 60 lbs. and over	16:10:0	16:10:0*
Tinplate, base box, 108 lbs.	2:06:0	2:06:0*
*Export steel prices are nominal.		
PIG IRON		
Hematite, East Coast Mixed Numbers ...	10:0:0	10:5:0
Hematite, Scotch ...	10:10:0	10:15:0
Middlesborough Basic.	8:5:0	8:10:0
Middlesborough No. 3	8:0:0	8:5:0
No. 3 Foundry, Derby, Leicester, Nottingham	9:5:0	9:10:0
No. 3 Foundry, Northampton hire	8:08:0	8:13:0
No. 3 Foundry, Staffordshire	9:00:0	9:5:0
Scotch Foundry	9:15:0	10:0:0
Ferromanganese, 80 per cent	25:0:0	23:0:0
COKE		
Midlands furnace	2:10:6	.....
Midlands foundry ...	3:0:0	.....

fused orders, chiefly foreign, running into thousands of tons. These cover all branches, sheets, bars, hoops, material for reinforced concrete and sections. The mills are quite unable to cope with them, but there are very good reasons why they show a decided preference for home business.

Transport difficulties are so serious that many mills in the Black country, whose order books are loaded up, have their warehouses so full of finished material that a stoppage is inevitable in some cases until the mills are clear.

The scarcity of half-finished steel approaches famine proportions. Several mills near Birmingham are idle, or nearly so. One of the largest has not operated at more than 30 per cent of its capacity for two months. The country has been scoured for billets with very little success. A few Scotch parcels have been had at high prices. Welsh material cannot be delivered before January or February when the Ebbw Vale works, the Dowlais steel works, and others, resume full production. American steel does not now come in in sufficient quantity to produce an appreciable effect. Some fairly good lots of American discard steel have been offered at low prices, but these have a very limited use for ordinary trade purposes.

Galvanized sheets are ordered in big lots, and very strong efforts are being made in Birmingham to start additional mills which, for months past, have been waiting for the requisite skilled labor. Sheets sell easily at £37 ($148.55) to £37 10s ($151.89) per ton.

Billets have been advanced from £15 5s ($61.22) to £16 (64.24) per ton, but are almost unobtainable at this price. Finished steel has not been formally advanced but easily realizes from 10s ($2.01) to £1 ($4.01) more per ton.

War Control of Coke Prices Restored

WASHINGTON, Dec. 9.—An order of Fuel Administrator Garfield last Saturday restoring war time prices of beehive and by-product coke made sharp reductions in the prevailing market quotations. While not entirely unexpected, the order canceling the suspension order of last January was somewhat of a surprise in that no inkling of its coming was to be had until it was announced at midnight Saturday. It terminated a week, however, given over to final study of the coke situation, the few days previous having seen an order promulgated curtailing the output of beehive coke 25 per cent, which, at the average rate of production in the past few weeks, amounts to considerably more than the mere percentage shows.

By the order of Saturday night beehive coke prices were restored to these levels: Connellsville, furnace, $6; Connellsville, foundry, $7; Connellsville, crushed, $7.30; and on by-product: Furnace, $5.70; foundry, $6.70; crushed and screened, $6.20. This restoration largely was made by the fuel administrator in order to keep prices to the public, not only of coke but of stel and other commodities, from going higher. This is an avowed policy of Fuel Administrator Garfield and one which the political administration is backing. According to reports reaching here it is generally accepted with open arms by the public.

In this connection the geological survey's weekly report, which show the coke output of the week ending Nov. 29 was 449,000 tons, the highest in any week since last February, except just before the beginning of the steel strike, has the following to say on coke production and prices:

"The causes underlying the exceptional output of coke have been apparent since the beginning of the coal strike. The beehive ovens for the most part lie in the regions not affected by the strike order. Open top car equipment has been released in abundance by the closing of the union mines. The competition of by-product coke has been for the time being restrained by the difficulty which by-product operators have experienced in obtaining supplies of coal. The fact that war time maximum prices have been restored on coal but not on coke (Editor's note: At time this statement was issued coke prices were not fixed) has encouraged operators to dispose of their product as coke rather than as coal. The consequence of these tendencies is seen in the increased proportion of the coal produced going into the manufacture of beehive coke. Whereas normally the beehive ovens take 6 per cent of the output, during the last week of November they absorbed 12.3 per cent of all the soft coal produced."

The Garfield order restoring war time prices and regulations on coke was as follows:

"The United States fuel administrator, acting under authority of an executive order of the President of the United States, dated Aug. 25, 1917, and of subsequent executive orders, and in furtherance of the purpose of said orders, and of the act of congress therein referred to and approved Aug. 10, 1917,

"Hereby orders and directs that the order of said administrator, dated Jan. 31, 1919, suspending the operation of certain rules, regulations, orders and proclamations theretofore promulgated by or under the authority of the President of the United States or by said administrator relating to coal and coke be and the same hereby is revoked insofar as said order suspends the orders and regulations of said administrator fixing or regulating the prices of beehive and by-product coke, or fixing or regulating the margins or commissions of middlemen or wholesale or retail dealers in beehive and by-product coke, and said orders and regulations are hereby restored to like effect as if the same had not been suspended, and said administrator

"Further orders and directs that all beehive and by-product coke in transit on or after date of this order shall be subject to diversion in like manner and to the same extent as bituminous coal under orders of said administrator relating to the diversion of bituminous coal in effect at the date of this order. The person or consumer to whom any such coke is diverted shall become liable as of the time of such diversion to pay to the shipper thereof the prices for such coke as fixed by or under the authority of the President of the United States and in effect at the date of such diversion, plus transportation charges thereon, and the order of said administrator dated Jan. 14, 1918, as amended by the order of said administrator dated Nov. 20, 1918, is hereby suspended insofar as said amended order is inconsistent with this order, and said administrator

"Hereby authorizes and empowers the director general of railroads and his representatives acting by and under his authority to make such diversion of coke in transit as may be necesary in the present emergency."

Wants Equipment

Friction clutches, one-way marine clutches, metal adjustable shaftlogs and propeller wheels for motor boats, will be manufactured by the E. J. List Mfg. Co., Havana, Ill., which was recently incorporated. The company does not plan to build a new plant, but is erecting an addition to its present building, and is in the market for screw lathes, drilling machines and grinding machines. The company, which is capitalized at $35,000, was incorporated by E. J. List, president; L. B. Travers, vice president; Fred C. Euteneuer, secretary-treasurer, and the office of the company is located on Water street, between Main and Adams streets, Havana, Ill.

Shells Require Uniform Castings

High-explosive Shellmaking Demands Consistent Ingots if the Percentage of Discards is to be Held to a Minimum—Forming Process Executed by Horizontal Hydraulic Press—Method Followed at Watertown Arsenal

BY HERBERT R. SIMONDS

PERHAPS the greatest necessity for uniform castings is found in the manufacture of high-explosive shells. Here are found many of the principal problems met by foundrymen, metallurgists and machinists. A detailed account of this manufacturing process is beyond the scope of this article but a general description of the methods employed at the Watertown arsenal, Watertown, Mass., in the production of 14-inch, high-explosive shells may serve to illustrate the attention which generally is given to uniform castings in shell manufacture.

The arsenal plant was established in 1816 and seven of the original buildings are still in use so that the entire progress of the metal working trade of this country is written on the annals and records of the institution. New buildings and modern equipment have kept the plant continually abreast of the times.

Ingots Carefully Designed

Ingots of the size required for 14-inch shells must be designed carefully to prevent the formation of cracks and pipes. The ingots used at the Watertown arsenal are corrugated and tapered along carefully predetermined lines to facilitate cooling and withdrawal from the mold. They are cast of special steel and their structure and analysis must meet the strict requirements of the foundry inspector. Each ingot as cast weighs 2800 pounds, which includes a 500-pound riser or hot top connected to the main ingot



FIG. 2—INGOTS ARE CAST WITH A 500-POUND RISER WHICH IS KNOCKED OFF PRIOR TO FORGING

by a bottle neck. Until recently these ingots were cast in one straight section, the riser being merely a uniform continuation of the ingot itself. The risers were then sawed off by a slow and costly process. The ingots, which now are molded with the bottle-neck joint between the riser and the ingot body, are placed on a two-point support. A weight is dropped on the joint, and breaks off the riser at one blow. This not only saves time and expense but presents a fracture across the top of the ingot for determining the structure of the metal.

Serial Number is Important

Before each ingot is cast a strip of metal, which is stamped with a number, is partially inserted into the mold. This number follows the ingot through the various operations and becomes the number of the completed shell.

Considerable importance is attached to this individual numbering of shells, and if for any reason a shell number is lost in its circuit through the different finishing processes, the shell is discarded, even though nearly completed. The number is painted in white figures on the side of the ingot, and later is die punched on the partially-finished shell. Thirty of the ingots are cast from one heat and these become a unit group in the shell production. Each group continues intact on the records and throughout all the operations until the shells are boxed for shipment. In fact the group significance does not disappear until the shells have been fired and the results noted. A careful chemical analysis of specimens taken from

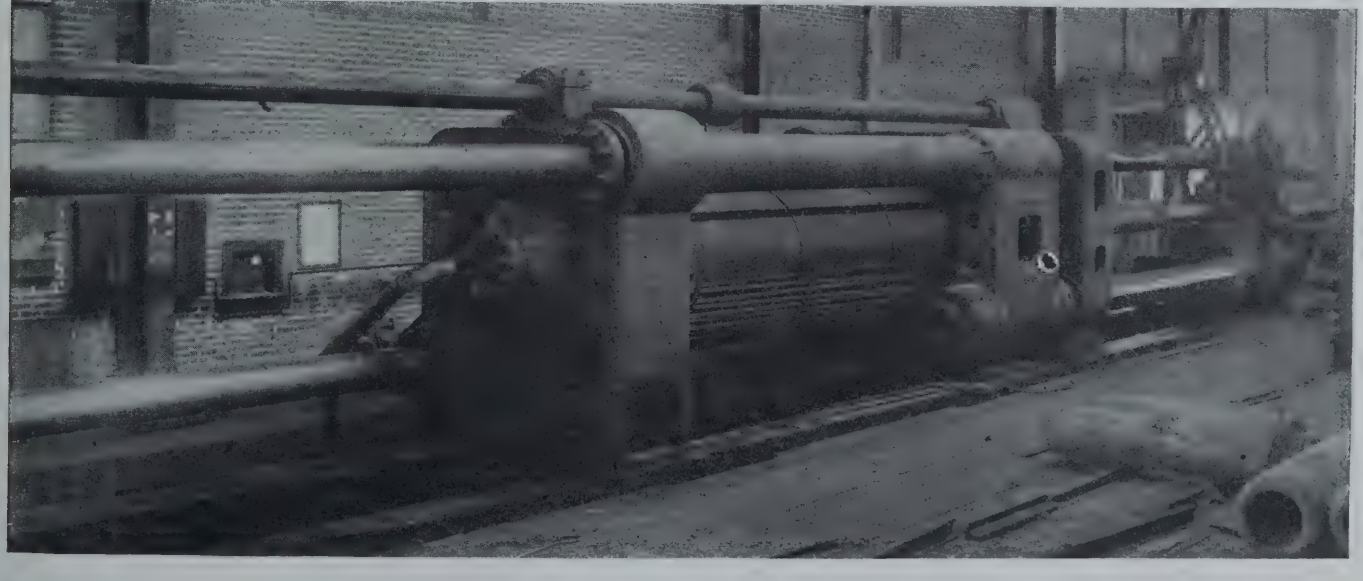


FIG. 1—HYDRAULIC PRESS, WHICH IS BUILT TO EXERT A TOTAL FORCE OF 2000 TONS, TRANSFORMS SOLID STEEL INGOTS INTO HOLLOW CYLINDRICAL SHELL FORMS IN ONE OPERATION

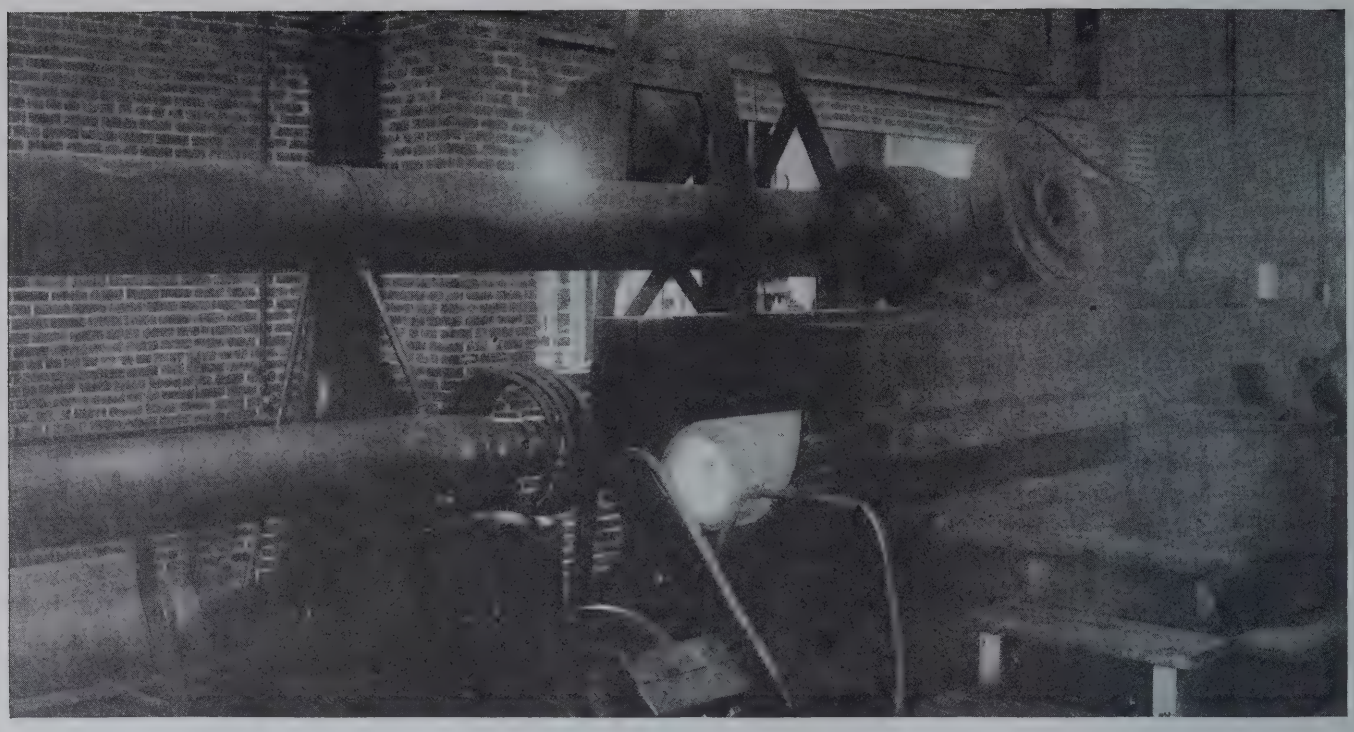


FIG. 3—A HOT FORGED INGOT AFTER IT HAS BEEN PRESSED AND EJECTED FROM THE PRESS CONTAINER. THE MANDREL IS SHOWN AT THE LEFT WHERE IT HAS BEEN WITHDRAWN THROUGH THE COOLING COIL

each heat in the foundry indicates the composition of the shells in each group, and this analysis therefore is an important part of the records of the shells as they pass from one department to another. The heat treating is based upon this composition, and the record and behavior of the completed shells is compared with the record of chemical analyses. In this way determination for future foundry practice is developed. From the yards where they are stored after the risers have been taken off, the ingots are taken to preheating furnaces; then to forging furnaces, where the correct forging heat is obtained; and, finally to a large hydraulic forging press. This press is the most spectacular piece of apparatus in connection with the manufacture of the shells. By its use the solid hectagonal ingot is transformed into a hollowed cylinder. The ingot at a temperature of 1296 degrees Cent. is placed in a container and a piercing mandrel or punch, placed against one end, is forced slowly 44 inches into the red-hot metal. The initial action under this forging operation is that of compressing the ingot. As the mandrel starts its slow movement in the end of the ingot, the hot metal completely fills the container.

As the progress of the punch con-

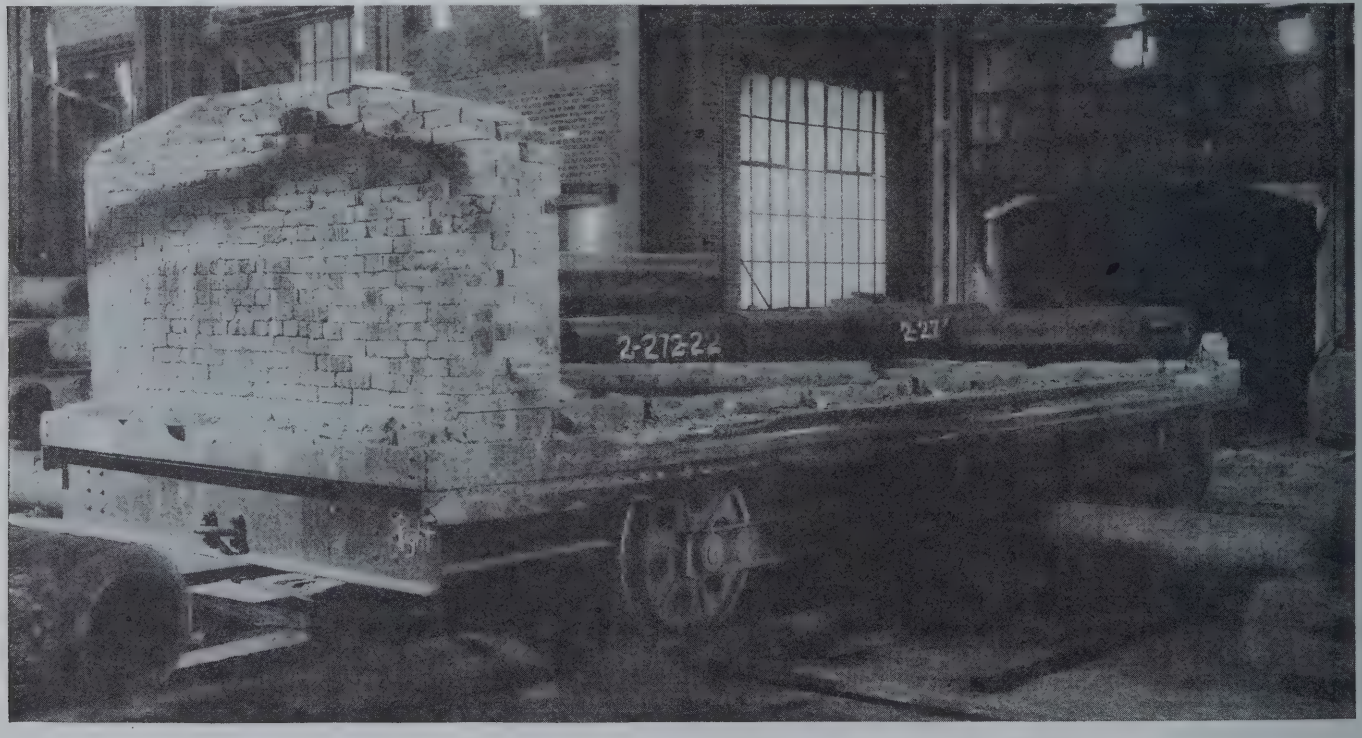


FIG. 4—AN 80-TON CAR BOTTOM FURNACE IS USED FOR ANNEALING THE SHELLS AFTER FORGING. THE ANNEALING PROCESS REMOVES ANY STRAINS DUE TO FORGING AND GIVES THE STEEL FREE MACHINING QUALITIES

tinues the metal flows back along the shaft of the mandrel and compensates for the metal which is forced out of the central cavity. The punch, when withdrawn from the newly-formed shell, recedes through a spraying coil, which by a constant play of cold water, drives the heat forward and off the punch end. This punch end or nozzle, as it is called, is a separate piece screwed on to the steel shaft of the punch proper, and is made of chilled cast iron this having been found to stand up under the scoring action of hot metal better than steel. The shell is forced out of its container by a hydraulic press and is then taken by a crane to storage piles where the numbers, which have been effaced during the forging, are stamped on by dies while the metal is still red.

Shell Order Preserved

The order of taking the ingots from the forging furnace and the forging press follows a definite, carefully worked out system, so that a shell number would be known even if the lettering could not be read. The shells whose numbers have been stamped are taken from the stock piles and placed on an 80-ton car bottom furnace, shown in Fig. 4. After annealing, the open end of the shell is cut off to length, and the shell is centered for turning. In order to confine the boring operation to a minimum, the shells are centered with respect to the internal cavity, rather than to the outside dimensions. To accomplish this each shell is lowered over circular revolving guides.

The upper guide fits into the tapered portion at the base end of the cavity and thus centers that end. The lower guide is made in the form of a frustrum of a cone with its base larger than the cavity opening, and therefore as the shell is lowered onto this frustrum guide the open end also becomes definitely centered. The position of the shell on the centering device is shown in Fig. 5. The guides are of the ball-bearing type so that the shell when resting on them is easily revolved. An outside centering point is brought down from above, and in this way locates a point on the outside of the top of the shell, which is on the axis of the shell cavity.

In the next operation the shell is rough-turned and the base end is partially cut off. This partial cut is shown in the standing shell in Fig. 7 and the reason the cutting-off operation is not carried to completion, is that the slot formed by partial cutting provides an excellent means for holding and withdrawing the shell during the nosing operation. After this the cavity is bored in the large boring lathe shown in Fig. 8. This is the final operation on the interior of the shell and it leaves the lines of the cavity in the body of the shell accurately conforming to the required dimensions.

Forge is Used for Nosing

Forming the nose of the shell, or ogive, as it is technically called, is perhaps the most interesting stage of the forming operation. The method of



FIG. 5—SHELLS ARE CENTERED FOR THE BORING OPERATION BY PLACING THEM ON AN UPRIGHT BALL BEARING SUPPORT

nosing the shells is merely a development of the ordinary steam-hammer forging process. The shells are placed in groups of six on a supporting frame directly in front of a small furnace, which is provided with circular openings corresponding to the positions of the six shells. The shells are carried forward until they project part way into the furnace openings. The heat is applied to the ogives of the shells only and as the walls of this portion are thin, it requires but 20 minutes to bring them up to the forging temperature which, in this case, is 1230 degrees Cent.

The shells are taken one at a time from this furnace by small traveling chain blocks and are placed in a Whelan-type nosing attachment, as shown in Fig. 7. This attachment is independent of the nosing press and consists essentially of a carriage, supporting a revolving universal chuck. The chuck, which is motor driven, automatically centers itself on the body of the shell. The shell thus fastened in the chuck is free to revolve, together with the chuck, on its axis. The carriage is provided with a friction drive and may be moved up to or away from the press.

Naturally the ogive of the shell, which heats rapidly, also cools off rapidly, and, therefore, it is important that the handling of the shell from the furnace to its position in the nosing attachment and through the nosing operation itself, be accomplished with a minimum delay. As soon as the shell is placed in the universal chuck the latter grips the shell at a predetermined pressure which, when reached, automatically shuts off the driving motor. A revolving motion is then given to the shell, and at the same time it is carried forward into the nosing press. The latter operates at 200 strokes per minute, and the shell is forced in and revolved as fast as the press will take it.

Feed is Automatic

Both the revolving motion and forward movement of the shell ahead are controlled by friction, so that, in case the press does not take the shell as fast as its forward motion requires, the friction clutch slips and eases up the travel. The hot shell, before it is run into the nosing press, is shown in the chuck in Fig. 7. A shell, which has just been taken out of the press, is shown standing at the left. The nosing operation draws the ogives down from an interior diameter dimension of 11.17 inches to an internal diameter at the extreme end of 3.75 inches and at the same time leaving the inside surface smooth. The shells then are transferred from the nosing press to the machine shop where the nose ends are faced. A small straight section is bored 3 inches long at the nose end and rough threaded. A temporary plug then is screwed into this threaded section in order to exclude water during heat treatment.

The details of the heat treatment for each group of 30 shells are determined from the records of their chemical analysis made at the foundry. The shells are quenched in water instead of oil and the temporary cap in the end of the shell is necessary because the water which otherwise would enter the shell would cause uneven cooling on the inner

surfaces. After the heat treatment one shell, selected at random, is cut up for test purposes. If the tests are satisfactory, the remaining 29 shells are accepted up to this point of the construction. If the tests are unfavorable the entire lot is reheat-treated or perhaps rejected entirely. From this point on the shells pass through successive operations in the machine shop until they are ready for the final hydraulic-pressure test. The operations in sequence are: Finish cutting the thread in the nose, which previously had been rough cut, finish cutting the boat tail or base end, facing the base end to exact weight, cutting the base-cover groove, and cutting the band seat. At this point the hydraulic-pressure test is made, through minute defects in the base metal. While these defects were not detected under any of the rigid tests, they were sufficient to let pass small amounts of the highly-compressed gas and thus to explode the inner charge and wreck the gun. This danger has been overcome entirely by using a base plate which consists of a lead disk covered with a thin copper plate. Such a combination seems to furnish just the resistance necessary to protect the steel shell.

Band Seat is Waved

It has been found necessary to roughen the band seat so that the copper band will not turn with the shell, as the rifling action takes effect. The easiest way to roughen the seat is to make wavy



FIG. 6—WHEN THE BAND SEAT HAS BEEN CUT AND GROOVED THE COPPER BAND IS PRESSED ON BY A HYDRAULIC PRESS BUILT LEVEL WITH THE FLOOR

and afterwards the operations to complete the shells include finish turning the band, washing in hot soda water, painting the interior with a spray gun, assembling the base cover, painting the exterior, and crating for shipment.

Weight Must be Accurate

The operation of cutting or facing the base end to exact weight is interesting. A curve showing the total weight of the shell at $\frac{1}{64}$-inch intervals is used. In other words, the different weights of the shell, assuming it were cut off at any one of a series of points $\frac{1}{64}$-inch apart, taken from the base end furnish a means for determining the exact point of cutting, in order to give the finished shell the correct final weight.

It was found in using high-explosive steel shells in guns that the powder pressure in firing sometimes was great enough to enter the chamber shell cuts, such as are shown in Fig. 6. The cutting operation is shown in Fig. 10. A turret lathe is used. The first cut leaves small collars or projections about ¼-inch wide and ¼-inch apart surrounding the groove. The part between these collars already is machined to the finished dimensions leaving the top surface of the collars to form the top surface of the finished wavy projection.

The wave is produced by using a V-shaped tool with the opening towards the work. If this tool were held stationary on a collar throughout the cut it would turn the collar into a straight sharp edged projection without any waving or irregularity. The turret attachment, however, is given a positive oscillating motion with respect to the motion of the lathe itself. By this means the sharp edge of the resulting projection moves regularly back and forth across the top surface of the collar to produce the continuous wave shown in Fig. 6.

When the grooves have been cut and the shell is ready for the band, it is swung by a crane out over the banding press. A hot band is placed in the press at the floor line, as shown, and the shell is lowered through it. The 10-segment press then firmly seats the copper on to the waved recess. Near this press is a band ring heating oven where the copper bands are brought to a cherry red temperature. A detail of interest in connection with this furnace is the design of the doors. In opening a standard hinge door for the purpose of inserting or removing the rings it was found that an appreciable amount of the heat in the furnace was lost.

To save time and heat a curtain, consisting of a double row of short lengths of chain, was hung in front of the furnace opening. This has been found exceedingly efficient inasmuch as little heat is dissipated through the curtain as it normally hangs. It is only necessary to catch hold of a band with a pair of tongs and to draw it out through the curtain. The bands are made of such size that when heated they will slip over the outside dimensions of the shell.

Punch Die Removes Hot Metal

The large hydraulic-forging press is considered the most important link in the equipment for manufacturing 14-inch shells. The press has a pressure of 4000 pounds per square inch and a rate of travel of 44 inches in two minutes. It was built by Henry Berry & Co., Leeds, England, to exerting a total force of 2000 tons. The ingots are brought to this press at a temperature of 1296 degrees Cent. The machine is designed to take one ingot at a time and the rapidity of operation from the standpoint of the press is limited by the heat developed in the punch.

Each ingot as it comes to the press is placed in a heavy cast-iron cylindrical frame which is fitted with a replaceable cast-iron liner or interior section. The purpose of the latter is to give the proper diameter to the forgings. Steel bands are shrunk onto these cast-iron liners for greater strength against bursting. A shell is pushed to the back of the container by the first stroke of the plunger and then is pressed to a depth of approximately 40 inches with the second stroke. During the early operation it was thought necessary to upset the ingot in the press container before pressing so as to force the hot metal to completely fill the die. It was soon discovered, however, that this second operation could be done away with The pressing causes the metal to flow not only to every corner of the die but back along the spindle of the mandrel itself to provide for this space taken

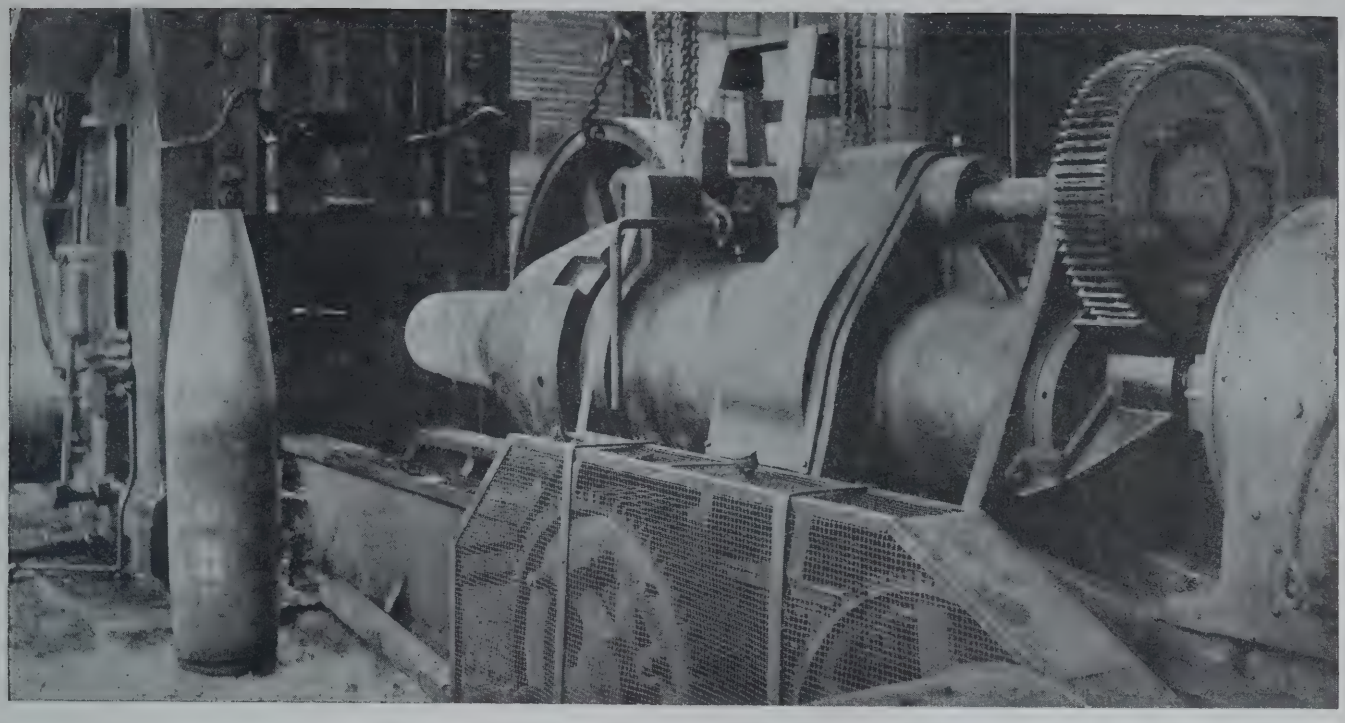


FIG. 7—AFTER THE BORING OPERATION IS COMPLETED THE SHELLS ARE HEATED AND TAPERED IN A NOSING HAMMER WHICH OPERATES AT 200 STROKES PER MINUTE

up by the mandrel, as it moves forward. After the mandrel is withdrawn from the completed forging, an auxiliary press is operated to eject the forging from the press container. Fig. 3 shows the forging just after it has been ejected from the container. It lies on a part of a heavy casting which forms the press end of the large machine. The mandrel has just been drawn back through the coil of pipe and has been cooled by the jets of water which play upon it from the inside of the coil.

A peculiar detail noticed in connection with the forging operation is that the nozzle or end piece of the mandrel must not be too hot nor too cold, previous to its being forced into the hot ingot. The first difficulty encountered in attempting to increase the speed of the press was that of cooling this nozzle. It was found by running one ingot after another through the press the nozzle became so hot that it scored badly and finally could not be used. The method of cooling at that time was by means of a short hose held in a man's hand. The cooling effect came constantly upon the end of the nozzle and much of the heat was driven back into the heavy part of the mandrel. In the attempt to cool the nozzle more quickly, the coil shown in the illustration was devised. This worked so successfully that the nozzle became too cool for best results.

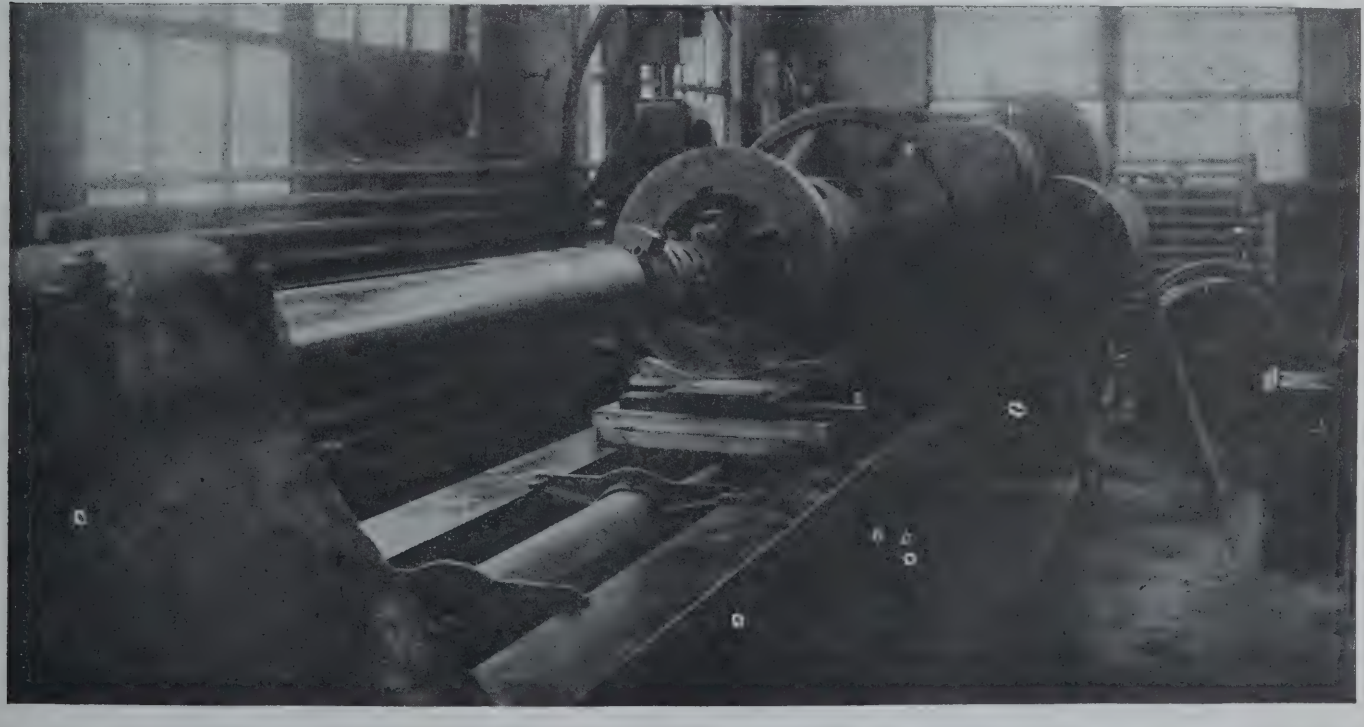


FIG. 8—SHELLS PLACED IN A HEAVY CAST IRON CHUCK ARE BORED ACCURATELY WITH A MULTIPLE POINT TOOL WHICH GIVES THE EXACT OUTLINE IN ONE OPERATION

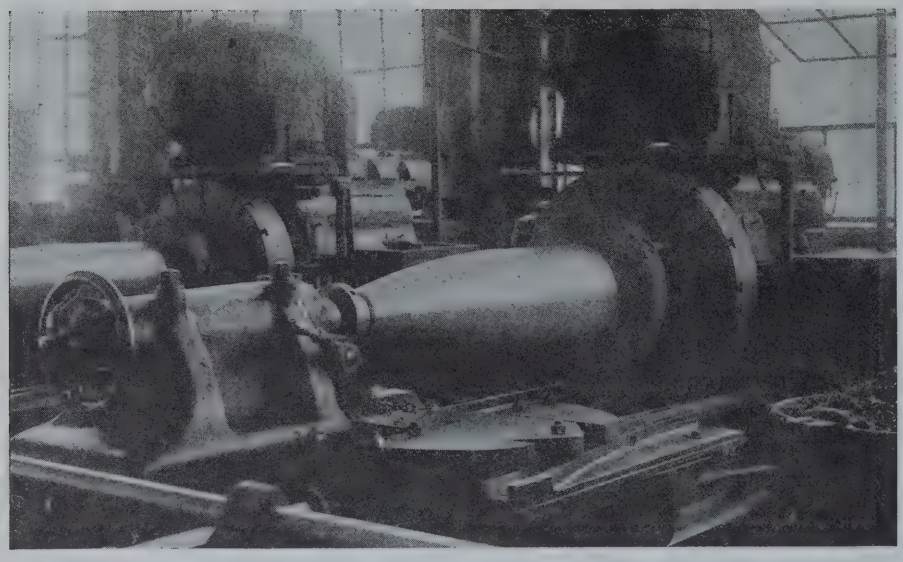


FIG. 9—AFTER THE SHELLS HAVE BEEN TAPERED BY THE NOSING HAMMER THEY ARE MACHINED ON LATHES

It was then necessary to decrease the amount of water used.

When for any reason the nozzle becomes cold, it must be partially heated before starting the punching. In practice, therefore, it is necessary to strike a balance between the amount of cooling water used and the interval from one operation to the next. The full capacity of the press has never been reached, and probably never will be, in the present plant, on account of the limit in furnace capacity and the lack of necessity. The furnace capacity until recently was entirely inadequate to economical production from the labor standpoint.

The 16 ingots which could be heated at one time were easily forged and handled in about half of the day's shift. And yet the number of men could not be cut down on account of the requirements of the work. In bringing the ingots up to the forging temperature of 1296 degrees Cent. it is necessary to conform to certain requirements as to heating speed. The ingots must be allowed to soak and the best practice developed after considerable experience is to heat the ingots through a period of seven hours up to the desired temperature and to allow them to soak for four hours at that temperature before using them in the press. This means that the furnaces are occupied 11 hours with one set of 16 shells.

As each shell is taken out for forging, another shell can be put in its place and in this way if it takes three hours to do the forging, the first shell will have a three-hour start on the heating process. However, this does not help much in reducing the loss of time of the men. Several unused heat-treating furnaces near at hand were brought into service. Their temperature limit was about 1000 degrees Cent. however, and thus their use was limited to preheating.

The capacity of the heat-treating furnaces was several times that of the forging furnace. The scheme, eventually evolved and which is now used, was to slowly preheat the ingots in the heat-treating furnaces up to a temperature of 1000 degrees, and then to transfer these ingots to the forging furnaces in order to get the last 300 degrees necessary to bring them up to the forging temperature. This has been highly successful and the production of the plant through this and other changes has increased from 16 to 45 shells per day without addition of a single man.

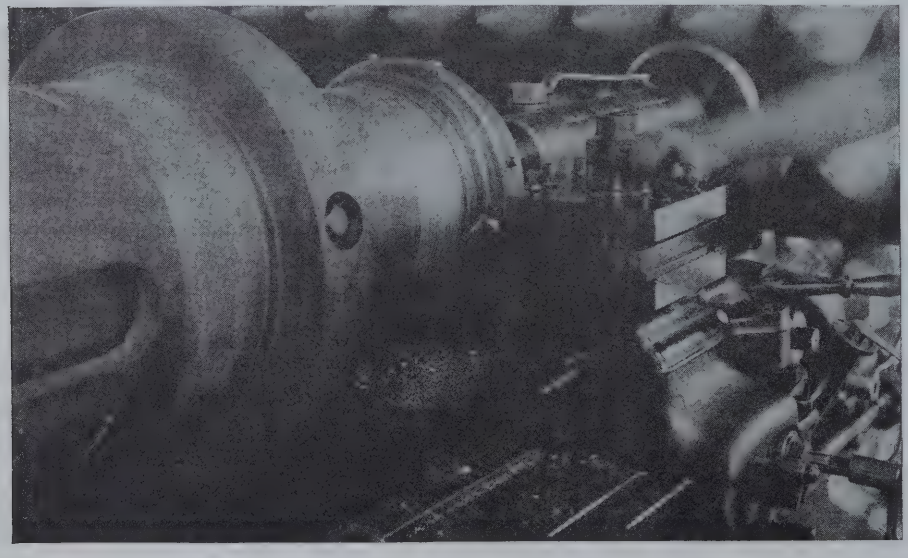


FIG. 10—WAVY GROOVES ARE CUT ON A TURRET LATHE EQUIPPED WITH AN ATTACHMENT WHICH OSCILLATES WHILE CUTTING

Germany Prospecting For Mineral Wealth

Various reports have been heard concerning discoveries of iron ore in the Hunsruck region of Germany, but not even in Germany itself are they considered seriously. Professor Beyschlag, of the German geological bureau, is quoted as saying:

"The deposits are found in the calcaire strata, the ore being classed as brown hematite of a very variable quality, but averaging 38 per cent. The position of the ore is a great advantage with respect to its possible exploitation. The deposits cover several thousand square kilometers, but are frequently interrupted for long distances.

"In certain points they form pockets five meters in depth. While as a rule they are near the surface there is always the possibility of their being too deep for economical working. At all events, Germany's situation today is such that the country must take advantage of every possible resource and adopt new methods of working, above all so far as concerns the recovery of the riches of the soil."

Various financial organizations are interesting themselves in the ore beds of Hunsruck and Franconia, but considerable time must elapse before their exploitation can be profitable. At present it appears that the ore is largely in the form of dust and has to be molded into bricks for the proper reduction.

Professor Beyschlag estimates that outside the region of the Suabian Alps Germany may still hope to find other deposits in Westphalia, near the western frontier.

Finally there is much talk in Germany as to the possibility of finding a combustible mineral oil in Hanover. Professor Beyschlag has visited various points in the district, and in his opinion nothing of commercial practicability is assured.

Wages Based on Guesswork

Industrial Unrest Likely to Continue Until Unscientific Way of Paying is Done Away With—Research Bureau Proposed for Determining Value of Services — Elements Lacking for Making Collective Bargaining Effective

BY A. L. DE LEEUW

UNREST among the laboring classes is so widespread that it is timely to discuss the various items which enter into the present relations between employer and employe, even if no prescription for a cure can be given at present.

It is well recognized that where two parties have a difference of opinion the first step should be to find some common ground from which to start, and that then the second step should be to define clearly and precisely the chief terms which enter into the controversy. One reason why discussions so often fail to bring the desired results and why they are often not started at all is that there is no clear understanding of some of the most commonly used terms in these controversies. The writer wishes to call attention to some of these terms, and to some of the misunderstandings in regard to their meaning.

We read practically every day about war between "capital" and "labor," about the demand of the laboring man for the "right to organize," and of his right to insist on "collective bargaining," and yet these three terms, which are perhaps used in every controversy that comes up, are not only not defined but they are actually misleading in themselves.

If war between capital and labor means anything at all, it must mean war between capitalists and laboring men. Capital is the result of past labor used progressively. Without capital, civilization is unthinkable. Capital is the tool with which the laboring man works. There can no more be war between labor and capital than between the laboring man and his tools.

Centralized Control Dangerous

In late years the control of capital has been more and more centralized, or, in other words, in the hands of fewer individuals. And though it is well recognized that this condition has its advantages in many ways, yet the dangers to which such centralized control may well lead have caused it to be regarded with suspicion and enmity.

It has been pointed out many times that there are really three parties, not considering the general public, which have a right to be heard in this controversy, namely, capital, labor and management. It seems to the writer that this merely leads to complication without any compensating features. Management and labor are both labor, but of different kinds. If at times they clash it is not due to unavoidable conditions but merely to defects in one or the other.

"Right to Organize" Misunderstood

Another term which should be quite familiar to all of us by this time is the "right to organize." Whether this term was purposely created by labor organizations as a slogan which ought to appeal to every fair-minded man, or whether it has just naturally slipped in, the writer does not know nor does he care. What he does care about is to have this term defined in such a way that no one with a fair amount of intelligence can mistake it for something else. If the purpose for which the employe wishes to organize is legal and proper, the third party, the general public, will naturally concede this right and quite as naturally inquire as to whether the employer has really denied this right to his employe.

Now, the facts in most cases where this right to organize has been brought to the foreground are these: A labor organization thinks it proper that the employes of a certain establishment should be gathered into its union. This, by the way, is perfectly proper, and no objection could be taken to it. The organization succeeds in gathering in part of the employes. The employer, fearing that this activity may lead to a strike, attempts to keep the other employes from joining the union; in other words, he tries to organize them with him instead of with the union. This also is perfectly proper. To make the claim at this point that the employe has been denied the right to organize may be good politics but is not quite correct. It is doubtful whether in late years there have been many cases where the employer has denied the employe the right to join the union, even if he was not in favor of it. When undesirable conditions or relations existed between employer and employe, or perhaps when union activities led to a strike, it was quite customary to make a demand on the part of the men for the right to organize, yet this right had seldom been denied. But put in this way the general public would get the impression that all kinds of organizations of the employe are taboo. What is really meant by the "right to organize" is that the employer shall give, not to *his men,* but to *some labor union,* the right to come into his shop and organize his men into a union; and apart from the question as to whether this is desirable or equitable, it is certainly different from the idea which the expression "the right to organize" conveys.

Another term which is misleading, even more so than those mentioned before, is "collective bargaining." So far collective bargaining has been collective, it must be admitted, but it has not been "bargaining." In collective bargaining it is supposed that some or all of the employes have delegated the right to bargain for them to some attorney or business agent.

Bargaining Has Never Been Used

In practically all cases this business agent is their union, and this union, according to the term used, is supposed to bargain with the employer. As a matter of fact, however, there is no bargaining, and, under the present conditions, there can be no bargaining. There have been cases where the men were entitled to all they asked for, and possibly more; there have been cases where the men were not entitled to as much as they asked for, but the method of bargaining has never been employed, and, in the writer's opinion, *could not* have been employed, to settle the differences. The issue has been brought to a conclusion by strikes, or threats of strikes, which is no more a method of bargaining than when a man points

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From a paper presented at the annual meeting of the American Society of Mechanical Engineers, New York, December, 1919. The author, A. L. DeLeeuw, is a mechanical engineer.

a gun at his debtor to collect a bill.

There is still another point about this question of collective bargaining which should have all the light possible thrown on it. Is collective bargaining, bargaining by *all* the employes? Is it bargaining for a group or part of a group? If it is bargaining by a union, acting for a group, should the representative, the union, show credentials before bargaining starts? Such a course of action might reveal the weakness of the union or of the employer, but would it not be for the best interests of the third party, the general public?

In offering labor and demanding money, one of the principal requirements of a bargain is missing. When we say that the price of eggs is 75 cents, we mean, per dozen. When we say that the price of land is $200, we specify per acre. But when we say that the price of labor is 75 cents, we do not know what this means. There are measures or quantities by which to sell eggs or real estate. If a house is sold, though there may not be a measure of the value of the house, there is at least a chance for the prospective buyer to look it over and make his own estimate, or if you wish, guess, as to what the house is worth. But when it comes to buying labor we have no measure nor can we estimate its value by personal observation, except after the labor is done, which is long after the so-called bargaining took place, long after the price was set. It is true that labor is sold by the hour, but the hour is a measure of time, not of labor.

At the present time labor is not sold by measure but a workman sells his time. This inability to strike a bargain because the value of the product to be sold is entirely unknown, is, in the writer's opinion, one of the greatest difficulties to be overcome before there can be an equitable adjustment of the differences between employer and employe. The fact that labor is sold by the hour is equally unjust to both parties. Sometimes the employer suffers, sometimes the employe. In all cases it is a source of curtailment of production, and this leads at once to a discussion of wage system.

"Wage" is defined as remuneration for work done. It is also defined as remuneration for time given. The second definition seems to be defective. In the first place, when money is paid for time given it is called "salary." In the second place, and this objection is more serious, time alone is not bought or paid for. There are many occupations in which employes must wait until something turns up for them to do, and then they are supposed to do it. It would not be proper, then, to say that they are paid for their time. It would be more proper to say that they are paid for the labor which they perform within a specified amount of time.

There are cases where, practically speaking, time alone is sold. Such is the case, for instance, with a stationary watchman. Even in such an extreme case something more than time is paid for: the man's watchfulness and faithfulness. In other cases time and labor are paid for: For instance, with a machinist's helper, or a blacksmith's helper. In still other cases time and skill are paid for: For instance, the man running a large planer or boring mill.

Finding a Measure for Labor

The great problem before us is to find a measure for this labor, in order to obtain an equitable way of paying for it. In a large portion of work there is a combination of time, physical presence, labor, skill, knowledge, judgment, and probably other factors which are hard to define, such as reliability, steadiness, enthusiasm, loyalty, ambition, and whatnot. To make up a formula which would embody all these elements and from which a man's value could be calculated is, of course, impossible; and yet, unless this can be done there is no possibility of avoiding differences of opinion between employer and employe as to the value of a man's labor. The writer has gone into this matter somewhat at length, because to realize that a mathematical solution is not possible is also to realize that a compromise system *must* be developed.

There are various systems of payment in existence at present, straight wages, piece-work system, various systems of bonus payment, premium payment, and combinations of these systems. The wage system considers nothing but time and physical presence. The employe knows exactly what he will get, and guesses at what he will have to deliver. The employer knows exactly what he must deliver, and guesses at what he will get. He has no means to bring the employe's output up to his conception of what it should be, unless the employe falls so far behind the employer's expectations that he makes a new guess and fires the man.

With the piece-work system the employer knows exactly what he will get for his money, but the employe makes a guess as to how much he can reasonably do; he has no control over the conditions which will enable him to do, or prevent him from doing, as much as he is expected to. There are various kinds of bonus systems. The employe may earn his regular wages and get a bonus at stated intervals if his work exceeds the expectations of his employer; or he may be working under the task-and-bonus plan, in which case there is less guessing and more of an attempt at a definite bargain. If the employer is in earnest with such a system, and sees to it that it is possible for the employe to fulfill his task, then this system approaches quite closely to true bargaining.

The premium system is an attempt at gaining the interest of the employe by making him invent improvements in the method of working and sharing the profits with him; but unless the time originally set was carefully studied, and unless all conditions of machinery, tools, existing knowledge, and so on remain unchanged, this system also will lead to controversies and injustices.

To sum up, the pure wage system is no bargaining in any sense of the word; the piece-work system is only bargaining if employer and employe have reached an agreement, and if there is some mechanism by which this agreement can be changed as soon as conditions change; the pure bonus system is nothing else but a wage system with a kind of profit-sharing plan; the task-and-bonus system, if properly worked out and if accompanied by complete instructions to the employe, is a perfect bargain, but must be constantly revised as conditions change. However, this system carries with it the necessary mechanism to effect these changes.

It will be seen from the foregoing that wherever bargaining is possible it must be done, not only by each employe individually, but by each man separately every time his work is changed; in other words, each new operation he performs should lead to a new bargain. Unfortunately, the number of operations which can be fully analyzed and for which complete instructions can be given, is relatively small. There is no doubt but that it could be followed in many, many cases where it is not followed at the present. But, looking at the world's work in its entirety, the total percentage of the work which can be treated in this manner is small.

Whatever attempt has been made up to date to place labor on a con-

tract basis, on a basis of bargaining, has been done entirely by the employer, and has been antagonized by organized labor. And yet it is the writer's opinion that the ultimate solution of labor trouble must be based on some method of bargaining, probably collective. Taking the aims of organized labor to be: Proper share of the proceeds of labor, reasonable working conditions and working hours, right to organize and collective bargaining, the writer believes that these aims could all be accomplished without strife if the last item, collective bargaining, were put into actual practice instead of being a mere catchword.

If employers and employes together would put as the first item in their catechism the truth that the world must produce more in order to have more; if employer and employe together would try to find an equitable way of estimating the value of work done; if both would subscribe to the truth that no permanent gain can be made by wearing out a man's capacity for work nor by allowing him to work less than he should for the good of the world at large; if then employers and employes together would organize a bureau of research for defining the conditions under which various classes of work should take place; and if finally an attempt were made by both employers and employes to classify men according to their natural or acquired ability, there would be very little reason left why a union should be a fighting organization.

It is the writer's belief that the crux of the solution lies in the establishment of a proper wage system, and that in order to establish such a system the engineer must come to the assistance of labor in order to find standards of value for work done. Though it is not likely that there will ever be a time when every human activity can be scheduled and analyzed, yet by far the greater part of industrial operations can be treated in this way.

Standardizing Offers Difficulties

It hardly need be pointed out that to set such standards of value of work must necessarily be a gigantic task. In addition to the many technical difficulties in estimating values of products, there are other elements which must not be forgotten. There are many cases where operations are required which call for extreme skill, possessed by only a few, a skill which can never be found in the mass of the people. As a rule, people possessing such skill love to employ their gifts, they love their work and are willing to produce for less than their product is worth. Such skill should be estimated at its proper value, not only as a matter of justice to the workman, but also because he may finally lose his enthusiasm and industry at large would suffer.

There are operations where steady nerves are essential, some where physical courage is required, others which cannot be successfully carried out without many years of experience, etc. Such points should all be considered. The value of driving a rivet in some dangerous place of a new skyscraper is higher than that of driving a rivet in a boiler shop. The ability to judge the temperature of a piece of steel by its color is only obtained by many years of experience. This ability could not be called skill, though it is closely related to it.

Consideration should also be given to what constitutes a proper minimum and a proper maximum wage. In repetition operations it is sometimes possible for the operator to produce large amounts of work but only at the expense of extreme weariness, and in the long run such a man is not employed to the best advantage of the world at large. Recognition of this fact has led to the prescription of rest periods. On the other hand, there may be cases where it is expedient to employ men not skilled in the operation they are supposed to do. This may happen because skilled men are not available at a given time or place, or because special conditions call for an unusual amount of this class of work. Though the value of the product of such men might be low, they should receive not less than a minimum wage. This minimum wage, however, is in itself difficult to determine. A satisfactory minimum wage for an unmarried young man is not at all satisfactory for a married man with a large family.

The real cause of the present-day unrest lies in the fact that there is no unit of measurement which both employers and employes can use; or, in other words, the fact that our present wage system is not based on knowledge and justice, but only on guesswork and on the fear that the one may "do" the other.

Applying Electric Furnace to Foundry

BY W. E. MOORE

UP TO the present time the electric furnace has had its largest commercial development, first, in the manufacture of aluminum, second, in the manufacture of steel, third, in the manufacture of ferroalloys, and fourth, in the manufacture of calcium carbide. At the end of 1913 there were only 19 electric furnaces installed in the steelmaking industry in America. This number had increased to 136 at the end of 1916, and to 269 at the end of 1917. At the present time the number of steelmaking furnaces in use in various industrial countries of the world is 815, of which 290 are in the United States and 45 in Canada.

The average capacity of these furnaces in America is 0.37 tons per heat when used for ingots, and in the foundry business, 1.7 tons per heat, though the ordinary size now most generally used in foundries is the 3-ton. More than 99 per cent of all the steelmaking furnaces are of the arc type, less than 1 per cent being of the induction type, which was popular in the early days of the art.

Primarily, electric steel became popular because of its desirable physical properties. The bureau of standards reports regarding the superior qualities of electric steel as follows:

The characteristics of electric steel are great homogenity and freedom from segregation. It is somewhat higher in tensile strength and elastic limit than other steels and owing to its greater density, shows a marked resistance to fatigue.

Being absolutely "dead" when properly made and averaging lower in sulphur, electric steel in the foundry is less liable to show shrinkage cracks between ribs of castings, and, being more fluid, it is not so liable to piping, blowholes, cold shuts or misruns, and in tool steel it takes heat treatment more effectively and will stand greater abuse in heating.

The electric furnace is especially useful for making alloy steels. Since the metal is treated in a reducing

From a paper presented at the annual meeting of the American Society of Mechanical Engineers, New York, Dec. 2-5, 1919.

atmosphere, there need be no large losses of the added elements, such as silicon, manganese, vanadium and chromium.

The acid-type furnace is best suited for foundry work and the most popular size has a capacity of 3 tons per heat, though sometimes 1.5-ton or smaller furnaces are required. The more highly powered and rapid furnaces for such work turn out from eight to 16 heats in 24 hours, and with a power consumption of from 500 to 650 kilowatt-hours per ton of liquid steel and considering the ultimate efficiency of the large modern turbo-generator power house at, say 1.5 pounds of coal per kilowatt-hours, its fuel consumption might be said to be equivalent to from 750 to 900 pounds of coal per ton melted, and the coal need not be of high grade nor low in sulphur and phosphorus as is necessary with fuel-fired furnaces. Basic furnaces require more time and power, heats ranging from four to eight per day, and since the charge is melted in a reducing atmosphere there is practically no oxidation of the metal; consequently thin scrap, light turnings or scrap of other forms such as can be conveniently charged into the furnace, may be melted. Such scrap on the present market sells for approximately from $5 to $10 per ton less than low-phosphorus, heavy melting scrap necessary with the ordinary acid open-hearth melting furnace installation.

The furnace atmosphere, being of a reducing nature, makes it easier to refine and kill the steel, resulting in a saving amounting frequently to half of the ferroalloys necessary with converter steel, effecting a saving of, say, $2 per ton.

Comparative Costs of Electric and Converter Steel

With the electric furnace, men can readily make and check their steel to an exact percentage of carbon, manganese and silicon and can easily keep the undesirable sulphur and phosphorus to low limits. The steel may be readily alloyed with nickel, chromium, and vanadium to make the higher grades of steel castings to replace forgings and for special purposes, such as may be required for parts of unusual strength, ductility or for cutting tools. It is entirely feasible to make castings which will run up to an ultimate strength of 130,000 pounds per square inch, or to cast high-speed steel milling cutters and reamers to form for grinding.

Very fine results have been obtained with malleable iron made by treating cupola metal or by melting cold scrap in an electric furnace. The ability to refine for sulphur and phosphorus and to add ferroalloys to adjust the mixture to the proper malleabilizing formula, together with its very rapid operation, give the electric furnace a decided advantage in malleable-iron foundries, particularly in working on high-phosphorus southern irons.

In the nonferrous metal industry the electric furnace has shown remarkable economies, due to the saving of cost of crucibles and the greatly reduced metal losses caused by oxidation and volatilization. For such work special types of furnaces designed to avoid localized heating are necessary.

As to the most suitable type of electric furnace for a given installation, if the scrap be inferior and high in sulphur and phosphorus, then the extra cost, slower operation, and shorter refractory life of the basic furnace must be endured to obtain the lower limits of sulphur and phosphorus not practicable to reach with the acid furnace using poorer grades of scrap. At present the call is for acid-lined furnaces, and cheap, good scrap is available in large quantities for foundries, and basic furnaces for alloy and tool steel. The acid furnace is simpler, cheaper and faster to operate and the steel casts more easily, while the basic furnace is essential for tool steels.

It is strongly recommended in any case that a furnace be so designed and constructed that it is adaptable to basic operation. This means that the furnace shell must be of large diameter and the bath of large area and shallow. The furnace should not, it is thought, be of the long-arc type, nor of the small diameter, deep bath type, if the best and most rapid work is contemplated. Indeed, even for acid melting there is a noticeable difference in the quality of the steel obtained from the large diameter, shallow bath furnaces compared with that made in the deep bath type furnace, for with the latter it is not feasible to obtain the same mechanical reactions from the additions put in to refine and kill the steel as when the bath is of the shallower type. Nor is it possible so thoroughly to deoxidize the metal by maintaining a reducing atmosphere in the furnace.

It is quite important that the furnace should operate at the highest practicable power factor that can be obtained without undue disturbance of the power company's load, for by so doing the electrode, transformer, line and generator losses are maintained at a minimum. Engineering skill of a high order is required to forecast and select the best type of equipment, under the many varied power-supply conditions which obtain in different localities.

By reason of the now generally acknowledged superior quality of the product, greater flexibility of operation, quicker, more convenient sized heats, and saving in alloys and in cost of melting stock, the electric furnace is rapidly coming to the front in the steel foundry and alloy and tool steel works wherever suitable power is available and progressive policies are in vogue. It is making possible the profitable operation of widely distributed small steel foundries to an extent not generally realized and greatly reducing the investment cost required in tool steel works.

Engineering Dean Defines Proper Training

That the federal control of education is undesirable was the opinion expressed by C. H. Benjamin, dean of the school of engineering of Purdue university, Lafayette, Ind., before a recent meeting of the Cleveland Engineering society. Dean Benjamin defined education as the training of mental powers rather than the acquisition of knowledge. Boys are placed in three arbitrary classes: Those who go to work at 16, those who go to work at 18, and those who go to college. As a result each class must have different education in order that its members mature into good citizens. The first group, which finishes the grade school, should not have vocational work as plenty of time is offered for apprenticeship work to gain that training. All of the time should be spent in fundamental teaching. Some vocational work should be given the second group, which attends high school, as the period in which to obtain training through apprenticeship is limited. The third group should receive proper training to prepare the members for college courses.

Five and six-year college engineering courses seem too long since most students are dependent upon their parents during that period. As a result the four-year course must be compact and well balanced. Extensive teaching of English is highly essential and foreign languages are desirable since they result in good expression. Shop practice should be well advanced to illustrate efficient methods. Economic problems and their suggested solutions should receive much attention.

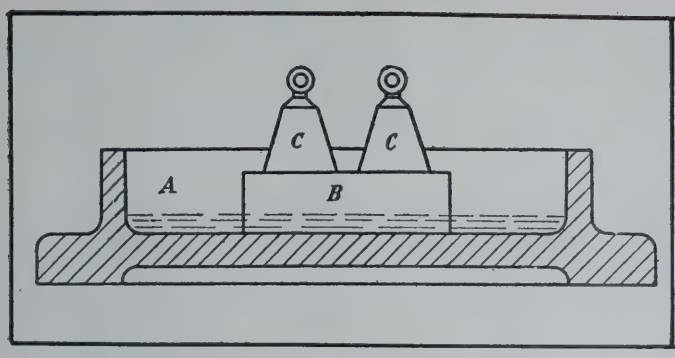


Fig. 1—Formation of Oil Film, Initial Stage

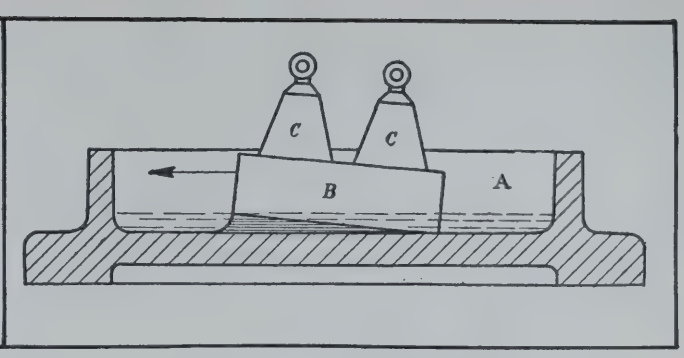


Fig. 2—Formation of Oil Film, Final Stage

Selecting Lubricants for Bearings

Principles Underlying Lubrication of Ball Bearings Differ From Those Applying to Plain Bearings — In Ball Bearings Oil Film is Only Possible at High Speeds When Slippage Occurs

BY H. R. TROTTER

AN INVESTIGATION of existing literature on the subject of ball-bearing lubrication reveals the fact that up to date a comprehensive study of this particular phase of lubrication has not as yet been published. The efficient lubrication of the plain sleeve-type bearing presents few difficulties, as the engineering world is in possession of an accumulation of data acquired during many years of patient study, experiment, and practice.

In 1885 Beauchamp Tower completed a series of experiments which he had made to obtain data regarding the behavior of a lubricant under various loads and speeds. These experiments were made at the request of the British Institute of Mechanical Engineers, and were later made the subject of a very thorough mathematical analysis by Prof. Osborne Reynolds. The outstanding feature of these experiments was the discovery of the wedge-shaped film of oil. Professor Reynolds later gave the rule for efficient lubrication, which is that where two surfaces are in sliding contact a satisfactory film of oil cannot be maintained unless the surfaces are at slight inclination to each other.

From a paper presented at the annual meeting of the American Society of Mechanical Engineers, New York, Dec. 2-5, 1919.

Oil Film Is Wedge Shaped

Fig. 1 shows a pan or tray *A* containing a small amount of oil. A flat plate *B* is loaded with weights, *C*. When in a stationary position the surfaces of the plate and pan are parallel to each other, but if the plate is pulled along the surface of the pan the leading edge rises and the plate flows on an oil film with the surfaces at an inclination to each other. The oil film assumes the shape of a wedge, as shown in Fig. 2.

The Michell thrust bearing, which is manufactured in Great Britain, and the Kingsbury thrust bearing, made in this country, are designed to take advantage of this phenomenon and both have proven very successful. The main features of a bearing of this type are shown diagrammatically in Fig. 5. *A* is the rotating member. *B* is the stationary member. The parts *C* are supported on pivots *D*. A bearing of this type with a diameter of 18 inches successfully accepts a thrust load of 160,000 pounds at a speed of 35 revolutions per minute.

The oil grooves of a sleeve-type bearing should be of such shape as to allow the formation of this oil wedge. Fig. 3 shows a correct groove and Fig. 4 an incorrect groove. When forced feed lubrication is used, the oil should enter the bearing at a point of low pressure and not at the bottom of the bearing which is near the point of maximum pressure. The oil grooves in a sleeve-type bearing are generally made wedge shape and not of semi-circular section, as experience shows that this is necessary to the formation of the lubricating film. The oil inlet on a force-feed bearing is placed at a point which is approximately the point of lowest pressure and not at the bottom of the bearing.

The final choice of a lubricant is at best the result of a compromise between the engineer and the chemist. This compromise is very often unsatisfactory and due in part to the chemist's inability to thoroughly comprehend the engineer's problem and in part to the engineer's lack of chemical knowledge.

All authorities are not agreed on the desirable qualities of a lubricant. Many claim that a high surface tension is a requisite, and others lay great stress on adhesive qualities. All are agreed, however, that a lubricant should have the minimum of internal friction. Generally speaking, the requirements of a lubricant for the plain sleeve type of bearing are a certain amount of adhesive quality

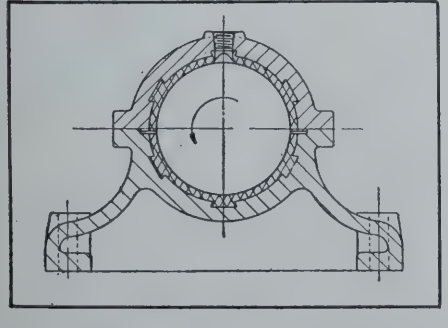


FIG. 3—CORRECT OIL GROOVE OF SLEEVE TYPE BEARING

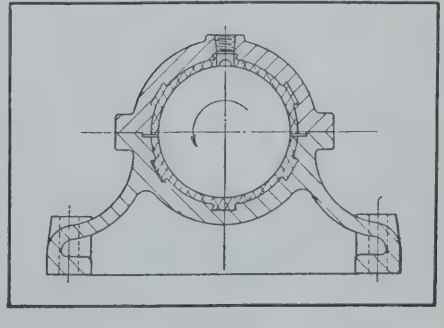


FIG. 4—INCORRECT OIL GROOVE OF SLEEVE TYPE BEARING

to enable it to adhere to both the revolving and stationary surfaces. It should have sufficient body to withstand the pressures. The lubricant film will therefore consist of three layers, which in operation approximate the features of a ball bearing in that one element is stationary, one rotating and one an intermediate layer consisting of globules similar to the balls in a ball bearing.

Body in a lubricant cannot very well be defined. It seems certain that its effects are opposite to those of viscosity. Professor Kingsbury gives the following relations of viscosity and body:

With increase of	Where the viscosity is effective the coefficient of friction	Where the body is effective the coefficient of friction
Pressure.....	Decreases	Increases
Speed.....	Increases	Decreases
Temperature....	Decreases	Increases

The two cardinal points of successful sleeve-bearing operation are: A design of such a type as will permit of the formulation and preservation of an oil film, and the selection of a lubricant that will provide a film of maximum strength with a minimum of internal friction.

With a ball bearing, however, the problem is not so easily understood, but the important points to be remembered are that the coefficient of friction is practically constant throughout wide ranges of loads and speeds; that an oil film is only possible at very high speeds when slippage may take place because the moving parts have metal-to metal contact; and that the coefficient of friction is lower in an unlubricated ball bearing at light loads and moderate speeds.

Coefficient of Friction Varies

In Fig. 6 curve *A* shows the change of friction coefficient of a plain bearing under constant load and varying speed. This curve is self-explanatory and shows that a satisfactory oil film is not formed till a certain speed is reached. In the same figure curve *B* gives the friction coefficients of a well-made ball bearing, and shows that the friction loss of a ball bearing is practically constant throughout wide ranges of speed. If an

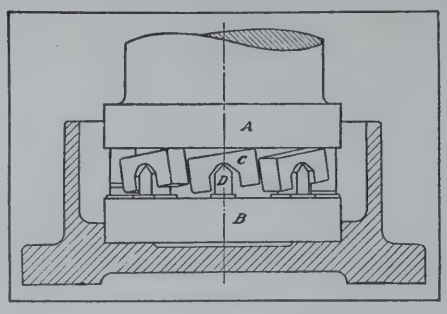


FIG. 5—DIAGRAMMATIC SKETCH OF MICHELL TYPE OF THRUST BEARING

oil film were formed between balls and races, curve *B* would possess the same general characteristics as curve *A*.

The difference between the friction coefficient of a lubricated and unlubricated ball bearing is shown in Fig. 7. This property of a ball bearing is not generally known, and should not be used as an argument in favor of operating ball bearings without lubrication. From the foregoing statements it should be evident that plain bearings and ball bearings possess such radically different characteristics that a true comparison is impossible. It naturally follows, therefore, that practically all the accumulated experience of the lubricating engineer is of little value when analyzing ball-bearing operation.

The use of a lubricant with ball bearings is necessary to protect the highly polished surfaces of the balls and raceways, and to minimize the slight friction between the balls and ball retainer. The small amount of friction between balls and retainer can also be minimized by careful design. The principal requirement of a ball bearing lubricant is chemical neutrality. The lubricant used must not contain over 0.10 per cent acid or alkali. There are many commercial lubricants on the market which come within this limit, but very few are acceptable because of their tendency to develop acid with age or when operating at high temperatures.

Experience shows that the most satisfactory lubricant for ball bearings is a highly refined mineral oil having the proper viscosity and cold test for the installation. Greases should be used only when operating conditions require viscosities greater than can be obtained with a mineral oil.

Should Not Run Submerged

Whenever a ball bearing is operated at high speeds, it is not advisable to run it submerged in a lubricant, and provision should be made to supply the oil from a pressure system. If such a system is not available, good results may be obtained by a large sight-feed oil cup. A few drops of oil per minute is all that is required.

At moderate speeds a heavy oil will generally give better results than a light oil. The substitution of a heavy oil for a light oil will generally result in a decreased operating temperature. This peculiarity may be explained by the fact that when the bearing is running at the actual operating speed, less opposition is offered to the rotation of the balls by the oil because of the inertia of the oil. In addition, there is less churning and frothing with their resultant air pockets. Air pockets in a lubricant act as insulators and prevent the transmission of the heat generated to the outer casing where it can readily be dissipated.

All mineral oils used on ball bearings should be highly refined, filtered, and contain a minimum amount of acid, alkali or sulpho compounds, and in order to insure the use of such oils the following specifications are suggested:

Free acid (calc. as oleic acid), maximum, 0.10 per cent; free alkali, absent; ash, maximum, trace; heat test (15 minutes at flash point), slight darkening, but no sediment; flash point (Cleveland open cup), minimum, 300 degrees Fahr.; fire test, minimum, 350 degrees Fahr.; viscosity at 100 degrees Fahr., Saybolt universal for light oil, 100 to 200 seconds, medium oil 200 to 300 seconds, heavy oil 300 to 500 seconds, and extra heavy oil, more than 500 seconds.

Most of the high-grade mineral oils

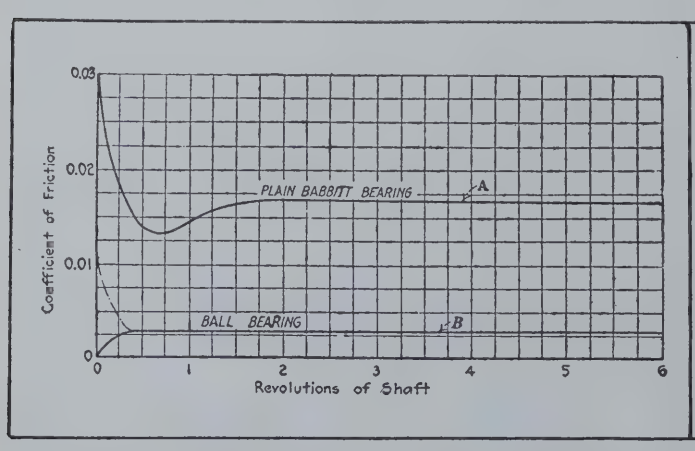


FIG. 6—FRICTION COEFFICIENTS OF A PLAIN AND A BALL BEARING

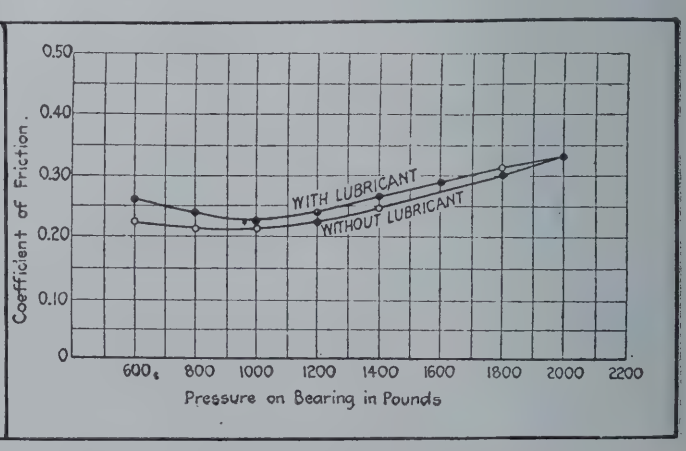


FIG. 7—FRICTION COEFFICIENT OF A BALL BEARING

conform quite closely to the above specifications. In connection with lubricating greases, however, the problem is more difficult. Many of the greases now on the market are entirely satisfactory for general purposes, but lack certain characteristics which experience shows to be highly important for successful ball-bearing lubrication.

A large number of greases contain lime soap as thickeners, a few are of the soda-soap type, while others are a combination of both. The lime greases are valuable in that they can be used without harmful results where moisture is present. Their consistency, however, is more easily changed by heat than greases of the soda type.

Suitable specifications which insure the production of lubricants suitable for ball bearings without putting any undue burden on the lubricant manufacturer are as follows:

Free acid (calc. as oleic acid), maximum, 0.10 per cent; free alkali (calc. as sodium hydroxide), maximum, 0.10 per cent; free lime (calc. as calcium oxide), maximum, 0.5 per cent; neutral saponifiable oil, maximum, 1.10 per cent; viscosity of mineral oil (minimum 200 sec., Saybolt universal, 100 degrees Fahr.), and abrasive particles (sand, etc.), absent.

Ball bearing manufacturers are quite agreed that the limit of free acid in a grease should not exceed 0.10 per cent calculated as oleic acid, and there are plenty of greases available which meet this requirement.

It is essential that the grease be comparatively free from unsaponified fatty oil, or as expressed in the analyses, "neutral saponifiable oil." This specification is imposed because the unsaponified fatty oil has a tendency to become rancid or develop an acidity with age in service, particularly when operating at high temperatures. We have established a limit of 1.0 per cent, and the above tables show that this can be met in most of the compounds which are suitable in other respects.

High Grade Mineral Oil is Best

One feature of grease lubrication which cannot be too highly emphasized is the importance of using a high-grade mineral oil conforming to the tests for purity as previously outlined. A grease may be perfect in every other respect, yet if a poor grade of mineral oil is used, the life of the bearing will be shortened.

In view of the high polish necessary on ball bearings, the elimination of abrasives such as sand particles, etc., is manifestly important.

It is also desirable to keep the free-lime content of the grease down to a minimum as any excess detracts from the lubricating qualities of the grease. Experience indicates that 0.5 per cent is a desirable limit. In some of the greases that the author has examined, small lumps of free lime were discovered to be distributed throughout the grease.

The highest-grade ball-bearing greases are put through a milling process after compounding. This treatment insures very intimate mixing of all constituents and pulverizes any chance impurity to an impalpable powder.

Microphotographs of various greases are reproduced in Fig. 8. *A* shows the crystals of calcium sulphate obtained from lime-soap grease; *B* crystals obtained from a soda-soap grease; *C* crystals obtained from a lead-soap grease and *D* crystals obtained from a potash-soap grease. Further investigations should be made to obtain data so that lubricating-grease specifications may be standardized.

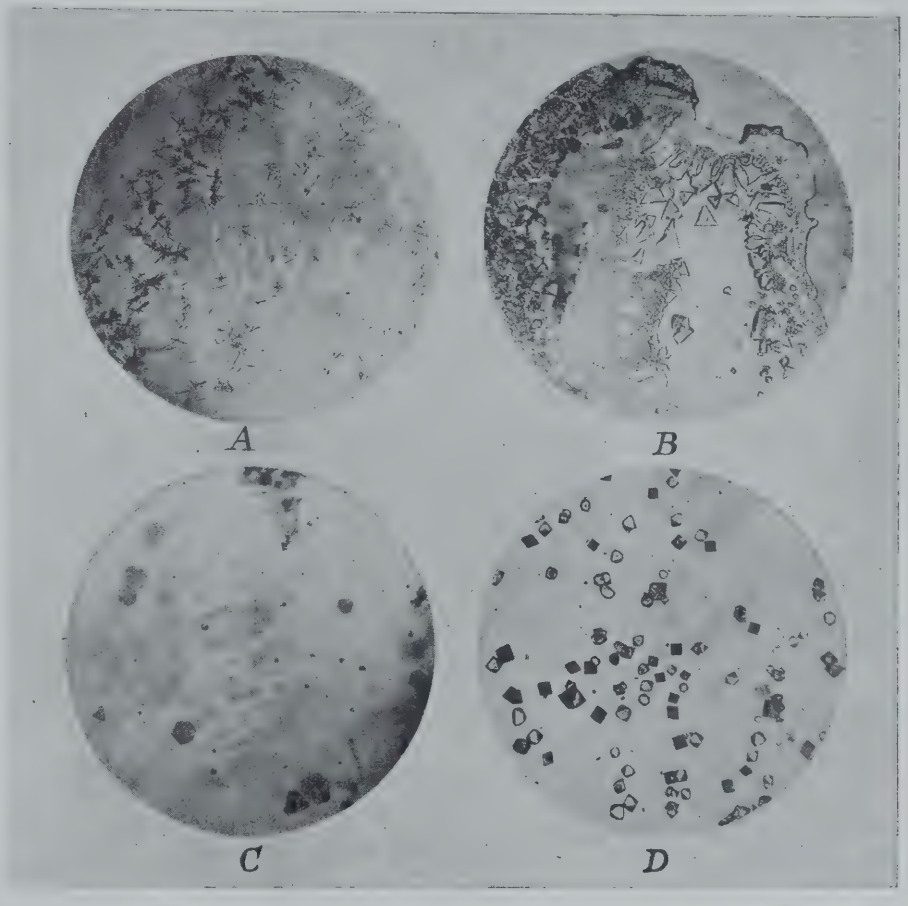


FIG. 8—MICROPHOTOGRAPHS OF VARIOUS TYPES OF GREASES

Book Review

Foundry Practice, a text book for molders, students and apprentices, by R. H. Palmer; cloth; 390 pages, 5 by 8 inches; published by John Wiley & Sons, Inc., New York, and furnished by THE IRON TRADE REVIEW for $3 net.

The second edition of this book has just been published, much of the text has been rewritten and subject matter has been added. The additions include a description of the rigging and flasks and details the processes of securing and pouring molds to produce large propeller wheels economically. Other new matter in this edition deals with the patterns, flasks, cores, molding, setting and securing cores, gating pouring, and testing the iron for locomotive slide valve cylinders.

As in the previous edition this book goes thoroughly into the question of molding in its every phase. Green-sand molding is considered first, and methods are described for molding irregularly shaped patterns including gears. Pit molding, floor molding and bench molding also are described. Dry sand work and loam molding are fully detailed. After the subject of making and setting cores is finished, the questions of molding machines, sand and metallurgy of iron are presented. Under metallurgy might be classed the chapters on iron and its composition, the treatment of castings while cooling, mending broken castings, and the chapter on the cupola and its operation. In the back of the book is a glossary giving definitions of foundry terms and a number of tables containing useful data for the foundryman.

Organizing Modern Stores Department System Simple, With Few Form Cards

BY M. H. POTTER

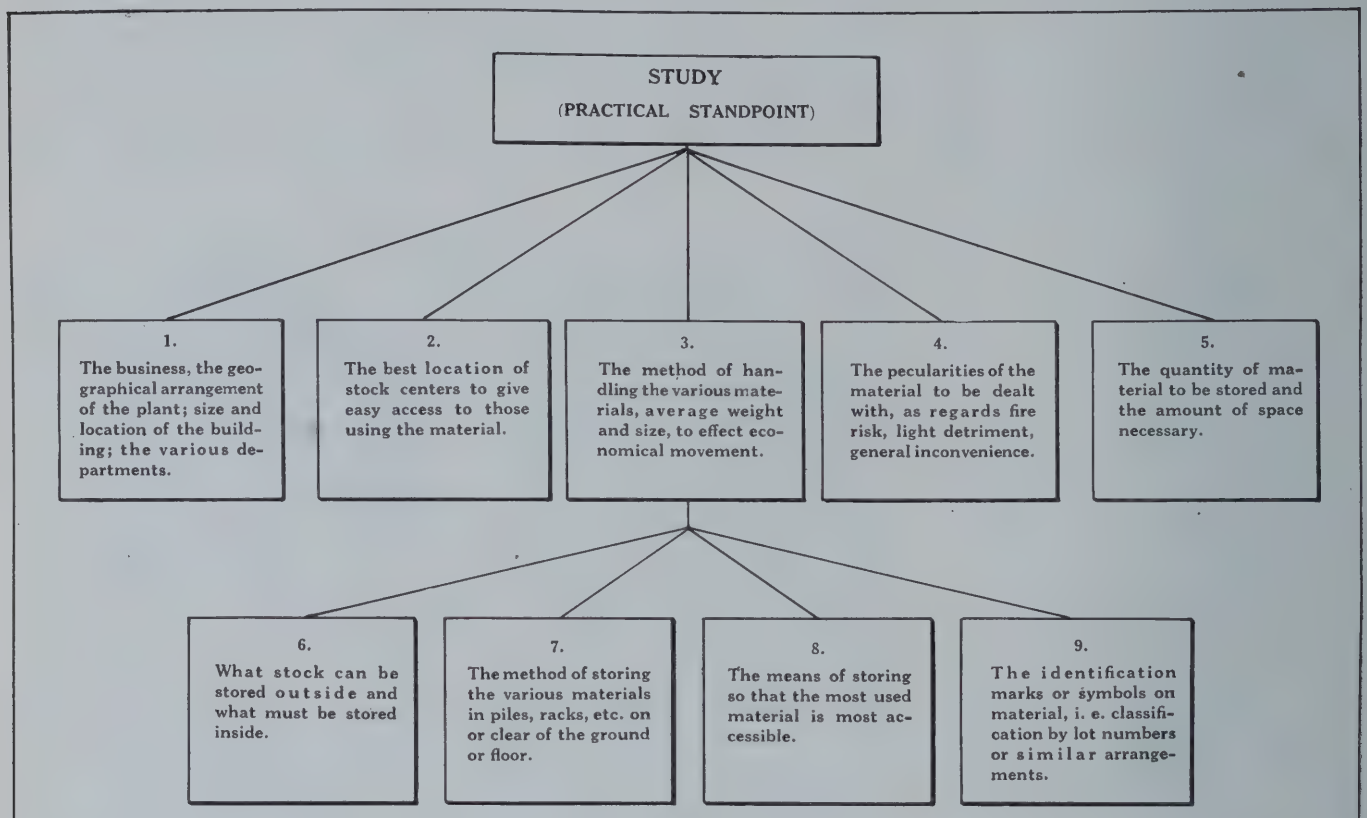


FIG. 1

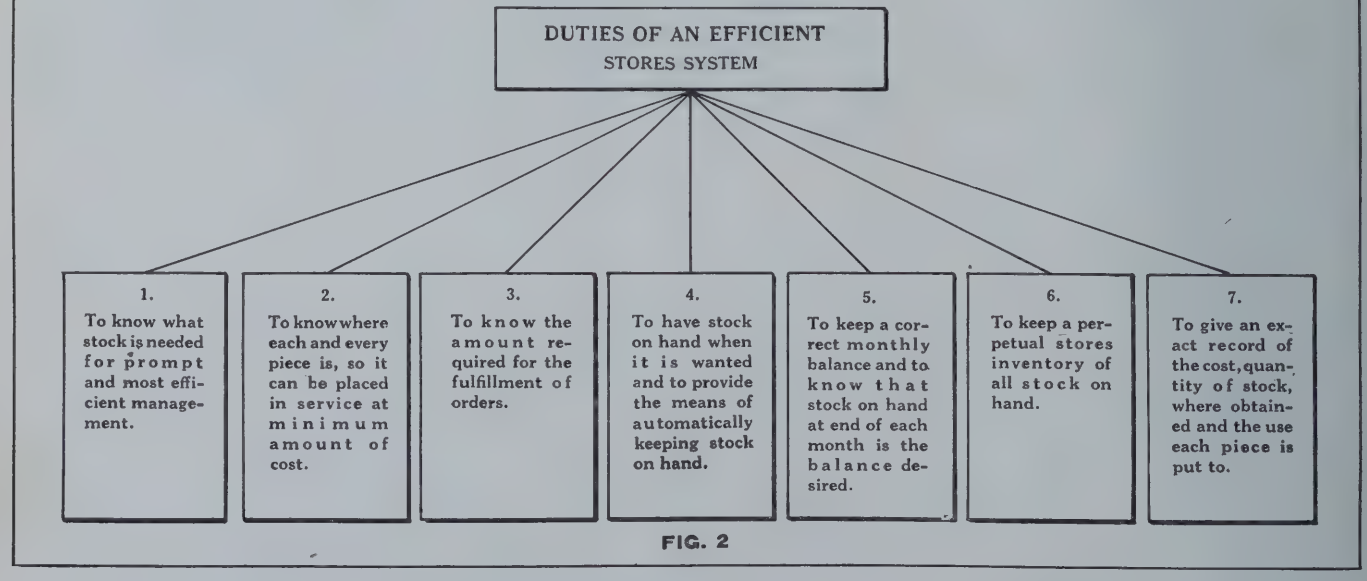


FIG. 2

ALTHOUGH the importance of an efficient stores system in manufacturing plants is generally acknowledged, many organizations lose much time in locating material, and also allow much material to go to waste owing to the lack of a little attention to this matter. An elaborate or expensive system is not necessary, but the establishment and maintenance of a satisfactory system require practical study, analysis of conditions, and the keeping of several card forms. Once in operation, the system may be easily maintained without trouble.

STORES CARD

ITEM			ORDER LOTS OF	AVER.	MIN.
SECTION	SPACE	REMARKS—			

Date	Quantity Ordered	Purchase No. or Job No.	Quantity Delivered	Price (Each)	Balance	Balance (Valve)

FIG. 3

MATERIAL CARD

No. DATE 191

DEBIT		CREDIT	
Quantity	Description	Price	Total

FIG. 4

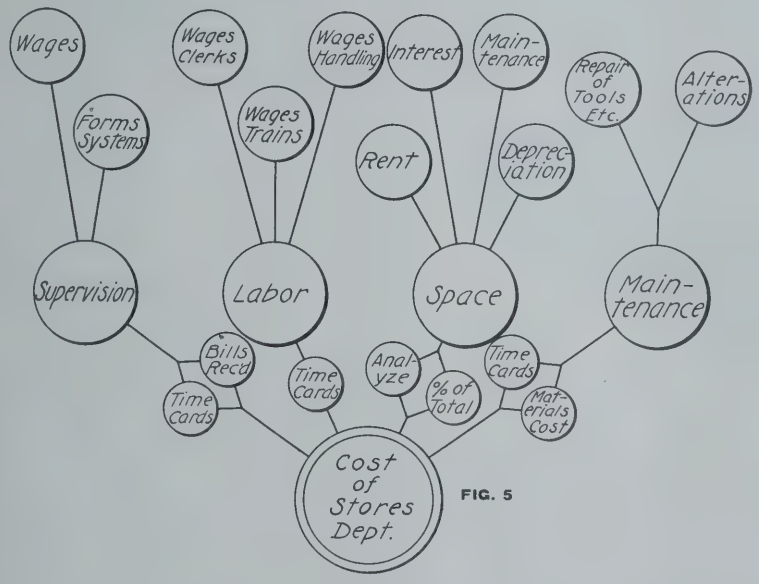


FIG. 5

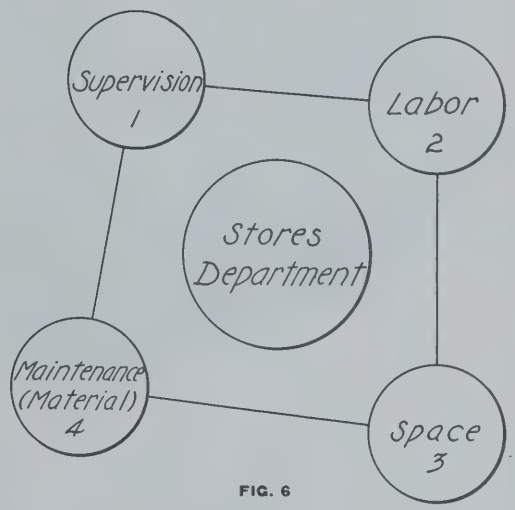


FIG. 6

The accompanying diagrams set forth in concise form the duties of an efficient stores department and the lines along which a practical study of its establishment and operation will proceed. These points should be carefully considered in order that important features be not overlooked and the department become only a makeshift, while it may just as readily be made to serve the full scope of its purpose.

The stores card not only serves to locate materials, but also provides a means for keeping account of the materials on hand and their market or cost value. Each stores card give the name and a brief description of the piece of material; location of stock and the minimum and maximum quantities which may be drawn from it. The material card is used to record the quantity, description and value of the stock on hand at the end of each month. It is filled in at the end of the month by the stores clerk.

In keeping a record of the cost of such a department the diagrams relating to cost factors and accompanying this article will prove helpful.

Figures issued by the United States geological survey for the first six months of 1919, show that zinc produced from domestic ore was 247,584 tons and from foreign ore, 7918 tons, a total output of 255,502 tons, as compared with 260,664 tons in the last half of 1918 and 257,263 tons in the first half of that year. It has been calculated that consumption during the first half of 1919 was 159,501 tons. In addition to

the zinc produced from ore, a bulletin issued by the survey states that 7328 tons were redistilled from zinc ashes, skimmings and drosses. The bulletin further states that many zinc smelters have been dismantled during the last year and a half and many others abandoned. The total number of retorts at plants at which there were some operations during the first half of the year is 158,988, compared with 224,778 on June 30, 1917. The number in operation June 30, 1919, was 82,000 compared with 123,500 at the end of 1918 and 204,500 at the end of 1916.

Develops Porcelain for Industrial Use

ONE of the remarkable achievements attained by British industry under the pressure of war was the application of high class porcelain to laboratory and steel works use. Until the emergency of war intervened British manufacturers had been hesitant in entering the field of industrial porcelain on account of the high reputation then accorded the German product. The annual importation of German laboratory equipment totaled a large amount annually, which was peremptorily stopped by the war.

Because of the special laboratory work which became necessary soon after the outbreak of the war and because of the urgent needs of steelmakers, producers of explosives, and others, a number of porcelain manufacturers of Great Britain turned their efforts toward developing a product of sufficient refractoriness to withstand the exacting demands of pyrometry work.

One of the first firms in England to engage in this work was the Worcester Royal Porcelain Co., Ltd., which until the outbreak of the war had confined its facilities to making high grade porcelain for artistic and domestic purposes. A considerable amount of research work was necessary in order to find material which could be reduced to a perfectly vitrified, nonporous state and which at the same time would be refractory when exposed to high temperatures. It was equally necessary to discover glazes which could be applied to the body material without cracking or breaking during rapid heating and cooling as in the case of pyrometer tubes and other laboratory supplies of this kind. That this company has been successful in its efforts is indicated in a recent report made by Walter Rosenhain, director of the national physical laboratory, Teddington, in which the British-made article was subjected to parallel tests with the porcelain of Berlin. In each case the British product compared favorably with the foreign ware and in many instances demonstrated its superiority. As a result of the success achieved, many British steel works now are using pyrometer tubes, crucibles, capsules, funnels and numerous other laboratory requisites made in the United Kingdom.



FIG. 1 (LOWER)—MEASURING PORCELAIN PYROMETER TUBES
FIG. 2 (UPPER)—MAKING CRUCIBLES FOR LABORATORY WORK

The porcelain is prepared from a combination of china clay, Norwegian felspar, various flints, etc., carefully calcined to get rid of superfluous matter. The grinding alone occupies about 40 hours. Iron and steel particles are extracted from the moisture by magnetic means and powerful cloth and wood presses are used to get rid of superfluous moisture. The mixture is then passed through a sieve of extreme fineness. The baking and glazing operation requires unusual skill and decided accuracy.

In testing the refractory porcelain, laboratory experts decided that the three reagents most likely to attack the porcelain were strong sulphuric acid at the boiling point, a 10 per cent solution of caustic soda at from 90 to 100 degrees Cent. and a 10 per cent solution of sodium carbonate at from 90 to 100 degrees Cent. Each of these tests were continued for four hours. Concentration of the reagent by evaporation was prevented in the last two tests by conducting the experiments in a closed oven. The same volume of liquid was used in each case and the areas wetted were calculated. From these results the amount of material dissolved of 100 square centimeters of wetted surface was determined. In the case of the Berlin porcelain the area wetted was 176 centimeters; the alteration in weight, 0.0016 grams and the loss per 100 centimeters was 0.0009. With the British ware the wetted area was 209 centimeters, the alteration in weight, 0.0016 grams; a gain in this case of 0.0008.

In Fig. 1 porcelain pyrometer tubes are being measured and in Fig. 2 crucibles in progress of manufacture are shown.

A.S.M.E. Undertakes New Work

After Devoting Considerable Attention to Labor Problems, Society Adopts Statement of Principles and Lays Foundation of Machinery For Studying Subject of Industrial Relations—Seven New Officers Elected

ALTHOUGH the subject of industrial relations frequently has appeared on the programs of the past annual meetings of the American Society of Mechanical Engineers, the first definite move committing the society to active participation in the work of studying and helping to adjust present day problems of industrial unrest was taken Thursday at the close of the session of the third day of the fortieth annual meeting at the Engineering Societies' building, New York. From the first day of the meeting, which was unusually well attended, the interest of the majority of engineers centered upon the various phases of the labor problem and continued in increasing intensity until late Thursday when it culminated in formally adopting a statement of principles, authorizing the appointing of a committee to study the agencies of productivity, and taking other action calculated to create the machinery for setting the society to work on the problems of industrial unrest.

At the first session of the meeting, held Tuesday evening in the auditorium, M. E. Cooley, dean of school of engineering, University of Michigan, and retiring president of the society, delivered the annual presidential address. The election of new officers was announced and honorary memberships were conferred or announced. A business session was held Wednesday morning, and in the afternoon simultaneous sessions on appraisal and valuation, aims and organization, and gas power were held. In the evening a meeting was held to commemorate the thirtieth anniversary of the death of John Ericsson and of Cornelius H. D. Lamater, who collaborated with Captain Ericsson in much of his work.

The industrial relations session, which opened Thursday morning, reconvened in the afternoon and continued simultaneously with sessions on machine design, power machinery, and textiles. Three sessions held at the same hour on Friday morning covered transportation, machine shop practice, and general topics. The entertainment features included the annual reunion and dance, held Thursday evening, and numerous inspection trips to points of interest in and near New York.

Urges Employers to End Antagonism in Industry

PREDOMINATING the entire convention and far surpassing any other topic in point of interest aroused, the subject of industrial relations held the attention of an audience which taxed the capacity of the auditorium Thursday morning and after recess discussed various phases of the problem until late in the afternoon in another assembly hall. The discussion was introduced early Thursday by Frederick P. Fish, chairman, national industrial conference board, who delivered a brilliant address on the causes of industrial unrest and their remedy. In introducing this subject Mr. Fish declared that the fundamental difficulties in the present situation are largely historic. Fifty years ago, he said, there were no large industries and inasmuch as almost all employers were in daily contact with their workmen, there were no opportunities for misunderstandings. During the past 50 years this condition has changed with the introduction of power driven machinery, the utilization of electricity, and the organization of large industrial establishments. During the last 30 years, of this half-century, the energies of engineers and employers have been devoted largely to developing mechanical details and the machinery of organization. As a result of this concentration, the United States leads the world in the ability of its manufacturers to organize industry in large units.

However, in devoting their attention to eliminating physical difficulties, the employers neglected the public interest and the subject of employment relations. It is their neglect of these two important factors which has brought on the present situation, emphatically declared Mr. Fish.

Point of View is Wrong

Referring to the part played by politics in the present period of unrest, the speaker stated that the point of view of the government in dealing with workmen has been wrong. Instead of cajoling workmen as has been the practice of the government, labor should have been approached in a manner which would have enabled the two agencies to work in harmony. Admitting that labor unions have done some good, Mr. Fish declared that they have been guilty of the crime of intimidating workmen, appealing to mob rule, disrespecting the law and depressing production. These policies, fostered by labor unions have been the means of accentuating the need of reform and have brought the attention of employers to the subject.

Unfortunately, stated Mr. Fish, labor unions have progressed on the principle that the less work performed the better is the cause of unionism. In the United States unions have not been able to establish the closed shop but in England 90 per cent of the industry was in control of the closed shop. These conditions enabled the average American workman in 1913-1914 to do from three to four times as much as the average English workman. In England, at the outbreak of the war, it was necessary to get the unions to revoke the principle of low production on the promise to return to prewar conditions at the close of the war.

Unionism is not sound because it surpasses production and freedom of contract. The closed shop would be fatal.

There can be no panacea by the way of legislation or of revolution. This was particularly brought out in the recent election in Massachusetts where labor voted for governor-elect Coolidge because of his stand for law and order. This proves, claimed Mr. Fish, that labor is true to the United States when the workmen understand the issue.

Since the present situation cannot be improved by law or by the change in the social structure, employers must instigate the move for reconciliation. Employers must organize their industries so that they can know their employes, learn their aspirations, listen to their complaints, and meet them on terms of equality—but not equality of power and capacities.

Both employers and employes must be taught that no one gains from the suppression of production. There are 450,000 industries in the United States.

Of these 98 per cent are small, and in these plants it is only necessary for employers to understand their men. In the larger plants the problem is an individual one. If employers in large companies devote as much time, attention, and painstaking study to the subject of industrial relations as they do to the mechanical and technical details of business, the present conditions would soon vanish.

The shop committee, claimed Mr. Fish, although new, has great possibilities. Supply and demand never again can be the sole dictator of wages. In the future, capacity, skill, speed, etc., must be factors in determining wages. The proper hours of labor are the longest hours per day compatible with good health. Conditions must govern the hours of work and it is not fair to state that the 8-hour day fits all cases of employment. That the 8-hour day does not satisfy workmen in many cases is proved by frequent strikes in which the strikers demand the opportunity to work overtime.

Cut Unemployment to Minimum

As another means of meeting antagonism, employers must strive to cut down unemployment as much as possible. In time of depression, employers should make every effort to hold their men as long as possible and to keep their heads in time of panic or industrial prosperity. Employment of men must be conducted in accordance with the principle of securing the right man for the right job. An employment department should be inaugurated to intelligently employ men. Employers should take an interest in the permanency of the jobs of their employes.

The recent war showed that organization possessed of the proper spirit of co-operation and teamwork achieves the greatest results. This has been true in all lines of human endeavor and it will prove equally true in industry. Employers must do away with the present antagonism existing in business and must get ready to inoculate the organization in their plants with the healthy spirit of co-operation and teamwork. Mr. Fish expressed the belief that employers now are ready for this movement.

Following the address of Mr. Fish, A. L. DeLeeuw, consulting engineer, New York, presented a paper on wage payment which appears elsewhere in this issue. A paper on systems for mutual control of industry by William Leiserson, formerly chief, division of labor administration, United States department of labor, was read by Calvin E. Rice, secretary of the society. In a noteworthy address on profitsharing, entitled, "What May We Expect of Profit Sharing in Industry?" Ralph E. Heilman, dean, school of commerce, Northwestern university, Chicago, declared that there are great opportunities for profit sharing in industry. He called attention to the fact that the subject of profit sharing has experienced a revival of interest during the past few years. To be successful, profit sharing must justify itself and must show economic results. It is best used in plants where work is not easily measured; as a means for retaining employes and for reducing labor turn-over, and for creating interest and rivalry among men holding managerial positions.

Professor Heilman pointed out that the higher the rank of employes participating in profit sharing, the greater is the opportunity for results. Moreover, in case of business depression the worker in the rank-and-file becomes suspicious when his share of the profit dwindles to a low figure, whereas the salaried man in a managerial position who is familiar with business conditions, thoroughly understands why profits are low and is more likely to do his best to counteract the effects of business depression. According to the speaker, profit sharing for salaried employes above the rank of foreman has unlimited possibilities.

New Officers

President

FRED J. MILLER

Member of technical advisory committee of war claims board, Washington, D. C.

Vice Presidents

JOHN ROBBINS ALLEN

Director research bureau, American Society of Heating and Ventilating Engineers, Pittsburgh.

ROBERT H. FERNALD

Professor of dynamical engineering, University of Pennsylvania, Philadelphia.

EDWARD C. JONES

Chief engineer, Pacific Gas & Electric Co., San Francisco.

Managers

ELBERT C. FISHER

Vice president, Wickes Boiler Co., Saginaw, Mich.

DEXTER S. KIMBALL

Professor industrial engineering, Cornell University, Ithaca, N. Y.

EARL F. SCOTT

President, Earl F. Scott Co., Inc., Atlanta, Ga.

Treasurer

WILLIAM H. WILEY

President, John Wiley & Sons, Inc., New York.

Discuss Shop Committees

Following the talk by Professor Heilman, the meeting was thrown open for general discussion of the subject of industrial relations. George Nicoll Barnes, British representative at the recent international labor conference, Washington, pointed to the fact that the relations between employer and employe today differ from those of years ago in that the average workman is better educated than formerly and has a better grasp of current events. Mr. Barnes stated that employers should study the problem of utilizing to better advantage the intelligence of workmen. He expressed the belief that profit sharing does not appeal to workmen except under certain limited conditions.

A number of interesting types of shop committees were briefly outlined by several speakers at the morning session. According to one speaker fear of unemployment is an important factor in the present labor situation. Harry Alexander, president, Harry Alexander, Inc., New York, in discussing the subject of profit sharing briefly outlined a plan whereby workmen were given a certain rating based upon the following: Loyalty, 60 points; judgment, 15 points; ability, 15 points, and speed, 10 points. Under this system 10 per cent of profits is assigned to the workmen, but efficiency adjustments based on the ratings already mentioned determine the amounts for each. Seventy per cent of the amount devoted to efficiency adjustment is divided among two first rate men; 20 per cent among three second rate men, and 10 per cent among five third rate men. In this manner the flat profit-sharing bonus is diminished or increased by the efficiency adjustment. Mr. Alexander presented slides showing the distribution of profits according to the plan outlined by him.

Foremen Should Be Trained

Owing to the fact that lack of time prevented full discussion of all subjects brought up in the morning session, the industrial relations meeting reconvened in the afternoon. George P. Hemstreet, Hastings Pavement Co., Hastings-on-Hudson, N. Y., declared that engineers must be patient in the present situation. They must teach that production is a basic factor and that no aggregation of capital and no organization of labor can be greater than the government. Because workmen live more closely with their foremen than with any other representatives of employers it is important that foremen know their men more intimately. There should be no excuse, asserted Mr. Henstreet, for a foreman not knowing each of his men by name.

Harrington Emerson, efficiency engineer, New York, discussed the paper on wage payment presented in the morning by Mr. De Leeuw. According to Mr. Emerson, it is not feasible for employers and employes, especially in units as organized today, to fairly arbitrate their differences. Each party cannot help but feel that the other is intent upon driving a hard bargain. What is needed, declared Mr. Emerson, is a referee eminently

qualified to decide what is just. Under the present conditions there is no adequate unit of measurement and labor and capital in compromising usually do so at the expense of the public.

Another speaker called attention to the fact that distribution of goods is a factor which should be considered in conjunction with the present industrial situation. He advocated the establishment of a system of priority similar to that employed during the war which would prevent the waste effort now devoted to unessential industries.

Following this discussion, L. P. Alford, chief of staff, *Industrial Management,* again brought to the attention of the meeting a resolution which had been tabled at the early morning session. Mr. Alford explained that the document, which appears elsewhere in this article, was formulated by the New York section of the society after considerable discussion. Its adoption by the section was unanimous and it was submitted to the council of the society, which suggested that it be presented to the society at large. Following the motion a lively debate ensued, which continued until late in the afternoon. A number of speakers objected to the statement of principles on the ground that a number of terms in the last two paragraphs are vague and misleading. A number of queries were made regarding the real definition of the expression "credit capital" and a number of speakers requested an explanation of the term "intrinsic law."

The discussion was marked by considerable emphasis on detail and it was at all times apparent that with one exception all persons participating in the discussion were in hearty accord with the principles involved. It was only after the statement in question was carefully explained and questionable phrases satisfactorily amplified that the original motion, stripped of its numerous amendments, was brought to vote. Closely following the passing of this motion, another was introduced authorizing the council of the society to appoint a committee to be known as the committee on agencies of productivity to study the following: Invested savings, credit capital, organized labor, unorganized labor, employers, managers, society as a whole, and economic and productive intelligence service. This motion was quickly carried and immediately following it, another resolution committing the society to ground work plans for undertaking the task of thoroughly investigating the subject of industrial relations was considered and adopted.

Among those who participated in the discussion relative to these three motions and who were largely instrumental in passing them were E. S. Carman, chief engineer, Cleveland Osborn Mfg. Co., Cleveland; Harrington Emerson, efficiency engineer, New York; Robert Thurston Kent, New York; Frank B. Gilbreth, president, Frank B. Gilbreth, Inc., Providence, R. I.; Ira N. Hollis, president, Worcester Polytechnic institute, Worcester, Mass., and A. Ferguson, New York, who was largely resonsible for a part of the resolution adopted by the New York section.

Read Many Technical Papers

MANY different topics were discussed in the eight sessions devoted to technical subjects. Wednesday afternoon at a joint session with the American Society of Refrigerating Engineers, methods of appraisal and valuation were discussed. David H. Ray, director of laboratories, United States signal corps school, New York, presented a paper on appraisal and valuation methods in which he pointed out the injustice of some methods of valuation of public utilities now employed. M. E. Cooley, retiring president of the society, read a noteworthy paper on "Development of Project," written by the late F. B. H. Paine. In this paper the author shows that the development of project involves the conception of plan, determining of scope, preliminary design, estimate of operating expense, prospectus, development of financial plans, legal considerations, negotiations with banks and negotiations with state or other government for franchises, etc. Dean Cooley also read an abstract of a paper on "The Construction Period," by H. C. Anderson, University of Michigan, Ann Arbor. In an unusually comprehensive paper dealing with price levels and values, Cecil Elmes, Sanderson & Porter, Chicago, emphasized the importance of a knowledge of economic and exchange values for engineers. Mr. Elmes illustrated his discussion by a number of interesting charts showing comparisons of price levels and values during several critical periods in the

State Engineers' Creed on Industrial Relations

FOLLOWING is the text of the declaration of the engineers' view covering the industrial relations situation formulated by the New York section of the American Society of Mechanical Engineers and adopted by the society Thursday after an all-day session devoted to the subject of labor, employment and profit sharing:

Social and industrial unrest result from the fact that human relations have not kept step with economic evolution.

Competent directive management of essential enterprises is the logical solution. Such management must be free from autocratic control, whether by capital or by labor.

Sharp social or industrial disputes are no longer private. Society is affected, therefore such cases must be subject to the decision of authorities based upon intrinsic not arbitrary law.

Industry and public utilities must serve the people. There is no room for special privilege of capital or of labor. Strikes, irregular employment, or arbitrary acts of ownership or of management are harmful, not alone to the immediate parties but to society as a whole.

Productivity and public service are absolutely essential.

On account of the peculiarly intimate familiarity of engineers with industrial problems our responsibility is great.

Therefore, we, engineers and members of the American Society of Mechanical Engineers, declare that the following essentials are established by facts and experience, urge all of our members to uphold them, and invite other engineers to co-operate with us in having them unanimously recognized; namely:

EVERY important enterprise must adopt competent productive management, unbiased by special privilege of capital or of labor, and disputes must be submitted to authorities based upon intrinsic law.

Credit capital represents the productive ability of the community and should be administered with the sole view to the economy of productive power, that is, it should be granted only to those who are able to render valuable service.

financial history of the United States.

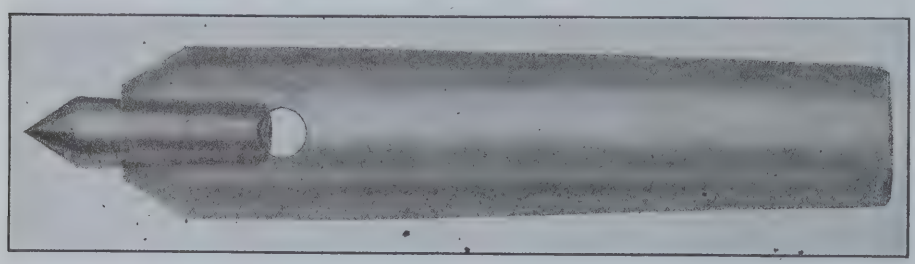
A session on gas power was held simultaneously with the session on appraisal and valuation. E. B. Blakely, engineers, Sears, Roebuck & Co., Chicago, presented a paper describing the Hvid engine, a recently developed internal combustion unit which uses kerosene for fuel. Mr. Blakely claimed that this engine is particularly economical in the use of fuel and points out that this is important at this time when it is estimated that there are in use in this country burning gasoline nearly 4,000,000 automobiles, 250,000 trucks, 500,000 motor boats, 75,000 tractors and 750,000 farm engines.

Thursday afternoon sessions were devoted to machine tool, power machinery and textiles. The final sessions of the convention, held Friday morning, covered transportation, machine shop and general engineering topics. At the machine shop session, H. R. Trotter, S. K. F. Ball Bearing Co., Hartford, Conn., presented a paper on the lubrication of ball bearings, an abstract of which appears in this issue. H. L. Unland, General Electric Co., Schenectady, N. Y., gave an illustrated talk on electric arc welding; C. H. Bierbaum, Lumen Bearing Co., Buffalo, read a paper dealing with common errors in designing and machining bearings; and B. F. Waterman presented a paper on "Thread Forms for Worms and Hobs."

At the general session W. E. Moore, W. E. Moore & Co., Pittsburgh, spoke on modern electric furnace practice as particularly related to foundries, and Alfred Musso, the Coast Cooling & Engineering Co., New York, presented a paper on an investigation of the strains in the rolling of metal. An abstract of Mr. Moore's paper appears elsewhere in this issue, while Mr. Musso's paper was reproduced in the issue of Dec. 4.

Confer Honor on French Engineer

The first session of the annual meeting was held Tuesday evening in the auditorium. M. E. Cooley, retiring president, delivered the presidential address in which he dwelt largely with problems confronting the society. The electing of new officers, as shown in an accompanying table, was announced. Honorary membership was conferred upon Charles de Freninville, consulting engineer, Creusot works, France, and announcement was made of the election to honorary membership of Auguste C. E. Rateau, chairman, board of directors, Rateau, Battu & Smoot Co., France. M. de Freninville has taken a prominent part in engineering in France. In response to the address made when honorary membership was conferred upon him, he stated that the world looks to America for vast production. "On my recent tour of the country," he said, "I have seen great industrial plants which have been created by the war and I saw evidences of the ability of the American people to produce manufactures of all kinds, in large quantities. Although we regard the United States is a great producing nation, a large output is not inconsistent with the highest mechanical skill. With the advantage of efficiency, machinery, and high grade tools American industrial plants are in a position to produce on a large scale, and this can be done by paying moderately high wages."



THE HIGH-SPEED STEEL CENTER MAY BE REPLACED WITHOUT REMOVING THE SLEEVE

At Wednesday morning's business session the report of a joint conference committee representing the societies of civil, mining, mechanical and electric engineers was discussed. The report favors a general organization of engineers for public activities. Shortly before the war the four engineering societies organized the engineering council, a body which has represented the entire engineering profession in its public relations. It is now proposed to extend the scope of that council by creating a national organization by which the engineering and allied technical professions may become more active in their service to the public. Among the objects to be obtained are the licensing of engineers, the forming of a national service committee, the forming of a national department of public works, the conservation of national resources, and an international affiliation of engineers.

At the memorial meeting held Wednesday evening to commemorate the eightieth anniversary of the beginning of Capt. John Ericsson's work in this country, addresses were made by Rear Admiral Bradley A. Fiske, United States navy; W. A. F. Ekengren, minister to United States from Sweden; Lewis Nixon, commissioner of public works, borough of Manhattan, New York, and H. F. J. Porter, consulting engineer, New York. Speaking of the work of Ericsson, Rear Admiral Fiske said: "Weighed in the light of the results that followed, the MONITOR stands out as not only the greatest of Ericsson's achievements but as one of the greatest achievements in the progress of the human race."

Preceding the annual reunion and dance held Thursday evening, lectures on phases of aviation were delivered by Col. E. A. Deeds, chief of equipment, division of air service; and Col. Thurman H. Bane, chief of engineering division of air service, United States army. Colonel Deeds, under whose personal direction the Liberty engine was developed, spoke on the future of aviation and Colonel Bane, who is the commanding officer at McCook field, spoke on the present development of military airplanes.

During the convention a number of members and guests of the society took advantage of inspection trips to points of interest in and near New York, including the Seventy-fourth street plant of the Interborough Rapid Transit Co., the Equitable building and power plant; Brooklyn navy yard; and plant and flying field of the Curtis Airplane Co., Garden City, L. I.

Machine Tool Center Has Replaceable Point

A new center for lathes, milling machines, gear cutters and grinders has been made by the Federal Steel Co., Detroit, and consists of a high-speed steel center or point and a hardened steel sleeve. The sleeve which acts as a holder is permanent and is not subject to wear, it holding the center securely in a tapered hole.

The advantages claimed for the new center are that the high-speed steel point can be changed in about 10 seconds without removing the sleeve from the tool and that the cost of a new point is comparatively low. Being made of high-speed steel, the centers do not readily burn or wear off. The sleeves are supplied ground to any of the standard tapers.

Under the name of the Springfield Cylinder Regrinding & Piston Works, H. C. Wisenburn, of Mittineague, Mass., has started business at 343 Walnut street, Springfield, Mass.

Steel Exports Continue Decline

October Tonnage Falls to Low Figure After Slump in September—Pig Iron Exports Are Lowest Since April, 1918 as Result of the Steel Strike —Imports Also Show Falling Off

CONTINUING the slump of September, exports of iron and steel in October fell to the second lowest figure on record for this year, the tonnage for July having set the mark of smallest volume. Although a gain in imports was noticed in September when exports fell, the former also declined during October but not in an appreciable amount. Imports for the month, in fact, were the second largest during 1919, the tonnage of the previous month having set the highest figure since April, 1917.

October exports totaled 302,459 gross tons, a loss of 61,072 tons over the September shipments of 363,531 tons, and a decrease of 16.8 per cent. The latter is just double the percentage decrease of September over August. Compared with the record movement of December, 1917, when 653,344 tons were exported, the October figure represents but 46.3 per cent. Although gains were made in wire rods, structural iron and steel, hoops and bands, ship and tank plates, and barbed wire, the only one of significance was that in structural material which increased from 21,933 tons to 26,641 tons, a gain of 4798 tons. All other products suffered losses, the most severe being in steel billets, ingots and blooms, pig iron, steel rails and sheets and plates. Because of decreased blast furnace output on account of the steel strike pig iron exports with 14,108 tons reached the lowest figure since April, 1918.

Imports with a total of 40,698 tons showed a decrease of 2869 tons over the September figure of 43,567 tons. Several small gains were registered but a large loss in scrap was responsible for the decreased total. The scrap loss was 4995 tons.

Iron ore imports also dropped sharply with a total of 30,386 tons

IMPORTS AND EXPORTS
(Gross Tons)

1916	Imports	Exports
January	15,824	360,102
February	20,279	368,980
March	15,159	438,649
April	20,176	384,452
May	32,114	538,657
June	26,885	515,214
July	14,774	502,330
August	23,255	571,401
September	25,559	643,762
October	30,169	588,892
November	42,545	554,219
December	44,134	580,988
Total	310,891	5,947,646
1917—		
January	40,910	608,281
February	24,947	449,099
March	37,943	606,559
April	48,213	519,397
May	26,479	582,303
June	29,080	629,305
July	28,859	346,393
August	26,129	503,075
September	19,058	499,067
October	14,310	571,868
November	13,995	473,549
December	14,642	653,344
Total	324,565	6,442,240
1918—		
January	12,475	490,259
February	12,941	438,848
March	14,345	379,924
April	11,371	462,887
May	14,387	488,515
June	13,913	418,605
July	11,511	452,759
August	12,520	512,104
September	8,440	473,688
October	15,744	426,767
November	11,582	471,427
December	28,996	356,641
Total	168,225	5,372,424
1919—		
January	16,913	371,570
February	12,302	344,180
March	17,632	367,224
April	16,560	396,813
May	17,885	422,282
June	21,056	561,020
July	28,258	287,685
August	28,987	396,743
September	43,567	363,531
October	40,698	302,459
Total ten months	243,858	3,813,507

IMPORTS VARIOUS ORES AND FERROALLOYS
(Gross Tons)

	October 1919	October 1918	10 months ending October 1919	10 months ending October 1918
Ferromanganese	4,025	200	22,674	26,471
Ferrosilicon	1,601	733	7,235	2,610
Manganese ore	15,863	48,917	285,274	431,299
Tungsten-bearing ore	592	959	6,435	7,021
Nickel ore	2,536	5,803	18,672	51,385
Total	24,617	56,612	340,290	518,786

IRON ORE IMPORTS
(Gross Tons)

From—	October 1919	October 1918	10 months ending October 1919	10 months ending October 1918
Spain	....	....	54,937	15,563
Sweden	5,949	....	61,540	....
Canada	1,040	20,935	11,267	94,705
Cuba	23,397	48,437	198,805	572,414
Other countries	....	1,205	702	1,205
Total	30,386	70,577	327,251	683,887

IRON AND STEEL IMPORTS
(Gross Tons)

	October 1919	October 1918	10 months ending October 1919	10 months ending October 1918
Pig iron	18,381	933	72,328	31,054
Scrap	19,673	8,616	141,900	40,546
Bar iron	106	2	1,354	1,285
Ingots, blooms and billets	1,415	3,438	7,693	33,192
Structural shapes	47	182	790	2,594
Rails	590	1,196	15,256	6,762
Sheets and plates	45	5	761	1,354
Tin and terne plate	3	....	152	32
Tin scrap	386	742	4,585	5,452
Wire rods	52	438	202	7,502
Total	40,698	15,552	245,021	129,773

IRON AND STEEL EXPORTS
(Gross Tons)

	October 1919	October 1918	10 months ending October 1919	10 months ending October 1918
Pig iron	14,108	35,452	285,220	214,125
Scrap	2,335	443	17,014	2,122
Steel billets, ing. & bl'ms.	20,713	125,023	223,675	1,572,375
Wire rods	8,806	11,610	102,619	123,711
Steel rails	43,730	48,242	563,958	374,372
Steel bars	45,136	38,959	477,052	503,066
Iron bars	2,687	6,009	55,812	45,697
Struc. iron and steel	26,641	13,265	322,238	188,407
Hoops, bands and scroll	3,884	3,238	44,318	41,954
Sheets & plates	63,705	66,081	877,980	226,618
Ship and tank plts., punched and shaped	1,114	2,575	11,194	25,166
Tin and terne plate	11,939	14,420	170,169	226,055
Barbed wire	11,712	29,270	82,670	207,892
All oth. wire	16,450	13,394	170,384	132,509
Cut nails	126	152	2,678	3,354
Wire nails	5,319	6,061	81,817	64,146
All other nails incl. tacks	797	1,040	14,661	9,807
Pipes and fit'gs.	19,116	8,322	239,521	126,202
R. R. spikes	1,294	380	22,803	8,337
Bolts, nuts, rivets and wash.	2,520	2,120	35,173	22,226
Horseshoes	52	241	2,953	2,680
Cast radiators	275	161	3,769	2,013
Total	302,459	426,458	3,807,678	4,122,834

EXPORTS PIG IRON AND SEMI-FINISHED
(Gross Tons)

1916—	Pig iron	Semi-finished material
January	19,319	55,315
February	15,061	87,406
March	19,439	107,675
April	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
August	60,264	160,921
September	64,122	163,104
October	92,756	162,669
November	106,781	120,883
December	105,195	162,901
Total	607,236	1,504,563
1917—		
January	69,146	183,656
February	49,018	131,566
March	69,629	193,469
April	44,783	162,209
May	61,112	168,158
June	83,406	190,907
July	32,305	106,085
August	62,083	170,503
September	44,287	148,932
October	47,115	209,667
November	25,733	150,120
December	67,593	203,085
Total	656,210	2,018,357
1918—		
January	20,581	195,385
February	10,540	173,272
March	9,849	144,443
April	11,282	177,128
May	22,567	159,299
June	22,896	139,377
July	20,265	139,612
August	26,028	189,851
September	34,494	135,450
October	35,452	125,023
November	30,825	150,024
December	24,577	63,890
Total	269,356	1,792,754
1919—		
January	36,757	11,594
February	20,340	10,407
March	22,158	8,176
April	17,038	11,488
May	37,087	20,771
June	39,758	46,016
July	42,327	21,318
August	36,071	36,162
September	18,991	37,513
October	14,108	20,713
Total ten months	285,135	224,158

Basing Point Finding Far Away

Drawn-Out Procedure is Indicated as Federal Trade Commission Hears Arguments For and Against Pittsburgh Base on Iron and Steel—Duluth and Birmingham Support Chicago's Claims for Recognition

WASHINGTON, Dec. 9.—Months, some say years, will pass before the federal trade commission will make known its decision on the applications of steel consuming interests for elimination of the Pittsburgh base in determining the delivered price for steel. In the week just passed the commission heard 19 hours of arguments evenly divided for and against the trade practice. Under the laws governing the activities of the commission, the investigation of the subject from now on will be conducted privately and not until after the commission has formally decided to issue a formal complaint against steel producers, taking up the cause of the complaining consumers, will any of its future actions be taken publicly.

Last week's course, like practically every step before the commission so far in connection with the basing point case, was somewhat unusual in that the doors were open for any and all interests to be heard. When the hour for hearing arrived Tuesday, Nov. 2, Claude R. Porter, chief counsel for the commission, met the steel producers, the consumers and their counsel, and informally arranged to divide the time so that each side would have ample opportunity to be heard. After this was done the commissioners, who were engaged in another case, received the groups and, with slight modifications, approved the arrangements. Arguments, more or less informal, began that afternoon and continued daily until one o'clock on Saturday afternoon.

John S. Miller, counsel for the Western Association of Rolled Steel Consumers, was selected as chief spokesman for the applicants and, to the surprise of the steel manufacturers and their counsel, announced that the Birmingham and Duluth interests had joined the Chicago consumers in asking for the elimination of the Pittsburgh base and would not ask for the establishment of separate bases at Duluth and Birmingham. Later, in the course of the arguments, it was practically agreed that an order of the commission stopping the trade practice of basing prices at Pittsburgh would have the effect of making prices f.o.b. mill and during the remainder of the hearing this basis of argument was employed. The trend of the arguments, while friendly and good natured, brought out sharply conflicting theories of economics, the question being, of course, whether continuance of the trade custom or its elimination would be best for the national interest. This, as is recognized, is the point the commission has been asked to determine and large as the question is, with all its ramifications, it is apparent that much time will be required for a full investigation into the claims set up by both those favoring and opposing the practice.

When arguments were concluded last Saturday the case automatically went from the personal attention of the commissioners to that of M. F. Hudson, acting chief examiner. Under his direction every phase, and perhaps more, brought out by the hearing last week will be studied from all angles. It is likely examiners will go into every important, and perhaps some remote, steel-producing and consuming centers and into other trade points where similar trade practices are effective. This will take months and in the end what Mr. Hudson and his examiners discover will be submitted in a complete report to the commission's board of review.

This board, composed of an econo mist and two attorneys, of whom Adrian S. Busick is chairman and the other two are T. M. Robertson and W. T. Roberts, will act upon the examiners' report and submit it to Huston Thompson, the commissioner to whom, under the rules of the commission, the case has been assigned. With the report the board will submit a recommendation of what it believes should be done, but Commissioner Thompson is not bound to follow the recommendation in writing his opinion. This opinion, together with all data in the case, then goes before the commission which, to reach a satisfactory conclusion, may call in the board of review, voting in the end, the majority of the commissioners ruling, whether to issue a complaint and to determine against whom the complaint will be issued.

If no complaint is issued the case, will be dropped and the basing point custom will remain as it is today or, as argued by the counsel for the steel producers, until the natural laws of economics, which they said meant the growth of the Chicago producing district until it is the controling factor in the market, bring about other arrangements. If a complaint is issued, then again months will pass before an order is entered, either dismissing the

Procedure Outlined

WASHINGTON, Dec. 9.—The government's own statement of the procedure in the enforcement of the rules of law declared in both the federal trade commission act and the Clayton act, under which the steel consumers charge the producers with violations in maintaining the Pittsburgh base in establishing prices, is as follows:

"Whenever the commission has reason to believe that any person, etc., has been or is using unfair methods of competition and that a proceeding by the commission would be in the public interest, or is violating or has violated any of the aforesaid provisions of the Clayton act, it shall serve a complaint, with notice of hearing, upon such prices, etc., who shall have the right to appear and show cause why an order should not be made requiring the cessation of the violation of law charged. Other parties, for good cause shown, are allowed to intervene in the proceeding. On hearing had, if the commission shall be of opinion that a violation of the law is shown, it shall serve an order on the person complained of to cease and desist. If such person fails to obey the order of the commission, the latter may apply to the circuit court of appeals to enforce the same, and file a transcript of the record in the case. The court shall then take jurisdiction of the proceedings and have power to affirm, modify or set aside the order of the commission, but the finding of the commission as to facts, if supported by evidence, shall be conclusive. If the court permits additional evidence to be adduced it must be taken before the commission. The only review of the judgment and decrees of the court is by writ of certiorari to the Supreme Court, as provided by law. Any party required to cease and desist from a violation of law may obtain a court review in a similar manner."

complaint or compelling the steel manufacturers to "cease and desist." If the steel people refuse to obey the order the commission may take the case to the circuit court of appeals or if the steel producers prefer, they may make the appeal. From then on the matter is one for the courts.

The arguments made before the commission last week largely were along the lines of the complaints and statements made in the applications and answers filed by the consumers and producers at the invitation of the commission following its conference here last July with E. H. Gary, chairman of the United States Steel Corp., and Judge Miller, representing the western consumers. Opportunity was given for refutation of the charges and countercharges made by either side and this was readily taken advantage of. The commissioners themselves raised point after point as the hearing progressed and much of the questioning and summing up was admitted by counsel of both sides to have helped the presentations.

Those Who Argued Case

Except for two others, who spoke briefly in rebuttal for the complainants, Judge Miller at noon Saturday concluded the arguments in the case. Besides Judge Miller those spokesmen who pleaded for the removal of the trade practice were H. G. Pickering for the Superior Commercial club; Clifford L. Hilton, attorney general of Minnesota; T. T. Hudson, for the joint committee of civic organizations of Duluth; Elliott Cheatham, for the Southern Association of Rolled Steel Consumers and the Southern Association of Steel Fabricators; Charles L. Harold, secretary-manager of the Birmingham Civic association; and others, including George M. Gillett, president of the Minneapolis Steel & Machinery Co.

Richard V. Lindabury, counsel for the United States Steel Corp., opened the argument for the steel producers and was followed in turn by Henry Russell Platt for the Inland Steel Co., Frank H. Scott for the Steel & Tube Co. of America, L. A. Manchester for the Youngstown Sheet & Tube Co., C. W. Wickersham for the Lackawanna Steel Co., Paul D. Cravath for the Bethlehem Steel Co., W. A. Collings of the W. A. Collings Co., Kansas City, Mo.; James Bowron, president of the Gulf States Steel Co., and John Walsh, counsel for the Petroleum Iron Works Co. Other interests were present and represented on both sides, but the speakers were authorized to present the respective arguments of all on either side.

Arguments against the basing point were based chiefly on the theory that it is an arbitrary factor in the delivered price quoted at points where delivery requires less or no freight haul than from Pittsburgh and that by reason of that fact a large number of steel consumers are forced to pay considerably higher prices for their steel at those points than are their competitors situated closer to Pittsburgh. Elimination of this point, it was contended, would, by virtue of the demand in the Chicago district, and lower operating costs, attract producers to Chicago, perhaps to the detriment of Pittsburgh, but in response to a natural, unrestrained economic law.

Opponents of the elimination plea contended that most if not all of the Chicago producers now located there established their plants in and around that point not only because of the low cost factors, but largely because the market price in Chicago is Pittsburgh plus freight, which, also under economic laws, is a natural advantage to producers at Chicago. The opposing sides, by these arguments, brought in conflicting laws, each of which, according to the view, was the natural one and the one which should not be disturbed. It was left to the trade commission to determine which, in its opinion, is the proper one.

The steel producers' counsel stated producing mills and consuming plants have been built because of certain advantages, either the proximity of raw materials or of finished material markets, freight hauls, labor, fuel, and other factors. The consumers admitted this, but pointed out that the increase in freight rates, for example from $2.60 per ton on steel several years ago, to $5.40, at present, Pittsburgh to Chicago, restricts the territory of their output, as far as competing with fabricators in the Pittsburgh district is concerned. The real reason for the complaint, counsel for the steel producers explained, is a natural desire by all consumers for a lower price on steel and that while it may or may not reduce the cost to the manufacturing consumer, it would, if a reduction did come, go into the pocket of the fabricator and not the ultimate consumer's.

Should Serve Public Interest

The public interest in the question is a point on which the applicants dwelt with much emphasis. They argued the commission should consider this. This, the opponents of the elimination plea admitted, is of vital public interest, but, they pointed out, the public interest will be served best by a stability the basing point custom gives than by the confusion they contend will follow its elimination. The applicants charged the "stability" desired by the steel manufacturer is that of price, while counsel for the producer maintained stability of conditions in the industry is what gives and what is wanted. One of the counsel for the producers said "Pittsburgh plus freight" is to the steel trade, both producer and consumer, what the shock absorber is to the automobile.

Problem is Intricate One

It was clear as argument progressed on both sides that the deeper the commission delved into the subject the more intricate it became. The trade practices in marketing wool, cheese, butter wheat, flour and other commodities were cited by counsel and the commissioners themselves and it was stated by some that when the issue is to be finally determined the commission may have to decide for other industries as well as for steel. It may be, one member explained privately, that the commission's private examination into the question may have to take in the other industries even now in order to settle the question justly.

While Commissioner Thompson has been assigned the basing point case for his personal supervision, Victor Murdock, chairman, and William E. Colver, commissioner, sat with him during the week's arguments. The day following Mr. Murdock's elevation to the chairmanship, succeeding Franklin Fort, who resigned because of illness, Mr. Fort, appearing very wan and fatigued, sat with the commission for a few minutes. The entire group of producers, consumers, counsel, etc., arose out of respect when he entered the room.

The board of review, which will pass upon the basing point case before it again reaches the commissioners, is composed of two attorneys and an economist, of whom Adrian S. Busick is chairman. The others are T. M. Robertson, economist, and W. T. Roberts. W. R. Turner is the attorney assisting the board which will also have the help of Dr. Francis Walker, chief economist of the trade commission, whose investigations in the steel cost question are more or less familiar to the steel industry.

Among those attending the argument sessions were Willis L. King, vice president, Jones & Laughlin Steel Co.; G. H. Jones, vice president, the

Inland Steel Co.; James B. Bonner of the United States Steel Corp.; T. K. Glenn, president of the Atlantic Steel Co.; C. R. Robinson, vice president, Lackawanna Steel Co., and others, including presidents and officials of the companies which are members of the complaining associations.

Bureau Would Extend Studies of Steel

WASHINGTON, Dec. 9.—Director Van H. Manning, of the bureau of mines, in his annual report expresses the hope that congress will provide funds enough to enable the bureau to investigate iron and steel problems at its Pittsburgh station. It is pointed out that Pittsburgh is one of the great iron and steel centers of the world and that whenever the necessary funds are made available many lines of investigation can follow with results that should be of much benefit to the industry. The director says the iron industry covers a wide field and has devoted much research to the many problems within its field, hence the bureau of mines has not felt that the problems of iron and steel manufacture demanded as much attention as those of mining or of other metallurgical work. It has investigated the hazards to which workmen are exposed at blast furnaces and steel plants, it is stated, and has published the results of investigations and now it is desired to take up at the Pittsburgh station the work suggested.

Dealing with iron ores, the report says there are deposits throughout the United States which are too low grade to permit profitable smelting at present. If these low-grade deposits could be utilized, Director Manning says, the iron ore reserves of the country would be enormously increased. In order to obtain the iron from these ores the opinion is expressed that it is necessary to do one of two things: (1) Remove enough of the gangue material and impurities to bring the iron content up to the percentage required for profitable smelting, or (2) devise a commercial process for treating ores of lower grade than those being treated by present blast furnace methods.

Work on Ore Beneficiation

At present the bureau's metallurgical work on iron is centered at the Minneapolis station and is being conducted in co-operation with the school of mines, University of Minnesota, and the state mining experiment station. Individuals and corporations are said to have given attention to the beneficiation of iron ores high in phosphorus and sulphur, as well as low in iron, and at least one process has been devised that promises to be highly successful in raising the iron content and removing the phosphorus. Because of this fact, and because the work done by the Minnesota mining experiment station promises to solve the problem of washing and concentrating low grade minable ores, the bureau of mines has not attempted to begin any work on the beneficiation of low grade ores, but is giving its attention rahter to the devising of commercially feasible processes for reduction of those iron ores that are too low grade for blast furnace smelting. Evidently, it is stated, the development of successful processes for the beneficiation of low grade iron ores will assist in solving the second phase of the problem, for an ore might be too low grade for blast furnace smelting, but after beneficiation be high enough in iron for reduction by some other process. Hence, the bureau believes it is justified in studying ways and means of preventing metallic waste, in giving especial attention to new processes for the production of iron, and investigating the merits of processes already suggested.

Manganese investigations showed that in time of war a large part of the manganese needed in this country could be obtained from domestic ores, reductions in imports being met by the development of new deposits of high-grade ore, by the beneficiation of low-grade ores, and by the use of low-manganese alloys made from these leaner ores. A comprehensive bulletin on manganese, its utilization, treatment of its ores, and mining costs is in press.

Coal Crisis Demands Policy of Wisdom

—Secretary Lane

WASHINGTON, Dec. 8.—Able and timely analyses and suggestions are made by Secretary of the Interior Franklin K. Lane in dealing in his annual report with coal, electricity, and petroleum, as the three sources of light, heat and power, and the need for constructive policies affecting their production and distribution. Secretary Lane goes into these intricate problems from both a practical and scientific viewpoint and treats of the fundamentals they involve in a most illuminating way comprehensively pointing out remedies some to come through legislation the adoption of which ought to prove a great boon to industry in assuring more efficient operation, conservation and the averting of such crises as that caused by the coal strike.

Summarizing his report on the three vastly important commodities mentioned, he says:

"It would seem to be our plain duty to discover how little coal we need to use. To do this we must dignify coal by grading it in terms not merely of convenience as to size, but in terms of service as to its power. We should save it, if for no better reason than that we may sell it to a coal-hungry world. We should develop water power as an inexhaustible substitute for coal and if necessary compel the coordinating of all power plants which serve as a common territory. New petroleum supplies have become a national necessity, so quickly have we adapted ourselves to this new fuel and so extravagantly have we given ourselves to its adaptability. To save that we may use abundantly, to develop that we may never be weak, to bring together into greater effectiveness all power possibilities—these would seem to be national duties, dictated by a large self-interest."

The report begins with a discussion of the coal strike immediately after the statement that there will be a reaction against the intense industrialism of the present, "but as it must be agreed that the race for industrial supremacy is on between the nations of the world, America may well take stock of her own power possibilities and concern herself more actively with their development and wisest use."

Secretary Lane explains that "the coal strike has brought concretely before us the disturbing fact that modern society is so involved that we live virtually by unanimous consent." Less than one-half

of 1 per cent of the population of the country, it is shown, quit their work of digging coal "and we are threatened with the combined horrors of pestilence and famine." Showing what might be the state of the country in another 30 days, Secretary Lane inquires as to what is the best way of meeting the situation, seeking to learn how much coal is mined, by whom, its quality, uses, its users, how much less could be mined if conservation were practiced, what better methods have been developed for using coal, who is to blame that so small a supply is on the surface, why people should live from day to day in so vital a matter of fuel supply, and what substitutes can be found for coal and how quickly these may be available.

He makes replies to his own queries, once he has stated that if coal operators themselves had not carried over the statistical machinery developed during the war, "we would have been forced to the humiliating confession that we did not know facts which at the time were of the most vital importance."

More Knowledge is Needed

In a time of stress, it is stated, it is not enough to be able to say that the United States contains more than one-half of the known world supply of coal; that we, while only 8 per cent of the world's population, produce annually 46 per cent of all coal that is taken from the ground; that 35 per cent of the railroad traffic is coal; that in less than 100 years we have grown in production from 100,000 tons to 700,000,000 tons per annum. He says that months since congress was called upon to grant the money that the desired figures might be secured, a committee of the senate finally awoke to this need and indorsed the petition. Secretary Lane states that it is necessary for national stock-taking and that it need excite no fear of a malevonent policy of "conservation," because what is desired is a policy of wisdom in order to know our resources, their availability for immediate use, guarding against waste either through ignorance or wantonness and the prolonging of their life by invention and discovery.

The present strike, makes quite clear, perhaps for the first time, that it is not the coal in the mountain that is of value, but that which is in the yard.

Secretary Lane points out that large storage facilities have not been provided, and says a bit more foresight on the part of the public would certainly have made less sudden the present crisis. He goes into the short work-year of the miners and the reasons therefor, chief of which is "no market" and says the public must accept responsibility for the coal industry and pay for carrying it on the year around.

Secretary Lane says the government should sample and certify coal, so the public would know the kind of coal it is buying and so that coal should sell in terms of capacity to deliver heat. A bill to effect such fuel inspection, it is stated, has been drafted and will be presented to congress.

Taking up the question of saving coal by saving electricity, Secretary Lane says it is three years since congress was urged "that we should be empowered to make a study of the power possibilities of the congested industrial part of the Atlantic seaboard, with a view to developing not only the fact that there could be effected a great saving in power and a much larger actual use secured out of that now produced, but also that new supplies could be obtained from both running water and from the conversion of coal at the mines instead of after a long rail haul. A stream of power paralleling the Atlantic from Richmond to Boston, a main channel into which may run many minor feeding streams, and from which diverge an infinite number of small delivering lines—the whole an interlocking system that would take from the coal mines and the railroad a part of their present burden and insure the operation of street lights, street cars, elevators and essential industries in the face of railroad delinquencies—this is the dream of our engineers, and a very possible dream it has seemed to me; of such value, indeed, that we might well spend a few thousand dollars in studying it, not with the thought that the government would construct or operate even the trunk line, tion of the engineering and financial but that it might so attract the attenworld as to make it a reality."

After reciting accomplishments of other nations in this district, Secretary Lane says the theoretical maximum quantity of hydroelectric power that can be produced in the United States has recently been estimated by Dr. Steinmetz, who calculates that if every stream could be fully utilized throughout its length at all seasons, the power obtained would be 230,000,000 kilowatts (320,000,000 horsepower). It is clear, Secretary Lane adds, that only a fraction of this absolute maximum can ever be made available. He states that the geological survey estimates that the water-power in this country that is available for ultimate development amounts to 54,000,000 continuous horsepower. The census of 1912 showed that the country's developed water power was 4,870,000 horsepower, about 9 per cent of the maximum power available for economic development and less than 2 per cent of the total that may be supplied by the streams as estimated by Dr. Steinmetz.

Alexander's Appointment, Cause of Surprise

Washington, Dec. 9.—The senate is expected to confirm without any debate the action of the President in nominating Representative Joshua W. Alexander as secretary of commerce to succeed William C. Redfield. His nomination came as a surprise and set at rest reports that the President intended to name a business man for the position. Mr. Alexander has expressed reluctance at leaving congress, but said he would resign as soon as the senate had confirmed his nomination. Mr. Alexander has been a member of congress since 1904 and became chairman of the committee on merchant marine and fisheries in 1910.

Nelson B. Gaskill, Burlington, N. J., was nominated as a member of the federal trade commission to succeed Chairman J. Franklin Fort, who resigned owing to illness. Victor Murdock, who has been vice chairman, has automatically become chairman.

Edgar E. Clark, of Iowa, has been renominated as a member of the interstate commerce commission.

Palmer's Attitude Wins Foundrymen's Approval

Washington, Dec. 9.—Commendation of Attorney General Palmer for his attitude toward radical labor is carried in a resolution adopted by the National Founders' association at New York, Nov. 20, and which was presented through a committee from the association.

The resolution follows:

Whereas, the forces of unrest in this country, fostered by alien propaganda and abetted by union labor leaders of radical tendency, are at this time seeking the overthrow of the government of the United States, and, as a means to that end, are attempting to crush industry through widespread strikes and monopolies of labor, and

Whereas, it is fitting that all loyal citizens give encouragement by word and deed in its stand against such lawless acts,

Resolved, that we, the National Founders' association, in convention assembled, do renew our allegiance to the principles embodied in the constitution and laws of our country and do pledge ourselves to assist the government in its efforts to suppress sedition and disorder;

Resolved, further, that we, as citizens, express our deep debt of gratitude to A. Mitchell Palmer, attorney general of the United States, for his timely effort and loyal and courageous action in defense of American principles and against the disloyal and unlawful activities of the United Mine Workers of America and their allies.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Reading Iron Co., Reading, Pa., manufacturer of wrought iron pipe, has been reorganized under the direction of President Leon E. Thomas. A notice of Mr. Thomas' election with a sketch of his business career was published in the March 27 issue of THE IRON TRADE REVIEW. W. Woodward Williams, who as noted in the July 24 issue of this publication, was appointed general manager of the company, succeeds George Schuhmann, who retired Aug. 1, because of ill health. The appointment of Craig Geddis as advertising manager and W. E. Dunham as production engineer, was noted in this column under date of Oct. 30. Edgar F. Blessing is metallurgical engineer.

Purchases by the company include the plant of the George B. Lessig Co., Pottstown, Pa., bringing an additional monthly muck bar capacity of 2600 tons, and 10 acres of land adjoining its tube works have been bought from the Empire Steel & Iron Co.

Important changes have been made in the sales policies of the Reading company. Branch offices for district sales representatives have been established at Philadelphia, New York, Pittsburgh, Chicago, Cincinnati and Dallas, Tex. Additional branches which now are being located, will be established in the near future.

* * *

UNDER the direction of John O'Brien and David Goldich, the Universal Bearing Bronze Co., Windsted, Conn., has started the manufacture of aluminum castings, rough and finished, in a portion of the old Goodwin & Rintz factory buildings.

* * *

TO DOUBLE its capacity the Iowa Steel & Iron Works, Cedar Rapids, Iowa, has added a new foundry building. This covers a space 72 x 140 feet, and has been equipped with up-to-date machinery. In addition several modernizing changes are being made in the office.

* * *

A HALF million dollar syndicate is being formed in Cleveland to underwrite stock of the Murray Ohio Mfg. Co. The J. W. Murray Mfg. Co. of Detroit, said to be the largest manufacturer of hoods, fenders and sheet metal parts for motor cars recently announced its intention of establishing a plant in Cleveland.

* * *

THE Model Yacht Co., Worcester, Mass., a $10,000 Massachusetts corporation, has been organized for the construction of toy ships. Henry H. Forbes is president, treasurer and general manager, with Floyd A. Ramsdell, general manager of the Worcester Film Corp., and Linwood M. Erskine, attorney, directors. The company has been organized to fill a growing demand for toy boats formerly supplied by Germany.

* * *

ORGANIZED by Frederick C. Van Derhoof, formerly general manager of the automobile department of the Standard Steel Car Co., Butler, Pa., the Bacon Motors Corp. has a capital of $1,500,000. It will build a light 6-cylinder automobile, which will be marketed next spring at a low price. The company has acquired a 21-acre site at New Castle, Pa., and a new factory, 100 x 500 feet. H. L. Archey, Philadelphia, has been named sales manager.

* * *

ANNOUNCEMENT is made of the organization of the Miller Mfg. & Machine Co., of Centralia, Wash., where the company has opened a plant at 616 North Tower avenue. W. J. Miller is president, J. G. Jones secretary and treasurer, L. B. Jones general manager and C. S. Sheldon manager. The company will have a completely equipped shop to do mill and automobile machine work, grinding cylinders, will make high-speed piston rings, and do oxy-acetylene welding.

* * *

THE largest structural job awarded in Milwaukee in several years, involving 4500 tons of shapes, was let during the week by the A. O. Smith Corp. to the Worden-Allen Co., which is now completing the erection of a 600-ton building for the same interest. The new letting is for the second unit of a plant enlargement project by which the Smith Corp. will add 400,000 square feet of manufacturing space at an estimated cost of more than $3,000,000, including a large list of machine tools and other equipment.

* * *

PROPERTY, 356 x 600 feet, in Evanston, Ill., has been purchased by the International Lubricants Co., Ltd., 350 North Clark street, Chicago. It adjoins the Mayfair cut-off of the Chicago-Northwestern railroad. The first unit of a 3-story brick and concrete building, 50 x 100 feet, now is nearing completion. All equipment, machinery, storage tanks, pumps, etc., rapidly are being installed, with the expectation that the manufacture of lubricating greases and oils will commence, shortly after the first of the year.

* * *

THE Cleveland Tractor Co., Cleveland, has entered into a contract with the government of the province of Quebec for an unlimited number of tractors. Quebec is to finance the sale of the tractors to farmers in promoting greater farm efforts.

The company has reached a production of 8000 tractors of the crawler type since it began operation four years ago. The output this year was double that of the previous year, when production was rushed to help in wartime farming. The present factory space is being doubled.

* * *

THE Billings & Spencer Co., Hartford, Conn., is to increase its capital stock from $750,000 to $1,000,000, the $250,000 to be used for an expansion of the plant. The directors of the company, at a meeting Dec. 2, elected two new officers, J. B. Sehl being promoted from assistant treasurer to second vice president, and A. W. Gray being elected to succeed Mr. Sehl as assistant treasurer. Mr. Sehl has been with the company seven years, the last three as assistant treasurer. He also is factory manager. Before going to Hartford he was manager and treasurer of the Precision Die Casting Co., Syracuse, N. Y.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

BUSINESS and property of the O. S. Walker Co., Worcester, Mass., manufacturer of grinding machines and magnetic chucks, has been sold by Oakley S. Walker to a group of men prominently connected with the machine tool and supply business. The reorganization has been completed and the new management has assumed control. The name of the company will remain unchanged. The sale includes the company's plant on Rockdale street, Greendale, Mass. The officers of the company now are: President, W. B. McSkimmon, Boston; vice president, J. H. Drury, Athol, Mass.; general manager, secretary and treasurer, Clayton O. Smith, who until recently was sales manager of the Norton Grinding Co. The third director being William F. McCarthy, Boston. Isaac F. Williams remains as manager.

The new ownership brings increased financial resources for the Walker company, which means the development and increase of the business.

* * *

RECENTLY formed at Detroit, the American Auto Parts Co. will build and operate a plant which will have an immediate capacity of 2500 tons of automobile springs per month. Most modern mechanical and heat treating equipment will be utilized and the furnaces, other heat treating equipment and power system were designed and constructed by the McCann-Harrison Co., Cleveland, engineer and contractor, and this company will supervise their installation. The building construction is being handled by the Thompson-Sterrett Co.

* * *

REORGANIZATION recently was completed by the Pittsburgh Rivet Co., Pittsburgh, by the election of the following officers: William J. Reitz, president; Jacob H. Reitz, vice president; John F. Lehrian, treasurer; and Roy A. Reitz, secretary. The company has leased a tract, 100 x 100 feet, adjoining its plant at Thirty-eighth street and the Baltimore & Ohio railroad and will erect an addition. It expects to be in the market shortly for equipment for the extension and plans to increase the number of its products by the addition of some specialties.

* * *

W. E. MOORE & CO., engineers, Pittsburgh, now are busy designing a new carbide plant for the Farmers Standard Carbide Co., Freydenburgh Falls, N. Y. A 46-foot waterfall will be developed to a capacity of 3700 horsepower. A 3-phase carbide furnace, made by the Pittsburgh Electric Furnace Corp., Union bank building, Pittsburgh, will be installed, together with crushing, screening, canmaking and packing machinery, to handle an output of 30 tons per day. W. B. Ragatz, of the Union Carbide Co., has been engaged as works manager.

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THE Lumen Bearing Co., recently organized at Youngstown, O., for the erection of a plant to manufacture bearings of an improved type, has elected the following officers: William H. Barr, president and treasurer; C. H. Bierbaum, vice president; N. K. B. Patch, secretary. The officers and the following comprise the board of directors: Thomas Parrock, H. B. Parrock, Kester Barr, L. B. McKelvey, J. F. Bonnell and B. G. Parker. The company is erecting a plant, the first unit of which will be 105 x 140 feet, and expects to produce its first castings April 1, next.

* * *

CAPITALIZED at $100,000, the Pacific Iron & Steel Co., Inc., 610 Laughlin building, Los Angeles, will equip a foundry and machine shop in addition to its present steel plant. Construction will start soon on these two buildings and the company will be in the market for foundry and machine shop equipment at an early date. Included in the latter is one large boring mill, several large lathes, a few small punches, etc. Officers are: President, D. M. Ward; vice president, A. J. Anderson; secretary and treasurer, C. E. Bradburn. The plant is located at 2637 to 2665 Humboldt street.

* * *

THE Judson Mfg. Co., San Francisco, with works at Emery, Cal., about Jan. 1 will have ready for operation a new 19-inch breakdown mill and a 16-inch 5-strand bar mill, driven by an 800-horsepower motor. The mill will take from a 6 to an 8½-inch ingot. A new continuous furnace for No. 1 10-inch mill will be 125 feet long. The No. 5 mill, 5-stand, will have a hot bed 150 feet long. A 50-ton open-hearth furnace now under way will be completed shortly after Jan. 1, it is thought. The Judson company also will have a new rolling mill shortly.

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THE Eastern Foundry Co., which operates a gray iron plant at Jamesburg, N. J., for casting piano plates and backs as well as other castings for musical instruments, has been incorporated with an authorized capital of $350,000. The incorporators include Thomas J. Watts, Mattawan, N. J., and William B. White, South River, N. J. The office is at 152 Main street, South River, N. J., where the company is about to erect a branch plant. It will contain about 40,000 square feet of floor space and will be devoted to piano plate and other specialties that now are produced at the company's plant at Jamesburg.

* * *

ORDERS booked during October by the Chicago Pneumatic Tool Co., Fisher building, Chicago, are stated to be in excess of any previous month since the signing of the armistice. This is true as well of the English and German subsidiaries. While the German subsidiary of the Chicago Pneumatic Tool Co., Chicago, was seized by the German government and operated by it under "compulsory administration" since the entry of the United States into the war, this now has ended and the management transferred back to the Tool company through the courts of commerce. This information was conveyed by cable recently from the company's representative now returning from Berlin. He states that the German company was well managed during the war and while it now is operating on a satisfactory basis, arrangements have been made to increase its production materially.

Plans Refinancing

Inland Steel Co. Outlines Extensive Stock Changes—Growth is Marvelous

Chicago, Dec. 9.—Preliminary steps have been taken by the Inland Steel Co. for complete refinancing and reincorporation. The recommendations of the board of directors will be presented at a special meeting of stockholders Dec. 16, when they undoubtedly will be adopted.

The Inland company now is incorporated under a Delaware charter for $30,000,000, of which $25,019,500 is outstanding. The shares have a par value of $100. New stock of $25 par value is to be issued and exchanged for old stock on the basis of four to one. The company then will be incorporated under the new Illinois law, with stock of no par value, which will be exchanged share for share for the $25 Delaware stock. The new stock will be tax exempt in Illinois. Dividends at the rate of 8 per cent a year have been paid since Sept. 1, 1915. The dividend rate on the new stock is expected to be $4 per year, which would be equivalent to 16 per cent on the present stock. The New York stock exchange will be asked to list the new issue. Present stock is now in the unlisted department of the Chicago exchange but is inactive as it is closely held and commands a high price. The Illinois corporation will have a capitalization of 1,200,000 shares, of which 1,000,780 will be exchanged for the old stock, leaving 249,220 shares to be disposed of as the board of directors decide.

The measures outlined probably will not mark the completion of Inland's new financing. Further developments will await the forthcoming decision of the Supreme court on the taxability of stock dividends as income. At the end of the last fiscal year the company had a surplus of $14,301,973, held cash and Liberty bonds in excess of $10,000,000 and reported receivables nearly $5,000,000 in excess of payables. In addition the current year's earnings have been good.

From a junk pile to one of the largest integrated units in the steel industry of the country with total resources close to $100,000,000, is the history of the wonderful growth of the Inland Steel Co. The company's spectacular rise has been due to the work and management of its builders —the Block Brothers, P. D. and L. E., and George H. Jones, who founded the company, and Alexis W. Thompson, R. J. Beatty and E. M. Adams, who joined the staff of executive officers about 17 years ago.

Starting in 1893 as a small rerolling plant at Chicago Heights, handling mostly scrap iron, the company struggled along, making headway slowly until the three prosperous steel years immediately preceding 1911. Then the capital stock had risen to $6,000,000 and the company was in such a financial position that it began to branch out. In the next two years the stock was increased to $10,000,000. Then the war greatly stimulated the company's expansion. In 1917 by a stock dividend the capitalization was raised to $30,000,000.

The company controls all materials and stages in the making of steel—iron deposits, lake vessels, coal mines, coke ovens and finishing plants at Indiana Harbor and Chicago Heights, with a capacity of more than 1,000,000 tons a year. During the period of the war a large amount of earnings was turned back into plant extensions. Still further expansion is under way. The company recently bought some 500 acres of land between its Indiana Harbor plant and Gary on which are to be erected more mills and furnaces.

Various Plants Started at Marysville, Mich.

Detroit, Dec. 9.—The Wills Automobile Co., headed by C. Harold Wills and John R. Lee, former executives of the Ford Motor Co., this city, has started building operations on its 4200-acre town site at Marysville, Mich., 52 miles north of here. The first units of the Wills motor car factory, in which an 8-cylinder automobile will be produced by next June, now are ready for structural steel. These units include the main assembly plant and a heat-treating building.

Nearby the steel work on the United States branch of the Pressed Metals Co., Ltd., of Canada, is going up while the Detroit Edison Co. is clearing ground for a $1,500,000 power and light plant.

About a dozen other industrial organizations have purchased sites in Marysville, plans for which provide for a model industrial city of wide streets, boulevards, parks and many other recreational facilities calculated to attract workmen desirous of more ideal living conditions than can be found in large industrial communities at present. Plans provide for an ore unloading dock on the St. Clair river, on which the town site is laid out, which will permit the biggest ore carriers on the lakes to discharge cargoes.

Storage Space

Of Refractory Manufacturers Filled and Some Curtailment is Forced

Pittsburgh, Dec. 9.—While shipments of refractories to the steel plants and blast furnaces have improved with the steady breaking up of the strike of the iron and steel workmen, considerable room for improvement still exists. Common labor is none too plentiful at the iron and steel plants and because of this condition shipments are going forward in no greater volume than they can be promptly handled.

A lack of specifications has resulted in considerable curtailment of brick plant activities lately, for manufacturers in a number of sections of the country continued making and piling during the first few weeks of the strike and now have no further storage capacity. Shortage of coal also is affecting production especially in the Middle West and at plants which do not own coal mines. The prices which have been in effect for several months still hold and seemingly no effort is being made to advance them.

Refractories

(Per 1000 f. o. b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 41.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Per Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Per Net Ton)

55 per cent	$ 40.00 base
76 per cent	100.00 base

To Cast by Machine

A pig-casting machine will be installed at the Atlantic furnace of the Republic Iron & Steel Co., New Castle, Pa. The molten metal at present is cast in sand pig beds. With the completion of the pig machine, the company will be in a position to operate the Atlantic stack on merchant iron when the output is not required for other purposes.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WILLIAM A. THOMAS has resigned as president of the Brier Hill Steel Co., Youngstown, O., of which he has been the executive head since the organization of the company in 1912. Mr. Thomas' resignation is to become effective Jan. 27 when the annual meeting of the board of directors is to be held. It is understood Mr. Thomas informed the board of directors at its meeting last January of his desire to retire at the end of the current year, and be relieved of executive responsibilities. Mr. Thomas' identification with the iron and steel industry dates back over a period of 20 years or more. Prior to that time he was engaged in the dry goods business for a period of about 15 years. When the American Sheet Steel Co. was organized Mr. Thomas entered the sheet business, organizing the Niles Iron & Steel Co., Niles, O. After carrying on operations under this title for about four years he and his brothers purchased the holdings of the other partners and reorganized the company with increased capital. The reorganized company was given the name of the Thomas Steel Co., and carried on expanded operations until it, with other interests, was joined with the Brier Hill Steel Co. Mr. Thomas' administration as president of the Brier Hill Steel Co. has been marked by the rapid expansion of the company's works.

Martin Stuit has been made treasurer of the Standard Malleable Iron Works, Muskego, Mich.

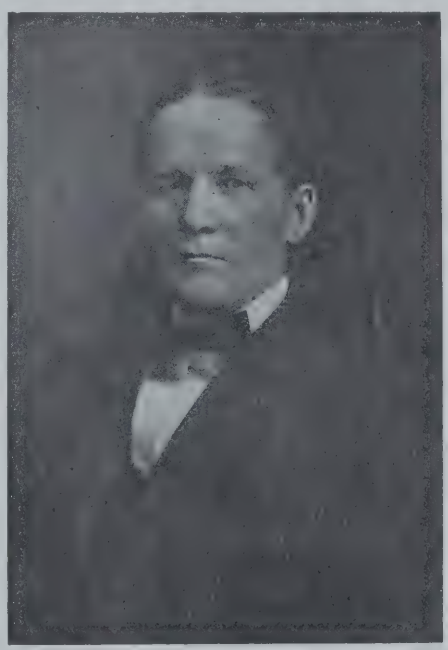
W. H. Lutz, for 35 years connected with the Reading Iron Co. and superintendent of its Ninth street rolling mills for many years, has resigned, effective Jan. 1, because of ill health.

Arthur H. Jones has been made Seattle sales agent for the Consolidated Steel Corp., 165 Broadway, New York City, with headquarters at 1419-20 L. C. Smith building, Seattle, recently established.

James Gilchrist has been placed in charge of the branch office established at 136 Liberty street, New York City, by Nielson & Maxwell, Ltd., Glasgow, Scotland, iron and steel merchants.

Raymond Fisher, for several years chief civil engineer of the plant of the Pittsburgh Crucible Steel Co., Midland, Pa., recently resigned to accept a position with the H. W. Johns-Mansville Co.

J. H. Creighton recently was elected secretary-treasurer of the Monongahela Iron & Steel Co., Pittsburgh, succeeding George B. Meanor Jr., who retired from the company to go into the laboratory supply business at Birmingham, Ala.



WILLIAM A. THOMAS

Joseph G. Butler Jr., vice president of the Brier Hill Steel Co., Youngstown, O., and director of the Youngstown Sheet & Tube Co., suffered a severe scalp wound and a fractured rib when he was run down by an automobile near his home, Dec. 5. Despite his 79 years he is making rapid recovery.

C. T. L. Edwards resigned as superintendent of blast furnaces of the Bethlehem, Pa., plant of the Bethlehem Steel Co., Dec. 1. Mr. Edwards entered the employ of the Bethlehem company in 1912, becoming superintendent of blast furnaces in June, 1918. He has been succeeded by G. H. Hohl, formerly assistant superintendent of blast furnaces.

Fred P. McLyar, who for the past eight years has been foreman of the hot-mill department at the Guernsey works, American Sheet & Tin Plate Co., Cambridge, O., has resigned to become superintendent of the Newton Steel Co., Newton Falls, O.

J. Ramsey Speer has resigned as president to become chairman of the board of the Pittsburgh Iron & Steel Foundries Co., Pittsburgh, and Charles McKnight, treasurer of the company, has been elected to succeed him as president. Mr. Speer served the company as vice president from 1899 to 1911, and as president from 1911 until Nov. 1 of this year. Mr. McKnight has been treasurer and a director of the company since 1899.

William M. Corse has resigned as technical superintendent of the Ohio Brass Co., Mansfield, O., to become general manager of the Monel Metal Products Corp., Bayonne, N. J. The Monel company, which specializes in monel metal and aluminum bronze castings formerly was the Bayonne Casting Co. Prior to his connection with the Ohio Brass Co., Mr. Corse was associated with the Titanium Bronze Co., Niagara Falls, N. Y., and the Detroit Lubricator Co., Detroit. In 1908 he was elected secretary-treasurer of the American Institute of Metals, now the Institute of Metals division of the American Institute of Mining Engineers, and became president of that society in 1917.

John H. Dwight, for seven years vice president and general manager of the Belle City Malleable Iron Co. and the Racine Steel Casting Co., Racine, Wis., has tendered his resignation, to take effect Jan. 1, and will join the Saginaw Products Co., Saginaw, Mich., as vice president in charge of production. The Saginaw company is a division of the General Motors Corp. Mr. Dwight went to Racine from Chicago in 1904 and with the exception of five years was associated with malleable and steel companies. For a time he was secretary of the Racine Rubber Co. and afterward manager of the wagon department of the Mitchell Motors Co., rejoining the Belle City company in 1912.

New Officers of Engineers

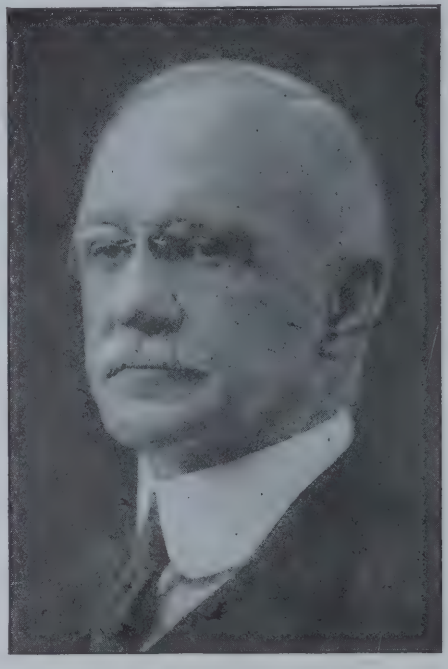
Elected at Fortieth Annual Meeting, Held at New York City, Dec. 2 to 5

FRED J. MILLER, who was elected president of the American Society of Mechanical Engineers, at its fortieth annual meeting at New York last week, succeeds M. E. Cooley, dean of schools of engineering, University of Michigan, Ann Arbor, Mich. Mr. Miller was born in Ohio in 1857. After a high school education, supplemented by personal study and special instruction, he served a 4-year apprenticeship in the machinist trade and for a number of years was employed in various capacities in machine shops.

He contributed largely to mechanical journals and finally became a member of the editorial staff of the *American Machinist,* where he remained for 20 years. The last 10 years of that period, he was chief editor and also vice president of the publishing company. After retiring from the journalistic field, Mr. Miller became general manager of a group of typewriter factories, in which capacity he served for nine years. He then was commissioned a major in the ordnance department of the United States army, being stationed during most of his service at the Rock Island arsenal. While there he organized and was at the head of the civilian service division of the arsenal. He later became attached to the office of the director of arsenals at Washington, being assigned to duty at the plant of the Bethlehem Steel Co. He then was attached to the office of the secretary of war. At present he is a member of the technical advisory committee of the war claims board at Washington.

Mr. Miller became a member of the American Society of Mechanical Engineers in 1890 and has always taken an interest in its affairs. He has served on various important committees and was a member of its council from 1904 to 1907, inclusive. He also served two terms as the society's representative on the board of the United Engineering societies, where he was chairman of three successive committees entrusted with the work of reorganizing and perfecting the Founder societies' business affairs and finances.

John Robins Allen, Robert H. Fernald and Edward C. Jones were elected vice presidents at this meeting. Mr. Allen was born in Milwaukee in 1869 and was graduated from the University of Michigan in 1892. For one year he was affiliated with the Industrial Works, Bay City, Mich., and for two years with the L. K. Comstock Construction Co.



FRED J. MILLER

He then served various educational institutions in important capacities.

Robert H. Fernald, who likewise was elected vice president, has held various professorships in educational institutions. He was instructor and assistant professor from 1893 to 1901 at Case School of Applied Science, Cleveland. From 1907 to 1912, he was professor of mechanical engineering, holding that same position from 1902 to 1907 at Washington university, St. Louis. Since 1912 he has been professor of dynamical engineering at the University of Pennsylvania, Philadelphia. Since 1910, Professor Fernald has served as consulting engineer of the fuel division of the bureau of mines, Pittsburgh.

Edward C. Jones, a third vice president, has had a prominent affiliation with the gas and electric power industry. He is now chief engineer of the Pacific Gas & Electric Co., of which he now is chief engineer.

Elbert C. Fisher who was made manager, was born in Scranton, Pa., in 1865. He was graduated from Cornell university in 1890. For one year, he was employed in the locomotive repair shop of the Delaware, Lackawanna & Western railroad, Scranton; a like period for Westinghouse-Church-Kerr & Co., Chicago, and then was manager of the Chicago office of the Murphy Iron Works. In 1895 he became associated with Wickes Bros., Detroit, and was made vice president and general manager of the Wickes Boiler Co., in 1908, a position which he now holds.

Dexter S. Kimball, also elected manager, served his apprenticeship in the shops of Pope & Talbor, Port Gamble, Wash., and the Union Iron Works, San Francisco. In 1898 he became designing engineer for the Anaconda Mining Co., and for three years served as assistant professor of machine design at Sibley college, Cornell university. He then became works manager of the Stanley Electric Mfg. Co., Pittsfield, Mass. In 1904, he returned to Cornell as professor of machine design and construction and since 1915, has occupied the chair of industrial engineering.

Earl F. Scott, a third manager elected, after serving as instructor in mechanical engineering at Vanderbilt university, was occupied with drafting and mechanical designing for several years. From 1905 to 1908, he was affiliated with A. M. Lockett & Co., New Orleans, La., contracting mechanical engineers. During that time, Mr. Scott had charge of the engineering department, designing and supervising the construction of a number of large irrigation, power and steam-heating plants. Five years subsequent to 1908, Mr. Scott had charge of the Atlanta, Ga., plant's engineering department, of the General Fire Extinguisher Co. For one year he served as assistant manager of the Atlanta office of the Griscom-Russell Co. Since 1914, Mr. Scott has been president and manager of Earl F. Scott & Co., Inc., and has designed and supervised the installation of equipment in cotton mills of the south.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

OAKLEY S. WALKER, who as noted in THE IRON TRADE REVIEW of Dec. 4, retired recently from the O. S. Walker Co., Worcester, Mass., founded by him and of which he was president and treasurer for a long period, has been succeeded in the former position by W. B. McSkimmon, Boston. J. H. Drury, Athol, Mass., is vice president of the reorganized company; Clayton O. Smith is general manager, secretary and treasurer. William F. McCarthy, Boston, also is on the board of directors.

Mr. Walker occupies a prominent place in American machine tool circles as a designer and manufacturer of grinding machines. In this work he was a successful pioneer and was the inventor and developer of the magnetic chuck. He was a machinist by trade and early revealed a genius for machine design. Before located in Worcester in 1886, he had manufactured drill grinding machines in a small way in Watertown, N. Y., his native city. His first three years in Worcester, were spent in the Washburn shops, where he designed and perfected a twist drill grinding machine which since has had a wide sale. From 1890 to 1897 he was employed as grinding machine designer for the Norton Co., then the Norton Emery Wheel Co., and developed various machines which have played a considerable part in the development of the business of the Norton Grinding Co.

While at work on a magnetic chuck brake, Mr. Walker observed the power magnetized metal asserts to hold to it other metal and from this evolved the magnetic chuck. When Mr. Walker established his first shop on Union street, out of which grew the O. S. Walker Co., the major portion of his time was devoted to the production of this type of chuck. Later he commenced the manufacture of grinding machines as a separate business until the shops were combined and removed to the Samuel Porter building on Union street. In 1900 the present shops were erected and the business since has been carried on in Greendale.

Clayton O. Smith, the new manager of the O. S. Walker Co., was graduated in 1892 and 1893 as mechanical and electrical engineer respectively from Worcester Polytechnic institute. He then took a student course at the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and from there went with the C. W. Hunt Co., Staten Island, N. Y. Later for five years, he was employed by the Norcross Bros. Co., Worcester, in the drafting and engineering department and became affiliated with the Norton Grinding Co., in its early days, being placed in charge of the drafting department. In 1902 he was promoted to be superintendent, in 1905 took charge of the office and in 1907 became sales manager.

Isaac F. Williams, who remains with the new company, has been manager of the business for the last four years. He was graduated from Worcester Polytechnic institute in 1897 and for a time was assistant superintendent of the Washburn shops of the institute. He entered the employ of Mr. Walker when the latter started in business for himself. His responsibilities gradually were increased until he became manager of the business.

J. E. Houck has been appointed traffic manager for the Samson Tractor Co. division of the General Motors Corp., at Janesville, Wis.

Julius Milkey has taken charge of the advertising department of Landers, Frary & Clark, New Britain, Conn.

Charles M. McNeil, president of the Utah and Chino Copper companies, has been elected a director of the American Vanadium Co.

J. H. Fellows has been placed in charge of the construction and plant engineering departments of the Stanley Works, New Britain, Conn.

E. J. Wilkie formerly connected with the sales department of the Bucyrus Co., South Milwaukee, Wis., has taken up his duties as assistant to C. N. Ballentine, southern sales manager for the company at 212 Jefferson County bank building, Birmingham, Ala.

Abram Buol, superintendent of the New Britain Machine Co., New Britain, Conn., has been elected president for two years of the New Britain chamber of commerce.

C. M. Wallace has been engaged as purchasing agent for the Standard Motor Truck Co. He was formerly connected with the Packard Motor Car Co., Detroit.

Waldo S. Reed, formerly treasurer of the Emergency Fleet corporation, has been elected treasurer of the Green Star Steamship Corp., New York.

W. H. Blake recently resigned as electrical engineer of the Charleroi, Pa., plant of the Universal Steel Co., Bridgeville, Pa., and will go into business for himself.

Milton S. Monteith, master mechanic and chief engineer of the Warren Mfg. Co., Warren, R. I., has resigned to become chief engineer for D. Goff & Sons, Pawtucket, R. I.

George E. Leighton, 136 St. James street, Montreal, consulting mining engineer, recently was elected vice president of the Samuel Osborne Co. of Canada, 145 St. James street, that city, manufacturer of steel, tools, etc.

John J. Eberhard, for the past 10 years connected with the Simonds Mfg. Co., Fitchburg, Mass., first as superintendent and more recently in charge of the hand-saw department, has resigned.

L. B. Marcy, for the past three years superintendent of the Hart & Cooley Mfg. Co., New Britain, Conn., has resigned to accept a position with the Waterbury Mfg. Co., Waterbury, Conn.

William L. Robbins, for the past five years advertising manager of the Greenfield Tap & Die Corp., Greenfield, Mass., has become sales promotion department manager of the Cowan Truck Co., Holyoke, Mass.

Ormond E. Hunt has resigned as chief engineer of the passenger car division of the Packard Motor Car Co., Detroit, to become president of the Mercer Motors Co., Trenton, N. J. He has been with the Packard organization since 1909.

Newark Makes a Bid For Foundry Convention

A meeting of the Newark Foundrymen's association, Newark, N. J., which was held Dec. 3, was participated in by the membership of the Gray Iron club and the Metropolitan Brass association, of New York. The object of the meeting was to bring the foundrymen of the Newark and New York districts closer together.

This was the first gathering of the kind ever held jointly by the three societies, and owing to its success the meeting probably will be repeated. A. E. Barlow, president of the Newark Foundrymen's association, presided, introducing Andrew N. Petersen, president of the Gray Iron club, and Frederick H. Landolt, president of the Metropolitan Brass association, who made brief addresses. It was proposed by Mr. Petersen that the 1921 convention of the American Foundrymen's association with its exhibition of foundry equipment and supplies, be scheduled for Newark or some other community in the New York district. This proposal, offered as a resolution, was adopted unanimously.

A. O. Backert, editor of *The Foundry,* was the speaker of the evening, and addressed the foundrymen on the foundry industry in France and England as seen through American eyes. Mr. Backert pointed out that whereas steelmaking capacity in this country has expanded at the rate of 10,000,000 tons a year, the pig iron production has remained almost stationary. He stated that this great demand for steelmaking iron has caused the increased prices and will continue to cause further advance. The speaker contrasted foreign with American foundry practice and enumerated the conditions which must be considered in making a fair comparison. He stated that the casting industry in France is not as large at the conclusion of the war, as it was previous to the German invasion, for the foundries gained through the accession of Alsace-Lorraine have been outnumbered by those destroyed by the enemy. In England the industry has expanded until now the foundries of that country number over 3000 active foundries.

Hold Sales Convention

About 300 salesmen, engineers and representatives of Blaw-Knox Co., Pittsburgh, attended the sales convention of that company held at Pittsburgh, Dec. 3 to 6. Discussions pertaining to all of the company's products were held and tours were made by the salesmen and representatives through the company's plant. Some of the discussions were: "Handling an Order;" "Information on Cost Keeping;" "Discussion of Knox Devices;" "Discussion of Plate and Structural Sales," and other subjects. The committee in charge of the convention was composed of Chester H. Lehman, H. B. Loxterman, Jay E. Mason, J. H. Flynn and G. E. Land.

Will Form Labor Board

Leaders in Youngstown, O., affairs are behind a plan to establish an industrial relations board for the promotion of greater amity between capital and labor.

The announced purpose of the promoters of the plan is to study the problems and grievances of employer and employe and to arrange a basis on which both can work for the best interests of the community. These leaders are understood to have approached employers and labor leaders and learned that both were favorable to ironing out any differences in such a way as to insure not only industrial peace but the complete harmony which labor and capital say is necessary to proper production and sound prosperity. Four citizens, one a manufacturer and one a labor leader are said to have signified willingness to sit on the board.

Changes Labor Policy

Washington, Dec. 9.—The United States shipping board announces that, in order to co-ordinate its labor policy and bring about a more consistent method of dealing with labor problems, all questions of labor policy affecting the construction, repair, operation, loading and unloading of ships and marine equipment, will hereafter be handled, subject to the direction of the board, through the division of industrial relations of the shipping board at Washington. Darragh de Lancey, heretofore director of the marine and dock industrial relations division, has been appointed director of the division of industrial relations.

With the return to work of a number of molders and coremakers, the strike at the plant of the Bay View Foundry Co., Sandusky, O., apparently has ended. More men are expected to seek their old jobs and all for whom places can be found will be taken back. The strike had been in progress 12 weeks.

New York Fabricators Not to Drop Open Shop

While a wage scale agreement for 1920 recently was closed between the Building Trades council, New York City and the Building Trades Employers' association, structural steel fabricators and erectors will not be a party to this contract, which had the closed shop for its feature. Under the contract as signed, union men employed on building operations where nonunion men are working are permitted to strike. Walter Drew, counsel for the Iron League Erectors' association, whose members also are members of the Employers' association, announced that his organization did not intend to abandon the open shop.

Nov. 26, 1919.

To All Architects, Owners, and Prospective Builders in Greater New York and Long Island:

Gentlemen:—As a result of the criminal records of a large number of officers and men prominent in the International Association of Bridgemen and Housesmiths, involving intimidation, violence, destruction of property by dynamite, and other crimes, the erection of structural steel work in this city and vicinity was placed on the open-shop basis on Jan. 1, 1906, and has been maintained on that basis until the present time, resulting in greatly reducing the cost of building operations and the practical elimination of strikes in the steel branch of the industry.

The contrast beween the result obtained in that industry and that resulting in other trades where members of labor unions have been recognized exclusively has been most marked, and the investing public has been the recipient of the gain.

Pressure is now being brought to bear in certain quarters to induce the members of the Iron League Erectors' Association to change this policy and adopt the unamerican policy of the closed shop.

As such a change, if adopted would inevitably result in increasing the cost of buildings, in decreasing the efficiency of our workmen, in limiting the available labor supply in this district, in causing labor strikes and delays, and would violate the rights of many of our workmen under the constitution of the United States, the members of our association, at a meeting held in the rooms of the Building Trades Employers' association Nov. 25, 1919, unanimously voted to adhere to the policy which has proved satisfactory during the last fourteen years, to employers and workmen alike.

It is the intention of our members to offer employment to all applicants having the proper requirements, without regard to their affiliation or nonaffiliation with labor unions, thereby guaranteeing to each individual his constitutional right to such employment, based only on his own ability and efficiency.

We earnestly solicit your aid in retaining the results which have been gained as set forth above, by insertion in all contracts for the erection of structural steel work of a labor clause, copies of which are inclosed herewith. Very truly yours,

Bethlehem Fabricators, Inc., Bigelow & Nichols, Communipaw Steel Co., Donnell-Zane Co., Eidlitz & Ross, Martin R. Everett, Inc., William J. Fichter, C. H. Fox, Chr. Hafers Iron Works, Hamilton & Chambers Co., Harris Struc. Steel Co., Hay Foundry & Iron Wks., Hedden Iron Const Co., Hinkle Iron Co., Geo. A. Just Co., Lehigh Struc. Steel Co., Levering & Garrigues Co., Lucius Engineering Co., McClintic-Marshall Co., National Bridge Wks., Alfred E. Norton, Inc., Passaic Struc. Steel Co., Struc. Erecting Co., Members of the Iron League Erectors' Association.

Obituaries

LYMAN H. TREADWAY, president of the Peck, Stow & Wilcox Co., Cleveland, New York and Southington, Conn., and vice chairman of the Federal Reserve bank of the Fourth district, died Sunday morning, Dec. 7, at his residence in Cleveland. The cause of his death was heart disease and his condition was not believed to be critical until shortly before his death.

Mr. Treadway was 57 years old, having been born in New Haven, Conn., March 27, 1862. He was the son of Augustine R. Treadway, who died in Cleveland eight years ago. After his father had organized the Wilcox-Treadway Co., manufacturer of hardware and mechanics' tools, Mr. Treadway located in Cleveland in 1880. He had entered the mercantile business one year before in New Haven and when he came to Cleveland, he started as a packer in his father's plant, and learned the hardware and tool business from the ground up. The Wilcox-Treadway Co. later was incorporated into the Peck, Stow & Wilcox Co. The company's larger plant is located at Southington, Conn., where the company's centennial was celebrated on Aug. 29 and 30, of this year.

In 1911 Mr. Treadway succeeded his father as president of the company, upon the latter's resignation. While the direction of the business was his main activity, he was identified with many other interests. He was a director of the Peerless Truck & Motor Corp., and a trustee of the Western Reserve university, and was associated with various charitable, religious and civic organizations in Cleveland.

Henry Laurence Cantt, a leading industrial engineer, died suddenly at his home in Montclair, N. J., recently from an acute attack of indigestion.

Wm. E. Rice, former president of the Washburn & Moen Mfg. Co., and later connected with the American Steel & Wire Co., died in Worcester, Mass., Dec. 2, aged 86.

Jerome F. Good, aged 77, at one time superintendent of the plant of the Pittsburgh Forge & Iron Co., Pittsburgh, but latterly engaged in the real estate business, died at Pittsburgh, Dec. 1.

John A. Svenson, one of the founders and owners of the Worcester Ornamental Iron Works, Worcester, Mass., with which he has been connected the past 15 years, died at his home in that city, Dec. 4, from pneumonia, aged 54 years.

William G. Holmes, president of the Holmes Bronze Co., Bedford, O., founded by him, died on Nov. 30 in Silver City, N. M., where he had gone for his health. Mr. Holmes was



LYMAN H. TREADWAY

graduated from Ohio State university in 1904 and was a member of the Phi Kappa Psi fraternity.

Edward C. Wood, Somerville, Mass., experimental engineer, famed for work during the war, on devices for detection of submarines, died Dec. 1 of an accident at his work, aged 45 years. Most of the apparatus used during the war in submarine signaling was the result of the experimental work of Mr. Wood, and it has since been adopted as of practical commercial value in nearly every country on the globe.

William O. Oschmann, 35, electrical engineer of the Oliver Iron & Steel Co., Pittsburgh, died at the South Side hospital, Pittsburgh, Dec. 3 as a result of an accident. He was a native of Pittsburgh and resided there practically all of his life and had been connected with the Oliver Iron & Steel Co. for the past 12 years. He was a member of the American Institute of Electrical Engineers and the Association of Iron and Steel Electrical Engineers.

John F. Harrison, for many years manager of the flour and saw mills department of the Allis-Chalmers Mfg. Co., Milwaukee, died after a brief illness Dec. 4, at the age of 78 years. Mr. Harrison was especially well known as a designer and builder of flour mills, although he handled some of the largest saw mill projects in the United States. He was born in 1841 at Manchester, Eng. At the outbreak of the Civil war, he enlisted in the engineer service of the union army. At the conclusion of the war, Mr. Harrison settled in Minneapolis, where he erected some of the biggest flour mills of the present day. He came to Milwaukee in 1884 as an engineer for the Allis-Chalmers Mfg. Co., then the E. P. Allis Co., and in 1894 was promoted to the position of manager of the saw and flour mill departments.

William Ellis Rice, formerly president and treasurer of the Washburn & Moen Mfg. Co., and president and treasurer of the Worcester Wire Co., of which he was the founder, died at his home in Worcester, Mass., Dec. 2, aged 86 years. Mr. Rice retired from active business life when the American Steel & Wire Co. took over the two corporations in 1899. He was at one time one of the best known wire manufacturers in the United States. He began work in a wire mill at the age of 18 and seven years later started in business for himself with Dorrance S. Goddard, father of Harry W. Goddard, chairman of the board of directors of the Clinton-Wright Wire Co., Worcester, under the firm name of William E. Rice & Co., the plant being in Holyoke, Mass. Later it became part of the Washburn & Moen Mfg. Co. In 1870 he visited England and Sweden and was the first consumer in this country to import rolled iron direct from Swedish makers. In 1877 he organized the Worcester Wire Co., which he successfully carried on until it was merged with the American Steel & Wire Co. The Washburn & Moen Mfg. Co. and the Worcester Wire Co. now are the North, South and Central works of the American Steel & Wire Co. in the Worcester district.

U. S. Not to Aid Foreign Credits

Secretary Glass in Annual Report Sets Forth Government Policy—Demoralization of Exchanges Reflects Weak Credit Position of European Nations as Well as Adverse Trade Balance—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

IN HIS annual report published a few days ago Secretary of the Treasury Glass dashed cold water upon the hopes of those who believe the government should participate on a large scale in further peacetime loans to the hard-pressed European nations. Instead of high commodity prices based upon the "spectre of European demand or high interest rates based upon the spectre of European credits," Mr. Glass warned that this country's fear must be that the cessation of war exports will result in closed plants, passed dividends and general depression.

Adverse Trade Balances Responsible

In a word Mr. Glass, speaking for the administration, puts it straight up to the American exporter to go out into the markets of the world and find his customers and arrange his credit terms with them, without the aid of the government. Answering the urgings of those that this government continue the flow of credits abroad to the point of stabilizing foreign exchanges, Mr. Glass makes some interesting observations the soundness of which cannot be disputed. He says:

"The artificial maintenance of the gold par of all exchanges is impossible unless we propose to level all differences in the relative credit of the nations and for our gold reserve substitute a reserve consisting of promises to pay of any nation that chooses to become our debtor. The United States has met a greater proportion of the cost of the war from taxes than any other country. Largely as a result of this the buying power of the dollar at home has been sustained better than the currency of any European belligerent. For the United States government to depress the dollar as measured in terms of foreign exchange and to improve the position of other currency as measured in terms of dollars would be to shift to the American people the tax and loan burden of foreign countries. This shifted burden would be measured in taxes, additional loans and increased domestic prices."

The secretary's views are based upon the recognition of the fact, pointed out previously by THE IRON TRADE REVIEW, but too frequently overlooked in discussions of the foreign exchange question, that adverse trade balances are not entirely responsible for the depressed exchanges. This is but one of the factors in the situation, by far the most important one being the weak credit position reflected in the astounding depreciation of the currencies of various countries. Sufficient credits to pay for all of the European purchases in this country, or enough exports to pay for all that was imported from the United States, would not bring the exchanges to par so long as the war debt had not been liquidated to some extent, and substantial deflation of the huge amounts of circulation currency and credits had not taken place. Consequently the task of bringing the exchanges to par is something that may not be accomplished with America's golden wand, unless this country is willing to lower its credit to the level of the weaker nations, an unthinkable solution.

Although the government will not make any such effort the fact remains that the treasury still has available $593,628,000 of the total of $10,000,000,000 loans authorized together with $1,000,000,000 in addition which the War Finance Corp. has been authorized to extend to aid exports. As Mr. Glass points out the power of the government to aid Europe financially is considerable. Respecting it he says that "this power must be exercised with extreme caution and with the utmost regard for the urgent needs of our own people for an ample supply of foodstuffs and other necessities at reasonable prices."

On the face of the monthly export records it would seem that American exporters have little to worry about in the exchange situation. October exports gained $35,000,000 over those for September and almost $130,000,000 over those for October, 1918. Of this gain over one year ago $90,000,000 represents increased exports to Europe where the exchange rates are carrying the heaviest burden of depreciation. From these figures many are likely to hasten to the conclusion that Europe's necessities are so urgent that she must come to America for goods at whatever price or exchange premium.

Trade Follows the Dollar

This is true to a certain extent, but eventually Europe, or that part of it with depreciated exchanges, will find a way to stop buying even necessities, unless improvement comes. Analysis of exports to Europe shows that this tendency is already in operation. The real increases in exports have been to Spain, Norway and Sweden, Denmark and Holland where the dollar is at a small premium. France is reducing her purchases at the rate of $14,000,000 a month and Italy at the rate of $11,000,000 from last year. Belgium, however, is increasing purchases and so is Great Britain, where cotton is an important factor in prosperity.

How long will present enormous exports last? No one can certainly tell but with pound sterling at a discount of 21 per cent, francs at 53 per cent and Italian lire at 60 per cent drastic curtailment of foreign buying on the part of the great European customers probably is not far distant. Long time credits and reduced prices that will in a measure absorb the shock of the exchange premium and the operation of the Edge export financing bill, expected soon to pass, are methods which may help to bring relief.

New Republic Stock May Cover Further Mills

Youngstown, O., Dec. 8.—With the issuing of 26,480 shares of common stock by the Republic Iron & Steel Co. for the purpose of providing funds for works expansion, it is thought that additional sheet mills will be built at the company's De Forest plant at Niles, O. Officials of the Republic company neither affirm nor deny that such expansion will be undertaken soon. The De Forest plant now inculdes 10 sheet mills. At the time the Republic company took over this plant, it is understood, the plans provided for the building of 30 additional mills for rolling sheets and black plate together with tin-coating equipment.

Owners of common stock on record Dec. 26 will be privileged to subscribe on the basis of one share of the new stock for each 10 shares of the old stock with provisions being made for fractional titles. The new common stock is held at $100 par and will place $2,648,000 at the company's disposal.

The present outstanding common stock of the Republic Iron & Steel Co. includes 271,910 shares of an authorized issue of 300,000 shares. The new issue, which must be paid

by Jan. 16, 1920, will increase the outstanding common stock to 298,390 shares having a par value of $29,839,000.

Crucible Picks Officers

Pittsburgh, Dec. 8.—Horace S. Wilkinson, chairman of the Crucible Steel Co. of America, was re-elected chairman and elected president of the company at a meeting of the directors in this city today. He succeeds O. H. Wharton, who declined to be a candidate for re-election as president. Dr. John A. Mathews, Syracuse, N. Y., was elected first vice president; George E. Shaw, Pittsburgh, second vice president and treasurer; John W. Dougherty, Pittsburgh, third vice president; R. H. Illingworth, Harrison, N. J., fourth vice president, and H. F. Kress, secretary.

The company under the DuPuy regime had five vice presidents, John A. Sutton, John W. Dougherty, G. W. Sargent, H. A. Brown and George A. Turville, the latter also being secretary and treasurer of the company. The number is reduced to four by today's election and John W. Dougherty is the only one of the former vice presidents who was re-elected. H. F. Kress, who succeeds George A. Turville as secretary of the company, formerly was assistant secretary and treasurer.

To Build Bar Mill

Capitalized at $500,000, the Cambridge Steel Co. has been formed and is reported planning to erect a bar mill on the site of the Interstate Iron & Steel Co.'s plant at Cambridge, O., which was damaged by fire three years ago. No other details have been made public as yet.

Scrap Firms Combine

Bishop, Friedman & Bergstrom, Inc., is the title of a consolidation just effected of the following interests: J. V. S. Bishop, Philadelphia; Ellis O. Friedman, Inc., Albany, N. Y.; V. E. Bergstrom & Co., New York; Coatesville Scrap Iron & Steel Co., Inc., Coatesville, Pa. Offices will be maintained in the Real Estate Trust building, Philadelphia; 30 Church street, New York; 82 State street, Albany, and at Coatesville.

Buys Metal Stock

Charles D. Barney & Co., Chicago, and associates have purchased voting trust certificates representing 34,644 shares of stock of the American Metal Co., Ltd., which were offered at public auction by the alien property custodian. The purchase price was $166 a share. The deal amounts to $5,310,000, and is one of the largest that has ever been negotiated by the alien property custodian. The same stock was offered at public auction on April 7, when the successful bidder was Charles Hayden of Hayden, Stone & Co. This transaction was, however, set aside. The Hayden bid was $140 a share.

Buys Pipe Foundry

John S. Tait of J. S. Tait & Co., Ltd., 500 Beatty street, Vancouver, B. C., has purchased the Vancouver Pipe & Foundry Co., Ltd., that city, and now is making cast iron soil pipe and fittings.

Sells Forging Plant

The Bethlehem Steel Co. has sold its forging plant at Titusville, Pa. Mr. Dillon, up to the time of the sale of the plant, was the general manager of the property. The plant was acquired by the Bethlehem Steel Co. from the Dillon interests about seven years ago.

Issue Oversubscribed

Youngstown, O., Dec. 8.—Official reports show that employes have oversubscribed the new issue of preferred stock of the Truscon Steel Co. The stock to the amount of $1,000,000 with a par value of $10 per share, was authorized by the directors Oct. 7.

Financial Crop Ends

The Semi-Foundry & Machine Co., of Barberton, O., has been taken over by the Frantz Foundry & Machine Co. of Akron, O., a $400,000 corporation.

* * *

The Cromwell Steel Co., Lorain, O., will redeem all of its first mortgage 7 per cent bonds at their face value plus 1 per cent premium and accrued interest at the First Trust & Savings Co., Cleveland, Jan. 1.

* * *

The Van Dorn Iron Works, Cleveland, has amended its charter placing common stock on a no par basis. New capital will consist of $2,000,000 7 per cent preferred of which $650,000 has been sold and 100,000 shares of common stock of which 80,000 will be issued.

* * *

William C. Redfield, former secretary of the department of commerce, has entered the investment security business in New York, associating himself with H. P. Wilson under the firm name of Redfield & Wilson. The firm expects to conduct reorganizations and consolidations of industrial and public utility companies.

Prices Advance

In Benzol and Toluol as Result of Curtailment by Strikes

New York, Dec. 8.—Benzol finally has advanced, the market on spot and contract business now holding at 27 to 31 cents, a rise of 2 cents in the week. Ninety per cent benzol is quoted at a 1-cent advance or 23 to 25 cents. A rise of 2 cents also is shown in toluol, the market now being 28 to 32 cents.

This advance has been expected for several weeks. Had it not been for the appearance of taking an undue advantage of the situation brought about by the steel strike, producers assert they would have advanced prices early in October, so heavy was the demand at that time. Since, the demand has continued strong, and this in conjunction with the curtailment of production brought about by the steel strike and later by the coal strike has made an exceedingly tight market. Only occasional lots of benzol are available for spot delivery, and contract shipments have been extended beyond the first half. So far have shipments been advanced that recent contract inquiry has fallen off.

Prices on sulphate of ammonia, which of late have featured the coal-tar products market, are unchanged this week. Spot domestic is quoted at $3.85 to $4, and for export $4.75 to $5 in double bags at eastern seaboard. future business is nominal.

Considerable activity is shown in naphthalin, the dye interests being good buyers. Quotations, however, are unchanged. Solvent naphtha is in steady demand at former prices.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants

Pure benzol	$0.27 to .31
Toluol	.28 to .32
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$3.85 to 4.00

Contract

Pure benzol	$0.27 to .31
Toluol	.28 to .32
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake	0.06½ to .07½
Naphthalin, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Fair Trading in Machine Tools

New Departure Takes $1,000,000 Worth — Standard Ore Buys Heavily — Export Transactions are More Numerous—Van Dorn Iron Works Wants $100,000 Worth of Equipment—Coal Strike Effect as Yet is Normal

DEARTH of business, usually so apparent in the preholiday period, continues to hold off in the machine tool industry. In the East a considerable amount of trading is being done and inquiries are heavy in practically all districts. The New Departure Mfg. Co., Bristol, Conn., is reported to have closed on $1,000,000 worth of equipment and the Standard Oil Co. again is buying for Roumania, the award this time aggregating about $400,000 worth. It also is in the market for $90,000 worth of machine tool equipment for Mexico and Peru. It is buying considerable equipment for Toledo, O.

While export inquiries are not as numerous as two months ago, several sizable orders have been placed in addition to those of the Standard Oil Co. One Spanish shipbuilder has bought $30,000 worth of equipment. A Brazilian manufacturer closed on considerable and Brazilian railroads are inquiring, while Argentina railroads are buying. Chile is inquiring for additional locomotive cranes, although on machine tools severe competition in that country now is offered by German builders.

Eastern crane trading is somewhat restricted. The Sun Shipbuilding Co., Chester, Pa., closed on its overheads. The Eastern Potash Co., New York, the Tidewater Iron Works and the W. & A. Fletcher Co., Hoboken, N. J., each bought one. A list of overheads is expected from the Union Shipbuilding & Dry Dock Co., Baltimore while the Pennsylvania Service Corp., Philadelphia, is in the market for one. The Foote-Burt Machine Co., Cleveland, is about to close on 17 small electric cranes. In Pittsburgh, several small awards of cranes are reported. The Westinghouse Electric & Mfg. Co., inquires for 10 and the American Sheet & Tin Plate Co., asks for eight for Vandergrift, Pa.

In the Cleveland territory, dealers are active and have many inquiries. Sales are somewhat curtailed because of the approach of the inventory period, the coal strike and the fact that users' 1919 budgets for machine tool expenditure now are exhausted and they have to wait until 1920 before they can make additional purchases. Large inquiries are issued by the Van Dorn Iron Works Co., Cleveland, which wants $100,000 worth; the E. J. List Mfg. Co., Havana, Ill., the Zigler Mfg. Co., Alexandria, Ind., the Wm. H. Haskell Mfg. Co., Pawtucket, R. I. Formal lists are expected soon from the Wills Automobile Co., Marysville, Mich., the General Electric Co., Erie, Pa., the Tabor Mfg. Co., Philadelphia, and the Birdsboro Foundry & Machine Co., Birdsboro, Pa.

In Chicago, the coal strike is more of a factor than elsewhere apparently. Considerable hesitancy is manifested in ordering, but sellers state that business is not poor. The Nash Motors Corp., Milwaukee, has bought additional production equipment and the Chain Belt Co., that city, has closed on presses. Shipments to the domestic trade from the governmental warehouse at the Symington-Chicago Corp., have been delayed owing to the attention given to shipments to Belgium, which now are going forward. About 300 tools are involved.

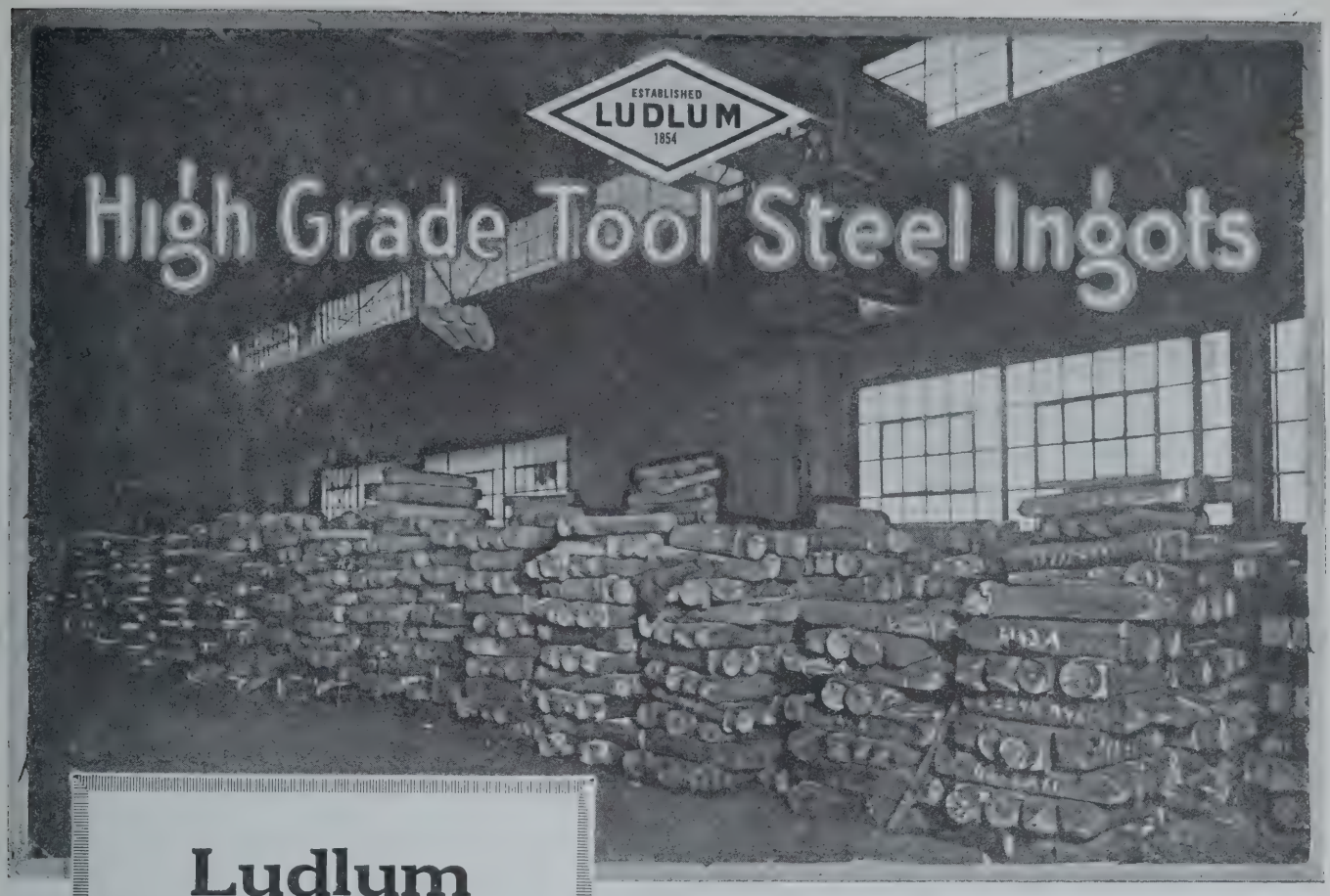
New Departure Co. Closes on $1,000,000 List

EASTERN machine tool sellers are expressing considerable satisfaction over the volume of business now coming out. Miscellaneous inquiries are noted in good number, and buying is featured by the placing of some large orders. The New Departure Mfg. Co. is closing on a list valued at more than $1,000,000 and the Standard Oil Co. is buying considerable equipment for export to Roumania. The list had been pending for some time and in all represents approximately $400,000. In addition, the Standard Oil Co., through its subsidiaries, is in the market for about $90,000 worth of machine tool equipment for Mexico and Peru.

While exporters assert that inquiry is not what it was two months ago, they claim that actual buying has increased. In addition to the buying by the Standard Oil Co. mentioned, there have been several sizable orders placed. A shipbuilding company in Spain has awarded contracts in this country during the past week or so for approximately $30,000 worth of equipment, including some fabricating tools, and a private manufacturer in Brazil has recently closed on a considerable list of machinery. Some scattered buying has been done by the railroads in Argentina. At the present time, the Brazilian railroads are issuing small inquiries for machine tools.

In Chile, German machine tool builders are again figuring in the requirements of that country, according to American representatives. During the war, German manufacturers were black-listed. While some business has gone to Germany, machine tool builders in this country have been in receipt of some scattered orders from Chile, and recently several locomotive cranes were placed with an American builder. Chile is inquiring for additional locomotive cranes.

Trading in the eastern crane market continues rather



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Albany Alloy Tool Steel	**Oneida** Oil Hardening Tool Steel
Huron Alloy Die Steel	**Teton** Ball Bearing Steel
Seminole "Fool Proof" Chisel Steel	**Yuma** Chrome Magnet Steel

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General Office and Works
WATERVLIET, N. Y.

Branch Offices:
Chicago, Cambridge, Mass., Detroit, Buffalo, New York City, Cincinnati, Cleveland, Philadelphia, Pittsburgh

restricted, although a fair amount of business is being placed. The Sun Shipbuilding Co., Chester, Pa., placed its inquiry for several overhead cranes with the Pawling & Harnischfeger Co., Milwaukee. The Eastern Potash Co., 120 Broadway, New York City, awarded a 25-ton overhead crane, with 56-foot span, for New Brunswick, N. J., to the Champion Engineering Co., Kenton, O. The Tidewater Iron Works, Hoboken, N. J., bought a 7½-ton crane, with 48-foot span, from the Bedford Foundry & Machine Co., Bedford, Ind. Another Hoboken concern, W. & A. Fletcher & Co., bought a 20-ton crane from the Ohio Locomotive Crane Co., Bucyrus, O. It is expected that a large list of overhead cranes for the Union Shipbuilding & Dry Dock Co., Baltimore, will be placed shortly through the McClintic-Marshall Co., Pittsburgh. Dwight P. Robinson & Co., 61 Broadway, New York City, consulting engineers, are inquiring for a 50-ton overhead crane for the Pennsylvania Service Corp., Philadelphia. The Eastern Foundry Co., South River, N. J., is to build a $100,000 foundry.

Coal Strike Affects Chicago Industry

WITH the coal strike causing a famine in Chicago which has led to actual closing of a majority of industrial concerns and much the same conditions obtaining in all territory west and north, a decided hesitation is evident in the buying of machine tool equipment. This intensifies the usual lull that comes on the approach of the holidays and inventory season. Yet business is by no means poor and with deliveries much delayed on the part of builders of machine tools it is difficult to place business for anything like prompt delivery. Railroads have not yet changed their attitude as to buying the tools they need.

Shipments of machinery from the government's store at the Symington-Chicago Corp. plant to Belgium are going forward, about 300 pieces being involved. This is delaying greatly the shipment of machinery to domestic users from the same source. The Nash Motors Corp. has bought further for the production equipment of its Milwaukee plant and the Chain Belt Co., Milwaukee, has bought some presses.

The American Foundry Equipment Co., Chicago, will build a machine shop. The Doehler Die & Casting Co., Chicago, is building a plant. The Ursus Motor Co., Chicago, is building the first unit of a large plant. The Crawfordsville Foundry Co., Crawfordsville, Ind., will build a foundry and machine shop.

Buyers Postpone Action Until 1920

EXHAUSTED 1919 machinery budgets of several machine tool buyers in the Cleveland territory have removed them from the market until 1920. They are telling dealers' representatives that although they need the equipment, they will not buy until after Jan. 1. The coal strike is not seriously affecting trade, although some few prospective purchasers of machinery are timid and will not close while others who do close buy one tool here and another there. It is thought this is an effort to obtain better deliveries, which for the most part on new tools are deferred many weeks. One Cleveland dealer with branches in Dayton, O., and Detroit, stated last Monday: "We have more unfilled orders on our books than at any time in our history; some of the business is booked for delivery in July and August of next year. Inquiries are plentiful and buying is frequent. If the labor situation were stabilized our large warehouse stock would be cleaned up quickly, so anxious would buyers be to obtain equipment."

One of the largest inquiries current in Cleveland is a list issued by the Van Dorn Iron Works, 3685 East Seventy-ninth street, that city. This has an aggregate value of $100,000 and the equipment is understood to be for an addition to cost $300,000. The Lakeside Forge Co., Erie, Pa., is obtaining quotations on several Bradley hammers. A large list also is expected soon from the General Electric Co., that city, in view of its recent announcement that a huge machine shop is to be built in its effort to make the Erie plant second only to the Schenectady, N. Y., works. An inquiry, current in Dayton, O., related to the automotive industry, calls for between 60 and 70 machine tools valued at between $300,000 and $400,000. The Zigler Mfg. Co., Alexandria, Ind., is in the market for several automatics, and a Cincinnati dealer, the Seifreat-Woodruff Co., is endeavoring to locate five or six inclinable punch presses, either new or used, equivalent to No. 20 Bliss, for one of its customers, who requires the equipment quickly. The Forest City Forge & Machine Co., and the Columbia Axle Co., Cleveland, are understood still to be in the market for some equipment and the B. F. Goodrich Co., is one of the Akron, O., companies which is holding off placing its orders. The Central Aluminum Co., Canton, O., has completed its addition and wants a spinning lathe and a toggle press. The Plymouth Stamped Metal Co., Plymouth, O., will require additional equipment for installation in its plant when it moves to Galion, O. The Findlay Engineering & Mfg. Co., Findlay, O., has purchased the plant of the Findlay Iron & Coal Co., to increase its output of automobiles, truck and tractor parts. It will require additional machining equipment. The Standard Oil Co. is buying crane and other equipment elsewhere than in Cleveland, for its Toledo, O., refinery which is scheduled to be the largest refinery in the world. Coal will be used for fuel since it cannot afford to use oil; the by-products, etc., it will obtain from the oil will more than pay for the coal. The Foote-Burt Machine Co., Cleveland, is about to close on its list of 17 small cranes, mentioned last week, but so far as can be learned, it has not lined up its machine tool requirements for its large new plant, now being built. Some activity is expected soon on the part of the Torbensen Axle Co., Cleveland, which recently was purchased by Willys interests at Toledo, O. The Marsh Motor Car Co., Cleveland, is endeavoring to obtain some equipment and is advertising for a second hand 20 or 30 horsepower slide valve steam engine. This company plans to manufacture passenger automobiles.

While an increase in prices shortly after Jan. 1, would not be much of a surprise in some quarters, the only advance noted recently is on one line of woodworking machinery, including spinning lathes and accessories. Effective Dec. 1, this was advanced 20 per cent.

Inquiries originating outside of the immediate vicinity of Cleveland are of interest to some sellers in that locality. The William H. Haskell Mfg. Co., Pawtucket, R. I., has issued a partial list of its equipment requirements for its new 2-story machine shop, 80 x 140 feet. It calls for one 48 x 48-inch x 12-foot and one 36 x 36-inch x 10-foot planer; one 42-inch vertical and one horizontal boring mill; one small upright and one radial drill; one tool room and one large milling machine; one large and one tool room shaper; one plain grinder; one 16-inch x 6-foot tool room and two 16-inch x 8-foot lathes, as well as pattern shop machinery and machine shop furniture. Before long the Beck & Corbitt Iron Co., St. Louis, will be in the market for electric-driven machinery as follows: Two 15-ton and one 10-ton electric traveling cranes with 75-foot span, the latter to have a lifting magnet. In addition one 84-inch plate shear for

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"Makers of Steel Castings that are a little better than the next best."

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1¾-inch plates; one 48-inch sheet shear for No. 8 or No. 10 gage sheets; one bar and angle shear, with capacity for angles up to 6 inches and up to 6 x 1-inch bars, and one cold saw and table for cutting structural shapes, also will be required. The E. J. List Mfg. Co., Havana, Ill., has issued a list which covers screw machines, drilling and grinding equipment, etc. A large list of machine tool and other equipment needs, now is in course of preparation by the Tabor Mfg. Co., Philadelphia, which has moved its plant. The Birdsboro Foundry & Machine Co., Birdsboro, Pa., placed contracts recently for a machine shop, which it will equip shortly to machine castings up to 50 tons in weight. Another list which is expected soon is that of the Wills Automobile Co., Marysville, Mich., plant of which is to be on a producing basis June 1, 1920. Representatives were in Cleveland last week calling on machinery dealers but it is understood that any inquiry issued only is tentative. Some heavy equipment doubtless will be purchased by the Connell-Erben Body Corp., Scranton, Pa., which is erecting a building to manufacture truck bodies. The Jackson Metal Products Co., Jackson, Mich., will buy additional equipment in all probability for its new addition comprising 17,000 square feet of floor space which is to double its output. Punch shop equipment will be bought by the Kent Steel Co., Scribner avenue, Grand Rapids, Mich., for its new punch shop.

Others who are expected to issue lists soon include the Cleveland Worm & Gear Co., East Fortieth street, Cleveland, which recently purchased the property fronting on East Forty-first street, immediately in the rear of its present plant; and the Crawfordsville Foundry Co., Crawfordsville, Ind.; Barnes Mfg. Co., Massillon, O.; Mead Pulp & Paper Co., Dayton, O.; Bucyrus Machine & Tool Co., Bucyrus, O.; Wm. Dennick & Co., Dayton, O.; all of whom are to build machine shops. Should the Briggs Mfg. Co., East 131st street and Taft avenue, Cleveland, commence the building of automobile bodies, in its new 6-story addition, 100 x 176 feet, it will probably require presses, etc.

Crane Business Fair in Pittsburgh

ORDERS for cranes in the Pittsburgh district bulk small in comparison with the number of inquiries which have been out for some time and those which recently have been made. The Jones & Laughlin Steel Co., Pittsburgh, recently closed with the Alliance Machine Co., Alliance, O., for a 5-ton crane for its South Side works and a 20-ton crane for its ore-roasting plant in Minnesota. The Heppenstall Forge & Knife Co., Pittsburgh, has closed for a crane with the Roeper Crane & Hoist Co., Reading, Pa., while the Pennsylvania railroad, lines west, has bought a hoist for its Crestline, O., shops from the Detroit Hoist & Machine Co., Detroit. The Canonsburg Steel & Iron Works has placed a 25-ton crane, with 5-ton auxiliary with the Pawling & Harnischfeger Co., Milwaukee.

New crane inquiries include eight mill type cranes for the Vandergrift, Pa., works of the American Sheet & Tin Plate Co., 10 cranes for the Essington, Pa., plant of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Request for bids has gone out for 17 cranes for one plant, but the identity of the prospective buyer is withheld, probably because only a few have been asked for prices and they do not want to increase competition for the business. Revised bids have been asked on the cranes for the new plant of the Follansbee Bros. Co., Pittsburgh, at Toronto, O., and as these have not all gone in yet, the award probably will be delayed. With the coal shortage slowing down industrial activity and the end of the year in sight, a quiet period appears to be immediately ahead.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

BIDDEFORD, ME.—Plans are being drawn for a 100-foot extension to the machine shop of the Saco-Lowell Shops branch.

BELLOW FALLS, VT.—The Vermont Farm Machine Corp. has been incorporated with $1,200,000 capital to take over the Vermont Farm Machine Co., by Nathan G. Williams, James S. Williams, Glastonbury, Conn., J. A. Pearson and H. J. Searles.

BOSTON.—The Mullin Body Corp. plans a plant addition, 1-story, 170 x 560 feet, to cost $600,000.

BOSTON.—Plans are being drawn for a 1 and 2-story, 241 x 331-foot warehouse for the American Radiator Co., Chicago.

BOSTON.—The Metal Products Co. of New England has been incorporated with $90,000 capital by David H. Coolidge, Frederick H. Cowles and R. M. Russell.

BOSTON.—The American Textile Machinery corp. has been incorporated with $10,000 capital by S. F. Johnson, Bartlett Harwood and O. W. Haussermann.

BOSTON.—The Crucible Furnace Supply Co., Inc., has been incorporated with $50,000 capital by Leon L. Faux, Manfred E. Miller, Cambridge, Mass., and Thomas E. P. Wilson.

BOSTON.—The W. T. Fisher Co., Inc., has been incorporated to deal in machinery with $50,000 capital by William T. Fisher, Milton, Mass., James Wilkinson and E. J. Wilkinson.

BOSTON.—The Stone & Webster Engineering Corp. has the contract to build a 1 and 2-story, 241 x 331-foot warehouse for the American Radiator Co., Chicago. The building will cost $1,500,000.

BOSTON.—The Oil Wells Renewal Co. has been incorporated to make electrical heating appliances with $250,000 capital by P. Frederick Brine, E. M. Pollard, Cambridge, Mass., and George S. Holister.

BOSTON.—The Petroleum Heating & Power Co. has been organized with $2,000,000 capital and has taken over the Fess Rotary Oil Burner, Inc. The officers are: President, F. L. Ames; vice presidents, Robert Adamson and W. C. McTarnahan; treasurer, F. Murray Forbes.

CAMBRIDGE, MASS.—Charles M. James, 444 Main street, has plans for a factory and machine shop, 1-story, 125 x 150 feet, to cost $35,000.

EAST BOSTON, MASS.—Bids closed Dec. 8 for a 2-story and basement, 80 x 245-foot plant for the Boston & Lockport Block Co.

FALL RIVER, MASS.—The Empire Machine Works, Inc., has been incorporated with $15,000 capital by John B. Quinn, Francis J. Quinn and William T. Nickerson.

FITCHBURG, MASS.—Crocker, Burbank & Co. will build an iron storehouse.

FITCHBURG, MASS.—Bids have closed for a 2-story storehouse, to cost $75,000 for the Simonds Mfg. Co.

GARDNER, MASS.—The Gardner General Foundry Co. will build a foundry, 50 x 130 feet, to replace one burned some time ago. It will be equipped with two 5-ton and four 2-ton traveling cranes. The cupola building will be extended 40 x 46 feet.

NORFOLK DOWNS, MASS.—The Pneumatic Scale

Corp., Ltd., has let a contract for a 3-story, 70 x 150-foot office and factory building, to cost $50,000.

PEABODY, MASS.—The A. C. Lawrence Leather Co. plans a 3-story building for its mechanical department.

QUINCY, MASS.—The Bethlehem Shipbuilding Corp., Ltd., has let a contract to P. McGovern & Co., New York, for a 5000-ton floating drydock at its Fore River yard.

SPRINGFIELD, MASS.—Permit for construction of the second unit of the Stevens-Duryea Co.'s plant has been issued. The building will be 200 x 300 feet.

SPRINGFIELD, MASS.—The C. H. Smith Corp. has been incorporated to make rolls and machinery with $5000 capital by Clinton E. Bell, H. B. Lowe and V. A. Converse.

SPRINGFIELD, MASS.—The city will erect a 3-story and basement, vocational high school to contain a machine shop, tool department and sheet metal workers department.

TAUNTON, MASS.—Albert F. Lincoln & Co. have let the contract for a 1-story, 40 x 150-foot machine shop and factory, to be devoted to the manufacture of small tools.

TURNER FALLS, MASS.—Bids have closed for a one-story machine shop for the Martin Machine Co.

WILLIMANSETT, MASS.—The Stevens-Duryea Co. has let the contract for a 300 x 320-foot factory, the second unit of a 20-acre plant. The third unit will be 320 x 760 feet.

WORCESTER, MASS.—The American Steel & Wire Co. is to build a new 20 x 100 foot machine shop.

WORCESTER, MASS.—The Morgan Construction Co. has let the contract for an addition, two stories, 45 x 97 feet.

WORCESTER, MASS.—The Hobbs Lock Washer Co. is expected to be organized here soon with a capital stock of $50,000.

WORCESTER, MASS.—The Worcester Machine Works, Inc., will erect a plant next spring to contain 60,000 square feet.

WORCESTER, MASS.—The Worcester Abrasive Co. has been incorporated with $10,000 capital, by Alfred J. Pearson, Arthur C. Hedlund and O. G. Hedlund.

WORCESTER, MASS.—The Walden-Worcester, Inc., maker of wrenches, has let the contract for a 1-story, 132 x 173-foot factory and boiler house, to cost $38,000, this being the second unit of its new plant.

PAWTUCKET, R. I.—The Rhode Island Crucible Steel Co. has purchased a tract of land here and will remove its present plant to the new location.

PROVIDENCE, R. I.—The R. I. Body Co. has been incorporated to build vehicle bodies with $10,000 capital by Phillip Harris, Hyman Sarkin and Abraham Luff.

PROVIDENCE, R. I.—The Master Tool Co. has been incorporated to make tools with $25,000 capital by Joseph Duplessie, Henry C. Hart and William D. Grady, Woonsocket, R. I.

BRIDGEPORT, CONN.—The Star Auto Machine Co. has been incorporated with $5000 capital by Soren Rosenbeck, D. E. Rosenbeck and F. E. Hubbs.

BRIDGEPORT, CONN.—The Crane Co., Chicago, has let a contract to the Stone & Webster Engineering Corp., Boston, for a 3-story, 80 x 500-foot combined manufacturing and foundry building at its west end plant.

DANBURY, CONN.—The Ball & Roller Bearing Co. will build a 2-story, 50 x 75-foot addition.

HARTFORD, CONN.—The Whitney Machine Co. contemplates a plant at an estimated cost of $82,000.

HARTFORD, CONN.—Bids have closed for a 98 x 194-foot factory to cost $65,000, for the Hartford-Fairmount Co., builder of machinery.

HARTFORD, CONN.—Reconstruction of the Hartford Rubber Works division of the United States Tire Co. has recently been announced by C. B. Whittlesey, president of the local plant.

HARTFORD, CONN.—The Merrow Machine Co. has recently purchased property, and although officials of the company have made no definite statement, it is understood that a factory addition will be erected.

HARTFORD, CONN.—The L. & L. Automobile Accessories Corp., has been formed here to manufacture automobile parts. The capital stock is $25,000. The incorporators are Lewis L. Libby, Florence L. Libby, and Joseph Albani.

MERIDEN, CONN.—Wolfs Abrasive Wheel Co. has been incorporated with a capital of $400,000.

MERIDEN, CONN.—The Manning Bowman Co., nickel and silver plated ware, has let the contract for a 5-story, 50 x 130-foot factory addition.

NEW BRITAIN, CONN.—The Eastern Malleable Iron Co. will erect a building.

NEW BRITAIN, CONN.—The Fafnir Bearing Co. has let a contract for a 51 x 137-foot addition to cost $97,000.

PHILLIPSDALE, R. I.—The Washburn Wire Co. has been incorporated with $1,500,000 capital, by Albert R. Palmer, Madison, N. J., Frank R. Serles, East Orange, N. J. and George F. Handel, New York.

THOMASTON, CONN.—Bids have closed for a 3-story and basement, 90 x 100-foot factory to cost $40,000 for the Waterbury Jewell Co.

WATERBURY, CONN.—The Manufacturers Foundry Co. will build a 100 x 153-foot addition.

WATERVILLE, CONN.—The American Pin Co. is considering plans for a 4-story building.

North Atlantic States

ALBANY, N. Y.—The Cox Brass Mfg. Co. plans a factory buildnig, 2-stories, 38 x 46 feet.

ALBANY, N. Y.—The White Service Station & Motor Co. plans a salesroom and machine shop.

ALBANY, N. Y.—B. Hennessey has had plans drawn for a machine and repair shop, 1-story, 124 x 153 feet.

BATH, N. Y.—The property of the Bath Machine Works Co., which has not been operated for sometime, has been purchased by R. H. Hood, of Rochester N. Y.

BATH, N. Y.—The United States Hammered Piston Ring Co., Inc., machine shop and foundry, has been incorporated with $25,000 capital, by U. H. Frey, J. C. Frey and J. S. Frey, Hammondsport.

BROOKLYN, N. Y.—The Couch Haas Motors Corp., 1537 Bedford avenue, plans a factory building, 2-stories, 80 x 185 feet.

BROOKLYN, N. Y.—The Bay Machine Co. has been incorporated with $50,000 capital, by J. A. Clymes, T. E. Shea and P. J. McGrath, 145 East Eighty-second street.

BROOKLYN, N. Y.—The American Macaroni Dies, Inc., dies and metal plates, recently was incorporated with $5000 capital, by A. Battista, P. Gardone and O. Scallisi, 930 Fifty-sixth street.

BUFFALO.—The Guilford Mfg. Co., 225 Guilford street, has had plans drawn for a boiler room.

MIDDLETOWN, N. Y.—T. E. Reinhalter Corp., machine shop, recently was incorporated with $50,000 capital, by D. E. Stuart, W. L. Maguire and Peter Reinhalter.

NEW YORK.—The Wilkie & Carbonic Gas Co. plans a power house.

NEW YORK.—This city plans alterations to a boiler plant at Blackwells Island.

NEW YORK.—The J. L. Mott Iron Works, Inc., has had plans drawn for alterations to its plant.

NEW YORK.—The Pan American Iron Works, Inc., recently was incorporated with $10,000 capital, by M and A. Horowitz and J. Bond, 515 East 138th street.

NEW YORK.—The Presto Gas & Blower Iron Mfg. Co. has been incorporated with $10,000 capital, by J. Kornbluh, T. Podelsky and L. Pivnik, 75 East 111th street.

NEW YORK.—The Independent Gas & Electric Fixture Co. has been incorporated with $15,000 capital, by H. Goldberg, I. and R. Clar, 528 East 149th street.

NEW YORK.—The Climax Smelting & Refining Co. recently was incorporated with $10,000 capital, by S. Blumenfeld, A. Miller and M. Yockers, 1 Madison avenue.

NEW YORK.—The Begley Mechanical Corp., electrical devices, has been incorporated with $300,000 capital, by W. J. Begley, E. W. Ernst and F. P. Hennessy, 200 West Twenty-third street.

NEW YORK.—The Acetylene & Electric Welding Machine Co. has been incorporated with $11,000 active capital, by R. E. Polhemus, L. Scheuer and S. Dannenberg, 407 East Fiftieth street.

NEW YORK.—The Standard Button Machine Co., machinery and tools, recently was incorporated with $100,000 capital, by J. E. Griswold, H. P. Livermore and A. P. Nevin, 30 Church street.

ROCHESTER, N. Y.—The American Laundry Machine Co. plans a machine shop, 2-stories, 161 x 198 feet.

SYRACUSE, N. Y.—Plans have been completed for the organization of the Franklin Die Castings Corp., with a capital of $1,000,000. Howard L. Franklin, brother of H. H. Franklin, president of the H. H. Franklin Mfg. Co., is to be president; Holbert C. Skinner and C. E. Hull, vice president, and secretary and treasurer, respectively. It is the intention of the company to erect or acquire a new plant.

UTICA, N. Y.—The Muson Mill Machinery Co. contemplates a factory building, 2-stories.

WHITEHALL, N. Y.—The Adirondack Machine Co. recently was incorporated with $20,000 capital, by J. J. Doran, D. E. Brett and E. M. Finch.

BIRDSBORO, PA.—The Birdsboro Foundry & Machine Co. has placed contracts for an extension to its machine shop, 60 x 187 feet.

ERIE, PA.—The Eric Art Metal Co. will build an addition, 120 x 190 feet.

FREELAND, PA.—The Freeland Chamber of Commerce is to aid the Freeland Foundry & Machine Co., whose plant was damaged by fire some time ago.

IRWIN, PA.—The Pittsburgh Reflector & Illuminating Co., Pittsburgh, will build a plant here.

NEW CASTLE, PA.—The Bacon Motor Corp. has been organized with $1,500,000 capital to manufacture passenger cars, and has purchased a 21-acre site here on which it plans to erect a plant. F. C. Van Der Loof, Butler, Pa., formerly in charge of the automobile department of the Standard Steel Car Co., is president and F. W. Bacon, this city, is vice president.

PHILADELPHIA.—Work will be undertaken at once by the Wicaco Screw & Machine Works on a one and 2-story factory addition, 82 x 206 feet.

PHILADELPHIA.—A total of $2,500,000 will be expended by the Philadelphia Electric Co. on a power house. The building will be 1-story, 130 x 197 feet.

PHILADELPHIA.—The Philadelphia Storage Battery Co. has awarded the Stewart Bros. Co. a contract for a 3-story plant addition, 50 x 219 feet, with an ell, 26 x 50 feet.

PHILADELPHIA.—The Standard Tin Foil Corp. has awarded a contract to the Orson Co., for a $200,000

factory building. The structure will be 2-stories, 130 x 260 feet.

PHILADELPHIA.—The Wright Roller Bearing Co. has awarded the general contract for a $10,000 plant addition to the H. John Homan Co. Plans call for a building 1-story, 50 x 80 feet.

PITTSBURGH.—The Macbeth-Evans Glass Co. has let the contract for a machine shop and pattern shop.

PITTSBURGH.—The Mayer Wagon Co. plans a plant addition, 3-stories, 49 x 112 feet, to cost $50,000.

PITTSBURGH.—The Conley Car Co., tank cars, recently was incorporated with $25,000 capital, by Joseph H. Holmes, F. G. Conley and John O. Burgwin.

PITTSBURGH.—The Green River Gas Co. has been incorporated with $100,000 capital, by J. Hartman Jr., W. P. McNellie, H. J. Gallagher, H. Adams and J. Cheuvront.

READING, PA.—Part of the Orr, Painter & Co.'s Reading Stove Works recently was damaged by fire.

READING, PA.—A. Lincoln Frame, 403 South Fifth street, plans an addition to his foundry, 60 x 92 feet, to cost $22,000.

READING, PA.—The Gray Iron Foundry Co. has placed a contract for a foundry extension to cost $22,000. A. L. Frame is president.

READING, PA.—The Birdsboro Steel Foundry & Machine Co. has placed contracts for an addition to its machine shop. The building will be 60 x 187 feet.

SHARON, PA.—The Savage Arms Corp. will build a $50,000 plant and a power house.

JERSEY CITY, N. J.—The Drop Forge Co., Westside avenue, has let a contract for a 4-story plant to cost about $50,000.

JERSEY CITY, N. J.—The American Platinum Works, 231 North Jersey Railroad avenue, plans a factory and boiler house.

MILLVILLE, N. J.—The Millville Cast Iron Products Co. plans a foundry, 50 x 150 feet, and other improvements.

MONTCLAIR, N. J.—J. D. Mackridge, Inc., 21 Greenwood avenue, has been incorporated with $100,000 capital to manufacture motor vehicles and motors, by Robert Kayser, John and Florence C. Sulzberger.

NEWARK, N. J.—Work will begin in the spring on a factory building for the Aeolian Co.

NEWARK, N. J.—The Seton Leather Co. plans a factory building and boiler house to cost $40,000.

NEWARK, N. J.—The Rubber & Celluloid Products Co., 55 Ferry street, has plans for a boiler and pump house.

NEWARK, N. J.—A 46 x 57-foot boiler house and engine room will be erected at the plant of Kaltendach & Stevens, Inc.

NEWARK, N. J.—The Simon-Gartler Corp. has been incorporated with $125,000 capital to manufacture skylights, cornices, sheet metal structures, etc.

NEWARK, N. J.—The Tanners Machinery Co., 42 Kent street, has been incorporated with $100,000 capital, by Anna B. Spiegel, James Brown and Charles J. Hanke.

NEWARK, N. J.—Plans are being considered by the Autocar Co., Ardmore, N. J., for a large service station and distributing plant in this city. It is stated that the building will be 1-story, 200 x 412 feet.

NEWARK, N. J.—The American Writing Machine Co., a subsidiary of the Remington Typewriter Co. has acquired the building at Central avenue and Fourth street, to which it will remove the equipment at its present plant on Mulberry street.

NEW BRUNSWICK, N. J.—The Middlesex Motors, Inc., 175 Smith street, Perth Amboy, N. J., recently was incorporated with $30,000 capital, by Leo B. Wolfe, Edward Miller and Frank Stas.

PHILLIPSBURGH, N. J.—The Hull Battery & Ignition Co. has been incorporated with $70,000 capital, by R. N. Fulton, G. T. Hull and J. M. Cady.

SOUTH RIVER, N. J.—The Eastern Foundry Corp. has been incorporated to manufacture piano plates, etc.

SOMERSET, MD.—The plant of the Somerset Highland Foundry Machine Co. recently was damaged by fire. The loss has been estimated at $30,000.

In The South

CLARKSVILLE, TENN.—The Red River Co. has been incorporated with $100,000 capital to mine minerals and manufacture pig iron, by H. N. Leech, Graham Macfarlane, L. C. Nesbet and Callis Tate.

KNOXVILLE, TENN.—The Dixie Machinery Co., Inc., recently was incorporated with $10,000 capital, by E. W. Gillespie and others.

MEMPHIS, TENN.—The Liberty Cotton Chopper Co. has been incorporated with $100,000 capital, by F. R. Hansell and others.

MEMPHIS, TENN.—The Memphis Leland Lock Co. has been organized to manufacture automobile locks, by Frank B. Folsom and others.

NASHVILLE, TENN.—The York Starter Co. has been incorporated with $25,000 capital, by W. L. York, B. U. Taylor, O. R. York, J. F. Shaw and others.

SOUTH PITTSBURG, TENN.—The South Pittsburg Foundry Co. is reported planning a plant addition, 50 x 200 feet.

CHARLOTTE, N. C.—Alexander & Garsed, cotton-mill machinery, plans a building to cost $10,000.

FAYETTEVILLE, N. C.—A $200,000 woodworking plant will be erected here by the Jackson Bros. Co.

HIGH POINT, N. C.—The Bar Spring Co. recently was incorporated with $125,000 capital, by John H. Welborn, William H. English and others.

KINSTON, N. C.—The Kinston Iron & Mantel Works will erect two buildings, 50 x 80 feet and 40 x 60 feet.

TARBORO, N. C.—The Eclipse Harrow Mfg. Co. has been incorporated with $100,000 capital, by M. G Mann, T. T. Thomas and M. S. Brown.

COLUMBIA, S. C.—The Whitton Air Jack Co. has been incorporated with $10,000 capital, by W. B. Whitton and others.

FLORENCE, S. C.—The Eagle Machine & Mfg. Co. recently was incorporated with $20,000 capital, by L. W. Broadfoot and others.

AMERICUS, GA.—The W. H. Sawyer Sons Co. plans to rebuild its plant which was damaged by fire to the extent of $75,000.

ATLANTA, GA.—The Railway Lock Spike Co. recently was organized with $300,000 capital, by J. F. Pickard, H. E. Harris and R. R. Lanham.

SAVANNAH, GA.—J. F. and J. E. Weeks will equip a plant for the manufacture of metallic caskets.

BESSEMER, ALA.—The Beggs Foundry Co. recently was incorporated with $3000 capital, by Oscar Cochranel, P. J. Beggs and others.

BIRMINGHAM, ALA.—The Birmingham Machine & Foundry Co. plans a machine shop addition.

BIRMINGHAM, ALA.—The Vulcan Rivet Co. recently was incorporated with $75,000 capital and contemplates enlarging a plant which it has taken over.

GREENVILLE, MISS.—The Riverside Transmision Co. recently was incorporated with $7000 capital, by R. B. Claggett and others.

JACKSONVILLE, FLA.—The Southern Automatic Machine Co. recently was incorporated with $10,000 capital, by R. H. Tresca and others.

SHREVEPORT, LA.—The Acme Oil & Drill Co., J. D. Pace president, is equipping a plant for turning out its products including drop forging equipment, heating furnaces and power hammers.

Throughout the West

MINNEAPOLIS.—The Russel Grader Mfg. Co. plans a factory and warehouse, to cost $75,000.

MASON CITY, IOWA.—The Mason City Foundry & Machine Co., recently was incorporated with $30,000 capital, by R. E. Wilcox, L. G. Dreyer and others.

WATERLOO, IOWA.—George B. Miller & Sons contemplate a plant to include a foundry.

ST. LOUIS.—Henry P. Mueller, 215 Lombard street, has plans for a foundry, to cost $100,000.

ST. LOUIS.—The Standard Stamping Co., 200 North Broadway, is reported planning a machine shop, 1-story, 24 x 41 feet, to cost $10,000.

ST. LOUIS.—John Nauman, care of the Urizda Realty Co., 4012 Choteau avenue, contemplates an automobile accessory plant, to cost $40,000.

ST. LOUIS.—The Wagner Electric Co. will build an additional plant five stories, 60 x 400 feet, with two wings each 60 x 60 feet, costing $44,000.

AUSTIN, TEX.—The Paris-Hugo Bridge Co., capitalized at $100,000, will build a bridge across Red river near Arthur City, Tex. E. M. McGlasson is one of the incorporators.

DALLAS, TEX.—Work of laying the ofundation for the new Dallas Machine & Locomotive Works has been started. The plant will be built at an estimated cost of $35,000.

EASTLAND, TEX.—The Howard Tool Works has been incorporated with $50,000 capital, by D. M. Howard, P. S. Wolfe and H. L. Durlin.

RANGER, TEX.—The Crescent Sheet Metal Co. recently was incorporated with $10,000 capital, by F. E. Skinner, W. E. Skinner and A. M. Fitzgerald.

CARNEGIE, OKLA.—An election will be held Dec. 16 on $24,000 in bonds for waterworks extensions.

OMAHA, NEBR.—The Carter Sheet Metal Works, 108-12 South Tenth street, is reported planning a plant, 1-story, 132 x 162 feet, to cost $20,000.

SIOUX FALLS, S. DAK.—An election will be held Dec. 9 to issue $375,000 in bonds for waterworks construction and $175,000 for a sewer system.

DEVILS LAKE, N. DAK.—The Northwestern Iron Works contemplates a plant to include a machine shop, foundry, pattern shop, tin shop, blacksmith shop, etc.

ORNICO, NEV.—The 100-ton mill of the Olympic Mines Co. recently was damaged by fire. The loss has been estimated at $70,000.

PHOENIX, ARIZ.—Bids will be taken soon for a pipe line to cost $1,000,000. H. J. Phillips, St. Louis, is consulting engineer.

Central States Activity

JANESVILLE, WIS.—The Samson Tractor Co., now erecting a large foundry, has announced plans for two others of similar dimensions.

MILWAUKEE.—The Atlas Foundry Co. will erect a plant addition, 80 x 80 feet, at an estimated cost of $20,000.

MILWAUKEE.—The Gemco Mfg. Co., G. F. Disher president, 742 South Pierce street, will build a plant costing $50,000.

MILWAUKEE.—The Worden-Allen Co. has the contract to construct new buildings for the Newport Co. manufacturer of coal tar products.

MILWAUKEE.—The Nordberg Mfg. Co., engines and pumping equipment, has awarded contracts for a 1-story machine shop addition, 100 x 120 feet, to cost $100,000.

MILWAUKEE.—Contracts have been awarded by the Milwaukee Auto Engine & Supply Co. for a 1-story machine shop, 120 x 120 feet, costing $45,000 without machinery.

MILWAUKEE.—The Mid-West Electric Co. has been incorporated with a capital of $50,000 by David, Louis and Anna Cohen to manufacture and deal in electric-motored domestic and industrial appliances.

MILWAUKEE.—The Stowell Co., manufacturer of hardware specialties, has acquired the foundry of the Pelton Steel Co. at Chicago road and Elliot place, and will convert it into a malleable iron unit.

MILWAUKEE.—The Pelton Steel Co. has sold its plant to the Stowell Co., manufacturer of steel and iron castings. It is said the plant will be operated by the purchaser as a branch malleable iron foundry.

RACINE, WIS.—The American Skein & Foundry Co. will enlarge its plant by an addition, 100 x 250 feet.

RACINE, WIS.—The Walker Mfg. Co. has broken ground for a foundry, 120 x 128 feet, to be equipped for light gray iron casting work. The company makes automobile jacks and other accessories.

RACINE, WIS.—Becker, Menzel & Becker, consulting engineers, Baker building, are preparing specifications for improvements in the steam power plant of the Higgins Spring & Axle Co., and also for the Sheboygan (Wis.) Fruit Box Co.

SHEBOYGAN, WIS.—The Globe Metal Products Co. is erecting a foundry and cupola building at an estimated cost of $50,000.

ALPENA, MICH.—The General Engineering Co., John Lundberg, president, will erect a foundry and machine shop, 70 x 80 feet.

BATTLE CREEK, MICH.—Two hundred acres have been acquired for expansion of the Grand Trunk railway machine and repair shops here.

BATTLE CREEK, MICH.—The Advance Pump & Compressor Co. is erecting a foundry, machine shop, power house, testing room, blacksmith shop and warehouse, which will double its capacity.

BENTON HARBOR, MICH.—Plans have been prepared for a foundry addition for the Superior Steel Co. to cost $200,000.

CADILLAC, MICH.—Ground has been broken for the first unit of the new plant for the Kol-Ben Wheel Co. It will be 48 x 156 feet.

DETROIT.—The Gray Motor Co. plans a plant addition, 60 x 160 feet.

DETROIT.—The Commerce Motor Car Co. contemplates a plant addition.

DETROIT.—The Timken-Detroit Axle Co. has let a contract for a second story addition.

DETROIT.—The Hupp Motor Car Corp will erect a power plant and factory at Jackson, Mich.

DETROIT.—The Cut Tap & Die Co. plans a factory and office addition, 1-story, 40 x 48 feet, to cost $15,000.

DETROIT.—Architect Albert Kahn is taking figures on the machine shop unit of the new Paige-Detroit Motor Car Co. plant.

DETROIT.—The McCord Mfg. Co., manufacturer of auto parts, has purchased the plant of the Racine Mfg. Co., Racine, Wis.

DETROIT.—The Krukow Process Tool Co. has been chartered with $20,000 capital and will operate a machine and tool shop.

DETROIT.—Edmunds & Jones Corp., manufacturer of auto lamps, plans extensive plant additions. George E. Edmunds is president.

DETROIT.—The Star Tool & Die Works has been incorporated with $15,000 capital, by Herbert Chartier, 716 Lakewood boulevard, and others.

DETROIT.—The Peninsula Forging, Die & Tool Co. has been chartered with $10,000 capital, by George F. Daschke, 193 Woodward avenue and others.

DETROIT.—The Detroit Weatherproof Body Co. has acquired additional space at Corunna, Mich., for the manufacture of limousine bodies. Other buildings will be erected later.

DETROIT.—W. P. Fleming, Inc., has been chartered with $15,000 capital to manufacture garage equipment and machinery, by F. R. Dentz, 225 Elmhurst avenue and others.

DETROIT.—The Continental Trailer Corp. has been chartered with $50,000 capital to manufacture auto trailers, trucks, etc., by Thomas Steiner, 1499 Townsend avenue, and others.

FILER CITY, MICH.—The Manistee Drop Forge Co. is erecting a new building.

HOLLY, MICH.—The Ground Hog Tractor Co. has been organized with $250,000 capital to manufacture farm tractors. C. F. Megow is president.

JACKSON, MICH.—The American Gear & Mfg. Co. will erect a plant addition, 169 x 280 feet, to cost $180,000.

KALAMAZOO, MICH.—The D'Arcy Spring Co. is completing an addition, 112 x 150 feet.

KALAMAZOO, MICH.—The Dearborn Equipment Co., capitalized at $50,000, recently was organized to manufacture garage equipment, by John H. Penniman and others.

MENOMINEE, MICH.—The Lloyd Mfg. Co. has purchased the plant of the Automatic Welding Co.

MUSKEGON, MICH.—The Shaw Electric Crane Co. contemplates an addition to double the capacity of its plant.

MUSKEGON, MICH.—The Shaw Crane Works contemplates a building campaign to enable the manufacturer of gas engines and machine tools.

SAGINAW, MICH.—The Michigan Crankshaft Co. is erecting a building, 120 x 690 feet.

SAGINAW, MICH.—The Erdman-Guider Co., manufacturer of auto bodies, is installing machinery in its new plant.

CHICAGO.—The Pullman Co., 79 East Adams street, contemplates a shop.

CHICAGO.—The Crane Co., 636 South Michigan avenue, will build a pipe shop, 193 x 375 feet.

CHICAGO.—The Mechanical Equipment Co. will erect a plant, 3-stories, 52 x 125 feet, to cost $60,000.

CHICAGO.—The Powell Steel Kitchen Co., 219 Loomis street, contemplates a factory building, 1-story, 86 x 144 feet, to cost $25,000.

CHICAGO.—The Simplex Windshield Wings Co. has been incorporated with $50,000 capital, by Robert Hartman, Henry Halbritter and Samuel N. Reiback.

EAST ST. LOUIS, ILL.—The Hussman Refrigerator & Butcher Supply Co. plans an office and factory building, 2-stories, 130 x 260 feet, to cost $100,000.

HARVEY, ILL.—The Buda Motor Co. plans a foundry, 40 x 160 feet, to cost $75,000.

JOLIET, ILL.—The Moore Bros. Co., Lewis Moore, president, is reported planning a foundry, 67 x 70 feet, to cost $20,000.

MARION, IND.—The Marion Gray Iron Foundry Co. is reported planning a warehouse, 1-story, 54 x 122 feet, to cost $10,000.

WEST PULLMAN, ILL.—The International Harvester Co., 606 South Michigan avenue, Chicago, contemplates a manufacturing building here.

CONNERSVILLE, IND.—The Lexington Motor Co. contemplates a foundry.

CRAWFORDSVILLE, IND.—The Crawfordsville Foundry Co. will build a foundry and machine shop consisting of three buildings, 1-story, 60 x 80 feet, 2-story, 60 x 80 feet, and 1-story, 20 x 40 feet, costing $20,000.

EVANSVILLE, IND.—The Advance Stove Works plans a foundry addition.

EVANSVILLE, IND.—The Imperial Desk Co. has had plans drawn for a factory and power house.

FT. WAYNE, IND.—The General Electric Co., Broadway and Wall streets, plans a tank, shop and garage, 1-story, 140 x 200 feet, at an estimated cost of $75,000.

HAMMOND, IND.—The American Iron & Metal Co. recently was incorporated with $10,000 capital, by Sam Abalman, John A. Gavit and James K. Stinson.

INDIANAPOLIS.—The Globe-Bosse-Wold Furniture Co. has plans for a power house, 60 x 80 feet.

INDIANAPOLIS.—The Imperial Drop Forge Co., 510 South Harding street, has had plans drawn for a power plant.

INDIANAPOLIS.—The Vonegut Machinery Co. is taking bids for a machinery warehouse, 2-stories, to cost $200,000.

INDIANAPOLIS.—The Robbins Body Corp., capitalized at $2,500,000, has been chartered to take over the plant and business of Irvin Robbins & Co., automobile body manufacturers.

MICHIGAN CITY, IND.—The Sheet Steel Products Co. recently was incorporated with $200,000 capital, to manufacture pressed steel, by Charles E. McBride, D. A. Crawford and K. S. Baxter.

RICHMOND, IND.—The Richmond Piston Ring Co. is reported contemplating a plant to cost $40,000.

SOUTH BEND, IND.—The Lock Joint Tube Co., capitalized at $100,000, has been chartered to manufacture metal tubing by Isadore Van Huffel, Isadore Woodka and Andrew Woodka.

SULLIVAN, IND.—The Mutual Truck Co. will build a 1-story addition, 100 x 300 feet, costing $40,000.

AKRON, O.—The Summit Mold & Machine Co. plans a machine shop to cost $30,000.

AKRON, O.—The Franz Foundry & Machine Co., recently incorporated with $400,000 capital, has taken over the Triumph Machine Shop at Barberton, O., and will manufacture rubber making machinery. C Franz is president.

BUCYRUS, O.—The Ohio Brass Co. has plans for remodeling its foundry.

BUCYRUS, O.—Ground has been broken for an addition to the Bucyrus Machine & Tool Co. The building will be 36 x 120 feet.

CLEVELAND.—The Dangler Stove Co., 5017 Perkins avenue, plans a plant addition, 1-story, 50 x 200 feet, to cost $35,000.

CLEVELAND.—W. K. Smith, 66 Taylor road, East Cleveland, has plans for a foundry and machine shop, 100 x 120 feet, to cost $75,000.

CLEVELAND.—The Merit Machine Co. recently was incorporated with $200,000 capital, by Isador Grossman, N. M. Doehring and others.

CLEVELAND.—The Harvey Steel Products Co. has been incorporated with $120,000 capital, by George Higgins, Thomas H. Jones, Williamson building, W. R. Kinder, James P. Wood and H. O. Jones.

(*Concluded on Page* 1620)

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bes., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	4.00c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.27c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c to 3.62c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.33c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.365c
Iron bars, Boston	4.10c
Iron bars, Buffalo	3.95c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.33c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.52c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	4.00c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.37c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.43c
Plates, Buffalo	3.665c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.95c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.57c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.63c
No. 10 blue anl. sheets, N. Y.	4.82c to 6.00c
No. 10 blue anl. sheets, Phila.	5.00c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	4.47c
No. 10 blue anl. sheets, Boston	5.30c
No. 10 blue anl. sheets, Buffalo	4.565c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.53c
No. 10 blue anl. sheets, St. Paul	4.79c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	6.00c to 7.50c
No 28 black sheets, Phila.	6.00c
No. 28 blacfl sheets, Cleveland	5.27c
No. 28 black sheets, Boston	7.65c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.69c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.865c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.25c to 9.50c
No. 28 galv. sheets, Phila.	7.50c
No. 28 galv. sheets, Boston	9.00c
No. 28 galv. sheets, Cleveland	6.62c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.215c
No. 28 galv. sheets, St. Louis	7.04c
Bands, New York	4.22c
Bands, Boston	5.20c
Bands, Detroit	4.03c
Bands, Buffalo	4.065c
Hoops, Buffalo	4.065c
Hoops, Boston	5.45c
Hoops, New York	4.47c
Hoops, Detroit	4.03c
Cold rolled shafting, Buffalo	4.85c
Cold rolled shafting, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inc., 24, 26, 28, 30 and 36 in. wide by 72, 84, 96 and 120 in. long. Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40

Chicago to:

St. Louis	4.25
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	1.25
Pacific coats (tin plate)	1.25

Blue Annea ed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbefs in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
⅛-inch	1	+14
¼-inch	24½	+ 2½
⅜-inch	25½	+ 1½
½-inch	29½	11½
¾ to 1½-inch	34½	18½

Lap Weld

2-inch	28½	14½
2½ to 6-inch	30½	17½
7 to 12-inch	27½	14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼-inch	+21	+36
⅜-inch	23½	6½
½-inch	28½	15½
¾ to 1½-inch	34½	19½

Lapp Weld

2-inch	29½	16½
2½ to 4-inch	31½	19½
4½ to 6-inch	30½	18½
7 and 8-inch	22½	10½
9 and 12-inch	17½	5½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Balck	Galv.
½-inch	15½	3½
¾ to 1½-inch	20½	8½

Lap Weld

2-inch	16½	4½
2½ to 4-inch	18½	9½

Lapweld Boiler Tubes

Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16

LINK-BELT



Labor-Saving Conveyors for the Modern Foundry

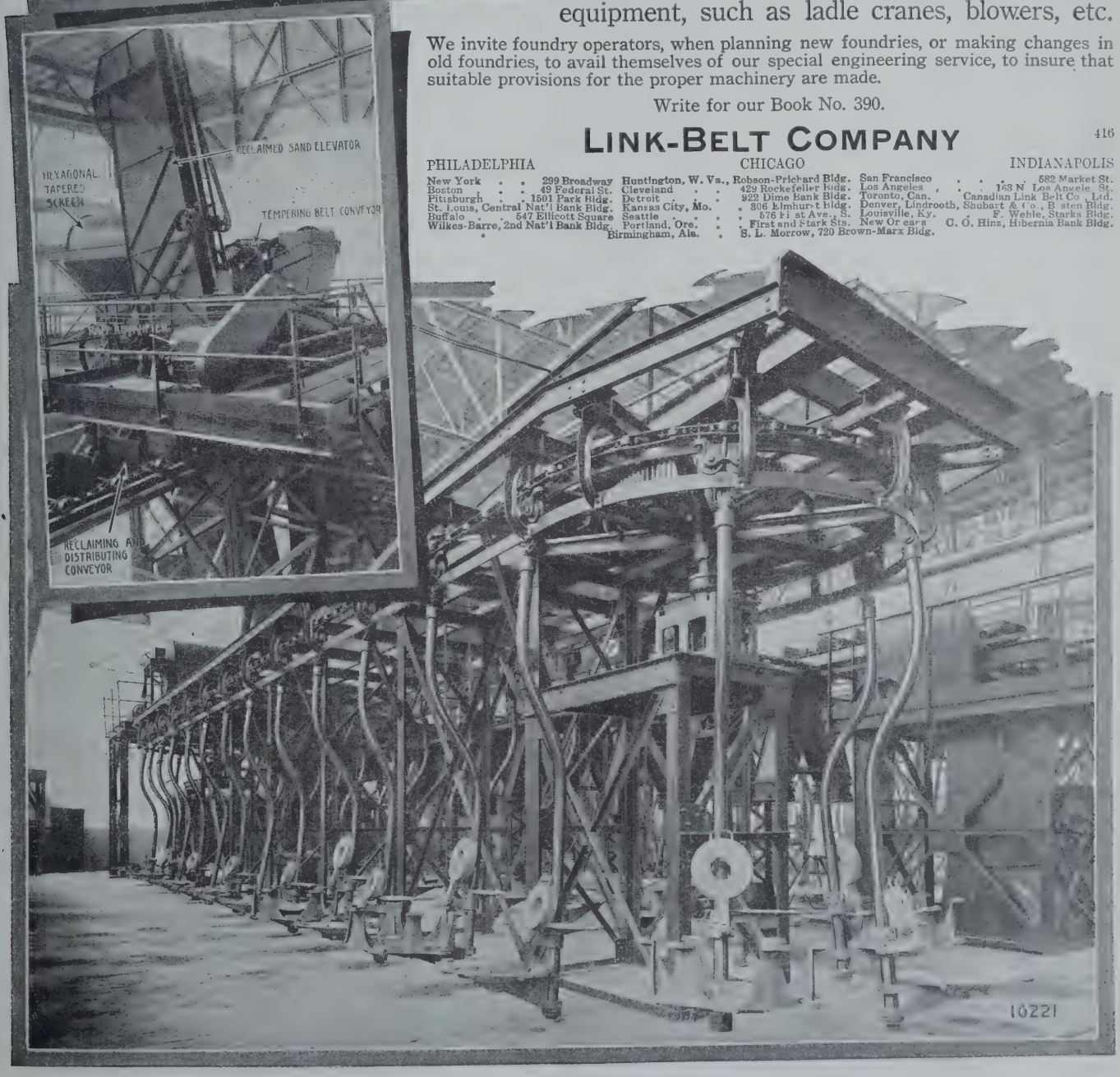
WITH modern Link-Belt Labor-Saving machinery, it is possible to increase the output of the foundry—with less labor. Foundrymen in general are realizing with increasing certainty that machinery of this type, when properly designed and built, and well taken care of, is fully as necessary an adjunct, and as reliable and economical in operation, as any other foundry equipment, such as ladle cranes, blowers, etc.

We invite foundry operators, when planning new foundries, or making changes in old foundries, to avail themselves of our special engineering service, to insure that suitable provisions for the proper machinery are made.

Write for our Book No. 390.

LINK-BELT COMPANY 416

PHILADELPHIA	CHICAGO		INDIANAPOLIS
New York . . 299 Broadway	Huntington, W. Va., Robson-Prichard Bldg.	San Francisco . . . . 582 Market St.	
Boston . . . 49 Federal St.	Cleveland . . . 429 Rockefeller Bldg.	Los Angeles . . . 163 N. Los Angeles St.	
Pittsburgh . . 1501 Park Bldg.	Detroit . . 922 Dime Bank Bldg.	Toronto, Can. Canadian Link-Belt Co., Ltd.	
St. Louis, Central Nat'l Bank Bldg.	Kansas City, Mo. . 306 Elmhurst Bldg.	Denver, Lindrooth, Shubart & Co., Boston Bldg.	
Buffalo . . . 647 Ellicott Square	Seattle . . . . 576 First Ave., S.	Louisville, Ky. . . F. Wehle, Starks Bldg.	
Wilkes-Barre, 2nd Nat'l Bank Bldg.	Portland, Ore. . First and Stark Sts.	New Orleans C. O. Hinz, Hibernia Bank Bldg.	
	Birmingham, Ala. . S. L. Morrow, 720 Brown-Marx Bldg.		



Say you saw it in THE IRON TRADE REVIEW

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$24.50 to 25.00
Chicago	21.00 to 21.50
Eastern Pennsylvania	23.00 to 25.00
Cleveland	20.50 to 21.00
St. Louis	22.00 to 22.50
Buffalo	23.00 to 23.50
New York (dealers)	18.50 to 19.00
Cincinnati	18.50 to 19.00
Birmingham	20.00 to 21.00
Valleys	22.75 to 23.00
Boston (dealers)	17.50 to 18.00

BUNDLED SHEETS

Pittsburgh	17.50 to 18.00
Eastern Pennsylvania	18.50 to 19.00
Cleveland	13.50 to 14.00
Buffalo	15.50 to 16.00
Cincinnati	13.50 to 14.00
St. Louis	13.50 to 14.00

STEEL RAILS, SHORT

Chicago	$25.50 to 26.00
Boston (dealers)	15.50 to 16.00
Cleveland	19.00 to 20.00
St. Louis	24.50 to 25.00
Birmingham	21.00 to 22.00
Cincinnati	22.00 to 22.50
Eastern Pennsylvania	22.50 to 23.00

STOVE PLATE

Pittsburgh	$22.00 to 23.00
Chicago	29.25 to 29.75
Eastern Pennsylvania	22.50 to 23.50
Cleveland	22.00 to 23.00
St. Louis	27.00 to 27.50
Buffalo	23.00 to 23.50
New York	20.50 to 21.00
Cincinnati	20.50 to 21.00
Birmingham	22.00 to 23.00
Boston	22.00 to 23.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$27.00 to 28.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	27.00 to 29.00
Buffalo	27.00 to 28.00

SHOVELING STEEL

Chicago	$20.50 to 21.00
St. Louis	21.00 to 21.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$24.50 to 25.00
Chicago	24.50 to 25.00
St. Louis	24.00 to 24.50

BALED SHEETS

Pittsburgh	21.00 to 21.50
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	21.00 to 21.50
St. Louis	22.50 to 23.00
Eastern Pennsylvania	23.00 to 25.00

BOILER PLATE, CUT

Chicago, No. 1	$19.00 to 19.50
St. Louis	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$24.50 to 25.00
St. Louis	23.00 to 23.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$26.00 to 27.00
Pittsburgh, No. 2	24.50 to 25.00
Chicago, No. 1	27.00 to 28.00
Chicago, No. 2	23.00 to 23.50
Eastern Pennsylvania, No. 1	30.00 to 32.00
Cleveland, No. 1	24.50 to 25.00
St. Louis, No. 1	25.00 to 25.50
St. Louis, No. 2	24.00 to 24.50
Buffalo	24.00 to 24.50
Cincinnati, No. 1	21.50 to 22.00
Birmingham, No. 1	20.00 to 21.00
New York, No. 1 (dealers)	27.00 to 27.50
Boston (dealers)	26.00 to 26.50

WROUGHT PIPE

Eastern Pennsylvania	$22.00 to 23.00
Eastern Pennsylvania, ungraded	17.00 to 18.00
Buffalo	18.50 to 19.00
New York (dealers)	18.50 to 19.00
Boston (dealers)	17.50 to 18.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$26.00 to 27.00

CITY WROUGHT

New York, long (dealers)	21.00 to 22.00

BUSHELING

Chicago, No. 1	$20.00 to 20.50
Chicago, No. 2	16.00 to 16.50
Cleveland, No. 1	18.50 to 19.00
Cleveland, No. 2	15.00 to 15.50
St. Louis, No. 1	22.00 to 22.50
Buffalo, No. 1	20.00 to 21.00
Cincinnati, No. 1	16.50 to 17.00
Eastern Pennsylvania, No. 1	20.00 to 21.00

MACHINE SHOP TURNINGS

Pittsburgh	$15.00 to 15.50
Chicago	12.00 to 12.50
Eastern Pennsylvania	18.50 to 19.50
Eastern Pennsylvania (blast furn.)	17.00 to 18.00
Eastern Pennsylvania (chemical)	24.00 to 25.00
Cleveland	12.50 to 13.00
Buffalo	14.50 to 15.00
New York (dealers)	14.00 to 14.50
St. Louis	15.00 to 15.50
Cincinnati	7.50 to 8.00
Birmingham	12.00 to 13.00
Valleys	13.50 to 14.00
Boston (dealers)	14.00 to 14.50
Boston (blast furnace) (dealers)	11.50 to 12.00

CAST IRON BORINGS

Pittsburgh	$18.00 to 18.50
Chicago	13.75 to 14.25
Eastern Pennsylvania	22.00 to 23.00
Eastern Pennsylvania (chemical)	24.00 to 25.00
Cleveland	16.00 to 16.50
St. Louis	13.00 to 13.50
Buffalo	17.50 to 18.00
New York (dealers' price)	16.50 to 17.00
Cincinnati	11.00 to 11.50
Birmingham	12.00 to 13.00
Valleys	17.50 to 17.75
Boston (dealers)	16.00 to 17.00
Boston (blast furnace) (dealers)	11.50 to 12.00

IRON AXLES

Pittsburgh	$44.00 to 45.00
Chicago	39.50 to 40.50
Eastern Pennsylvania	40.00
Cleveland	35.00 to 36.00
St. Louis	36.50 to 37.00
Buffalo	33.00 to 34.00
Cincinnati	23.00 to 23.50
Birmingham	29.00 to 30.00

IRON RAILS

Chicago	28.50 to 29.00
Cleveland	27.00 to 28.00
St. Louis	27.00 to 27.50
Buffalo	25.00 to 26.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	21.75 to 22.25
Cleveland	17.50 to 18.00
St. Louis	20.00 to 20.50
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	28.50 to 29.00
Cleveland	22.00 to 23.00
Buffalo	21.00 to 21.50
New York	17.50 to 19.00
Eastern Pennsylvania	25.00 to 26.00

FORGE FLASHINGS

Cleveland, large	$16.75 to 17.25
Cleveland, small	18.00 to 18.50
Chicago, small	17.00 to 17.50
Boston (dealers)	13.00 to 14.00

FORGE SCRAP

Chicago	22.50 to 23.00
Eastern Pennsylvania, No. 1	17.50 to 18.50
Boston	14.00 to 14.50

ARCH BARS AND TRANSOMS

Chicago	32.50 to 33.00
St. Louis	29.00 to 30.00

ANGLE BARS—IRON

Chicago	$31.00 to 31.50
St. Louis	26.00 to 26.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$18.00 to 18.50
Eastern Pennsylvania	19.00 to 20.00
Boston (dealers)	15.00 to 15.50
St. Louis	16.00 to 16.50
Cleveland	19.00 to 19.50
Buffalo	17.50 to 18.00
Chicago	17.50 to 18.00

STEEL CAR AXLES

Pittsburgh	$32.00 to 33.00
Eastern Pennsylvania	32.00
Cleveland	34.00 to 35.00
St. Louis	34.00 to 34.50
Buffalo	33.00 to 34.00
Chicago	33.50 to 34.50
New York (dealers)	28.00
Birmingham	28.00 to 29.00
Boston (dealers)	27.00 to 28.00

SHAFTING

Eastern Pennsylvania	$26.00 to 28.00
St. Louis	31.00 to 31.50
New York (dealers)	26.00 to 27.00
Chicago	30.00 to 30.50

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$31.00 to 32.00
Pittsburgh, steel	24.50 to 25.00
Chicago, iron	29.50 to 30.00
Eastern Pennsylvania, iron	29.00 to 30.00
Cleveland, iron	26.00 to 27.00
St. Louis, iron	26.00 to 26.50
Buffalo, iron	27.00 to 27.50
Birmingham, iron	26.00 to 27.00
Birmingham, tram car	26.00 to 27.00
Boston	25.00 to 26.00
Cincinnati	21.50 to 22.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$30.00 to 31.00
Chicago, cupola	34.50 to 35.00
Eastern Pennsylvania, cupola	31.00 to 32.00
Cleveland, cupola	30.00 to 30.50
New York, cupola (dealers)	27.00 to 28.00
Cincinnati, No. 1, cupola	25.00 to 25.50
Birmingham, cupola	26.00 to 27.00
St. Louis, railroad	32.00 to 32.50
St. Louis, agricultural	32.00 to 32.50
Buffalo	27.00 to 27.50
Boston	34.00 to 35.00
Valleys	30.00 to 31.00

HEAVY CAST

New York (dealers)	24.00 to 25.00
Buffalo	21.00 to 22.00
Pittsburgh	25.00 to 26.00
Cleveland	23.00 to 24.00
Boston	28.00 to 28.50

MALLEABLE

Pittsburgh, railroad	$25.00 to 26.00
Pittsburgh, agricultural	22.00 to 23.00
Chicago, railroad	28.00 to 29.00
Chicago, agricultural	28.50 to 29.00
Eastern Pennsylvania, railroad	25.00 to 27.00
Cleveland, railroad	25.50 to 26.00
Cleveland, agricultural	18.50 to 19.00
St. Louis, railroad	24.50 to 25.00
St. Louis, agricultural	23.50 to 24.00
Cincinnati, railroad	17.00 to 17.50
Cincinnati, agricultural	16.50 to 17.00
Boston, railroad	23.00 to 24.00
Buffalo	22.50 to 23.50

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$30.00 to 31.00
Chicago	31.50 to 32.00
Eastern Pennsylvania	32.00
Cleveland	28.50 to 29.00
St. Louis	32.50 to 33.00
Birmingham	27.00 to 28.00
Boston (dealers)	26.00 to 27.00

LOCOMOTIVE TIRES

Chicago	23.50 to 24.00
St. Louis	23.00 to 23.50

BOILER PUNCHINGS

Chicago	$26.00 to 27.00
Eastern Pennsylvania	27.00 to 28.00

A Repeater

Not a rifle but another invitation to give us an opportunity to figure with you whenever you are in the market to buy your scrap requirements or to sell the scrap which you produce.

A-ee us
C-oncerning your
R-equirements
And our
Prices

MILLCO

SERVICE

S-ell
C-arloads
R-ight
And be
P-leased.

The James S. Miller Company
McCormick Bldg. Chicago.

(*Concluded from Page* 1615)

DAYTON, O.—The Mead Pulp & Paper Co. plans a machine shop, 2-stories, 60 x 250 feet.

DAYTON, O.—The Vaile-Kimes Co., pump makers, has reincorporated as a $1,000,000 company. Plans are under way for the erection of a large plant.

DAYTON, O.—New equipment will enter into a 3-story building to be erected by the Stanley Mfg. Co. Company makes perfume bottle labels and thin metal labels for machinery.

DAYTON, O.—The Dayton Tractor Co. has been incorporated with capitalization of $250,000 and plans to manufacture tractors. E. A. Brenneman, Harry Gascho, J. E. Allen, Isaac Warner and A. M. Inderbitzen are the incorporators.

DAYTON, O.—The Miami Brass Foundry and Miami Mfg. Co., each headed by Ben Semmelman, will erect a 3-story plant. The companies have installed core ovens giving capacity of drying 150,000 pounds of sand core per day. New furnace equipment and ten molding machines have been installed.

DAYTON, O.—Educational Toy Mfg. Co., capitalized at $25,000, has decided to locate in Dayton instead of Springfield, Mass., and has taken over the Custer machine shop, 28 North Ludlow street. The company will purchase punch presses and other mechanical equipment. Joseph Vehan, Springfield, Mass., is president, and W. H. Robertson, general manager.

DAYTON, O.—William Dennick & Co., 1415 East Fifth street, manufacturers of heavy and light bronze castings, are erecting a 2-story addition to their foundry, the upper floor to be used as a core room, dressing room and racks for core boxes, while the lower floor will be divided into two sections, one part to be used as an office while the other will be used for machinery and shipping rooms. In addition to the addition, the company is modernizing all its equipment.

MANSFIELD, O.—The Barnes Mfg. Co. plans a machine shop addition, 2-stories, 22 x 126 feet, to cost $30,000.

NEWARK, O.—The Ohio Sash Weight Co. recently was incorporated with $15,000 capital, by M. J. MacDonald, N. E. Hones and others.

NILES, O.—The Kennedy Reiter Co. has been incorporated by Myron Kennedy, Clarence Reiter and others, and will manufacture metal products.

NORTH CANTON, O.—Work on an addition for the Hoover Suction Sweeper Co. is being rushed to completion. The building will be 80 x 170 feet.

TOLEDO, O.—The Acme Specialty Co. plans a manufacturing building, 3-stories, 45 x 100 feet, to cost $45,000.

TOLEDO, O.—The Krenz Boiler Works has been incorporated with $20,000 capital, by Reinhold W. Krenz, M. K. Kureth and others.

WASHINGTON COURT HOUSE, O.—The Fayette Sand & Gravel Co. has been incorporated with $25,000 capital, by G. D. Baker, George A. Hyer, H. C. Hosier and others.

LEXINGTON, KY.—This city proposses to build a sewage reduction plant.

LOUISVILLE, KY.—The Frank Fehr Coal Storage Co. has had plans prepared for a $1,000,000 coal storage plant.

LOUISVILLE, KY.—The Kentucky Color & Chemical Co. has been organized with $70,000 capital by A. W. Clark, G. A. Goodell and others and will build a plant.

LOUISVILLE, KY.—The Byron Engineering Works has been organized by O. E. Byron and others, and plans are being made for a plant to be devoted to the manufacture of truck trailers.

PIKEVILLE, KY.—The Kentucky & West Virginia Power Co. will purchase equipment for its plant.

ASHLAND, W. VA.—The Ashland Coal & Coke Co. will build a $200,000 tipple and mining plant. W. A. Phillips is general manager.

HUNTINGTON, W. VA.—The Stoody Machine Co. has been incorporated with $5000 capital, by C. H. Stoody, J. S. Myers, R. Bias, S. M. Stoody and W. F. Stoody.

MOUNDSVILLE, W. VA.—The United Zinc Smelting Co. contemplates a plant at an estimated cost of $300,000.

MOUNDSVILLE, W. VA.—C. D. Keyser has the contract to erect a plant for the United States Stamping Co.

POWHATAN, W. VA.—The Mohawk Coal & Coke Co. is arranging to make additions to its mining plant.

LOGAN, W. VA.—The Kentucky & West Virginia Power Co. is having plans prepared for a boiler house and power plant additions. H. T. Hartmann, Land Title building, Philadelphia, is general manager.

WARWOOD, W. VA.—The United States Corrugated Fibre Co. will start work early next spring on additions to its plant.

Business in Canada

LAKE TEMISKAMING, QUE.—M. J. O'Brien, Ltd., Union Bank building, Ottawa, Ont., is making arrangements for pulp and paper mills and hydro electric power development here.

LATUQUE, QUE.—The Brown Corp., Ltd., will make improvements to its power plant.

MONTREAL, QUE.—The St. Maurice Power Co., Ltd., has been incorporated to build and operate power plants, hydro electric systems, etc., with $6,500,000 capital, by Howard Murray, William S. Hart, Julian C. Smith and others.

BRANTFORD, ONT.—The Dominion Steel Products Co. is having plans prepared for a manufacturing plant here. W. P. Kellett is manager.

CROWLAND, ONT.—E. J. Pratt, clerk, Welland, Ont., is receiving bids for extension to waterworks plant here to cost $12,000. George Ross is engineer.

GALT, ONT.—The Perfect Machine Co. will start building operations on an addition to cost $50,000.

HAMILTON, ONT.—A permit has been issued to the B. Greening Wire Co. to erect a 4-story addition to its plant, to cost $40,000.

LARDER LAKE, ONT.—The Associated Gold Fields Mining Co., Toronto, Ont, will build a 5000-ton mill.

LONDON, ONT.—The London & Port Stanley railway will make improvements and will make improvements and will require equipment for its system at London, Port Stanley and St. Thomas, Ont., to cost $300,000.

SARNIA, ONT.—The Holmes Foundry Co. will build an addition.

ST. CATHARINES, ONT.—W. P. Near is calling for bids for the construction of a sewage disposal plant here. J. Albert Pay is clerk.

TORONTO, ONT.—The Automatic Scale Co., Ltd., has been incorporated to manufacture scales, etc., with $40,000 capital, by William H. Male, room 39, 33 Richmond street west; Harworth Atkinson and others.

TORONTO, ONT.—S. McCord & Co., Ltd., have been incorporated to manufacture builders' supplies, machinery, etc., with $100,000 capital, by Samuel McCord, 696 Queen street east; George S. McCord and others.

TORONTO, ONT.—The Canadian Mine Shovel Co., Ltd., has been incorporated to manufacture tunnelling machinery, mechanical shovels, etc., with $100,000 capital, by Charles B. Jackes, room 202, Lumsden building, Horace M. Jackes and others.

New Trade Publications

MACHINE TOOLS.—Turret lathes, horizontal boring and drilling machines, vertical boring mills, universal tool grinders, etc., are described and illustrated in a 4-page circular recently published by the Gisholt Machine Co., Madison, Wis. General data pertaining to each machine are given.

BARGES.—The Dravo Contracting Co., Pittsburgh, has published a booklet in which a paper entitled "Barges for Interior Waterways," is given. This paper was read before the Mississippi-to-Atlantic Inland Waterways Convention at Pittsburgh, Jan., 1919, by F. R. Dravo, president of the company. The booklet is profusely illustrated.

OIL ENGINES.—The Allis-Chalmers Mfg. Co. has published bulletin No. 1532-A, in which oil engines of the diesel type are described and illustrated. The operation and construction of these engines are given in a thorough way and the numerous line drawings and illustrations give the reader a comprehensive idea of these engines.

COMBUSTION.—A booklet, entitled "Securing Better Combustion of Mid-West, Western and Southwestern Fuels," has been published by the Green Engineering Co., East Chicago, Ind. Many problems which arise in securing efficient combustion with fuels from the districts mentioned in the title, are discussed in the various articles appearing in the booklet, and which are reprints from *Power* and *Electrical World*.

CONDENSER EQUIPMENT.—A revised and enlarged bulletin entitled "Condensers, Pumps, Cooling Towers, etc.," has been published by the Wheeler Condenser & Engineering Co., Carteret, N. J. The bulletin illustrates and describes late developments in condenser practice. Illustrations and descriptions of surface condensers, jet condensers, barometric condensers, air pumps, centrifugal pumps, rotative dry vacuum pumps, turbo-air pumps, steam jet air pumps, natural and forced draft cooling towers, feed water heaters, evaporators and dryers are given.

STARTING SWITCH.—The Electric Controller & Mfg. Co., Cleveland, is circulating a 4-page leaflet in which a starting switch for small induction motors is described and illustrated. This switch is built to handle motors up to and including three horsepower, 110 volts, or 7½ horsepower, 220, 440 or 550 volts. Overload protection is supplied by two special alloy wires stretched along the left side of the slate. They open the circuit to the motor quickly if the overload is excessive and introduces a delay if the overload is only slight.

OPTICAL PYROMETER.—The Leeds & Northrup Co., Philadelphia, has issued a catalog in which an optical pyrometer for works temperature measurements, is described and illustrated. Its practical application in gaging temperatures in muffle furnaces, electric furnaces, in the open, in fuel beds, heat-treating furnaces, the rolling and forging of steel, blast furnaces, of molten steel and slag, molten cast iron, molten nonferrous metals, molten glass, in ceramic furnaces, etc., and for checking thermocouple pyrometers are given.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, December 18, 1919 No. 25

Works Strive to Restore Output

Iron and Steel Producers Attack Problem of Overcoming Effects of Recent Interruptions—Shortage of Material in Many Lines Most Acute—Large Rail and Plate Sales—Pig Iron at $40

IRON and steel plant operations gradually are being restored to the point at which they suffered curtailment recently through the restrictions placed on fuel supplies. While the most alarming aspects of the situation of a week ago have been dissolved through the coal strike settlement and the relaxing of the federal regulations covering distribution, the recovery of production will require more time. It is believed it will be several weeks before the mills and furnaces again will be able to re-establish their former basis of operations. The loss of tonnage by the interruptions of the past two or three weeks has been considerable and it has come at a time when the industry, just emerging from the steel strike and facing a tremendous demand, could afford it least. The market effect of this continues to be seen in an acute shortage and in a further lifting of prices in various lines. Production more and more has become the dominating factor of the situation and makers are squaring themselves to attack this problem with great vigor once the holiday period is past.

Though all restrictions on coke production have been removed, government control of coke prices remains. Various steel companies, short of supplies, have been scouring the market for tonnage. A fair amount of coke business has been done at the fixed prices of $6 and $7 Connellsville base, including some by-product tonnage in the East.

Big Orders Placed

As a rule, producers are forced to sell sparingly because the prospects are against their having much free tonnage for many months. Some important buying however is going in certain of the heavier material where demand either has been lacking previously or has been moderate. The New York Central lines have distributed 150,000 tons of rails with different mills for 1920 delivery contingent upon the railroads being returned to their former owners. Western roads which buy in New York have closed for about as much tonnage on a similar basis. Other western lines with official headquarters in Chicago, have reserved 400,000 tons, which it is believed represents practically their entire requirements for next year. Four eastern roads are inquiring for a total of 132,000 tons. Ship steel is keeping in prominence. At Chicago, the leading interest the past week booked 75,000 tons for Pacific coast yards and the largest independent there, 25,000 tons. At Pittsburgh 65,000 tons of new inquiry has been bid upon. the navy is out for 14,000 tons for two cruisers. Eastern makers have sold plates in considerable tonnage at 3.00c Pittsburgh, and have asked 3.25c.

French Sell Billets

The export market has been featured by an unusual transaction in which a New York house has purchased 135,000 tons of 3¼ to 13-inch shell billets from the French government. This steel is to be converted into commercial forms for sale at home or abroad. The Steel corporation has closed for 15,000 to 18,000 tons of rails for the Dutch East Indies, winning this business against the competition of European mills. This is understandable in the case of British makers who have just raised their price on rails to the equivalent of $65.28.

Iron Reaches $40 Line

Following the touching of that figure at Chicago a week ago, the $40 price on pig iron has appeared in several districts. An eastern maker sold some second half No. 2 foundry at $40 furnace, and prompt and second half No. 2X from the same district has brought $40 and $41 furnace. Further sales have been made at Chicago at $40 and that figure now is accepted as the market there. For second quarter $40 Birmingham has been named. Valley and Buffalo makers continue to hold their schedules unchanged at $38 furnace for the base grade. Steelmaking grades also continue to advance. A St. Louis steel maker has bought 10,000 tons of basic from a local furnace. Shipments of iron have been considerably in excess of production. In November the furnaces dispatched 90,000 tons more than they made, drawing on stock piles to this amount.

DECEMBER 18, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - - York St. and Western Ave.
NEW YORK - - - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - - - Prince's Chambers
LONDON, ENG. - - - - - - - 16 Regent St., S. W. I.

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Recuperation is Slow Process

PRODUCTION of iron and steel in the United States has just passed through the most discouraging three months in its history. Other periods where a stringent reduction of output has been forced by conditions outside the trade or market situation have been faced, such as attended the demoralized traffic conditions in the winter of 1917 and 1918. But these were the outcome of abnormal conditions beyond the control of either employer or employe. They therefore are not to be compared with the present period of curtailed operations which have been deliberately brought about by labor through invoking the country-wide strike weapon. Where in the former case the loss of output has represented an unavoidable result, in the latter it has been purely a man-made penalty which labor has inflicted upon industry and therefore the country at large because its dictation was resisted.

The actual loss of iron and steel production due to the steel and coal strikes, has been estimated at something like 2,500,000 to 3,000,000 tons. The probable accuracy of this estimate is indicated by the productive record of the country in pig iron during the past three months. As compared with August, the last month unaffected by strikes, the loss of output during September, October and November was about 1,600,000 tons. This figure has been added to greatly during December because of the banking of many stacks caused by the shutting off of fuel supplies. During August the pig iron output of the country, according to the statistics compiled by THE IRON TRADE REVIEW was 2,742,081 tons. The average production for the three months of September, October and November, was about 2,250,000 tons. These figures, however, do not measure the full loss caused by the strike. In August iron and steel production due to the expanding trade movement that then was in progress, was on the increase. Had the strike factor not interfered, September, October and November undoubtedly would have shown an extension of this increase of the productive rate. The potential loss of iron and steel accordingly was far beyond anything which the bare figures of output now disclose.

With the steel and coke strikes now matters of history, the iron and steel industry is squaring itself about for a period of vigorous recuperation, pressed on all sides by the tremendous demands for material. The factor of potential loss to the industry and to the whole country however is bound to be carried along for some months. It is one thing to call off a strike but another to restore operating efficiency after weeks of idleness and scattered forces. It promises to be several months before it can be hoped to re-establish high speed production and then only in the event no further restrictive factors develop. This only goes to prove how costly a general strike is. And of the three sufferers, the country at large, the employer and the employe, the loss of none is greater proportionately than of the wage-earners themselves.

Profit Sharing Aids Production

PANACEAS for labor difficulties are as numerous as they are varied. Labor's universal and sustained cry is one for shorter hours and longer wages; with these prescriptions labor hopes to cure all industrial ills. It sees but the need for more money to meet the high and apparently ever-increasing cost of living. Not enough consideration is being given to another diagnosis; a diagnosis made by the careful thinker, be he employer or employe, namely, the need for increased production.

Industrial doctors fast are coming to the realization that the labor situation today hinges not so much upon the underpaid workman as it does upon the under-production of that workman. Counter-complaints by employers that employes are producing far below par are as numerous if not more so as complaints by employes that wages are low and hours are long. Machinists and machine workers

as well as other classes of labor are said to be producing in some cases as low as 25 per cent of their possible capacity.

How to bring about increased production is engaging the attention of a widening circle of industrial leaders. That they cannot bring it about by addresses to workmen has been proven; neither can they bring it about by newspaper or any other sort of propaganda.

Increasing attention therefore is being given at this time to the possibilities of profit-sharing in stimulating production. But all consideration of this method of compensation must recognize the fundamental fact that to be successful, the workmen's share must represent economic benefits created by his labor and it defeats its own purpose where it ceases to be based on tangible returns and becomes a mere gratuity. Successful profit-sharing cannot be expected, moreover, unless accompanied by a campaign of education. Employers must be educated as well as employes. No plan of profit distribution can be successful if one-sided. Lean years are possibilities and employes who are beneficiaries under a profit-sharing plan, when the figures show a loss instead of a profit, should expect to share in some of these losses.

If these conditions are established profit-sharing is certain to have a beneficial effect; it will serve to weed out the undesirables, the disturbers and the transients, who do not intend to become citizens or home-owners but who simply aim to get as much as they can, raise disturbances and then clear out.

It is becoming apparent that something must be done to bring about an increased production in practically every line of industrial activity which immediately or remotely affects the lives of the people. That properly administered profit-sharing is effective is shown by the production records of shops which have tried it out.

Lead Shortage is World-Wide

ADVANCING lead prices reflect the world shortage of this metal, which has been especially affected by labor troubles the world over. In May, lead sold at 5.00c a pound, as against 8.05c, the price prevailing when government control ended last December. Today the market is 7.00c to 7.25c, New York delivery, an advance of over 40 per cent. The United States, Spain, Australia and Mexico are the leading lead producing countries and supplies from all these countries will show curtailment this year. Strikes at certain smelters and in the Coeur d'Alene district in Idaho, together with decreased operations because of fuel shortage, will cause a reduction of 10 to 20 per cent in the production of domestic lead in the United States in 1919 as compared with 1918. The Utopian scheme of labor and capital relations in Australia has been sufficiently disturbed this year that supplies of lead from this quarter will be sharply cut, the bitter struggle beween employers and employes in Spain will cause a loss of Spanish lead of about 50,000 tons as compared with normal; while in Mexico, political and economic conditions have continued to interfere with mine operations and shipments, so that supplies from this quarter again will be far below normal. The world shortage of lead has been reflected in a strong London market, with advances of more than £2 per ton in two weeks. The London prices have been sufficiently high to threaten to attract sales of domestic lead instead of foreign lead smelted in bond, which is normally much cheaper. Consequently domestic producers have steadily been forced to advance their prices to keep domestic lead at home and avert a serious shortage here.

The Pot Calls the Kettle Black

TRADE union leaders called into conference last week in Washington by President Gompers made a puerile attempt to court public approval by indulging in the popular pastime of denouncing bolshevists. The bid for applause might have carried some weight had the leaders promptly put into practice what they preached and ejected those radicals within their ranks who are well recognized as being opponents of law and order and Americanism. Without such evidence of good faith, mere lip service to popular ideals savors of hypocrisy. Fitzpatrick presiding and Foster applauding the repudiation of radicalism suggests the pot calling the kettle black.

In the United States today there are only two classes who are persistently criticising the federal courts, the officials of the American Federation of Labor and the out-and-out bolshevists, as the enemies of the government are understood by the American public. At the same conference in which it denounced bolshevism, the federation fired a broadside of excoriation at the courts, the country's bulwark against bolshevism.

The two statements from the leaders of the trade unions are inconsistent, and makes it even more difficult for their friends to apologize for them. A far more effective course from the standpoint of their own interests would have been for the federation to have asserted itself in favor of obedience to the law, and to have given some proof of its opposition to radicalism by the ousting of Foster. Constituted as it is, it could do neither; but it sought to throw dust in the eyes of the public and make a pretense of purging itself by adopting a declaration against bolshevism.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1680 AND 1682

Pig Iron

Bessemer ,valley	36.00
Bessemer, Pittsburgh	37.40
Basic, valley	34.00
Basic, Pittsburgh	35.40
Basic, delivered, eastern Pa.	36.00
Malleable, Pittsburgh	39.00 to 40.65
Malleable, Chicago, furnace	40.50
Malleable, Buffalo, furnace	39.25
Malleable, delivered eastern Pa.	39.00 to 41.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$42.10 to 44.10
No. 1X, Buffalo	41.00
No. 1 foundry, Chicago, furnace	41.25
No. 2 foundry, valley, Pittsburgh	39.40
No. 2 foundry, Buffalo	38.00
No. 2 foundry, Boston	41.50 to 42.50
No. 2 foundry, Chicago furnace	40.00
No. 2 foundry, Ironton furnace	35.75 to 36.75
No. 2 foundry, Cleveland furnace	35.00 to 36.00
No. 2X, eastern, del., Phila.	41.00 to 42.00
No. 2X, eastern, N. J., tidewater	41.10 to 42.10
No. 2X, eastern, Boston	41.90 to 42.90
No. 2X, foundry, Buffalo furnace	39.25
No. 2 foundry, del., Philadelphia	40.00 to 41.00
No. 2 foundry, N. J. tidewater	40.00 to 41.00
No. 2 southern, Birmingham	34.00 to 35.00
No. 2 southern, Cincinnati	38.60
No. 2 southern, Chicago	40.00
No. 2 southern, Phila.	38.50 to 39.50
No. 2 Southern, Cleveland	37.00 to 38.00
No. 2 southern, Boston	43.00 to 44.00
No. 2 southern, St. Louis	38.25
Virginia, No. 2X, furnace	39.25
Virginia, No. 2X, Philadelphia	43.35
Virginia, No. 2X, Jersey City	43.65
Virginia, No. 2X, Boston	43.70 to 44.70
Gray forge, valley, Pittsburgh	36.40
Gray forge, Buffalo	32.00 to 33.00
Gray forge, eastern Pa.	38.00 to 39.00
Silveries, 8%, furnace	50.00
Ohio Silveries, 8%, Chicago	53.80
Tennessee Silveries, 8%, Chicago	55.65
Low phos. standard, Phila.	48.80
Low phos. Lebanon, furnace	40.00
Low phos. standard, Pittsburgh	45.40
Charcoal, Superior, base grade, Chicago	45.00 to 47.50

Coke

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

Ferroalloys

Ferromanganese, 80 per cent, delivered, domestic metal	$120.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	110.00
Spiegel, 18 to 22 per cent furnace spot	39.00 to 41.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.20
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's plant	27c to 29c
Ferrovanadium, 35 to 40 per cent per pound contained, according to analysis	$5.50 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	59.50
Bessemer, ferrosilicon, 11 per cent	62.80
Bessemer, ferrosilicon, 12 per cent	66.10

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS
(4 x 4 inch)

Open-hearth, Pittsburgh	45.00 to 47.00
Open-hearth, Philadelphia	54.00
Open-hearth, Philadelphia	45.00 to 47.00
Bessemer, Pittsburgh	45.00 to 47.00
Bessemer, Youngstown	45.00 to 47.00
Forging, Pittsburgh	55.00 to 60.00
Forging, Philadelphia	64.00

SHEET BARS

Open-hearth, Pittsburgh	$50.00 to 51.00
Open-hearth, Youngstown	50.00 to 51.00
Bessemer, Pittsburgh	50.00 to 51.00
Bessemer, Youngstown	50.00 to 51.00

SLABS

Pittsburgh and Youngstown	48.00 to 50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$63.00 to 67.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c to 2.60c
Structural shapes, Philadelphia	2.695c to 2.795c
Structural shapes, New York	2.72c to 2.82c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c to 3.00c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c to 3.245c
Tank plates, New York	2.92c to 3.27c
Bars, saft steel, Pittsburgh	2.35c to 3.00c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c to 3.77c
Bars, soft steel. Philadelphia	2.549c to 3.745c
Bar iron, common, Phila.	3.245c to 3.745c
Bar iron, common, Chicago	2.87c to 3.00c
Bar iron, common, Cleveland	3.25c
Bar iron, common, New York	3.27c to 3.77c
Bar iron, common, Pittsburgh	3.50c
Hard steel bars, Chicago	2.85c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 46.00
Relaying rails, Pittsburgh	40.00 to 43.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	$2.10 to 2.45
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	5.00c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 5c more)

Wire nails, Pittsburgh	4.00 to 4.50c
Plain wire, Pittsburgh	3.25c to 3.50c
Galvanized wire, Pittsburgh	3.95c to 4.20c
Barbed wire, painted, Pitts.	3.70c
Barbed wire, galvanized, Pitts.	4.40c
Cut nails, Pittsburgh l. c. l.	5.195c
Coated nails per count keg, Pitts.	3.50c to 4.00c
Polished staples, Pittsburgh	3.70c
Galvanized staples, Pittsburgh	4.40c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.00c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c
No. 28, bessemer, Pitts.	4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c
No. 28, bessemer, Pitts.	5.70c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c
No. 10, bessemer, Pitts.	3.55c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.995c to 4.295c

Full sheet schedule page 1680.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	34½	18½

Full pipe schedule page 1680.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax
(Class B Pipe)

Class A pipe is $2 higher than Class B

Four-inch, Chicago	$65.80
Six-inch and over, Chicago	62.80
Four-inch, New York	65.30
Six-inch and over, New York	62.30
Four-inch, Birmingham	59.00
Six-inch and over, Birmingham	56.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c to 3.50c
Bands, Pittsburgh	3.05c to 3.50c
Hot rolled strip steel, Pitts. stamping quality	3.50c
Cold finished steel bars, Pitts., base	3.60c to 4.00c

Rivets

Structural rivets, Pittsburgh	3.90c to 4.15c
Boiler rivets, Pittsburgh	4.00c to 4.25c
Rivets ⅞ in. and smaller Pitts.	50 to 50—10 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS
(⅜ x 6 inches, smaller and shorter)

Rolled thread	45–5 to 50–10 off
Cut thread	40–5 to 50–10 off
Larger and longer	30–10 to 40–10 off

MACHINE BOLTS
(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–7½ to 60 off
Cut thread	40–10–5 to 50–10 off
Larger and longer	40 to 40–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	70–10–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c to 2.70c off
Hot pressed, square tapped	2.25c to 2.45c off
Hot pressed, hexagon blank	2.50c to 2.70c off
Hot pressed, hexagon tapped	2.25 to 2.45c off
Cold pressed, square tapped	2.25c to 2.45c off
Cold pressed, square blank	2.50c to 2.70c off
Cold pressed, hexagon blank	2.50c to 2.70c off
Cold pressed, hexagon tapped	2.25c to 2.45c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Dec. 17, 1919	Average prices Nov. 1919	Sept. 1919	Dec. 1918
Bessemer valley, del., Pittsburgh	$37.40	$32.00	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	35.40	30.40	27.15	34.40
*No. 2 Foundry, Pittsburgh	39.40	33.15	28.15	35.40
*No. 2 Foundry, Chicago, furnace	40.00	31.75	26.75	34.00
Lake Superior charcoal, Chicago	45.00	35.50	32.75	38.70
Malleable, valley	36.25	31.75	28.65	35.90
Malleable, Chicago	40.50	32.25	27.25	34.50
*Southern, No. 2, Birmingham	35.00	30.65	26.75	35.25
*Southern Ohio, No. 2, Ironton	36.00	31.75	26.75	34.00
Basic, eastern del., eastern Pa	36.00	33.00	27.00	36.90
**No. 2X, Virginia, furnace	39.25	33.40	29.25	38.00
*No. 2X, eastern del., Philadelphia	41.10	35.85	29.95	39.15
Gray forge, valley del., Pittsburgh	36.40	31.80	27.15	34.40
Ferromanganese, 80 per cent, delivered	120.00	110.00	105.00	240.00†
Bessemer billets, Pittsburgh	45.00	40.90	38.50	47.50
Bessemer sheet bars, Pittsburgh	50.00	45.00	42.00	51.00
Open-hearth sheet bars, Pittsburgh	50.00	45.00	42.00	51.00
Open-hearth billets, Pittsburgh	45.00	40.90	38.50	47.50
Steel bars, Pittsburgh	2.50c	2.45	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	3.495c	2.895	2.595	3.745

	Prices Dec. 17, 1919	Average prices Nov. 1919	Sept. 1919	Dec. 1918
Iron bars, Cleveland	$3.25	$3.00	$2.52	$3.64
Iron bars, Chicago mill	2.87c	2.73	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.45	2.45c	2.45	3.00
Beams, Philadelphia	2.795c	2.695	2.695	3.245
Tank plates, Pittsburgh	2.65c	2.65	2.60	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	3.245c	2.895	2.845	3.395
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.70	5.70	6.25
Wire nails, Pittsburgh	4.00	3.45	3.25	3.50
Connellsville furnace coke	6.00	5.80	4 60	6.00
Connellsville foundry coke	7.00	6.95	5.90	7.00
Heavy melting steel, Pittsburgh	24.50	21.90	20.50	27.50
Heavy melting steel, eastern Pa	23.00	20.80	19.00	24.75
Heavy melting steel, Chicago	21.00	20.65	19.00	26.50
No. 1 wrought, eastern Pennsylvania	31.00	27.85	27.00	33.50
No. 1 wrought, Chicago	26.00	26.50	21.25	29.65
Rerolling rails, Chicago	31.00	31.15	25.40	30.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

$40 Iron Appears Here and There

Eastern Makers Sell at $40 Furnace for No. 2 and $41 Base on No. 2X—Southern No. 2 for Second Quarter Quoted at $40—Buffalo and Valley Iron Held at $38 Base — Demand is Heavy

Pittsburgh, Dec. 16.—Several good sized tonnages of foundry iron for first half of 1920 shipment have been moved at $38, valley and western Pennsylvania furnaces for No. 2 foundry (1.75 to 2.25 silicon) in the past few days, a clear advance of $2 a ton over the basis of the last previous sales, and furnace interests serving this district now say they have no more of this grade for less than $40, furnace. The usual differential of $1.25 per ton has been obtained on two good-sized sales, also for first half delivery of foundry iron running 2.25 to 2.75 in silicon. A further advance of $1 a ton also has been established on standard bessemer, a sale of 1000 tons being noted at $35.50, valley furnace, while several quotation-making tonnages lately were disposed of at $36. A portion of the latter business was with foundries and the iron is for western shipment and is to be substituted for foundry grade. Although it is reported that 7000 tons of standard basic have been sold by a valley interest for first half shipment at $35, verification is lacking and in the absence of syndicated sales at a higher price the market remains at $34, furnace, although this grade is scarcer than bessemer and makers who remain in the market generally are asking $35, furnace. Bessemer is doing best in price of the two grades of steelmaking iron because of its adaptability to either foundry or steelmaking use. No recent business has been done in gray forge or malleable, although a good sized sale of the latter is said to be pending at $38.25, valley, for first half. All grades of iron for early delivery are being sold in small lots, at least $1 a ton above the basis of round tonnages. Several lots of bessemer running from a carload to 500 tons having been moved at $37, furnace. Trading is unattended by the excitement of a few weeks ago, but with the supply situation one of marked strength, it does not require much activity to advance prices. It is reported that merchant production of pig iron last month ran 96,000 tons behind the shipments, indicating a reduction in furnace yard stocks of that amount.

Spot Demand is Less

Boston, Dec. 15.—With the end of the year close at hand the demand for spot pig iron in New England has dropped to meager proportions. Although foundries are exceptionally busy and in many cases behind on orders, there is a strong desire not to take on any further supplies which would increase the 1919 inventory. A final settling of the coal strike has had a moral effect in relieving abnormal conditions and while there is a strong permanent demand for 1920 iron the panicky features of the market have disappeared entirely. Sales in New England during the week have established fairly consistent markets in all of the districts except Buffalo. The base price for Alabama iron may be said to be $36, furnace, for New England delivery. In Virginia while available supplies have noticeably tightened, nearly all the iron now offered is on a $38, furnace base. The Virginia Iron Coal & Coke Co. has sent out a list of small lots of special manganese iron which it is offering at prices figured on the $38 base. Eastern Pennsylvania iron for first half is also being sold at $38, furnace, for 1.75 to 2.25 silicon. The Temple furnace at Temple, Pa., came into the market during the week and quickly sold up its desired tonnage at close to $38, furnace. During the latter part of the week a tendency in some cases toward high Pennsylvania prices, was shown and sales at $40 at the furnace for 2.25 to 2.75 silicon were reported.

One such sale was for 500 tons to a Massachusetts consumer for second quarter. A feature of the present market is the fact that occasional sales are being made extending through to the third and fourth quarter. These have usually been in connection with first half contracts and are not part of any established policy to open books for second half. Some sales extending through second half have been made at $40, furnace, for 2X eastern iron (2.25 to 2.75 silicon). One furnace has made several sales in this territory based on a Buffalo market of $39.25 for 2X iron (2.25 to 2.75 silicon) for first quarter.

Much Off-Iron is Sold

New York, Dec. 15.—Large tonnages of off-iron which recently came on the market in this and other districts, now have been pretty well absorbed. This iron was offered principally from furnaces owned by steel companies, and the tonnage disposed of amounted to 20,000 to 25,000 tons, and probably considerably more, for this and other districts. The prices obtained were several dollars per ton below the market on standard iron. Sales of standard iron in this district during the past week were small as compared with preceding weeks. This was due to the fact that most sellers are unwilling to accept any more tonnage, and in fact, are taking only what is being forced on them by

regular customers. One eastern Pennsylvania maker during the past week has taken a little foundry business of this insistent kind at $41, furnace, for 1.75 to 2.25 silicon, and $42, for 2.25 to 2.75 silicon. Another eastern Pennsylvania furnace has taken some 2.25 to 2.75 silicon, for first half, at $41.25, furnace, with $1 higher for first-quarter alone. Another eastern Pennsylvania interest made its last sale nearly a week ago at $41, furnace, for 2.25 to 2.75 silicon, and has named no price since. Central Pennsylvania foundry iron still can be had at $40, furnace, for 2.25 to 2.75 silicon. Buffalo iron is almost impossible to obtain. In fact, Buffalo makers, in all cases as far as known, have free not more than one month's output over the first half. A Virginia interest which a week ago was taking some business from regular customers at $38.50, furnace, for 2.25 to 2.75 silicon, and $40 for 2.75 to 3.25, has not changed its prices, but is practically out of the market. A little Alabama iron has been sold in this district during the past week at $36, Birmingham, for 1.75 to 2.25 silicon. Some basic has been sold in this district at $36, eastern Pennsylvania furnace. Sales of malleable have been made at $38, eastern Pennsylvania furnace. There is a fair amount of export inquiry here. This includes principally basic, and also some foundry for Japan. 1000 tons of foundry for Brazil, etc. One northern furnace, having partly covered its coke requirements for the second half, has booked some second-half foundry business from regular customers on a basis of $40, furnace, for No. 2.

Consumers Not Suffering

Philadelphia, Dec. 16.—While pig iron scarcity continues, the extent to which consumers are able to get spot iron from regular sources is surprising. No case is known where consumers are embarrassed in their operations through lack of iron. While comparatively few furnaces are soliciting business, sales form a large aggregate principally for forwarded delivery. Considerable spot off-iron is included in current business, also considerable spot standard grades. While a number of the furnaces have not yet sold all their first quarter output, some are booked for the entire first half and in one case a furnace is said to have enough tonnage for 10 months. Prices of Virginia iron are going up rapidly. Several thousand tons of Virginia were sold at $38, furnace, for No. 2 plain (1.75 to 2.25 silicon), and $39.25 for No. 2X (2.25 to 2.75 silicon). Some spot Virginia iron still is obtainable at these figures, but these prices have been withdrawn for next year, for which $20 higher is being asked. Market tendencies are being reflected by the fact that Virginia No. 1X (2.75 to 3.25 silicon) has been sold at $42, furnace. Considerable Virginia high silicon and high manganese is being sold for spot shipment with differentials. In eastern Pennsylvania No. 2X is bringing $40 and $41, furnace, although there are some sales at $42 and some are reported even higher. Central Pennsylvania has been sold in round lots at $42.80, delivered Philadelphia for No. 2X. Buffalo No. 2X has been sold here for first half at $43.15, delivered Philadelphia. Southern iron in round tonnages has been sold for northern shipment for first half at $37, Birmingham, for 2.25 to 2.75 silicon. No basic has been sold but $35, furnace, is said by makers to be a low figure. Malleable has been sold for spot shipment at $38, eastern Pennsylvania furnace, and for first half at $39. No new sales of standard low phosphorus are reported and this grade continues at $45, eastern furnace. Copper-bearing low-phosphorus iron makers have sold round tonnages for first half at $40, furnace, and on new inquiries have asked $43, Eastern blast furnaces are not much worried by decision of the railroad administration to spot cars only to take on fuel, limestone and ganister since they are well provided with iron ore for the winter. The Alan Wood Iron & Steel Co. expects to blow in its new 600-ton furnace on basic as soon as assured of fuel.

Iron for First Half Scarce

Buffalo, Dec. 16.—It is becoming more difficult to obtain pig iron in this territory for 1920. Only foundry grades can be obtained, and the capacity of first half iron left to district furnaces is growing small. No first quarter iron is available, furnacemen say, except such limited tonnages as they may allow their established trade. During the past week one furnace interest contracted for between 5000 and 10,000 tons of foundry iron. Out of a battery of four furnaces, three are now working on foundry iron. The fourth is being relined, but when this is finished the furnace which ordinarily makes malleable iron will be held available to make foundry iron already sold by this interest for prompt shipment. Third quarter iron is not figuring in the market. Inquiry for foundry iron is strong for small tonnages. One furnaceman states that there is an almost unlimited demand for 300 to 500-ton lots. No changes have been made in prices. Reports that a tonnage of No. 2X foundry (2.25 to 2.75 silicon) was sold here for $40, delivered, Philadelphia, cannot be verified.

Little Iron is Offered

Cleveland, Dec. 16.—A few sales of iron are being made in this territory because supplies continue exceedingly scarce. Wherever any transactions are put through, however, they show a still further advancing movement of prices. Local furnaces continue out of the market and it is uncertain when they will resume selling, as their present obligations will depend entirely upon whether they are able to increase production. A valley interest has sold several thousand tons of foundry iron for first half on the basis of $38 for 1.75 to 2.25 silicon and $39.25 for 2.25 to 2.75 silicon. Included in these sales was one lot of 3000 tons. This same interest has sold malleable at $39.25, valley. Inquiry continues active but this in large part is going begging or is attracting little attention from sellers because they have not the iron to offer. The American Car & Foundry Co. has recently been figuring on 3500 tons of foundry and malleable for delivery at Detroit for first half. A southern Ohio steelmaker inquired during the week for 1000 to 2000 tons of prompt basic but it is believed that this is only a forerunner of a larger tonnage that is wanted. With more assured operations, because of the elimination of the coal strike, shipments are expected to go forward more freely. Unless makers are able to increase present production by blowing in additional stacks, however, they are not likely to have much additional iron for sale for a long time, so heavy are their present obligations.

Delivery Most Important

Chicago, Dec. 16.—Getting pig iron from producing stack to the consumer is the most important and difficult feature of the pig iron situation at present. Orders to railroads limit the use of open top or gondola cars to the coal trade entirely and blast furnaces are not able to obtain a supply for shipping their product. This situation began to be felt today and probably will be much worse before it grows better. Furnaces casting pigs in chills are equipped to load the iron direct into open cars and have no facilities for transferring it to box or cattle cars, which is the only kind available at present. Lack of men to handle the iron prevents its being loaded into the less desirable cars. The only alternative is to pile the iron in storage yards, and this is a difficult matter in the present labor situation. Furnace operation is far from good as coke is more or less irregular because of interrupted coal supply and much off iron results. While price is not a factor in the present market, as ability to get the iron weighs much more heavily, it may be stated that northern iron is quotable at $40 furnace, for silicon 1.75 to 2.25. Comparatively little tonnage is being contracted and then only in the most extreme cases. No large inquiry is being entertained for foundry iron, as most melters apparently believe they would be unable to obtain material at present. Melters of malleable iron are seeking considerable tonnages, inquiries for 1500 tons, 1000 tons and 2000 tons being representative, a total of 7000 to 8000 tons being asked from one local seller. This demand is being filled with malleable from the valleys at $38, furnace, subject to $3.80 freight to Chicago. A recent sale of 1000 ton of malleable wa made at $37, valley, for first half. Demand for silveries lags and comparatively little is being asked. A Jackson county interest is asking $50. and a Tennessee maker $50.25 for eight per cent at the furnace. Makers of pig iron believe the tightest pinch for material will come in January when bad weather is likely to interrupt transportation of coal and intensify the operating situation. Some makers believe furnace operation will be interrupted and are certain that it will not be possible to ship iron as rapidly as it may be turned out. Fuel difficulties are expected to follow exhaustion of present reserves of coking coal, which will not be replaced as rapidly as they are used.

Quote $40 on Southern

Cincinnati, Dec. 16.—Demand for

pig iron in this district is very strong but very few furnaces are quoting. On a lot of 1000 tons of southern No. 2 (1.75 to 2.25 silicon) for second quarter delivery, $40, Birmingham, was named. It is believed that this price represents the minimum figure which southern furnaces would take business for first half. The furnaces are well filled with orders.

Strong Demand at St. Louis

St. Louis, Dec. 13.—Demand for pig iron from all sources is strong. Supplies for December delivery are exhausted, and available tonnages for the first half of 1920 are growing scarcer. Larger users are fairly well provided for the balance of this year and the first quarter, but not more than one-half of what will be needed during the second half of 1920 has been contracted for. Numerous smaller interests are hard pressed for iron for immediate needs. Prices are strong and advancing. Most of the merchant furnaces supplying this district have withdrawn. All consumers having iron under contract are urging prompt deliveries. Sales for spot shipment have been confined to a few scattering cars, and offers of premiums have failed to secure more. A good business in futures is reported, covering virtually all grades, but the furnace interests are not eager to dispose of future production even at stiff advances.

Sales for the week range from 200 to 1000 tons of foundry grades. The Scullin Steel Co. has purchased 10,000 tons of basic from the Mississippi Valley Iron Co. The latter's furnaces have been idle for several months for repairs and enlargement, and will not be blown in until March 1, so that the shipments will not start before that date. This 10,000 is part of an inquiry for 25,000 tons, the remainder of which is still open. No figures were given in the announcement of the transaction, but the Mississippi valley is quoting $38.50 to $42 for 2.25 to 2.75 silicon. No. 2 southern (1.75 to 2.25 silicon) ranges from $35 to $36. One sale of 700 tons of 3.75 to 4.25 silicon was reported by an eastern Ohio interest at $44, furnace. For this same grade a Missouri furnace is asking $48.

Southern Furnaces Out of Market

Birmingham, Ala., Dec. 16.—Producers of pig iron are out of the market at present, the only business transacted being with home melters or old customers. Quotations are on a basis of $35 for No. 2 foundry (1.75 to 2.25 silicon), and $36 is reported. Predictions are being made freely that by Jan. 15 the price of iron will have advanced $5 per ton over present figures. Costs of production in this district are expected to go up in the next few days. Consumers continue asking for delivery on old contracts, and railroads are endeavoring to furnish cars with which to move the product. Efforts are now being made to get furnaces in shape for operation, and in the next few days one stack will be blown in and two others will be ready for lighting.

No effort is necessary to sell charcoal iron. The market is very strong and this grade is quoted at $50 f.o.b. furnace.

Coke Prices Held Down

Brakes Applied by Fuel Administration as Spot Supplies Fall Far Behind Demand—Lifting of Coal Restrictions Has Not Yet Brought Relief

Pittsburgh, Dec. 16.—Spot supplies of coke still are so much behind the demand that if the fuel administration had not put the brakes on prices, the chances are that the market would be up around the highest levels of the war period. Ending of the coal miners' strike and the lifting of the restrictions on the allotment of coal for beehive ovens have not yet brought about any relief for the steel manufacturers operating by-product coke plants and such companies as the Midvale Steel & Ordnance Co., the Bethlehem Steel Corp., the Lackawanna Steel Co., the Republic Iron & Steel Co., the Youngstown Sheet & Tube Co., and the Jones & Laughlin Steel Co., still are combing the market for spot or prompt tonnages to tide them over until their coal shipments are sufficient to allow of the operation of their own by-product plants. It is intimated they would take 72-hour or foundry grade of coke and pay the premium of $1 per ton this grade commands over furnace grade in order to get supplies. Decline in the Connellsville production last week as a result of the fuel administration restrictions on the use of coal, it is estimated, averaged about 30 per cent from that for the week ended Dec. 6. It is doubtful if the operators and the trade in general ever before had such an experience like that of last week. Much confusion existed as the extent of the curtailment that was to be made, for the reason that the order was executed under the direction of the railroad administration and the orders sent out from the regional directors varied considerably. The Baltimore & Ohio railroad and the Pennsylvania railroad, which are under the jurisdiction of the Allegheny regional director had one set of instructions, while the Pittsburgh & Lake Erie railroad, the Monongahela railroad and the Pittsburgh & West Virginia railroad under the eastern regional director had another. The first order was for a 25 per cent cut, but almost before this was effective came a supplementary order calling for another cut of 25 per cent. After many conflicting orders as to methods to be employed in bringing about the reduction, it finally was decided that no cars were to be spotted for loading coke on Thursdays and that on the other five days of the week, the operators were to charge only a sufficient number of ovens to permit of 60 per cent of the production of the week ended Dec. 6. All restrictions on output were removed last Saturday. This week finds the car supply only 70 per cent, due to the fact that so many loaded cars are on track at or near consuming points. Oven operations are on a scale sufficient merely to allow operators to take care of contracts, against which buyers are specifying 100 per cent. Connellsville production of coke for the week ended Dec. 6, is estimated by *The Connellsville Courier* to have been 262,810 tons, as compared with 237,455 tons in the previous week. Assuming last week's production to have been 70 per cent of that for the week ended Dec. 6, the output of the regions was about 184,000 tons.

New England Demand Eases Off

Boston, Dec. 15.—With the coal strike ended, a decided slump has occurred in the coke market. There is no demand for spot coke, partly because of the desire to hold down stocks at this time of the year, and partly because foundries ordered in excess of requirements during the time of uncertain deliveries. First half contracts for the larger consumers have nearly all been entered. Little new business is expected until the middle of January. With the price of by-product coke at $11.90 or 50 cents a ton more than the price for beehive coke, based on $7, Connellsville, greater interest is being taken in the Pennsylvania product.

By-Product Furnace Coke Sold

New York, Dec. 15.—Eastern by-product coke has been sold during the past week for blast furnace use, this being the first business of its kind in a long time. The seller was the northern New Jersey producer and the government price of $8.69 f.o.b. ovens at Seaboard, N. J., or $5.59, Connellsville, prevailed. The coke involved is for both this and next year to eastern furnaces, and at least two good sized contracts were included. The northern New Jersey by-product maker is not selling any more foundry coke for shipment this year, but it is booking for 1920. Its price is $7.50, Connellsville, for delivery in this district, and $8, Connellsville, for shipment to New England. The price of $7.50, Connellsville, to New Jersey consumers, is equivalent to $10.60, delivered at Newark and other northern New Jersey points. On this basis, its price figures out somewhat less in most cases than the government maximum, which is $9.69, ovens, Seaboard.

Production Returning to Normal

Birmingham, Ala., Dec. 16.—Coke production this week will be normal. Government restrictions on coal were removed last week and beehive oven operators are not required now to give 50 per cent of their coal to the open market. Demand for coke is strong and quotations are firm. Foundry coke is quoted at $9.50 and furnace coke above $7.50. The Sloss-Sheffield Steel & Iron Co.'s 120 Semet-Solvay by-product ovens will be in operation by Feb. 1 and the Birmingham By-Product & Coke Co.'s 30 Kopper ovens will be producing by Feb. 20. But little coke is being shipped at present from this district. Coal production is normal.

Buying Scrap For Export

Europe Takes Axles and Japan, Heavy Steel and Other Grades—Market Holds Its Strength Well—More Advances Noted

FOR COMPLETE SCRAP PRICES SEE PAGE 1682

New York, Dec. 15.—A heavy export demand for steel car axles features the local scrap market. The axles are being bought for shipment to southern Europe. Due to the volume of this business prices have advanced rapidly, the market being $34, f.o.b. New York. Substantial lots of heavy melting steel and related grades have also been going abroad, Japan being the heaviest buyer. England steadily is taking some tonnage of choice grades, such as low phosphorus scrap. China has been taking fair tonnages of clippings, horseshoe scrap, etc. However, this demand is slower, and at the moment there is a round tonnage of horseshoes being offered for export without takers. While the domestic market appears to be undergoing a seasonable lull, the scarcity of pig iron is resulting in a large demand for cast scrap. Prices within the past few days have advanced to $26 to $27, f.o.b. New York, for heavy cast and $28 to $29 for machinery cast. Other descriptions to advance are machine shop turnings and old steel shafting, quoted at $27 to $28. The freight rate from New York to the Pittsburgh district has been advanced 10 cents, the rate now being $4.10.

Some Grades Are Easier

Philadelphia, Dec. 16.—Turnings have become weaker and consumers now are bidding only $18, delivered. Sales have been made at this figure. Heavy melting steel is easier on developments of the week although this is due to the withdrawal of buying. The Pencoyd Iron Works of the American Bridge Co. now is out of the market. An inquiry by big steel companies probably would send the market right back again. Chemical borings and turnings, forge and bundled sheets are stronger as are also rerolling rails, shafting, car wheels and iron and steel axles.

Mills' Suspension Affects Market

Boston, Dec. 15.—The coal shortage caused several steel mills in Pennsylvania to shut down or greatly curtail their production and the result has been a drop in the demand for some grades of scrap. Turnings have been particularly affected, for one Lebanon, Pa., rolling mill which has furnished a good, steady market for the best of this grade of scrap, is among those to shut down. The prices of turnings have dropped about $1 in the local market. New England foundries are behind on orders and cast scrap holds firm. No. 1 machinery has sold as high as $36 to consumers, and sales of round tonnages at $35 have been reported. Worcester, Mass. foundries have been among those particularly active in the scrap market. Heavy cast scrap has advanced to $32, delivered to consumer, and is in great demand. Borings, although inactive have not dropped in price. A sale of 400 tons of borings for chemical purpose is reported at $21 f.o.b. cars' shipping point. On a lot of 100 tons of steel armor plate for sale by the district ordnance office, the Midvale Steel & Ordnance Co. bid $30 per gross ton, f.o.b. Fitchburg, Mass. Other bids at this office include one for 125 tons of round steel bars by the Garden City Plating & Manufacturing Co. at $42.50 per net ton, f.o.b. South Boston, and further offerings include 80 tons of steel blooms and 185 tons of 2⅞-inch round cold-rolled steel.

Still a Waiting Proposition

Pittsburgh, Dec. 16.—In the lack of any material increase in steel plant operations as a result of the settlement of the coal strike, demands for the open-hearth grades of scrap still are on a limited scale but this fact has not been productive of any weakening in prices, for dealers confidently expect a more active and higher market with the turn of the year and are disinclined to sacrifice their holdings. While steel manufacturers are able to pick up small tonnages of heavy melting steel from time to time at $24 to $24.50, no round lots are available at these prices and it is doubtful if dealers would consider even $25 on contracts. Not only do the indications point to a more active market after the turn of the year but the firm attitude of the dealers with regard to steel works grades finds support in the unusually wide spread between the price of heavy melting steel and basic pig iron. Ordinarily the margin is a matter of a few dollars while today it amounts to almost $10 a ton. Foundry grades of scrap remain in good demand and such lots as are coming upon the market are being promptly cleaned up at firm prices.

Suspend Scrap Shipments

Buffalo, Dec. 16.—Although the coal strike has been settled, consumers are asking that scrap shipment be temporarily suspended until they learn what their coal supplies will be. In the meantime mills are checking up on stock lists. All district mills are in the market with one exception, and this mill is expected to enter the market soon. Heavy melting steel is in great demand. Almost unlimited tonnages of this grade can be sold at $23.50. Large sales of heavy melting steel, turnings and borings were made during the past week.

Upward Tendency Resumed

Cleveland, Dec. 16.—Prices of scrap iron and steel have recovered from their weakness and the tendency now is upward. The fuel situation, and now the inability of dealers to get open cars, have cut into scrap trading, but almost every dealer is unwilling to sell except at several dollars above present levels. Some heavy melting steel brought $21.25 today at producers' works, Cleveland. A plant is reported to have sold its December output of compressed sheet scrap at $20. Whenever 1920 prices are mentioned they are far above today's prices, and some dealers go so far as to predict $30 melting steel within six months. Quotations on heavy melting steel, bundled sheet scrap, old steel rails for melting, machine shop turnings, blast furnace turnings, stove plate, grate bars, malleable, No. 1 busheling, rerolling rails and car wheels have been advanced.

Chicago Market Strong

Chicago, Dec. 16.—Iron and steel scrap is fundamentally strong in the Chicago market with cast grades especially in demand. There seems to be a shortage of this material in the face of heavy demand from foundries, which are seeking to increase their proportion of scrap in view of the shortage of pig iron. Foundries in outside centers are able to bid higher for supplies in their own towns than dealers in Chicago can pay and this has reduced the tonnage coming from outside sources. Some buying of busheling during the past few days has given that material a little boost, while most rolling mill grades have been weak. A feature of the present situation of much interest to sellers and consumers of scrap is the recent order directing that all gondolas be used only for the transportation of coal during the next two weeks. This is expected to shorten the car supply for heavy scrap, as it will be necessary to use box cars largely, which increases the cost of loading and unloading. The Southern has issued a list offering 1900 tons of scrap, the Santa Fe 1530 tons, the Northern Pacific 750 tons, the Monon 570 tons and the Chicago Great Western 350 tons.

Foundry Scrap Heads Market

Cincinnati, Dec. 15.—Foundry scrap continues strong and prices show an advancing tendency. There has been some good buying of No. 1 cast with heavy inquiries still pending. Steel mill scrap is quotably higher, but the market is not firm. There has been a noticeable falling off in demand due to the fact that many mills have been forced to close completely on account of coal scarcity. There has been an accumulation of yard stocks.

St. Louis Prices Advanced

St. Louis, Dec. 13.—Considerable uncertainty as to the future of the scrap market exists among consumers, but dealers believe prices will advance still further. This opinion is based on settlement of the coal strike and a great demand for finished and semi-finished materials. Heavy melting and shoveling steel, railroad wrought, cast and stove plate have been advanced. Scarcity and expensiveness of pig iron is a strong argument in favor of higher values. Most of the foundries were able to continue work while the coal strike was in effect, but those

which closed or slowed down are making arrangements to resume. Cast and foundry grades are urgently wanted, and are scarce. There is also an excellent demand for steel. Within the past month two local dealers sold 10,000 tons of heavy melting, and 10,000 tons of shoveling at $19 and $10, respectively. Little of this material has been covered on, it is understood, and now heavy melting is quoted at $22.50 to $23 and shoveling at $21.50 to $22. Offerings from all sources are light. The 2300 tons offered by the Wabash railroad last week brought highest prices, and the same was true of the smaller lists put out by the Missouri, Kansas & Texas and the St. Louis Terminal Railway association. Rerolling rails are strong and scarce. Rolling mill grades are fairly plentiful, but in good demand and steady.

Southern Market Firm

Birmingham, Ala., Dec. 16.—Several grades of scrap are in demand and this has served to strengthen the southern market. Representatives of dealers in the larger scrap centers recently visited this district and it is understood more material will be shipped to some of these centers. Dealers here are unable to supply all demands for cast scrap as promptly as desired.. Heavy melting steel consumers are not purchasing entirely through dealers. Some plants are using scrap again to offset cost of pig iron. Quotations for scrap iron and steel were not advanced during the past week.

Sheet Outlook Better

Coal Settlement is Helping Operations—Scarcity of Material is Extreme—Sales at $9 to $13 Advance

Pittsburgh, Dec. 15.—Settlement of the coal miners' strike, although not reflected as yet in any very general resumption of sheet plants, recently closed down because of the fuel shortage, has made the outlook for larger mill operations immeasurably better than a week ago. Several of the manufacturers are located close to coal mines and in some instances own them, and the return of the coal miners to work relieves the situation at these mills. The American Sheet & Tin Plate Co. which had only 72 per cent of its sheet mills in operation a week ago, expects before this week is out to materially increase its active capacity, and some of the independent companies in the Wheeling-Steubenville district already have resumed operations after a shut-down, due to the lack of fuel. No let-up is noted in the demand for sheets and sales at substantially more than the base prices readily could be made if makers were disposed to accept the bids being made by buyers. So little tonnage is in stock, however, and with old orders further backed up by the recent loss of production, new demands even from regular customers are not getting much attention. Some of the independent companies in the recent past have taken some business in galvanized as high as 6.50c, base, in blue annealed at 4.00c, base, and in black at 5.00c, base.

Eastern Makers Advance Price

Philadelphia, Dec. 16.—The leading eastern maker of blue annealed sheets has advanced its base price to 4.05c, Pittsburgh, for No. 10. An eastern plate maker who has been rolling sheet gages now has a minimum of 4.00c, Pittsburgh. No. 10 blue annealed sheet demand is greater than the mills can take. Western makers are not taking business here.

Not Even Wasters Available

Youngstown, O., Dec. 16.—While sheet production has been slowed down here by the coal shortage still this has had little to do in the way of tightening up on available tonnages. A sheet shortage prevailed here long before the fuel scarcity was felt. The situation now has reached a point where not even wasters are to be had. Every sheetmaker in this district either is booked until the end of March or on account of the uncertain conditions, does not care to entertain further business. This has had a tendency to create a strong demand for all grades and has pushed prices to a point where the market is difficult to define. A few hundred tons of black resale sheets changed hands recently at between 6.00c and 8.00c. Buyers without question will pay most any price in order to get shipments, so that the market today, as far as valley mills are concerned, is nominal. Future extension at the DeForest plant of the Republic Iron & Steel Co., Niles, O., will include eight modern sheet mills, which it is expected, will roll as much tonnage as now obtained from the 10 mills. Present plans call for an early start on the new addition.

Rail Tonnage is Divided

New York, Dec. 16.—The New York Central railroad has allocated among various mills 150,000 tons of rails for 1920 delivery, conditional on the return of the road to its owners. Western railroads with offices in New York have placed approximately the same tonnage on the same condition.

Eastern Roads Seek 192,000 Tons

Philadelphia, Dec. 16.—Owing to a lack of assurance when the railroads will be returned to their owners, all plans for rail purchases in this district have been temporarily halted. The Reading railroad is inquiring for 25,000 tons of rails, including 12,000 for the Central Railroad of New Jersey. The Baltimore & Ohio is inquiring for 65,000 tons, the Virginian 16,000 and the Norfolk & Western 26,000. Unless the roads are returned the recent distribution of orders by the Pennsylvania railroad will be canceled. It is not known what the administration plans are for purchasing rails in case the roads are not returned.

Railroads Are Willing

Pittsburgh, Dec. 16.—Track material of all sorts still is in moderate demand, although several of the larger railroads of the country are understood to be anxious to get a place on the books of the makers of standard rails for their probable requirements upon their return to private management. Belief that the railroads will go back to old management on Jan. 1 is not so confidently held as was the case recently. Few demands are coming out for standard spikes and small ones are not being quoted for quite so freely probably because of the interruption to coal mining and development work by the miners' strike.

Rail Tonnage Nearly Covered

Chicago, Dec. 16.—Contracting for standard steel rails by western railroads has been practically completed, with about 400,000 tons involved. A survey of the field indicates that this covers practically the entire needs of western railroads during 1920, except for small emergency lots. These contracts are completed with the exception of final signature, which awaits the return of the roads to their owners. Carbuilding is slack and practically no inquiry for this department is now current. South African railways have inquired for 100 steel underframes and 100 sets of trucks, which will involve about 1800 tons of plates, shapes and bars, but no axles.

What is claimed to be the largest drydock in the world was dedicated at the Puget sound navy yard, Bremerton, Wash., Dec. 16.

Strip Bookings Heavy

Pittsburgh, Dec. 16.—Makers of strip steel, both hot and cold rolled, are committed practically through the first quarter of 1920,, and while there have been no announcements of withdrawals from the market for this period, it is doubtful if any of the manufacturers in this district can take on any additional tonnage. No orders for delivery beyond the first quarter are being taken and most makers are allotting tonnages for that period, allowing buyers to enter only the same tonnages as were placed for the present quarter. Demand for hot-rolled steel is especially heavy, due to the fact that some makers of cold-rolled strip steel buy hot rolled for cold rolling. Base prices of 3.50c, Pittsburgh, for hot-rolled, and 6.00c for cold rolled steel are being generally observed by makers.

Bar Market is Strong

Leading Makers of Soft Steel Product Sold Up Three to Six Months—More 3.50c Orders Taken—Bar Iron Again Rises

Chicago, Dec. 16.—Bar mills, those producing soft steel, hard steel and bar iron, practically all are out of the market, some being sold through for entire first half and others having up to three months' business on their books. The situation is tightest in soft steel, the leading independent having nothing to offer until the middle of 1920, while the largest interest practically is in the same situation. All mills producing bar iron and hard steel bars are idle at present, lacking coal, and probably cannot resume until the final week in December or the first week in January. Considerable inquiry is being entertained for each of these products, but even when specifications accompany the inquiry, makers are unable to entertain them. In the absence of trading, prices mean little, but nothing has been quoted on soft steel bars higher than 2.62c, Chicago mill.

On bar iron an unusually large inquiry is coming out and considerable tonnage is being booked. There is every appearance that iron mills are coming into their own and may enjoy a normal business after 18 months of starvation. The minimum quotation is 2.87c, Chicago mill.

Want No New Business

Philadelphia, Dec. 16.—Leading makers are booked to such an extent that orders have gone forth to take no business except that involved in existing contracts, and this applies especially to stel bars which now are almost impossible to place. Some steel bar business for first and second quarters has been booked at 3.75c, Pittsburgh, and some export sales have been made at 4c, Pittsburgh. Many thousand tons are being turned away daily. The minimum on iron bars is 3c, Pittsburgh, but the usual asking price is 3.50c and 3.75c is asked in some cases for shipment out of stock.

Shortage Brings Advance

Pittsburgh, Dec. 16.—In the lack of any improvement in the merchant steel bar supply situation, the shortage of cold-finished steel bars, especially in the smaller sizes and in screw stock, remains extremely acute. While most makers are holding at the old base of 3.60c for carloads, it is reported that one maker recently has offered to take business for shipment in 10 days on a base of 3.85c, while others are stated to be quoting 4.00c or more against new business. Demands still are heavy and insistent and buyers are not balking at premiums in their desire to secure supplies.

Most Makers Quote 3.50c, Base

New York, Dec. 15.—While some business in common iron bars continues to be booked at 3.25c, Pittsburgh, and even 3.00c, Pittsburgh, the makers in nearly all cases are obtaining 3.50c, Pittsburgh. In fact, anything less than the latter price now is exceptional. The market in common iron bars, while not as strong statistically as that in steel bars, is on a firm basis, so that the makers have got away apparently for some time to come from the conditions that only a month ago forced them to take business at or below cost. It now is figured that all of the bar iron makers have enough orders on their books to keep them occupied four to six weeks ahead. Current orders are coming from all sorts of domestic sources with the exception of the railroads. Good orders for export are current chiefly from South America. These export orders in some cases involve up to 300 tons each.

Recently, the bar iron makers association adopted certain changes in differentials. By the new schedule, the base price of 3.50c, Pittsburgh, applies to common or refined iron, rounds and squares, from ½ inch to 3 inches, and flats, ¼-inch to 1-inch thick and up to 6 inches wide. Rounds, ⅜ and 7/16-inch, take a 4.20c, Pittsburgh, base; rounds and squares, less than ⅜-inch, and flats under ¼-inch thick, 4.50c; hexagons, ovals, half ovals, and half rounds, 4.50c; and flats wider than 8 inches, and ¼-inch thick and heavier, 3.80c. Double refined iron takes an extra of 1 cent.

Prices Still Rising

Pittsburgh, Dec. 16.—Another advance of $5 a ton has just been announced by the leading makers of iron bars in this district putting the market on a basis of 3.50c for common bars and 3.75c for refined. This advance puts common bars back to the old war industries board base, but leaves refined iron about $10 a ton below the price established by that board. The demand for iron bars is on an enormous scale, with the Pennsylvania railroad making frequent inquiries for both common and specification iron, while chainmakers also are in the market for supplies. Makers also are profiting by the scarcity and sold-up condition of soft merchant steel bars and present bookings will carry them well into the new year. Small rounds in iron bars are quoted at 4.00c and this base also is quoted on iron bands. Makers of merchant steel bars have at least two months' business in sight while the Carnegie Steel Co. is reported to be sold up over the first half of next year. The latter company is holding to the old March 21 base of 2.35c, Pittsburgh, but it is doubtful if more than one or two independent makers would consider a price of less than 2.75c, Pittsburgh, while on prompt tonnages buyers have offered 3.00c or more, Pittsburgh. With the settlement of the coal strike it is believed that within the next few weeks mill operations will be on a heavier scale and that shipments against accumulated business will be freer than they are now. Demand for concrete reinforcing bars is heavy and makers of rerolled bars of this sort serving this district are not quoting less than 3.00c and some business actually has taken place at 3.25c and even higher. Bookings of both these and new steel reinforcing bars are heavy.

Makers Turn Down Inquiry

Chicago, Dec. 16.—Demand for bolts and nuts is immense and all makers are turning down much of the inquiry which reaches them. The business thus turned away in some instances reaches millions of pieces, but it is utterly impossible for mills to care for the total offered. Fuel shortage has caused much loss of time.

Premiums of $6 to $9 a Ton

Pittsburgh, Dec. 16.—While the Carnegie Steel Co. and some of the independent companies still are quoting hoops and bands at the old base of 3.05c, Pittsburgh, no tonnages of either are available for early shipment at this figure for all makers are heavily committed and production still is considerably below normal. As a matter of fact, those makers who have any prompt tonnage for sale are having no trouble in making sales at 3.30c, base Pittsburgh, and some sales are reported as high as 3.50c or from $6 to $9 per ton over the old base.

English Ferro is Offered

New York, Dec. 15.—An importer of English ferromanganese has been authorized by his British principal, to offer ferromanganese for second quarter delivery at $120, c.i.f. Baltimore. This authorization is limited to 1000 tons. So far, no business has resulted, due to the fact that there is no active inquiry at this time. In fact, no business of any moment in the ferromanganese market has been reported in this district during the past week. The price on domestic metal continues $120, delivered.

In spiegeleisen, the market also has been inactive during the past week, and while there is a fair amount of inquiry out, there is no hurry about closing. Small business has been done at as high as $41.25, furnace, for 20 per cent spiegeleisen, but this figure is exceptional, and the general market on sizable lots, on the basis of what has been done, may be quoted at $40, furnace, for 20 per cent. Included in the business of the past week is one lot of 250 tons of spiegeleisen for export.

Ferrosilicon Prices Soft

Pittsburgh, Dec. 16.—Efforts of producers of 50 per cent ferrosilicon to

establish higher prices have failed and while $85, furnace, freight allowed, has been done on one or two small tonnages, the largest sale lately reported here, one involving about 700 tons, carried a price of below $80. It has been the experience of sellers who have quoted more than $80 on this material that the order has not followed. Bessemer ferrosilicon also is extremely slow of sale and as far as this market is concerned the base of $59.50, furnace, is merely a quotation. Much tonnage remains on the furnace yards under contract, but shipping instructions are few and hard to obtain, though the present quotation is about $5 per ton above the basis of the contracts.

Domestic makers of ferromanganese still are holding at $120, furnace, freight allowed, for 80 per cent material and are getting a fair number of small orders, mostly for prompt delivery. Sale of 1000 tons of English ferromanganese running 76 to 80 per cent at $110, c.i.f. Baltimore, made here about 10 days ago, still waits word of the maker that shipments can be made. Fairly good demand is noted for spiegeleisen, but sales are neither large nor numerous. One eastern maker is quoting small tonnages at $37, furnace, lots of 100 tons or more, at $38, for prompt shipment, and $40, furnace, for first quarter shipments.

Ferro Selling Well

Chicago, Dec. 16.—Ferromanganese is in fair demand, with recent sales being made in 300 to 400 tons lots at $120 per ton, furnace, freight allowed. This price is higher than the quoted figure on imported English ferro, but material moves readily at that figure.

English Ferro is Sold

Philadelphia, Dec. 16.—An importer after selling considerable English ferromanganese for second quarter at $110 tidewater has withdrawn. Another is offering material for this position at $120 tidewater but has only 1000 tons to sell. He has made no sales as yet. Domestic makers continue to ask $120 delivered. The speigeleisen minimum now is reported as $40 furnace.

Tin Plate Mills

Planning Early Resumption—Black Plates Eagerly Sought

Pittsburgh, Dec. 18.—While a number of tin plate mills, recently shut down because of the fuel scarcity, are making plans to resume at an early date now that the coal strike is over, doubt is expressed that the fuel situation will be normal until after the first of the year. An acute shortage of early tonnages still exists and makers still are besieged with inquiries, few of which they are able to do anything with. Demand for black plate is extremely urgent as the margin between it and fully finishd tin plate is so great that few makers now are inclined to sell much black plate, preferring to take advantage of the extra profit there is in the fully finished material. Buyers are offering considerably more than $7 Pittsburgh, for standard tin plate.

Ship Plates in Demand

100,000 Tons Booked at Chicago—Pittsburgh Figures on 65,000 Tons—Tonnage Up in East—Sell at 3.00c and Ask 3.25c

Pittsburgh, Dec. 16.—Makers of plates are besieged with inquiries from the builders of tanks, who are so anxious to be covered against immediate and 1920 requirements that they have paid premiums of from $2 to $7 per ton. Some large ship-plate requirements lately have loomed up, and one maker here reports inquiries over a period of two days for approximately 65,000 tons of ship steel. The navy department is seeking 10,000 tons of plates and 4000 tons of shapes for cruisers Nos. 5 and 6, while the Pacific Mail Steamship Co. wants 10,000 tons of plates and 6000 tons of shapes. The Morse Shipbuilding Co. is reported in the market for the steel for two 15,000-ton steamers, which it recently was awarded, and among the other inquiries was one for 4000 tons of plates, shapes and bars for export. Sale of 2000 tons of tank plates for shipment over the first half of 1920 is noted by a valley maker at 2.75c, Pittsburgh, and 1600 tons by a Pittsburgh district maker at 3.00c. The Midvale Steel & Ordnance Co. is reported to be sold four months ahead on plates and to be quoting 2.75c, Coatesville, on western shipments. So heavily booked are all makers that 2.65c, base, Pittsburgh, now is a minimum quotation, and that price is being declined by some whose costs are high.

Quoting Up to 3.25c

Philadelphia, Dec. 16.—After securing considerable plate tonnage at 3.00c Pittsburgh, one eastern plate maker now is asking 3.25c. Those eastern mills which are able to make deliveries under three to six months are asking 3.00c Pittsburgh and this figure is being quoted on some big ship tonnages. The mills asking less, have only deferred deliveries to offer. One maker who last named 2.75c Pittsburgh has enough tonnage to keep his plant busy all of 1920 and some other makers are situated similarly. The Central Iron and Steel Co., Harrisburg, Pa., which was shut down because of the coal strike has lighted three open-hearth furnaces. Among orders placed the past week were 1000 tons of plates for Belgium locomotives.

Renew Ship Inquiry

Chicago, Dec. 16.—Inquiry for steel plates is strong, and the large producing capacity in the West probably will be entirely filled if the present rate of buying continues. Within the past week the leading interest has booked 75,000 tons of material for ships to be built in Pacific coast yards, while other producers have taken about 25,000 tons additional. About two-thirds of this material is plates, and the remainder shapes and bars. The demand for plates for tanks and tank cars for storing and transporting oil continues to bring considerable business to the mills. The Sinclair Refining Co. has placed 416 tons for two tanks at East Chicago with the American Bridge Co. The leading interest has booked about 15,000 tons, mostly plates, for car repair purposes. Plates are steady at 2.92c, Chicago.

Price Limit

Is Lacking in Nails—5000 Kegs Sold at 4.50c

Pittsburgh, Dec. 16.—Little or no improvement is observed in the position of makers of wire and wire products in the matter of their ability to accept business and prices still show a strongly upward tendency as a result of the efforts of buyers to secure supplies to carry them along. A sale is noted of 5000 kegs of nails at 4.50c, base Pittsburgh, for first quarter delivery, while in small lots for immediate shipment buyers know no price limits in their desire to secure supplies. While the American Steel & Wire Co. has made no change in its prices, still holding to 3.25c, base, for nails and 3.00c, base, Pittsburgh, for plain wire, this company is out of the market as far as new business is concerned and its quotations have found no recent basis in sales. Sales of plain wire recently have been made at 3.50c, base, Pittsburgh, while as much as 4.00c, has been obtained for coated nails. Sellers' price views not only are influenced by the attitude of buyers as to price limits but also by the fact that wire rods have moved up sharply over the old base price of $52, now being salable at anywhere from $63 to $67 and in some cases even more for soft steel.

Mills Take no Orders

Chicago, Dec. 16.—Wire and nail mills in the West continue their policy of accepting no further orders until the situation clears. They are loaded with business and unable to operate at full capacity and the wisdom of taking on further obligations is doubted. The shortage of wire and nails is becoming more acute, and consumers are using every effort to obtain shipments, while mills are spreading their shipments over as much territory as possible to serve all users.

Completes Furnace

The Worth Steel Co., Claymont, Del., has completed a fourth open-hearth furnace of 100 tons capacity, which is expected to be ready to be lighted next month. The new furnace will give the Worth Steel Co. a total of four open-hearth furnaces, each of 100 tons capacity. It is expected that two or three more open-hearth furnaces will be built during 1920. The company also has commenced preparing foundations for a second plate mill.

Awards More Numerous

Week's Record of Structural Contracts Include Many Good-Sized Tonnages—November Total Announced as 124,200 Tons

New York, Dec. 16.—A reduction of 8.50 per cent in structural lettings for November is shown by the regular monthly statement of the Bridge Builders and Structural society, just issued. The tonnage let in November amounted to 124,200, or 69 per cent of capacity, as compared with 139,500, or 77.50 per cent of capacity, let in October. Following is a comparative statement of monthly bookings reported by the Bridge Builders' society:

Month	Per cent	Approximate tonnage
November, 1919	69	124,200
October	77½	139,500
September	78½	141,000
August	78½	141,000
July	74	133,200
June	65	177,000
May	49	88,200
April	24½	48,100
March	17½	32,300
February	12½	22,500
January	12	21,600
December, 1918	29	52,270
November	27	48,700
October	43	77,400
September	60	108,000
August	57	102,000
July	116½	209,700
June	56	100,800
May	60	108,000
April	64	115,200
March	47	84,600
February	55	99,900
January	53	95,400
December, 1917	121	205,200
November	77	138,600
October	61½	110,700
September	29	52,200
August	38	68,400
July	41½	74,700
June	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000
December, 1916	86	148,000
November	78	134,000
October	77	133,500
September	52½	99,400
August	64	112,600
July	47½	83,600
June	58	100,000
May	80	137,000

Structural bookings during the past week exceeded inquiries. The larger awards included 2000 tons for a power house at Johnstown, Pa., 1500 tons for the International Tailoring Co. building, New York, and 1000 tons for the Park National bank, New York. Two lots of 875 tons for the Museum of Art, Philadelphia, and the store addition of A. I. Namm & Co., Brooklyn, also were awarded. Formal announcement was made of the award of 2300 tons for a loft building for Benjamin Hass, New York, and 1800 tons for a telephone exchange on Thirtieth street, New York. One eastern shape mill has recently advanced its minimum price from 2.45c, Pittsburgh, to 2.50c. Minimum shape prices in the East now range 2.50c to 2.55c, Pittsburgh.

Takes 1920 Business at 2.55c

Philadelphia, Dec. 16.—The minimum price on structural shapes for eastern mills is now 2.55c, Pittsburgh. At the same time there seems to be little disposition to press for more. One mill is taking some first quarter business at this level. The leading eastern maker has closed some schedules 10 to 12 weeks ahead, and in some cases will make deliveries in four to six months. Inquiry is good, but not sufficient to swamp mills.

Falling Behind in Deliveries

Pittsburgh, Dec. 16.—Shape mills in this district have become so heavily committed as a result of the large and urgent demands of the past couple of months that the interruption to operations occasioned by the coal shortage has caused most of them to fall behind in their deliveries and mill quotations carry no guarantees as to delivery dates. Piling up of orders for small shapes has been particularly heavy, due to a desire upon the part of users to be protected by contracts. The big accumulation of merchant bar orders, not to mention the extra labor required, has directed more bar mill capacity on bars than on small angles, beams and channels. Most of the structural contracts recently let have been extensions involving small tonnages and early delivery. Such jobs pay a higher price than the larger projects and because of this fact fabricating interests, unable to secure quick shipments from mill, have sought supplies from warehouses and paid the usual premiums of $10 to $15 per ton. While the Carnegie Steel Co. still is quoting and taking business at the old March 21, base of 2.45c for beams, some of the independents are booking as high as 2.60c, base, Pittsburgh. No important structural awards have been placed in this market in the past week, although a number of promising inquiries have come out. Tank builders are heavy buyers.

West Takes Large Tonnage

Chicago, Dec. 16.—Demand for structural shapes is improving and many contracts are being closed, some involving fairly large tonnages. The largest project is an addition to the Arthur Letts building at Los Angeles, involving 3000 tons. The mills are somewhat short on deliveries of structural material, in common with other forms of steel, but so far fabricators have not suffered from this fact. Plain material continues to be quoted at 2.72c, Chicago mill. No award has been made on 15,000 tons for the Chicago Union station on which bids are in.

CONTRACTS AWARDED

Building for Biltmore Country club, near Rye, N. Y., 1200 tons, let to Heddon Iron Construction Co.

Factory for General Leather Co. in Denmark, 700 tons; let to Hay Foundry & Iron Works.

Factory for Duretex Mfg. Co., 300 tons; let to Hay Foundry & Iron Works.

Addition to Arthur Letts building, Los Angeles, 3000 tons, to Baker Iron Works.

Paris-Hugo bridge over Red river, Hugo, Okla., 850 tons, to Virginia Bridge & Iron Co.

Two oil tanks at East Chicago, Ind., for the Sinclair Refining Co., 416 tons, to American Bridge Co.

Steel for ore cars for the Alaska Juneau Gold Mining Co., 260 tons, to independent shop.

Theater building at Okmulgee, Okla., 230 tons, to Illinois Steel Bridge Co.

Structural steel for warehouse at Alton, Ill., for the Laclede Steel Co., 276 tons, to Decatur Bridge Co.

Portage Park theater at Milwaukee and Cuyler avenues, Chicago, 186 tons, to Federal Bridge Co.

Boiler house for No. 5 shaft, Isle Royal mine, Houghton, Mich., for the Calumet & Hecla Mining Co., 125 tons, to American Bridge Co.

Awarded for Intenational Tailoring Co., New York city, 1500 tons, to Hay Foundry & Iron Works.

Loft building for Benjamin Hass, New York city, 2300 tons, formal announcement of award to Levering & Gerrigues.

Power house for Penn Service Corp., Johnstown, Pa., 2000 tons; to American Bridge Co.

Store addition for A. I. Namm & Son, Brooklyn, 875 tons; to Bethlehem Construction Co.

Telephone exchange on East Thirtieth street, New York city, 1800 tons, formal announcement of award to Hay Foundry & Iron Works.

Addition to Susquehanna Silk Mills, Huntington, Pa., 300 tons, to American Bridge Co.

Factory addition for Penn Rubber Co., Jeannette, Pa., 600 tons; to independent.

Building for Park National bank, New York city, 1000 tons; to Harris Structural Steel Co.

Telephone exchange in Bronx, New York city, 270 tons; to Hinkle Iron Co.

Apartment hotel, in Philadelphia, 650 tons; to American Bridge Co.

Museum of art, Philadelphia, 875 tons; to the American Bridge Co.

Building for Farr, Alpaca Co., Holyoke, Mass., 300 tons; to American Bridge Co.

Plant addition for H. H. Franklin Mfg. Co., Syracuse, N. Y., 300 tons to American Bridge Co.

CONTRACTS PENDING

Addition to Hamilton club, Chicago, 600 tons, bids asked.

Plant extension for Feurstein Ice Co., Nofolk, Va., 1400 tons indefinitely postponed.

Slow Return

In Mill Pipe Production Is Shown—Heavy Orders in Market

Pittsburgh, Dec. 16.—While the outlook for larger operations by the pipe mills is brighter as a result of the settlement of the coal strike and the easing up in the supply situation, little actual increase yet has come about at the various plants in this, the Wheeling and the valley districts. The National Tube Co. continues to concentrate mill activities in the products where the orders are heaviest and the indications are that not only this company, but all others will operate on a rather restricted scale until the turn of the year. A large number of men who were out on strike at the Riverside works of the National Tube Co. at Benwood, W. Va., have returned and the company now has two pipe furnaces in operation at this plant at which was located a fairly large stock of coal. It is expected that the Wheeling Steel & Iron Co., Wheeling, W. Va., shortly will resume operations as the men who have been out at this plant recently voted to resume work and call off the strike. Jobbers' stocks have become so thoroughly depleted by the demands of the past few months that in the lack of new production buyers in need of early tonnages find it extremely difficult to place them. Inquiries involving a large amount of line pipe are on the market and some heavy tonnages of oil country goods are seeking makers. The situation in standard pipe also is acute although not quite so taut as that in oil country pipe. Bookings in oil country and line pipe run as far ahead as Jan. 1, 1921, with some makers, while in merchant pipe hardly a manufacturer today has less than three months business in sight.

Private Demand Heavy

New York, Dec. 15.—Bids are to be closed tomorrow by the city of

Newark, N. J., on approximately 1500 tons of 24-inch cast iron pipe. No other municipal tonnages of consequence are reported. Private demand continues to come in heavy volume.

Shops Face Good Winter

Chicago, Dec. 16.—Cast iron pipe shops are entering the winter in better condition than has been the case for many years. Late buying has afforded large tonnages at the season when buying usually is light. Part of this backlog is due to the difficulties met with during the fall when pig iron supplies have been fairly scant and fuel has not been as plenty as usual. The United States Cast Iron Pipe & Foundry Co. has taken 120 tons at Cincinnati. Bids were to be opened Dec. 15 at Sandusky, O., on 103 tons and Dec. 16 at Toledo, O., on 1570 tons. Venango, Nebr. will take bids Dec. 29 on 80 tons. No award has been announced yet on the inquiry for 5000 to 7000 tons on which bids were taken recently at Elyria, O.

Steady Operations in South

Birmingham, Ala., Dec. 16.—Active operations at cast iron pipe plants in the southern territory continue and production during the winter will be good. Shipment of pipe is being maintained, and new specifications are coming in. Recent quotations are unchanged, though advances are expected.

To Erect Strip Mill

A universal mill will be erected at Bridgeville, Pa. by the Pittsburgh Open Hearth Steel Co., recently organized. The officials plan to roll strip steel for the automobile trade and for heavy stamping purposes.

Sheet Bars Are at $50

This Figure Now Appears Minimum—Report of Higher Sales—Slabs Bring $50—Semifinished Market Difficult to Define

Pittsburgh, Dec. 16.—Prices of practically all kinds of semifinished material still are headed upward, due to the fact that supplies available for early delivery are far short of demands. Sales of fair-sized tonnages of 4x4 billets are being made by manufacturers in this district at $45, with the usual differentials for sizes above and below the standard dimensions. Small sales of slabs are noted at $47.50 and also $50. For sheet bars, either open hearth or bessemer, $50 now appears to be the more general minimum as about the only tonnages becoming available are those released by some manufacturer who has received the steel on contract and for some reason or other is unable to use it. In view of the fact that substantial premiums are being paid on prompt tonnages of sheets, these manufacturers are unwilling to let the semifinished steel go for any smaller relative profit than they could obtain for the finished material. Demand for wire rods recognizes no price limits and while some business has been done at $63, Pittsburgh, for the base grade, considerably more tonnage has sold at $65 and even $67 has been obtained by some makers.

Talk $51 on Sheet Bar

Youngstown, O., Dec. 16.—If makers in this district were in a position to take on any sheet bar tonnages, they easily could get $51 or better. However, no sheet bars are available at Mahoning valley mills. This last week several offers of $50 were making the rounds but no sales were made so far as can be learned. Some spot business recently was done at $57 in a nearby district according to a dealer here. All makers of sheet bars here, however, are out of the market for first quarter and refuse to consider any business beyond that period until they determine where their costs stand and until they work off considerable business which accumulated due to the recent labor troubles and coal shortage.

Sell Slabs at $50

Cleveland, Dec. 16.—Strength continues to characterize the market on semifinished material and sellers are able to obtain high prices if they are inclined to ask them. This makes the situation lacking in price uniformity and a considerable range is represented in going business. However, the trend is steadily upward. As an example of this condition, a maker in this territory sold a tonnage of slabs in the week at $50, Youngstown, while another interest accepted $42, Youngstown, on 1000 tons of small billets. No sheet bars are being offered and there seems little doubt but that they would bring $50 or more on a sale.

New York Sheets Up

New York, Dec. 15.—A leading warehouse interest today advanced its prices on sheets 25 cents. The market on No. 10 blue annealed now is holding at 5.07c to 6.00c; No. 28 black, 6.25c to 7.50c, and No. 28 galvanized, 7.50c to 9.50c. This interest is also to announce shortly an advance in machine bolts, which are now quoted at a discount of 40 per cent on the smaller sizes and 30 per cent on the larger. It is likely the advance will amount to about 5 per cent. Rivets will advance.

No Let-Up in Demand

Boston, Dec. 15.—The general business quietness expected at this time of the year has not been noticed in warehouse business. Demand for sheets especially has been so great that some concerns have completely exhausted their stocks of certain lines. Some of the smaller warehouses in Boston have made price increase above the schedule adopted by the larger interests.

Stocks Low; Supplies Limited

Philadelphia, Dec. 16.—Warehouses here are having great difficulty in replenishing stocks, which are very low and incomplete. Prices asked vary, but the market here may be quoted about as follows on material out of stock: No. 10 blue annealed sheets, 5.00c to $5.25c; No. 28, black, 6.50c; No. 28 galvanized, 7.50c; steel bars, 3.60c; iron bars, 4.00c; plates, 3.60c; shapes, 3.70c.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Dec. 10	18.625	54.50	6.90	8.50	33.00	9.75	42.00
Dec. 11	18.625	53.75	6.90	8.45	33.00	9.75	42.00
Dec. 12	18.55	52.875	6.90	8.275	33.00	9.75	42.00
Dec. 15	18.50	54.00	7.00	8.375	33.00	9.75	42.00
Dec. 16	18.625	53.875	7.00	8.275	33.00	9.75	42.00

*Future shipment from Singapore or London.
†American Smelting & Refining Co.'s price.
‡Open market.

NEW YORK, Dec. 16.—The erratic movement of the sterling exchange market has been a prominent factor in the nonferrous metal market the past week. Sterling rates declined steadily to about 3.66, where export inquiries began to taper off. Down to $3.70 export inquiry was brisk and a heavy volume of business was transacted with Great Britain and the continent in zinc. Japan bought about 5000 tons of copper last week for first quarter delivery, while Germany and France also bought further tonnages. Foreign demand for lead continued and sales were made of bonded lead at prices about 6.50c, New York. The tin market, on the other hand, moved from day to day in accordance with the drop in exchange. Changes of 1c to 1½c a pound per day in the price of tin have not been unusual and have been due almost wholly to sharp changes in exchange rates.

The copper market was steady during the week at around 18.50c for electrolytic for first quarter delivery. Some sales were made as high as 18.62½c and some as low as 18.37½. Dealers continued to find it difficult to obtain copper due to the producers' policy of doing business only with consumers. Dealers have been holding crucible copper at high prices, asking 18.50c for this material in less than carload lots, which has meant that casting copper makers could not compete with electrolytic copper to any extent at present.

The zinc market slumped somewhat after exchange rates dropped to $3.66 and prime western fell from 8.50c to 8.25c. East St. Louis basis. At the lower price domestic galvanizers and brass mills showed increased interest. High grade zinc sold at 9c to 9.12½c delivered.

The tin market has been extremely irregular. Straits tin both for spot and future deliveries was held at 54.25c Dec. 9. By Dec. 12 it was available at 52.75c, owing to declining exchange rates, but on Dec. 15, an advance of £6 at London and a recovery of 4 points in exchange stiffened the market to 54c to 54.25c. Demand has been light, tin plate makers and other consumers having shown little interest because of the coal strike and also because of the recent heavy shipments from accumulated supplies in the port of New York.

The American Smelting & Refining Co. followed its lead price advance of Dec. 5 with another advance as of Dec. 12, this time the rise amounting to $2 a ton and bringing the price to 7c New York, 6.75 East St. Louis. Sales were made in the outside market at 7.25c New York, 6.95c East St. Louis.

Antimony was stronger at 9.75c for spot, duty paid, New York.

Shutting Down on Exporters

Refusal of Mills to Take Foreign Orders Causing Distress in International Markets—Dutch Buy Large Tonnage of Rails for Future Delivery —135,000 Tons of French Shell Billets Sold

NEW YORK, Dec. 15.—Speculation inspired by the advancing prices is resulting in considerable confusion and no little injury to the export trade. Legitimate exporters are finding it difficult to hold foreign customers to firm orders so long as this speculative tendency exists. They are finding it extremely difficulty to persuade their customers that no iron or steel commodity can be obtained in the present market at the March schedule of prices. It is necessary to pay anywhere from $20 to $40 a ton premium and even then it is uncertain whether such an offer will bring forth an agreement from the mill to accept the order. The case of No. 28 galvanized sheets, which bear a base price of $5.70, Pittsburgh, may be taken as a typical example. The exporters declare that it is necessary to pay at least $1.50 premium, making the actual cost of the sheets $7.20, Pittsburgh. Foreign clients are not infrequently confused with the quotations they read on American material and it is difficult to convince them that the quoted schedule is not the price at which the commodities now are being sold.

Despite the English orders that are now and then placed, a gradual diminution of the business is apparent. Many quotations offered to English colonies are meeting with rejections although some business has to be placed as a matter of necessity as the English mills cannot make the deliveries. The large purchases recently made by the Chilean government on railroad account included only such material as the Chilean railroads were compelled to have. Business which was possible in South Africa is being canceled, and Australia now has an embargo on many commodities from the United States. To ship goods into Australia it is necessary to have an import permit and only such material as the country finds essential is being granted admission.

This prohibition of imports is a drastic method to check the decline in exchange but it was forced upon France early. The situation is undoubtedly in part responsible for the reported sale of 135,000 tons of French shell steel billets to an American dealer. That transaction was one of the largest consummated for some time, involving several million dollars. While the French came into possession of these billets through old war contracts they have been held on this side of the Atlantic. The specifications of the billets are carbon .35, silicon 1.15 to 1.25, manganese .50 to .80, phosphorus .03 to .08, maximum sulphur .05. They run in sizes from 3¼-inch up to 10 or 13 inches.

The settlement of the coal strike holds out a glimmer of hope for the exporters although for some weeks it is not expected that the mills will be ready to receive inquiries. According to the word that has been passed around the market here the exporters must wait until Jan. 15 before any promises can be given by the producers.

The United States Steel Corp. has taken an order for between 15,000 and 18,000 tons of steel rails from Holland for the Dutch East Indies. Deliveries on the contract, it was said, will be started within the next 60 days. This order was considered important in view of the fact that the United States successfully competed with several European mills for the contract.

Some European Business

It was reported in equipment circles that Belgium is in the market for 10,000 freight cars. The companies are in a good position to take on this business, but the question of financing any order of this size is considered the chief stumbling block to its acceptance.

England has sent in an inquiry for 2000 tons of billets, but the exporters despair of placing the order on account of the disparity in exchange. England has been purchasing some little mattress wire and has been taking some choice grades of iron and steel scrap. London has been inquiring for 100 kilometers of portable track. It is believed that this was intended for South Africa, but the order was not placed. Italy also is said to have inquired for 4000 tons of bars and the inquiry is now going its rounds of this market.

South American inquiries call for cars, rails, sheets, wire, pipe, bars and plates. The volume of these inquiries is not nearly so great, it is believed, as they might be were we prepared to extend the Latin-Americans substantial credits. Much of the financing of South American industries has been done in London and consequently so long as supplies for these industries cannot be had in England they are purchasing only their immediate necessities from the United States. The sales to South America include plates, pipe, bars and hoops, although they are in small lots. A sale of 750 tons of bars to Argentina was reported by one house. The same house said it had received orders from Argentina for some 50,000 reels of barbed wire within the past two weeks but not all of this business has been placed with the mills. Brazil is now inquiring for some 500 railroad cars, and 10,000 tons of 70 and 80-pound rails.

Inquiries from South America passing through the general trading houses are small and few, probably due to the speculative state of the market and the specialty training required to fill orders. One such house, however, acknowledged the receipt of a South American inquiry for bars and hoops. The tonnage in each case was small. Another house reported the sale of approximately 700 tons of wire to Argentina and Brazil within the past two months.

Some of the exporters are beginning to complain of the manner in which inquiries from South America are being received. They ask for odd assortments of material and give unusual specifications. In this market it is practically impossible to do any business on such a basis. A typical South American inquiry just received asked for 500 tons of channels, 500 tons of angles, 250 tons of black sheets, 600 tons of mild steel plates, 900 tons of special wire and 18,000 coils of black varnished wire.

An inquiry for 1000 tons of bars has been received from Japan. A similar inquiry has been received from China. The lowest quotation brought out on this was $3 per 100 pounds, Pittsburgh, although some of the mills asked $3.50.

An important trading house has placed a few orders for a few hundred boxes each of nails for China and Japan. Previous orders placed for the same customers have been in thousands of kegs. These nails brought $5 per 100 pounds, Pittsburgh, but there has been an asking of $5.50 for similar nails for second quarter.

British Steel Growing Scarcer

Lack of Billets Forces Suspension of Many Rerolling Mills—Rails Advanced to $65.28 – Output of Some Steel Works Reduced 50 Per Cent as Railroad Congestion Forces Furnaces to Blow Out

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
16 Regent St., S. W. I.,
London, Dec. 15.

Rate of Exchange—3.73

THE steel scarcity in Great Britain is increasing. Some structural engineers now have nine-tenths of their work held up because of the fact. Semifinished steel from America is greatly missed. Many rerolling works have stopped operations for want of billets. Heavy steel rails have been advanced to £17 10s ($65.28). Scarcity of railroad cars has compelled many blast furnaces to blow out or damp down, and has reduced output of some steel works 50 per cent.

Derbyshire pig iron has been advanced 2s 6d ($0.47) Sellers often accept only half the tonnage offered. Basic pig iron is very scarce. Galvanized sheets have increased to £39 ($145.47) and orders are generally refused.

Sixty thousand tons of tin plate have been ordered by Japan and continental buyers are offering heavy premiums for supplies. The molders' strike is causing great distress through unemployment.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation Street,
Birmingham, Eng., Dec. 4.

Rate of Exchange, $4.01

PIG iron continues in strong demand, although the continuance of the molders' strike has greatly reduced the call for the best grades. The unsatisfactory quality of fuel keeps down the proportion of best iron. The deficient output largely is due to railroad congestion, and the insufficiency of cars which keeps numerous blast furnaces in constant danger of stoppage. One of the largest Black country concerns has at the present time 75 cars distributed among different collieries but is unable to get supplies, and will be obliged to stop operating in a few days.

Prices generally are unchanged, the only exception being No. 1 Cleveland iron which has been advanced for home and export 3s 6d (70 cents) per ton, making the home price 167s 6d ($33.58) and the export price 172s 6d ($34.58). This is practically unimportant, as so small a proportion of this particular grade is sold. Higher prices, however, are expected for pig iron when the situation is sufficiently settled to enable safe decisions to be taken. There have been good sales of Northamptonshire and Derbyshire foundry iron at recent prices. A certain amount of foundry material from the north of England is going to Scotland, where the molders are still at work. An attempt to extend the molders' strike to Scotland has failed. The pig iron situation in the East coast hematite trade is rather easier, chiefly because the steelworks cannot obtain cars to convey pig iron. The stoppage of several important steel mills in the north of England has already compelled some pig iron to go into stock. The position of the trade is serious, as the result of the railroad situation. The molders' strike with the extensive stoppages of engineering works has seriously affected the Barrow steel district, where the supply of steel is decidedly in excess of the demand. There is a strong demand for basic pig iron, which appears to be entirely below the requirements of the trade. In south Staffordshire, several furnaces are damped down or blown out because of the scarcity of fuel, combined with the molders' strike.

The situation remains extremely uncertain, in view of the recent regulation of coal prices, no declaration having yet been made with regard to coke. For the time being it is assumed that coke, like works coal, will maintain its price.

The finished iron and steel market is firm, partly due to the belief that prices must advance. Orders are plentiful for all descriptions, and especially for gas strip, for which local makers of tubes have depended mainly this year on American supplies. Some of the Staffordshire strip mills have lately been without orders on this account. A fortnight ago tubemakers placed heavy orders with local strip mills at the standard rate of £22 10s ($90.22), but the makers now decline to accept less than £24 ($48.24). Premiums have been offered frequently to secure all grades of iron, and numerous makers have now called on their customers to pay premiums ranging between 10s ($2) and £2 ($8.02) on old contracts.

The scarcity of semifinished steel is causing great difficulty, and is reducing the output of the finishing mills. The supplies of billets from America, which were useful while they lasted, are now sorely missed. The largest consumers have hastened to place heavy orders with the great South Wales firms with a view to securing the first production in the new year, but this leaves the present urgent need entirely unsatisfied. In the meantime, prices are advancing, makers who have billets to sell obtaining from £16 ($64.16) to £16 5s ($65.16) per ton. The demand for

Current British Prices

In Pounds, Shillings, Pence

	Home consumption	Export prices
SEMIFINISHED STEEL		
Billets, soft steel	16:10:0	16:10:0*
Sheet bars	14:0:0 to 15:0:0	15:0:0*
FINISHED STEEL		
Steel bars, England, ⅝ to 3 inch	20:0:0	20:0:0*
Ship plates, England.	21:0:0	21:0:0*
Ship plates, Scotland.	21:0:0	21:0:0*
Beams, England	18:0:0	18:0:0*
Beams, Scotland	18:5:0	18:5:0*
Sheets, black, 24 gage	28:0:0	39:0:0*
Sheets, galvanized, 24 gage	39:0:0	38:0:0*
Rails, 60 lbs. and over	17:10:0	17:10:0*
Tinplate, base box, 108 lbs.	2:06:0	2:06:0*

*Export steel prices are nominal.

PIG IRON		
Hematite, East Coast Mixed Numbers	10:0:0	10:5:0
Hematite, Scotch	10:10:0	10:15:0
Middlesborough Basic.	8:5:0	8:10:0
Middlesborough No. 3	8:0:0	8:5:0
No. 3 Foundry, Derby, Leicester, Nottingham	9:5:0	9:10:0
No. 3 Foundry, Northamptonshire	8:08:0	8:13:0
No. 3 Foundry, Staffordshire	9:00:0	9:5:0
Scotch Foundry	9:15:0	10:0:0
Ferromanganese, 80 per cent	25:0:0	23:0:0
COKE		
Midlands furnace	2:10:6	.....
Midlands foundry	3:6:0	.....

finished steel is enormous, especially for joists and girders.

There is a large amount of unemployment in the country, nearly 11,000 registering as unemployed in Sheffield last week.

The galvanized sheet trade is busy, but a great deal of work has to be refused owing to the inability of manufacturers to obtain transportation of steel and spelter and delivery of the sheets when they are finished.

The tin plate trade although working under boom conditions is hampered greatly by railroad congestion, which deprives mills of the necessary material, and makes it impossible to keep the works fully employed. A special conference held in South Wales made strong representations to the government to secure an improvement in traffic facilities. The demand for tin plates is enormous, one inquiry alone from the salmon packers on the Pacific coast of America running into 100,000 boxes. Quotations are steadily advancing and are now 46s ($9.22) to 47s ($9.42) per box.

There is every probability of a general advance in finished steel, several manufacturers by personal negotiation having put up their prices by 10s ($2) to 15s ($3) per ton. Buyers who have been hoping for supplies either from America or the continent have now made up their minds that this country can be the only possible source of semifinished steel for a long time, and they are pressing their orders on the market, the natural effect being to further stimulate the high values.

I. W. W. Use Dynamite in Range Town

Duluth, Minn., Dec. 16.—I. W. W. agitators are becoming more active in northern Minnesota iron mining and lumbering districts, and outrages attributed to them are being committed. Last night the house of Chief of Police Coffey at Ely, Minn., was damaged by a dynamite explosion. The house was shattered but no member of the family was injured. Windows of business places in Ely were covered with I. W. W. "stickers" during the night, and it is assumed that the "reds" took that way of defying the police authorities who were active in maintaining order in the town during the recent strike of miners. Federal authorities in all mining towns on the ranges are trying to run down agitators, and assistance is being given by members of the American Legion.

Coal Scarcity Still Affects Western Mills

Chicago, Dec. 15.—Little difference in operation of iron and steel mills has resulted from the coal strike being settled, and the effects of the strike are expected to last in some degree through the remainder of the winter. Small mills which had no reserve of coal and used up everything in their yards have no expectation of turning a wheel before Dec. 29, and then only if shipments started now are hurried through to them. Most of those in this position believe that Jan. 5 will be about as early as they can expect to resume.

Larger consumers like the Illinois Steel Co., and Inland Steel Co., which carried a reserve for winter use are in better position and can resume larger operation at once, but during the strike they have drawn from their reserve of coking coal to supply the lack of mill coal, and supplies now are short.

Continued operation through the winter depends largely on whether weather conditions allow continuous shipment of coal. No attempt has been made up to this time to increase the number of furnaces in blast and probably this will not be done for another week or two, after conditions become clearer.

Mills Planning to Resume as Coal Arrives

Youngstown, O., Dec. 16.—An early resumption of operating schedules is contemplated by steel plant officials here with the release of several hundred cars of coal since Saturday. The 10 and 20-inch skelp mills and the 8 and 10-inch continuous bar mills at the Brown-Bonnell plant of the Republic Iron & Steel Co., were placed in operation Monday. These mills have been idle since Sept. 22. Officials planned to charge some of the open hearths Wednesday. The Bessemer plant has been operating at full capacity since Monday morning.

While considerable coal was shifted into the mill yards of the Trumbull Steel Co., Warren, O., early in the week still the tonnage was not sufficient to warrant immediate resumption in all departments. By Wednesday, it is thought, enough fuel will have accumulated to start several sheet and blackplate mills and perhaps a few open-hearth furnaces. The strip mills at this plant have been rolling steadily.

The Liberty plant of the Trumbull company at Leavittsburg, O., operated only partially last week and if incoming shipments of coal continue at the present rate all units at this plant will be placed on the active list by next Monday. Last week the Brier Hill Steel Co. narrowly escaped a shutdown but this week finds all departments in steady operation. The Youngstown Sheet & Tube Co. reports partial operation but hopes to have additional units in action before the end of the week. Practically 100 per cent operation is being maintained by the Carnegie Steel Co.

Unfilled Bookings Increase

For the sixth consecutive month unfilled bookings of the United States Steel Corp. on Nov. 30 aggregated 7,128,330 tons, an increase over the preceding month of 655,662 tons. This is the biggest gain since July when bookings increased 685,806 tons.

A comparative monthly table follows:

Date	Total	Change, tonnage	Change, per cent
Nov. 30, 1919....	7,128,330	655,662+	10.12+
Oct. 31, 1919....	6,472,668	188,030+	2.90+
Sept. 30, 1919....	6,284,638	175,535+	2.80+
Aug. 31, 1919....	6,109,103	530,442+	9.50+
July 31, 1919....	5,578,661	685,806+	14.00+
June 30, 1919....	4,892,855	610,545+	10.70+
May 31, 1919....	4,282,310	518,375—	10.80—
Apr. 30, 1919....	4,800,685	629,887—	11.58—
Mar. 31, 1919....	5,430,572	580,215—	9.65—
Feb. 28, 1919....	6,010,787	673,481—	10.07—
Jan. 31, 1919....	6,684,268	694,884—	9.41—
Dec. 31, 1918....	7,379,152	745,511—	9.17—
Nov. 30, 1918....	8,124,663	228,630—	2.74—
Oct. 31, 1918....	8,353,293	55,388+	.668+
Sep. 30, 1918....	8,297,905	461,137—	5.26—
Aug. 31, 1918....	8,759,042	124,759—	1.40—
July 31, 1918....	8,883,801	35,065—	.39—
June 30, 1918....	8,918,866	581,243+	6.90+
May 31, 1918....	8,337,623	404,259—	4.60—
Apr. 30, 1918....	8,741,882	314,522—	3.47—
Mar. 31, 1918....	9,009,675	232,049—	2.49—
Feb. 28, 1918....	9,288,453	189,400—	1.99—
Jan. 31, 1918....	9,477,853	96,135+	1.02+
Dec. 31, 1917....	9,381,718	484,612+	5.44+
Nov. 30, 1917....	8,897,106	112,569—	1.24—
Oct. 31, 1917....	9,009,675	823,802—	8.37—
Sep. 30, 1917....	9,833,477	573,572—	5.51—
Aug. 31, 1917....	10,407,049	433,115—	4.16—
July 31, 1917....	10,844,164	539,123—	4.74—
June 30, 1917....	11,383,287	503,304—	4.24—
May 31, 1917....	11,886,591	296,492—	2.43—
Apr. 30, 1917....	12,183,083	471,439+	4.02+
Mar. 31, 1917....	11,711,644	134,947+	1.16+
Feb. 28, 1917....	11,576,697	102,643+	0.90+
Jan. 31, 1917....	11,474,054	73,232—	0.64—
Dec. 31, 1916....	11,547,286	488,744+	4.43+
Nov. 30, 1916....	11,058,542	1,043,282+	10.41+
Oct. 31, 1916....	10,015,260	492,676+	5.18+
Sep. 30, 1916....	9,522,584	137,133—	1.42—
Aug. 31, 1916....	9,660,357	66,765+	.69+
July 31, 1916....	9,593,592	46,866—	0.48—
June 30, 1916....	9,640,458	297,340—	3.09—
May 31, 1916....	9,937,798	108,247+	1.11+
Apr. 30, 1916....	9,829,551	498,550+	5.34+

Buys Steel Tonnage

Briggs & Turivas of Chicago, have purchased from the United States shipping board, Emergency Fleet corporation of Philadelphia, the latter's entire surplus of fabricated and unfabricated steel. The estimated quantity is approximately 300,000 tons.

The Ward Tool & Forging Co., Latrabe, Pa., organized late last summer, has completed and equipped its new plant. It started operations recently.



Fig. 1—A poorly lighted machine shop. This is an interior view of a room adjoining the well illuminated assembly room shown in Fig. 2

Good Lighting Aids Production

Tests Conducted to Find Relation of Lighting and Production Show That Substitution of Proper Lamps and Reflectors for Antiquated Equipment Increased Output by From 2 to 35 Per Cent

BY WARD HARRISON

IT HAS been only in the past three or four years that lighting, in the minds of factory executives, has been taken out of the janitor service class and placed with automatic machinery and labor saving devices, where it belongs. Now manufacturers are beginning to realize that it is a substantial aid to production and already six states have adopted codes of lighting requirements for industrial establishments and in three other states prospective codes are being drawn up.

In the state codes, intensities of lighting for various classes of operations are specified depending upon the nature and fineness of the detail to be observed, the closeness of application required, and the color of the working surfaces. These intensities are designed only to protect the life and to a reasonable extent the eyesight of the operative who must work long hours under these conditions. In halls, passages and stairways, the codes provide for intensities just high enough to enable the workman to find his way in safety. A well known insurance company is responsible for the statement that more people are killed by tripping or falling in poorly lighted areas than are killed by automobiles in the United States. It also is stated that 24 per cent of industrial accidents, as determined by an analysis of 91,000, are due wholly or in part to inadequate lighting.

However, government requirements for lighting are concerned only with protection and have no bearing upon economical production, which necessitates considerably higher intensities than are specified in the state codes. Recommendations for the proper intensity of illumination for a particular plant depend upon numerous factors such as cost of producing light, the number and wages of employes and the value of their output.

Study Relation of Lighting to Output

Tests to determine the relation of lighting to production, made in Chicago under the direction of the lighting committee of the Commonwealth Edison Co. have aroused considerable interest because of the care with which they were conducted and the conclusiveness of their results. For the purpose of ascertaining the true relation between the amount of light used and the production of hand and machine workmen, four shops were chosen in which the following ideal conditions could be realized:

1. The plant should be able to show actual production accurately for separate machines during definite periods.
2. The product should be standardized so that large outputs may be obtained with all conditions identical except the amount of light used.
3. A fair proportion of the work must be done during the hours of darkness or the factory must be so situated that the daylight is negligible.

The results of these tests showing the increased production obtained under improved lighting conditions are shown in Table III.

In a recent survey of industrial lighting conditions it was found that 25 per cent of the work is done under artificial lighting. If artificial light could be had for the asking, no manufacturer would be content with a lower standard of illumination by night than by day. An idea of the average intensities of day-

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From a paper presented at the recent annual meeting of the Society of Industrial Engineers, Cleveland. The author, Ward Harrison, is an engineer with the National Lamp Works of the General Electric Co., Nela Park, Cleveland.



FIG. 2—A WELL ILLUMINATED DEPARTMENT OF A SEWING MACHINE PLANT. COMPARE THIS ILLUSTRATION WITH FIG. 1, WHICH SHOWS AN ADJOINING ROOM IN THE SAME ESTABLISHMENT

light illumination for various kinds of manufacturing plants is given by Table I, which summarizes the values found in 17 typical industries. Each figure is the mean of a number of observations and the measurements extended over both clear and cloudy days. An attempt was made to secure data representing good average working conditions and processes were divided roughly into three groups in accordance with the relative necessity for accurate vision. It will be noted that in general the operations requiring the closest attention were ordinarily best lighted, for wherever possible such machines or work tables are located near the windows.

Data such as are summarized in Table I are made possible by the foot-candle meter, a simple and compact instrument recently developed for the purpose of measuring illumination. The screen of the foot-candle meter, on which readings of intensity of illumination are made, consists of a piece of clear glass on which are two thicknesses of paper, one having round holes being fairly opague and the other highly translucent. This screen forms one side of a light box which is constructed so that the screen is illuminated from within to a much higher intensity at the right than at the left. The exposed side of the screen is very nearly uniformly lighted and the round spots appear brighter than the surrounding screen at the right end and darker at the left, as shown in Fig. 3. It is evident that at the point where the spots change from brighter than their background to darker, the illumination on both sides of the screen is approximately the same. After the instrument has been calibrated, illumination intensities may be read on the screen at a glance. The scale reproduced in Fig. 3 indicates an intensity of 5 foot-candles.

Glare is Objectionable

Frequently the presence of direct glare in an artificially lighted room leads to the conclusion that the room is "overlighted", when in reality the illumination is inadequate. In order to approach the daylight standard in artificial illumination the diffusion or softness of natural light must be reproduced by artificial means. For this reason, glare, specular reflection and quality of shadow are factors now receiving increasing attention. All are dependent primarily upon the area of the source of light. In common usage any source of light which is uncomfortably bright is termed glaring, but whether or not a source does produce discomfort is dependent in a large measure upon the brightness of its surroundings and the length of time during which the eye is exposed to its rays. For example, a person scarcely will notice whether or not a bare tungsten filament lamp out of doors in daylight is lighted, but at night the same source is decidedly uncomfortable if close within the field of vision. Again, one may casually look out of an office window during the day and unless the landscape is unusually bright, he will not experience a sensation of discomfort; yet to sit all day at a desk facing this window no doubt would cause pronounced fatigue.

From the standpoint of glare, light sources may be divided into three classes, namely; those, such as an arc or bare lamp filament, which cause discomfort at once; those, like the window, which after a time give rise to fatigue; and those which may remain in the field of view indefinitely without producing any sensation of glare. The conviction is growing that under no circumstances should sources of the first class be tolerated within the field of vision. Those of the sceond class are usually satisfactory for all lighting installations where the light source need not be within the range of vision for a long period, or at worst, not focused continually on the same portion of the retina. In the third class must be included all places where the field of view remains fixed over a considerable period of time.

In addition to direct glare from light

Table I

Intensities of Daylight Illumination

Values in foot-candles obtaining when Daylight was deemed sufficient for processes carried on.

FACTORY PRODUCT	GRADE OF WORK		
	Fine	Medium	Rough
Engine lathes	10	7	3
Automatic engine lathes	14	12	10
Machine forgings	..	6	5
Special machinery	10	7	..
Lamps	10	9	..
Vacuum cleaners	17	11	..
Automobiles	5	5	5
Automobiles (saw-tooth roof)	10	3	5
Storage batteries	..	5	3
Machine tools and patterns	6	9	..
Sheet iron equipment	10	5	8
Machine gears	7	8	5
Hardware	10	10	4
Printing machinery	..	5	3
Sewing machines	..	4	2
Cloth bags	..	5	7
Clothing	10	4	..
Furniture	5	5	..
Average	10	7	5

sources, the element of reflected glare or specular reflection, is under certain conditions of equal or even greater consequence. The eyes may be shielded from the direct rays of a lamp, yet the image of this light source, reflected from the polished metal parts of a machine, may be the source of most serious discomfort. It is obvious that the lower the brightness of the source, the lower is the brilliancy and the less the discomfort from the reflected image. If a light source is satisfactory as to glare when one looks directly toward it, in most cases it can be safely assumed that its image will not be disturbing.

The illumination of vertical surfaces is an important factor of industrial lighting. In most factories objects of three dimensions predominate and the illumination of their vertical surfaces is of nearly as much importance as that of the horizontal planes. A good intensity of light on the vertical wall surfaces is also conducive to an impression of brightness and cheer throughout a room. To produce satisfactory vertical illumination a source of light must have fairly wide distribution and must give satisfactory intensity at angles as high as from 65 to 75 degrees from the nadir.

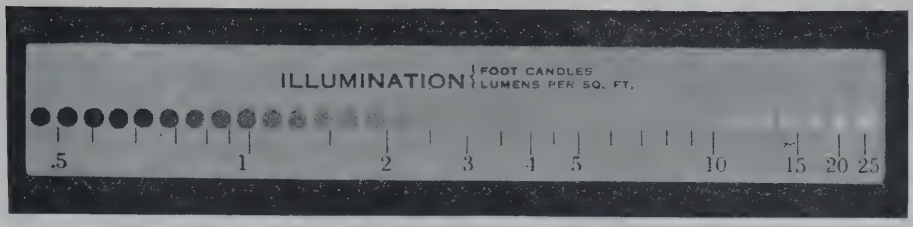


FIG. 3—A SCREEN INDICATING 5 FOOT-CANDLES

Table II

Guide for Selecting Proper Reflecting Equipment

VARIOUS lighting units are rated in accordance with seven fundamentals, the importance of which differs for different classes of service. In finishing automobile bodies, for example, the elimination of reflected glare is of major importance, whereas in a foundry no importance is attached to this factor. The grades assigned are relative and apply only when the units are used with the same size of lamp and under similar conditions.

Maintenance depends on the contour of the reflector, construction of the fixture and condition of ceiling. The rating is based on the labor involved in the units at comparative degrees of efficiency and on the likelihood of the need for cleaning being apparent. The column headed "Favorable Appearance of Lighted Room" refers only to the general or casual effect produced by the complete system and is not intended to rate the unit as to its satisfaction from the standpoint of good vision or freedom from eye fatigue.

A+ indicates .....Best
A indicates .....Excellent
B+ indicates .....Very good
B indicates .....Good
C+ indicates .....Fair
C indicates .....Weak
D indicates .....Condemned

If globes are very large rate B on glare; if very small, C. Rate C+ on glare of the bowl is noticeably brighter than the upper reflector. Ratings apply only where work is being done on polished or oily surfaces.

Type of reflector	Efficiency based on Horizontal illumination	Efficiency based on Vertical illumination	Favorable appearance of lighted room	Direct glare	Reflected glare	shadows	Maintenance
R.L.M. dome Clear lamp	A+	A+	C+	C	D	C+	A+
R.L.M. dome Bowl-frosted lamp	A	A	B	B	C	B	B+
R.L.M. dome Opal cap	B+	B+	B	A	B	A	C+
Enameled bowl Clear lamp	B+	B	C	C+	D	C	A
Enameled bowl Bowl-frosted lamp	B	B	C	B	C	C+	B+
Metal cap diffuser; Silver cap	B	C+	B	A	A	A+	C+
Flat cone Clear lamp	B	A	C	D	D	C	A+
Flat cone Shielding band	B+	B+	C+	C+	D	C	B+
Mirrored glass Clear lamp	A	B+	C	C+	D	C	A
Prismatic industrial; Clear lamp	A	A+	B+	C+	D	C+	B
Light density opal; Bowl-frosted lamp	B	B	A	B	C	B+	C+
Dense opal Bowl-frosted lamp	B+	B	A	B+	C	B	B
Diffusing globe Light opal	C+	B	A	C+	C+	B	A
Diffusing globe With reflector	B	B+	B+	B	C+	B+	B+
Shallow reflector; Diffusing bowl	B	B+	A	B+	B	A	C
One-piece unit Reflector and globe	B	B	A	A	B+	A	A
Semi-indirect Light opal	C+	C+	A	B+	B+	A	C
Semi-indirect Dense opal	C	C	A	A+	A	A+	C
Enameled inverted Diffusing glass plate bottom	C+	C	A	A+	B+	A	C
Indirect Clear lamp	C	C	B+	A+	A	A+	C



FIG. 4—A TYPICAL INSTALLATION OF INDIRECT LIGHTING. GLARE, WHICH IS AN OBJECTIONABLE FEATURE IN A DRAWING ROOM, IS ALMOST ELIMINATED BY THIS METHOD OF ILLUMINATION

The important question of shadows must be considered. For satisfactory general lighting there must be no shadows so dense as to make vision difficult where the direct light from one or two sources is cut off, nor so sharply defined as to confuse the worker, in other words, shadows should be soft and luminous. It must be remembered that the entire elimination of shadows is not an end to be desired in industrial illumination.

From successful trials of indirect lighting in offices, some factory managers have concluded that the indirect system is ideal for all conditions and that it is simply the question of operating cost and maintenance which has prevented the general application of this system. It is universally recognized that evenly diffused light makes sculpture appear flat and uninteresting and for the same reason that directed light is best for works of art, it is required for the easy vision of objects of three dimensions in factories.

Summarizing the factors which influence the selection of lighting equipment, we have efficiency, based upon horizontal and vertical illumination; favorable appearance of the lighted room; direct and reflected glare; shadows; and maintenance. In Table II, 20 different lighting units are compared according to these seven qualities. The choice of equipment depends largely upon the character of the place to be lighted. For instance, in a foundry where the question of maintenance is of prime importance a unit should be chosen which rates high in this respect.

The permanence of a porcelain enamel steel surface, even under unfavorable atmospheric conditions, its moderate cost, and the ease with which it can be kept clean, have made it the most generally employed among industrial reflectors. In order to conform to the specifications of the Reflector and Lamp Manufacturers' association, reflectors must have a surface of good quality and high reflecting power, the proper angle of cut-off and diameter, and a contour which distributes the light most effectively.

Clear bulb lamps, except with opal caps, should not be used with dome reflectors at mounting heights of less than 20 feet. At this height the nearest lamp within the field of vision is so far removed that ordinarily the amount of light entering the eye directly from it is insufficient to cause glare; also, the lighting unit subtends so small an angle at the working surface that shadows are not greatly softened by frosting the lamp. When suspended at a height of 20 feet or less from the floor the lamps should be bowl-frosted or otherwise rendered diffusing. Contrary to a rather common impression, the bowl-frosting does not affect their life and when used with dome reflectors does not increase the loss from absorption by more than 3 or 4 per cent.

So far as direct glare from units themselves is concerned, bowl-frosting the lamps usually proves sufficient. However, in some cases the resulting brightness of images of the unit on polished working surfaces may be found ex-

Table III

Tests Show Good Lighting Increases Output

	TEST NO. 1	TEST NO. 2	TEST NO. 3	TEST NO. 4
Kind of shop	Iron-pulley finishing shop.	Soft metal bearing machine shop.	Heavy steel machine shop.	Carburetor assembling shop.
Floor area, feet	40 x 80	48 x 50	40 x 58	50 x 80
Height of ceiling, feet	13	....	....	....
Old equipment	Drop cords, 60-watt lamps, bare or tin shades.	25 100-watt vacuum lamps in deep bowl reflectors.	13 100-watt gas filled lamps in 23-inch eye shield units.	84 40-watt vacuum lamps in 4-light clusters; 2 100-watt bare gas filled lamps; 14 drop cords with 40-watt lamps and tin shades.
New equipment	Reflector cap 200-watt units 10-foot mounting.	25 200-watt gas filled lamps in deep bowl reflectors.	13 300-watt gas filled lamps in same units.	19 300-watt gas filled lamps in 23-inch eye shield units; 10 200-watt gas filled lamps in 16-inch eye shield units.
Watts per square foot, old equipment	0.27	1.0	0.6	1.0
Watts per square foot, new equipment	1.90	2.0	1.7	1.9
Intensity of illumination, old equipment, foot-candles	0.2	4.6	3.0	2.1
Intensity of illumination, new equipment, foot-candles	4.8	12.7	11.7	12.5
Increased production, as shown by test records, per cent.	20.0	15.0*	10.0	2.0
Cost per month including maintenance, additional electricity, depreciation and interest	$105.00	....	$29.00	$57.90
Percentage of cost to pay-roll	5.5	....	1.2	0.9

Note: *From shop records.

cessive and shadows remain so sharp as to be annoying, inasmuch as nearly one-half of the light received at the work comes directly from the small surfaces of the lamp itself. Where the more exacting visual requirements exist, it is well to use bowl-enameled lamps or to fit them with dense opal diffusing caps. The work of maintenance is somewhat increased when caps are employed, inasmuch as a small amount of dust enters the narrow space sometimes left between the cap and the lamp bulb. The glass itself is smooth and may be readily cleaned.

Where a still further degree of diffusion of light is desired, the reflector cap diffuser unit is recommended. With this equipment, direct glare is avoided by covering the lower part of the bulb with a silver plated cap. This cap hides the filament from the eye and directs the rays of light to the large reflector above. The light is distributed over the entire surface of the reflector so that it is possible to view the unit from any direction without discomfort.



FIG. 5—A REFLECTOR CAP DIFFUSER INSTALLATION IN A MOTOR MANUFACTURING PLANT. IT WILL BE NOTICED THAT THE GLARE IS NOT OBJECTIONABLE AND THAT SHADOWS ARE ALMOST ENTIRELY ELIMINATED

Many engineers are familiar with the data in Table III which show the relation of the cost of good illumination to the value of workmen's time. In fact it often is only necessary to save 30 or 40 seconds in an hour to entirely offset the cost of lighting. To produce an illumination varying from 5 to 10 foot-candles in the different departments of a factory under present conditions requires an expenditure of a little more than 1 watt per square foot of floor space, assuming that well diffused lighting units are to be employed. With current at 2 cents per kilowatt-hour the total cost of lighting should not exceed 7.5 cents per square foot per year for a night shift of 2500 hours.

Humanizing Labor in the Steel Plant

BY PHILLIP STREMMEL

THE world war, through which we have just passed, and the innumerable problems growing out of it, challenge capital as it has never been challenged in all history. The world, in respect to labor, wages, hours of labor, management, etc., is practically chaotic. No one knows what a day may bring forth. We do know, however, that underneath this seething volcano of unrest there are certain unmistakable facts.

Are Conscious of Power

The part labor has played in the great world struggle has rejuvenated her. The working men are not only awake, but they are conscious of exerting a tremendous power. They are also determined that the fruits of the awakening shall not be lost. They look back on the old days and wonder how they could ever have submitted to that regime, and now capital and labor must settle the issues so clearly raised. The issues being joined, we must candidly and intelligently set them forth and abide the arbitrament of reason and the dictates of justice.

How, then, can we humanize the steel industry? And how do our share in solving the fearful problems of world reconstruction?

FIRST: If the steel industry is to be humanized, confidence must be restored between the employer and employe. The whole history of the steel industry has been one of struggle. The employes have believed that their rights could only be secured and maintained by organization. On the other hand the employer fought organization, because he was convinced that it was an invasion of his rights. The truth is, both were partly right and both were partly wrong.

The employer and employe must come to a state of mutual understanding, and in the realization of that fact a great step forward shall have been taken. The employer must not limit his interest in his employe merely to his power to produce. He must also see his family; their educational, social, and spiritual needs must express themselves in the pay roll. The employer must have vision enough to see that he must not think only in terms of profit and production but he must also think in terms of his responsibility to the community growing out of his plant.

So when capital, keeping pace with sociological thought as well as with modern methods and machinery, sets itself to see man as a man as well as a worker the old dissatisfaction and distrust will disappear. The basis of confidence, therefore, is self-respect. Without respect, mutual respect between employer and employe, there can only be struggle to the bitter end, which will ruin both.

Cannot Camouflage Employe

The employer can no longer camouflage the employe. He can no longer get up in large conventions, make speeches about the rights of the laboring man, that labor is not a commodity, that labor has the right to organize, that wages must not be re-

(*Concluded on Page* 1651)

From a paper presented before the metals section at the eighth annual congress of the National Safety council, Cleveland, Oct. 4. The author, Philip Stremmel, is superintendent of hot mills, National Enameling & Stamping Co., Granite City, Ill.

Making Tin Mills More Efficient

Tin Plate Production is Hindered Largely by Lack of Intelligence of Workmen and by Lack of Encouragement on Part of Employers— Improved Equipment Will Aid Production

BY J. K. LAMOREE

PRODUCTION is the most important factor in determining cost of manufacture. Large production will minimize various losses due to faulty practice; small production will neutralize many of the advantages to be gained from other sources.

This is particularly the case in the manufacture of tin plate, where the product is uniform and operations are conducted upon a large scale. The human element, which enters largely into the processes, exerts a powerful effect upon the productivity of the plant. The tendency, however, is toward increased production because most producing labor is paid on a tonnage basis.

Every manufacturer today is facing two problems, each distinct in itself but both inherently dependent one upon the other; namely, the necessity for increased production and the impending scarcity of labor. Exigencies of the reconstruction period demand an increase over normal production. At the same time, the outflux of foreign labor to European countries threatens to curtail normal output. The situation is anomalous in that production must be increased in order to overcome the handicap of decreased labor forces. In other words, more work with less men must be done.

Labor and Production Compared

The labor scarcity, being a mathematical matter of numbers, cannot be manipulated; on the other hand, production, being a variable quantity susceptible to adjustment, growth and development, can be increased through intelligent direction and study. If the problem is to be solved, production must be increased independently of labor numbers, and sufficiently to meet our greater needs plus the deficiency arising from a depleted labor market.

Increasing production by increasing the number of hours in the working day is impracticable. The production of tin plate is a continuous process, one shift beginning where the previous one leaves off. The present shift of eight hours represents an economic division of the day, suitable alike to employer and workman. Even if this were not the case, an increase of the working day would be undesirable from the standpoint of the employer and employe. In one case longer hours means inferior work and decreased efficiency while in the other increased working hours means less time for rest and recreation.

Production may be increased in many ways without increasing the number of labor employed. None of the methods are new, untried or unusual, yet each has possibilities which have not been developed and which are of sufficient merit to deserve attention and study. Briefly stated, production may be increased by increasing the output and the personal efficiency of the workman; by increasing the output and operating efficiency of present machinery; by decreasing the percentage of spoiled product, such as wasters, cobbles, etc., by invention, development and introduction of new machinery; by simplification of manufacturing processes; by better coordination of processes; by increasing the size of machines and equipment; by building larger plants and thus concentrate manufacturing effort; by bonuses, premiums and penalties; and by standardization of sizes.

The output efficiency of the workman is the measure of his ability to get out work, using a given machine in a given time with a given expenditure of human energy. His output efficiency is increased if he can so arrange his work as to increase his output without increasing the expenditure of human energy, the time and machinery remaining constant. Efforts to increase production are conducted most commonly along this line.

The usual method of teaching a man how to roll tin plate is to put him to work at a certain job on a mill and let him find out for himself. The roller, heater, or doubler shows him what to do and he proceeds to learn the knack of the business at a rate directly proportionate to his ability to observe and imitate. He will learn faster if he works with friendly companions, because they will teach him the finer points of the trade. The hot-mill foreman oversees the man's efforts in a general way, criticizes his work if it is not up to the standard and is satisfied if he does not fall down on the job.

This is ostensibly the least efficient manner in which new men can be broken in. From a production standpoint, there are three reasons why this method is undesirable to break in a new man. It makes the learning process hard, discourages men who are not extraordinarily strong and increases labor turnover through men quitting before they have learned the easy way to do the job. The intelligent American is discouraged by the hard work and apparent lack of opportunity. He feels that the return he receives is not worth the drudgery of a long apprenticeship. As a natural result, the husky, unintelligent foreigner falls heir to the job because he thrives on hard work and dull routine, and is attracted by the high wages. The general intelligence of the mill personnel is lowered, which means that greater executive effort is required to secure desired results.

Present Methods Are Undesirable

The second reason why mill apprenticeship is disadvantageous is that the beginner is essentially a poor producer. The longer his training lasts the longer his productivity is below normal. If he gets tired or disgusted and quits, another beginner takes his place and production again starts at the bottom. The "teach yourself" system of developing skilled men makes the apprenticeship period extend to the maximum and is therefore an undesirable method.

The third reason why production suffers through our failure to teach the beginner his job is that the work is not done according to system or to predetermined methods of output efficiency. Each man learns his own way and works his own way, with a considerable resultant difference in efficiency, according to the man. If he does his work a hard way, that is *his* affair; if there is a better way, whereby increased output may result from the easier method, that is the manufacturer's affair.

Hard apprenticeship, low labor intelligence, and lack of incentive are direct hindrances to production and can be improved by a study of the many factors entering into the work and the application of the results of that study to the betterment of the work. The first undertaking and the one most productive of immediate improvement would be the systematic training of beginners. This would be done best by setting aside

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one or two mills as apprentice mills. These would be in charge of workmen who have the ability and inclination to teach others. They would necessarily be men of higher than the average ability, who would study the work with the object of teaching the apprentices to become efficient workmen.

Advantage of Teaching Workmen

This arrangement should develop better workmen and reduce the time required for learning. An atmosphere of helpfulness and co-operation would be created. The intelligent American would find the outlook more encouraging and he would be more ready to enter upon the new work. The objection to this plan will be that we have so many beginners to break in that it would require several mills to take care of them. The principal object, however, is to decrease this large number of beginners. By alleviating the hardship of learning and by putting a premium on intelligence better men will be attracted and the number of beginners will be held to a minimum.

Another feature which enters into the output efficiency of the workmen and receives little consideration in the tin plate industry, is the time and number of movements required in doing the work. No matter how skillful, nor how old in service a man may be, he often consumes more time and goes through more motions than the work actually requires. The newer the man the more liable is this to be the case. An improper sequence of motion often is used, which makes the handling of the material awkward and slows up the process. Any advantage which might accrue from a time and motion study of present processes would be incorporated in the course of training and thus passed on to the new men.

Difference in Mill Crews

In processes, such as hot rolling, where the work involves the combined efforts of a mill crew, the advantage of eliminating lost motion is multiplied because the work of the entire crew is regulated largely by the greatest possible speed of the slowest man. If the speed of the slow man can be increased, the speed of the entire crew is affected proportionately. A brief survey of tin mill practice probably will show the opportunities in this direction. On 30 or 40 hot mills, individual crews seldom produce equivalent tonnages over a given period of time, even though the mills are working on similar specifications. The difference in output in this case is due almost entirely to the difference in the men and the way they do their work. It is reasonable to suppose, therefore, that the efficiency of the poor crew can be increased if the members can be taught to do their work in the same manner as the members of the good crew.

By personal efficiency of the workman is meant the measure of his physical capacity for doing work, and by increasing his personal efficiency in a given time with the same machinery, he can perform more work due to an increased expenditure of energy made possible by better working conditions. A man has a certain capacity for work, a certain fund of energy to give up and if he is working under adverse conditions or is not in good physical condition, the energy which might have gone into production is dissipated in overcoming these retardent elements. The steel industry has been foremost in promoting welfare work among employes. Results have justified the expenditure, judging by the increasing scope of this work and the large expenditures being made yearly.

A Field Fertile for Research Work

STIMULATED production in the tin-plate industry depends in a large measure on study and education. This industry has grown with great strides and engineers now are beginning to realize the large possibilities. The work, which already has been completed, has been enormous and reflects the high caliber of the officials who are steering the industry over its course today. However, additional work remains to be done. Research work on a large scale must be performed. Mechanical laboratories must be established. Machines must be built, tried and scrapped to make room for newer and more efficient units until there is an end to the possibilities in this direction. The workmen must be skillful and have vision and patriotic instinct. They must realize their true relationship to industry and to the nation and be willing to put those industrial ideals into practice.

For years it has been considered unavoidable that production in tin mills during the hot summer months be curtailed and lowered on account of the excessive heat. Due to the use of air blast cooling systems, insulated furnaces, floor fans, water cooled floor plates, ventilated smoke hoods, water cooled furnace shields, etc., conditions have been improved to a point where summer operation can be carried on without exhaustion of the men. At the same time, there are possibilities for considerable further improvement along these lines, provided the matter is made the subject of close and conscientious study.

Welfare Work for the Shop

Whether the comfort of the workman on the mill has been approached sufficiently from the standpoint of dollars and cents profit through increased production still is an open question. Large sums are spent annually on welfare work which aims to reach a man after he is through work. Community gardens, housekeeping centers, visiting nurses, and other devices are given close and scientific attention. Why not extend this staff work to the actual place where the workman spends the greater part of his time?

Here is a good opening for the welfare engineer to show an immediate return through increased production. Tests on cooling system air temperatures and pressures; determination of proper locations of outlets; tests of various systems of cooling, such as pedestal fans, individual blowers, etc.; study of advantages to be gained from various types of water-cooled floor plates and furnace shields; records of humidity, temperatures, air direction, etc., are but a few suggestions along the line of improving the working conditions on the mill and making it possible for men to make maximum production with the minimum expenditure of physical energy. Wherever men must work in extreme temperatures it is possible to increase production by improving working conditions.

How Machine Output is Increased

The output efficiency of a machine may be defined as the measure of its capacity to do certain work within a certain period of time with a given amount of human attention. Anything which can be done to make the machine do more work within the same time, or do the same work within quicker time, or do the same work within the same time with less human attention, increases the output efficiency of that machine. It is almost too palpable to state that production may be increased by speeding up a machine; yet there are many processes in the manufacture of steel products where a study of speeds can be made to advantage, and where present practice is now complacently taken for granted.

For example, the cold rolling of tin plate stock can be materially affected in time by speeding up the rolls or by increasing the diameter of the rolls, or both. The two factors entering into production on a cold mill are the speed with which a man can feed the plates, and the surface speed of the rolls. A

brief study of both factors will determine the limit. Getting additional speed out of the various stands of cold rolls on the day turn and discontinuing the operation of a few mills on night turn often affects both fuel and labor economy. Many machines are operating at speeds which current practice has determined to be satisfactory but which are not the result of study. Each machine must be known to be operating at maximum.

The term operating efficiency is used to denote the service a machine renders while under power. No one source of lessened production is so discouraging nor so readily noticed on the daily reports as loss of time due to disabled machinery. If maximum production is to be secured, careful attention must be given to this item. Every stoppage must be fully investigated and reported. Efficient inspections must be made and breakage anticipated.

Constant Operation Must be Considered

In some cases machines must be slowed down to get greater speed. This is true where high speed results in loss of time through breakdowns which more than balances the advantage accruing from increased machine speed. The element of constant operation enters into and must take precedence over all other items, because production primarily depends upon operation. Continuous operation is not always the result of upkeep and the attention given to the machine. Delays may be due to defects in machine design, as for example, stoppage and losses from cobbles.

Spoiled or imperfect product is a serious cause of low production. Every finished piece which is not prime stock or which is cobbled or spoiled before it comes through the last process, represents loss of time, material and labor. Every improvement which will cut down the percentage of wasters, cobbles, or discards, is a direct increase in production.

Cobbles are due mainly to imperfect machine action and must be remedied by closer attention to the construction, repair and maintenance of the machinery. A little educational work in the shops will be of big help. As a rule, the average machinist, blacksmith, or pipefitter does not realize fully his close connection to the productivity of the plant. This should be impressed upon him in such a manner that he can understand why the spoiled product is a direct function of badly kept machines. The manufacture of imperfect and indifferent product is generally due more to careless operation than to any defect in the machinery. Sometimes it is both, as in the case of a tin house foreman who runs a machine having worn out rolls or a hot mill foreman who tolerates scaled plates due to a faulty furnace damper. Wasters and seconds are analogous to a pain in the human body; they indicate imperfect functioning at some point or other in the plant. If we remove the cause, the pain will disappear.

Causes for Waster Sheets

Investigation will show that most wasters are caused through poor and careless workmanship. Education is the only remedy for this. Employes must be taught to realize the importance of every operation in relation to the finished product. They must know something about the plant as a whole and they must be interested in the business. Education, through plant magazines, lectures, meetings, posters, etc., is the road to loyalty and knowledge. Without knowledge the workmen will never realize their highest relationship to the plant and without loyalty the officials will never realize the greatest possibilities of the workmen.

The invention, development and introduction of new machinery is considered the true road to industrial advancement. The introduction of new labor-saving machinery in our mills not only will increase production, but also will release labor to handle work which cannot be done by machinery. The number of processes in our mills today, which are considered hand work, but which are adaptable to the use of machinery, is remarkable. There is not a single process in the manufacture of tin plate that the product is not handled by hand and often crudely. It takes nine men to heat the bar and hot roll it. These nine men principally are engaged in moving the packs of sheets from the furnace to the rolls and back again. Two men on the crew, the roller and the heater, are required to exercise judgment; the rest of the crew are paid high wages to do work that can be done by machinery.

Room for Improvements

The shearing of the plates after hot rolling can be improved. Opening the pack is done by hand and requires one or more men to every hot mill. It requires no exercise of judgment, except the elimination of stickers. Pickling requires large numbers of men due to the fact that no attempt has been made to replace the present intermittent method by a continuous process. No skill is necessary which cannot be transferred to a machine intelligently supervised. Annealing and cold rolling also present possibilities in labor saving machinery. Feeding and stocking on the cold rolls, now done by hand, are easily adaptable, with a little study, to machinery. In the tin house and shipping department much labor is expended which can be eliminated after a thorough study of conditions.

Men who have made a study of tin plate manufacture realize that the industry is a fertile field for the designer and inventor. To a man who wishes to embark upon work which offers great opportunities to the thinker, to the analyst and the engineer, the steel business holds no greater opportunity.

Simplification of manufacturing processes refers to the reduction of processes, the elimination of unnecessary parts of processes and the rearrangement and replacement of steps in manufacture which are now the result of natural growth rather than analytical study. For example, we are accustomed to consider hot rolling, shearing, opening, pickling and annealing as the necessary and natural succession of processes in the making of tin plate. Suppose it were determined, by experiment and study, that shearing could be eliminated at this stage, the packs being opened, pickled, and annealed before shearing. The shearing would then be done in connection with cold rolling with a possible advantage to be secured from better annealing and less labor in pickling. Or again, suppose a continuous pickling machine were devised, into which the sheets would be fed directly from the opening benches. This would simplify the pickling operation.

Is Room for Better Co-ordination

These instances are not given as feasible, workable schemes, but hold out sufficient promise to warrant using them as examples. There is no reason why the present processes are to continue indefinitely without change. As the industry progresses, the elements of manufacture will become more simple. This simplicity can be hastened by making it the object of direct purposeful inquiry.

By better co-ordination of processes is meant a personal co-ordination of departments and of those in charge of processes. Closer effort and a system of interdepartment staff action will straighten out many difficulties which lack smoothness and result in the loss of production through misunderstandings. Co-ordination of the processes in themselves suggests careful routing analyses and the appointment of a staff officer whose principal duty is the determination of precedence and the proper movement of orders. This in turn can be carried out successfully only when the mill organization realizes the function of this man as a production booster and gives him full support.

Size of machinery and equipment is a well known factor in figuring produc-

tion per unit of labor employed. Yet it is doubtful whether engineers and executives in the tin plate industry have given this matter explicit and sustained study with the definite aim of increasing production through this means. Hot rolling is a good example of a field for such study. In making an order of sheets of a certain size it is customary to figure the pack as it is rolled to give two, three, or four sheets of the finished size. In other words, the pack is rolled two, three, or four times as long as the finished sheet and then sheared to the proper size afterwards. The width of the sheet is taken care of by rolling on certain size mills. Considerable ingenunity can be exercised in laying out the orders for the mills and, as a matter of fact, the hot mill superintendent invariably rolls the sheet the widest way possible in order to get the maximum number of finished sheets.

The limiting factor in the number of cuts which can be secured is the weight and size of the pack. A man cannot handle sizes and weights beyond certain limits. Often it is a matter of a few pounds or a few inches but if the man is not capable of handling the larger size pack, it must be reduced, placed on another mill or changed around. The greater the number of cuts that can be secured from a pack, the greater is the production per unit of labor.

Handling Heavy Packs

Large and heavy packs can be handled if mechanical lifts, tables, and guides are devised which will take the weight off the roller's hands and make it possible for him to manipulate them. With these mechanical helps it would be possible to enlarge the mills, eliminating the smaller mills entirely and increase the average all the way through. This is where a study of sizes will result in more productive practice.

The building of larger plants is, of course, a matter of growth and executive policy. However, the advantages of the use of big power units, cranes and conveyors, byproduct installations, convenient routing facilities, etc., are noticeable, especially in plants which are growing, and points to larger plants as the road to higher plant efficiency. In this connection it may be stated that only in larger plants is it profitable to maintain a resident engineering force of sufficient size to accomplish anything outside of mere plant operation. The resident engineer can be a decidedly important factor in the development of new ideas because he is close to the work at hand and can see what is needed. Larger plants mean department heads and executives of bigger viewpoints, which opens the way for the staff organization which must be part of any large scale improvement program.

Bonuses, premiums and penalties are mooted questions and in the final analysis are within the function of the higher executives only. There is the question, however, of nonfinancial incentives which invites consideration. The personal efficiency of the workman can be affected greatly by his mental attitude toward the work and it is true that any improvement in general operating conditions can be attained only by bringing the minds of the men up to the level of the line of vision which the executive has when he lays out the plans.

In tin mill practice the hot mill crew must necessarily be the unit for any comparison as to personal efficiency. This is due to the fact that each man on the crew has a definite effect upon the quality and quantity of the output; at the same time the combined work of the crew must enter into the product to give a unit of production upon which to base comparisons. It is therefore evident that any improvement in operation must be secured through stimulation of the crew as a unit, relying in turn upon the roller, as the foreman of the crew, to stimulate each member to better and more careful work.

The tendency in mill management has been to reduce the roller from a position of responsible head of the crew to one of nominal responsibility. The actual responsibility has come more and more into the hands of the hot mill superintendent and his hot mill foremen. This largely has been due to the gradual enlargement of the plants and the necessity for greater centralization in control. At the same time it has destroyed, to a great extent, the feeling of personal responsibility of the roller, who, in the final analysis is the man who can do most toward increasing production.

Interest can be created among the rollers by letting them know more about what the mill is doing. There are a number of ways of doing this, all of which woudl have for purposes, the development of friendly competition in production, pride in quality of product and interest in general operation. The first and most effective procedure would be the publication, either by bulletin or weekly confidential letters, of the output of each turn on each mill. The roller's name and the size of the mill should appear on the record. The names should appear in order, according to amount of output. Mills of the same size can be grouped together to secure fair comparisons.

How Interest May be Created

Different methods can be used to call attention to good work. Printing the first and last names in colors is often effective. Classifying men over a certain minimum as "good rollers" should arouse desire to improve. One advantage to the manager is that this procedure enables him to keep a line on the efficient workers and pick out the weak ones. A man who is habitually in last place should be investigated and the cause of the trouble ascertained. It might be due to a poor crew, bad machinery or poor ability on the part of the roller himself.

A curve or graphic chart showing the output of each crew can be posted in a glass case at each mill. This curve would be lengthened each week, enabling the men to see graphically just how their efficiency varies. The hot mill superintendent would, of course, see that each crew kept its curve on an upward trend. Weighing shear scrap should be carried out rigorously, with penalties for scrap losses over a certain maximum. These penalties can be in the way of publishing mills which are inefficient, although in this case, financial penalties would be probably more effective.

Competition can be stimulated by having signs or placards framed, to be hung up at the mills having best and poorest production for the week. These signs could read: "This mill highest output for past week," or "This mill lowest output for the past week." The sign would be changed each week to the mills having the record for the

Pay Envelope Might be Heavier

FINANCIAL rewards do not always result in increased production. The fact that tin mill workers largely are paid on a tonnage basis, whereby an operator's pay automatically increases as his output enlarges, brings this to light rather forcibly. In few cases do the workmen strive to increase tonnage for the sole purpose of increasing their pay. The tendency is to strike a gait which will give a fair rate of remuneration and get along as easily as possible without lowering the level. An increase in wages often results in a decreased output, the workmen preferring to ease up on their tasks rather than profit by the increment in wages from higher tonnage rates. The obvious recourse is to stimulate production methods which include other than remuneration incentives. Plans along this line depend upon the heads of the departments and are explained elsewhere in this article.

week. Printing the "low output" sign on yellow paper might make it more undesirable as an ornament.

To give gifts for excellent performance of duty is generally considered poor practice; yet, a box of cigars distributed each week to the mill having the highest output for the week will result in increased effort all down the line. The principal object of any of the foregoing suggestions is to stimulate local pride and emulation among the crews. In any event, the roller should be recognized and all the effort be directed to the end of securing his help and cooperation.

Any work of this kind means an addition to the clerical force of the mill. Part or all of one man's time should be given to the job. It is a mistake to add this work to the load of some already overburdened clerk. Records must be published promptly and accurately, tabulation must be made and the data placed before the operating heads who can follow up the poor workers. It is impossible to arouse interest if records are not accurate or if publication is delayed; neither will any permanent good result unless the poor workers are investigated and eventually stimulated to improvement or put back into less important positions.

The standardization of sizes must be necessarily a matter of almost international moment. It is possible that labor conditions will eventually reach such stage that it will be cheaper to make a few standard sizes of tin plate and let the customer come to those sizes. That time is evidently not the present. However, the increased efficiency which will result from even a partial elimination of odd and unusual sizes certainly warrants the consideration of this factor. A study of the needs and requirements of the nation, with the view of establishing a code of permissible size variations, would be within the functions of one of the national engineering societies. Labor wastage through handling of orders for an infinite range of sizes is great and at least offers a field for investigation.

Plant Accidents Reduced by Safety Work

An instance of extraordinary accomplishment in accident prevention work has just come to the attention of the National Safety council. In the plant of one of its members, the American Rolling Mill Co., Middleton, O., a reduction of 46 per cent in the total number of lost-time accidents, 51 per cent in the total number of days lost by workmen as a result of accidents, and 91.9 per cent in the total compensation paid by the company is shown for the past five months of 1919, compared with the same period in 1918. In this plant, employing 3500 workmen, there were 83 accidents during the first five months of 1919, as compared with 210 in the same period last year. Injured workmen lost 868 days during the first five months of 1919, compared with 2523 last year. The total outlay for compensation of accidents in May, 1919, was but $1.71.

German Trade Outstrips that of British

A recent issue of the monthly journal of the Sheffield chamber of commerce contains articles expressing concern in regard to the enterprise of Germany and its menace to the trade of the British steel city. One writer says:

"The past month was one of the most hopeful—for Germany. How could her game have been played better than by those who, whatever their intention, succeeded in plunging British industry into confusion? We may shortly be faced with the necessity of fighting for a bare existence in the markets of the world. A pretty fine league of nations is likely to be built upon a lath and plaster foundation of that sort, and when the Germans ask for admittance to it they probably will do so with their tongues in their cheeks.

"As a matter of fact Germany is recovering, industrially and commercially, at a more rapid rate than we are and nothing is so calculated to urge her forward as the chaotic state of British trade. What did the British cutlery mission discover in their recent flying trip across the Rhine? That at Solingen there were quantities of finished goods packed up ready to be dispatched to the rich markets of South America and to countries where labels and descriptions printed in English are easily read. The mission also found that the German manufacturer had forgotten none of the prewar tricks he considered worth remembering, among the number being that notorious legend, 'Warranted Sheffield Steel.'"

"By every test that can be applied," says another writer, "we ought to export more steel than any other three or four nations put together. But the Germans beat us. Between 1900 and 1913 their exports of iron and steel increased from less than 1,000,000 tons a year to over 6,000,000 tons, while ours only increased from 3,500,000 to 5,000,000 tons, and even that comparatively small increase in our case was very nearly offset by importations of steel, which ought to have been produced at home.

"On the eve of the war Germany was producing pig iron at the rate of 19,000,000 tons a year, against our 9,000,000 tons; steel at the rate of 17,000,000 tons, against our 7,000,000 tons; and she was actually exporting at the rate of 7,000,000 tons a year, against our 5,000,000 tons. But for the war the Germans would soon have pretty nearly wiped us out of the business. And it is Germany's set intention to renew her old policy if she is permitted.

"Against fair competition there can be no complaint. If Germany can produce cheaper than we can we must either improve our methods or accept the situation. But German dumping is not the result of superior productive powers, or superior competitive resources. It is the outcome of the fiercest and most highly organized and subsidized economic war, conducted by 'blackleg' methods, the world has ever seen."

Book Review

Applied Science for Metal Workers, by W. H. Dooley; cloth; 479 pages, 5 x 7¼ inches; published by the Roland Press Co. and furnished by THE IRON TRADE REVIEW for $2.

The author, who is in charge of the navy yard instruction school for the New York board of education, has prepared this volume for use in technical, industrial, apprentice and continuation schools and for science classes in secondary schools. The work is in the form of a text book with numerous questions at the end of each chapter. The subjects treated apply to physics, chemistry, etc., and are arranged to teach the fundamental principles of science in such a way that the student or apprentice will understand in an intelligent manner the actual work as prosecuted in the shop under actual working conditions. Numerous illustrations are included to make the subject matter as clear as possible.

The chief purpose of the book is to teach the student the principles of industrial science in a practical rather than in an abstract way. Thus, after he has completed his education, the student will be able to grasp the principles of science in actual operation as he views them in everyday life. The book is written in clear, convincing language wherein theory is discarded as much as possible. As a text book for the student, it will prove of material aid.

Coordinating Shop Management

Basic Principles of System for Obtaining Maximum Efficiency in Operations Outlined—Balancing of Production, Division of Functional Departments and Systematizing of Control Explained

BY M. H. POTTER

CERTAIN requirements are necessary to establish and maintain efficient, progressive plant management, and it should be the first duty of the manager to secure fundamental authority from those in supreme command of the enterprise prior to planning for action. These requirements are shown in Fig. 1, together with the results that may be obtained, or at least are to be aimed at.

Many able executives, when taking hold of a new task, have neglected to secure the backing of the leaders in the enterprise. This has often resulted in difficulties, due to failure to keep promises made to the workmen, through the unwillingness of those "higher up" to stand back of the policies established by the plant manager.

Must Adhere to Policy

Plant managers who have been successful in securing the desired results in one particular line of work, also have been informed that other lines, not before mentioned, must be manufactured. Many similar instances might be mentioned, but the outcome is generally identical. The plant manager proves unable to cope with the situation to the satisfaction of the higher officials.

In dealing with the plant organization, as regards its direct control and supervision, the plant manager and his assistants should personally handle the work outlined in Fig. 2, and through the co-operation of the various foremen should handle the duties as listed in Fig. 3.

As to which are the more important requirements, the organization and the product manufactured must determine. However, too much stress cannot be laid upon the importance of planning, and separating the planning from the action. These are basic, important functions and should in turn be considered from a viewpoint of practical application, thoroughly analyzed and definitely decided on in detail before proceeding.

The balancing of production is another subject for earnest consideration, especially in plants not especially designed for the particular work in hand. The efficient handling of materials and work between operations is important and should receive due consideration from the start. If it does not, the chances are that the most economical arrangement will never be secured. Once a plant starts production, the equipment is seldom rearranged.

Every detail entering into the balancing of production should be considered prior to actual procedure, if economical results are desired. The usual method of studying a plan of the floor space available and the placing of machinery and equipment, on the drawing according to scale, is convenient and practical. However, the many other details which enter into the efficient, economical balancing of production should not be overlooked, as indicated in Fig. 4.

By reference to Fig. 5 it will be seen that the aim in standardizing routine duties is to permit of concentrated thought and effort to meet emergencies.

Fig. 6 further emphasizes the need of careful planning. Elementary as they may appear, the requirements as charted are well worth study. The determination of the most important requirements and their practical application is essential.

Establishing Functional Departments

The division of the organization into functional departments, as shown in Fig. 7, should next be considered. The actual accomplishment of this is not difficult. The fault has not been in neglecting, to make a theoretical division, but in failing to put theory into practice and to make efforts conform to the division. Close ad-

This is the third article of a series on industrial management written by the author, M. H. Potter, for THE IRON TRADE REVIEW.

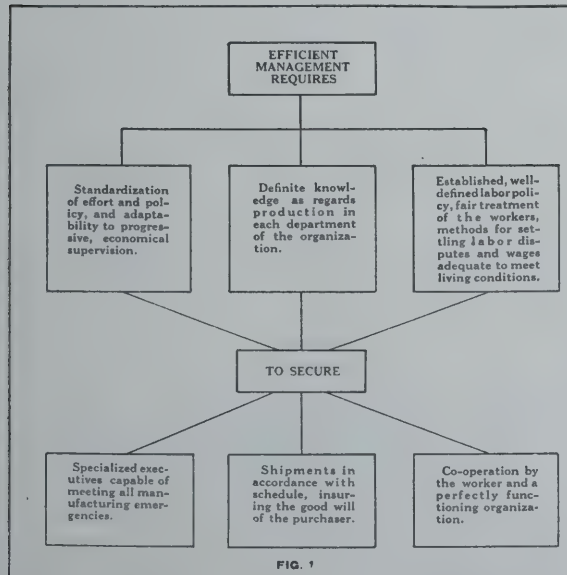


FIG. 1

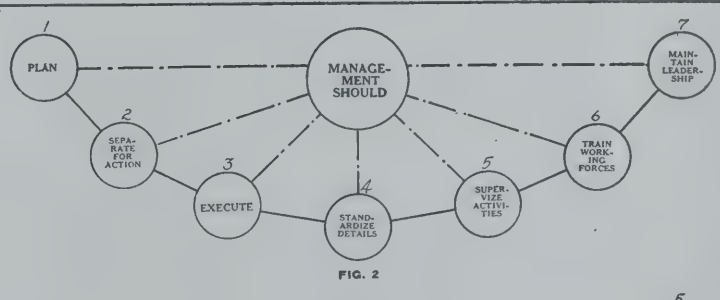


FIG. 2

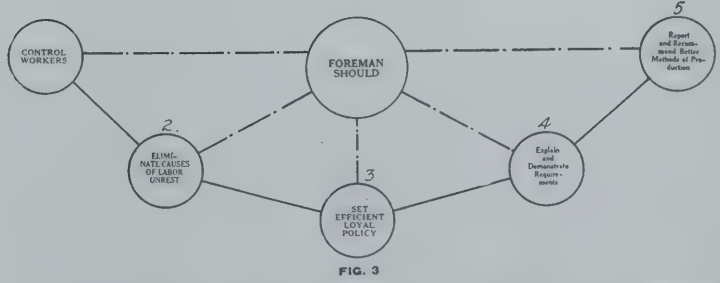


FIG. 3

REQUIREMENTS AND DUTIES OF EFFICIENT MANAGEMENT

herence should be maintained if systematic control is to be successfully attained. The systematizing of control, as illustrated in Fig. 8, is another most important requirement in maintaining operating efficiency. The advantage

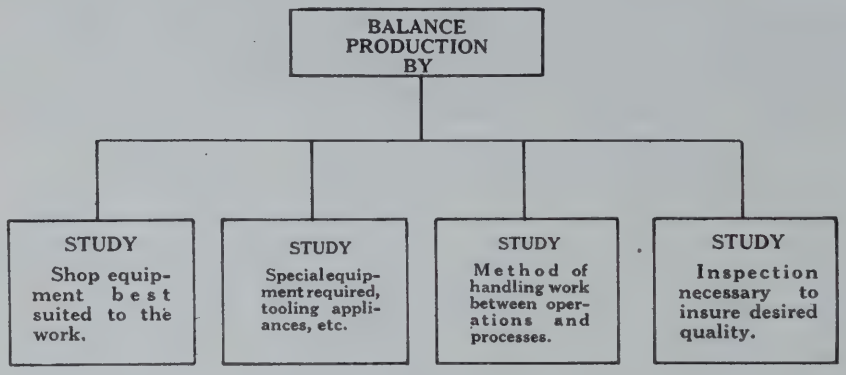


FIG. 4

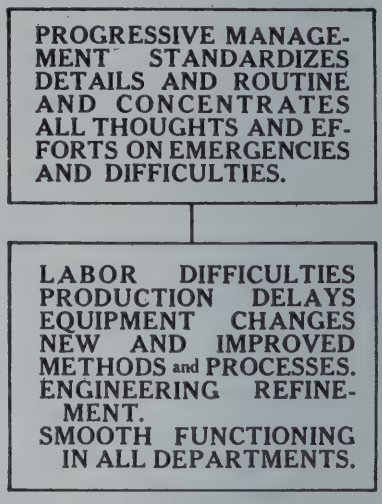


FIG. 5

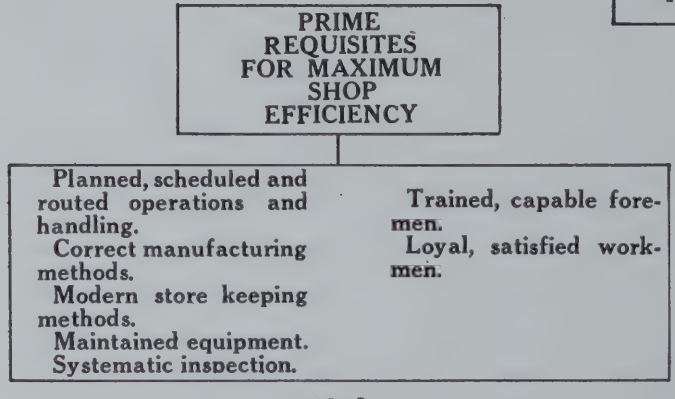


FIG. 6

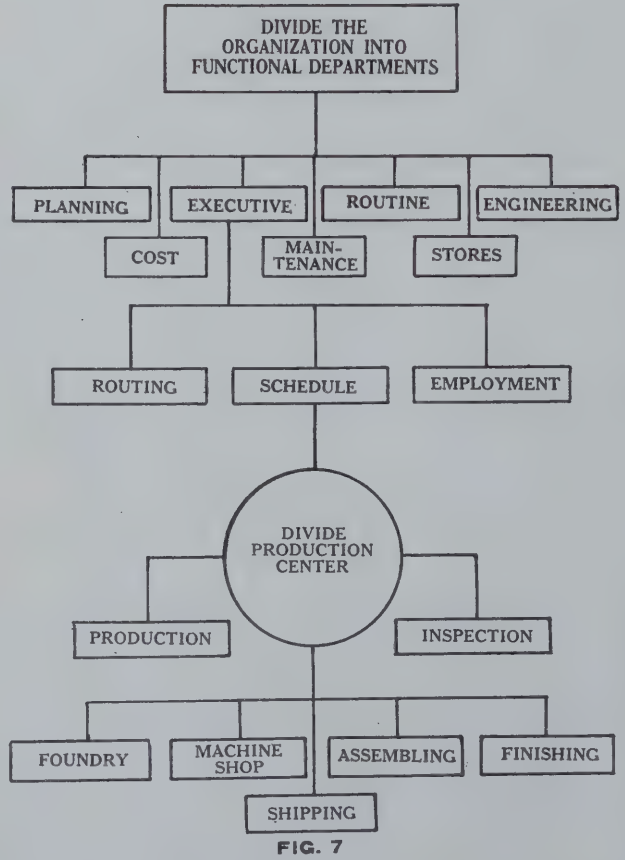


FIG. 7

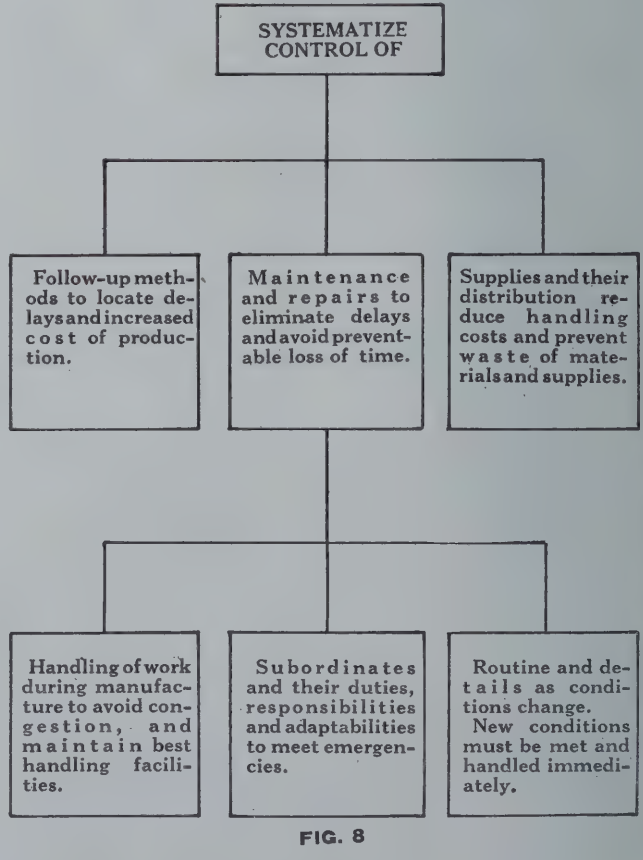


FIG. 8

DIVISION OF FUNCTIONAL DEPARTMENTS AND THE BALANCING OF PRODUCTION

gained is the elimination of delays and causes of inefficiency. This should be sufficient reason for thought and analyses.

Subdividing Functional Departments

Fig. 10 illustrates a practical system for recording production progress, to make all figures and facts available for ready reference. It is self evident that the best arrangement is that which enables the executives readily to determine not only what the actual production is, but also what it should be. If the problem of charting production progress is attacked in a practical way and if consideration is given to the facts needed, much will be accomplished to overcome delays and to eliminate production troubles. Efficient management demands quick, correct methods.

To further illustrate the advantages of and the reasons for the division of functional departments, Fig. 10 has been prepared. It is an example of subdivision, and covers but one subdivision of the employment department, namely, the labor department. In like manner every functional department should be analyzed and definitely subdivided. Action along the lines of a definite program, through predetermined functional departments and their subdivisions, greatly will lessen delays and troubles. The prevention, not the overcoming of delays, should be the first aim of the plant manager. Therefore, it is advantageous to plan and shape the entire organization in accordance with definite methods and system. If the organization is adapted to the work there is every reason to expect that it will so handle and control the situation that marked success will result.

Management when practiced along these lines has a far-reaching control, not only over the production problem but also the industrial situation. If managers will practice these principles labor troubles will be reduced to a minimum.

Most executives are quick to adopt cost-cutting equipment and means for securing more economical operations, but when the subject of basic organization principles is broached it some times does not suggest action. This is due, no doubt, to the fact that making changes would entail time and expense. However, this should not interfere with analyzing one feature of the system as outlined. For example, if the executive will study the charts and determine which one can be applied to the greatest extent in his organization and then formulate plans in this direction, place them in effect and follow up the program he can check closely the results.

Consider One Principle at Time

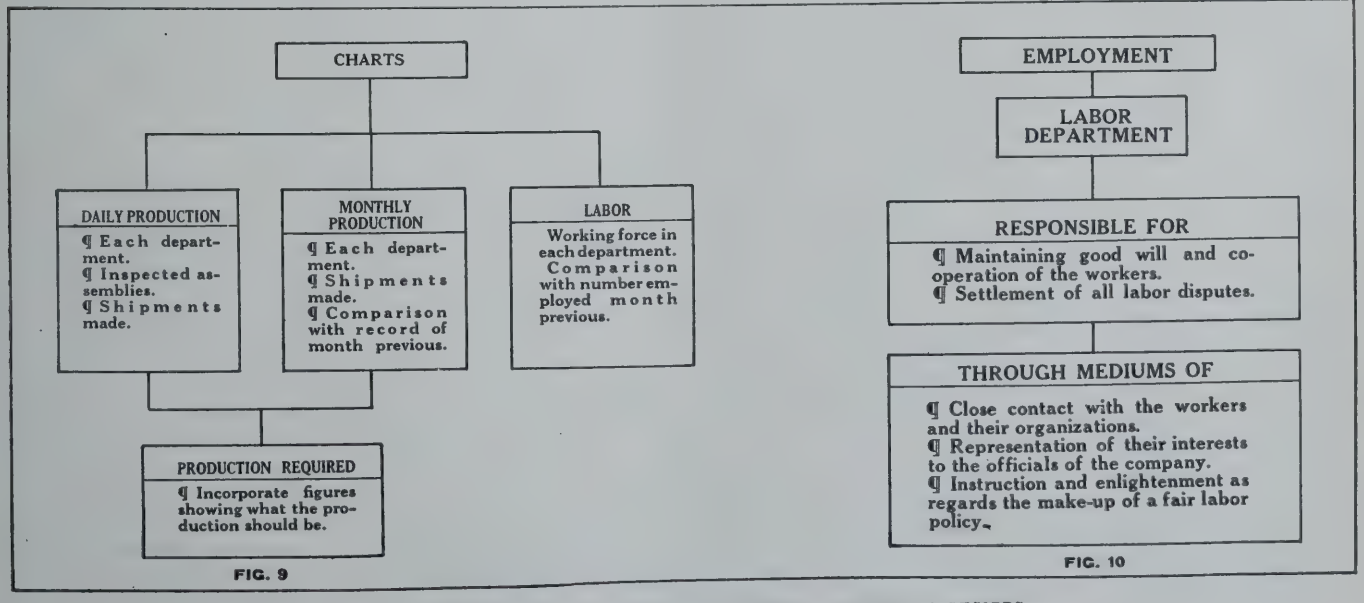
With the possible exception of a newly formed organization, there is nothing to be gained by attempting to formulate and place in effect new methods and systems throughout the entire organization at one time. This is especially true where the basic principles of reorganization are involved. It is through the successful accomplishment of one method with its connected details that maximum results are secured. This is not only true in action but likewise in planning. Here again, the executive must realize the great need of taking up and considering one basic principle of efficient management at one time. Of course, a broadminded viewpoint must be taken and the basic principle under consideration must be studied as it pertains to the organization as a whole. The main difficulty is in segregating and classifying subdivisions and their many elements. Interpret these basic principles in definite, concrete terms and their correct application becomes a matter of control and discipline.

Graphite Sales Increase

Sales of domestic crystalline graphite in 1918 were larger than ever before recorded, according to a bulletin issued by the United States geological survey on the production of graphite during 1918. Total shipments of crystalline graphite, including both flake and dust, amounted to 12,861,839 pounds, valued at $1,454,799, and as mine stocks were approximately the same at the beginning and end of the year, this represents the mine production. The sales show an increase of 22 per cent by weight and 33 per cent by value over those of 1917.

Estimates furnished the survey by producers, show that out of total sales of 12,861,839 pounds, 9,811,046 pounds valued at $1,364,600, or 76 per cent by weight and 94 per cent by value of the total was flake graphite for the most part suitable for crucible use. The remainder, 3,050,793 pounds, valued at $90,199, was dust or low grade flake, averaging less than 50 per cent of graphitic carbon.

The greater part of the domestic crystalline graphite output was produced in Alabama, New York and Pennsylvania. Graphite also was produced in Montana, California and Texas. The number of mines reporting sales was 26 in Alabama, one in California, one in Montana, three in New York, six in Pennsylvania and two in Texas.



EMPLOYMENT DIVISION, AND FORMS FOR KEEPING PRODUCTION RECORDS

Specializing in Efficient Buying

Separate Department With Trained Men in Charge Considered Just as Necessary to Successful Conduct of Business as Sales, Auditing or Other Departments—Requisites of an Able Executive

BY ROBERT N. LADD

THERE is an old adage to the effect that goods bought right are half sold, but the force of the argument has not with but few exceptions reached the heart of the modern American manufacturing industry. It has been proved that this adage is a foundation truth as applied to business consisting exclusively of buying and selling. Does it not also apply to the relation between raw material bought by the manufacturer and the products sold by him? The answer is obvious. One might safely say that it applies to the first shovelful of dirt excavated in the process of building the manufacturing plant and from then on step by step to the time of the delivery of the finished products to the consumer.

Too much has been said of sales departments, and other departments have been for the most part relegated to the background, or, to say the least, have been considered of secondary importance. Just as much good reading matter could be written regarding the other branches of industrial organization, and just as many helpful courses of instruction could be instituted relating to these branches, as has been shown to some extent in the matter of accounting, as dealt with in recent years by the various schools of accounting. An idea at one time prevalent was that a firm that found itself unable to tell why it was not making money could hire a bookkeeper at a minimum salary, and that he could tell from his meager knowledge and experience. In recent years this idea has been found to be wrong. Why should we adhere to the old ideas about the buying branch of industrial organization?

No one department of an industrial enterprise makes the success of that enterprise; it is the combination of them all, working together on an equal plane of efficiency for the ultimate result, that brings success. Failure of any department to function properly may ruin the business. In order to accomplish the aim of making capital earn money, what is more important than to start operations by buying right? Why not spend that portion of the capital which has been voted by the directors for the purpose of buying raw materials, machinery, buildings or equipment in the most efficient manner possible? To do this requires a purchasing organization carefully selected and supervised by a trained executive. This fact is often disregarded.

Executive is Needed

The prevailing opinion among many manufacturers seems to be that the proper thing to do with the buying end of the business is to delegate to the job someone in the organization who has the time to spare and who has sufficient ability to take care of the details of placing orders, keeping records, etc., and that when it becomes necessary to buy raw materials involving contracts, the secretary of the company, the sales manager or the chief engineer can take care of it. This method, of course, is wrong for the reason that it is placing the responsibility in the wrong place, making a nonenity of the purchasing agent which is both disastrous to the purchasing agent from the standpoint of his relations with salesmen and to proper buying. It places a responsibility on the shoulders of an official who should concentrate on work that properly belongs to him. In addition to these facts, it is contrary to proper rules of organization as applied to business. One of the secrets of proper organization is placing the work and the responsibility for it where it belongs. If a shop superintendent wants a tool forged he does not take his plans to the head bookkeeper. Just so with the buying; why take it to the secretary or the sales manager?

To appoint the president's nephew purchasing agent, as a matter of general practice, regardless of his ability to fill the position, is a thing of the past. Also among the discarded possibilities are those not specially trained for the work, and last but not least, all the grafters.

The manufacturer in selecting a man to fill the position of superintendent of one of the departments chooses the best trained man, preferably one familiar with the methods employed by other manufacturers. The type of man he selects will directly effect his ability to sell his article, will effect its cost, and the margin between cost and selling price. Why is it that the average manufacturer does not employ the same methods in selecting a purchasing agent? Choose a man from among those trained by actual contact with factory storekeeping, sales, traffic and purchasing. Select a man with mechanical ability, with at least some technical training or shop experience, an executive by character as well as by training, one given to the study of economics as applied to business, one who has an understanding of the laws of supply and demand and one who can, through experience, foresight and common sense, buy to save the manufacturer money. Quality, service and price must be properly considered in their relationship to the particular purchase in hand.

Select a man who can figure, when he buys six months' supply to save a few cents per pound, whether he is actually saving an amount over and above the bank's interest on the same amount for the same period. A man who will give due consideration to the proper distribution of his employer's capital, determining whether it is a heavy payroll period or heavy selling period, if the company is using all its capital at present or if it has a surplus that could be rightly diverted to the buying of stock to be used in the manufacture of some commodity for which arrangements are being made in the way of an intensive selling program.

I have simply mentioned a few of the many features most essential. Other characteristics, such as diplomacy and tact are needed in dealing with the other department heads, as well as a certain regard for co-operation with the engineering department and the work's manager or superintendent. Also an important matter is to have on record any data that might be of money-saving value to the firm.

To some manufacturers it has never occurred how or why these matters should be considered as effecting their balance sheet, but to the man who has in mind the ultimate result that

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Robert N. Ladd, the author of this article, is assistant purchasing agent of the United States Metals Refining Co., Chrome, N. J.

his employer desires to attain, it cannot but occur how important they are and that the proper regard for such facts comprises one of the elements necessary to a successful business.

It is important to start right by buying right. It is of equal importance to see that the stores department handles its records of stock and disbursements just as cash funds are handled by the cashier's department. This is another feature that is generally regarded as a matter of little importance. Both the buying and storekeeping, if improperly conducted eventually will ruin a business. Any one department of a business that is allowed to drift along under improper management will act as a dragging influence as well as a leak in the bank account and profits. Successful co-ordination of departments, properly led and manned, combined with a proper respect for true business policies, always will win.

Humanizing Labor in the Steel Plant

(*Concluded from Page* 1641)

duced, that there must be a fair system of collective bargaining, that there shall be no baron and serf, then return to his plant and permit the very thing to come to pass that he had spoken against and received much praise and publicity about.

But if we respect the employe's rights, concede that many of his demands are incontrovertibly just, he, in turn, will come to respect us and the basis of confidence becomes an established fact. No enterprise, however great or strong or essential, can abide the troublesome days ahead, that does not seek to build upon the foundation of fundamental social needs. This matter of self-respect involves the freedom to think and to act on one's conviction. The employer cannot have the confidence of his employes if he discharges men because they believe in organization or belong to a radical political party. We have condemned wanton acts of destruction and did not realize that the employer's methods of repression, lack of fair play, had much to do in making their employes the prey of conscienceless agitators. In the new order of justice, there will be no place for the agitator who doubtlessly has prejudiced labor's cause on many a field of battle.

SECOND: If the steel industry is to be humanized there must also be cooperation between the employer and employe. The employer and the employe have certain definite interests in common, and the one lesson that all concerned must learn is co-operation. It means success anywhere. It must always be remembered that the steel plant is only a cog in this great progressive movement, and that our work must be viewed, therefore, from the standpoint of the world. Co-operation then would mean a united effort in attempting a solution of our present difficulties as well as the matter of increasing efficiency and production. If jealousy, suspicion, distrust, covetousness, are permitted to fatten in the minds of the employes, what can the employer expect but war? It will be war, day in and day out, as long as men are moved by such motives. Production will be curtailed; the men will grumble; the atmosphere will become anarchistic, and in the end both capital and labor must pay the cost.

In the third place, the steel industry must be humanized to save itself from industrial revolution. The old days are gone, and it is no longer a question of returning to prewar conditions, which is unthinkable; but it is a question of working out the demands, the ideals of labor, in an orderly process. It is either evolution or revolution; strikes, lockouts, will seem small matters as we face the deadly struggle of capital and labor growing out of the world upheaval.

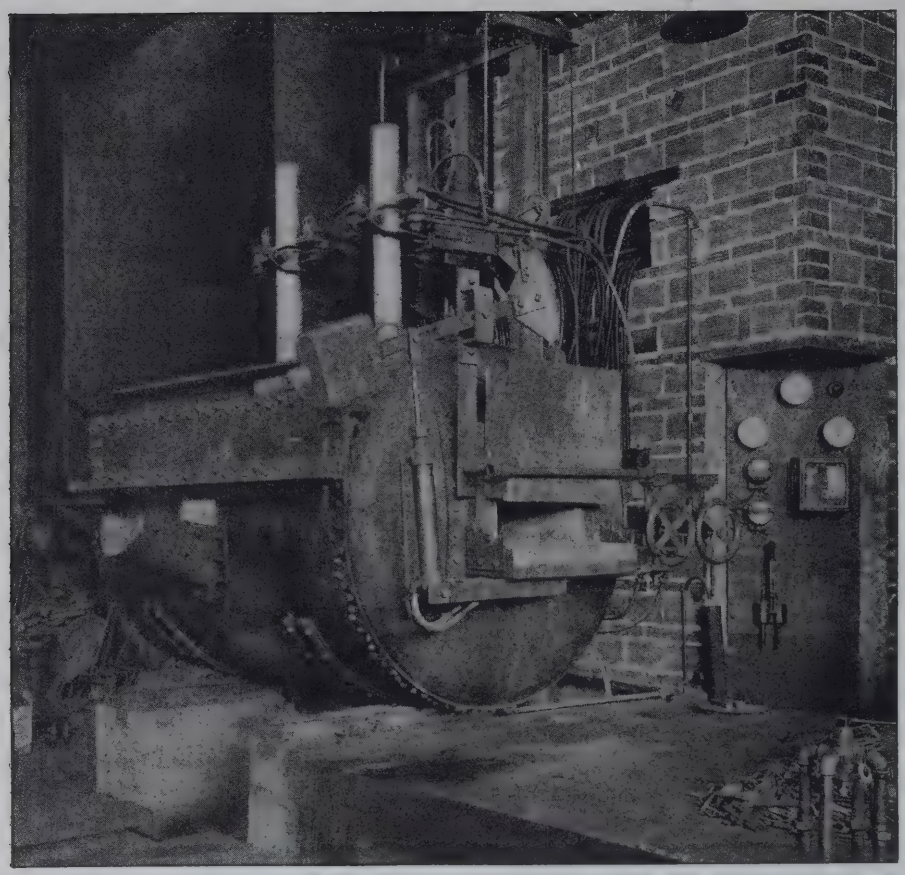
Labor is organized, and is organizing more intensely and determinedly every day. Workmen mean to maintain the new standards of living and they will work out the pressing, if not distressing problems peaceably if properly approached, and in time. They have had to fight every inch of the way, and the laboring man, the world over, is in a fighting mood today and means to win. Labor, then, must be approached in the spirit of the times. Capital will simply invite destruction if it attempts to maintain the old order. We must see the world as it now is and deal with the new conditions in a spirit of justice and of utter unselfishness.

This does not mean that every demand made by labor can be granted, but it does mean that in the granting of some of their demands that we propose thoroughly to face the issues, exhibiting a spirit of fairness, of willingness to do all that is within our power to give labor its due and also keep our business upon a paying basis. Our profits may not be so large as formerly, but the confidence, the harmony, shall have made our investment trebly secure, because out of the readjustment will come not only respect, but love for law and order. There is no other way that is so full of promise; and in view of the unprecedented economic upheavals shall we not follow the path that leads to peace and security?

FOURTH: The steel industry must be humanized, so that we may play our part in the world reconstruction. Its humanization not only affects America but it also affects the welfare of the world. Chaos must not only be defeated in America, it must be defeated, driven back, conquered, the world over. We must demonstrate a patriotism of the highest order, and as we work out the complex problems immediately confronting us at home, we shall be able to rally the moral influence of the greatest democracy in the world against these socialistic, anarchistic, and Bolshevistic tendencies anywhere they may be found. The steel industry, therefore, must work out its immediate problems at home and the very realization of that task will be like the pouring of oil upon the troubled waters of the world's discontent.

We know now that we can no longer disregard labor, labor conditions, or labor's thought or place in any part of the world. A victory for ultraradicalism in Europe means an ultraradical struggle in our own land. Defeat abroad only deepens the gulf between rich and poor at home. Labor's tremendous, yes, unprecedented influence in England thrills the American Federation of Labor to the heart, and new plans, new demands, and a definite policy of action is born. The world is one. What England thinks affects America. What France, Italy, or Japan does or fails to do is felt in our thought and life; wages, hours of labor, management, these are international terms and influences. It must, therefore, be plainly seen that if we find the way leading toward a solution we not only contribute to the social wholeness of our own land, but we are projecting influences which will affect the labor program of Europe, of Asia, of the world.

A new gas-producer plant was placed in operation recently at the works of the Page Steel and Wire Co., Monessen, Pa. The plant includes three mechanical producers built by the Morgan Construction Co., Worcester, Mass., together with coal-crushing and conveying equipment. The fuel gases will be used for open-hearth melting purposes. The furnaces formerly were fired with artificial gas and, consequently, to use producer gas it was necessary to install new port and valve equipment. The latter was built by the Blair Engineering Co., Pittsburgh.



TWO-TON, 500-KILOWATT, ROLLING CYLINDER TYPE ELECTRIC FURNACE INSTALLED IN SEATTLE PLANT

Install Electric Furnaces on Pacific Coast

Three installations of electric arc furnaces recently made in foundries in the state of Washington embody a number of novel features, each of which was demanded by the conditions obtaining in the plant. The unit shown in the accompanying illustration, which is employed by the Vulcan Mfg. Co., Seattle, has a capacity of two tons and is rated at 500 kilowatts. It is of the rolling cylinder type and the charging door is in the end, an arrangement which permits the furnace to set close to the transformer room, therefore occupying an unusually small amount of floor space. The tilting of the furnace is controlled by a 4-way hydraulic valve, shown at the right, which is said to be quick, direct acting and of simple operation. The furnace shell is provided with a dial and pointer to indicate the degree of tilting. This assists the operator in bringing the furnace back to its normal vertical position without shock.

A 500-kilowatt, 2-ton, rolling-cylinder type furnace recently was installed at the plant of the Lamb Machine Co., Hoquiam, Wash. The charging door of this unit is in the cylindrical wall of the shell opposite the spout. The furnace foundation is sufficiently elevated above the main floor of the foundry so that workmen may carry hand ladles away from the furnace without stooping over to pick them up. The ladles are supported by a ladle hanger while the metal is being tapped and workmen therefore may remain at a safe distance until the furnace is rotated to its normal position. When the metal is tapped into crane ladles, the shank ladle hanger is quickly removed. As in the case of the furnace at the plant of the Vulcan Mfg. Co., the tilting is controlled by a hydraulic valve situated at a convenient point safely removed from the danger zone.

The third furnace, which is in the plant of the Malleable Steel & Iron Co., Tacoma, Wash., is rated at 300 kilowatts and is adapted to making special grades of gray iron and semi-steel. Special castings heretofore unattainable on the Pacific coast are being produced at this plant. A second furnace will be installed, and when it is in operation, one unit will be employed for steel and the other for cast iron.

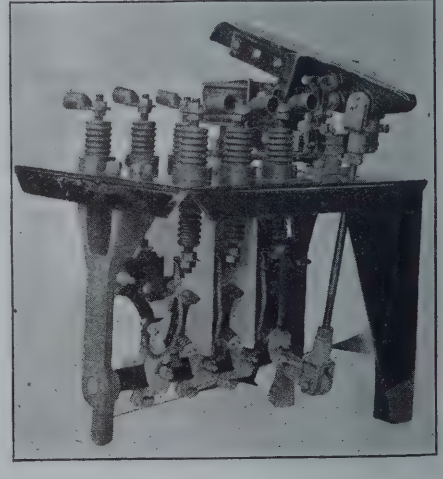
It is claimed that the roofs of these furnaces are of extremely simple design, standard shapes of silica brick being utilized except where the electrodes enter. The charging door shown in the accompanying illustration is operated by a hydraulic cylinder of the double acting type, which enables the operator to stop the door at any desired point. The furnaces were built and installed by the Greene Electric Furnace Co., Seattle.

New Switch Operated by Clapper Type Magnet

A new oil-immersed magnetic contactor, operated by a clapper type magnet, has been developed by the Cutler-Hammer Mfg. Co., Milwaukee. This contactor, which is shown in the accompanying illustration, has a capacity of 100 amperes at 2200 volts, and is designed for use as a main line switch for an automatic 2200-volt motor starter, or for the remote control of any 2200-volt light or power circuit. It is built with three poles, unless used with an auto-transformer starter when five poles are provided.

The frame of the contactor, which is of heavy sheet iron, is arranged for wall or switchboard mounting, and carries two cast iron supports with two insulated shafts carrying the contacts. Leads from the contacts connect with suitable terminals extending through high tension insulators mounted on the top of the frame. The armature is pivoted to the frame, and is connected by a rod to an arm of the shaft carrying the moving contacts. The attraction of the armature against the face of the magnet rotates the shaft and closes the switch, which is normally held open by the weight of the moving parts.

A head of oil is maintained over the contacts by providing a sheet metal tank of ample capacity, and as the contacts are situated above the operating shaft, they are away from any sediment which might accumulate in the bottom of the tank. The arc is broken at the contacts in a horizontal direction and therefore rises to the point of rupture without burning other parts.



OIL TANK REMOVED FROM NEW SWITCH SHOWING CONTACTS AND ARCING SHIELDS

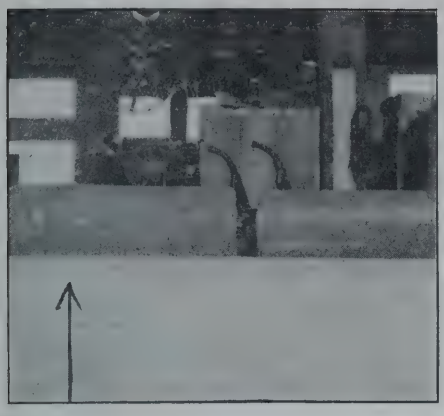


FIG. 1—ARROW SHOWS LOCATION OF WELD IN PIPE FRACTURED BY TEST

Test Tensile Strength of Welded Pipe

Tests recently were made to determine the tensile strength of two sections of 2-inch extra heavy steel pipe which were thermit welded for the Carnegie Steel Co. at Clairton, Pa. After the pipe was welded, the welded sections were pulled in a tensile stength test machine. The first pipe broke 4 inches from the weld at 113,800 pounds and the second pipe failed 4⅝ inches from the weld at 124,100 pounds. In Fig. 1, the arrow indicates the location of the weld, while Fig. 2 shows the cross section of the pipe at the break.

Christen Large Crane at League Island

The largest crane in the world was formally christened "League Island" at the Philadelphia navy yard on Saturday, Dec. 6. The simple but unusual ceremony was performed by Miss Bertha Kaltenbach, Cleveland, a daughter of one of the officials of the McMyler-Interstate Co., Bedford, O., which built the crane for the government. As the bottle of champagne broke upon the forward block of the four lifts, the big machine hoisted four loads and swung them completely around the end of the new fitting-out dock. Demonstrating its capacity, the new crane carried a yard-locomotive on the extended arm, a second locomotive as a counterweight under the machine house, and two compound loads on the arm weighing 416,000 pounds each.

The big machine, designed to hasten the equipment of major vessels of the navy, is designed to lift 350 gross or 392 net tons. Its cost was approximately $1,000,000, the contract price for the crane without the foundation being reputed to be $865,000. The whole was assembled and constructed in the yard upon the fitting-out dock which it equips. In building the crane, a specially constructed derrick with a 265 foot boom was used.

Unlike the smaller capacity hammerhead, the revolving portion of this crane is supported by a structural steel octagonal pillar. This pillar tapers gradually from the bottom to the top and forms a support for the roller bearing which carries all of the rotating parts of the crane. The combined load is, therefore, carried upon a space the diameter of which is approximately only 4½ feet, and upon 2½-inch roller bearings. The revolving portion of the crane consists of a horizontal truss, the front portion of which supports the trackways carrying the main and auxiliary trolleys. The rear portion of the truss supports the machinery as well as the counterweight. The truss maintains its horizontal position by means of a structural steel frame or apron which encircles the pillar and extends down to a point near the portal. Steel rollers are mounted in a flexible pin-connected band at the bottom of the apron and come in contact with an annular roller path on the pillar.

The crane is equipped with two distinct main hoist units, each having a separate hoisting and trolley racking mechanism. Each main hoist has a maximum capacity of 175 gross tons and

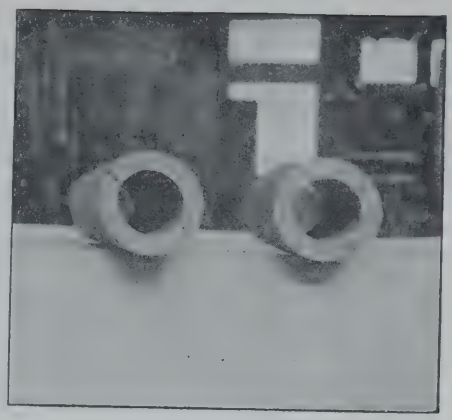


FIG. 2—THE CROSS SECTION OF THE FRACTURE PRESENTS A SMOOTH SURFACE

may be operated separately. To develop the maximum capacity of 350 gross tons, the two main hoists are operated jointly as a single unit through a mechanical and electrical coupling device.

The crane is operated entirely by electricity and it is reputed to be simply controlled, being designed to be operated by two men if necessary. The machinery house on the rear cantilever is fitted with a crane runway of 42-foot centers. This crane runway supports a 35-ton electrically operated overhead traveling crane for handling the operating mechanism of the shipbuilding crane



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LARGEST CRANE IN THE WORLD—IT LIFTS 350 GROSS TONS

when necessary. The crane runway extends over the end of the rear cantilever, which enables the overhead traveling crane to raise or lower machinery parts.

Each main hoist capable of lifting 175 gross tons, has a radius of 115 feet; acting together they can lift 350 gross tons with the same radius. Two 8-part lines are used on each main hoist, 32-part line being used to make the maximum lift of 350 gross tons. The auxiliary hoist, the lifting capacity of which is 50 gross tons, has a radius of 190 feet. The load is handled on two 4-part lines. The minimum operating radius of each hoist is 41 feet. Both main hoists, operating singly or jointly, have a speed of 2.5 feet per minute carrying the maximum load or a speed of 10 feet per minute with no load. The auxiliary hoist is capable of a speed of 12 feet per minute with the maximum load or 30 feet per minute with no load.

The sluing speed of the crane is one revolution in 12 minutes. The trolley racking speed of both main hoists, singly or jointly, is 12 feet per minute with the maximum load or 100 feet per minute with no load. The trolley racking speed of the auxiliary hoist is 100 feet per minute with the maximum load or 150 feet per minute with no load.

The navy department let the contract for this record crane in 1918 and a complete engineering description was published in the April 18, 1918, issue of THE IRON TRADE REVIEW. Those present at the christening ceremony comprised officials and friends of the contracting company and naval officers stationed at the League Island yard. The acceptance of the crane by the government will await the reports of the governmental representatives who will now make rigid tests.

Ask For Profit Sharing Data For Survey

The National Civic Federation, Metropolitan Tower, New York, is circulating form letters to manufacturers and employers, in an effort to assemble data concerning profit sharing plans, where existing, for a revised edition of the report, "Profit Sharing by American Employers," which was published by the federation in 1916.

Employers of labor are asked to advise the committee in charge of this work, which is headed by George W. Perkins, concerning the following points: The date of installation of your profit-sharing plan; and, if not in force, when discontinued and why. What is your average number of employes and how many participate in the plan? What is the feeling toward the plan by those for whose benefit it was intended% Has your profit-sharing plan been the means of modifying the tendency toward labor troubles? Is it limited to heads of departments or does it include the rank and file? Is it regarded unqualifiedly as a success? If not, where has it failed to accomplish your aim?

Zinc Smelter Planned

The Burma Corp., Ltd., will construct a zinc smelter at Janshedpur, India, about one mile from the plant of the Tata Iron & Steel Co. The smelter will have a capacity to use about 25,000 tons of zinc concentrates a year, produced by the Burma Mines, Ltd., a subsidiary of the Burma Corp., Ltd., and expects to have an output of about 10,000 tons of zinc. The company also will produce sulphuric acid. While the Tata Iron & Steel Co. will be the largest customer of the new smelter, the sale of zinc will not be confined to this customer. Lawrence Addicks, consulting engineer, 6 Church street, New York, is about to close on about 3500 tons of structural steel for the proposed plant.

Makes Electric Ingots

Two Webb electric furnaces which have been in operation for several years at the plant of the Old Dominion Iron & Steel Corp., Richmond, Va., recently have been adapted successfully to the production of 2-inch ingots, weighing 30 pounds each, which are rolled directly into horseshoes, thus saving the expense of breaking down large ingots into billets of small section. By means of a novel method involving the use of a mold, a 3-ton heat is cast into these small ingots in 7 minutes and the horseshoes produced are in every way equal in quality to those produced from the broken down billets before the new practice was adopted. The furnaces are basic-lined and produce a heat of carbon steel of ordinary grades in two hours from start to tap. For alloy steels, a longer time is required.

Reline Furnace Speedily

What is claimed to be a time record for relining a stack of its size recently was made at the furnace of the Bessie Furnace Co., New Straitsville, O., owned and operated by the Allen S. Davidson Co., Pittsburgh. This stack was blown out Saturday afternoon, Nov. 8, and was relighted early Sunday morning, Nov. 23. It was idle exactly 14 days and 11 hours. In that time, the old lining was taken out, a new one laid in and sufficient time was allowed for the new lining to dry out. Bricklayers worked five days and five nights and 11 hours.

Another feature of the operation was that only the first heat poured Sunday morning, Nov. 23, was off in analysis. Usually, it takes several casts before the proper analysis is had from a freshly lined stack. This furnace has a rated daily pig iron capacity of 175 tons, but running on bessemer ferrosilicon or silvery iron, of course, does not produce anywhere nearly that tonnage.

To Apply Powdered Coal

In order to increase production and efficiency, to meet the heavy demand for sheets, the Inland Steel Co. will proceed at once with the installation of a complete powdered coal system for firing 40 furnaces in its plant at Indiana Harbor. Greater output per ton of fuel used and reduced labor cost are expected to offset the present labor shortage and the high cost of fuel. For the initial installation, powdered coal will be applied to 16 sheet furnaces, 16 pair furnaces, three continuous plate mill furnaces, two continuous bar mill furnaces and three slab heating furnaces. The contract for this work, which has been awarded the Quigley Furnace Specialties Co., 26 Cortland street, New York, calls for the engineering work and installation of a complete milling plant with capacity of 20 tons per hour, with provision for extensions, compressed air distribution system for transporting pulverized fuel to furnace bins through small diameter standard wrought pipes, and the necessary fuel feed controllers, air supply system and burners. Arrangements are also being made for an extension to the boiler plant and other departments.

The last monthly meeting of the year for the New England Foundrymen's association was held Dec. 10, at the Exchange club, Boston. Frank B. Gilbreth, consulting engineer of Providence, R. I., read a paper on "What Industry Must Do to Allay Unrest and How It Must Be Done." The paper duplicated somewhat a talk given before the American Foundrymen's association in Philadelphia.

Coal Regulations Are Relaxed

Fuel Administrator Garfield Ignored by President in Settlement of Strike—Question as to Whether Secret Promises Were Made to Miners—Coke Supplies Are Not to be Further Curtailed

WASHINGTON, Dec. 16.—Last week was one of contradictions to the steel manufacturer who is dependent on coal and coke for the operation of his plants. In the early part of the week he, having already suffered considerably from the shortage of coal, had his coke supply curtailed 25 per cent. This was followed immediately by the report of another proposed cut of 25 per cent. Before this report could be affirmed or denied, the miners in session at Indianapolis voted to end the strike, and it was then stated here that the government would not make any further orders requiring less production of coke. Assurance of continued coke production on a 75 per cent operating basis came, of course, with the assurance of better fuel supplies resulting from settlement of the strike. Relaxation of priority rules was afforded by the order of the fuel administration last Saturday, providing that emergency needs of industries will be met when the coal supply in the respective regions makes it possible, although application for coal to the railroads which ordinarily supply coal for such industries.

The week also brought out the re-establishment of the government's war-time coke prices which action put the coke industry on a par with the bituminous coal industry, so far as federal regulation is concerned. This price matter, however, like that pertaining to coal, affected only spot sales of coke, as contracts were in no way infringed except, perhaps, as to quantity of deliveries. The shortage of coal created a larger demand for coke and spot quotations were soaring when Fuel Administrator Garfield stepped in and fixed the price, turning over to Director General Hines, as he did in coal, the control over the distribution of coke.

Another and equally important development, so far as the public is concerned, was the resignation of Dr. Garfield. The fuel administrator resigned on the ground that the President's solution of the coal strike problem was a surrender to labor and not fair to the public, although it, like any other settlement, naturally would result in increasing the coal output and at the same time lessen the suffering from lack of fuel. The President absolutely ignored the fuel administrator when he arranged through Attorney General Palmer to settle with the mine workers.

Dr. Garfield, except for the President, was absolute in administering the Lever act so far as fuel is concerned. His plan was to have a consultative body, somewhat like the railroad wage commission, which would review the miners' complaints, the operators' offers, determine the facts in the case and recommend wage adjustments. The administrator would be free to accept or reject the recommendation, of course, and even though he had declared unequivocally against increasing the price to the public it is believed he would have been fair with the miners and given them more than 14 per cent had the facts warranted.

The President's plan, however, as viewed here generally, would ignore the fuel administrator as the President himself did in getting the miners to accept it. At that, the President's plan is practically nothing more than the Garfield plan, except for the transfer of authority, and it won the miners as Dr. Garfield had been unable to do.

Dr. Garfield failed in this because Secretary Wilson of the labor department, who has certain mediatory powers, and proposed a higher increase as settlement of the wage controversy. The miners explained that they didn't know whether Garfield or Wilson was speaking for the government.

The President's action, however, could not be construed as other than the government's. There are many here who believe the truth in regard to the coal settlement has not been told. It is suggested that certain promises of what the proposed commission might do were so convincing as to cause the jubilation which everywhere is said to have characterized the activities of the miners following their conference with Mr. Palmer and Secretary Tumulty here, Dec. 6.

Withdrawal of the court proceedings at Indianapolis, whether actual or only promised, at the time of the conference, is believed not to have influenced the miners. They appeared to be absolutely calloused to government and court actions and while pretending to obey the law actually did not obey it. The original court order demanding canceling of the strike call was mailed out, but not on official stationery. The canceling order of last Wednesday was telegraphed and, of course, not on official stationery. This alone has served to convince many of the tactics of the miners.

Ship Board Uses 2,500,000 Tons of Steel

WASHINGTON, Dec. 16.—The United States shipping board at the end of the current calendar year will have consumed approximately 2,500,000 tons of steel in the construction of ships. The deadweight tonnage that will have been turned out will exceed the original estimate of 6,000,000 deadweight tons. This became clear with the announcement last Friday by John Barton Payne, chairman of the board, that deliveries up to Dec. 1 totaled 5,818,500 tons. These deliveries included 4,472,000 tons in steel ships, 1,298,000 in wood ships, 42,000 in composite ships and 6500 in concrete construction.

The active construction program of Dec. 2 showed 2314 vessels of which 2240 had keels laid with a tonnage of 12,926,486 deadweight. There were 1910 ships of that number launched, with a deadweight tonnage of 10,494,047, of which 1674 vessels had actually been delivered to the shipping board, the dead-

weight tonnage delivered up to Dec. 2 being 9,189,236.

At the same time, Chairman Payne made public an outline of the American passenger and freight service to Europe, South America, Africa and the Orient, which must be maintained by the government for the next 12 months to establish trade routes for the future American merchant marine. The outline was submitted to the board by John H. Rosseter, who resigned as director of operations on Dec. 1.

Mr. Rosseter advocates the placing of 29 former German passenger vessels and 26 passenger ships, newly constructed by the board, in permanent passenger and mail routes to the most important trading sections of the world. He is opposed to any attempt on the part of the war department to hold the former German ships for what he terms "wasteful operation as permanent transports.

"Instead of the army," says Mr. Rosseter, "maintaining a special transport service or services at a heavy cost its traffic requirements in the way of movement of troops, as well as cargo, can be taken care of by regular lines, at least in all the important routes."

May Expect Delivery in Good Time

It is shown by the reports that the shipping board can expect delivery of three of the new passenger vessels of the so-called 535-foot class next June, and the remainder of the class during the next six months at the rate of two a month. Of the 502-foot class, first deliveries are expected about July, and then at the rate of about one a month over the last half year.

Continuation of government construction of passenger vessels is regarded as being impracticable by Mr. Rosseter but as a building program for the coming year he suggests 70 cargo liners and also a limited number of small passenger boats. Mr. Rosseter says:

"As to the cargo liners, I would confirm my previous recommendations that we construct: Twenty, 15,000 tons deadweight, 14.13 knots; 20, 12,000 tons deadweight, 14.13 knots; 20, 10,000 tons deadweight, 13.12 knots, and 10, 11,000 tons deadweight, 13.11 knots.

"As to the small passenger trains, I would suggest adding to the building program 10 of about 5000 tons cargo capacity, with accommodations for 50 first-class passengers, 100 steerage and arrangements to take care of upwards of 100 deck passengers in 'port-to-port' traffic."

Miners Expect Greater Advance Later

WASHINGTON, Dec. 16.—Members of the senate subcommittee on interstate commerce plainly showed their sympathy with the attitude taken by former Fuel Administrator Harry A. Garfield during the hearing they held Saturday when they questioned him about his proposal for settlement of the coal strike which was refused by the union miners. He told of his subsequent resignation, which, as he explained, was due to his inability to accept the underlying principles laid down by the President in the latter's plan of settlement, which was accepted by the miners. The terms of the President, considered by some members of the committee to mean a yielding to the miners, were declared by Dr. Garfield to be "fundamentally wrong as a matter of government." Dr. Garfield said his objection to the plan of the President "goes to the point that the commission which I understand will be set up to decide wages and prices will be composed of three members, one to be a miner, another to be a coal operator, and the third to represent the general public. Under it, the public, which is the chief party at interest, would always be in the minority." He expressed the opinion in reply to a question by Senator Townsend, that the miners and operators may have a common interest in increasing wages and costs and passing the increase on to the public in prices, although he stated he was not charging that this would be necessary.

It is known, however, that members of the committee believe this will be the inevitable outcome unless something is done to prevent it. Some who are strongly opposed in principle to the idea of government control or operation of the mines have become so displeased with the President's substitute plan that they have indicated the government should take action with that end in view. It is evident, though, that even in the improbability of legislation being passed for this purpose it would be defeated through the veto power of the President. As the case stands, it is thought that the public will have to bear the burden of the increase and it is no secret that the union miners think they will be allowed a wage advance of 31.9 per cent by the commission, the increase that was suggested by Secretary of Labor Wilson, but which Dr. Garfield refused to agree to, proposing instead a raise of 14 per cent.

In the event an increase of 31.9 per cent is granted senators say they look for the operators to pass the entire added cost to the public and not endeavor merely to make an increase of the difference between 31.9 per cent and 14 per cent, the latter being the amount which Dr. Garfield said the operators could afford to absorb. For that matter, now that the Presidential commission will have the power to determine the advance instead of being only an advisory body, as was suggested by Dr. Garfield, it is the common belief that any increase that may be allowed will be passed to the consumers. Some operators are said to have already refused to open their mines under the proposal that they absorb the suggested 14 per cent increase. Under the Lever act the government has authority to open and operate such mines.

The manner in which the President's plan was arrived at may be inquired into closely by the committee through an examination of Attorney General Palmer and other government officials, as well as of operators and miners. Senator Frelinghuysen, chairman of the subcommittee, has intimated that the whole plan of the President, adopted without consulting Dr. Garfield, will be gone into fully.

Dr. Garfield denoted that he had determined to stand by his position, despite the refusal of the union miners to accept his terms and said he had gone home "thinking the matter would be fought out." Thereupon the President summarily took the question out of his hands and arranged a plan of settlement after a secret meeting between the attorney general and acting President Lewis and Scretary Greene of the miner's union.

Sells Tools at Profit

Washington, Dec. 16.—The director of sales office in the war department for more than a month has been selling machine tools on the basis of negotiation. The former plan of selling them at fixed prices based on their service value has been superseded, it was stated at the office, but no explanation was given. It was suggested that the government has as

much right to make a profit on machine tools as any one else. This policy is not entirely subscribed to by officials in the bureau, and it was pointed out that sales have not been any more satisfactory under this plan than under the former. The fixed price plan was worked out after months of study and it was, at that time, the consensus of opinion among machine tool builders, war department officers and economists that the plan was the best for all practical uses.

Immigration Problems Are Reviewed by Wilson

Washington, Dec. 16.—Future immigration will depend primarily on the ability of European countries to initiate an era of peace and profitable employment for those who have survived the war and those who hitherto have been occupied in its pursuit, Secretary Wilson declares in his annual report. Considering Europe as a whole, he said, there are some factors growing out of the war which may retard immigration and many which may promote it. He makes no recommendations covering the subject.

The report has nothing to say of the steel strike. It is true the report is intended to cover only the fiscal year ending June 30, but as the international labor conference held here beginning Oct. 29, 1919, and the industrial conference held here beginning Oct. 6, 1919, are discussed, it is not explained why there is no comment on the steel or coal strikes. These may be discussed in the report a year hence.

Antidumping Bill Passed by the House

Washington, Dec. 16.—Passage last week by the house of the Fordney antidumping bill has placed it, like the antidumping measure of Senator Smoot, before the senate committee on finance, but it is unlikely that either bill will be given early consideration by that committee. Even if antidumping legislation should be passed by this congress, it is believed the President, because of unsettled commercial conditions, would veto it. This opinon appears to be emphasized by reason of the President's comments on the tariff situation in his recent message.

The Fordney bill, which passed without a record vote, is intended to protect American manufacturers from the flooding of American markets with foreign products sold at lower prices in the United States than in the country of manufacture. It authorizes the secretary of the treasury to send agents to inspect the books and plants of the manufacturers and to study prices of merchandise abroad. Refusal of foreign manufacturers to submit to such inspection would result in the exclusion of their products from the United States. Where the value of the goods exported to the United States cannot be ascertained, if they have been sold in this country for less than their home value, a duty shall be imposed on them, in addition to all other duties, equal to the difference between the sales price in the United States and the foreign home value, the value to the countries other than the United States, or the cost of production, as the case may be.

Completes Calibration of Oxyacetylene Apparatus

Washington, Dec. 16.—In a bulletin on the work at the bureau of standards it is stated that the calibration of oxyacetylene welding and cutting apparatus is practically complete. This work was delayed somewhat, it is said, owing to the fact that a method had to be devised for determining the effective specific heat ratio of acetylene passing through the acetylene meter. Work of actual welding is expected to start in a short time. The calibration of the oxygen-flow meters used in cutting has not yet been complete.

The bureau of standards this month is to undertake a strain-gage investigation of the new 350-ton fitting-out crane at the Philadelphia navy yard. Bureau officials expect to have difficulty in making the test because of the low temperatures and winds of high velocity now prevalent, but hope the investigation can be completed successfully.

Reject 442 Claims for War Minerals Pay

Washington, Dec. 16.—Charged with the adjustment of losses sustained in producing manganese, chrome, pyrites and tungsten, the war minerals relief commission up to Nov. 29, 1919, had recommended partial allowance of only 30 claims, involving $418,502.79, and had recommended the disallowance of 442 claims, leaving 731 to be considered, the total number filed with the commission having been 1203. These facts are carried in a report submitted to congress by Alexander T. Vogelsang, acting secretary of the interior.

The following tabulation summarizes the work and expenditures of the commission to the date named:

Total amount of claims	$16,655,481.94
Amount of the 472 claims already considered	$3,345,486.95
Amount of claims remaining to be considered	$13,309,994.99
Total number of claims recommended for disallowance	442
Amount claimed in those disallowed	$1,946,374.23
Total number of claims recommended for partial allowance	30
Amount claimed in those partially allowed	$1,399,112.72
Amount recommended to be allowed	$418,502.79
RECAPITULATION	
Amount of appropriation	$8,500,000.00
Amount of awards recommended	$418,502.79
Administrative expenses to Nov. 29, 1919	$147,431.25
Balance	$7,934,065.96

The relative large proportion of disallowances, the report states, should not be taken as an index for the future, for several reasons: First, the commission eliminated initially, as far as possible, claims which on their face admitted no request or demand. Second, some of the largest and most complex claims, requiring establishment of principles, demanded an excessive amount of time and study. Third, the examinations by engineers and auditors of most of the claims on which some award must be made are not yet complete.

Buys Brass Tonnage

Washington, Dec. 16.—The Van Dyke Smelting & Refining Co., New York, has purchased through negotiations closed here, approximately 5,500,000 pounds of surplus brass from the salvage board of the ordnance department. The price paid was 13.11c a pound, f.o.b. cars at place of storage. Most of the metal is located in the Boston district. The brass is in the form of 60-40 per cent rods in sizes 1¼ inches and larger, mostly not of commercial sizes. This material represents practically all of the declared surplus of this class of metal held.

Navy Contracts Awarded

Washington, Dec. 16.—The navy department last week awarded to the Carnegie Steel Co. contracts for most of the 7440 tons of special treatment steel plates and 3960 tons of nickel steel plates for battleships Nos. 49, 50, 51 and 52. The contracts were at the bid prices of 11.12 cents per pound of special treatment and 8.84 cents per pound of nickel plates.

Navy Steel Wanted

Washington, Dec. 16.—The navy department will open bids Dec. 19 on 10,000 tons of plates and 3350 tons of shapes to be used in the construction of battle cruisers Nos. 5 and 6 at the Philadelphia navy yard. Deliveries will begin in January, plates at a rate of 1800 tons monthly and shapes 600 tons.

Labor Leaders Express Defiance

Conference in Washington Devoted to Denunciation of Federal Courts and Employers —New Labor Party Fails to Obtain Support—Farmers Decline to Participate —Bolshevism "Repudiated"—Steel Strike "to be Continued"

WASHINGTON, Dec. 16.—Trade union leaders at their conference in this city last Saturday adopted a declaration of principles reasserting rights they always have claimed, and denouncing government "interference" with those rights. Articles containing 15 sections were drafted by the 200 union officials called here by Samuel Gompers, president of the American Federation of Labor. These ask for government operation of railroads at least until Jan. 1, 1922, to provide "a thorough test" of government control. Immediate ratification of the peace treaty also is urged. It is declared that the claim that increased wages must necessarily result in increased prices of commodities is false.

The 24 presidents of unions with membership including workers in the iron and steel industry voted to continue the strike four years "if necessary." Despite the statement of various plant officials that scarcity of coal is now the only restriction on operation, the labor leaders declared that the strike is still crippling the industry and that plans have been adopted for continuing the campaign. John Fitzpatrick stated that session of the 24 union presidents was "the most enthusiastic" held since the strike was called.

In the general declaration of principles, the labor leaders criticised federal courts for their actions, such as enjoining the leaders of the striking bituminous miners. The employers' group in the first national industrial conference also was criticised.

Rejects Pleas for New Party

The rejected attempts of some of the delegates to get recognition of the socalled national labor party, knowing that the federation could exert more influence through established political parties. It went on record against the bolshevists in its ranks, just as it has done in the past, regardless of its approval of the activities of some individuals of the syndicalist type, who have been seeking to "bore from within" the federation. The federation attempted to get farmers to join in the meeting, but they declined to do so, realizing their interests and the principles of the federation are opposed.

President Gompers presided at the principal session, and when a motion was made to obtain recognition of the labor party, Gompers curtly ruled the motion out of order. Instead of trying to organize a labor party, the conference urged workers to "seek redress for their grievances by exerting political pressure." Delegates took pains to say that workers will "defeat their enemies and elect their friends" through the medium of existing political parties, and by this action "approve" of the "new national labor party."

Much noisy condemnation of bolshevists was indulged in. The delegates appeared to be encouraged over the decining strength of the radicals.

The conference reiterated the right of federal, state and municipal employes to organize and affiliate with the federation in the face of the sharp challenges and defeats recently administered to such organizations. In urging adoption of the peace treaty the conference approved its labor provisions and gave complete endorsement to the principles the labor group tried unsuccessfully to force through at the recent industrial conference.

John L. Lewis, acting president of the United Mine Workers' union, was present at one of the meetings. Lewis said he was not directly concerned with the steel strike, but was present to get the steel men's decision first hand, and asserted that the future policy of the miners will be influenced in a degree by the steel workers' strike. Andrew Furuseth, chief pilot for the seaman's union in steering its legislative interests through congress, also was present, but his participation was "sympathetic" only. Fitzpatrick presided at this meeting, with his usual gusto, and Secretary Frank Morrison of the federation was likewise among those present.

The substance of the more important sections of the declaration of principles adopted by the conferees follows:

"Powerful forces are seeking more and more aggressively to deny to wage earners their right to cease work. We denounce this as vicious and destructive of the most precious liberties of our people. So long as it is necessary to exercise the right to cease work—strike—as a final means of enforcing justice from autocratic control of industry, so long must the workers maintain the right to strike."

This was amended to read: "The right to cease work—strike—as a final means of enforcing justice from autocratic control of industry must be maintained."

"The right of public employes to organize must at all times be fully safeguarded.

"The injunction writ has been abused.

"We declare these abuses in the exercise of the injunction writ are clearly violative of the constitution and that this issue must be determined definitely in accordance with the guarantees of the constitution of the United States."

"Workers are free citizens, not slaves. They have a constitutional right to cease working. The strike is a protest against autocratic management. To penalize strikes or to make them unlawful is to apply an unwarrantable and destructive method when a conservative one is available.

"The government has a greater obligation in this matter than to use its coercive powers. Legislation which proposes to make strikes unlawful or to compel the wage earners to submit their grievances or aspirations or governmental agencies, is an invasion of the rights of wage earners and when enforced makes for industrial serfdom or slavery.

"We hold that the government should supply information, assistance and counsel, but that it should not attempt to destroy voluntary retaliations and policies of mutuality between employers and employes.

"We specifically denounce the anti-strike provisions of the Cummins bill and all similar proposed legislation as unamerican, as being vicious in character and establishing by legislation involuntary servitude."

Steelworkers Increased in September

Washington, Dec. 16.—The first government figures showing the employment situation in the iron and steel industry since the commencement of the steel strike on Sept. 22 have been made public in the November issue of the monthly labor review published by the bureau of statistics in the department of labor. At the end of September, 92 steel manufacturers reported 146,298 men employed as compared with 141,664 on the last working day in August. This was a gain of 3.3 per cent.

It may be pointed out that if the last full working day in each month is not a fair comparison, perhaps the monthly payroll figures will be better. During September 102 manufacturers paid out $11,545,096 in wages, or only approxi-

mately 2 per cent less than in August. The numbers on the payrolls of these companies in the two months were 175,237 in September and 174,606 in August, an increase of approximately half of 1 per cent.

The comparisons with 1918 are, of course, less favorable, because September and August in that year found practically all mills operating at full capacity. For example, in September last year 104 companies employed 199,136 men with a monthly payroll of $12,824,070 while the same mills in September this year employed only 174,117 men to whom $11,389,023 in wages were paid. This was a loss of 12.6 per cent in men and 11.2 per cent in wages. The number actually working in 95 establishments on the last full day of September, 1918, was 165,168, while the number in the same plants on the comparative date this year was 148,749, or 9.9 per cent less. In discussing changes in wage rates the review says of the iron and steel industry:

"Two plants reported an increase of 10 per cent affecting the entire force in one plant and 95 per cent of the employes in the second plant. Increase of 2.5 per cent in the finishing mill and 5 per cent in the puddling mill were given by one establishment affecting 50 per cent of the employes. Four per cent of the employes in one plant received 0.26 per cent increase."

Texans Form Open-Shop Association

Employers in Beaumont, Tex., and vicinity have organized the Open Shop association of Jefferson county, Texas, with a view to disseminating information showing the advantages to the public of the open shop. The declaration of principles states that it is the purpose of the organization "by its teachings and good offices to prevent and avert industrial disturbances; to harmonize differences between employers and employes, with justice to all concerned and to insist on the enforcement of the laws of the land.

Other purposes are "to oppose restriction of output, sympathetic strikes, lockouts and boycotts and illegal prosecution of individuals; to secure for employers and employes the freedom of individual contract in the matter of employment; to prevent any interference with persons seeking through honest effort to work and earn an honest living, and to lend aid and influence to protect everyone in his lawful right to conduct his business or affairs as he deems proper, so long as he does not encroach on the rights of others."

Membership is divided into two classes, active and associate, the first being composed of employers and the second of those who are not employers but who believe in the principle of the open shop. A board of directors consisting of 21 members is chosen in accordance with a predetermined classification of industries as represented in the association. An executive committee of five elected by the board of directors has authority to act in the general management of the association. A penalty of not less than $500 and not more than $5000 is provided for members who wilfully violate the principles of the association.

Barring of Workmen is Ordered Stopped

Federal Judge Westenhaver at Cleveland, Tuesday rendered a decision, restraining Mayor Davis and Police Chief Smith of that city, from barring workmen who had come from other cities to work in steel plants there. The city administration, shortly after the breaking out of the steel strike, issued an edict to the effect, all men who came from other cities to work in the mills in Cleveland during the strike, would be arrested on charges of suspicion, and given the alternative of leaving the city or serving a term in the workhouse. It has been estimated that more than 300 men were forced to leave the city, as a result of this ruling, which was backed up by an ordinance passed by the Cleveland city council, and employers in the district blame the action of the city officials for the prolongation of the steel strike in the district.

By the decision of the federal judge the city officials cannot interfere with workmen coming into the city, and can arrest only those against whom legitimate charges can be placed. The city administration had claimed that they had found many of the men whom they had arrested were armed and were justified in arresting them. Judge Westenhaver rendered but a temporary report of his decision, but is expected to hand down a complete statement within a few days. The action was brought by the American Steel & Wire Co.

Frick Company Increases Wages 14 Per Cent

Announcement of an increase of 14 per cent in wages effective Dec. 1 has been posted by the H. C. Frick Coke Co., at its plants and colleries in the Fayette county, Pa., coal fields. The company decided to increase wages a week prior to the settlement of the coal strike, and at that time announced its decision, although the posting of notices was delayed until the result of the miners' negotiations at Washington and Indianapolis was announced. Fayette county is a non-union coal field and it is believed the Frick scale will be slightly higher than that agreed upon by which the miners in the union fields will return to work. A similar announcement by independent companies affecting other miners in Fayette county is expected to be made soon.

Agitators Held for Trial

More than 100 men who were arrested by state troops on Dec. 5 at Donora, Pa., when the officers raided the steel strike headquarters, were held for the February term of the Washington county court following a hearing Dec. 11. The men were charged with conspiracy and intimidation to prevent men from working in the steel mills at Donora. The arrests followed a bomb explosion at the home of Felix Burkhardt, an employe of the American Steel & Wire Co. at Donora.

Would Disbar Margolis

A petition asking the disbarment of Jacob Margolis, who it is claimed has attempted and still is attempting to overthrow the government of the United States and is wholly lacking in fidelity to our system of the government, which he swore he would obey and uphold when admitted to the bar, was presented Dec. 13 in the common pleas court at Pittsburgh by the Allegheny County Bar association. Margolis, it will be recalled gave startling testimony before the senate committee which investigated the steel strike and this disbarment action grew out of his admissions before that committee.

Cambria Workers Back

All except about 1000 of the workmen employed at the Cambria Steel Co., Johnstown, Pa., prior to the outbreak of the strike now are back at work. The men who still are out are chiefly foreigners. The company has 10 open-hearth furnaces in operation at the Franklin works and as soon as the coal situation improves, a marked increase in both steel works and finishing mill operations is planned.

Whitaker Glessner Co.'s sheet mill at Martins Ferry, O., employing 2000 persons, has resumed work in full, after being idle two months on account of the steel strike.

Foreign Market

For American Machinery Should Not be Neglected, Says Wood

American manufacturers of industrial machinery should not allow the present home demand for their product to cause them to ignore the future of the European market, declared Maj. Charles P. Wood, trade commissioner of the United States department of commerce, in a recent address before the Foreign Trade association of the Cincinnati chamber of commerce. Many machine tool manufacturers of the Cincinnati district were in attendance and heard Major Wood, who recently returned from Europe, discuss the subject of European demand for American-made machinery. He said in part:

New German-made machinery is available for quick delivery. The value of the mark at the present time has created an inducement which can not be overlooked by industries which must study economy regardless of other considerations. The supply of this machinery is limited, however, and there is no reason to believe that the German can arrange to give long credits in large amounts. Still, it is true that this situation provided the entering wedge for German machine manufacturers who may be expected to take full advantage of every chance to build up their business on a profitable basis for the future.

It will pay American machinery manufacturers to confine themselves to definite propositions. The field has been looked over in a general way so much that prospective customers have begun to wonder when the Americans are going "to get down to brass tacks." Intermediaries who add excessive profits have spoiled some good prospects and have made a bad impression. The French and Belgians prefer to deal direct with the principal or with his regularly constituted agent, who has authority as to terms and who is not merely looking out for his commission on the one proposition in hand.

There is, of course, a variety of light American machinery that can be handled to advantage through carefully selected French agents. Some of these are large mill supply houses carrying stock. American woodworking machinery is in demand, principally machinery for making interior finish and furniture, much of it being special. Projects for building flourmills in the French colonies may create a demand for the necessary machinery beyond that which can be supplied in Europe.

Forms New Axle Company

Within the next six months the Eaton Axle Co., Cleveland, will be established and it is hoped will be on an operating basis. The new company will be incorporated under the laws of the state of Ohio for $5,000,000 and construction soon will commence on a $1,000,000 building to be erected on a 15-acre site. J. O. Eaton, formerly president of the Torbensen Axle Co., Cleveland, which recently was purchased by Willys interests, is president of the new company and associated with him is V. V. Torbensen, one of the founders of the Torbensen Axle Co., and inventor of the internal gear principle for truck axles, and others formerly with the Torbensen company.

An initial 1-story building of the saw-tooth roof type, covering approximately 150,000 square feet, will be built. It will saw-tooth roof type, covering 150,000 square feet, will be built. It will provide for the daily production of 200 sets of beveled gear drive passenger car axles and 100 sets of internal gear truck axles operating in oil, the two types of axles to be produced by the Eaton company. Officials anticipate that the first year's production will comprise 30,000 sets of axles and predict that this output will reach 90,000 sets by the third year.

Rails Are Wanted

Sexton & Popham, Paris, are in the market for 35 kilometers of 60 centimeter portable rails with steel ties, the weight to be 9 kilos, 500 grammes per meter. This firm also is in the market for five steel locomotives of 60 centimeter gage, and of 5 to 10 tons capacity. It has no objections to purchasing second hand equipment, if not too old, and if in first-class condition. This business will be handled by George L. Sexton of Sexton & Popham, who is located temporarily at 288 East Milwaukee avenue, Detroit, Mich.

Wire Co. is Chartered

Capitalized at $1,500,000, the Washburn Wire Co., Providence, R. I., recently was incorporated. The company for several years has been carrying on business at Phillipsdale, R. I., and it is understood the new capitalization is the forerunner of plant extensions. The present plants of the company are engaged in the manufacture of iron and steel wire, and for some time have been unable to meet the demand. Incorporators are, Albert R. Palmer, Madison, N. J.; Frank R. Searles, East Orange, N. J., and George F. Handle, New York.

Addresses Foundrymen

At the regular monthly meeting of the New England Foundrymen's association, held Wednesday, Dec. 10, Frank B. Gilbreth, consulting engineer of Providence, R. I., spoke on "What Industry Must do to Allay Unrest and How it Must be Done." Mr. Gilbreth is an advocate of scientific foundry management and motion study work and his talk, which was illustrated, touched largely upon efficiency of workers in performing their every day operations. Some of the points he emphasized were greater conveniences for employes to cut down fatigue; instruction in proper method of handling work in order to reduce effort, and to increase speed; and payment based on production. The paper aroused a great deal of interest and was roundly discussed by those present.

Decline of German Casting Industry Revealed

(*Special Correspondence*)

London, Nov. 28.—How lack of fuel and other factors have paralyzed the German castings industry is graphically illustrated in statistics on the production of castings in Germany for the past three years, which have recently become available through the provisions of the treaty of peace. The statement, given out by the peace conference in Paris, does not mention what classes of castings are included, but from the quantities shown evidently all kinds of cast products have been lumped together, including steel, iron, brass and other nonferrous metal castings, together with possibly some ingots. The figures by months are as follows, in metric tons:

	1917	1918	1919
January	1,082,797	933,570	506,185
February	943,547	892,788	475,586
March	1,104,653	1,039,092	558,788
April	1,131,620	1,084,601	439,975
May	1,198,171	1,184,794	524,986
June	1,124,998	1,182,415	531,632
July	1,190,014	1,179,947	580,819
August	1,185,963	1,155,084	568,785
September	1,119,635	1,105,366	531,167
October	1,076,222	1,057,920	.....
November	1,007,731	565,706	.....
December	976,891	481,308	.....
Total for 9 months	10,081,407	9,757,657	4,717,923
Total for the year	13,142,241	11,862,621	.....

Starts Employes' School

The Clinton Wright Wire Co., Worcester, Mass., has started a school for the use of its employes. Attendance is optional and English, reading, writing and arithmetic will be taught. The initial enrollment was 70 men representing five nationalities. The teachers have so far been taken from the staff of the different departments of the company and the plan is to give over certain sessions to discussion of technical questions in connection with the company's work.

Corporation Expands at Duluth

More Land is Acquired and Preparations are Made for Construction of Two New Mills and Extension of Industrial Town of Morgan Park—New Budget to Include $5,000,000 For Part of Program Outlined By Judge Gary

Special Correspondence of The Iron Trade Review

DULUTH, Dec. 15.—Important developments are coming about in connection with the expansion of the United States Steel Corp.'s subsidiaries at Duluth. A semiofficial announcement was made recently that appropriations are to be made in the corporation's next budget for $5,000,000 to be expended in carrying through a part of the program outlined by Judge E. H. Gary, chairman of the corporation, in October, 1918. This includes two plants for the manufacture of finished steel products, the conversion of the rail mill and the installation of machinery for the manufacture of another line of products, and the extension of the Minnesota Steel Co.'s model town at Morgan Park for the housing of employes. Work on the conversion of the rail mill is progressing, and preparations are being made to start construction on the other plants. The cement block plant at the Minnesota Steel Co.'s property at Spirit Lake is now manufacturing blocks to be used in the construction of new buildings.

The Minnesota Steel Co. had more than 1360 acres of ground available for industrial purposes but recently purchased 20 additional acres at Spirit Lake and also 80 acres, to be diverted from the northerly half of the first division of Morgan Park. A contract has just been let for the building of a 500-foot addition to the coal dock and negotiations are proceeding for the purchase of another parcel of property to be used in extending the yardage at Spirit Lake available for the company's transfer railroad. A deal for the purchase of another block of 160 acres also is pending and may be closed soon.

Further interesting industrial developments are foreshadowed by the acquisition by the Duluth Corrugating & Roofing Co., a subsidiary of the Marshall-Wells Co., of three blocks of property in the vicinity of its plant at Ironton. This includes property formerly occupied by the Thompson Furniture Co., together with a 3-story brick factory building, besides 50 acres taken over from A. C. Volk. It is understood that the land acquired is to be utilized for industries to be established during the coming year.

Plan Defeat of Ore Tax

Progress is being made by the commercial and mining interests in range towns in the campaign to combat the agitation in the southern part of the state for a tonnage tax on ore. All the towns were represented at a recent organization meeting in Eveleth. It is understood that speakers will be sent into southern Minnesota towns to explain the position of the mining interests, and the damage that would result if the proposed measure is passed.

Regarding current operations on the ranges, it has been announced by officials of the Oliver Iron Mining Co. that a force of approximately 12,000 miners will be employed at its various mines in the Lake Superior district during the winter months in development work, and in stockpiling ore from underground properties. In addition to its regular program, the company will open up two new mines this winter, the Sweeney in the Hibbing district and the Wellington near Chisholm. At the latter mine, a new 8 x 20-foot three-compartment concrete shaft will be put down.

M. A. Hanna & Co. propose to continue stockpiling during the winter at all their underground mines and stripping work will be carried along at their La Rue and Wakefield open pits.

The Shenango Furnace Co. has included in its winter program development and stockpiling at its Tioga mine near Chisholm, and the stripping contract is expected to be completed at its Webb mine this month. It is estimated that a total of 3,300,000 cubic yards of overburden will have been removed at the latter property.

Despite the decrease in operations at manganiferous mines on the Cuyuna range during the past season, shipments of ore from that range made a much better showing than expected. They aggregated 1,819,935 tons as compared with 2,478,000 tons in 1918 and 2,422,864 tons in 1917.

The Phoenix iron mine on the Vermilion range has been taken over by the Phoenix Mining Co. from the Vermilion & Extension Co. The mine has been freed of water, and nonbessemer ore is being mined, three shifts of men now being employed.

Independent operators are anxious to see ore prices for 1920 fixed as early as possible in order they may be able to make their arrangements for the year's operations. They contend that as a result of high costs of labor and advanced freight rates they found it almost impossible to operate at a profit during the past year.

Shipbuilders Expect Future Business

INDEPENDENT of whether the government continues its ship construction program or not, America's shipbuilding industry is beginning to prove that it is here to stay, according to a bulletin issued by the Atlantic Coast Shipbuilders' association, and the frequently expressed belief that the great organization built up during the war would dwindle to prewar proportions with the return to peace conditions is not borne out by actual developments.

Despite labor difficulties, high costs, official restrictions and wholesale suspensions and cancellations of government contracts, the shipyards are today in a stronger position than ever before, says the bulletin. Although only a few months have elapsed since American shipyards became free to accept orders for private account, there are already on the ways and under construction more than 550,000 gross tons of merchant shipping. This amount is exclusive of all government work, and includes no wooden steamers or sailing vessels of any kind, being confined to steel vessels. With the addition of contracts placed, but upon which work has not been started, it is probable that the shipyards of the country have orders for almost

1,000,000 gross tons of ocean-going vessels.

These figures are unmistakable evidence of the belief of business in the efficiency of American shipyards and of confidence in the future of the American merchant marine. The confidence of the shipbuilding industry itself is shown by the fact that in a number of cases the yards have taken over ships upon which the government had canceled contracts and will complete them.

To appreciate the expansion of merchant shipbuilding facilities it is only necessary to compare the present position with that existing before the war. Figures for June 30, 1914, show that at that time the total of all classes of ships building in the United States was only 148,000 gross tons. Today one American concern alone is constructing for private account 20,000 tons more than all the shipyards of the country in 1914 and the present total is nearly four times the prewar aggregate. Construction on the ways today represents 200,000 more gross tons than a month ago. It is of interest to note that present construction is practically 100 per cent American, only one of the 118 vessels now building being for foreign account. American yards are now in a position to bid for foreign business. On the basis of present quotations British prices are slightly lower than American, but the difference is a little more than 10 per cent and is diminishing, while the yards of America are in a position to offer much quicker deliveries and produce in quantities.

Summaries prepared from the official classification records of the American bureau of shipping and Lloyd's Register show that of the 550,000 tons of steel steamers being constructed, only 36,300 tons are being built by the yards of the Pacific coast and Great Lakes districts, the remainder, or over 93 per cent, being in Atlantic coast and gulf yards.

While half of the vessels under construction are freighters, the growing demand for tankers is shown in the number of ships of this type being built. Further contracts for oil-carrying vessels are looked for, as the shipping board has decided to sell none of this type.

Ships now being built include: Freighters, 59. tankers, 34; trawlers, 11; fruit steamers, 6; oil barges, 2; ore carriers, 2; harbor scows, 2; motor vessels, 1; barges, 1; totaling 118.

The greatest amount of tonnage building for one concern consists of 14 freighters, aggregating 108,710 gross tons being built for the United States Steel Corp. by the Federal Shipbuilding Co. The Standard Oil Co. is adding six tankers to its fleet, aggregating 51,650 tons and an oil barge of 995 tons. The Standard Transport Co. is securing seven tankers aggregating 50,400 tons. Other tanker orders under way include four for the Gulf Refining Co., four for the Panamerican Petroleum & Transport Co., three for the Vacuum Oil Co., five for the Atlantic, Gulf & West Indies Steamship Co., one for W. R. Grace & Co., two for the Sun Co. and one for the Texas Co. Five trawlers are being built for the East Coast Fisheries Co.

The largest volume of work under way for private account is at the yards of the Federal Shipbuilding Co., which, in addition to the 14 steel freighters for the United States Steel Corp. is turning out five tankers, of 10,000 gross tons each, for various accounts and two freighters for the Freeport Sulphur Co., the total involved being 168,090 tons. The Bethlehem Steel Corp. is building two ore carriers and seven tankers, aggregating 94,193 tons. At the yards of the Sun Shipbuilding Co. there are being constructed eight tankers and a freighter, totaling 61,345 tons.

Terminals Firm Elects

W. D. Nesbitt, Birmingham, Ala., well known warehouseman, has been elected president and treasurer of the Port of Birmingham, Inc., and R. A. Brown, vice president and treasurer. This concern is constructing terminals at Short Creek, on the Warrior river and the work is being rushed in the hope of being able to handle some traffic within a month. The Tennessee Coal, Iron & Railroad Co. is making its second shipment of steel shapes for the Chickasaw Shipbuilding & Car Co. down the Warrior river to Mobile, rail being used to Tuscaloosa. When the terminals at Short Creek are completed movements will be direct from the Birmingham district.

To Rebuild Furnace

Arthur G. McKee & Co., Cleveland, have been awarded the contract for redesigning and rebuilding the blast furnace plant of the Wharton Steel Co., Wharton, N. J. The work will consist of remodeling and enlarging the two existing stacks and installing new equipment necessary to modernize the plant in all respects.

This makes a total of four blast furnace plants in eastern Pennsylvania being reconstructed at present by this firm of engineers and contractors, the other plants being the Crane Iron Works, Catasauqua, Pa.; the Thomas Iron Co., Hokendauqua, Pa., and the Eastern Steel Co., Pottstown, Pa.

The Weirton Steel Co., Weirton, W. Va., also has placed a contract with the McKee company for equipping their existing furnace with a revolving stock distributor, which makes a total of 112 distributors of this type now operating or under construction.

Plant Taxed by City

The Paterson, N. J., board of finance has ruled that the American Locomotive Co. must pay to the city $25,000, representing taxes due on 47 locomotives which were built by the company in its Cooke plant in Paterson for the Imperial Russian government. The locomotives which are valued at $500,000, were completed in 1917, dismantled and placed in cases for shipment to Russia. Lack of ships and changes in the Russian government made it impossible to move the locomotives so that they remained at Paterson. Last year, a tax of $11,000 was levied against the locomotives but was not collected. This year the taxes amounted to $14,000. Representatives of the American Locomotive Co., the Russian embassy and the Paterson chamber of commerce endeavored in vain to have the charges canceled.

Holds Annual Dinner

The annual dinner for the superintendents, foremen and office force of the Cumberland plant of the N. & G. Taylor Co., Philadelphia, was held on Nov. 22 at the Fort Cumberland hotel, Cumberland, Md.

The table was set in the form of a capital "T", and 31 men were present, representing all departments of the plant. During the course of the dinner a number of entertainment features were introduced, and addresses were made by L. Leslie Helmer, general manager, John Read, superintendent of tin house, Dan Williams, superintendent of open hearth department, E. W. Shinn, chief engineer, Isaac Berman, metallurgist, and Hollinshead N. Taylor, president of the company.

The Antigo Tractor Co., Antigo, Wis., has contracted with the Murray-Mylrea Machine Co., also of Antigo, to build its haulage machines pending the completion of its new machine shop. The tractor company is incorporated for $500,000. Its machine shop is expected to be completed by June 30, 1920.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE Toledo Steel Products Co., Toledo, O., until recently the Lewis Steel Products Co., will move from its present location on Detroit avenue to its new plant on Summit street and the Maumee river, about Jan. 1. The institution is the outgrowth of a small business organized in the early days of the automotive industry by George Lewis, pioneer manufacturer of poppet valves. Later the Lewis Electric Welding Co. was merged with the Lewis Foundry Co., and the two became the Lewis Steel Products Co. In January, 1919, Mr. Lewis disposed of the business to A. R. Clas, who until that time had been in charge of the management of the Falls Motors Corp. of Wisconsin. Mr. Clas has associated with him as assistant general manager J. George Lude, and as factory manager, W. B. Childs, both of whom also had been identified with the Falls Motor Corp. During the past year considerable additional equipment has been installed and production correspondingly increased.

Ground was broken Sept. 18 for a new plant and in it all possible operations will be automatic from the unloading of steel and iron to the weighing and counting of the finished product. The plant includes a foundry, power and boiler rooms, departments for cleaning, inspecting and annealing, a plant for threading and cutting steel and a machine shop including a tool, screw machine, grinder and inspection department. Restrooms, lockers, showers and restaurant are provided for employes. The buildings are of concrete, brick and steel construction, with steel sash on all sides and full length skylights over the two main units. The plant will have a capacity of 50,000 to 60,000 poppet valves daily. Since the company expects to continue to operate its night shift, much attention has been paid to the artificial lighting. Plans of the buildings were prepared by A. C. Clas of Milwaukee, and the A. Bentley & Sons Co., general contractors, Toledo, will be able to complete the entire structure in the record time of 100 days.

* * *

DEBEVOISE-ANDERSON CO., pig iron dealers, 53 State street, Boston, recently secured the exclusive New England agency for the Temple Iron Co., at Temple, Pa. C. A. Wyatt is New England manager.

* * *

THE Paul J. Kalman Co., Milwaukee, has taken the contract to furnish the reinforcing bars required for a 7-story brick and reinforced concrete stock house, 100 x 120 feet, for the Hummel & Downing Co., Milwaukee. The contract will require from 100 to 125 tons of bars.

* * *

THE Southington Mfg. Co., Southington, Conn., has just completed its government contracts, making small drop forgings for the navy, and will now resume the manufacture of its tool line. In one year three drop forges at the company's plant turned out 800,000 small forgings.

* * *

UNLOADING machinery for the port of Baltimore, recently was purchased from the Wellman-Seaver-Morgan Co., Cleveland, by the Western Maryland railroad. Exact details have not been divulged. The Wellman company has closed several large contracts recently including one with the Goodyear Co., of California.

* * *

INCORPORATED under the laws of the state of New York for $50,000, the Sterling Car Body Corp., with office at 1 West Thirty-fourth street, New York City, intends to build and equip a plant for the manufacture of special automobile bodies a little later on. Ultimately the company plans to produce a complete car. S. W. Woodruff is president, D. H. Fessenden, vice president, and C. E. Lussenhop, secretary and treasurer.

* * *

THE officers and directors of the Morgan Spring Co., Worcester, Mass., resigned at a meeting of the stockholders, Dec. 2, on account of the taking over of the business by the Clinton-Wright Wire Co. The resignations of the following officers and directors were accepted: President, Paul B. Morgan; vice president, assistant treasurer and clerk, Charles F. Morgan; treasurer and general manager, Evan F. Jones, who is now vice president and general manager of the Elyria Iron & Steel Co., Cleveland; directors, the foregoing and Jerome R. George, Rufus B. Fowler and A. J. Mahue, all of Worcester. The corporation will not be dissolved according to Harry W. Goddard, chairman of the board of directors, but will continue its corporate existence on account of ownership of patents and trademarks which will continue to be used by the Clinton-Wright Wire Co.

* * *

IN ITS new location, 60 Mt. Elliott avenue, Detroit, the American Boiler Works, now is ready to produce smoke stacks, boilers, tanks, and other sheet metal products. Established 10 years ago, the business steadily has grown until its quarters at 2519 West Jefferson avenue became cramped and a larger plant was required. New and modern machinery has been installed at the new plant. Walter Burns and T. Johnson are the proprietors.

* * *

THE former Worcester, Mass., branch war factory of the United States Light & Heat Corp., Niagara Falls, N. Y., has been sold by the Boston district salvage board to the Foster associates, which owns the land. Negotiations for its occupancy are under way. The building, which was erected in 22 working days, was used during the war for the electroplating of booster adapters for gas shells, and is adapted for light manufacturing.

* * *

THE General Electric Co. has purchased the plant of the D. & W Fuse Co., Providence, R. I., and will use it to make small devices to supply the works of the company in various parts of the country. The company also has under consideration substantial additions to its other manufacturing plants. The General Electric Co. also recently purchased seven acres in Gloucester, Mass., a part of which was occupied by the Mead-Morrison Mfg. Co., East Boston, Mass., as a munition plant during the war, and will erect an 800-foot building.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

PROPERTY of the Mansfield Glass Co., Lockport, N. Y., was purchased recently by President A. H. Dittmer, of the Dittmer Gear & Mfg. Co., of that city. It is busily engaged razing the buildings on the site, which fronts Green and Grand streets, preparatory to erecting a new plant. The plant will be of steel, brick and concrete construction and will have a floor space of 22,000 square feet. The company will specialize in making automobile, truck and tractor transmissions, gears and shafts and the contract calls for completion by January next. One order for $60,000 worth of transmissions, gears, etc., already has been received from a prominent automobile manufacturer. Mr. Dittmer was identified with the Packard Motor Car Co., Detroit, as its railroad man for four years. He was employed three years in the production department of the Thomas Motor Car Co., Buffalo and for four years was secretary to the president and manager of the technical department of the Chalmers Motor Car Co., Detroit. He then became purchasing agent and director of production and purchases with the Covert Gear Co., Lockport, N. Y., a position which he filled for about three years. The Dittmer Gear & Mfg. Corp. is capitalized at $125,000. An outfit of gear cutting machinery and other equipment has been purchased. W. J. Riley is the company's efficiency engineer.

* * *

DELIVERY of rolling mill machinery has begun at the plant of the Newton Steel Co., at Newton Falls, O., according to a recent announcement of the company. The plant, while rated as eight mill, will have four roughing mills in addition to other equipment. It will be operated throughout by electricity and is expected to be turning out black plates by March 1 while it will be sometime later before finished steel is produced.

* * *

THE Norton Co., Worcester, Mass., manufacturer of abrasives and grinding machines has received word from Germany that its manufacturing plant near Cologne again is back under the Norton control. This branch plant was established some years before the outbreak of hostilities but since the war no news concerning it had reached the Worcester management until a few days ago when its return was reported by European Manager John Sigel.

* * *

THE International Motor Co., 252 West Sixty-fourth street, New York, has bought the large plant of the Wright-Martin Aircraft Corp., at New Brunswick, N. J. Huge numbers of airplane engines were produced at this plant during the war. Prior to its acquisition by the Wright-Martin interests, it had belonged to the Simplex Automobile Co. It comprises a huge machine shop, gray iron and brass foundries and other departments. The Wright-Martin Aircraft Corp. plans to build a new aircraft manufacturing plant near Newark, N. J.

* * *

ONE of the interesting contracts recently closed by the Erie Crucible Steel Co., Erie, Pa., was for a large quantity of high speed steel for the United States navy, to be used at the naval ordnance plant at Charleston, W. Va. The award followed a test made at the Philadelphia navy yard where 18 different brands of steel were entered, three of which were favorably passed upon, namely those made by the Erie Crucible Steel Co., the Carpenter Steel Co., Reading, Pa., and the Crucible Steel Co. of America. All samples were heat-treated, 0.40 to 0.50 carbon, 3½ per cent nickel steel forgings. The cutting speed was about 65 feet per minute, the cut, $\frac{3}{16}$-inch deep and the feed was 0.044-inch per revolution. Each tool was run until the edge was burned off.

* * *

TRANSFER of the property and business of the Whiteley Malleable Castings Co., Muncie, Ind., to the Muncie Malleable Foundry Co., Muncie, was accomplished on Nov. 29, and the new owners took possession Dec. 1. Since the organization of the new company has not been perfected, the names of the probable directors have not been announced. However, most of the men interested in the new company are malleable iron men who reside in Michigan, although a considerable block of the stock is held in Muncie. The negotiations for the new owners of the Whiteley plant were conducted by J. N. Klock, manager of the Benton Harbor Malleable Foundry Co., Benton Harbor, Mich. The plant of the Whiteley Steel Co. is not affected by the transaction and will be operated by its present owners. J. Lloyd Kimbrough, of Muncie, largely is interested in the new Muncie Malleable Foundry Co.

* * *

A FIRM to be known as Elliott Norton & Co. is in process of incorporation to engage in import and export trade with mid European countries, primarily Poland, Cecho-Slovakia, Roumania and Greece, Elliott Norton, Cleveland industrial engineer, has announced. The company will be similar to the American International Corp. The new company has headquarters in New York, with offices at 506 Sincere building. European headquarters are about to be opened in Warsaw and Prague, Mr. Norton said. The company will sell tools, automobiles, automobile accessories, railway supplies, agricultural implements, tractors, machine tools, tires, clothing and shoes in Europe.

* * *

PROGRESS is being made by the Link Belt Co., Chicago, toward completion of furnace buildings Nos. 7 and 8 at its Belmont foundry, Indianapolis. For the present, however, only furnace No. 7, of 15 tons capacity, instead of 10 tons like the present furnaces, will be installed. Purchases are being made of the necessary machinery such as tumbling mills, sand blast and other foundry equipment, sufficient to take care of the additional capacity. These improvements are housed in a building, 70 x 400 feet, and when finished it will complete the foundry as originally laid out. This Indianapolis foundry produces malleable iron chains for elevating conveying and power transmission purposes.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

SCHEDULED to be the last word in modern foundries in the world and the equivalent in size and output of any in the world, the plant to be erected in Beloit, Wis., next year by Fairbanks, Morse & Co., will contain 495,000 square feet of floor space. It will be 500 feet wide by 900 feet long. The structure, including storage of flasks, iron, sand, etc., will be under one roof and will cover 11 acres of ground. It will be located north of the company's present power house, bordering the River road. An ultimate daily capacity of 350 to 400 tons of gray iron is contemplated which will mean the addition of a like number in other departments to take care of the increased production that will result. Plans and specifications rapidly are nearing completion, the raw material for construction work is being placed on the ground and work will commence as soon as open weather appears. Approximately $1,500,000 will be expended.

Every protection for the safety and health of employes and all modern and scientific foundry devices will be incorporated. Electric cranes will carry raw material to and from the cupolas. Electric grab buckets will unload molding and core sand as well as coke. Electric magnets will be utilized to remove the pig iron from the cars. Electric cranes and conveyors will carry molten metal from cupola to molds for castings weighing from a few ounces up to 10,000 pounds.

* * *

AN ADDITION to its plant at 930 Loughborough avenue, St. Louis, is being built by the St. Louis Machine Tool Co. This will practically double the capacity of this plant which specializes in grinding, polishing and tapping machines. The enlargement which was made necessary by the increasing demand will give the company about 13,000 square feet additional floor space.

* * *

THE McClintic-Marshall Co., Pittsburgh, has added further to its land holdings in the vicinity of Leetsdale and Ambridge, Pa., having just concluded a deal for 15 acres at Fair Oaks station on the Fort Wayne railroad. The property adjoins some bought by the company a year ago and also the holdings of the American Bridge Co. As far as can be learned the company plans no immediate improvements on the property.

* * *

ONE of the largest sales in the Hyde Park manufacturing district of Greater Boston was made recently to the Crowfoot Gear Works, Inc., Chicago. The property includes a large modern manufacturing plant formerly used by the Mason Regulator Co., Dorchester, Mass. It is the intention of the gear manufacturer to make extensive improvements which will result in making the plant one of the most modern of its kind in this section of the country.

* * *

ERWIN A. MORSE, president of the Groton Iron Works, Groton, Conn., announces the new United States Steamship Co., which his father, Charles W. Morse, and some associates recently organized, has arranged with the Emergency Fleet corporation to purchase as fast as completed, the vessels built at the Groton yard. The Groton Iron works, which is a subsidiary, proposes to regain control of the yard and to build ships for the new company. Mr. Morse says the latter proposes to raise sufficient money to pay all claims against the Groton Iron Works, to ask for the discharge of the two receivers now operating the plant.

* * *

STOCKHOLDERS of the Ohio Blower Co., Cleveland, have approved the changing of the name of the concern to the Ohio Body & Blower Co., which company has been incorporated under Ohio laws with a capitalization of 110,000 shares of no par common stock. The company has called for redemption at $105 a share the $400,000 preferred stock of the old company and $404,400 of common stock $100 par value was exchanged on a basis of five shares of new for one of the old. The company was organized 15 years ago, beginning the manufacture of ventilators and blowers of various sorts. Later it began the production of automobile hoods and other parts and finally it took up the manufacture of automobile bodies. Officers and directors of the company are: President, D. K. Swartwout; vice president and treasurer, H. H. Lind; secretary, W. E. Clement.

* * *

FIRE recently damaged the manufacturing departments of the Marchant Calcuga Machine Co., Oakland, Cal., and the accompanying loss was estimated to be heavy. It is believed that the fire originated in the heating plant. R. H. Marchant, president, stated that a fireproof vault had safely preserved the special dies needed in the manufacture of new machinery. Operations accordingly were resumed as soon as the damage was repaired.

* * *

THE Sheet Steel Products Co., Bryan, O., capitalized at $200,000 has acquired property one-half mile east of Michigan City, Ind., which formerly was owned by the Granite Brick Co. A force of men now are remodeling the building, 80 x 300 feet, making it a 2-story structure. The company manufactures pressed steel parts for automobiles and trucks and expects to commence operations in its new location in January, 1920, with a force of 200 men, which later will be increased.

* * *

TO INCREASE its facilities to supply the widespread demand for its products, the Van Dorn Electric Tool Co., Cleveland, has completed an additional 4-story plant affording 30,000 more square feet of floor space. This plant is devoted to the manufacture of portable electric drills, reamers and grinders, which are finding a growing use among shipbuilders and automobile manufacturers. Holes up to 2 inches in diameter may be drilled in iron or steel. All parts of the machines from the motors to the cutting of the gears, through the tempering and grinding processes to an accuracy within 0.00025 of an inch, are made complete in the Van Dorn plant.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JAMES H. GROSE, who is expected to resign as general superintendent of the Carnegie Steel Co. in the Youngstown district and is mentioned as the probable successor of William A. Thomas who recently resigned as president of the Brier Hill Steel Co., has enjoyed an extended, practical experience in the iron and steel industry. He also has won for himself the distinction of having risen from the position of a laborer for his first connection being with the old Morris Bridge Co. of Haselton, O. Mr. Grose was born in Michigan, but moved with has parents to Youngstown, O., when a boy. As a young man he entered the employ of the Morris Bridge Co., as a laborer and advanced to the position of machinist. Thrown out of employment when the plant of that company was destroyed by fire in 1887, he went to the Homestead, Pa., works of the Carnegie Steel Co. as foreman in the bridge department. For the next 25 years he was attached to the company's plants in and about Pittsburgh, being successively, superintendent of the structural mills at Homestead, head of the Schoen Steel Wheel works at McKees Rocks, Pa., and then superintendent of the Howard Axle works at West Homestead, Pa. In the summer of 1912, he was transferred to the Ohio works of the company at Youngstown, O., as superintendent of the mills and furnaces of that works and on Jan. 1, 1916, was made general superintendent of the Carnegie plants in the Youngstown district. In this capacity, the construction of the town of McDonald and the Carnegie mills there came under his general supervision.

Donald S. Michelsen is the new geneneral manager of the Worcester Pressed Steel Co., Worcester, Mass.

Harrison Loring, formerly purchasing agent of the Virginia Shipbuilding Corp., Alexandria, Va., has resigned. He is succeeded by H. C. Russel.

W. B. Ragatz, of the Union Carbide Co., is to be works manager for the Farmers Standard Carbide Co., Freydenburgh Falls, N. Y.

Samuel Stoneham, general superintendent of the Union Steel Casting Co., Boston, has resigned and the office temporarily is being filled by Vice President A. F. S. Blackwood.

Harry Connors is directing the operation of the foundry of the Pennsylvania Iron & Steel Products Co., Ellwood City, Pa., which recently resumed activity.

Charles Herrick, for the past 20 years superintendent of the Twin Bluffs plant of the National Fireproofing Co., La Salle, Ill., has been transferred to Hobart, Ind., to take charge of the company's plant.

M. M. Drake, formerly sales manager for the Deeming-Endsley Co., Chicago, now is manager of the railway supply division of the Pierce Co., Kansas City, Mo., with office in the Transportation building, Chicago.

James R. Conrad, who since 1914 has been associated with the Truscon Steel Co., Youngstown, O., sailed recently for Singapore where he will represent his company through the United Engineers, Ltd. Mr. Conrad's territory will include Siam and the Malay peninsula.

B. Frank Hiestand, who as noted in the Dec. 4 issue of THE IRON TRADE REVIEW, recently was elected vice president of the Pulaski Iron Co., Philadelphia, also is president of the Marietta Casting Co., Marietta, Pa.; president of the Exchange National bank of that city and senior member of the lumber firm of B. F. Hiestand & Sons, Marietta.

Don F. Kennedy, Detroit, manufacturers' agent, who for the past four years has been Detroit district sales manager of the Hammond Steel Co., Inc.; Syracuse, N. Y., has taken the agency for Michigan and Toledo, O., of the Towmotor Co., Cleveland, manufacturer of gasoline industrial tractors for use in and about manufacturing plants.

R. E. Talley, chief engineer of the electric furnace department of the George J. Hagen Co., Pittsburgh, will present a paper at a joint meeting of the Pittsburgh chapter of the American Steel Treaters society and the Steel Treating Research society to be held Monday evening, Dec. 22, at Hotel Chatham, Pittsburgh. Mr. Talley's subject will be, "Electric Heat Treating Furnaces."

Col. F. M. Dorsey was elected chairman of the Cleveland section, American Chemical society, at the chapter's annual meeting in Cleveland. Other officers elected are: Vice chairman, Dr. W. O. Tower; secretary and treasurer, W. R. Mott; L. C. Drefahl, Hippolyte Gruener, A. W. Smith and George Oenslager, counsellors, and H. D. Batchelor, W. M. Clark, R. D. Landrum, Hugo Schapiro and A. W. Smith, board of managers.

Howard M. Davis, superintendent of the sheet mills of the Gary, Ind., plant of the American Sheet & Tin Plate Co., has resigned to become general superintendent of the Newport Rolling Mill Co., Newport, Ky. His resignation is effective Jan. 1, 1920. Mr. Davis went to Gary nine years ago, coming from Scottdale, Pa., while the Gary mills were under construction, and has been in charge since that time.

George S. Vail, sales manager for Arthur G. McKee & Co., Cleveland, engineers and contractors, sailed from New York, recently, for England, where he will spend several months on business for his company in connection with the installation of modern blast furnace and steel plant equipment. Mr. Vail was accompanied by George Garrett who will establish an office and remain in England permanently as the English representative of Arthur G. McKee & Co.

Louis J. Krom, who has been managing editor of *The Metal Industry* for the past 11 years, has resigned to take a position as works manager of the new rolling mill of the West Virginia Metal Products Corp., Fairmount, W. Va. Mr. Krom is a graduate of Lehigh university and for 10 years was in the rolling mill industry at Waterbury, Conn., being one of the first chemists employed by a rolling mill of that city. Adolph Bregman, the new managing editor of *The Metal Industry*, is a graduate of the Colorado School of Mines, where he specialized in metallurgy. In his profession of metallurgical engineer he made a study of metallurgical furnaces.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

GEORGE A. STEVENSON has been appointed manager of the recently established London office at 3 St. James place, London, England, of Victor E. Karminski & Co., Inc., 291-295 Broadway, New York City, international iron and steel merchants. Mr. Stevenson also is opening an office for his company at Eagle Chambers, Adelaide street, Swansea, South Wales. He is a native of America and is well known in the steel trade of this country as well as of England. For four years he was connected with Richard Thomas & Co., Llanelly, South Wales, manufacturers of tin plate, and for three years subsequently was with the Pemberton Tin Plate Co., Llanelly, manufacturer of circles, black sheets and tin plate. He later had charge of the metal department of the Asiatic Petroleum Co., London. Mr. Stevenson is the son of Edwin Stevenson who is said to be the first man to introduce tin plate in the United States. He brought out black sheets and tinned them in Elizabethport, N. J., but because of natural gas possibilities dismantled the Elizabethport plant and removed it to Gas City, N. J.

Ernest W. Pelton, mechanical engineer, for the past 16 years connected with the Stanley Works, New Britain, Conn., has been made manufacturing superintendent of the hardware factory. He will retain supervision of the electrical and power, as well as the engineering, mechanical and transportation departments.

Allan A. Ryan, formerly vice president of the Stromberg Carburetor Co. of America, New York City, recently was elected chairman of the board of directors. J. P. Coffin, who recently was elected to the board to fill the vacancy resulting from the resignation of H. C. Stutz, was named to succeed Mr. Ryan as vice president.

D. S. Devor, who for many years has been works manager of the Olds Motor Works, Lansing, Mich., recently was made manager of the Elizabeth, N. J., plant of the Willys Corp. His assistant is Frank H. Schuman, who until recently was superintendent of the plant of the Buick Motor Co., Flint, Mich. F. Sergardi has been appointed chief engineer of the Willys Corp. plant.

George D. Farnham, formerly power and heating engineer for Westinghouse, Church, Kerr & Co., New York, has become chief engineer of the power and heating department of the McCann-Harrison Co., Sloan building, Cleveland, engineer and contractor. J. J. Scales, formerly assistant chief engineer of the American Shop Equipment Co., has become chief engineer of the McCann-Harrison Co.'s industrial furnace department.

Frederick C. Van Derhoof, formerly general manager of the automobile department of the Standard Steel Car Co., Butler, Pa., resigned recently to organize the Bacon Motors Corp., New Castle, Pa., of which he has been made president. Other officers follow: F. W. Bacon, New Castle, vice president; George N. Glass, Pittsburgh, secretary, and E. C. Hopkins, New Castle, treasurer. H. L. Archey, of Philadelphia, has been named sales manager.

Carl Edward Johansson, scientist and inventor of Sweden has been touring in this country recently and last week visited the plants of the National Acme Co. and the Warner & Swasey Co., Cleveland, as the guest of the Cleveland Engineering society. Mr. Johansson claims to have perfected a gaging system of an accuracy never before attained. Educated in America, Mr. Johansson returned to Sweden 35 years ago and began the development of his gaging system while a toolmaker in the Swedish arsenal.

John H. Allison has joined the Pittsburgh sales engineering department of the Celite Products Co., New York, producer of insulating products. Mr. Allison is a graduate of the mechanical engineering department of the University of Pittsburgh and has been associated with the Crucible Steel Co. of America, Pittsburgh Valve Foundry & Construction Co., Pierce-Arrow Motor Car Co., Model Engine Co., Pittsburgh; American Brake-Shoe & Foundry Co., Erie, Pa., and the Pittsburgh Bridge & Iron Co.

W. E. Fisher, of St. John, N. B., recently re-elected chairman of the maritime branch of the Canadian Manufacturers' association, is president of the Enterprise Foundry Co., Sackville, N. B., and vice president of the Enterprise Hardware Co., Sackville, and Emerson & Fisher, Ltd., St. John. He is a past president of the St. John Hardware association and of the maritime board of trade and has filled other prominent positions in the commercial organizations of the province.

Charles J. Fancher, formerly assistant to the factory manager of the Hart & Hegeman Mfg. Co., Hartford, Conn., has accepted the position as head of the engineering department of the National Machine Co., Brattleboro, Vt.

Clinton B. Lamson has resigned his position with Swan & Finch Co., Providence, R. I., and has purchased the Providence Oil Co. The new concern will be known as the Lamson Oil Co. and will manufacture a full line of lubricating oils and greases.

Leopold Tschirky, has resigned as assistant purchasing agent of the Bethlehem Steel Co., Bethlehem, Pa., to become connected with the General Refractories Co., Philadelphia. Upon his graduation from Cornell university in 1912, Mr. Tschirky went to the Bethlehem company, where he worked for a period in the machine shops and transportation department, being transferred in December, 1914, to the purchasing department, in charge of the purchase of all raw materials, machine tool, mill, industrial and electrical equipment, as well as all construction and construction

H. H. Harris has been appointed manager for the heat-treating equipment department of the Quigley Furnace Specialties Co., 26 Cortlandt street, New York. Mr. Harris has devoted several years to the practical application of materials for heat-treating purposes, especially to steel mixtures and special alloys for carbonizing and annealing boxes, cyanide pots, etc. In his new connection he will give special advisory service to users of heat-treating equipment. Mr. Harris was formerly general sales manager for the Swedish Crucible Steel Co.

Will Erect Large Joint Plant at Toronto

The Canadian National Carbon Co., Ltd., and the Prest-O-Lite Co. of Canada, Ltd., jointly have purchased 10 acres at Bathurst and Davenport roads, Toronto, Ont., as a site for a large manufacturing plant. The plant, to be erected at once will be the largest manufacturing establisment erected in Toronto for several years and will consist of two buildings, one of which will be 80 x 400 feet, three stories with one section 80 x 80 feet, three stories, to be occupied by the Canadian National Carbon Co., while the second building for the Prest-O-Lite Co. will be 80 x 400 feet, two stories. The heating plant will be housed in a separate structure, 50 x 60 feet, and will have room for installation of additional boilers. All buildings will be of reinforced concrete frame, flat slab floors, mushroom type columns on 25 centers, steel sash and brick curtain walls. Each building will have two freight elevators. All toilet accommodations and stairways will be contained in towers erected outside of buildings.

Special rest rooms for female employes, shower baths, a dispensary with competent medical attendant; restaurant with modern, equipped kitchen, etc., will be provided.

It is expected that the plant will be ready for occupancy in May, 1920. At present the two companies are operating five plants at different locations in Toronto. In addition to this plant the Prest-O-Lite company will erect in the spring, a new acetylene gas plant in Toronto or immediate vicinity, to take care of the greatly increased demand for compressed gas for welding and cutting and that a large new storage battery warehouse and assembly plant will be erected at Winnipeg.

Lake Huron Steel Corp. Buys Plant Site

Purchase of 1.147 acres in the Indian reservation adjoining Sarnia, Ont., as a site for its proposed steel plant, has been made by the Lake Huron Steel Corp., recently organized by Detroit and Canadian capitalists with an authorized capital of $15,000,000. The Indians are said to have been paid $200,000 for the land, which will be developed immediately and building operations put under way. It is expected the company will produce alloy steel for the Canadian and United States motor industries. The company, when first organized, planned to build at Goderich, Ont., but this plan has apparently been abandoned. Those identified with the corporation include, S. A. Howard, 1834 Dime Bank building, Detroit; G. H. McCreath, of Goderich, Ont., and others.

Obituaries

MYER M. KANN, secretary and treasurer of the Pittsburgh Crushed Steel Co., died at his home in Pittsburgh, Dec. 10. Mr. Kann, who also was president of Harrison Bros., Inc., Amesbury, Mass., and a director of the Specialty Device Co., Cincinnati, and of the National Abrasive Co., Boston, was born in Pittsburgh, Sept. 2, 1857, and made his home in that city throughout his entire life. He was a member of the American Foundrymen's association, the American Society of Mining Engineers, the Pittsburgh chamber of commerce, and several of the Jewish charitable and philanthropic organizations.

H. S. Waterman, sales manager for the Hutchins Car Roofing Co., Detroit, died in that city, Dec. 1, after a 10-day illness.

John H. D. Smith, for 30 years treasurer of the Boston Belting Co., died at his home in that city, Dec. 9, following a short illness, aged 83 years.

Charles M. Hart, 67, head of the Hart Bros. Machine Works, Clarksburg, W. Va., and a prominent figure in the financial and business affairs of that city, died at his home there on Dec. 3.

William H. Crawford, for many years head of Crawford & Co., Worcester, Mass., new and second hand machinery, manufacturers' mill supplies, etc., now the Brierly-Lombard Co., died at his home in that city, Dec. 4, aged 79 years.

Frederic P. Stearns, Boston, widely known engineer, who was a member of the board of consulting engineers of the Panama canal, died at his home in that city, Dec. 1, aged 68 years. His plans were followed largely in the development of the Boston metropolitan water and sewerage systems.

Daniel Williams, 67, superintendent of of the open-hearth furnaces of the plant of the N. & G. Taylor Co., Cumberland, Md., died at the Western Maryland hospital, Dec. 9. Mr. Williams was a native of Wales but came to this country 28 years ago and had been connected with the N. & G. Taylor Co. for the past 17 years.

Stephen P. Brown, civil engineer, who recently resigned as vice president of Ford, Bacon & Davis, New York City, was drowned Dec. 6, at Sebec Lake, Dover, Me. Mr. Brown aided in the construction of the Pennsylvania terminal, New York, and had charge of the work of constructing the Canadian Northern railroad terminal in Montreal.

John Slote, aged 77, died Dec. 3 at his home in Buffalo, after a short illness. Mr. Slote was a member of the Delaney Forge & Iron Co., that city, for about 40 years and for many years was acting head of the business. He was born in April, 1842, and at the age of 20, entered the firm of W. L. Comstock & Co. One year later, he organized the firm of Wippert & Slote, furriers. In 1866, he became a member of the Delaney Forge Co., with which he was associated until his death.

Charles A. Moore, superintending engineer of a crucible company in Jersey City, N. J., consulting engineer of a graphite company in New York, and superintendent of building and equipment of the St. George Navigation Co., died recently at his home in Jersey City. Mr. Moore, who built the first refrigerating plant in the Panama canal zone, was connected with the Brooklyn Rapid Transit Co. nine years as chief engineer and was chief engineer of the Western Electric Co., New York, for five years.

Edward Zelleken, retired Joplin mine operator and one of the pioneers of the district, died at his home in Joplin recently. He was 80 years old. Mr. Zelleken came to this district from Cincinnati in the early '70s, locating in Baxter Springs, Kans., where he operated a brewery for a number of years. He came to Joplin about 1880, and became widely interested in mines, among them being the Galena Lead & Zinc Co. at Galena, Kans. Besides being a stockholder in the Miners bank, he owned a large amount of valuable property. His philanthropic activities, in which he gave liberally to various charities, were well known.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

J. O. EATON, formerly president of the Torbenson Axle Co., Cleveland, now is president and general manager of the Eaton Axle Co., that city, which is being organized to manufacture truck and automobile axles. V. V. Torbenson, one of the founders of the Torbensen company and inventor of the internal gear principle for truck axles, is affiliated with Mr. Eaton in the new enterprise.

Robert A. Weinhardt recently joined the engineering staff of the Supreme Motors Co., Warren, O.

Seymour A. Spencer has resigned as assistant purchasing agent of the Graton & Knight Mfg. Co., Worcester, Mass.

William A. Kuhnly has been appointed manager of the Martin branch of the Horton Mfg. Co., Bristol, Conn., which it has taken over in Rockville, Conn.

Herbert H. Dean recently was elected vice president of the Buffalo & Susquehanna Coal & Coke Co., Buffalo.

L. D. Stanton has been placed in charge of the Detroit district sales office, 459 Book building, recently established by the Sizer Forge Co., 244 Larkin street, Buffalo.

Louis Selmi, chief chemist, and Samuel Agnew, chief engineer, of the McKinney Steel Co., Cleveland, were injured in an automobile accident at Cleveland, Dec. 8.

R. H. Combs, who has been general manager of the Prest-o-Lite Co. of Canada for several years, recently was appointed general manager for the Canadian National Carbon Co.

Howard Morrill, a Boston engineer, has been appointed assistant agent of the Pepperell Mfg. Co., Biddeford, Me., of which his father, Ernest L. Morrill is agent. He will begin his duties Feb. 1.

Jomes A. Crotty, of the legal department of the American Steel & Wire Co., Worcester, Mass., and E. Kent Swift, of the Whitin Machine Works, Whitinsville, Mass., have been elected vice presidents of the Worcester county council, National Safety council, with headquarters in Worcester, Mass.

A. L. Pschaiden, of Detroit, has been appointed assistant production engineer of the newly organized Reynolds Motor Truck Co. which began operation in its new plant at Mt. Clemens, Mich., recently.

Ernest E. Whitney, an engineer, who formerly lived in Orange, Mass., has been placed in charge of the maintenance department of 27 plants of the American Can Co., with headquarters in New York.

J. B. Shickel of Howell, Mich., has joined Maj. I. H. Case of the Ohio Machine & Motor Co., American Trust building, Cleveland, Ohio distributor of lathes, presses and other machinery and a line of electric motors.

W. Wood Smith, for the past six years sales manager for the Stafford Co., Readville, Mass., builder of textile machinery, has resigned to join the executive force of the Manchester Co., Woonsocket, R. I.

Charles Nourse has severed his connection with the Heald Machine Co., Worcester, Mass., where he had charge of the engineering department, to accept a position with the Lombard Machine Co., that city. Victor Bergstrom succeeds him.

C. Sterling Bailey, who for several years has been assistant advertising manager of the Peerless Motor Car Co., Cleveland, has been placed in charge of the department, succeeding George E. Twitmyer, who recently became sales manager of the Stevens-Duryea organization.

Frank H. Wheaton has been made manager of the Cleveland headquarters of the Walcott Lathe Co., Jackson, Mich. Display rooms recently were opened at 1316 Ontario street, Cleveland, where the company's lathes, shapers, duplex die sinkers and cherrying cutters are shown.

Robert Kimber, formerly representative of the Firth Sterling Steel Co., McKeesport, Pa., in its Hudson river, Brooklyn and Long Island, N. Y. territory, has been appointed eastern sales representative of the Le Moyne Steel Co., with offices at room 1800 Church street, New York.

L. E. Bixler, purchasing agent for the U. S. Metal Goods Co., Cleveland, manufacturer of automobile parts and replacement parts for Ford cars, also formerly purchasing agent for Service Motor Supply Co., has resigned to accept a position with Fackers' Machinery & Equipment Co., Chicago.

Samuel T. Hobbs, sales manager of the lock washer department of the Hobbs Mfg. Co., Hartford, Conn., has resigned to engage in the independent manufacture of lock washers. He has in contemplation the organization of the Hobbs Lock Washer Co. However, the question of the use of that particular name is in dispute.

J. H. Drury, treasurer of the Union Twist Drill Co., Athol, Mass., and the new vice president of the O. S. Walker Co., Worcester, Mass., has been elected a director of the Merchants National bank of Worcester. Mr. Drury is a member of the executive committee of the Associated Industries of Massachusetts.

Clarence E. Mason, who for several years has acted in an official capacity in the sales department of the Graton & Knight Mfg. Co., Worcester, Mass., with which company he was identified more than 26 years, is now associated with the Warren Belting Co. of that city, in which he has acquired a financial interest.

M. J. Butler, managing director of Armstrong & Whitworth of Canada, Montreal, has retired from active business and now is living at Oakville, Ont. Mr. Butler was deputy minister and chief engineer of the Canadian department of railways and canals from 1905 to 1910, when he resigned to take the position of second vice president and general manager of the Dominion Steel Corp. In 1912 he came to Montreal to organize the Canadian branch of Armstrong & Whitworth which began operations in December, 1914, and rendered important service during the period of the war. Mr. Butler was created a C. M. G., by the imperial government for his efficient services in the railway department and has also received the title of L. L. D. He is a native of Deseronto, Ont.

Exchange Still Absorbs Interest

Violent Fluctuations Compare With Confusion of International Finance at Outbreak of the War in 1914—Stocks Continue Weak Also—British Steel Firm Discloses Peace Plans—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

THE extraordinary exhibition of the foreign exchange markets continues to hold the center of the financial stage. So violent and drastic have the fluctuations become in recent weeks that some observers have been led to compare the situation with the chaotic upheaval which took place in the foreign exchanges upon the outbreak of the war in 1914. Those who hold this view believe that the result will be identical with what it was after 1914, namely "such a positive adjustment of international finance and trade to the new conditions that the immediate problem will very soon assume a new and intelligible shape."

Months ago the question of foreign exchange stepped forth from its moth-eaten academic seclusion and became recognized as a vital factor in America's future prosperity. Never has this realization been impressed upon American business men with such telling emphasis as last week when the pound sterling fell to around $3.65 or a discount of 24 per cent. In England's worst period during the Napoleonic wars the discount of the pound never went below a discount of 21 per cent.

Out of the discussion which has been stirred up by the exchange situation two schools of thought have grown up. One believes that the necessities of Europe are so overwhelmingly urgent that even the tremendous barriers of the depreciated exchanges will not suffice to curtail American export of cotton, food, many iron and steel products and machinery to the needy nations across the Atlantic. The other school is certain that exports are on the brink of a precipitate decline induced by the utter inability of European buyers to continue paying American prices and the excessive exchange premium in addition.

Exports Great Despite Obstacle

Thus far those who think Europe will be compelled to buy apparently are being sustained by the facts. American exports continue enormous despite the exchange barrier. England during one recent month imported from this country as much cotton as was taken in three months previously. Throwing of the bills representing these sales upon the market was in a large measure responsible for the alarming break in sterling exchange. Of the allies only England's and Belgium's imports from America are increasing. France and Italy are slowing down in their buying here vastly. The fact that England and Belgium are purchasing raw materials here harmonizes with reports that industries in those countries are rapidly regaining their normal stride. Belgium plants that were not destroyed are said to be running from 70 to 90 per cent of normal. England is increasing exports and cutting imports and restoration of her trade and financial equilibrium is in sight.

Sir George Paish the great British economist and financial adviser to the British government last week predicted an utter credit collapse in Europe if America does not ratify the treaty and hasten to the rescue with generous loans. In making the recommendation for an immediate grant of credits Sir George overlooks an essential factor in Europe's extravagance. People and governments in a majority of the countries most needful of aid refuse to face the cold facts of the situation. Without increased taxation greater national economies and some effort in the direction of liquidation of the staggering war debt by the government harder work and increased production and sensible spending by the people, enormous credit extensions from America would only aggravate a deplorable situation.

The stock market has been adversely affected by the sharp fall of the exchanges, although tight money, and the uncertainty surrounding the railroad situation have contributed to the hesitation in share quotations. Last week's increase in rediscount rates on government paper collateral announced by the federal reserve bank of New York was believed to have been directed at commodity speculation and hoarding rather than stock speculation. The former move of the reserve board early in November which was intended to prick the Wall street bubble has served its purpose well and the street has been remarkably subdued for a number of weeks. Brokers loans a month or more ago estimated as high as $2,000,000,000 are now not believed to be over $1,300,000,000, with overextended speculative borrowers weeded out and stocks held in stronger hands. With the credit situation respecting the share market well under control the reserve board is said to be turning its attention to commodity speculation which is a factor in inflated prices and the increased rate last week may be followed by another if no results are perceptible soon.

British Company Plans Great Expansion

(Staff Correspondence.)

London, Nov. 24.—At the recent annual meeting of the stockholders of Sir W. G. Armstrong, Whitworth & Co., Ltd., plans were outlined by J M. Falkner, chairman of the board of directors, for the issuance of 1,500,000 of ordinary shares and 1,500,000 of 6½ per cent third preference shares to take care of the vast peacetime expansion being undertaken by the concern. The company has successfully accomplished the adjustment of its business from a war basis, and is broadening its activities into many new fields to utilize the tremendous extension of its facilities necessitated by the war.

The company is now making iron and steel, locomotives, automobiles, machine tools and many other similar products and is one of the largest iron and steel and machinery companies in the world. Recently the company celebrated the conversion of its shell works at Scotswood to a locomotive manufacturing plant, by the official steaming and trial of the first locomotive completed of an order for 50 for the North Eastern railway. In picturing the company's present status and future prospects, Chairman Falkner said in part:

"Owing to the excessive amount of detail necessary to settle all claims for war work, it is impossible at this time to give an accounting of earnings and it will be some months before a

financial statement will be ready. However we are able to determine that, in spite of all the confusion and dislocation attendant upon an entire change of work, the present rate of dividend will be maintained for 1919 and probably for next year as well. In 1920 our peace work should be in full swing. We have no choice before us in these days of progress but to develop and develop again. We have, for various reasons, whether to control material of other makers or to find an outlet for material of our own, made several valuable alliances by which we have obtained control of other undertakings."

Chairman Falkner's inventory of the company's acquisitions include the Siddeley Deasy Motorcar Co., at Coverntry; the electrical works of Messrs. S. Crompton & Co., Ltd., Chelmsford; and the business of the construction engineers, of Messrs. A. & J. Main & Co., of Glasgow. In addition the company has large interests in Canada, Japan and Italy. The Canadian works are adapted for the production of tool steel, railway tires and other products. In the company's works at Manchester, Eng., elaborate extensions have been made including a new steel works. The company also has turned one portion of its war additions into a foundry while still another has been converted for the production of brass and aluminum castings of all sorts. Despite vast preparations for entering the peace markets of the world the company announces that it is maintaining a large staff of technical war experts who could convert the huge capacities back to war production at short notice if the emergency should arise again.

Passes Dividend

In order to maintain the company's financial position and fortify it against the uncertainties of the future the board of directors of the Charcoal Iron Co. of America, Detroit, has decided to pass the usual dividend on preferred stock, according to a statement of President F. W. Blair. In further explanation of the action, President Blair makes the following observations:

"In my letter of Nov. 12 last, I made mention of the unsettled business conditions which have confronted your company during the present year. Since that time the situation has been materially aggravated by the coal strike and its effect upon transportation facilities. This further manifested itself on Friday last when notice was received from the railroad administration of its inability to furnish train service sufficient to supply us with requisite raw materials. In view of the possibility that there will be no immediate betterment of the situation your board decided that ordinary business prudence demanded that the cash resources of the company be conserved to meet any contingency. This action in deferring payment of the preferred dividend will operate merely as a postponement of the dividend, which is cumulative. Your annual report will show that the earnings of the company for the year under the conditions we have faced, are satisfactory and the prospects for substantial improvement in 1920 are favorable."

To Make Auto Bodies

Incorporated under the laws of New York with $50,000 capital, the Sterling Car Body Corp., 1 West Thirty-fourth street, New York, plans to engage in the manufacture of special automobile bodies and at a later date may engage in the manufacture of a complete machine. The company plans to equip a plant for the manufacture of the bodies, been started. S. W. Woodruff is presibut as yet work on the project has not dent, D. H. Fessenden, vice president, and C. E. Lussenhop, secretary and treasurer.

To Issue Stock

Announcement is made that the Struthers Furnace Co., Struthers, O., is about to issue preferred stock to the amount of $1,250,000 which is to be offered at par. This is the first issue of the kind ever offered by the company, the stock having been closely held by W. C. Runyon and associates in Cleveland.

Financial Crop Ends

A SPECIAL meeting of the stockholders of Landers, Frary & Clark, New Britain, Conn., hardware and cutlery manufacturers, has been called for Jan. 6 to approve an increase in the capital stock from $5,000,000 to $6,000,000, par value $25. The corporation has no funded debt.

* * *

J. S. Holt & Co., Inc., Boston, builder of shoe machinery, has made an assignment for the benefit of its creditors of its machinery and tools to Michael F. Culliney.

* * *

The Southern California Iron & Steel Co., Los Angeles, has sold $500,000 first mortgage 6 per cent serial bonds. The company manufactures nuts and bolts.

* * *

For the six months ended Oct. 31 Gaston, Williams & Wigmore, New York, report a surplus after charges and taxes $10,572, bringing the total surplus up to $1,481,510. The chaotic condition of the foreign exchange markets, shipping dearth and the longshoremen's strike is reported to have seriously affected the company's earnings.

Strong Positi on

Shown By Coal-Tar Product s Due to Restricted Output

New York, Dec. 15.—Rest riction in coke production, due to the c oal shortage, and the sold-up conditio n of sellers are leading factors in the continued strength of the coal tar products market. Despite the str ong tone of the market again this week no further advances have been reported. Pure benzol is still held at 27 to 31 cents and 90 per cent at 23 to 25 cents. Toluol is quoted at 28 to 32 cents. These prices are for both spot and contract deliveries.

Owing to the deferred deli veries of benzol, few contract buyers a re in the market. However, there are a number of spot buyers, both fore ign and domestic, who are ready to snap up whatever odd lots of nearby material may be available. While the situation in toluol is not so tight, the market is strong, with a good demand and with prices tending upward.

Large quantities of naphthalin continue to be bought by the dye industry, and supplies are becoming scarce. This, however, has not affected prices. Naphthaline in balls is holding at 8½ to 9½ cents, and in flakes at 6½ to 7½ cents. Phenol is featureless, with government supplies being moved at the fixed price of 12 cents, f.o.b. eastern storehouses. Solvent naphtha is being bought in good quantities by the dye industry. For spot and contract delivery, this product is holding at 22 to 27 cents.

The contract market on sulphate of ammonia is nominal, owing to the sold-up position of sellers. Prices are tending upward, but are unchanged.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants

Pure benzol	$0.27 to .31
Toluol	.28 to .32
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake 0.06	½ to .07½
Naphthalin, balls 0.08	½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$3.85 to 4.00

Contract

Per Gallon at Producers' Plants

Pure benzol	$0.27 to .31
Toluol	.28 to .32
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalin, flake 0.06	½ to .07½
Naphthalin, balls 0.08	½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

Tension Relaxes in Tool Market

Easing of Conditions Accompanies Improvement in Labor Situation—Much Prospective Business in Evidence for January Closing—List of 200 Tools Out in East—Several Sizable Crane Purchases Made and Inquiries Pending

ACCOMPANYING the relaxed tension in labor circles, an improved condition is noted in machine tool centers. In some districts, particularly Cleveland and Pittsburgh, this improvement is more prospective than actual, with a large number of users disinclined to close on equipment requirements until after the holidays. With others, however, the desire is present to get orders booked for the earliest possible delivery, since many makers are unable to offer anything better than three to six months delivery. A few users are asking that their orders be held up until later; these include the Nash Motors Co., Milwaukee. The Cleveland Automobile Co., Cleveland, has issued specifications.

One of the largest lists in recent weeks is issued by the Wright Aeronautical Corp., New Brunswick, N. J., calling for 200 new or used tools. The General Electric Co., Schenectady, N. Y., issues no large individual lists, but puts out inquiries almost daily for its various plants. The Willys Corp., Elizabeth, N. J., is said to have bought $600,000 worth of machinery in recent weeks. The Hurley Machine Co., Chicago, asks for eight or 10 tools; the National Mold & Machine Works, Clarksburg, W. Va., wants five. Large lists are expected soon from the following: American La France Fire Engine Co., Elmira, N. Y., which is to build a truck plant at Bloomfield, N. J.; C. R. Curtis, Newark, N. J., with others, is to build a $400,000 automobile accessory plant; Eaton Axle Co., Cleveland, which will build a $1,000,000 plant.

Canadian users who have issued lists recently, include: The Fraser Brace Shipyards, Ltd., Montreal, 12; Canadian Ingersoll Rand Co., Sherbrooke, Ont., four; McKinnon Industries, St. Catharines, Ont., 10. Canadian machine tool prices have advanced 30 per cent and sellers are busy. Prospective business is heavy. Used and rebuilt machinery finds a ready market, since deliveries on new tools are deferred from three to six months.

Pittsburgh district crane sellers expect the award of 14, 12 and 22 cranes respectively by the Union Shipbuilding Co., Baltimore; Westinghouse Electric & Mfg. Co., Essington, Pa., and the Follansbee Bros. Co., Pittsburgh, for Toronto, O. Further east, cranes move in lots of one or two, several such sales being reported. John Simonds Co., Long Island City, N. Y., however, asks for quotations on three and the Youngstown Boiler & Tank Co., Youngstown, O., wants two. Phelps-Dodge Copper Co., Bisbee, Ariz., is expected to award 15 electric cranes soon and the Bethlehem Steel Co. has delayed action on 11 for Lebanon, Pa., and four for Sparrows Point, Md. One Ohio crane builder will withdraw all quotations on Dec. 31, which is taken to mean an increase on Jan. 1.

Cerro de Pasca Copper Co., New York, bought one crane for Peru; W. R. Grace & Co., New York, is inquiring for one for Brazil, and the Standard Oil Co. is inquiring for one for shipment to South America. An export inquiry current in Cleveland, calling for boring mills and vertical milling machines, is issued by Arva Stroud, 120 Liberty street, New York City, dealer in machine tools.

Wright Aeronautical Issues List of 200 Tools

FEATURING the eastern equipment market is an inquiry for approximately 200 miscellaneous machine tools for the Wright Aeronautical Corp., New Brunswick, N. J. The company contemplates buying either new or used equipment, which, according to reports, is to be installed in a new plant to be established some time in the near future. The General Electric Co., Schenectady, N. Y., while not bringing out large individual lists, continues to issue new inquiries almost daily for equipment for its various plants, including two new plants, reported recently, at Rochester, N. Y., and Decatur, Ind., for the production of light motors. At the same time, this company has been continually placing orders.

A large buyer of late has been the Willys Corp., Elizabeth, N. J., its purchases up to date aggregating about $600,000. Approximately $400,000 worth of this business went to an Ohio manufacturer of special machinery. The Otis Elevator Co., New York City, which has been in the market for additional equipment recently is expected to close at once on a substantial list. At present several other good-sized lists are pending which are likely to be closed soon.

Of interest to the eastern machine tool trade is the announcement that the American La France Fire Engine Co., Elmira, N. Y., will erect a plant at Bloomfield, N. J., where a 21-acre site has just been purchased. The plant will produce motor trucks. The initial unit, it is stated, will comprise 100,000 square feet of floor space. Another northern New Jersey project is that being fostered by C. R. Curtis, Newark, N. J., formerly manager of the Splitdorf Electric Co., for the manufacture of automobile accessories. Present plans call for the erection of a $400,000 plant, to be located at Newark.

Outstanding in the eastern crane market is a list of 12 cranes for the Willys Corp., Elizabeth, N. J. Specifications call for one 15-ton handpower crane, with 28-foot span; one 5-ton electric crane, with 59-foot span, to operate a grab bucket; one 10-ton electric crane, with 38-foot





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Prompt shipment from warehouse stock at Watervliet, N. Y.; Detroit, Mich.; Chicago, Ill.; or Cambridge, Mass., handled through our branch offices.

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span, and nine 5-ton cranes, with 58-foot span. One of the 5-ton cranes is to be equipped with a 1-ton monorail hoist, as an auxiliary.

Included in the awards of the past week is a 70-ton triple hoist electric crane for the Cerro de Pasco Copper Co., New York. This crane will be erected by the Alliance Machine Co., Alliance, O., for shipment to Peru. Dwight P. Robinson & Co., 61 Broadway, New York City, has placed a 50-ton overhead crane with the Niles-Bement-Pond Co., that city. The crane is to be installed in a new power house to be erected by the Pennsylvania Service corporation, near Philadelphia.

The Otis Elevator Co., New York, has bought a 10-ton electric crane, with 56-foot span, from the Bedford Foundry & Machine Co., Buffalo. This latter company has also received an order for a 20-ton electric crane, with 50-foot span, for the Acme Road Machinery Co., Frankfort, N. Y. The American Metal Co., 65 Broadway, New York City, placed a 25-ton handpower crane with 40-foot span, with the Whiting Foundry & Equipment Co., Harvey, Ill. The Smidth-Lewis Foundry, Inc., 50 Church street, New York, has placed a 5-ton, 3-motor crane, with the Pawling & Harnischfeger Co., Milwaukee. The order of the Sun Shipbuilding Co. recently reported as being placed with Pawling & Harnischfeger, involved one 15-ton crane, 76-foot span; and two 15-ton cranes and two 20-ton cranes, 112-foot span. James Stewart & Co., 30 Church street, New York City, has awarded a 2½-yard bucket handling crane, with 20-foot span and 90-foot hoist, with the Champion Engineering Co., Kenton, O. This crane is for installation in a power house at the new plant of the Standard Oil Co., in Toledo, O. This latter company also is inquiring for a crane for South America, now being in the market for a 5-ton electric crane with 25-foot span, for Compania Transcontinnial de Petrolco, South America. Among the few awards of locomotive cranes to be noted, is a 20-ton Browning crane, bought by Stone & Webster, Boston, for Jeannette, Pa.

Additional recent inquiries include three 3-ton overhead cranes, 48-foot span, for the John Simonds Co., Long Island City, N. Y. Westinghouse, Church, Kerr & Co., 37 Wall street, New York City, are engineers in charge. The bureau of yards and docks will close bids Dec. 23 on three traveling hammerhead cranes for Norfolk. The cranes are to have a capacity of 5 tons at one stage of operation and 10 tons at another. A 5-ton locomotive tower crane is to be purchased for the Portsmouth navy yard. W. R. Grace & Co., 7 Hanover square, New York City, are inquiring for a 5-ton overhead crane for Brazil. The Youngstown Boiler & Tank Co., Youngstown, O., will install two 10-ton overhead cranes, which have been or are about to be placed.

The engineering department of the Phelps-Dodge Copper Co., at Bisbee, Ariz., has approved the award of the 15 electric cranes, for which that company has been in the market, to either one of two builders, and an announcement of the placing of this business is expected daily. Action on the cranes for the Union Shipbuilding Co., Baltimore, has been posponed, pending bids of additional crane builders. The Bethlehem Steel Co. continues in the market for its list of 15 overhead cranes, of which 11 are for Lebanon, Pa., and four for Sparrows Point, Md.

Fuel Shortage Slight Deterrent on Tool Buying

WHILE the uncertainties of operation on the part of machine tool users as the result of fuel shortage have been noted here and there in the Chicago district as a deterrent to further buying, the general situation has not been affected appreciably and the volume of business is as large as ever. At present larger buyers are not prominent, though the Samson Tractor Works, Janesville, Wis., has placed a little additional business. The Nash Motors Co. has asked some delay in delivery of some of its equipment as a result of delay in building operations at its Milwaukee plant. Another recent buyer asked March delivery for his equipment as his plant will not be ready until then. The Hurley Machine Co., Chicago, is inquiring for eight or 10 miscellaneous tools.

Among railways uncertainty still exists and the Chicago, Burlington & Quincy railroad is the only one showing signs of closing on long-dormant inquiries. Shipments of machinery for Belgium are about completed at the government machinery depot in Chicago and domestic buyers now have hope of something being done for them. Builders of roadmaking machinery, mining equipment and all branches of the automotive industry are most active. Deliveries continue to be extended and do not improve.

Cleveland Sellers in Midst of Apparent Lull

DISSOLVING labor disturbances has brought an improved tone in the Cleveland machine tool and equipment market. The ending of the coal strike with its consequent removal of fuel restrictions has made it unnecessary for makers' plants to shut down hence production will not be greatly curtailed. Several users, however, are disinclined to place their orders and will not until after Jan. 1, 1920. It is thought the apparent lull which exists at present will continue until well along after the first of the year. A few, however, who realize that even though they place orders now, deliveries cannot be had until the end of the first quarter and in some cases later, are negotiating for their requirements. This is true of the Cleveland Automobile Co., Cleveland, which has specifications out on some equipment to be purchased direct and delivered beginning in March, 1920. This company also is endeavoring to obtain some slab millers through the parent company, the Chandler Motor Car Co., Cleveland. The Foot-Burte Machine Co., that city, has started to place orders for the cranes for its new plant, having purchased two or three 10-ton machines the past week. This company likewise is understood to have received bids on a tentative list of machine tools. Engineers are busy lining up the plant's possible requirements and these will be purchased in small lots from time to time as needed.

At present, a large number of hammer inquiries are finding their way to Cleveland dealers. These average three or four a day and cover one or two hammers of varying weights. Large lists are absent but smaller inquiries continue to be received in fair number. The U. S. Copper Products Corp., Cleveland, is in the market for a bar and billet shear. The National Mold & Machine Works, Clarksburg, W. Va., is in the market for five machines as follows: One 20-inch geared head engine lathe with turret and carriage; two 18-inch geared head engine lathes with regular equipment; one 6 x 6-inch power hack saw and one 20-inch power band saw. The Cleveland Metal Products Co., Cleveland, is understood to have closed on a press, filling its present requirements. The International Steel Tie Co., Cleveland, is receiving shipment on hammers ordered last October. The Carthage Foundry & Machine Works, Carthage, Mo., wants a new or second hand grinder suitable for flour mill rolls from 6 to 16 inches in diameter and up to 36 inches long. P. H. Bridge, Troy, O., is looking for a complete foundry and equipment, including a 10-ton crane. The Swenson

Rolling Mill Jim Does His Christmas Shopping Early.



Say, Fellas—

I had to look around a bit; couldn't use them HUBBARD ROLLS for Christmas presents; but when it comes to rollin' any derned kind of metal, why you can't beat 'em.

HUBBARD rolls are good rolls.

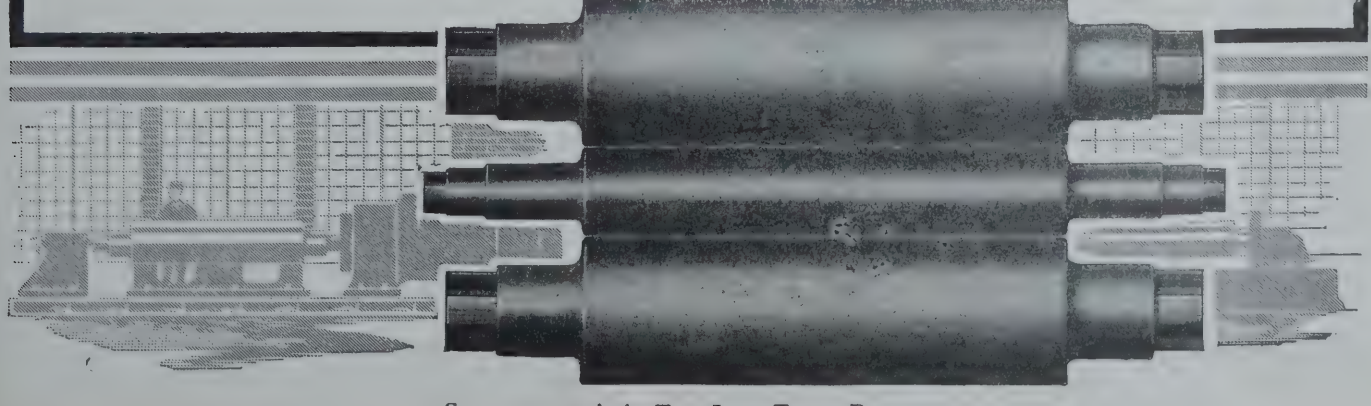
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings.



Say you saw it in THE IRON TRADE REVIEW

Evaporator Co., 945 Monadnock building, Chicago, will buy new or second hand foundry equipment in good condition for a gray iron foundry to be erected in northern Indiana. It will buy equipment for castings up to two tons, with a cupola of 5 or 10-ton capacity.

An interesting inquiry is current in Cleveland for export shipment. Arva Stroud, 120 Liberty street, New York City, has foreign clients who desire to purchase some used 48 or 52-inch boring mills and some model C Becker vertical milling machines with rotary tables.

While it is understood that the Eaton Axle Co., organized by former officials of the Torbenson Axle Co., which was recently purchased by Willys interests, has acquired a plant, it is anticipated that the new company will have extensive machine tool and equipment needs, since the initial unit of the plant will be valued at $1,000,000. The Eaton company will be incorporated with a capital of $5,000,000, and will produce two types of axles for passenger cars and trucks, respectively.

Projects which give promise of developing some interesting machine tool and equipment needs, include: Machine shops for the Summit Mold & Machine Co., Akron, O.; Advance Pump & Compressor Co., Battle Creek, Mich.; General Engineering Co., Alpena, Mich.; A. F. Oliver Gear & Machinery Co., Buffalo; new buildings for Thomas Steiner, 1499 Townsend avenue, Detroit, who has organized the Continental Trailer Corp.; American Gear & Mfg. Co., Jackson, Mich.; Vaille-Kimes Co., Dayton, O., to manufacture pumps; Michigan Crankshaft Co., Saginaw, Mich.; Enamel Products Co., Cleveland; Cameron Tool Co., Moundsville, W. Va.; and the Auer Register Co., 403 Long avenue, Cleveland, to build at East Thirty-seventh street and Payne avenue; additions for the Edmunds & Jones Corp., Detroit, manufacturer of automobile lamps; American Radiator Co., and the Stewart Motor Machinery Co., Buffalo; and the Erie Motor Car Co., Painesville, O., is to complete a building started before the war.

Several new tractor companies are about to enter the market for equipment. This include the Mackey Truck & Tractor Co., Akron, O.; Franklin Tractor Co., Greenville, O., branch of plant at Franklin, O.; Dayton Tractor Co., Dayton, O., formed by B. A. Brenneman with a capital of $250,000; Ground Hog Tractor Co., Holly, Mich., C. F. Megrow, president, capitalized at $250,000.

The Welver Piston Ring Co., Toledo, O., has increased its capital from $20,000 to $100,000 for purposes of expansion. The Jorgenson Mfg. Co., Waupaca, Mich., has increased capital from $70,000 to $3,500,000 and half of the new issue will be expended on new buildings and machinery. The Cree Drop Forge Co., Utica, O., is to engage in business at Newark, O. It recently purchased a hammer from a Cleveland seller. Engineer Charles F. Schultz, Cleveland, has charge of buying $35,000 worth of machinery for Wooster, O., waterworks.

Pittsburgh Seller's Prospects Are Good

PROSPECTIVE business in machinery and tools in the Pittsburgh district still is better than the actual, but this condition finds no reflection in plant activities, which still are brisk, though restricted here and there by a scarcity of raw materials. Tool builders are not inclined to become concerned over the fact that bookings are not heavier. They have so much business in drills, planers, lathes and milling machines that the best average delivery dates are three to four months ahead, while in some lines, six months is as early as deliveries are being promised. No big lists of machine tools recently have come out, but steady demands are being made for individual machines and such sales constitute a fairly large aggregate.

Some builders of cranes can take on more business for fairly early delivery, but as a number of them are unable either to make or buy sufficient supplies of steel castings, the work on hand is taking much longer to complete than otherwise would be the case.

The crane list of the Union Shipbuilding Co., Baltimore, which has gone out calls for 14 overheads of varying sizes, while that for the new turbine plant of the Westinghouse Electric & Mfg. Co. at Essington, Pa., calls for 12, eight of 10 tons and less and two 30-ton cranes with 5-ton auxiliary and two 50-ton cranes, also with 5-ton auxiliary. Both of these contracts will be let through this market. Nothing yet has been done on the crane requirements for the new plant of the Follansbee Bros. Co. at Toronto, O., which calls for 22 cranes in all.

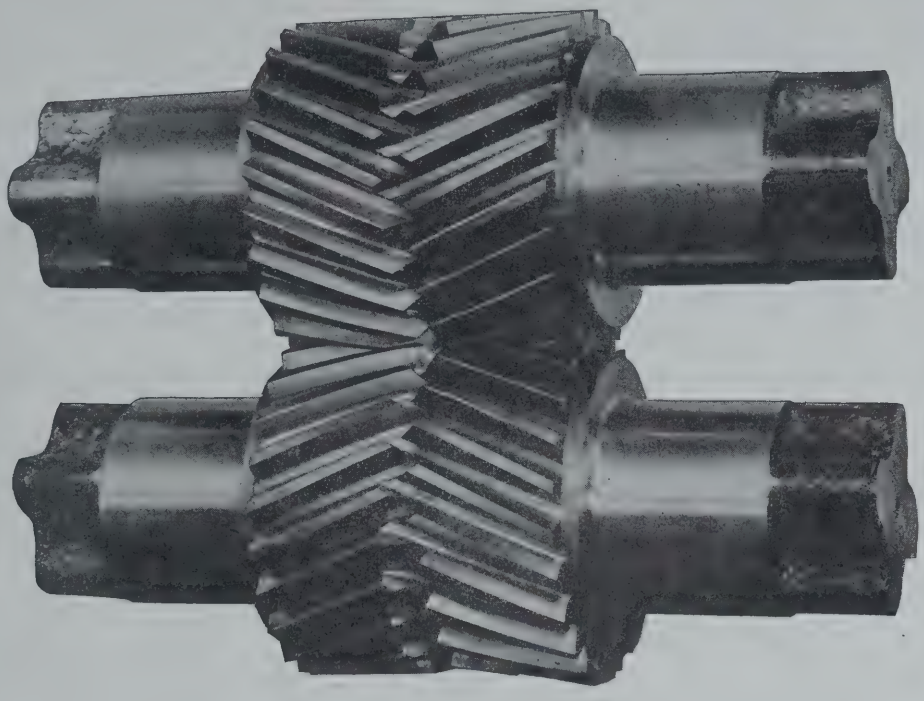
As far as prices are concerned the market is showing sustained strength in all directions and recently a large Ohio crane builder sent out notice that the prices named against inquiries would be withdrawn on Dec. 31. This move, it is understood, is preparatory to a substantial advance made necessary by the big advance in the past few months in pig iron and other producing costs. If this action is taken by other makers, prompt closing of a number of orders is likely. It is reported that makers of steel and alloy rolls soon will announce the restoration of the prices in effect on Jan. 1, last, which would mean an increase of approximately 20 per cent over present prices.

Canadian Sellers Busy; Look for More Business in 1920

CESSATION of orders for machinery and machine tools is not apparent in the Canadian market. In fact, some dealers state, orders are coming in better than has been the case for some time and greatly increased business is anticipated after Jan. 1. In a few cases deliveries are being made more freely, but many dealers are unable to promise some new tools for delivery inside of six months. Price advances in the United States are reflected here and instead of only taking a slight increase a jump of about 30 per cent is made, chiefly due to the present high rate of exchange and duties. Dealers also are raising prices of rebuilt equipment and because of slow delivery on new tools a splendid demand is noted for second hand lines.

The Fraser Brace Shipyards, Ltd., 83 Craig street west, Montreal, inquired for the following equipment recently: One oil-heated angle iron furnace, one plate-bending roll; two vertical punching machines; six plate-punching tables; two single-headed shears; one horizontal punching machine; three radial countersinking machines; one angle iron cutting machine and an emery wheel. The Canadian Ingersoll-Rand Co., Sherbrooke, Que., is asking for quotations on one 10 x 20-foot planer; one 16 x 24-foot vertical extension boring mill; one 7-foot radial drill and one floor type boring mill with 6-inch spindle. The McKinnon Industries, Ltd., St. Catharines, Ont., are in the market for seven 14-inch engine lathes, and three 20 to 26-inch drill presses. Edward Neville, 130 Ontario street, Toronto, Ont., is in the market for a set of 48-inch sheet metal rolls. The Canadian Buttons, Ltd., 922 Visitation street, Montreal, Que., desires information on equipment for proposed factory. The Engineering Service, Ltd., 233 St. James street, Montreal, Que., is asking for prices on contractors' machinery and equipment.

Nearly every line of machinery and tools is in demand, and with the present government programs going through there is sure to be a greater number of requirements to be filled for equipment for public works early



MILL PINIONS

MADE FROM

Open Hearth Steel Castings

We own and operate one of the largest steel foundries in the West, making castings from 1 to 100,000 pounds.

THE FALK COMPANY

MILWAUKEE, WIS.

AGENTS: Pittsburgh—W. O. Beyer, 1007 Park Bldg. New York—M. P. Fillingham, 50 Church St. Wilkes-Barre—Vulcan Iron Works. Denver—Denver Engineering Works. San Francisco—F. W. Grimwood, Rialto Bldg.

in 1920. T. L. Church, chairman of the board of control, Toronto, Ont., is receiving bids until Feb. 10, 1920, for one or more 16,000,000 to 20,000,000-gallon centrifugal pumps for installation in the main pumping station. John T. Reid town clerk, Campbellton, N. B., is in the market for a direct connected, electric driven, 600-gallon per minute centrifugal pump, against 150 pounds pressure; also one motor, 220 volts, 60-cycle. The Toronto Lock Mfg. Co., Patterson place, Toronto, Ont., is in the market for a high speed ¼-inch riveter.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

KITTERY, ME.—The Boston Maritime Corp. has been formed with a capital of $2,000,000 to engage in shipbuilding and branches. The incorporators are Harry W. Foster, George E. Burnham and Elmer J. Burnham.

PORTLAND, ME.—The Sanward-Cooper, Inc., has been incorporated to make iron, steel, copper, etc., with $10,000 capital, by F. W. Hinckley, F. E. Tarr and George Hinckley.

WINDSOR, VT.—The National Acme Co., Cleveland, will build a stock house and other buildings, at an aggregate cost of $250,000.

BOSTON.—The Simpson Patent Dry Dock Co. has let a contract for an engine house and repair shop.

BOSTON.—The American Pattern, Model & Mfg. Co. recently was incorporated with $20,000 capital, by George W. Johnston, John A. Christie and George Remick.

BOSTON.—The Weber Carburetor Co. has been incorporated with $400,000 capital, by Harold E. Clarke, Worcester, Mass., James L. Doyle and George E. Richardson.

BOSTON.—The Tinsel Products Co. has been incorporated to make metal goods with $50,000 capital by William W. Bevan, Charles G. R. Hanson, Melrose, Mass., and D. R. Hanson.

BOSTON.—The F. L. Horton Corp. has been incorporated to manufacture machinery, hardware, etc., with $700,000 capital, by Charles E. Fay, Harold V. Tillson, Brockton, Mass., and Fred C. Fernald.

CAMBRIDGE, MASS.—Bids have closed for a 2-story, 110 x 150-foot plant for the Eco Mfg. Co. manufacturer of piston rings.

CAMBRIDGE, MASS.—The Dover Stamping & Mfg. Co. has had plans prepared for a storage building and garage, 80 x 80 feet, to cost $36,000.

CAMBRIDGE, MASS.—The New England Spark Intensifier Co. has been incorporated to make auto accessories, with $5000 capital by G. F. Farnum Jr., Thomas F. Carey and Frank A. Keaney.

CHELSEA, MASS.—The Standard Welding Co., Inc., has been incorporated with $1000 capital, by Fred Freedman, Philip Greenberg, East Boston, Mass., and L. Freedman.

DORCHESTER, MASS.—The Mason Regulator Co. will erect a large addition.

GLOUCESTER, MASS.—The General Electric Co., Schenectady, N. Y., has purchased a tract of land here and will erect a plant.

HYDE PARK, MASS.—The Crowfoot Gear Works, Inc., Chicago, has purchased the property belonging to the Mason Regulator Co. and will rearrange and enlarge the plant.

LYNN, MASS.—The Smith Iron Foundry Co., 31 Marshall Wharf, plans a plant addition.

SPRINGFIELD, MASS.—The Storms Drop Forgings Co. has been organized to carry on a drop forging business and five acres have been purchased as a site for a plant.

SPRINGFIELD, MASS.—The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has filed plans for an addition to cost $60,000. The building will be used for a punch shop.

TAUNTON, MASS.—Albert E. Lincoln will build a machine shop, 1-story, 40 x 150 feet.

TURNER FALLS, MASS.—The Martin Machine Co. recently was incorporated with $100,000 capital, by Frank J. Martin, Leon E. Turner and Waldo T. Ellis.

WALTHAM, MASS.—The Judson L. Thompson Mfg. Co., manufacturer of rivets, has started work on an addition, 50 x 100 feet.

WATERTOWN, MASS.—The Watertown Pressed Steel Co. recently was incorporated with $150,000 capital, by William H. MacDonald, Arthur E. Quilty, Newton, Mass., and William S. Murray, Somerville, Mass.

WESTFIELD, MASS.—Bids closed Dec. 15 for a 2-story, 40 x 80-foot addition to the plant of the Vitrified Wheel Co.

WILLIMANSETT, MASS.—B. F. Perkins & Son, Inc., Holyoke, Mass., machinery specialists, let a contract for a 22 x 121-foot press shop, which will be the forerunner of a large manufacturing plant to be built before spring. The building will cost $30,000.

WORCESTER, MASS.—The Simplex Player Action Co. has let a contract for a 4-story addition, to cost $100,000.

WORCESTER, MASS.—The Morgan Construction Co. has let a contract for an addition, 2-stories, 45 x 97 feet, to cost $25,000.

WORCESTER, MASS.—The Walden-Worcester, Inc., has let a contract for a second unit. The building will be 132 x 173 feet.

WORCESTER, MASS.—The Sanford Riley Stoker Co., Ltd., has purchased seven acres of the Worcester Machine Screw Co., on which it plans to erect a plant.

WORCESTER, MASS.—The G. M. C. Engineering Co. has been incorporated with $25,000 capital to manufacture and handle power equipment. The incorporators are John L. Gallivan, Frank Galvin and Lynwood M. Erskine.

HARTFORD, CONN.—The New England Mattress & Spring Co. has been incorporated with $25,000 capital, by Charles Weinstein, Joseph Rose and Daniel Davidson.

WATERBURY, CONN.—The American Chain Co. has had plans prepared for a plant, 100 x 128 feet, to cost $135,000.

North Atlantic States

NEW YORK.—The American Can Co. contemplates a new plant at Grand Rapids, Mich.

NEW YORK.—The Wilson Maulen, 781 East 142nd street, has had plans prepared for a plant.

NEW YORK.—The Gehnrich Indirect Heat Oven Co., 60 Franklin avenue, has had plans prepared for a garage building, one story, 75 x 100 feet.

NEW YORK.—The Consolidated Antique Brass Works, Inc., has been incorporated with $15,000 capital, by D. Ripp, L. Hoffman and D. Klein, 84 Avenue D.

NEW YORK.—The W. G. Knapp Watch Case Co., Inc., recently was incorporated with $50,000 capital, by F. H. Etches, G. W. Geiling, 52 Broadway, and T. Hartigan.

NEW YORK.—The Marco Bronze Co., lighting fixtures, etc., has been incorporated with $15,000 capital, by A. and M. G. Magui, and C. S. Rush, 521 Stone avenue, Brooklyn, N. Y.

NEW YORK.—Weymouth & Co., Inc., smeltig and refining ores, has been incorporated with $25,000 capital, by R. W. Weymouth, L. Weymouth and M. S. Brownold, 263 West Seventy-fifth street.

NORTH TONAWANDA, N. Y.—The Niagara Radiator & Boiler Co. plans a plant addition.

OSWEGO, N. Y.—The Sawyer Brass & Iron Foundry contemplates a foundry building at an estimated cost of $100,000.

ROCHESTER, N. Y.—The High Speed Hammer Co. plans an addition to its foundry, 55 x 82 feet.

ROCHESTER, N. Y.—The Galusha Stove Co. has had plans drawn for an addition to its foundry, 37 x 96 feet.

ROCHESTER, N. Y.—The Multipost Co., 69 Allen street, plans a plant, two stories, 30 x 67 feet, to cost $15,000.

ROCHESTER, N. Y.—The Co-operative Foundry Co. contemplates a storage building, one story, 34 x 140 feet, to cost $14,500.

EAST PITTSBURGH, PA.—The Westinghouse Electric & Mfg. Co. contemplates a plant addition.

ERIE, PA.—The General Electric Co. plans a machine shop.

MYERSTOWN, PA.—The McKneat Mfg. Co., iron and steel, has been incorporated with $6000 capital, by L. F. Krum and others.

PHILADELPHIA.—An $8000 factory addition is to be erected here by the Standard Dental Mfg. Co.

PITTSBURGH.—The Mine Safety Appliances Co. is reported planning a machine shop.

PITTSBURGH.—The Pittsburgh Knife & Forge Co. is reported planning a plant, one story, 60 x 450 feet, to cost $500,000.

PITTSBURGH.—The Hoffman Bergeber Mfg. Co. has been incorporated with $200,000 capital to manufacture machinery, etc., by Arthur L. Hoffman, Alwin Bergener, Herman Knoff, McKees Rocks, Pa., and others.

SHARON, PA.—The National Malleable Castings Co. will erect a steel plant, 100 x 300 feet.

YORK, PA.—The Road Machinery Co. plans a building, one story, 30 x 60 feet, to cost $10,000, and a boiler house, one story, 40 x 50 feet.

BLOOMFIELD, N. J.—A 21-acre site has been selected here by the American La France Car Engine Co. for a plant to make motor trucks. The first unit will contain 100,000 square feet.

CAMDEN, N. J.—The Delaware Shipbuilding & Repair Co. contemplates a machine shop, one story, 25 x 100 feet, to cost $50,000.

NEWARK, N. J.—The National Welding Co. will erect a 1-story, 40 x 95-foot factory addition.

NEWARK, N. J.—A 40 x 220-foot warehouse will be erected here by the Upson Walton Co., for the storage of wire.

NEWARK, N. J.—The United Tube Co. has been incorporated to manufacture metal tubing, radiators, manifolds, etc., with $20,000 capital.

NEWARK, N. J.—The Qualitoy Co. has purchased the property of the American Hammered Piston Ring Co. of Baltimore. The premises will be improved by a series of 1-story factory buildings.

NEWARK, N. J.—C. R. Curtis, formerly manager of the Splitdorf Electric Co., contemplates an 8-story factory building comprising 180,000 square feet. It will be used for the production of automobile accessories, and will cost approximately $400,000.

BEDFORD, VA.—The Bedford Iron & Steel Works, recently incorporated here, will erect a foundry and machine shop, according to a report. J. J. Scott is president.

RIVERTON, VA.—The Shenandoah Milling Co. plans a hydroelectric plant.

Central States Activity

CHIPPEWA FALLS, WIS.—The Yates & Johnson Co. is erecting a foundry and machine shop, 125 x 200 feet.

CLEVELAND, WIS.—The Cleveland Welding & Mfg. Co. is erecting a 1-story plant addition, 60 x 120 feet.

COLFA, WIS.—The Colfax Light & Power Co. will spend about $200,000 to increase the capacity of its hydroelectric plant.

GREEN BAY, WIS.—The Northern Corrugating Co. is having plans prepared for a second manufacturing unit two stories, 100 x 100 feet. H. W. Krueger is president.

JANESVILLE, WIS.—A new planing mill costing about $25,000 will be built and equipped with new machinery by the Fifield Lumber Co. The building will be 70 x 100 feet.

KENOSHA, WIS.—Eskil Lindstrand plans a machine shop and garage building, to cost $25,000.

KENOSHA, WIS.—Articles of incorporation have been filed by the Tri-Clover Machine Co., which will engage in a general machine shop and foundry business. Organizers of the company are, L. C. Thomsen, Thorwald Jensen and Ole Rasmussen. The company is capitalized at $30,000.

LACROSSE, WIS.—Articles of incorporation have been filed by the Linker Electric Co. with $25,000 capital. The company will manufacture, repair and deal in elctrical machinery and quipmnt. John L., Philip and Emma Linker ar the incorporators.

LACROSSE, WIS.—The Trane Co., Detroit, manufacturer of vacuum heating systems, has a site here on which it plans to erect a branch plant, two stories, 62 x 80 feet, to be equipped for the manufacture of radiator traps, centrifugal pumps, etc.

LOMIRA, WIS.—The Lomira Furniture Mfg. Co. has started work on a woodworking plant, 50 x 140 feet, and a dry kiln, 42 x 42 feet. Machinery is being purchased. Albert Sterr is president.

MARINETTE, WIS.—The Victory Bag & Paper Co. will erect a 2-story mill addition, 100 x 100 feet, and will install new special machinery, tank equipment and devices for the making of paper and paper bags. A. M. Parevia is general manager.

MARSHFIELD, WIS.—The Felker Bros. Mfg. Co. contemplate a 1-story plant addition, 75 x 150 feet, to be equipped for the manufacture of steel culverts and metal barn equipment. About $50,000 will be expended.

MENASHA, WIS.—The Whitmore Foundry & Machine Co. has let contracts for a plant addition, 60 x 126 feet. A craneway will run the length of the building.

MILWAUKEE.—The W. F. Seaman Co., 480 Virginia street, contemplates a plant, to cost $50,000.

MILWAUKEE.—The Milwaukee Auto Engine & Supply Co. will start work soon on a plant, one story, 120 x 120 feet.

MILWAUKEE.—The Mueller & Son Co. will electrify its entire drive by the installation of a large generator and 65 motors of various sizes.

MILWAUKEE.—Articles of incorporation have been filed by the Sterling Tool & Mfg. Co. The company is capitalized at $25,000 and will manufacture machinery. The incorporators are E. G. Patek, Harry R. Kuntz and Louis Wiener.

OSHKOSH, WIS.—The Wisconsin Parts Co. has broken ground for a 1-story plant addition, 30 x 240 feet, to be equipped with milling machines, boring mills, lathes, grinders, etc., for which contracts are now being placed.

RACINE, WIS.—The Hamilton-Beach Mfg. Co. is having plans prepared for a 3-story plant addition, 60 x 400 feet, to cost $135,000.

SHULLSBURG, WIS.—The M. & P. Mining Co. has been incorporated with $50,000 capital to do prospecting and mining of lead, zinc, spelter, etc., in southwestern Wisconsin. George S. Huxtable, R. W. Blackstone and R. A. Fox are the incorporators.

WEST BEND, WIS.—The West Bend Aluminum Co. contemplates a plant addition.

BAY CITY, MICH.—The American Road Machinery Co. will erect a plant, 50 x 200 feet, and a foundry on a 90-acre site.

DETROIT.—The Detroit Range Boiler & Steel Barrel Co. has started work on an office building addition, one story, 32 x 41 feet.

DETROIT.—The Crescent Tool Co. has been incorporated with $50,000 capital, by William Shenk, Charles Heunebeck, Emil Gloor and others.

DETROIT.—The Master Products Co. recently was chartered with $25,000 capital by William K. Cochran, 22 Taft avenue, and others, to manufacture aircraft and automobile motors.

DETROIT.—The Detroit Structural Steel Co. has been incorporated with $75,000 capital, to manufacture and deal in ornamental steel and iron, and foundry products, by Isaac Goldberg, Harry L. Harris and Max Rothenberg.

FLINT, MICH.—The Flint Foundry Co. has taken over the plant of the Marshall Foundry Co.

FLINT, MICH.—The Flint Pattern & Foundry Co. will build a plant 40 x 100 feet, costing $80,000.

GALESBURG, MICH.—The Kalamazoo Chain Co., recently organized by Chauncey Hodges to manufacture automobile tire chains, will erect a plant, 80 x 125 feet.

GRAND RAPIDS, MICH.—The Hackett Motor Car Co. has changed its name to the Lorraine Motors Corp., and plans a 100 per cent increase in manufacturing facilities.

GREENVILLE, MICH.—The Regle Brass Co., according to a report, will locate its plant in this city.

IMLAY CITY, MICH.—The Imlay City Foundry Co. has been incorporated with $25,000 capital by Herman A. Chriscinske, P. W. Mulder and Will Borland.

JACKSON, MICH.—The American Gear & Mfg. Co. will build a plant 169 x 280 feet, costing $180,000.

JACKSON, MICH.—The Jackson Metal Products Co. has let contracts for a $50,000 addition. John Stern is president.

LANSING, MICH.—The Atlas Drop Forge Co. has let a contract for a plant addition. New equipment is being ordered.

MONROE, MICH.—The J. L. Fusner Corp. has been chartered with $25,000 capital by J. L. Fusner and others to manufacture sheet metal specialties.

MUSKEGON, MICH.—Manning, Maxwell & Moore, New York, owner of the Shaw Crane Co. at Muskegon, will build a plant for the manufacture of machine tools and gas engines, including a foundry, at a cost of about $2,000,000.

SAGINAW, MICH.—The Nelson Motor Truck Co. is building an addition, 70 x 130 feet, pending erection of an entirely new plant.

TRAVERSE CITY, MICH.—The Napoleon Motors Co. contemplates new buildings to replace units damaged by fire.

AURORA, ILL.—The Richards-Wilcox Mfg. Co. will build a 2-story plant costing $125,000. F. D. Chase, Inc., Chicago, is architect and engineer.

CHICAGO.—The Western Foundry Co. has had plans prepared for an office building.

CHICAGO.—The Walker Vehicle Co. has had plans prepared for a plant, 20 x 528 feet.

CHICAGO.—The Automobile Construction & Repair Co. plans a machine shop, to cost $10,000.

CHICAGO.—The Federal Electric Co. has plans for a plant, 27 x 306 feet, to cost $150,000.

CHICAGO.—The Sloan Valve Co. has a permit to erect a plant at an estimated cost of $25,000.

CHICAGO.—The Standard Screen Co., 1850 Hastings street, plans a plant addition, two stories, 50 x 70 feet, to cost $25,000.

CHICAGO.—The Tarrant Foundry Co., 369 West Grand avenue, contemplates a storage building at an estimated cost of $12,000.

CHICAGO.—The Player Phone Talking Machine Co. has had plans prepared for a plant, two stories, 157 x 163 feet, to cost $100,000.

CHICAGO.—The Joseph F. Kiesler Co., 929 North Huron street, machinery manufacturer, is building a one and 2-story plant, 69 x 75 feet, costing $13,500.

CHICAGO.—The American Foundry & Equipment Co., 2931 West Forty-seventh street, is building a foundry, 100 x 300 feet, to cost $160,000.

HARVEY, ILL.—The Buda Motor Co. contemplates a foundry, 140 x 160 feet, to cost $75,000.

(*Concluded on Page* 1684)

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bes., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 55c per unit, nominal.

Warehouse Prices

Steel bars, Boston	4.00c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.52c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.37c to 3.62c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.58c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.365c
Iron bars, Boston	4.50c
Iron bars, Buffalo	3.95c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.58c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.52c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	4.00c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.62c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.68c
Plates, Buffalo	3.665c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.95c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.82c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.88c
No. 10 blue anl. sheets, N. Y.	4.82c to 6.00c
No. 10 blue anl. sheets, Phila.	5.00c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	4.72c to 4.97c
No. 10 blue anl. sheets, Boston	5.30c
No. 10 blue anl. sheets, Buffalo	4.565c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.78c
No. 10 blue anl. sheets, St. Paul	4.79c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	6.00c to 7.50c
No. 28 black sheets, Phila.	6.00c
No. 28 black sheets, Cleveland	5.52c to 5.77c
No. 28 black sheets, Boston	7.65c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.69c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.865c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.25c to 9.50c
No. 28 galv. sheets, Phila.	7.50c
No. 28 galv. sheets, Boston	9.00c
No. 28 galv. sheets, Cleveland	6.87c to 7.12c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.215c
No. 28 galv. sheets, St. Louis	7.04c
Bands, New York	4.22c
Bands, Boston	5.20c
Bands, Detroit	4.03c
Bands, Buffalo	4.065c
Hoops, Buffalo	4.065c
Hoops, Boston	5.45c
Hoops, New York	4.47c
Hoops, Detroit	4.03c
Cold rolled shafting, Buffalo	4.85c
Cold rolled shafting, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inc., 24, 26, 28, 30 and 36 in. wide by 72, 84, 96 and 120 in. long. Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
Chicago to:	
St. Louis	4.25
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	1.25
Pacific coats (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

	Black	Galv.
Butt Weld		
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld		
1 to 3-inch	55½	42
2-inch	48½	36
Lap Weld		
2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

	Black	Galv.
Butt Weld		
⅛-inch	1	+14
¼-inch	24½	+ 2½
⅜-inch	25½	+ 1½
½-inch	29½	11½
¾ to 1½-inch	34½	18½
Lap Weld		
2-inch	28½	14½
2½ to 6-inch	30½	17½
7 to 12-inch	27½	14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld		
⅛, ¼-inch	+21	+36
⅜-inch	23½	6½
½-inch	28½	15½
¾ to 1½-inch	34½	19½
Lapp Weld		
2-inch	29½	16½
2½ to 4-inch	31½	19½
4½ to 6-inch	30½	18½
7 and 8-inch	22½	10½
9 and 12-inch	17½	5½

DOUBLE EXTRA STRONG PLAIN ENDS

	Balck	Galv.
Butt Weld		
½-inch	15½	3½
¾ to 1½-inch	20½	8½
Lap Weld		
2-inch	16½	4½
2½ to 4-inch	18½	9½

Lapweld Boiler Tubes

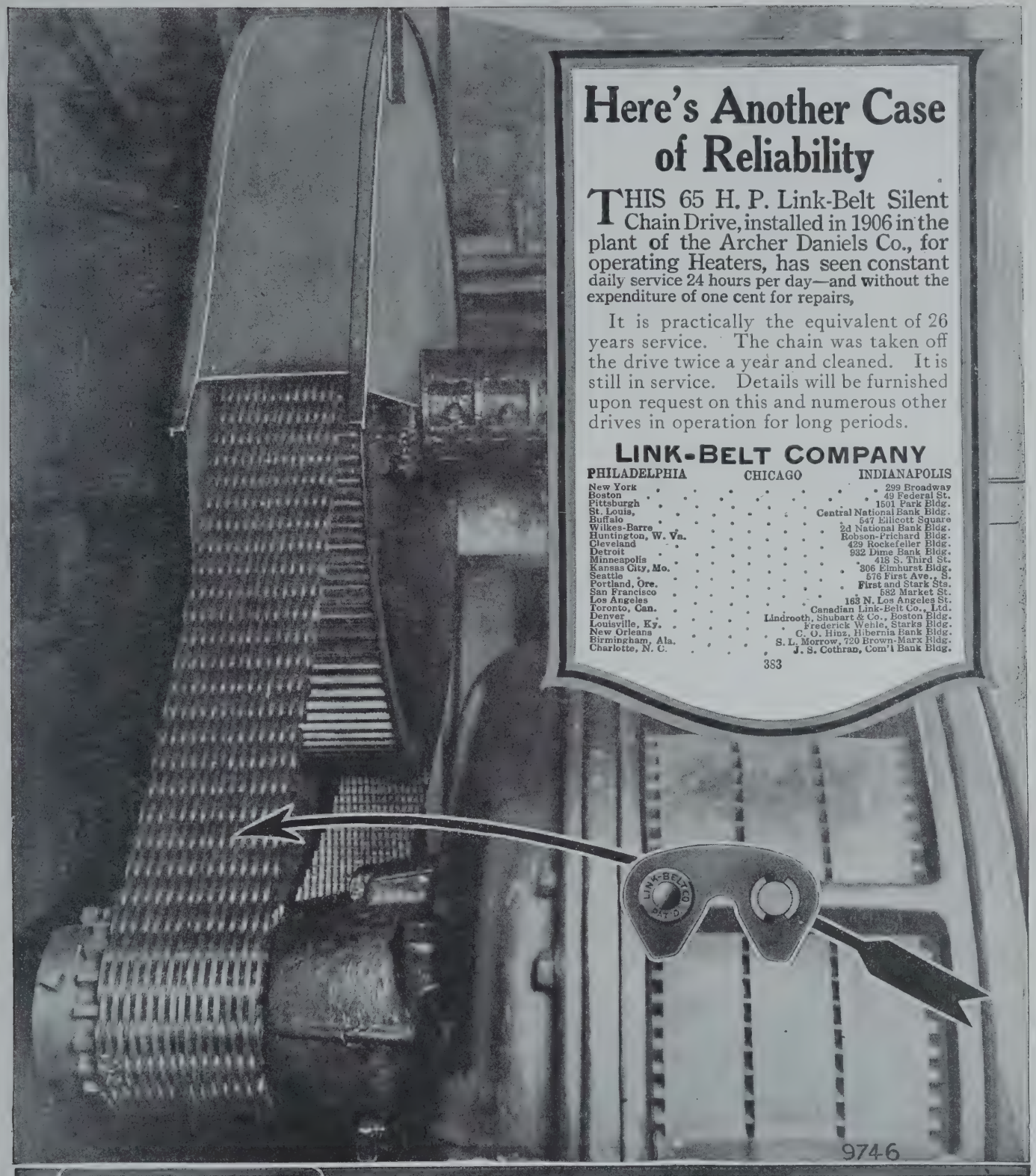
Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16



Here's Another Case of Reliability

THIS 65 H. P. Link-Belt Silent Chain Drive, installed in 1906 in the plant of the Archer Daniels Co., for operating Heaters, has seen constant daily service 24 hours per day—and without the expenditure of one cent for repairs,

It is practically the equivalent of 26 years service. The chain was taken off the drive twice a year and cleaned. It is still in service. Details will be furnished upon request on this and numerous other drives in operation for long periods.

LINK-BELT COMPANY

PHILADELPHIA	CHICAGO	INDIANAPOLIS
New York		299 Broadway
Boston		49 Federal St.
Pittsburgh		1501 Park Bldg.
St. Louis,		Central National Bank Bldg.
Buffalo		547 Ellicott Square
Wilkes-Barre		2d National Bank Bldg.
Huntington, W. Va.		Robson-Prichard Bldg.
Cleveland		429 Rockefeller Bldg.
Detroit		932 Dime Bank Bldg.
Minneapolis		418 S. Third St.
Kansas City, Mo.		306 Elmhurst Bldg.
Seattle		576 First Ave., S.
Portland, Ore.		First and Stark Sts.
San Francisco		582 Market St.
Los Angeles		163 N. Los Angeles St.
Toronto, Can.		Canadian Link-Belt Co., Ltd.
Denver		Lindrooth, Shubart & Co., Boston Bldg.
Louisville, Ky.		Frederick Wehle, Starks Bldg.
New Orleans		C. O. Hinz, Hibernia Bank Bldg.
Birmingham, Ala.		S. L. Morrow, 720 Brown-Marx Bldg.
Charlotte, N. C.		J. S. Cothran, Com'l Bank Bldg.

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We Also Make

- ☐ Elevators and Conveyors
- ☐ Link-Belt and Sprockets
- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Portable Loaders
- ☐ Coal and Ashes Systems
- ☐ Coal Pockets
- ☐ Complete Sand and Gravel Plants

Write for Catalogs
Place X in Square

LINK-BELT
SILENT CHAIN DRIVES

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$24.50 to 25.00
Chicago	21.00 to 21.50
Eastern Pennsylvania	23.00 to 25.00
Cleveland	21.25 to 22.00
St. Louis	22.50 to 23.00
Buffalo	23.00 to 23.50
New York (dealers)	18.50 to 19.00
Cincinnati	19.50 to 20.00
Birmingham	20.00 to 21.00
Valleys	23.00 to 23.50
Boston (dealers)	17.50 to 18.00

BUNDLED SHEETS

Pittsburgh	17.50 to 18.00
Eastern Pennsylvania	19.00 to 20.00
Cleveland	14.00 to 14.50
Buffalo	15.50 to 16.00
Cincinnati	14.50 to 15.00
St. Louis	13.50 to 14.00

STEEL RAILS, SHORT

Chicago	$25.50 to 26.00
Boston (dealers)	15.50 to 16.00
Cleveland	20.50 to 21.00
St. Louis	24.50 to 25.00
Birmingham	21.00 to 22.00
Cincinnati	23.50 to 24.00
Eastern Pennsylvania	22.50 to 23.00

STOVE PLATE

Pittsburgh	$22.00 to 23.00
Chicago	29.25 to 29.75
Eastern Pennsylvania	22.50 to 23.50
Cleveland	25.50 to 26.00
St. Louis	27.50 to 28.00
Buffalo	23.00 to 23.50
New York	20.50 to 21.00
Cincinnati	21.00 to 22.00
Birmingham	22.00 to 23.00
Boston	21.00 to 21.50

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$27.00 to 28.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	27.00 to 29.00
Buffalo	27.00 to 28.00

SHOVELING STEEL

Chicago	$20.50 to 21.00
St. Louis	21.50 to 22.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$24.50 to 25.00
Chicago	24.50 to 25.00
St. Louis	24.00 to 24.50

BALED SHEETS

Pittsburgh	21.00 to 21.50
Chicago	15.50 to 16.00

FROGS, SWITCHES, GUARDS

Chicago	21.00 to 21.50
St. Louis	23.00 to 23.50
Eastern Pennsylvania	23.00 to 25.00

BOILER PLATE, CUT

Chicago, No. 1	$19.00 to 19.50
St. Louis	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$24.50 to 25.00
St. Louis	23.00 to 23.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$26.00 to 27.00
Pittsburgh, No. 2	24.50 to 25.00
Chicago, No. 1	26.00 to 27.00
Chicago, No. 2	22.00 to 23.00
Eastern Pennsylvania, No. 1	30.00 to 32.00
Cleveland, No. 1	24.50 to 25.00
St. Louis, No. 1	26.50 to 26.00
St. Louis, No. 2	24.00 to 24.50
Buffalo	24.00 to 24.50
Cincinnati, No. 1	22.50 to 23.00
Birmingham, No. 1	20.00 to 21.00
New York, No. 1 (dealers)	27.00 to 27.50
Boston (dealers)	25.50 to 26.00

WROUGHT PIPE

Eastern Pennsylvania	$22.00 to 23.00
Eastern Pennsylvania, ungraded	17.00 to 18.00
Buffalo	18.50 to 19.00
New York (dealers)	18.50 to 19.00
Boston (dealers)	18.00 to 18.50

YARD WROUGHT

Eastern Pennsylvania, No. 1	$26.00 to 27.00

CITY WROUGHT

New York, long (dealers)	21.00 to 22.00

BUSHELING

Chicago, No. 1	$20.75 to 21.25
Chicago, No. 2	16.00 to 16.50
Cleveland, No. 1	20.00 to 20.50
Cleveland, No. 2	15.00 to 15.50
St. Louis, No. 1	22.50 to 23.00
Buffalo, No. 1	20.00 to 21.00
Cincinnati, No. 1	16.50 to 17.00
Eastern Pennsylvania, No. 1	20.00 to 21.00

MACHINE SHOP TURNINGS

Pittsburgh	$15.00 to 15.50
Chicago	12.00 to 12.50
Eastern Pennsylvania	18.50 to 19.50
Eastern Pennsylvania (blast furn.)	18.00 to 18.50
Eastern Pennsylvania (chemical)	25.00 to 26.00
Cleveland	12.75 to 13.00
Buffalo	14.50 to 15.00
New York (dealers)	14.00 to 14.50
St. Louis	15.00 to 15.50
Cincinnati	7.50 to 8.00
Birmingham	12.00 to 13.00
Valleys	14.50 to 14.75
Boston (dealers)	13.00 to 13.50
Boston (blast furnace) (dealers)	11.50 to 12.00

CAST IRON BORINGS

Pittsburgh	$18.00 to 18.50
Chicago	13.75 to 14.25
Eastern Pennsylvania	22.00 to 23.00
Eastern Pennsylvania (chemical)	25.00 to 26.00
Cleveland	15.50 to 16.00
St. Louis	13.00 to 13.50
Buffalo	17.50 to 18.00
New York (dealers' price)	16.50 to 17.00
Cincinnati	11.00 to 11.50
Birmingham	12.00 to 13.00
Valleys	17.00 to 17.50
Boston (dealers)	16.00 to 17.00
Boston (blast furnace) (dealers)	11.50 to 12.00

IRON AXLES

Pittsburgh	$44.00 to 45.00
Chicago	39.50 to 40.50
Eastern Pennsylvania	38.00 to 40.00
Cleveland	35.00 to 36.00
St. Louis	36.50 to 37.00
Buffalo	33.00 to 34.00
Cincinnati	24.00 to 24.50
Birmingham	29.00 to 30.00

IRON RAILS

Chicago	28.50 to 29.00
Cleveland	27.00 to 28.00
St. Louis	27.00 to 27.50
Buffalo	25.00 to 26.00
Cincinnati	23.00 to 23.50

PIPES AND FLUES

Chicago	18.50 to 19.00
Cleveland	17.50 to 18.00
St. Louis	20.00 to 20.50
Cincinnati	15.00 to 15.50

GRATE BARS

Chicago	28.50 to 29.00
Cleveland	26.00 to 27.00
Buffalo	21.00 to 21.50
New York	17.50 to 19.00
Eastern Pennsylvania	25.00 to 26.00

FORGE FLASHINGS

Cleveland, large	$16.75 to 17.25
Cleveland, small	18.00 to 18.50
Chicago, small	17.00 to 17.50
Boston (dealers)	14.00 to 14.50

FORGE SCRAP

Chicago	22.50 to 23.00
Eastern Pennsylvania, No. 1	18.00 to 19.00
Boston	14.00 to 14.50

ARCH BARS AND TRANSOMS

Chicago	33.00 to 33.50
St. Louis	30.50 to 31.00

ANGLE BARS—IRON

Chicago	$31.00 to 31.50
St. Louis	26.00 to 26.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$18.00 to 18.50
Eastern Pennsylvania	19.00 to 20.00
Boston (dealers)	15.00 to 15.50
St. Louis	16.00 to 16.50
Cleveland	19.00 to 19.50
Buffalo	17.50 to 18.00
Chicago	17.50 to 18.00

STEEL CAR AXLES

Pittsburgh	$32.00 to 33.00
Eastern Pennsylvania	35.00 to 36.00
Cleveland	34.00 to 35.00
St. Louis	34.00 to 34.50
Buffalo	33.00 to 34.00
Chicago	33.50 to 34.50
New York (dealers)	28.00
Birmingham	28.00 to 29.00
Boston (dealers)	27.00 to 28.00

SHAFTING

Eastern Pennsylvania	$34.00 to 36.00
St. Louis	31.00 to 31.50
New York (dealers)	26.00 to 27.00
Chicago	30.00 to 30.50

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$31.00 to 32.00
Pittsburgh, steel	24.50 to 25.00
Chicago, iron	29.50 to 30.00
Eastern Pennsylvania, iron	31.00 to 33.00
Cleveland, iron	29.00 to 30.00
St. Louis, iron	26.00 to 26.50
Buffalo, iron	27.00 to 27.50
Birmingham, iron	26.00 to 27.00
Birmingham, tram car	26.00 to 27.00
Boston	26.00 to 27.00
Cincinnati	22.00 to 22.50

NO. 1 CAST SCRAP

Pittsburgh, cupola	$30.00 to 31.00
Chicago, cupola	35.25 to 36.25
Eastern Pennsylvania, cupola	31.00 to 32.00
Cleveland, cupola	30.00 to 30.50
New York, cupola (dealers)	27.00 to 28.00
Cincinnati, No. 1, cupola	25.00 to 26.00
Birmingham, cupola	26.00 to 27.00
St. Louis, railroad	32.00 to 32.50
St. Louis, agricultural	32.00 to 32.50
Buffalo	27.00 to 27.50
Boston	34.00 to 35.00
Valleys	30.00 to 31.00

HEAVY CAST

New York (dealers)	24.00 to 25.00
Buffalo	21.00 to 22.00
Pittsburgh	25.00 to 26.00
Cleveland	23.00 to 24.00
Boston	28.00 to 28.50

MALLEABLE

Pittsburgh, railroad	$25.00 to 26.00
Pittsburgh, agricultural	22.00 to 23.00
Chicago, railroad	28.00 to 29.00
Chicago, agricultural	28.50 to 29.00
Eastern Pennsylvania, railroad	25.00 to 27.00
Cleveland, railroad	26.50 to 27.50
Cleveland, agricultural	21.00 to 22.00
St. Louis, railroad	24.50 to 25.00
St. Louis, agricultural	23.50 to 24.00
Cincinnati, railroad	17.50 to 18.00
Cincinnati, agricultural	17.50 to 18.50
Boston, railroad	23.00 to 24.00
Buffalo	22.50 to 23.50

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS

5 feet and over

Pittsburgh	$30.00 to 31.00
Chicago	31.00 to 31.50
Eastern Pennsylvania	33.00 to 35.00
Cleveland	30.00 to 31.00
St. Louis	32.50 to 33.00
Birmingham	26.00 to 27.00
Boston (dealers)	26.00 to 27.00

LOCOMOTIVE TIRES

Chicago	24.00 to 25.00
St. Louis	23.00 to 23.50

BOILER PUNCHINGS

Chicago	$26.00 to 27.00
Eastern Pennsylvania	27.00 to 28.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

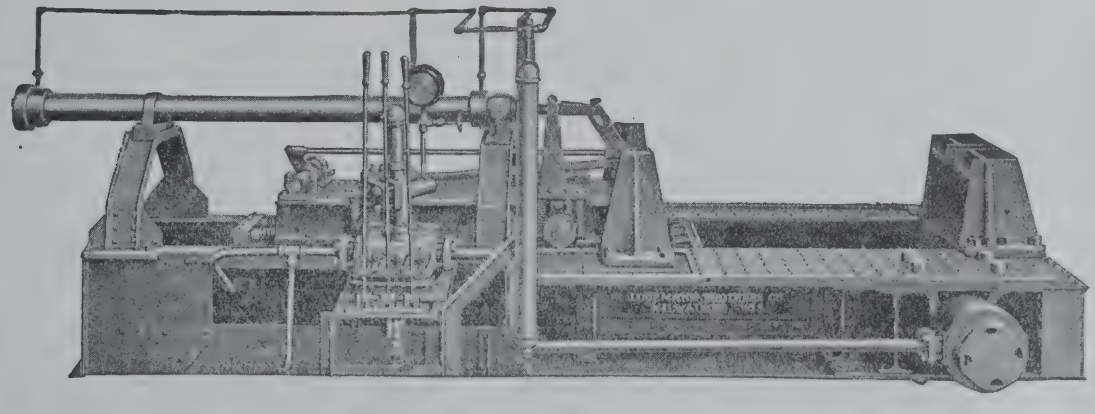
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

(*Concluded from Page* 1679)

MOLINE, ILL.—The Waterloo Gas Engine Co. has had plans prepared for a plant to include a main factory building, one story, 100 x 160 feet, and a core building, one story, 120 x 140 feet.

ROCK ISLAND, ILL.—The Rock Island Stove Co. is having plans made for a plant 50 x 144 feet.

URBANA, ILL.—Machinery and other equipment for the Clifford Jacobs Forging Co. is being installed.

DECATUR, IND.—The contract for a factory building here for the General Electric Co. has been awarded to the H. K. Ferguson Construction Co., Cleveland. The building will be 260 x 360 feet.

ELKHART, IND.—The Indiana Aluminum Utensil Co., capitalized at $400,000, has been chartered to manufacture aluminum utensils by John I. Liser, James A. Bell and Carl D. Greenleaf.

EVANSVILLE, IND.—Plans are being drawn for an addition to the plant of the Advance Stove Works.

EVANSVILLE, IND.—The Evansville Paint & Varnish Co. will build a plant at an estimated cost of $25,000.

EVANSVILLE, IND.—Graham Bros., manufacturers of trucks and tractors, have completed the foundation for a $40,000 office building.

HAMMOND, IND.—The American Iron & Metal Co., capitalized at $10,000, has been chartered to deal in iron and metals by John A. Gavit, James K. Stinson and Samuel Abalman.

INDIANAPOLIS.—The L. H. Van Briggle Chemical Co. will erect a new building.

INDIANAPOLIS.—The La Fayette Motors Co. McCall White, president, will build a 1-story plant, 100 x 1000 feet.

INDIANAPOLIS.—The William Small Co., William Small, president, 33 West Eleventh street, will build a 1-story plant, 70 x 480 feet.

INDIANAPOLIS.—The Dean Bros. Steam Pump Works is reported planning a machine shop, two stories, 27 x 120 feet, to cost $20,000.

INDIANAPOLIS.—The Wolff Mfg. Co., an Illinois corporation, has qualified to do business in this state. The company manufactures plumbing supplies

INDIANAPOLIS.—The Prest-O-Lite Co., R. A. Hays, purchasing agent, Speedway City, will build a 2-story battery house, 100 x 400 feet, costing $400,000.

INDIANAPOLIS.—The Parts Corp., capitalized at $25,000, has been chartered to manufacture automobile devices by Robert F. Miller, Bert F. Kelley and B. E. Griffey.

LAFAYETTE, IND.—The Ross Gear & Tool Co., capitalized at $150,000, has been reorganized as the Fairfield Motor Co., and will take over the property of the Lafayette Enginering Co.

MARION, IND.—The Allmur Mfg. Co. has plans for an addition to its plant, one story, 30 x 40 feet, to cost $18,000.

PETERSBURG, IND.—The Simple Lock Rim Co., capitalized at $100,000, has been chartered to manufacture automobile rims by S. R. Clark, John L. Loveless and C. C. Walton.

PORTLAND, IND.—Sheller & Co., manufacturers of steering wheel rims, has awarded contracts for a building. The structure will give the company additional floor space of 16,000 square feet.

RICHMOND, IND.—The Richmond Piston Ring Co., Inc., has had plans prepared for a plant, to cost $40,000.

SOUTH BEND, IND.—The Studebaker Corp. has plans for 1000 houses. A subsidiary home building company has been formed with a capitalization of $1,000,000 to carry on the project.

SOUTH BEND, IND.—The Johnson Bros. Engineering Co., capitalized at $100,000, has been chartered to manufacture machinery by Louis J. Johnson, Clarence L. Johnson and Harry L. Johnson.

CINCINNATI.—The J. F. Dietz Co., 4851 Spring Grove avenue, plans a machine shop and garage, five stories, 41 x 98 feet, to cost $21,000.

CINCINNATI.—The Production Machinery Co., a new corporation which will manufacture machine tools, has leased a 3-story building here, containing 12,000 square feet of floor space.

CLEVELAND.—The Kelly Reamer Co. contemplates a plant.

CLEVELAND.—The Enamel Products Co. plans a plant, one story, 60 x 190 feet.

CLEVELAND.—The Rubay Co. will erect a plant addition, one story, 88 x 216 feet, at an estimated cost of $150,000.

CLEVELAND.—The Clark Machinery Co., 1302 Ontario street, plans a warehouse, one story, 56 x 115 feet, to cost $15,000.

CLEVELAND.—The American Stove Co. has taken out a permit to erect an addition, three stories, 60 x 152 feet, to cost $90,000.

CLEVELAND.—The Ohio Metal Utensil Co. recently was incorporated with $10,000 capital, by Jacob Hartman, E. J. Thobaben and others.

CLEVELAND.—The York-Ohio Ice Machine Co. recently was incorporated with $50,000 capital, by John Schurman, William T. O'Brien and others.

CLEVELAND.—The Magic Wall Paper Cleaning Machine Co. has been incorporated with $300,000 capital, by George J. Forcier, Melvin H. Lee and others.

CLEVELAND.—The Kulla Machine Co. recently was incorporated with $150,000 capital, by J. William Decumbe, 325 Williamson building, Michael J. Kulla and others.

CLEVELAND.—The DeMooey Electric Mfg. Co. has been incorporated with $600,000 capital, by Keith Lawrence, 329 Society for Savings building, Edward L. Neuswander and others.

CLEVELAND.—Work has started on a brass and copper smelting and refining plant, to be 150 x 300 eet, or an Ohio corporation organized by Paul E. Cleveland, Guardian building. Those interested in the project include E. T. Heinsohn, president of the United Copper Products Corp.; Ralph R. Parish, Edward A. Noll, of the National Tool Co., and Lloyd H. Pool.

COLUMBUS, O.—The Rutkowski Iron Works, 7001 Polenia avenue, will erect a factory and storage building, one story, 81 x 142 feet.

CUYAHOGA FALLS, O.—The Cornwell Quality Tool Co. has been incorporated with $50,000 capital, and will engage in business here.

ELYRIA, O.—The Standard White Metals Co. has been incorporated with $90,000 capital, by George Stevens, John K. Nece and others.

FINDLAY, O.—The Buckeye Traction Ditcher Co. is reported planning a foundry, 100 x 200 feet, to cost $75,000.

FREMONT, O.—The plant of the Hotz Foundry & Machine Co. recently was damaged by fire.

GREENVILLE, O.—The Franklin Tractor Co., of which George Hills is president, contemplates a tractor plant here.

MANSFIELD, O.—The Victor R. Browning Co. is reported planning a fabricating shop, one story, 100 x 200 feet, to cost $35,000.

NEWARK, O.—The Cree Dropped Forge Co. plans to engage in business here.

NEWARK, O.—The Moore Tool & Machine Co. has been incorporated with $250,000 capital, by Otto N. Moore, E. D. Leach and others.

SPRINGFIELD, O.—The Springfield Machine Tool Co. plans a plant, one story, 50 x 60 feet, to cost $15,000.

TOLEDO, O.—The Kasle Iron & Metal Co., 1212 Elm street, contemplates erecting a smelting plant.

TOLEDO, O.—The Toledo Enameled Wire Products Co. has been incorporated with $300,000 capital, by Seymour Hirsch, George R. Beckwith and others.

YOUNGSTOWN, O.—Ground will be broken shortly for additional buildings at the plant of the Truscon Steel Co.

LOUISVILLE, KY.—The Standard Sanitary Mfg. Co. will erect a foundry, 70 x 85 feet, at an estimated cost of $75,000.

DUNBAR, W. VA.—The Dunbar Flint Glass Co. will make additions.

GRAFTON, W. VA.—The Southern Glass Co. has been organized with Wm. G. Hammond, manager, and will build a plant.

HUNTINGTON, W. VA.—The Virginia Glass Mfg. Co. will build a plant.

New Trade Publications

AIR TOOLS.—Pneumatic tools, consisting of hammers, holder-ons, drills, grinders, rammers, etc., are described in a leaflet recently published by the Independent Pneumatic Tool Co., Chicago.

ARC WELDING.—The U. S. Light & Heat Corp., Niagara Falls, N. Y., is circulating bulletin No. 700, in which electric arc-welding equipment is described and illustrated. The booklet also contains a number of characteristic curves.

THREAD MILLER.—The Smalley General Co., Inc., Bay City, Mich., has published a 4-page leaflet, containing data on a thread miller which it manufactures. The leaflet contains a number of illustrations, including a chart, which gives the necessary data for milling work under any condition of feeds and speeds with a miller, of either the motor or belt-driven type.

SLAG LINE COOLERS.—Savings in upkeep and operation of open-hearth furnaces and profits from increased capacity as a result of using the slag line cooler are set forth in a 16-page booklet issued by the Open Hearth Steel Furnace Co., Chicago. The device has been described previously in these columns. The pamphlet is embellished by drawings and photographs of installations and, figures based on actual operation over a certain period are given.

THAWING OUTFIT.—The Aeroil Burner Co., Inc., Union Hill, N. J., is circulating an 8-page folder, in which an outfit for removing ice and snow from frozen coal, sand, ore cars, hoppers, pockets, conveyors, leading chutes, dipples, tracks and switches, etc. The outfit consists of a pressure tank of 10 gallons capacity, a powerful hand power air pump, flexible hose, fittings, etc., and two kerosene thawing burners. According to the folder the average consumption of each burner is two gallons an hour.

MAGNESITE.—The Northwest Magnesite Co., Chewelah, Wash., has published an illustrated booklet containing information of the company's history, the manufacture of magnesite, its use and the company's properties. The first section of the booklet gives the history of the company. The second section describes the company's plant and deposit, and a third section is devoted to describing methods for miscroscopic examination, which is accompanied by a number of colored plates, illustrating magnified sections of magnesite brick.

HIGH SPEED STEEL.—The Onondaga Steel Co., Syracuse, N. Y., has issued a new catalog bearing the title, "Intensive Specialization." One section of the booklet contains an article on "Steel Conservation," and another section an article on "Selecting of High Speed Steel Scrap," in which a short description of the method of testing high speed steel scrap by the emery wheel spark is given. The booklet contains tables of sizes, weights of high speed steel bars, giving the millimeters and kilograms in red, and inches and pounds in black. The booklet also contains directions for the treatment of high speed steel, and contains a color chart which gives an idea of the various heats required. It is illustrated.

THE IRON TRADE REVIEW

Vol. LXV Cleveland, December 25, 1919 No. 26

Makers Carry Over Big Tonnage

Obligations of Mills and Furnaces at Year End Greatly Swollen Because of Production Lost by Strikes—Market Much Congested and Prices Show Great Strength—Allotment of Tonnage in First Half Necessitated

CONFRONTED by a loss of production reaching several million tons because of the steel and coal strikes, iron and steel manufacturers are closing the year with a great tonnage of deferred obligations and with order books unduly swollen. Of the large volume of business on hand the carry-over from that originally accepted for 1919 delivery constitutes an important part and this must be satisfied out of 1920 output. Moreover the regular requirements of many consumers for the first quarter and first half entered by the producers during the past month or two in a number of lines are unusually heavy. With plant operations still backward, a congestion of business has followed which forbids the taking on of further obligations and spells continued disappointment to urgent buyers who fill the market.

Those steel products in which the situation is tightest are sheets, tin plate, steel bars, strip steel, wire and oil and gas pipe. In some of these lines pro-rata allotments among consumers will be necessitated. Unfilled sheet bookings in December were estimated at over 1,000,000 tons. In tin plate 400,000 tons of orders will be carried over into next year. Steel bar capacity promises to be filled for three to six months. The leading interest is reported to be sold up on oil country pipe through practically all of next year. It has become a serious question how some prospective demands are to be satisfied. The automobile industry with increased production schedules for 1920 in view is a case in point. The requirements of rim stock of the Ford Motor Co. alone are placed at 150,000 tons.

Prices Are Strong

The effect of these conditions is to stimulate the naming of higher prices. The spread between the minimum figures which the Steel corporation and other interests following a strongly conservative policy are quoting and those being realized by various mills, continues to grow. One independent maker of wire products has opened his books to January tonnage on the basis of 4.25c on nails or $15 per ton above the market's minimum. Steel bars continue to sell up to 3.50c Pittsburgh. Eastern plate mills are booking first quarter contracts at 3.00c to 3.25c, Pittsburgh. Eastern shapemakers are turning away business at attractive prices. In northern Ohio, round tonnages of slabs and sheet bars for first quarter have been entered at $50 and $51 respectively.

British Steel Is Sought

The excess of sheet demand over supply is reflected by American inquiries for 7000 tons of galvanized which have appeared in the British market. British mills are equally overwhelmed with business in this product, however, and can make no deliveries until summer. Prices on various iron and steel materials continue to rise in Great Britain according to the weekly staff cable of THE IRON TRADE REVIEW, especially in semifinished steel, sheets, tin plate, structural shapes and bars. Welsh tin plate makers are swamped with world-wide inquiry for tin plate, the same as the mills in this country. One inquiry from the Orient calls for 160,000 boxes.

Germany is believed to have taken an order for 25,000 tons of cast iron pipe for Java and the Dutch East Indies which had been offered to American foundries. Brazil also has opened negotiations in this country for 25,000 tons of cast iron pipe.

Iron Supply Inadequate

Pig iron prices have gone higher in some districts but on the whole the market is steadier. A range of $38 to $40 for the base grade of foundry iron is representative for most producing centers. In the south, sales have been made at $36 Birmingham, and more has been quoted. Eastern basic was sold in the week at $39 furnace. This grade is scarce and there are many buyers in the market, including 30,000 tons for a large steel foundry interest. The demand for iron continues greater than that available for sale. The straitened position of the furnaces on supplies is being prolonged by the shortage of coke which is affecting operations.

The Steel corporation has closed for 12,000 tons of 50 per cent ferrosilicon to cover its 1920 requirements. English ferromanganese for second and third quarter has been sold at $130 tidewater.

DECEMBER 25, 1919

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metal-working Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - - York St. and Western Ave.
NEW YORK - - - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - - - - Prince's Chambers
LONDON, ENG. - - - - - - - 16 Regent St., S. W. I.

Subscription, United States and Mexico, $4 per year. Canada $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Member, the Audit Bureau of Circulation and Associated Business Papers, Inc.

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Are Visitors Playing Fair?

SINCE the war the number of manufacturers and engineers who are visiting the plants of their competitors in foreign countries has increased surprisingly. In many of the larger blast furnace and steel plants it is not uncommon for works superintendents to receive dozens of requests daily for permission to inspect their equipment and operations.

In most cases these requests have been granted and few, if any, visitors from foreign shores have been denied entrance to mills because of their nationality. Within the past few months, however, there has been a growing attitude of reserve toward a certain prevalent type of alien whose visits are marked by demands for voluminous information regarding the innermost details of operation. American plant officials have been reluctant to withhold from visitors of this type the courtesies extended to others, but unfortunately their action has been forced by the visitors themselves.

When foreign representatives first came to the United States to investigate steel works, they were extended every possible opportunity to become familiar with American practice. After several years of this open-door policy, American engineers began to seek entrance to plants of some of the foreign manufacturers whose countrymen previously had enjoyed this privilege in the United States. To their surprise, admission was refused. This is not an isolated case but on the contrary it coincides with the complaints frequently made by American travelers abroad. As a result of this failure to reciprocate, many American manufacturers are becoming more reluctant to allow visitors from these countries to enter their plants.

If some of the foreigners now visiting in the United States find it increasingly difficult to gain admission to industrial plants they may attribute this seeming act of discourtesy to the narrow-minded attitude of their countrymen at home. Men identified with the iron and steel industry in England and the United States have been unusually liberal in their dealings with visitors from other countries, and naturally they have the right to expect that similar treatment will be accorded their representatives abroad. The unreciprocating attitude, so apt to be interpreted by fair minded British and American business men to be based on the axiom "Take all but give nothing in return," cannot possibly lead to gain. On the other hand, it may develop distrust and antagonism which will go far toward discounting the beneficial results of present industrial and commercial awakening.

Eliminating Politics From Strikes

SUPERSEDING by its general importances, any restricted application to local conditions, a decision handed down by Judge Westenhaver of the United States district court at Cleveland recently, is a notable addition to the court decrees pertaining to the legal powers of civic authorities in labor disputes. This decision in effect completely overruled the position pursued for several months by the mayor and his chief of police in barring from the city of Cleveland, workmen from outside points who had applied for jobs or who had been brought in by various companies during the steel strike. Hundreds of workmen, many of them American citizens, and in the full possession of their rights as such, have been seized and deported from the city due to this policy. This has been a leading factor in the slow restoration of the iron and steel production in Cleveland following the breaking up of the strike. The flagrantly, unfair attitude pursued by the city administration toward the iron and steel employers of Cleveland manifestly has been due to political motives and has been carried out under the thin pretense of the enforcement of the "suspicious person" ordnance. Any strike breaker was deemed to come within the provisions of this ordnance.

Judge Westenhaver in his decision declared that the so-called "suspicious person" ordnance under the circumstances had been illegally applied and he issued

an injunction to the plaintiff restraining Mayor Davis and Chief of Police Smith from interfering with the efforts of the plaintiff, the American Steel & Wire Co. to recruit its labor forces where it chose. In this ruling the court said:

"That plaintiff is entitled to relief by injunction in this situation is obvious from a consideration of well settled legal principles. It is engaged in a lawful business and has a right to conduct that business without unlawful interference, either by its striking employes or by any other persons. It may solicit and procure persons to work in its plant, no matter where they reside, or whether citizens of the United States or not. No one may lawfully interfere with this right of plaintiff, and if deprived thereof its property is destroyed.

"This is also equally true of all persons desiring to enter into the employment of plaintiff. To deny any such person that right because he does not live in Cleveland would be to abridge or deny to such person privileges and immunities belonging to every citizen of the United States and protected by its constitution from a denial or abridgment by any state. The protection accorded by the constitution of Ohio is equally sweeping. The power to preserve the public peace and to arrest and prosecute persons for crime cannot be made to support action depriving persons of these constitutional rights and privileges."

Votes and mere numbers at that, too often play their part in the local enforcement of law and order or lack of it in labor disputes. The well-merited rebuke administered by the federal court to the mayor of Cleveland and his subordinates is bound to have a good moral effect, not confined to the iron and steel industry. It not only clarifies the legal rights of employers in an important respect but it serves to arouse the consciousness of the workmen as to what the badge of American citizenship really implies.

Secretary Lane to Leave

GENERAL regret is felt by the country that Secretary of the Interior Franklin K. Lane has decided to leave the cabinet of the present administration. Conceded to be probably the ablest department head in the administration, his departure will be a real loss. His constructive ability shown as a member of the interstate commerce commission has been further signified throughout his tenure as secretary of the interior. Broad-visioned, Secretary Lane always has shown a comprehensive grasp of the big internal problems of the country. He has been a strong influence in solving some of them, and in making practical recommendations for the solution of others. Apparently and unfortunately, his advice has been neither courted nor accepted by the administration during the past two years and it is not improbable that this fact has helped to influence Mr. Lane to leave the cabinet. His dignity and regard for the President, however, has restrained him from airing any grievances he may have had. Instead he now has issued a frank, moderate statement, explaining briefly that because of the illness of the President he had not as yet sent in his resignation.

If, as reported, Secretary Lane's decision to leave the cabinet is attributed in part to his inability to conscientiously agree with the President's policy in "settling" the coal strike, his attitude coincides with that of many others who think the administration has yielded without justification to organized labor. But no one who knows Secretary Lane or his policies can charge him with being unfair to labor, either organized or unorganized. He has been honest and just to both, as he has been fair to the business interests of the country. In his differences with Secretary of War Baker and apparently the President over the prices of coal he proposed when the United States entered the war, public sentiment generally approved of his position, although it was overridden by the administration. Various subsequent policies of the administration appear to have been adopted without due consideration to suggestions which he had made. Under such conditions it is easy to understand why Secretary Lane has decided to resign although his act must be a source of great regret.

Japan Wins Chinese Trade

AN AMERICAN banking institution with close connections in the Orient recently has made a very interesting report with regard to business conditions in the Far East. With respect to China the report says:

"A noticeable feature of China's general trade during the past year is the increased share secured by Japan, whose merchants now buy much of the raw material exported from China and furnish that country with a large proportion of its need for staple products."

This report discloses nothing new to those American exporters who have been closely interested in the Oriental trade. Repeatedly it has been noted in that quarter that the Japanese have been heavy speculators in iron and steel commodities. On the other hand the Chinaman is not a speculator. He buys only when he actually needs the material. Under such circumstances it is not unreasonable to expect that a great share of the goods bought by Japan have been intended for resale to the Chinese.

In this way the Jap is enhancing his dominance in the Far East. There appears to be but one way for Americans to gain a foothold in China in metals, and that is by direct representation. It means that American exporters must keep themselves better posted on Occidental politics and society if they would build for permanency in trade and properly safeguard their interests in the future.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 1742 AND 1744

Pig Iron

Bessemer ,valley	36.00
Bessemer, Pittsburgh	37.40
Basic, valley	35.00
Basic, Pittsburgh	36.40
Basic, delivered, eastern Pa.	37.00 to 40.00
Malleable, Pittsburgh	39.65
Malleable, Chicago, furnace	40.50
Malleable, Buffalo, furnace	39.25
Malleable, delivered eastern Pa.	40.00 to 41.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$44.10 to 46.10
No. 1X, Buffalo	41.00 to 43.00
No. 1 foundry, Chicago, furnace	41.25
No. 2 foundry, valley, Pittsburgh	39.40 to 41.40
No. 2 foundry, Buffalo	38.00 to 40.00
No. 2 foundry, Boston	41.50 to 42.50
No. 2 foundry, Chicago furnace	40.00
No. 2 foundry, Ironton furnace	38.00 to 40.00
No. 2 foundry, Cleveland furnace	38.00
No. 2X, eastern del., Phila.	41.10 to 44.10
No. 2X, eastern, N. J., tidewater	41.10 to 44.10
No. 2X, eastern, Boston	41.90 to 42.90
No. 2X, foundry, Buffalo furnace	39.25 to 41.25
No. 2 foundry, del., Philadelphia	40.10 to 43.10
No. 2 foundry, N. J., tidewater	40.10 to 43.10
No. 2 southern, Birmingham	35.00 to 36.00
No. 2 southern, Cincinnati	38.00 to 39.00
No. 2 southern, Chicago	40.00 to 41.00
No. 2 southern, Phila.	41.50 to 42.50
No. 2 southern, Cleveland	40.00 to 41.00
No. 2 southern, Boston	43.00 to 44.00
No. 2 southern, St. Louis	39.25 to 40.25
Virginia, No. 2X, furnace	39.25
Virginia, No. 2X, Philadelphia	43.35
Virginia, No. 2X, Jersey City	43.65
Virginia, No. 2X, Boston	43.70 to 44.70
Gray forge, valley, Pittsburgh	38.40
Gray forge, Buffalo	32.00 to 33.00
Gray forge, eastern Pa.	39.00 to 41.50
Silveries, 8%, furnace	50.00
Ohio Silveries, 8%, Chicago	53.80
Tennessee Silveries, 8%, Chicago	55.65
Low phos. standard, Phila.	49.80
Low phos. Lebanon, furnace	40.00 to 41.00
Low phos. standard, Pittsburgh	45.40
Charcoal, Superior, base grade, Chicago	45.00 to 47.50

Coke

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

Ferroalloys

Ferromanganese, 80 per cent. delivered, domestic metal	$130.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	120.00 to 130.00
Spiegel, 18 to 22 per cent furnace spot	39.00 to 41.00
Ferrosilicon, 50 per cent, spot and contract, delivered	80.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.05 to 1.15
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's plant	22c to 24c
Ferrovanadium, 30 to 40 per cent per pound contained, according to analysis	$6.00 to $7.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	59.50
Bessemer, ferrosilicon, 11 per cent	62.80
Bessemer, ferrosilicon, 12 per cent	66.10

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	45.00 to 50.00
Open-hearth, Philadelphia	54.00
Open-hearth, Philadelphia	45.00 to 47.00
Bessemer, Pittsburgh	45.00 to 50.00
Bessemer, Youngstown	45.00 to 47.00
Forging, Pittsburgh	60.00 to 65.00
Forging, Philadelphia	64.00

SHEET BARS

Open-hearth, Pittsburgh	$50.00 to 51.00
Open-hearth, Youngstown	50.00 to 51.00
Bessemer, Pittsburgh	50.00 to 51.00
Bessemer, Youngstown	50.00 to 51.00

SLABS

Pittsburgh and Youngstown	48.00 to 50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00 to 67.00
Grooved skelp, Pittsburgh	2.45c
Sheared skelp, Pittsburgh	2.65c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c to 2.60c
Structural shapes, Philadelphia	2.695c to 2.795c
Structural shapes, New York	2.72c to 2.82c
Structural shapes, Chicago	2.72c
Tank plates, Pittsburgh	2.65c to 3.00c
Tank plates, Chicago	2.92c
Tank plates, Philadelphia	2.895c to 3.245c
Tank plates, New York	2.92c to 3.27c
Bars, saft steel, Pittsburgh	2.35c to 3.00c
Bars, soft steel, Chicago	2.62c
Bars, soft steel, New York	2.62c to 3.77c
Bars, soft steel. Philadelphia	2.549c to 3.745c
Bar iron, common, Phila.	3.245c to 3.745c
Bar iron, common, Chicago	2.87c to 3.00c
Bar iron, common, Cleveland	3.25c
Bar iron, common, New York	3.27c to 3.77c
Bar iron, common, Pittsburgh	3.50c
Hard steel bars, Chicago	(nom.) 2.85c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	40.00 to 46.00
Relaying rails, Pittsburgh	40.00 to 43.00
Angle bars, Pittsburgh base	2.75c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	2.45c
Spikes, railroad, Pittsburgh	3.35c
Track bolts, Pittsburgh	5.00c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 5c more)

Wire nails, Pittsburgh	3.25c to 4.50c
Plain wire, Pittsburgh	3.00c to 3.50c
Galvanized wire, Pittsburgh	3.70c to 4.20c
Barbed wire, painted, Pitts	3.40c to 3.70c
Barbed wire, galvanized, Pitts	4.10c to 4.40c
Cut nails, Pittsburgh l. c. l.	5.195c
Coated nails per count keg, Pitts.	3.50c to 4.00c
Polished staples, Pittsburgh	3.40c to 4.25c
Galvanized staples, Pittsburgh	4.10c to 4.95c

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Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	5.75c
Sheet piling, base, Pittsburgh	2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.00c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 5.00c
No. 28, bessemer, Pitts.	4.35c to 5.00c
No. 28, open-hearth, Chi.	4.62c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 5.00c
No. 28, bessemer, Pitts.	4.35c to 5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c to 6.50c
No. 28, bessemer, Pitts.	5.70c to 6.50c
No. 28, open-hearth, Chi.	5.97c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c to 4.00c
No. 10, bessemer, Pitts.	3.55c to 4.00c
No. 10, open-hearth, Chi.	3.82c
No. 10, open-hearth, Phila.	3.795c to 4.295c

Full sheet schedule page 1742.

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¾ to 3 in., butt, steel	57½	44
¾ to 3 in., butt, iron	34½	18½

Full pipe schedule page 1742.

Boiler Tubes

Steel, 3½ to 4½ inches, l. c. l.	40½
Iron, 3½ to 4½ inches, c. l.	16

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B

Four-inch, Chicago	$69.80
Six-inch and over, Chicago	66.80
Four-inch, New York	65.30
Six-inch and over, New York	62.30
Four-inch, Birmingham	63.00
Six-inch and over, Birmingham	60.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c to 3.50c
Bands, Pittsburgh	3.05c to 3.50c
Hot rolled strip steel, Pitts. stamping quality	3.50c
Cold finished steel bars, Pitts., base	3.60c to 4.00c

Rivets

Structural rivets, Pittsburgh	3.90c to 4.15c
Boiler rivets, Pittsburgh	4.00c to 4.25c
Rivets ⅞ in. and smaller Pitts.	50 to 50—10 off

Nuts and Bolts

(Prices f. o. b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	45–5 to 50–10 off
Cut thread	40–5 to 50–10 off
Larger and longer	30–10 to 40–10 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–7½ to 60 off
Cut thread	40–10–5 to 50–10 off
Larger and longer	40 to 40–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–5 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	70–10–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c to 2.70c off
Hot pressed, square tapped	2.25c to 2.45c off
Hot pressed, hexagon blank	2.50c to 2.70c off
Hot pressed, hexagon tapped	2.25 to 2.45c off
Cold pressed, square tapped	2.25c to 2.45c off
Cold pressed, square blank	2.50c to 2.70c off
Cold pressed, hexagon blank	2.50c to 2.70c off
Cold pressed, hexagon tapped	2.25c to 2.45c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Prices are those ruling on the largest percentage of sales at the dates named.

	Prices Dec. 24, 1919	Average prices Nov. 1919	Sept. 1919	Dec. 1918
Bessemer valley, delivered, Pittsburgh	$37.40	$32.00	$29.35	$36.60
Basic, valley, delivered, Pittsburgh	36.40	30.40	27.15	34.40
*No. 2 Foundry, Pittsburgh	39.40	33.15	28.15	35.40
*No. 2 Foundry, Chicago, furnace	40.00	31.75	26.75	34.00
Lake Superior charcoal, Chicago	45.00	35.50	32.75	38.70
Malleable, valley	39.65	31.75	28.65	35.90
Malleable, Chicago	40.50	32.25	27.25	34.50
*Southern, No. 2, Birmingham	35.00	30.65	26.75	35.25
*Southern Ohio, No. 2, Ironton	38.00	31.75	26.75	34.00
Basic, eastern del., eastern Pa	40.00	33.00	27.00	36.90
**No. 2X, Virginia, furnace	39.25	33.40	29.25	38.00
*No. 2X, eastern del., Philadelphia	43.10	35.85	29.95	39.15
Gray forge, valley del., Pittsburgh	38.40	31.80	27.15	34.40
Ferromanganese, 80 per cent, delivered	120.00	110.00	105.00	240.00†
Bessemer billets, Pittsburgh	48.00	40.90	38.50	47.50
Bessemer sheet bars, Pittsburgh	51.00	45.00	42.00	51.00
Open-hearth sheet bars, Pittsburgh	51.00	45.00	42.00	51.00
Open-hearth billets, Pittsburgh	48.00	40.90	38.50	47.50
Steel bars, Pittsburgh	3.00	2.45	2.35	2.90
Steel bars, Chicago	2.62	2.62	2.62	3.17
Iron bars, Philadelphia	3.495	2.895	2.595	3.745

	Prices Dec. 24, 1919	Average prices Nov. 1919	Sept. 1919	Dec. 1918
Iron bars, Cleveland	$3.25	$3.00	$2.52	$3.64
Iron bars, Chicago mill	2.87	2.73	2.62	3.50
Beams, Chicago	2.72	2.72	2.72	3.27
Beams, Pittsburgh	2.50	2.45	2.45	3.00
Beams, Philadelphia	2.795	2.695	2.695	3.245
Tank plates, Pittsburgh	2.75	2.65	2.60	3.25
Tank plates, Chicago	2.92	2.92	2.92	3.52
Tank plates, Philadelphia	3.245	2.895	2.845	3.395
Sheets, blk., No. 28, Pittsburgh	4.35	4.35	4.35	5.00
Sheets, blue anld., No. 10, Pittsburgh	3.55	3.55	3.55	4.25
Sheets, galv., No. 28, Pittsburgh	5.70	5.70	5.70	6.25
Wire nails, Pittsburgh	4.25	3.45	3.25	3.50
Connellsville furnace coke	6.00	5.80	4.60	6.00
Connellsville foundry coke	7.00	6.95	5.90	7.00
Heavy melting steel, Pittsburgh	25.00	21.90	20.50	27.50
Heavy melting steel, eastern Pa	23.00	20.80	19.00	24.75
Heavy melting steel, Chicago	22.50	20.65	19.00	26.50
No. 1 wrought, eastern Pennsylvania	31.00	27.85	27.00	33.50
No. 1 rought, Chicago	27.00	26.50	21.25	29.65
Rerolling rails, Chicago	32.00	31.15	25.40	30.40

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon. †70 per cent.

Basic Iron Sells High in the East

Tonnage Booked at $39 Furnace and $3 Over Previous Transaction—Eastern No. 2X Bringing $40 to $44 Furnace—Shortage of Cars and Coke Continue to Affect Production and Deliveries—Demand Exceeds Supply

Pittsburgh, Dec. 23.—Though still inclined to a lag behind other districts in the matter of prices, the pig iron market here shows evidence of great strength. Proof of this is found in a sale of 500 tons of No. 2 foundry for prompt shipment at $40, valley furnace basis, and the fact that while no round tonnages have been moved at that figure, none of the blast furnace interests who have any unsold tonnage for either prompt or first half shipment will consider less than that price. Sizable tonnages of standard basic have been sold within the week under review, at $35, valley furnace and a considerable amount of bessemer has been moved at $37, valley furnace, though no individual sales of as much as 1000 tons have been made at that figure. For round tonnages of basic the market still is quotable at $35, furnace, though it is asserted that this price has been offered for some off-iron running high in silicon and off in sulphur, while some makers expecting higher prices are disinclined to consider any business at the moment. Merchant producers are well sold ahead on foundry iron, but 1920 bookings for steel making grades have been moderate thus far and have been confined largely to the first quarter, though as a result of the contraction in blast furnace operation due to the coke scarcity, not a little first quarter tonnage is likely to become a second quarter obligation. This is true of merchant production generally and constitutes one of the strong elements of the situation in that the shortage which now exists is not probable of relief until well after the turn of the year. A number of blast furnaces which are ready to be lighted remain idle because coke is unobtainable, while here and there some have been forced to bank and others will have to do so soon unless the production and shipment of coke shows a decided increase. Malleable iron for first half of 1920 shipment was done at $38.25, valley furnace, recently, but there also have been sales of this grade to brokers around $36, valley furnace.

Upward Trend Not Checked

New York, Dec. 22.—Despite the disposition on the part of some furnaces which has been noticed recently to discourage sharp price advances, the upward trend of pig iron prices in this district is just as pronounced as before, and, although there now is a slight lull in demand in anticipation of the holidays, a comparatively heavy volume of business has been booked here during the past week. While some foundry iron still was being entered a week ago for first half at $39, eastern Pennsylvania furnace, for 2.25 to 2.75 silicon, this figure now has disappeared, and the minimum on this grade for any delivery seems to be $40, eastern Pennsylvania furnace. In fact, the general market on this grade for first half now may be represented by a spread of $40 to $42, eastern Pennsylvania furnace for this grade. On a number of instances, sales of small spot tonnages have been made at $43 and even $44, eastern Pennsylvania furnace, for 2.25 to 2.75 silicon. The latter prices, however, still are exceptional. Some Virginia iron has been sold in this district during the past week at $42, furnace, for 2.75 to 3.25 silicon. Good-sized lots of central Pennsylvania foundry for first half have been sold at $41 for 2.25 to 2.75 silicon, and $42 now is being asked. Buffalo foundry has been sold at resale for prompt shipment during the past week at $41, Buffalo, and even higher for 2.25 to 2.75 silicon.

Strong Demand at Buffalo

Buffalo, Dec. 23.—A strong demand for first half iron in this district is going unsatisfied. Business is not as brisk as it was, because consumers realize that furnaces have almost exhausted their first half capacity, but after the holidays, it is believed, business will assume still larger proportions. The stringency is made more emphatic by the fact that one of the producing interests in this district, which has been out of the market for considerable time, has been forced to keep three stacks out of blast because of the shortage of coke. Only one furnace in this district is at liberty to take first half iron. This producing interest has raised its prices, and authorizes this schedule for the three grades of foundry: No. 2 plain (1.75 to 2.25 silicon), $40; No. 2X (2.25 to 2.75 silicon), $41.25; No. 1X (2.75 to 3.25 silicon), $43. Representatives of this furnace state that small tonnages have been sold during the past week at these prices. Third quarter iron is not for sale. One other furnace that sold a small tonnage of No. 1X during the past week, received $41 for foundry and $39.25 for malleable.

Little Iron for Sale

Cleveland, Dec. 23.—A heavy inquiry but few sales covers the pig iron market in this district. Buyers continue much more active to place tonnage than producers are willing or able to accept. One Cleveland producer in the week sold some tonnage of No. 2 foundry, 1.75 to 2.25 silicon,

at $38, furnace, and this apparently represents the present market level locally. Other makers in northern Ohio or valley territory have made further sales in the week at $38, furnace, for No. 2 foundry, and $39.25 for 2.25 to 2.75 silicon. A sale of 500 tons of malleable for first quarter at $38, valley, is noted. Consumers in Detroit territory remain in the market with a heavy unfilled requirement. One large buyer there recently closed for 7000 tons of foundry. Brokers have made a number of sales in Detroit and Cleveland territory and have been trying to arrange with certain furnaces for substitutions of orders which will enable them to fill these obligations. It has been estimated by one furnace interest that recent inquiries, a large part of which are from brokers, have totaled 50,000 tons. Basic remains scarce and there is a receptive demand among northern and southern Ohio steelmakers for a large tonnage. One northern Ohio interest has been figuring on 15,000 tons, a southern Ohio user has renewed a request in which 4000 to 5000 tons now is named and there are other buying propositions in sight. The McKinney Steel Co. has blown in an additional furnace in this city and now has three of its four stacks in blast.

Car Shortage Delays Iron

Chicago, Dec. 23.—Inability of pig iron producers to obtain more than a small fraction of the car supply needed to move their produce is resulting in most of the iron now being produced being piled on furnace yards. This is a result of the order limiting the use of open cars to the coal trade. However, a few cars are furnished occasionally and thus some shipments are possible, while the bulk of the iron cannot be moved. Local iron, when it can be obtained at all, is quoted at $40, furnace, for foundry iron containing silicon 1.75 to 2.25 and $40.50, furnace, for malleable. The leading producer is selling only small lots of prompt iron to regular customers. Some tonnage is being contracted for first quarter delivery at the same price by another producer, being sold against the production of a stack which is idle at present. The total tonnage available from this source is probably 5000 to 7000 tons. One southern producer is selling a small tonnage of prompt iron at $36, Birmingham, for silicon 1.75 to 2.25, but no southern maker is making contracts for future delivery, as far as is known. Another southern interest is offering a small tonnage of 4 to 7 per cent silicon on the basis of $36, Birmingham, for the base grade. Inquiry is strong, a Chicago manufacturer of machinery seeking 1500 tons of malleable for first half. The Chicago, Milwaukee & St. Paul railroad is in the market for 3000 to 4000 tons of foundry and charcoal iron. The largest inquiry now current involves 30,000 tons of basic iron for a consumer with plants located both east and west. Competent observers believe it will be difficult to cover any important part of this tonnage. Other inquiries include 2000 tons of foundry iron for a Michigan melter, 1000 tons of low phosphorus for Chicago delivery and 2000 tons of malleable for a Chicago user.

Little Metal for Sale

Cincinnati, Dec. 22.—The pig iron market in this district appears to be nearly at a standstill because of excessively low stocks, although there is an urgent buying demand. Some consumers have made almost frenzied efforts to obtain supplies during the past week. Prices are strong and show an advancing tendency under the persistent call of buyers, and a generally higher schedule is confidently predicted in all quarters for delivery early next year when supplies are available. In the Ironton district there is absolutely no iron and quotable prices have bounded upward, there being bids up to $41 for delivery early in the first quarter of 1920. Practically the same condition prevails at Birmingham, where the furnaces are out of the market. There is a continued scarcity of coal and coke. Southern producers report urgent inquiries.

Sales Light, But Demand is Active

St. Louis, Dec. 20.—Selling of pig iron during the week has been in light volume relatively, but the demand is still broad and active. Nothing is offered for prompt shipment, little for the first quarter, and less for the second quarter of 1920. While southern interests have not sold out their entire capacity, they are endeavoring to determine production costs for next year before opening their books for disposal of their remaining tonnage. Consumers are eager to obtain deliveries on contracts. The coal situation in this district is rapidly clearing up. Several southern furnaces now idle are preparing to go into blast. Foundry iron is stronger than steelmaking grades, because of the almost unprecedented activity of foundries. Selling agencies representing eastern and northern furnaces report iron is growing scarcer. Some of the smaller plants in this district which have delayed covering their requirements, will be unable to operate fully unless they obtain iron. Some relief may come later with the resumption of production by certain furnaces, but even they have sold against anticipated production, as in the case of the Mississippi Valley Iron Co., which will not resume until March, but which recently sold 10,000 tons of basic to the Scullin Steel Co. Sales of identical grades have been reported at different figures. Southern foundry (1.75 to 2.25 silicon) is being offered by makers at $40, but no sales at that figure have been reported. One dealer was offering small tonnages of northern iron (1.75 to 2.25 silicon) at $40, Chicago, for delivery in February and March.

Anxious to Place Business

Birmingham, Ala., Dec. 23.—Inquiries for pig iron are numerous, and consumers are anxious to have their business accepted. One of the smaller companies in this district tried out the market a few days ago, offering a little spot iron at $1 above the quotations then in effect, and the tonnage was quickly taken. There is a tendency on the part of producers to remain out of the market for the present. Sales have been made on a basis of $36 for No. 2 foundry (1.75 to 2.25 silicon), and the report is that $38 can be obtained. Little iron for first quarter is available, while not more than half of that of the second quarter has been disposed of. The Hattie furnace of the Sloss-Sheffield Steel & Iron Co., at Sheffield, is making iron again, and No. 3 furnace of the same company, at North Birmingham, will be ready for operation by March 1. A skip hoist, cast shed and crane are being built at the plant. Shipment of iron from the Birmingham district is restricted by lack of cars.

Basic Has Sharp Rise

Philadelphia, Dec. 23.—After several weeks, basic in this territory again has advanced sensationally. A sale of several thousand tons has been made for first quarter at $39 eastern Pennsylvania furnace. Prior to this sale the market on this grade had not been considered so high; in fact it is not yet certain that less could not be done. A Cumberland, Md., consumer is inquiring for a round lot of basic for first quarter. Several thousand tons of standard low phosphorus iron has been sold for first quarter at $46 eastern furnace equivalent to $49.80 Philadelphia. Small sales of copper-bearing low phosphorus have been closed at $41 furnace but it is not yet certain that the $40 price has disappeared. From 6000 to 7000 tons of gray forge sold for first quarter have been sold at $38 to $39, eastern Pennsylvania furnace and a big inquiry is unsatisfied because of the lack of this grade. Malleable in substantial tonnages has brought $39 eastern Pennsylvania furnace and $40 now is being asked. The last price on charcoal iron quoted to this district was $50 Michigan furnace but this now is withdrawn. There has been some round lot business in bessemer and this grade now is around $38 valley equivalent to $42.40, Philadelphia. Altogether the past week was characterized by a large total of pig iron business in which both furnaces and second hands figured actively. A large business was done in foundry iron at prices ranging $40 to $44 eastern Pennsylvania furnace for No. 2X (2.25 to 2.75 silicon) with the inside price now exceptional. Central Pennsylvania furnaces here sold heavily at prices ranging from $40 to $41 furnace for No. 2X. Differentials in most cases for No. 2 plain (1.75 to 2.25 silicon) and No. 1X (2.75 to 3.25 silicon) are $1 but one furnace which has sold considerable No. 1X now is asking differential of $1.75 for the latter. Buffalo foundry for first quarter and second half has been sold by makers at $40 and $41, Buffalo, for No. 2 plain. All Virginia makers with one exception now holding at $40 furnace for No. 2 plain, $41.25 for No. 2X and $43 for No. 1X and sales have been made on this basis. Some Virginia iron still is obtainable on the basis of $38 furnace for No. 2 plain. A Lynchburg pipemaker bought heavily of No. 2 plain and practically cleaned up the tonnage, to be made for the first quarter.

The Midvale Steel & Ordnance Co. is making low phosphorus iron at its

furnaces at Coatesville and will run on this grade for about a month.

Must Buy Additional Tonnage

Boston, Dec. 22.—The holiday quietness is apparent in the pig iron market in spite of the fact that many foundries are still anxious about their supplies for first half. It is estimated by those in close touch with the New England situation that foundries have already purchased approximately 75 per cent of the iron which they will require up to June, 1920. Because the furnaces are behind on 1919 deliveries new purchases will have to be made during the early part of the year covering nearly 50 per cent of needs, or, conservatively speaking, about 100,000 tons. The furnaces which usually supply the New England trade are for the most part sold up. Southern furnaces still have considerable tonnage to offer. The Virginia furnaces are rather heavily sold. The eastern Pennsylvania furnaces have comparatively little iron to offer, for first quarter. Most consumers have decided to hold up their purchases until after the inventory at the first of the year. The sales during the past week in Boston have been unusually small. One southern furnace sold 300 tons of a special analysis iron to a Massachusetts consumer at a $36.00 base, Birmingham. Small sales of Virginia iron were made on a $38.00 base, furnace, but some sales have been at a higher figure and the market is generally considered to be above this level. In eastern Pennsylvania sales have shown a wide spread. A sale of 400 tons was made at $41.25, furnace, for 2.25 to 2.75 silicon, and others are reported as high as $44.00, furnace. Resale iron is bringing $45.00 and $46.00, delivered, New England points. Deliveries of pig iron are slowing up due partly to a car shortage.

Car Shortage

Holds Up Tin Plate Shipments—Production On the Upgrade

Pittsburgh, Dec. 23.—With improvement in the coal situation, tin plate mill activities are on a larger scale. While production is gaining steadily and is being applied largely to existing contracts, a shortage of cars has been holding up shipments and this situation has rather intensified the demand for prompt or early delivery. The American Sheet & Tin Plate Co., at one of its valley plants last week piled up no less than 75 carloads of finished material because of inability to obtain cars. Almost no tonnage beyond contract obligations is available for first quarter shipment, and prompt business cannot be taken on except at the expense of old orders. While some business has been taken for that period at $7.50 per base box, Pittsburgh, and it is reported that as high as $9 was quoted against an inquiry for 20,000 boxes for that delivery, makers generally are quoting $7 per base box, Pittsburgh, to regular customers. Substantially higher prices are quoted on export inquiries, and domestic buyers without regular supply sources also are being asked more than the regular market base.

Coke Situation Still Tight

Car Shortage Offsets Any Advantages Resulting From Lifting of Government Restrictions—Merchant Producers Suffering the Most

Pittsburgh, Dec. 23.—A shortage of cars has more than offset any benefit expected from the lifting of the fuel administration's restrictions on production of beehive coke. While production in the Connellsville regions in the week ended Dec. 13, fell off less than 30 per cent compared with the previous week, the merchant ovens suffered considerably more than that. Last week their loss was more pronounced, due to the fact that only 30 per cent of the car supply was allotted for coke shipments. At some plants the number of cars was but 10 per cent of the requirement, and the situation is no better this week. Oven operators are endeavoring to meet their contract obligations to the exclusion of spot demands, but are not succeeding, as a couple of valley merchant stacks have been forced to bank because of the lack of coke, and others are expected to go down unless immediate relief is forthcoming. Meanwhile, coke is eagerly snapped up by the steel companies unable to get sufficient coal to operate their by-product plants.

Some reports have been current that the fuel administration never restored officially the old government maximums on coke. The order was signed by Dr. Garfield, but was not sent to the operators. This, however, was not necessary. Removal of the price restrictions cannot be expected until the by-product plants get normal coal supplies, and when this will be is merely a matter of conjecture. Little, if any coke, is available at the fixed prices.

It is stated that several offers of $6, ovens, for furnace coke have been refused by oven operators, who claim they can obtain $8, $9 or $10, ovens, from the steel companies. In view of the fact that operators are unable to meet their contract obligations, considerable business is piling up, and this must be taken care of before much coke will be available for the open market. Not much has been done lately in the matter of contracts and consummation of pending negotiations probably will be deferred until the price restrictions are removed. It is believed that fully 70 per cent of the production in the Connellsville regions for the first half of 1920 is under contract or reservation. Fixed price contracts have carried prices of from $5.50 to $6, ovens, while on sliding scale agreements, ratios of from 5½ to 4½ to 1 on valley basic pig iron, have been accepted by consumers. On $35 iron, coke under sliding scale contracts has a value of from $6.35 to $7.75.

Many foundries in this district appear to be better off in the matter of coke supplies than the blast furnaces, possibly because of restricted cupola operations, due to the scarcity of iron. Connellsville production of coke for the week ended Dec. 13, is estimated by *The Connellsville Courier* to have been 191,600 tons, as compared with 262,810 tons in the previous week.

Approach of Holidays Brings Lull

New York, Dec. 22.—Coke buying has fallen off in volume in this district due to the approach of the holidays. Restoration of government prices and the resumption of coal production also have tended to terminate the period during which consumers were anxious as to their situation with respect to supplies and prices of fuel. The northern New Jersey by-product producer continues to quote $7.50 Connellsville, for by-product foundry coke for spot and first half delivery. It continues to book orders for by-product furnace coke at $8.69 ovens, for spot shipment. The beehive makers, generally, are not offering.

Producers Well Sold Up

St. Louis, Dec. 30.—Demand for coke is active. Ovens supplying this district seem well sold up and regular customers are receiving scarcely enough to fill their requirements. It is hoped, however, that lifting of government restrictions on the manufacture of coke will result in more liberal offerings early in 1920.

Foundries are busy and demand from that source is continuous. Smelters also are inquiring for more coke. Southern makers are not offering a pound of coke in this region, and latest advices indicate they will not do so for at least six months. Numerous inquiries arrive daily from the West and Southwest.

Production Improving in South

Birmingham, Ala., Dec. 23.—Beehive ovens in Alabama are producing normally, while by-product plants have continued operations. Demand for coke is increasing, but producers apparently are not yet ready to take on new business. Independent companies are shipping coke to the West and into Mexico. Quotations are unchanged, $9.50 being the price for foundry coke and $7.50 for furnace.

Turn to By-Product Fuel

Boston, Dec. 22,—Most New England consumers of foundry coke have contracted for their first half requirements based on their present rate of production. At present there is a decided lull of business especially as to prompt deliveries. A feature of the by-product market in New England is the demand from foundries in New York and Canada. Failing to get sufficient Connellsville coke, foundries in the Buffalo district have turned to the by-product producers along the Atlantic coast and many substantial orders have been placed during the last two weeks. The low Connellsville price has made the sliding scale contracts, which heretofore have been based on the beehive prices, unpopular with the New England producers.

Scrap Market is Firmer

Resumption of Various Plants After Coal Shortage Stirs New Demand — Some Grades Again Advance

FOR COMPLETE SCRAP PRICES SEE PAGE 1744

St. Louis, Dec. 20.—The market for scrap iron and steel continues on the upgrade. Sentiment among dealers and even consumers is bullish, induced by a broad and active demand, and marked scarcity of all grades. The railroads had no lists before the market this week, and aside from a few scattered cars disposed of at private sale the carriers offered nothing. Little material is coming in from the country. Rolling mills are endeavoring to purchase sizable tonnages, believing that by the end of next week they will be able to procure all the coal they need. The Helmbacher plant of the American Car & Foundry Co., which is the largest single user here, is understood to have bought 5999 tons this week. The St. Louis Screw Co. is in the market for supplies. Dealers report numerous inquiries from outside points, many of which are never heard from in this market unless there is a general scarcity. Eastern interests are buying, and industries between here and Chicago apparently have need of large supplies. The feature of the week's business was the sharp upward revisions in dealers' lists. Virtually all quotations were advanced, changes ranging from $1 to $3.50. The heaviest rise was in old car wheels, which are up $3.50 to $28.50 to $29. Heavy melting steel was marked up to $24.50 to $25, with shoveling steel proportionately higher. Agricultural malleable was advanced $2 and stove plate $1.50. Cast grades of all descriptions are most in demand, and are scarce.

Cast Scrap Snapped Up

New York, Dec. 21.—Heavy demand for cast scrap continues to shoot prices upward. No. 1 heavy machinery cast is now quoted at $27 to $28, f.o.b. New York, and machinery cast at $29 to $30. Foundries are closing on practically every tonnage offered at the current market. Grate bars also are being bought in better volume, and at advancing prices. This material is now holding at $19.50 to $20 f.o.b. New York. Other descriptions to advance are city wrought pipe, long stock, holding at $21.50 to $22.50, f.o.b. New York, and railroad wrought, being offered at $27.50 to $28. The upward tendency in these materials appears to be due more to scarcity and the general strength of the scrap market than to the volume of demand. Heavy melting steel is strong, but unchanged.

Steel Companies Are Buyers

Philadelphia, Dec. 23.—The Bethlehem Steel Co. has bought a large tonnage of heavy steel scrap at $22 delivered which generally is regarded as below the market. This interest also bought a large tonnage of blast furnace borings and turnings at $17.25 to $18 delivered. The Phoenix Iron Works bought 2500 tons of machine shop turnings at $17 delivered. The turnings market is easier while borings continue strong. A sale of rerolling rails was made at $34 delivered. Foundry scrap is strong but erratic. Sales of No. 1 cupola have been made at $32 to $35 delivered.

Prices Already Are Firmer

Pittsburgh, Dec. 23.—Demand for scrap is more active demand and dealers are now giving little consideration to bids they would have accepted a week ago. Heavy melting steel has moved up to $25, delivered, and some has been sold at that price to steel manufacturers in the Pittsburgh and Wheeling districts. Less than that now will not be considered by dealers, most of whom believe that prices will advance. Grades finding the same use as heavy melting steel are sympathetically firmer, and it is wasted effort for buyers of foundry grades to attempt to obtain supplies at recent prices. Low phosphorus steel is not obtainable now for less than $30, delivered. Machine shop turnings, which consumers could not be interested in at $15, now are held at $16. Pressure to sell bundled sheet sides and ends has abated with the improvement in the prospect, while knuckles, couplers and springs instead of selling at parity with heavy melting grade now are at a premium over that grade.

Trading at Buffalo Light

Buffalo, Dec. 22.—All grades of scrap in this district have been advanced, but the prices are only nominal as trading is light, and it is impossible to buy a large tonnage of any grade. All the mills tentatively are in the market but are not pressing forward for material. Dealers believe the first of the year will see a general increase in prices, as by that time mills will know how much scrap they will be able to use.

Southern Market Firm

Birmingham, Ala., Dec. 23.—The scrap iron and steel market in the South is not weakening. Dealers are showing confidence and contracts are being accepted. Some apprehension is felt that if too large a tonnage is sold for future delivery there may be some difficulty in obtaining sufficient material to fill them. No change has been made in prices, although they are showing an upward trend. Cast scrap is less plentiful. Consumers of heavy melting steel still are hesitating as to paying prices asked by dealers.

Chicago Market Holds Strength

Chicago, Dec. 23.—Firmness characterizes the market for scrap iron and steel in Chicago, a recent purchase of a round tonnage by an open-hearth consumer outside Chicago having given the market a decided upward turn. Resumption of production by bar iron mills has given wrought scrap and busheling an upward tendency, while continued demand for cast scrap is making those grades advance steadily. Increasing activity of steel plants is giving grades which go into open hearths a much livelier feeling. Railroads are offering comparatively little, the list of the Rock Island, offering 1200 tons, being the only one out at present.

Cast Leads the Market

Boston, Dec. 22.—Cast scrap iron continues to advance in price and there is no let up in the demand from foundries for better grades. A lot of 500 tons of mixed railroad and machinery scrap was sold to an eastern Massachusetts consumer during the week for $36.50 and some smaller sales have been made at even higher figures. The demand for turnings which fell off last week still is quiet although one sale of approximately 2000 tons to a Pennsylvania steel plant has been reported. Heavy melting steel scrap also is quiet. Although some sales continue to be made for delivery to Pennsylvania, the prices remain unchanged and the demand is not active. Most grades of scrap with the exception of machinery cast are quiet. The salvage board continues to bring out small lots of steel and wire scrap and 4,500,000 feet of steel cable located at Worcester, Mass., is among the recent offerings.

Trading Confined to Dealers

Cleveland, Dec. 23.—The scrap iron and steel market in Cleveland just now is wholly a dealers' affair. Some dealers are speculating and offering several dollars more than the market; others are bearish and refuse either to sell or buy until the price trend can be determined. Larger melters of scrap, barring the foundries, say they will not need a pound before March 1. Some dealers explain the unusually wide spread between pig iron and heavy melting steel to the fact that scrap is plentiful, while the reverse is true of pig iron. Trading in the past week has been confined to small lots among dealers and some speculative buying on a small scale. Prices are unchanged.

Pressing Needs

Still Receive Exclusive Attention of Pipe Mills—Fancy Prices Paid

Pittsburgh, Dec. 23.—While all makers of pipe in this, the valley and Wheeling districts have increased operations as a result of the easier fuel situation, production has not risen to a point where any of them has abandoned entirely the recent practice of confining activity to most pressing needs. Makers are going over their order books carefully and then asking buyers to specify minimum tonnages necessary. Total bookings are not being rapidly reduced by this plan. None of the manufacturers can guarantee shipments of oil country pipe before the second quarter, while the leading interest is sold prac-

tically through the entire year. Some fancy prices are being offered for oil well pipe for early delivery. A buyer in McKeesport paid $2.40 per foot for some secondhand 6-inch, 24-pound casings, against the list price on new pipe of this size and weight of less than $1.30 per foot. Drill, drive and line pipe and casings, it is said, would bring about double the present schedules for early deliveries if makers could accept the business. Jobbers are down to bare boards on merchant pipe in both steel and wrought iron.

Awards Are Deferred

New York, Dec. 23.—Although no award has been announced, the low bidder on approximately 2000 tons of cast iron pipe for Newark, N. J., was the Warren Foundry & Machine Co. In the case of the two tonnages required by New York City, action has been postponed, as bids exceeded appropriations. It is believed, however, that action will not be delayed long. Despite the close proximity of the holiday season, private demand continues in good volume, although there is a slight falling off. Included in recent buying are some fairly good tonnages for Brazil, Argentina and Japan. Brazil is reported in the market for a requirement which eventually will reach 25,000 tons. Prices are strong, but unchanged.

Back to January Level

Chicago, Dec. 23.—With prices on cast iron pipe advanced $4 late last week, the base price is increased to $60, Birmingham, for 6-inch, which is exactly the quotation at which the year started. This brings 6-inch pipe to $66.80, delivered, Chicago, and 4-inch pipe to $69.80, delivered, Chicago. Fittings have been advanced $5 per ton, in keeping with the advance on pipe. Elyria, O., has not yet made an award on its inquiry for several thousand tons. Bids will be opened Jan. 5, at Rio, Wis., on 170 tons.

Pipe Plants in South Busy

Birmingham, Ala., Dec. 23.—All cast iron pipe plants in the Birmingham district are busy, and have orders in hand for large tonnages. The National Cast Iron Pipe Co., Birmingham, is to increase the capacity of its plant at Boyles with an additional pit, a specialty department, and other additions. Shipments of pipe from this district are steady, when cars can be furnished by the railroads.

Considers Asian Plant

Ground has been broken for a 50 x 150-foot building at the plant of the Truscon Steel Co., Youngstown, O. The officials of the company are centering their efforts on available business in the Far East markets having a fabricating plant under construction in Japan. The company also is considering the erection of a similar plant at Singapore, Straits Settlements, Asia.

Steamer chartering has dwindled to a point which makes it a negligible factor in shipping. Only seven charters were reported in New York last week. The situation is due to the coal strike.

Sheet Shortage Growing

Though Mill Operations Continue to Increase, Supplies are Almost Unobtainable — Valley Mills Sold Up For First Quarter

Pittsburgh, Dec. 23.—Although the fuel situation is not normal and the shortage of sheet bars remains a restrictive factor, sheet mill operations continue to improve. Several independent plants in the valley and Wheeling districts which suspended or curtailed production as a result of the coal scarcity, now are operating at about the same rate as before the coal shortage. The American Sheet & Tin Plate Co., this week has more than 90 per cent of its sheet mills in operation, as compared with 70 per cent during the fuel shortage. The company has gone outside its regular sources of supply for sheet bars, obtaining some tonnages from Chicago. The supply situation remains extremely tight, for while the bulk of current production is being applied to standing obligations, stocks in second and third hands are almost nil as a result of the constant and heavy drafts of the past few months. Galvanized corrugated sheets are almost unobtainable, while galvanized sheets can be had for early delivery only at big premiums over recognized market bases. Some business in the latter is reported to have been done recently as high as 7.00c, base. Sharp distinction is being made by all manufacturers between regular and occasional customers. The former's requirements are being met as far as possible at regular prices, but the latter find they can make purchases only by paying prices based on current prices.

Large Premiums Paid for Sheets

Philadelphia, Dec. 23.—Sheets continue exceedingly scarce, and the amount of premiums being paid is indicated by the fact one interest bought galvanized corrugated at 8.50c, Pittsburgh. The lowest price on blue annealed sheets is 4.05c Pittsburgh, for No. 10. A big tonnage for both the domestic and export trade is being turned away.

Turn Down Inquiry

Chicago, Dec. 23.—Manufacturers of steel sheets are unable to cope with the flood of inquiry now being received and much of it is being turned down. The plea of most consumers is that they are increasing their volume of business, while producers advise them they must reduce their volume to keep within reach of present supply of raw material. The principal producer recently opened its books to old customers but booked all it could contract for within a short time and again has retired from the market.

First Quarter Tonnage Sold

Youngstown, O., Dec. 23.—From present indications makers in this territory will have nothing for sale for the first quarter. Inquiries for all grades are heavy but only in rare cases are they entertained. They average anywhere from carload lots to 100 tons each. No letup is noticed in the demand for light-gage black and galvanized. Blue annealed sales to western consumers have decreased considerably. Shipments of this grade especially in 12 gage or heavier, to eastern points also are light.

Waster and cutdown sheets are difficult to find. In some cases they are commanding a price higher than that quoted for prime stock. Consumers, finding it almost impossible to locate first grade sheets, have become heavy buyers of defective stock and as a result a strong market has been created in this direction. A bid of 5.90c for galvanized wasters was made recently but failed to uncover any tonnage. All sheet plants here will close Wednesday evening. Little repair work is contemplated on account of the large amount of business booked.

Wire Tonnage

For January Offered by One Maker on Higher Basis

Pittsburgh, Dec. 23.—Little tonnage of nails or other wire products is available for early delivery, although one of the independent companies recently opened its books for a limited amount of business for January shipment in nails, staples and barbed wire. Nails are priced at $4.25, base, Pittsburgh, in this allotment, staples at $4.25 for polished and $4.95 for galvanized and barbed wire at $3.65 for painted and $4.35 for galvanized. While all makers of wire and wire products are doing better in the matter of plant operations than recently, not much headway yet has been made in cutting down old obligations. Small sales of both nails and wire have been made at considerably above the prices named for early shipment. While the possibility is slight that the American Steel & Wire Co. immediately will make any change in its prices, it is understood that the independent companies are considering a new base and a new card of extras on nails. It appears to be a general feeling among the independent wire companies that until nails are placed upon a profitable basis, they should not increase production. The shortage of nails is extremely acute and no relief apparently is likely soon.

Production Improves Slowly

New York, Dec. 22.—Wire production continues to improve slowly, and many consumers are unable to obtain enough material. Mills are trying to take care of their customers to the best of their ability, and the leading interest is booking a day-to-day business on the same price basis of 3.25c, Pittsburgh, for wire nails and 3.00c for plain wire which it has maintained since last March.

Bar Demands Unsatisfied

New Requests for Tonnage Pour in and Accumulated Orders Are Not Diminished—Ford to Need 150,000 Tons for Rims

Chicago, Dec. 23.—Efforts of consumers to buy soft steel bars are almost futile, the leading independent being unable to book anything further before July 1, 1920. The leading interest has little to offer and this only to regular customers. At present this interest is selling only for first quarter specification, which means in most cases delivery during the second quarter, and little tonnage remains to be disposed of. The situation is uncertain because of the possibility that weather conditions may limit fuel shipments and lessen operations. The quotation remains unchanged at 2.62c, Chicago.

Production of bar iron is being resumed. The East Chicago mill is in operation with large bookings and much inquiry which it cannot consider. At present quotations are 2.87c to 3.00c, mill, with the probability of the higher figure being standard within a few days. Railroads are in the market for some of this material, and consumers in the east are inquiring from western producers, as their own sources are unable to supply them.

Mills producing hard steel bars from old rails are resuming operation after having been closed for lack of fuel, and have contracts and specifications covering at least three months' production. While the last sales at a specified price were at 2.85c, mill, all recent selling provides that the price shall be the quotation in effect at the time of shipment.

Mills Refuse Large Tonnages

New York, Dec. 22.—It is becoming more difficult to place orders for steel bars. Occasionally, orders are being closed at prices ranging from 3.00c, Pittsburgh, to 4.00c. Some export business has been taken at the latter figure. Mills are making every effort to provide their regular customers, some of them allotting a certain tonnage a month. Some large forging bars have been taken by an eastern mill at 3.50c, Pittsburgh, and small bars at 3.75c. The latter are sold up to a greater extent than the larger sizes of material. Eastern bar iron makers generally now are quoting 3.50c, base, Pittsburgh. One feature of recent buying is the substantial tonnages called for by South America.

Big Premiums Paid for Steel Bars

Philadelphia, Dec. 23.—Steel bars are bringing all kinds of prices. While a large number of consumers are being supplied at 2.35c through regular sources, many are paying as high as 3.50c, Pittsburgh. In fact, the premiums being paid depend on what will tempt the mills to enter tonnages, as there are many consumers with whom price is no object. Most mills are booked for from five to six months ahead. Some could give better deliveries, but will book no more business at this time, saying they do not know what costs will be, and that they expect to see prices go higher. Current prices of iron bars range from 3.00c to 3.75c, Pittsburgh.

Demand Still Unsatisfied

Pittsburgh, Dec. 23.—While shipments of merchant bars on old contracts are larger than they were recently, the fact that new demands still are pouring in indicates that no appreciable inroads have been made by the mills against their accumulated orders, and that the immediate requirements of buyers are unsatisfied. While the leading interest holds to the base of 2.35c, Pittsburgh the bookings carry no guarantee as to time of delivery. Independent makers who also are holding that base, are accepting no new orders. Independents who are taking business, either are stipulating a price at time of delivery or quoting 3.00c, base, Pittsburgh, or higher. That was the best price quoted a Pittsburgh district maker of cold-finished bars on a recent inquiry for 10,000 tons of bars. In some quarters a 4-cent bar market is looked for with the explanation of billets carrying the March 21 price. The market on 4 x 4 billets is now up to $45 to $50 a ton, while conversion costs are put at about $20 per ton.

New demands for concrete reinforcing bars are light, but most makers have several weeks' business booked. Rerolled bars of this sort are quotable from 3.00c to 3.50c, mill.

Iron bars still are sought, and 3.50c, base, for common bars is reported to be easily obtained. The Pennsylvania railroad is seeking first quarter tonnages of both common and specification iron, and chain makers also are in the market for first quarter supplies.

Out of Market for First Half

Buffalo, Dec. 22.—Buffalo bar mills are out of the market for first half business. Demand is still strong. Some mills have not booked business for the first quarter, owing to uncertainties in regard to the supply of raw material. Considerable 1920 capacity will go to the production of 1919 tonnages which were held up by the strike. Mill operation is about 70 per cent of capacity.

Big Tonnage in Sight

Cleveland, Dec. 23.—A tremendous demand for bars and bar mill products continues current and much of this still is coming from the automotive industries. While most of these consumers in this territory are comfortably covered some of them are seeking additional tonnage and they are having great trouble to place it because the mills are so filled. Some large tonnages are being talked of as representing probable requirements of leading automobile builders for next year. It is understood that the requirements of rim stock of the Ford Motor Car Co. for 1920 have been placed at 150,000 tons of which 40,000 tons would come to plants in Cleveland territory doing work for this interest. The leading producer continues to take some business from its regular trade at 2.35c, Pittsburgh, but this is limited to the amount these buyers have been accustomed to order and outsiders are not being accommodated.

Sell Over 4.00c Base

Pittsburgh, Dec. 23.—The former base price of 3.60c, Pittsburgh, for cold finished steel bars means little so far as current sales for prompt delivery are concerned. Actually, 4.05c, base, has been obtained recently on bessemer screw stock, and in view of the fact that makers are unable to obtain bessemer billets in the base size for less than $50, still higher prices appear likely in the near future. Bessemer steel capacity has remained stationary in recent years, the tendency of the industry being to increase steel production through the medium of open-hearth furnaces. It is asserted that the automotive industry alone requires enough bessemer steel in the form of screw stock to warrant a larger production. Deliveries of merchant bars to the cold-finishing mills still are too small to permit of an increase in operations of the latter. Some of the larger makers still are quoting 3.60c, base, but cannot take on new business at that figure. The Wyckoff Drawn Steel Co., with a plant at Ambridge, Pa., started operations and made its initial shipments last week. This plant has a monthly capacity of 6000 tons of cold finished steel and probably will be running full early in 1920.

No Let Up in the Demand

Pittsburgh, Dec. 23.—Makers of nuts and bolts in this district still are up against the proposition of trying to meet an abnormal demand with subnormal supplies of bars and rods. Since this cannot be done new business is being turned down, even at the higher prices established in the past few weeks. Merchant bars for early or specified deliveries are unobtainable much below 3.00c base, Pittsburgh, as compared with the former base of 2.35c. Wire rods of the best grade have been selling at $65 per ton or higher, at least $13 a ton over the March 21 base. Shipments of bars against contracts are moderate as steel production in the Pittsburgh district has suffered considerably in the past week because of the fuel situation. The supply of producer gas has been affected by the coal shortage while little or no natural gas has been available for industrial uses. The situation in rivets is not quite so taut as with nuts and bolts, since no railroad demand has developed.

Warehouse Demand Big

New York, Dec. 21.—Despite the near approach of the holiday season, local warehouse interests continue to be fairly deluged with business. Demand for sheets, steel bars, hoops, bands and, in fact, for most all descriptions, remains heavy. Plates and heavy structural shapes are in not

such active demand, but, nevertheless, these descriptions are moving more rapidly. As indicated last week, an advance has gone into effect in machine bolts, the larger sizes now being quoted at a discount of 20 per cent, and the smaller at 30 per cent. Iron bars also are moving upward, the current market being 4.00c, New York.

The Pittsburgh Steel Co. is sending out as a holiday souvenir, a nickel plated envelope opener made from a 9-inch wire spike.

Offer Big Plate Business

40,000 Tons For 16 Oil Tankers Among Current Inquiries—Contracts For First Quarter Made at From 3.00 to 3.25—By Eastern Mills

Philadelphia, Dec. 23.—A huge plate business is being offered from all sides, the largest probably being involved in an inquiry for 40,000 tons for ten tankers, from which are likely to be let to Pacific coast yards, for the Southern Pacific railroad, and six for the Sinclair Oil Co. Inability to get steel may hold up this business. Some plate business was done in this district in the past week at 2.85c, Pittsburgh, and this was the minimum. Most sales were at 3.00c, and a considerable number were made at 3.25c. Three cents now seems to be the minimum. Some first quarter contracts were taken from insistent buyers at both 3.00c and 3.25c. The best delivery to be had in the East is five weeks for universals, and three months for sheared. Due to the fuel situation, as well as to the indifference of the men in some cases, the output of eastern plate mills is not greater than 85 per cent. On bids opened last Friday, the Carnegie Steel Co., offered 16,000 tons of plates and shapes to the government at 2.50c and 2.40c, Pittsburgh, respectively. However, this interest now seems to have an absolute minimum of 2.65c and 2.45c on all other business, and no longer is quoting the special price of 2.50c on plates, at which figure it was taking ship business only a few weeks ago. Included in recent export orders are some round tonnages of plates for shipyards in Belgium, France and England.

Bookings Are Heavy

Pittsburgh, Dec. 23.—Demand for plates is now coming from practically all classes of users. In addition to demands from the tank builders, structural interests and the ship builders, a number of inquiries for small tonnages have been received from the railroads. Plate mill operations in this district are increasing as the coal situation improves, but few makers are in a position to make shipments earlier than the latter part of next month and enough business is in sight to keep some plants busy for at least the first quarter of 1920. No more than 2.75c, base, has been paid here, while the Carnegie Steel Co. continues to accept business at 2.65c. Some of the valley makers also are holding at the 2.65c, base, but the word from the East is that as high as 3.00c and 3.25c, Pittsburgh, is being quoted.

Ship Tonnage Leads

Chicago, Dec. 23.—In addition to the large purchase of shipbuilding material, mostly plates, by a Pacific coast builder last week, the total of which now aggregates 75,000 tons, sufficient for four or five hulls, a Gulf shipbuilder is in the market with an inquiry for plates and shapes for the construction of four steel barges. The tonnage involved is not known. Plate mills have some unsold tonnage for first half, but recent bookings are sufficient almost to fill productive capacity. The quotation has not been changed from that prevailing for some time, 2.92c, Chicago.

Corporation Buys Alloy

New York, Dec. 22.—The United States Steel Corp. is reported to have closed for its 1920 requirements of 50 per cent ferrosilicon, involving 12,000 tons, at between $80 and $85. Last year the corporation's blanket contract covered a maximum of 30,000 tons for 1919 delivery. The Andrews Steel Co. is reported in the market for 600 tons for first half. Recent carload sales have been reported at $80, delivered Pittsburgh and Buffalo districts.

One of the domestic makers of ferrotungsten is reported to have reduced quotations to $1.05 a pound contained, while brokers offering foreign alloy are asking around $1 a pound contained. Inquiry for ferrotungsten is light.

Several large contracts for ferrochrome for 1920 delivery have been closed, at prices said to be around the basis of 22 cents per pound contained, delivered for alloy containing 6 to 8 per cent carbon. The prices made by domestic manufacturers by whom the business was closed were developed in close competition with foreign sellers, largely French. Domestic makers are obtaining 24 to 25 cents per pound contained for spot carloads of ferrochrome.

A number of contracts for ferrovanadium for next year's delivery have been closed on the basis of $6 a pound contained for alloy containing 30 to 40 per cent vanadium. Some sellers are realizing $7 a pound contained on relatively small lots of high grade ferrovanadium for early delivery.

After entering considerable ferromanganese tonnage during the past week at $120, delivered, domestic makers have advanced their price to $130, delivered. As far as known this figure has not yet been done. There is a total lack of pressure to sell ferromanganese and the situation is quite strong. The lowest price now being quoted on English ferromanganese is $120, c.i.f. tidewater, for second quarter and the tonnage offered is limited. More than 1000 tons of English ferromanganese for the second and third quarters have been booked at $130 tidewater but the offering at this price is limited.

Spiegeleisen is quiet but strong and, on the basis of the last sales, still may be quoted at $39 to $41, furnace, on 19 to 21 per cent metal. There apparently is only one seller at this level. One maker for several weeks has been holding for $45, furnace. Included in the demand for spiegeleisen is considerable export inquiry.

Buy Ore at 55 Cents

Philadelphia, Dec. 23.—Several thousand tons of Cuban, Indian and Brazilian manganese ore has been bought by domestic consumers during the past week at 55 cents per unit tidewater. The market is reflecting a tendency toward higher levels particularly by reason of the buying by England, Belgium and France.

Sell Domestic at $130

Philadelphia, Dec. 23.—Domestic makers here sold 2500 to 3000 tons of ferromanganese at $130 delivered largely for the second quarter.

Ferromanganese Again Advances

Pittsburgh, Dec. 23.—Most domestic makers of ferromanganese now are quoting 80 per cent material at $130, furnace, freight allowed, but this price as yet lacks real basis in sales. While a few small tonnages are reported to have been sold at that price, sellers who have recently quoted $120 report that no business resulted and buyers say they have been able to secure supplies for less than $120. General demands are not particularly large for this alloy, with consumers disinclined to buy much ahead of their actual needs. It still is possible to buy English ferromanganese running 76 to 80 per cent manganese content as low as $110, c.i.f. Atlantic seaboard.

Demand for spiegeleisen is sporadic and involves only small tonnages, with first quarter shipments generally priced at $40, furnace, while $37 to $38 is being quoted by some makers on prompt shipments.

Ferro Quotation Higher

Chicago, Dec. 23.—Ferromanganese, which has been selling at $120, furnace, freight allowed, has been advanced to $130, in the absence of English ferro, which is not being shipped. Sales have been made in this territory at the new figure. The market for spiegeleisen is entirely dead, with $45, furnace, being asked but with the probability that tonnages could be placed at $40, furnace.

Big Projects Coming Out

Five Structural Jobs in New York Will Require More Than 25,000 Tons—Pittsburgh Mills Well Booked—Good Awards in Chicago

New York, Dec. 21.—New projects coming to the fore in the local structural market involve a heavy tonnage of steel. More than 25,000 tons will be required for five projects likely to develop in the near future. A new department building to be erected on Park avenue, between Forty-ninth and Fiftieth streets, by T. Coleman du Pont and others, will require from 4000 to 5000 tons. The Thompson-Starrett Co. will have charge of the construction. An office building at Forty-second street and Madison avenue, to be erected by the Winchester Arms Co., Fred T. Ley & Co., and others, will require about 6000 tons. Another building to be constructed at Thirty-eighth street and Seventh avenue by a syndicate of clothing manufacturers will call for 6000 to 7000 tons. Two office buildings on Fifth avenue, to be erected by George Backer, will require a total of 13,000 tons. One, to be erected at the corner of Fifth avenue and Fifty-seven street, will involve 6000 tons, and the other, to be built between Thirtieth and Thirty-first streets, 7000 tons. Plans are being prepared by Warren & Wetmore, architects, and, according to the present schedule, construction will be started in March. Bids on at least three jobs will be taken soon. Awards of the week were light.

Round Tonnage is Sought

Boston, Dec. 22.—The structural steel situation is under the combined influence of winter weather and slow deliveries and the market is quiet. Inquiry for future delivery of structural shapes continues favorable, although the awards apparently are being held up until after the first of the year. The largest award made during the week was for a $3,000,000 manufacturing building at Cambridge, Mass., which will take approximately 3500 tons of steel. The steel award has not yet been made.

Large Tonnages Turned Down

Philadelphia, Dec. 23.—Shape mills are unable to cope with the great demand for material for nearby shipment. One eastern mill turned away 14,000 tons today. While some sections can be had for delivery next week others cannot be had for four months. Consumers offer tempting premiums, which some mills cannot resist. There has been some business in the past week at 2.75c, Pittsburgh. In structural shapes, however, this level is exceptional, and the general level of eastern mills is 2.55c, Pittsburgh. Last week's report that one eastern mill took first quarter shape contracts at 2.55c was in error. This business was done at 2.45c. Eastern mills are selling pickups for spot shipment at from 2.75 to 2.85c, mill, which is considerably lower than the warehouse price in this district. The mills say that some consumers already have specified all their first quarter tonnage, and want more, but there is no more to give them. The Belmont Iron works took 2000 tons for two new shipways and other work at a shipbuilding yard in Chester, Pa.

Mills and Shops Well Booked

Pittsburgh, Dec. 23.—Both the shape mills and the fabricating shops in this district are well booked with business, although comparatively few structural lettings recently have been placed. A number of projects are up for bids, however, and in the view of the fact that deliveries of plain material have slowed down considerably, and of the possibility of higher prices for early deliveries, belief is strong that the turn of the year will bring the letting of these jobs. Much business in plain structural material has accumulated at the mills, due to the recent interruptions to operations occasioned by the steel and coal strikes. Small shapes remain extremely scarce, due in part to the congestion of orders for merchant mill products.

Building Active in West

Chicago, Dec. 23.—Building activity in the west continues to bring a number of moderate tonnages to fabricators, the largest placed recently involving 700 tons for a theater building in San Francisco. Other tonnages placed recently are for smaller lots. Bids have been asked in Chicago on 750 tons for a theater building. The Alaskan commission is inquiring for 1500 tons for a bridge on the government railroad, and the United States Copper Co., is asking for bids on 350 tons for a boiler house at Clarksdale, Ariz. Plain material is steady at 2.72c, Chicago.

CONTRACTS AWARDED

Automobile body manufacturing plant for Seaman Body Corp., Milwaukee, 750 tons to Milwaukee Bridge Co.

Addition for Harvey Spring & Forging Co., Racine, Wis., 300 tons to Wisconsin Bridge & Iron Co., Milwaukee.

Manufacturing and power plant extensions at Mark plant of Steel & Tube Co. of America, Indiana Harbor, Ind., 3000 tons to Worden-Allen Co.

Rolling mill foundry for Hubbard Steel Foundry Co., East Chicago, Ind., 375 tons to Northwestern Bridge & Iron Co.

Assembling building for Cadillac Motor Car Co. at Milwaukee, 125 tons to Northwestern Bridge & Iron Co.

Artillery drill shed for the Hunt armory, Pittsburgh, 700 tons to the American Bridge Co.

Plant extension Pittsburgh Seamless Tube Co., Beaver Falls, Pa., 350 tons, to the McClintic-Marshall Co.

Building for Philadelphia Paper Co., Philadelphia, 300 tons to the McClintic-Marshall Co.

Theater building for the Ackermann-Harris-Lowe, Inc., San Francisco, 700 tons, to Dyer Bros.

Structural steel for foundry and machine shop building for the A. Plamondon Mfg. Co., Chicago, 518 tons, to Northwestern Bridge & Iron Works.

Two oil tanks at East Chicago, Ind., for the Sinclair Refining Co., 478 tons, to American Bridge Co.

Buildings at East St. Louis, Ill., for the Monsanto Chemical Co., 450 tons, to Christopher & Simpson.

Extension to Sherman Hotel, Chicago, 382 tons, to Strobel Steel Construction Co.

Additions to boiler house for the Ingalls-Shepard Forging Co., Harvey, Ill., 350 tons, to Kenwood Bridge Co.

Factory buildings for the Service Motor Truck Co., Wabash, Ind., 222 tons, to independent shop.

Craneway extension and alterations for Nash Motor Co., Kenosha, Wis., 100 tons to Northwestern Bridge & Iron Co.

Building for the Hartford Rubber Works, Hartford, Con.., 300 tons, to the Phoenix Bridge Co.

Fertilizer plant for the Armour Co., Chrome, N. J., 300 tons to an independent shop.

Addition for the Nichols Copper Co., Laurel Hill, N. Y., 350 tons to independent shop.

Building for the Magor Car Corp., Passaic, N. J., 400 tons to the American Bridge Co.

Plant addition for Willys Corp., Elizabeth, N. J., 4200 tons, to the American Bridge Co.

Shipways and other shipyard work at Chester, Pa., 2000 tons to the Belmont Iron Works.

CONTRACTS PENDING

Theater building for Baliban & Katz, at State and Lake streets, Chicago, 750 tons, bids asked.

Boiler house for U. S. Copper Co., Clarksdale, Ariz., 350 tons, bids asked.

Shipping building and loading dock for Oakland Motor Car Co., Pontiac, Mich., 400 tons, bids asked by Dupont Engineering Co.

Additions to bessemer plant at Indiana Harbor, Ind., for Steel & Tube Co. of America, 2200 tons, bids being taken.

Foundry at Muskegon Heights, Mich., for Manning, Maxwell & Moore, Inc., 700 tons, bids being taken by F. D. Chase, Inc., Chicago.

Implement plant for Samson Tractor Co., Janesville, Wis., 500 tons, bids asked by Dupont Engineering Co.

Bridge on Alaskan railroad, 1500 tons, bids asked.

Liberty tunnel through South hills, Pittsburgh, 1100 tons, general contract to Booth & Flynn, Pittsburgh.

Plant addition and crane runway for American Car & Foundry Co., Buffalo, 1500 tons; contract pending.

Manufacturing building at Cambridge, Mass., 3500 tons. Bids being taken.

More Rails Are Pending

New York, Dec. 22.—Practically all of the rail tonnages which were under negotiation in this district for delivery during 1920 have been closed. They include 150,000 tons for the New York Central lines, 135,000 tons for western roads which do their purchasing in New York, and tonnages for other eastern roads having their headquarters in this district. The total involved was in excess of 335,000 tons and probably was close to 400,000 tons. A significant feature is that while some roads placed the orders tentatively, subject to cancellation in case the roads are not returned to their owners, certain roads placed definite orders without making any such stipulation. It is understood that the bulk of the business was placed on the basis of $47, mill, for standard open-hearth rails, plus extras for special specifications.

4000 Cars Are Wanted

Philadelphia, Dec. 23.—Inquiries are out for a total of 4000 freight cars for two railroads. The Baldwin Locomotive Works has an order for 50 locomotives for Egypt.

High Prices on Export Rails

Pittsburgh, Dec. 23.—While it is reported that most of the important railroad systems of the country are making reservations for standard rails for delivery next year, orders have not developed here. Such business as is being booked runs largely for small tonnages. Export inquiries, however, are quite numerous and include some fair-sized tonnages of both light and

standard sections. These involve 10,000 tons, and it is said that the best price named by any of the makers was $60, mill. In the lack of new business makers are catching up on their orders for small spikes. Standard spikes still are wanted only in small lots.

Rail Tonnage Pending

Cleveland, Dec. 23.—From 10,000 to 11,000 tons of rails for 1920 delivery for those roads which buy in this district are pending. The largest lot is 4000 tons for the Wheeling & Lake Erie. The Clover Leaf and the Ann Arbor are in the market and an inquiry is expected soon from the Nickel Plate.

Big Order About to be Placed

Chicago, Dec. 23.—Negotiations for standard steel rails for western railroads are being drawn to a close with practically 400,000 tons involved. The only element now causing doubt is the date when the roads will be returned to their owners. Under present conditions it seems likely that the rails will be taken by either the roads or the railroad administration, as they are needed. Activity in track fastenings is about equal to that in rails, with corresponding tonnages under negotiation or recently closed. Light rails are active for both domestic and export buyers, while some users are asking contracts for six months supply. The recent inquiry of the Great Northern railroad for 1000 stock cars has been withdrawn. The Seaboard Air line is asking inquiries on a few passenger cars, involving about 140 tons.

Sell Semifinished High

Transactions Closed at $51 For Sheet Bars and $50 For Slabs—Rerolling Billets Up—Pittsburgh Draws on Chicago Mills

Pittsburgh, Dec. 23.—Prices for prompt tonnages of billets, sheet bars and wire rods still are ascending except for the occasional sales of tonnages which manufacturers have had on their yards. On newly made steel, all manufacturers with the exception of the United States Steel Corp., and one or two of the independents, have price ideas based on the higher value of pig iron and the advanced figures obtainable on prompt tonnages of finished steel. Sales of forging billets are noted here at $64 and no further business would be accepted by the seller of this tonnage now at less than $65. Rerolling billets have been quoted as high as $54 for the base size and $53.75 has been quoted against an inquiry for 1½ x 1½ billets, which is equivalent to $50 for the base size. It is doubtful if less than $50 for the base size of rerolling billets and $60 for forging billets now would be considered by more than one or two makers. The shortage of sheet bars still is acute and even the American Sheet & Tin Plate Co. is suffering, at least to the extent that it lately has been obliged to draw some heavy shipments out of Chicago territory for its finishing mills in this district. Freight eastward is about $5 per ton, as against an average charge of about $1 a ton when supplies are drawn from nearby sources; so the delivered cost of its sheet bars is $4 per ton higher than usual. While all makers of wire rods appear to have tonnages for sale, the demand is sufficient to readily absorb them at well sustained prices, the range being from $63 to $67 for soft steel. The leading wiremaker, however, still is quoting $52 and states it is making some sales at that figure.

Bid $60 For Bars

Youngstown, O., Dec. 23.—Sheet bars are extremely scarce in this territory and it is doubtful whether any tonnage could be bought for less than $51. Last week a bid of $60 was made for only a fair size tonnage but failed to uncover any material. The leading maker has no semifinished tonnage to offer for first quarter delivery and refuses to sell beyond this period.

Close at $50 and $51

Cleveland, Dec. 23.—Transactions involving large tonnages for first quarter delivery have been closed by makers in this district on the basis of $51 for sheet bars and $50 for slabs. While no sales of billets are reported, producers express the opinion that $48.50, Pittsburgh, for 4 x 4-inch, and $51 for small billets are representative.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead. New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
Dec. 17	18.50	54.62½	7.00	8.20	33.00	9.75	42.00
Dec. 18	18.50	54.75	7.15	8.25	33.00	9.75	42.00
Dec. 19	18.50	54.75	7.15	8.30	33.00	9.75	42.00
Dec. 22	18.50	56.25	7.15	8.40	33.00	9.75	42.00
Dec. 23	18.625	56.25	7.15	8.50	33.00	9.75	42.00

*Future shipment from Singapore or London.
†American Smelting & Refining Co.'s price.
‡Open market.

NEW YORK, Dec. 23.—Erratic movements of foreign exchange rates dominated the nonferrous metal markets the past week. Sterling exchange rates recently declined to $3.66 for checks, then quickly recovered to $3.90 on Dec. 17, reacted to $3.73¾ on Dec. 18 and recovered to $3.82 on Dec. 22. In view of the fact that a difference of one point in exchange means a difference of 15 points or about ⅛c a pound in the price of tin, the importance of the fluctuations of exchange in the tin market are appreciated. In two days, recently, an extreme range of 24 points in exchange made a difference of about 3c a pound in the cost of importing tin. In the other metals, which have owed much of their current strength to foreign markets, the fluctuations of exchange have exerted great influence.

Copper has held steady at 18.50c, this price being quoted by producers to good consumers, but the tendency is to 18.75c. Dealers are not yet able to buy any large amount of copper from producers, but appear to have covered their short contracts. Further big Japanese business was booked and also some French, English and German. It is estimated that upwards of 40,000,000 pounds of copper have been sold for export thus far in December, about 20,000,000 pounds of which have been bought by Japan for first quarter shipment. Domestic business also is big, much being done quietly. Casting copper continues scarce and makers are not offering freely, owing to high prices quoted on scrap. Lake copper is quoted nominally at the price of 19c.

The lead market has been steadily advancing. The leading producer advanced its quotation to 7.15c New York, 6.90c East St. Louis, Dec. 18. Producers are well sold up both for December and January shipment and stocks of spot lead in outside hands are extremely small. The outside market has been 7.30c and higher, New York delivery. The London lead market advanced £5 from Dec. 1 to Dec. 23, to £44 5s as of the latter date.

Zinc was quiet but in the past two days has been strong. Exchange interfered with export for a time. The aproach of the year-end inventory has deterred some domestic consumers from covering at present, but a fair interest from galvanizers has been nevertheless reported. Prime western sold at 8.50c East St. Louis today, and for first quarter shipment 8.55c was quoted, advances of about 20 points over the past week. Sheet zinc is up to 11.50c.

Tin prices have been extremely irregular. The London and Singapore markets have advanced just as rapidly as Sterling exchange declined, and when exchange rates recovered the London tin market advanced just the same. The total advance in London from Dec. 1 to Dec. 22 amounted to about £30, equal to about 5⅛c a pound. The Sterling exchange market dropped from $4 to $3.82 as of Dec. 22, equal to a reduction of about 2¾c a pound in the cost of importing tin. The price of future shipment Straits tin as of Dec. 1 was 54.50c to 54.62½c; as of Dec. 23, 56c to 56.50c. These prices were made by interests who were taking profits. The actual cost of importing Straits tin as of Dec. 22 was 57.50c, based on the current London market.

Selling Strip Steel for Second Quarter

Pittsburgh, Dec. 23.—Although makers of strip steel have been trying to keep their bookings within the first quarter of 1920, a number of them have found it impossible to do so because so much 1919 business is still unfilled that they could not offer any tonnage for shipment over the first quarter. Consequently they are taking business from regular customers for shipment during the second quarter. The supply situation still is extremely tight and no trouble would be had in obtaining more than the base price on first quarter shipments. Demand for hot-rolled strip steel is extremely heavy and intimations of another advance of $5 per ton are being heard, due to the increasing cost of billets. Some manufacturers report the receipt of quotations as high as $54 for 4 x 4 billets during the past week.

Appoints Superintendent

I. Lamont Hughes has been appointed general superintendent of the Youngstown district for the Carnegie Steel Co., Pittsburgh, effective Jan. 1, 1920, according to an announcement made in the latter city on Dec. 23. In this position, he will succeed James H. Grose, whose resignation will become effective at that time.

Quotations For Export Soaring

Trading Agencies Depending on Foreign Sales of American Iron and Steel Begin to Feel the Pinch of Material Shortage—Demand From Abroad Showing no Abatement—German Competition Looms as Possibility

NEW YORK, Dec. 22.—By modifying their operations and curtailing their office forces, most of the export houses depending primarily on iron and steel trade are meeting the present shortage of material. Business current today is very small although the inquiries from abroad show no abatement.

There is a very heavy export demand for 30 gage sheets, which American mills are in no position to furnish and exporters are scouring British, Belgian and other European markets with but indifferent success. Export demand for all lines of semi-finished and finished steel would be even heavier but for the present unfavorable exchange rates. Following the recent order by the Holland government for rails for the Dutch East Indies railroads a further small order involving about 500 tons of light rails has been placed here. The export demand for pig iron also is heavy but little business can be done. Due to the shortage of the supply much business has been diverted to England. British producers can furnish pig iron on the basis of £8 9s, delivered at continental ports, which is equivalent to about $40. American iron at the present market could not be delivered for less than $45 to $48 per ton. Inquiries for export are in the market for some 5000 tons of basic but so far no furnace has been found to quote.

About 10,000 tons of basic originally purchased by Japan, has been bought by a dealer. It is understood that this iron was sold because the importers were able to use the ship space to better advantage.

Steel bars have been sold for export at a price equal to 4.00c, Pittsburgh, it is reported. It is declared bars can not be purchased for less than 3.25c, Pittsburgh. Tubes 2½ inches and under brings a discount of but 53 under the list, even for second quarter delivery, and the larger tubes carry a discount of but 51 off. One eastern mill offered a few thousand tons of black plates for export at a premium of $38 a ton over the schedule price. Tin plate has been selling for $8.25, Pittsburgh, and some sellers are asking $8.50. The price of tin plate at the present time, provided any stable price is quoted, is $10 c.i.f. A foreign sale of tank plates was made at 3.25c, mill, and a premium of approximately $10 a ton has been paid on wire.

France has approached the market with an inquiry for 600,000 ties, but the exporters are giving the matter little consideration. Italy is also asking for 4000 cases of tin plate but the order cannot be filled. Denmark has purchased 200 tons of plates at 3.25c, which will be delivered during the second quarter. Holland has taken a small tonnage of barbed wire. Portugal has bought 2000 coils of wire.

While sales to England are proving difficult, the American exporters have been able to dispose of some little material to the British colonies. India has purchased 150 tons of structurals, 150 tons of nail wire, a small tonnage of zinc sheets, and 500 tons of wire. It is also learned that a deal is in contemplation for the sale of some $250,000 worth of industrial machinery to India.

The Orient remains the best market. The Oriental banks are extending credits to their people making purchases abroad, and drafts against this credit can be drawn as soon as the goods are placed on the ship. Japan has been inquiring for black sheets and small bars principally, while China's chief requirements appear to be bars and galvanized wire. From the Orient has come an inquiry asking whether or not a particular agency can furnish a total of 160,000 boxes of tin plate for deliveries distributed throughout next year. It was also learned that China has recently sent to this market inquiries for 21,000 kegs of counter-sunk checkered nails.

Japan has asked for 5000 tons of 12-pound rails, 2000 tons of 16-pound rails, and 500 tons of 20-pound rails. The business was not closed because of the price. One Japanese order for tin plate placed calls for 4000 boxes at $8.25. Japan has purchased 300 tons of light rails, 750 tons of plates, 5000 kegs of nails and 6000 boxes of tin plate. Another export house reported the sale to Japan for first quarter delivery of 300 tons of shapes, 500 tons of plates, 500 tons of bars, 2000 tons of pig iron, 10,000 kegs of nails, 200,000 feet of pipe, a few hundred tons of wire and a small tonnage of copper. A third house reported the sale to Japan of 200 tons of black sheets and 200 tons of English gas tubes. Japan ordered 500 tons of wire for second quarter delivery, paying a $10 premium.

Japan inquired for 250,000 feet of pipe, but the order could not be placed. It has been learned that Germany had agreed to take an order which was first offered to the United States for 25,000 tons of cast iron pipe for Java and the Dutch East Indies.

Some sales of nails have been made for $57, and on export business this is the normal quotation, despite the fact that some orders have recently been closed at slightly less. This price makes the c.i.f. quotation at Yokohama $82 a ton. A Japanese order for 44 track miles of 40-pound rails was placed last week for second quarter delivery. Japan also purchased 300 freight cars for South Manchuria and 2050 couplers. The sale of 1500 tons of ammonium sulphate to Japan was reported.

Among the sales reported made to China were 400 tons of bars and 350 tons of plates. China is now inquiring for 5000 tons of heavy rails. Several thousand boxes of tin plate have been sold the Far East. Some Chinese coal mines are planning the construction of light railways, totaling about 50 miles in length, to connect the mines with the Shantung railway. The mine owners are said to be desirous of obtaining American materials. Complete equipment, including locomotives and several hundred coal cars, is desired for delivery early in 1920.

About four carloads of barbed wire were sold in South America by one export house. Another agency reported the sale of 600 tons of 60-pound relayers to Cuba. An order from Argentina for 1000 coils of oval wire was booked last week. One house reported selling through its branch in South America 500 tons of sheets, 500 tons of bars, and several thousand boxes of tin plate. A sale of 500 tons of barbed wire to Brazil was also noted. Argentina has invited quotations of 25,000 tons of cast iron piping for the enlargement of the water systems in the federal capital and in provincial towns. The installation of a water system and sewers in Bahia Blanca and the issuance of bonds for sanitation works, up to $1,584,000 United States gold, have been authorized.

British Prices Again Advanced

Scarcity of Finished and Semifinished Steel Forcing Buyers Into Market—Railroad Congestion Expected to Cause Suspension of Many Blast Furnaces—Freight Rates to be Increased, Probably 50 Per Cent, by Jan. 15

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
16 Regent St., S. W. I.,
London, Dec. 22.

Rate of Exchange—$3.81

SCARCITY of semifinished and finished steel is forcing buyers into the market, despite rising prices. Railroad rates, still at prewar level, probably will be increased 50 per cent by Jan. 15. The situation in regard to the railroads is confusing.

American inquiries are out for 7000 tons of galvanized sheets, but there is little prospect of delivery before summer. Sheet prices are £1 ($3.81) higher. Scarcity of sheets has been emphasized by the advance of 35s ($6.66) in the price of sheet bars. Billets are scarcer and have advanced to £17 10s (($66.68). Steel bars, English beams and tin plate also have advanced.

Inquiry for tin plate is pouring in from all parts of the world, Scandinavia is seeking 20,000 boxes. Sales for the first quarter are at £2 8s 6d ($9.24).

The London tin market is very firm and there is a big business in Welsh tin plate. Three hundred tons of Straits tin was sold yesterday at £321 ($1223) a ton.

The price policy of the makers of pig iron apparently is waiting for the settlement of the railroad rate question, and in the meantime Staffordshire pig iron has advanced. Production of coal is improving but railroad congestion is still hampering distribution. This is expected to cause banking of many stacks along about the Christmas holidays. Iron bars have advanced 10s ($1.90).

All attempts to settle the molders' strike have failed. The coal strike in the Charleroi basin, Belgium, is serious. The government has removed the embargo on the commercial exploitation of Arnold's molybdenum, high speed steel. Great technical developments are expetced to follow.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Dec. 11.

Rate of Exchange, $3.92

PIG iron prices are firm, with an upward tendency, and a very good demand. The market for raw material has been strengthened by further advances in finished material. In the Birmingham district and some other parts of the area covered by the Midland wages board a 7½ per cent increase in wages, effective Dec. 8, is being shared by the blast furnace workers.

There is a general scarcity of pig iron, partly due to insufficient ore supplies, but mainly to the disproportionate production of iron of poor quality which can only be used for forge requirements. Two furnaces have been started in the Northampton and Derbyshire districts, while others are being made ready.

The molders' strike serves to reduce the tonnages ordered, but foundries continue to buy pig iron, considering that they have nothing to gain by postponement. Business is hampered a good deal by the insufficient supply of cars. Works coal appears to be slightly more plentiful, as the result of the new coal order, making the selling rate to works 10s ($1.96) above that to householders. The advance of 3s 6d (65 cents) in the price of No. 1 Cleveland iron, declared last week, has not made much difference, as no great quantity of this brand is sold. There is some talk of higher prices for pig iron as the result of the increase in wages, but makers are in no hurry to make definite advances, mainly because their customers are all pledged to the limit to pay any increases in the cost of production, whether arising from wages, fuel or transportation. It is quite likely, however, that prices will be revised when the new railroad rates are announced.

East Coast hematite pig iron is more plentiful, largely because of the inability of the steel rolling mills to make full production, through the scarcity of cars. At present, there is a little iron for export, and a moderate overseas business is being done. Foreign business, however, is hampered by high freight rates and scarcity of ships.

The latest returns of the national output of coal relate to the week ending Nov. 22, and show a tonnage for the week of 4,767,578, compared with 4,679,402 tons for the previous week. The increase appears to be fairly well distributed over the various districts.

The Staffordshire makers of finished iron will have to pay an additional 7½ per cent in wages for the ensuing two months, the total advance over prewar wages now amounting to 170 per cent. For the 17 selected firms, in the district the output was 23,298 tons, compared with 21,835 tons for the previous two months, while the average net selling price was increased from £22 18s 5d ($88.71) to £23 15s ($93.10). In addition to this advance the recent agitation by the workmen on the wages board resulted in an increase of 5s (98 cents) per week to workmen whose wages are not governed by the sliding scale. This advance is intended to place ironworkers on an equal footing with other workmen benefiting from the recent 5s (98 cent) award made by the government's committee of production.

Advances in prices now are generally looked for and several were declared yesterday at the Birmingham

Current British Prices

In Pounds, Shillings, Pence

	Home consumption	Export prices
SEMIFINISHED STEEL		
Billets, soft steel	16:0:0 to 17:0:0	17:0:0*
Sheet bars	16:10:0	16:10:0*
FINISHED STEEL		
Steel bars, England, ⅝ to 3 inch	21:15:0	21:15:0*
Ship plates, England.	21:0:0	21:0:0*
Ship plates, Scotland.	21:0:0	21:0:0*
Beams, England	18:5:0	18:5:0*
Beams, Scotland	18:5:0	18:5:0*
Sheets, black, 24 gage	28:0:0	28:0:0*
Sheets, galvanized, 24 gage	39:0:0 to 40:0:0	40:0:0*
Rails, 60 lbs. and over	17:10:0	17:10:0*
Tinplate, base box, 108 lbs.	2:07:0	2:07:0*
*Export steel prices are nominal.		
PIG IRON		
Hematite, East Coast Mixed Numbers	10:0:0	10:5:0
Hematite, Scotch	10:10:0	10:15:0
Middlesborough Basic.	8:5:0	8:10:0
Middlesborough No. 3	8:0:0	8:5:0
No. 3 Foundry, Derby, Leicester, Nottingham	9:5:0	9:10:0
No. 3 Foundry, Northamptonshire	8:08:0	8:13:0
No. 3 Foundry, Staffordshire	9:12:6	9:17:6
Scotch Foundry	9:15:0	10:0:0
Ferromanganese, 80 per cent	25:0:0	23:0:0
COKE		
Midlands furnace	2:10:6	.....
Midlands foundry	3:6:0	.....

meeting. The inability to get American gas strip or skelp, as it is called in America, has compelled a number of English consumers to turn to the British makers. Some months ago the local mills were adversely affected by American importations, and were reduced to partial idleness. Prices were reduced from £24 ($94.08) to £22 10s ($88.20). Prices have been stiffening the last week or two and yesterday they were restored to £24 ($94.08). Steel strip was raised to £25 10s ($99.96), and steel hoops to a similar figure. Small steel bars were put up to £20 15s ($81.34). All these prices are "at works."

Prices of ordinary iron bar, although not formally revised, are steadily rising. The more general quotation is now £23 10s ($92.12) with a firm market. The hardening of American prices has removed any fear of competition from the United States, the latest quotations for American bars being £21 6s ($83.28) c.i.f. Liverpool. This would mean about £22 5s ($87.20) delivered in Birmingham, but delivery is now so uncertain that all such business is regarded with doubt, quite apart from the question of price.

All the works are full of orders, as a rule far beyond their capacity. An advance of £2 ($7.84) has been made in wire rods, carrying with it a rise also in wire.

For the present advances in nut and bolt iron are held back by a few American arrivals.

Twenty-one Furnaces Now Active in Valley

Youngstown, O., Dec. 23.—Blast furnace No. 5 at the Haselton plant of the Republic Iron & Steel Co., and the Mary furnace of the Sharon Steel Hoop Co., Lowellville, O., were placed in blast last week. This brings the number of active stacks in the Mahoning valley to 21. The Mary furnace was blown out for relining Sept. 20 while Republic's stack was banked at the beginning of the steel strike.

While fuel shipments are not normal they are sufficient to maintain mill operations. The Republic Iron & Steel Co. is operating all units at its Brown-Bonnell plant with the exception of two bar mills. This company now has three blast furnaces and 10 open hearths active. The Trumbull Steel Co., Warren, O., had five open-hearth furnaces and more than 50 per cent of its sheet and black plate departments in operation Monday. This plant with the exception of the hot and cold-rolled steel departments, has been idle for more than 10 days on account of a shortage of fuel.

Cambria Operation Now Steadily Gaining

Aside from the hindrances created by the fuel situation, little evidence of the recent labor disturbance remains at the plant of the Cambria Steel Co., Johnstown, Pa. Practically all of the men who went out on Sept. 22 have returned and plant operations and production steadily are gaining. With a restoration of normal fuel supplies, nothing stands in the way of practically full plant operations. Unskilled labor is scarce at this plant as it is at practically all steel plants throughout the country, but this condition existed even before the strike.

Seven of the 11 blast furnaces of the company are in blast, with others likely to be lighted as soon as sufficient supplies of coke are obtainable. While the men have returned to work at the mines of the company, the output of coal remains considerably below normal. This has kept down coke production and supplementary purchases on the open market have been hard to make.

Seven of the open-hearth furnaces at the Cambria works are in operation and 11 at the Franklin works now are making steel, a total of 18 out of the 32 furnaces of the entire plant. Most of the finishing capacity of the company is in operation.

More Furnaces in Chicago District Resume

Chicago, Dec. 22.—Improving conditions in mills of the leading interest are noted, one additional blast furnace having resumed production at the Gary plant, one at South Works, and one at Joliet. Seventeen out of 27 stacks at these three plants are now active, and this is the largest number in blast since the coal strike started. The open-hearth department at the South Works is being started full this week, after partial operations for the past two months. Activity in finishing mills is being carried forward in proportion to the additions to pig iron units. The leading independent is operating at about 80 per cent of rated capacity.

Metal Rolls to Advance

Upward revisions of the prices of rolls and other castings are beginning to appear following the recent steep advance in pig iron costs. It is probable that announcements will go out of increases in iron, steel and alloy rolls at an early date, but as yet the extent of the advances has not become known. Suggestions have been heard, however, regarding the restoration of the quotations in effect prior to the last reduction made in May, 1919. Roll prices were cut twice in the past year as the contribution of makers to the readjustment in the steel industry to a peacetime basis and in keeping with the price reductions made by the steel industry itself. It is claimed that the last cut in roll prices reduced the margin of profit to the vanishing point on several classes and the rise in pig iron makes necessary an increase at this time.

Corporation Announces Plans For Duluth

Duluth, Dec. 23.—An outlay of $9,000,000 will be made for extensions and improvements at the Minnesota Steel Co.'s plant in Duluth next year, according to a statement made today by George L. Reis, vice president of the company. The program provides for a wire mill of large capacity, changes in various mills, and additional equipment of the power plant. Two hundred and fifty additional houses also will be built at Morgan Park, the company's model town. The wire mill, and extensions at the present plant will be completed by the end of next year.

The program of expansion is intimated by Mr. Reis to be the beginning of the fulfilling of the agreement made by E. H. Gary, chairman of United States Steel Corp., with a committee of Duluth business men last October.

Big By-Product Plant is Put Into Operation

Birmingham, Ala., Dec. 23.—The first battery of 77 Kopper ovens of the addition to the by-product coke plant of the Tennessee Coal, Iron & Railroad Co., has been completed and is now in operation at Fairfield. Within 90 days the second battery of 77 ovens will be in operation.

Announcement is made that the by-product coke oven plant at Fairfield will meet the requirements of the company, and the plant of the Semet-Solvay Co., at Ensley, probably will not be purchased. The Semet-Solvay plant has been getting its coal for years from the Tennessee company.

Making Manganese Steel by the Open-Hearth Process

Steel Containing 12 Per Cent Manganese is Made by Open Hearth Instead of Bessemer Process Usually Employed—Method of Adding Alloy and Quenching Heat Treated Castings is Unique



Fig. 1—Modern Steam Shovel Dipper. The Dipper Front and Teeth Are of Manganese Steel

STEEL always has been an important factor in the development of equipment employed to perform the arduous tasks formerly accomplished by manual labor. This is especially true of steam shovels and dredging machinery, which have undergone a steady and rapid development since 1834 when the first power shovel was built at Springfield, Mass. The most notable improvements have taken place during the past decade when the demand for machines of large capacity and great power caused designing engineers to seek material especially adapted to the great variety of requirements imposed on the different parts of the machines. For instance, in certain castings used in the construction of power shovels, ability to withstand the abrasive action caused by contact with stone, sand, slag and similar substances is essential. It is particularly important that dipper fronts and teeth possess this property. By constant study of the requirements for steel working in contact with steel, engineers have taken cognizance of the fact that pinions are subjected to far greater wear than the gears with which they mesh. To equalize this difference, the pinions have been made of steel having greater resistance to wear than the steel of the gears. This is only one instance of many in which special specific demands have been made of the materials entering into the construction of excavation machinery.

Manganese is known to impart unusual toughness to steel and for this reason manganese steel is generally employed in parts subjected to excessive wear. The common practice at present followed by manufacturers of manganese steel for this purpose calls for a manganese content of from 11 to 14 per cent.

When manganese steel was first made in the United States, steelmakers employed the acid bessemer process for melting the steel and added the required amount of manganese as the metal was being tapped. Either this practice with slight modifications, or the electric furnace process now is followed in practically all manganese steel works in this country with few exceptions. One of the makers of manganese steel employing the open-hearth furnace is the Marion Steam Shovel Co., Marion, O. In common with other firms, the Marion company first employed converter steel as the basis of its manganese product, but several years ago open-hearth metal was adopted for this purpose and has been used with unusual success.

The company's preference for open-hearth metal is based upon the belief that with this process it is easier to maintain the phosphorus content at the low percentage desired. Moreover, the authorities at this plant are convinced that not near as many impurities are carried into the metal poured from open-hearth steel as in that in which converter steel is the base. As is well known, bessemer steel requires more deoxidation than open-hearth steel, and it is pointed out, therefore, that the addition of manganese to open-hearth metal, in which the real need of a deoxidizing agent is less than in the case of converter steel, leaves the resulting product unusually free from impurities.

At Marion the making of manganese steel is carried on in the steel foundry where castings ranging in weight from one pound to 16 tons are made. The tonnage of manganese steel averages approximately 5



FIG. 2—VIEW OF 20-TON OPEN-HEARTH FURNACE FROM CHARGING SIDE

per cent of the total output of the foundry. In October, a month somewhat below the average in production, 63,636 pounds of manganese metal was poured.

Description of Foundry

The melting equipment consists of a 20-ton, nontilting, basic open-hearth furnace and a small oil furnace for ferromanganese. The open hearth is at the south end of the east bay of the steel foundry and is served by a floor-type charging machine made by the Wellman-Seaver-Morgan Co., Cleveland. The molding floors extend the entire length of the main bay and northward from the charging platform in the east bay. The main bay is commanded by one 30-ton and two 10-ton electric traveling cranes and the side bay by two 10-ton cranes. The cores, which are made in a core shop situated in the east bay, are baked in a coke-fired oven adjoining the east wall of the building. Molds are dried in a car-type, oil-fired oven outside of the foundry building. Provision has been made for moving oven cars by means of steel cables operated by power-driven drums.

A novel arrangement has been adopted for handling the molten metal preparatory to pouring. When it is desired to make a heat of manganese steel, the furnace operator is given instructions to make steel of the required analysis. In the meantime, the necessary amount of 80 per cent ferromanganese is charged into the small furnace.

A large ladle is placed on the platform of floor scales directly under the spout of the small furnace, and the balance weights are set for the amount of manganese required, proper allowance being made for the weight of the ladle. In predetermining the exact amount of metal to be tapped, the condition and quantity of slag is taken into consideration. After the manganese has been tapped into the ladle, the balance weights are adjusted for the addition of open-hearth metal, which is bottom-poured from a large crane ladle. The rush of molten steel into the bottom of the mixing ladle has a stirring effect upon the contents and thoroughly distributes the manganese.

Process Modified if Desired

Another method of mixing which has been used successfully consists of pouring a quantity of open-hearth steel into the mixing ladle, adding the manganese, and then the remainder of the open-hearth metal. With either



FIG. 3—TAPPING SIDE OF OPEN-HEARTH FURNACE—SCALES AND FURNACE FOR MELTING FERROMANGANESE, NOT SHOWN, ARE AT LEFT OF OPEN HEARTH

of the methods described it is possible to produce metal conforming to the following specifications: Carbon, 1.10 to 1.30 per cent; phosphorus, 0.055 per cent (maximum); sulphur, 0.04 per cent (maximum); and manganese 11 to 14 per cent. Steel of this analysis is used for dipper fronts, teeth, rack and pinion castings, elevator dredge buckets, latch plates, wearing plates, propelling gears, pinions, etc.

Just prior to pouring, the metal is thoroughly teemed to insure soundness. In distributing the molten steel to the molds, it is bottom poured from the ladle in which the open-hearth steel and manganese were tapped at the furnaces. As a rule the metal is handled in 6-ton ladles, it being possible to fill two ladles of this size from each heat of the open hearth. The capacity of the furnace is three heats per day.

Heat Treating of Castings

After the molds are shaken out the castings are ready to be cleaned in a building south of the steel foundry which is entirely devoted to this work, after which they are subjected to the usual heat treatment for manganese steel. This consists of heating the castings to a temperature of about 1800 degrees for approximately 8 to 20 hours depending on the size and shape of castings, followed by quenching in water. The equipment for heating and quenching is decidedly novel.

The cleaned castings are placed on oven cars, the front doors of the ovens resting on one end of the cars. Each of the two ovens is about 6 feet wide by 14 feet long and is hand fired with coal. The temperature of each is registered by electric pyrometer recorders in the office of the company metallurgist. When the castings are ready to be taken from one of the ovens, a steel cable is hooked to the car and it is slowly drawn out by means of a power drum.

As the car is drawn from the furnace it runs on a track pivoted longitudinally over the quenching tank shown in Fig. 10. As the car nears its position on the tilting portion of the track a workman throws a lever which raises two hook-shaped castings to a vertical position, where they engage the axles of the car, which is held tight against the hooks by the tension of the cable. The car being securely clamped to the track, air is admitted to an air cylinder underneath, the rising piston of which tilts the track to an angle of about 45 degrees, where further tilting is prevented by wooden stops. The rapid tilting of track and car causes the castings to slide off into the quenching tank, which is filled with water. The castings are recovered by means of a traveling crane which spans the tank and is operated from a nearby control station.

Each Ladle of Metal is Analyzed

In order to keep a close check on the chemical composition of the steel, the metal of each ladle is completely analyzed in the well-equipped laboratory maintained by the Marion company. Test bars are taken from each ladle tapped from each heat, and carry the date and heat number for identification. Each test bar remains with the castings throughout the heat treating process, after which it is tested for physical properties. In case a defect is revealed by the testing of a bar, all of the castings poured from the heat are again heat treated. Another test for physical properties is made and if no defects are revealed the castings are considered satisfactory for use. In case the test indicates that undesirable qualities still are present, the entire heat is thrown out.

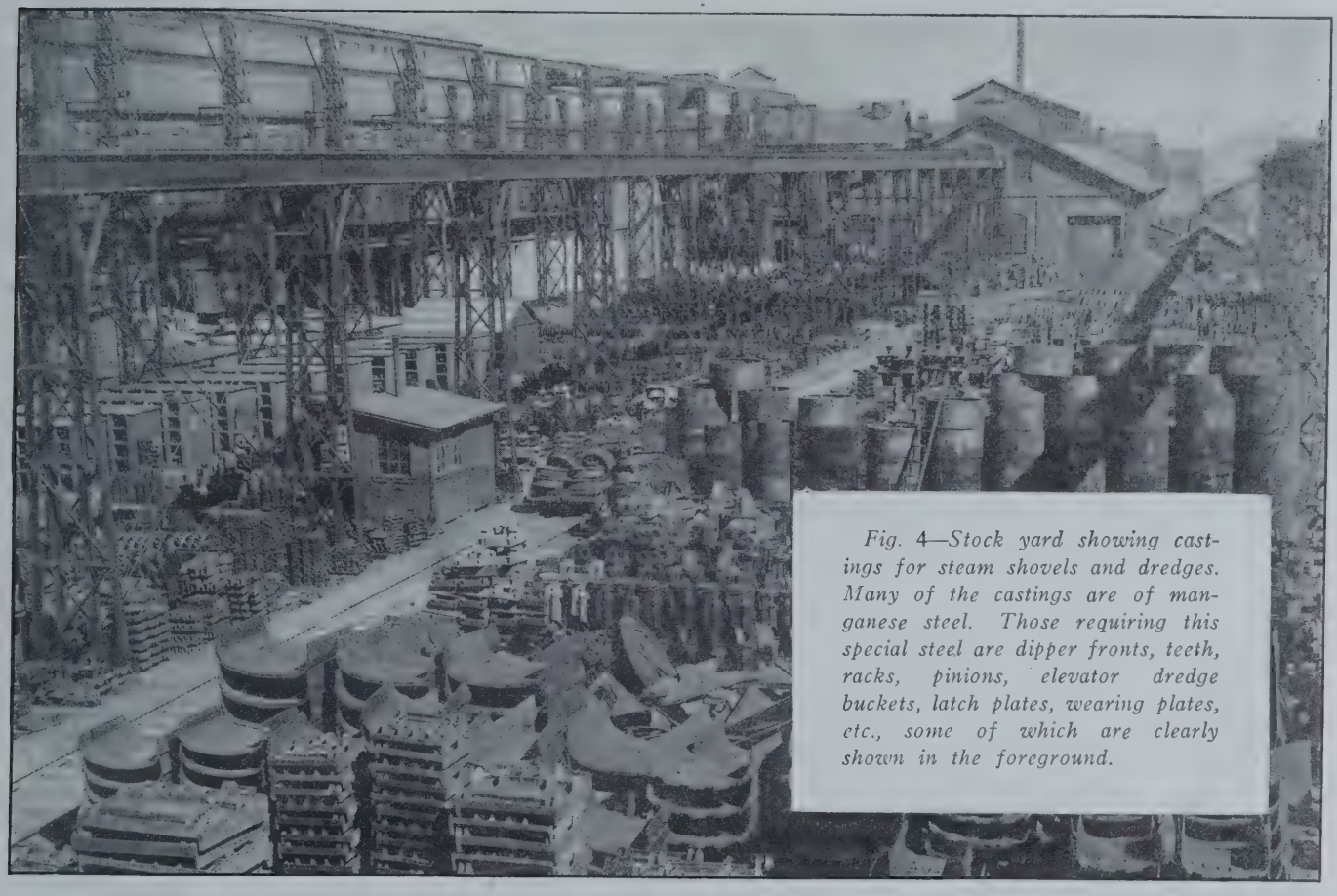


Fig. 4—Stock yard showing castings for steam shovels and dredges. Many of the castings are of manganese steel. Those requiring this special steel are dipper fronts, teeth, racks, pinions, elevator dredge buckets, latch plates, wearing plates, etc., some of which are clearly shown in the foreground.

Believe Process More Economical

Although comparative costs of the bessemer and open-hearth processes for making manganese steel are not available, the estimates made by the company based upon melting losses indicate that the open-hearth process is as economical if not more so than

FIGS. 5-8—VIEWS IN LABORATORY OF MARION STEAM SHOVEL CO., WHERE STEEL IS ANALYZED AND TEST BARS TESTED FOR PHYSICAL PROPERTIES

the more generally used converter method.

The steel foundry of the Marion company is in charge of Marshall Post, and the laboratory work and all problems pertaining to the metallurgy of metals are under the direction of Ralph Young, metallurgist.

Production of Domestic Manganese Declines

Statistics compiled by the United States geological survey for the first six months of 1919, show that both the production and demand for domestic manganese ore has fallen off considerably and is still declining. Reports received from shippers during this period show that shipments of high grade ore amounted to 44,539 tons, which was less than the amount shipped during the first quarter of 1918, when 55,682 tons were carried. The number of shippers of this grade of ore was 30 whereas in 1918 the number totaled 247.

The total shipments of low grade ore containing from 10 to 25 per cent of manganese during the period, was 86,158 tons and, but 16,871 tons of ore containing from five to 10 per cent were shipped.

Practically all the ore was shipped under contracts made in 1918 and which expired July 1, 1919. Only a few of those who shipped during the six months, which ended June 30, expect to make shipments during the third quarter of the year.

Montana contributed more than one-third of the high grade ore shipped, shipping 16,026 tons. Colorado shipped the second largest quantity and California the third. Practically half the ore containing from 10 to 35 per cent manganese came from Nevada. Total shipments from this state were 40,710 tons. The Cuyuna range in Minnesota shipped only 8220 tons.

Imports of manganese ore during this period were 225,985 tons, of which 172,996 tons came from Brazil, 33,013 tons from Cuba and 5574 tons from Costa Rica.

Producing Potash From Blast Furnace Gas

Data collected by the bureau of soils, United States department of agriculture, show that, with a new electrical precipitation apparatus for treating blast-furnace gases, about 90 per cent of the potash carried along in the dust or as a fume in the gas stream can be collected in a product containing from 5 to 30 per cent total potash of which 80 per cent is readily water soluble. In other words, if the average charge contains 12 pounds of potash per ton of pig iron, about six pounds or about 50 per cent can be recovered as readily water soluble.

Very little of this volatilized potash is recovered by the present methods of handling, the gases, either using them directly in the stoves and boilers or passing them first through washers and scrubbers before utilizing them in the stoves, boilers, or gas engines. Most of it is lost in the water with which the gases are washed in the primary or secondary washers and a large proportion is actually discharged into the atmosphere. It is claimed that little operation charges can be placed against the apparatus and therefor it is expected that potash will be produced at such a favorable price that it may enter competition with the supply from German or other sources.

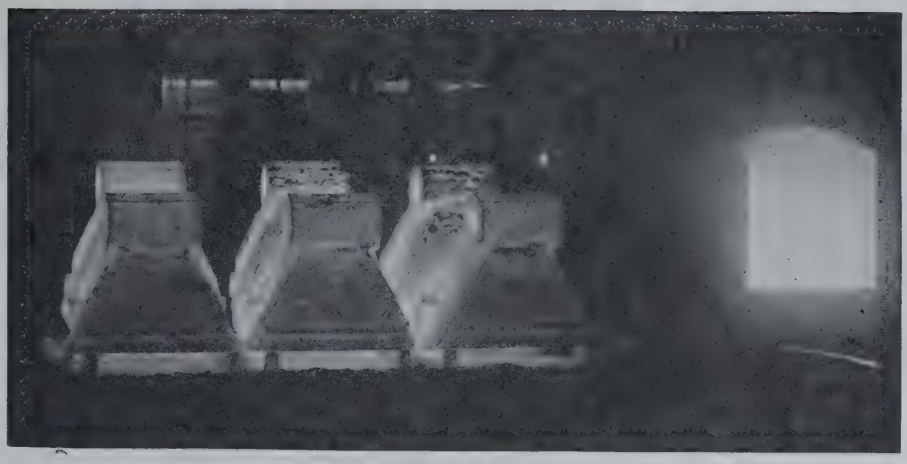


FIG. 9—REPRODUCTION OF PHOTOGRAPH TAKEN AT NIGHT OF CASTINGS ON CAR JUST REMOVED FROM HEAT TREATING OVEN AND ABOUT TO BE THROWN INTO QUENCHING TANK

Foundry Organizations in Germany Unite

The Verein Deutscher Eisengiessereien in its general meeting, held recently at Dusseldorf, has announced the fusion of the foundry syndicate Giessereiverband with the Germany Foundry union, which now counts a thousand adherents.

The foundry industry of Germany will thus be represented by a single economic organization. The union proposes to aid the foundries not only by the labors of its central trade committee but by the activities of a technical council.

A memorial of Alfred Seidel, Chemnitz, establishes the basis of a system which shall give a definite coefficient or formula for computing overhead charges tending to lead to price uniformity, a feature hitherto lacking among the scattered foundry elements of Germany.



FIG. 10—OVEN CAR ON PIVOTED TRACK DIRECTLY OVER THE QUENCHING TANK. AFTER CAR IS ANCHORED TO TRACK BY HOOK OVER AXLES, TRACK AND CAR ARE TILTED TO ANGLE OF 45 DEGREES WHICH IS SUFFICIENT TO HURL ALL CASTINGS INTO BATH SIMULTANEOUSLY

Producing Electric Steel Castings

Flexibility of This Melting Medium Recommends it to the Jobbing Foundry as Well as the Large Manufacturer—It Will Place Steel in the Ladle for From $35 to $40 a Ton

BY R. C. GOSROW

INITIALLY, the intention to engage in the manufacture of electric steel castings is influenced by several important factors. The question is frequently studied from a purely remunerative standpoint. Then comes the consideration of the ease and dependability with which the electric furnace will make steel to meet the present rigid requirements of specifications for engineering materials which demand material of high grade and of a reliable and uniform character. The installation of an electric furnace for making steel appeals in one way to the manufacturer having an established plant, producing a finished machine or other product and not engaging in making castings for other firms. But it has a different aspect to the foundryman doing a jobbing business in a district producing large machinery, and requiring large castings of reliable material. Again the electric furnace appeals in a different way to the man in charge of a jobbing foundry in a district producing machinery requiring mainly small castings.

We may then analyze the utilization of the electric steel and iron furnace, for foundry use, somewhat as follows:

A steel foundry connected with a large manufacturing plant producing castings for its own use only: Making heavy machinery castings. Making light machinery castings such as automobile truck and agricultural machinery parts.

A steel foundry doing a jobbing business only: Making heavy castings principally; making light castings principally; making heavy and light castings simultaneously.

Let us consider a foundry operating in a certain territory and supplying large steel castings, up to 40,000 pounds in weight, for locomotives, ships, railroad equipment, industrial, and steel mill machinery, etc. The furnace which such a foundry would require would have a capacity of at least 50,000 pounds, which would mean a rated 25-ton unit. For making low-carbon steel castings under specifications calling for 60,000 to 70,000 pounds per square inch tensile strength, with 45 per cent of the ultimate in elastic limit; 18 per cent elongation in 2 inches, and 25 per cent reduction of area, a duplex process using the open-hearth and the electric furnace could be adapted. The cold scrap would be melted in the open-hearth furnace and the electric furnace would then act as a basic finishing unit, to desulphurize, deoxidize, degasify, and recarburize, and also to fix the steel's composition. If acid operations were carried on, the electric furnace unit would function as a deoxidizing, recarburizing and degasifying unit, and also for fixing the composition of the steel. With the regularity of such operations, electric furnace operating costs would be maintained at a minimum, and electric furnace maintenance costs would be exceptionally low, as referred to refractories and electrodes. This practice has been followed in several plants in this country.

In order to utilize the electric furnace in a duplexing process on steel, certain advantages must be guaranteed and demonstrated. Advantage is found in being able to melt the scrap steel in the open-hearth, by gas or oil, in large quantities, and maintain a reservoir of metal molten at all times to feed the electric furnace. As longer time is required to finish steel in the open-hearth furnace than in the electric furnace, more heats may be finished and more castings poured if the metal is transferred to the electric furnace for finishing as soon as being melted in the open-hearth furnace. Again, the metal from an open-hearth furnace of 100 tons capacity may be split up into four or five steel heats of different compositions if transferred to the electric furnace, should this be desired. Another advantage is that hotter heats may be made in the electric furnace, thus eliminating the occurence of cold shuts and misrun castings, and decreasing the weight of ladle skulls. The hotter the metal the more completely may it be degasified, which concerns the elimination of entrained air, with its oxygen and nitrogen contents. By charging hot metal to the electric furnace, current fluctuations are reduced to a negligible item, and the frequent power surges attending cold melting are absent, thus making a good power load. With the hot metal charge, the furnace builds up its electrical load rapidly, and the desulphurizing and deoxidizing slag may be made without delay after the metal is charged. The interval of time between heats, from tapping of one heat to the charging of the next, is not lost. Few agencies are so destructive to highly heated refractories, acid or basic, as the sudden chilling when a furnace is tapped and cold metal charged at once. Hot metal charging would considerably eliminate this difficulty and reduce the cooling interval between heats. Another advantage of the duplexing process, under the present consideration, is the decreased amount of molding floor space required owing to the fact that pouring would take place more frequently.

A plant with such equipment could readily switch its electric furnace over to producing gray-iron castings. In this case the iron scrap would be charged cold into the electric furnace for melting; or a duplexing process with a cupola could be used. The addition of a cupola to such a plant, would give the most flexible operating conditions desired. The products of such a plant could constitute castings of duplex electric steel, duplex electric gray-iron, prime electric steel, or prime electric gray-iron. This outline then would cover the

Electricity Appraised

WONDERS accomplished by electricity have been so startling that a glamor is cast about the word and any operation associated with it is likely to be overestimated in its results. This was true of the electric furnace process for making steel. When first introduced, extravagant claims were made for the product and, to some extent, in regard to the metallurgical reactions which take place in the furnace. Mr. Gosrow has tabulated data from a number of tensile tests which show what may be expected from a low-carbon steel made in the electric furnace. He also outlines the metallurgical reactions which take place and explains the reasons for the different effects, showing that an oxidizing atmosphere is necessary to remove phosphorus and a reducing atmosphere is required to free the steel from sulphur. Under both of these conditions a lime slag is essential and these reactions are therefore confined to the operation of the basic lined electric furnace.

operations of a plant making large castings only and installing the largest, most economically sized electric furnace.

A foundry producing only light castings would encounter a different set of conditions from the case above cited. The production of small castings from a few ounces up to 1500 pounds in weight means large molding floor space. A unit of the most efficient capacity to consistently keep pace with the production demands of the shop must be installed. The furnace should be kept operating and the molders should not be interfered with for lack of floor space. For the most flexible operation, a furnace should be installed which will have about 25 per cent additional capacity, over the anticipated maximum production demand. This would give a unit which would be economical during minimum production, yet large enough to produce a maximum, both in daily tonnage and unit heat poured.

Small Furnace Recommended

As the productoin of small castings requires hot heats, and not too large heats, the desirable medium would be a furnace of one to three tons capacity. Such a furnace operating with an acid bottom should melt and finish a heat in 2 hours on the average; while for basic operation 2½ to 3½ hours would be an average. These figures are based on both operations producing 0.25 per cent carbon steel castings, with sulphur and phosphorus in acid practice each 0.07 per cent maximum, and in basic 0.04 per cent maximum.

The most economical grade of scrap to use would be 80 per cent of the charge in clean, coarse, heavy turnings, with 20 per cent of the charge foundry sprues; or about 10 per cent sprues and 10 per cent drop forge crop ends and tong holds. These materials melt up rapidly and may be charged easier than most other grades of scrap materials. Heavy materials should be avoided, as they are charged slower, and require more time to melt. In small furnaces heavy chunks of scrap destroy the door sills, banks and hearth. By operating 1½ to 3-ton furnaces, pouring the metal from the furnace to a bull ladle, then shanking off in 150-pound pots, the furnace is never held idle for long periods to pour off, as is usual when shanking is done direct from the furnace.

While it is true that the rapid heating and cooling of the lining in small, fast operated furnaces is deteriorating on the refractories, it cannot be prevented when cold charging is practiced. Yet considering the weight of the lining material and the heat stored up in it, compared to the weight of the cold metal charged, it can be seen that the deteriorating effect of heating and cooling would not be as great in a 3-ton furnace as it would be in a 10 or 25-ton unit. Besides it would not be practical to run a mixer in connection with a 3-ton, or smaller unit. Cold charging is therefore the preferable method for smaller furnaces.

By installing a furnace with an automatic electrode control, with mechanism to tilt back for slag skimming and forward for pouring the metal, a labor-operating crew consisting of one man can tend the furnace, except at charging time, when two additional men would be required for short intervals. A 1½-ton furnace operating by acid process, should melt and finish a heat with an energy consumption of not over 650 kilowatt hours per ton poured, while a 3-ton furnace should get out a heat with not over 600 kilowatt-hours per ton poured. On basic operation these figures would average 50 to 100 kilowatt-hours greater per ton poured. These figures pertain, of course, to plain carbon steel castings.

Frequently a large manufacturing concern engages in the production of the steel castings which enter into the manufacture of its final product while many users of steel castings, although they have foundries to produce gray-iron and brass castings for their own needs, purchase steel castings from other firms. This brings up the question of the advisability for a firm to make its own steel castings.

Production of steel castings in a large manufacturing institution, means another department for the management to handle. It means a new organization in a plant which may already be over organized and too integrated. Then should there come a business depression the steel foundry would have to suffer; it would be necessary to lay off men, the machinery and equipment would stand idle, and the organization be broken up. These factors in turn affect other departments of the same plant. The purchase of materials for the steel foundry puts additional strain on the purchasing department and adds to the large variety of material with which the department must be familiar. The installation of a steel foundry would also require an investment in buildings, equipment, supplies, etc., and the interest and

Table I

Cost of Net Ton of Electric Steel in Ladle*

Item	Pounds	Unit cost	Cost per 2000 lbs. metal 1½ ton	3 ton
Turnings .....5% loss	1680	$15.00 net ton	$12.60	$12.60
Sprue .....2% loss	410	13.50 net ton	2.70	2.70
Limerock	200	5.50 net ton	0.54	0.54
Fluorspar	15	30.00 net ton	0.23	0.23
Carburizer	4	12.00 net ton	0.02	0.02
Ferromanganese 80%	18	8½c pound	1.53	1.53
Ferrosilicon 50%	20	7½c pound	1.50	1.50
Power—700 K. W. Hrs. @ 1.25 cents			8.75	....
Power—650 K. W. Hrs. @ 1.0 cents			....	6.50
Electrode—nongraphitized—20 pounds 8½c pound			1.70	1.70
Linings—New				
Roof			0.45	0.45
Walls			0.50	0.40
Hearth			0.20	0.15
Linings—Repairs				
Banking materials			0.50	0.40
Roof patching			0.15	0.15
Spout and slag doors			0.20	0.25
Ladles—				
Linings			0.60	0.50
Drying—Oil			0.50	0.50
Furnace tools—steel bars, skimmers, etc			0.50	0.50
Labor—				
Superintendence—20 per cent of time to furnace at $500 per month			0.30	0.20
Head melter—2 work 10 hours @ $6.00 each			0.89	0.57
Ladle liner—2 work 12 hours @ 45c hour			0.83	0.52
Labor charging furnace—2 @ 40c hour			0.53	0.27
Scrap yard labor—2 men 10 hours @ 40c hour			0.59	0.38
Chemist $200 per month			0.58	0.38
Laboratory supplies—$50 per month			0.15	0.10
Unproductive payroll			1.00	0.75
Depreciation of furnace installation.....1% per year			0.57	0.57
Amortization fund on furnace installation.....1% per year			0.57	0.57
Interest on furnace installation only.....7% per year			0.33	0.33
Insurance, etc.			0.04	0.04
Total cost per net ton of metal in the ladle			$39.55	$35.31

*Steel composition desired:

Carbon	0.22—0.28 per cent.
Manganese	0.55—0.70 per cent.
Silicon	0.40—0.55 per cent.
Sulphur	0.045 per cent maximum.
Phosphorous	0.040 per cent maximum.

Furnace capacity per unit heat and production:
Producing from 1½ ton unit, 9 heats, 13½ tons.
Producing from 3 ton unit, 7 heats, 21 tons.

Power capacity of furnaces:
1½ ton; 600 KVA.
3 ton; 1000 KVA.

Scrap melted:
Steel turnings, 80% of charge. 0.20—0.30 carbon.
Foundry sprue 20% of charge, 0.20—0.30 carbon.

depreciation charges would have to be met by the profits of the steel foundry.

It would appear, however, in spite of the foregoing arguments against it, that a steel foundry would be a paying investment for many concerns. The quantity of scrap material accumulating is considerable in any large manufacturing plant and a big portion of this scrap is steel. The scrap steel of course, is sold at good or poor prices, depending on the market, and directly bears on the prices paid for new materials. However, the manufacturer might convert it into a product for which he pays good prices when buying his castings, if he established his own steel foundry.

In the large manufacturing plant considerable accessory equipment could be utilized in operating a steel foundry. Such equipment already in the plant and which is needed for a steel foundry would consist of water pumping machinery, air compressors, transformers for power and lighting circuits, spur trackage, industrial trackage, yard cranes for unloading raw materials and handling the castings, fire protection systems and shops in which its own equipment may be made and repaired. Engineers of wide experience, an efficient employment department, trained office help with a systematized method of keeping accounts, and usually good financial support are among the other advantages which a large organization offers for adding another unit to its plant.

A large machinery manufacturer would undoubtedly require castings of a wide range of weight and would have to equip his foundry to make the largest as well as the smallest castings which would be needed. For economy he should keep his furnace running continually and produce all his work, both heavy and light. This condition would be a hardship on the foundry. At times it would have a surplus of heavy work to turn out quickly, and at other times a majority of light work. In order to take care of the fluctuations it would be necessary to over-man his foundry. This condition would be undesirable as well as unprofitable. However, the difficulty, in many cases, might be somewhat obviated by running the foundry to produce castings for stock.

Table II

Methods of Determining Rates in Two Plants

PLANT A		PLANT B	
Furnace—3 ton; 3 phase.		Furnace—3 ton; 3 phase.	
Transformer, 1000 KVA.		Transformer, 1000 KVA.	
Process, basic.		Process, basic.	
Operating 3 heats in 12 hours.		Operating 6 heats in 18 hours.	
Maximum demand, 1500 KW.		Maximum demand, 1750 KW.	
Energy consumption per month, 168,750 KW. hours.		Energy consumption per month, 315,000 KW. hours.	
Tonnage per month, 225 tons—net.		Tonnage per month, 450 tons—net.	
DEMAND CHARGE			
Kilowatts		Kilowatts	
200 @ $1.50	$ 300.00	200 @ $1.50	$ 300.00
800 @ 1.25	1000.00	800 @ 1.25	1000.00
500 @ 1.00	500.00	750 @ 1.00	750.00
1500 KW.	$1800.00	1750 KW.	$2050.00
ENERGY CHARGE			
100,000 Kilowatt hours @ 1.0c	$1000.00	100,000 Kilowatt hours @ 1.0c	$1000.00
68,750 Kilowatt hours @ 0.9c	618.75	215,000 Kilowatt hours @ 0.9c	1935.00
168,750 Total	$1618.75	315,000 Total	$2935.00
Demand charge	$1800.00	Demand charge	$2050.00
Energy charge	1618.75	Energy charge	2935.00
Total	$3418.75	Total	$4985.00
AVERAGE CHARGE PER KILOWATT HOUR			
Plant A average	2.02 cents	Plant B average	1.58 cents

Advantage in Regular Production

Manufacturers of parts for automobiles, trucks, tractors, agricultural machinery, rock and ore crushing machinery, and other similar lines could advantageously introduce the electric furnace. The universal use of such machinery, guarantees to the manufacturer a continual market for his product. With the quantities of castings required daily a steady, never failing production must be maintained. This means that the electric furnace could be maintained at maximum production. Such a manufacturing plant would enjoy a considerable advantage in producing its own castings. In the first place a desirable supply of turnings, etc., would accumulate for an electric furnace charge from the quantity of material machined. Then, too, the foundry practice could be improved and standardized through studying results and investigating their causes. At the same time improvement could be made in the grade, composition, and quality of the steel.

The manufacturer of machinery, as previously stated, uses many gray-iron as well as steel castings in his machines. The flexibility of operation of a well designed and equipped electric furnace should appeal strongly to such manufacturers. By operating the electric furnace for producing gray-iron and steel castings, by basic or acid processes, a unit would be at hand which would produce castings of the highest physical properties, and at the same time replace a cupola for iron, and a converter or crucibles for steel.

An electric furnace for such requirements would be most suitable in a 1½ to 3-ton unit. In a furnace of such capacity, repairs to the refractories could be quickly made. Quick heats could be produced of such a size that the chemical composition could be closely controlled and changed readily when desired.

A Study of Costs

Back of all the arguments pro and con is the cost question. If the cost were excessive it would bar the electric furnace. But it has been proved that electric furnace steel costs are not excessive. In Table I figures are given showing the cost of producing one net ton of 0.25 per cent carbon basic steel in the ladle.

From this estimate, which it is safe to state is not over 10 per cent plus or minus from actual foundry costs in manufacturing centers of this country, it may be seen that there is not a wide difference of costs between the two sizes of furnace providing both are run to normal capacity. The ultimate cost of electric furnace steel in the ladle is lower than the cost of other methods of producing the same analysis steel in the same unit quantities. The reasons are:

Less oxidation losses of metal in melting down the charge.

A less gasified steel, not requiring as much time to finish the heat.

A steel containing less oxygen and oxides, thus not requiring the quantities of silicon for deoxidizing.

A less oxidized steel, consequently more economy in the use of manganese and other alloys, otherwise lost by oxidation.

A more fluid steel, thus giving homogeneity and better absorption of the alloys added.

Production of a hot metal and thus eliminating cold shuts and misrun castings.

The ease of manipulation and control of the electric furnace, decreases labor needed to operate it.

Producing quick, small heats: The foundry can be operated more

economically when casting is going on at regular intervals all day.

The ability to carefully control the analysis desired eliminates loss by off heats and scrap castings.

Money is saved on interest and investment by using a small unit, producing several heats per day, than by using a large unit or greater unit production, but less heats per day.

Electric Companies a Factor

While the electric furnace has developed in favor among foundry and mill men, its advance would have been seriously impeded and delayed if it had not been fostered and backed by the power generating companies. Through the loyal and scientific cooperation of generating and distributing electrical engineers, metallurgists and foundrymen, the electric furnace has developed to be an apparatus favored and promoted by all three of these interested groups.

Initially when electric furnace loads were put on some of the power company's lines, it became apparent that certain refinements were necessary to safeguard other customers taking power from the same lines. Then, also, it was found that an electric furnace load on a small feeder system caused too great fluctuations of power. Where favorable conditions warranted it, power company lines were consolidated to feed through a larger system and thus take care of an urgent demand from customers who were installing electric furnaces. But now with the three-phase furnaces in operation, having regulating and safety devices, the power companies are anxious to get such customers. As most of the heavy peak loads of the generating companies come during the morning and evening hours, the hours of the night and day present periods of surplus power available. If a manufacturer can regulate his output so as to refrain from operating the furnace during peak load periods, he can secure concessions in his power rate. The ease with which an electric furnace may be started and heated up makes this practice of operating the furnace on off-peak periods practical, and the furnace need be shut down only about 6 hours out of 24 hours. This schedule, of course, pertains to the foundryman who has a large tonnage to produce, and who operates his plant on a 24-hour day schedule, which practice is followed in some plants throughout the country.

At the present time, various large electric generating and distributing systems require that electric furnaces on their lines shall be three-phase furnaces. This is to eliminate the unbalancing and overload on their feeder lines and generators, caused by single phase units, with their resultant low power factor. When electric furnaces first came into use single-phase furnaces were tolerated by the power companies. But with the increasing application of the electric furnace, and the large loads which are required, the single-phase units became undesirable, and today some power companies require, before issuing a power contract, that a three-phase furnace be installed.

The objection is often made among buyers of electric energy for electric furnace use, that their unit energy charges are not consistent, or that one has a lower unit rate than another. The amount of money paid for electric energy is derived from and figured on how much energy is used per month, and when it is used during the 24-hour day. An example of the method of calculating rates of charge are illustrated in Table II. Calculations are given of two furnaces with different demand charges and varying energy consumption. The demand charge is a charge for capacity and is based on the largest amount of power the furnace will take. This is merely a charge by the electric company for standing ready to deliver power of a stated number of kilowatts. The consumption charge, on the other hand, is for power actually used. The figures in Table II show clearly the effect of a low energy charge with a high demand. The furnace in plant *A* was not running near to capacity. It was also running slow, as evidenced by the time to make three heats. The furnace in plant *B* was running nearer to capacity and had a higher demand but also a much greater energy consumption which made the charge per kilowatt hour less for plant *B* than for *A*.

When using the electric steel furnace for manufacturing castings, it must not be assumed, that any aggregate of poor materials will produce the highest grades of steel. It must also be remembered that an electric steel furnace is not a cure for all troubles with steel and castings. The electric steel furnace is a high class piece of steelmaking apparatus and must be intelligently used and operated. Only in this way can the economies and high grade product claimed for it be realized. The proper grade and physical condition of raw materials also must be considered.

For producing acid carbon steel castings, an electric furnace may be most efficiently operated with a rapid output of heats. But the raw material available would determine whether it would be advisable to use this process instead of the basic process. Scrap for acid steel castings should not contain more than 0.045 per cent sulphur and phosphorus as there is always an increase of sulphur and phosphorus when steel is melted in an acid-lined furnace. A 0.06 per cent sulphur and phosphorus content should be the high limit for steel made by the acid process. As the increase in percentage of sulphur and phosphorus in the final metal is due to the oxidation of iron in melting down, the electric furnace acid operation does not cause as high an increase in the percentage of these elements as does the open-hearth with its greater oxidation losses. The scrap selected should also be physically clean and free from sand, scale, rust, and refuse, such as shop sweepings.

Table III

Tensile Tests of Basic Electric Steel

Test number	A	B	C	D	E	F
Carbon	0.49	.44	.41	.39	.53	.31
Manganese	0.51	.56	.66	.65	.66	.61
Silicon	0.26	.37	.33	.37	.33	.59
Sulphur	0.041	.043	.047	.045	.047	.035
Phosphorus	0.036	.035	.042	.044	.043	.035
Utimate strength, lbs. sq. in.	93,000	84,000	83,400	85,300	103,500	84,400
Elastic limit, lbs. sq. in.	44,500	42,800	44,000	45,300	48,300	44,500
Per cent elongation in 2"	17.0	17.2	18.5	19.0	16.5	18.2
Reduction of area; per cent	20.2	20.1	23.8	24.1	20.0	21.8

The purpose in melting steel in a furnace with basic hearth and banks is to oxidize the phosphorus, and then combine the phosphorus pentoxide produced with lime. These form a calcium phosphate which is held in the slag. The conditions for good dephosphorizing must be oxidizing, with an excess of lime present in the slag. In the acid operation of melting, oxidation takes place, but a phosphate of iron is formed instead of calcium phosphate because there is no lime present to unite with the phosphorus pentoxide. The first slag that forms in the acid furnace is a black, glassy silicate of iron with some iron phosphate. This phosphate of iron is easily reduced and the phosphorus goes back into the metal and none is carried away by the slag.

During the final period in which the steel is refined the atmosphere over the metal is decidedly neutral and reducing in character. The term refining generally implies basic operation, but it may technically mean the finishing and completion of the steel, either in basic or

acid operations. In the acid process refining might be considered to consist of the elimination of gases, solid oxides and slag from the metal. The operation also includes securing the desired composition of the metal by the addition of alloys, etc. In the basic process, refining constitutes the elimination of sulphur, gases, solid oxides and slag, and final fixing of the chemical composition. The elimination of sulphur is the one element of operation which strongly distinguishes it from acid operations. As desulphurizing of steel in the basic process is a series of chemical reactions, the proper conditions must be maintained to achieve the result. Primarily, desulphurization is a reducing process. When the metal is melted and after the first ferrous-lime slag is removed, the steel is contaminated with oxides, both solid and gaseous. Although the metal is melted it is not in its most fluid quiescent state. At this stage lime is added, along with carbon, for the purpose of forming a carbide of lime on the surface of the metal. This combines with any silica present and forms a slag. As carbide of lime, or calcium carbide, is a strong reducing agent, the sulphur of the iron sulphide in the slag combines with the calcium and forms calcium sulphide, which goes into the slag as a very liquid compound. The oxygen in the solid and gaseous oxides present, combines with the carbon and forms carbon monoxide and carbon dioxide, which go off as gas. The iron oxide in the metal has now been reduced to iron, the oxygen has passed off as an oxide of carbon, and some of the sulphur is in the slag, combined with calcium. In the acid process this procedure does not follow, because it is impractical to add a strong base, such as lime, to a strong acid refractory, like silica. So in the acid process desulphurizing is not carried out, and better grades of scrap are necessary to make a final metal sufficiently low in this element.

As the uniform physical properties of a metal depend on its homogeneity, it would appear primarily essential that electric steel be homogeneous. When properly made from suitable materials, steel from the electric furnace is homogeneous. Heterogeneity is due to unsatisfactory and poorly selected raw materials, haste and lack of skill in operations, and a misunderstanding or ignorance of what the electric furnace requires in producing the high grade product it is capable of making. As an indication of the quality of such steel the results of some tensile tests of basic electric steel, after it had been annealed, are given in Table III which is shown on page 1709.

Welding Large Mill Engine Cylinders

BY L. M. MALCHER

TWO weeks after the signing of the armistice, one of the big steel rolling-mill engines of the Carnegie Steel Co., Farrell, Pa., which had been working steadily on war orders, broke down with the result that its service had to discontinue entirely. As a result of the breaking of a connecting rod at the point of reversal, the left-hand low-pressure steam cylinder of this engine—an Allis-Chalmers twin tandem-compound, reversing—was badly fractured besides several other parts being injured. The cylinder, shown in the accompanying illustrations, has an inside diameter of 70 inches. To obtain a new cylinder would require about 3½ months and while the engine was out of operation, 360 men would be thrown out of employment. Thus, in order to place the mill in operation as soon as possible and to prevent laying off employes, it seemed that a repair was the only solution. After oxyacetylene welding was decided upon as the method to be used, the Oxweld Acetylene Co., Chicago, was called upon to do the work. Three expert welders with the necessary equipment went at once to Farrell to undertake the job of repairing the unit. With much success, the task progressed until it reached completion although at times a few difficulties arose to hinder the work. The total time required to finish the repair of the broken cylinder was 72 hours, which included the operations of chipping, preheating and welding. While dismantling he engine to have access to the low-pressure cylinder, a fracture was discovered in the 42-inch right-hand high-pressure cylinder. Welding this fracture required about 18 hours. Seven days from the time the welders were given

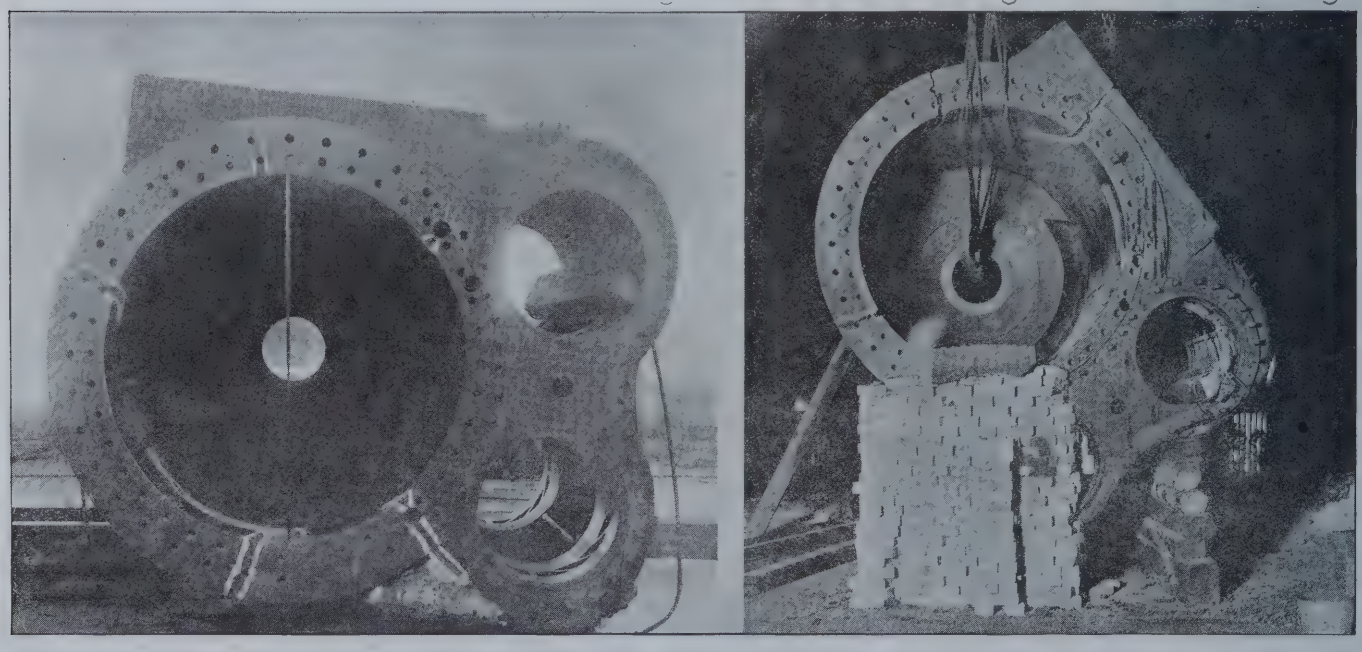


FIG. 1—WRECKED LOW-PRESSURE CYLINDER SHOWING THE CRACKS V-GROOVED BY CHIPPING PREPARATORY TO WELDING. FIG. 2—PREHEATING A CRACK IN THE LOW-PRESSURE CYLINDER WITH A CHARCOAL FIRE. THE CASTING WAS HANDLED BY CRANE

Table I

Low Pressure Cylinder

Cylinder bore, inches	70
Stroke, inches	54
Weight of cylinder, tons	13
Thickness of iron castings, inches	2¾ to 3⅜
Number of cracks (See Fig. 1)	7
Total length of all cracks, inches	266
Preparing and preheating casting, hours	27
Welding casting, hours	45
Oxygen consumed, cubic feet	2850
Acetylene consumed, cubic feet	2845
Cast iron welding rods, pounds	390
Flux consumed, pounds	25
Period of welding shifts, minutes	10 and 30
Number of welders	3

the order for the work, the entire task was finished. In Table I is given data as to the size of the casting welded, the amount of material required and the time required for the different operations in repairing the low-pressure cylinder. Similar information for the high pressure cylinder is given in Table II.

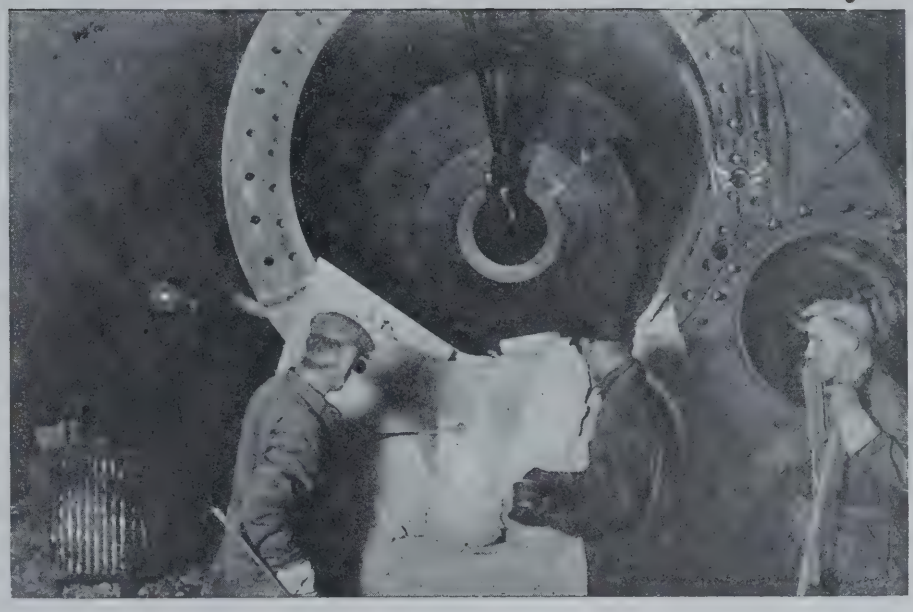


FIG. 4—WELDING THE LOW-PRESSURE CYLINDER —ASBESTOS PAPER WAS USED TO PROTECT THE WORKERS

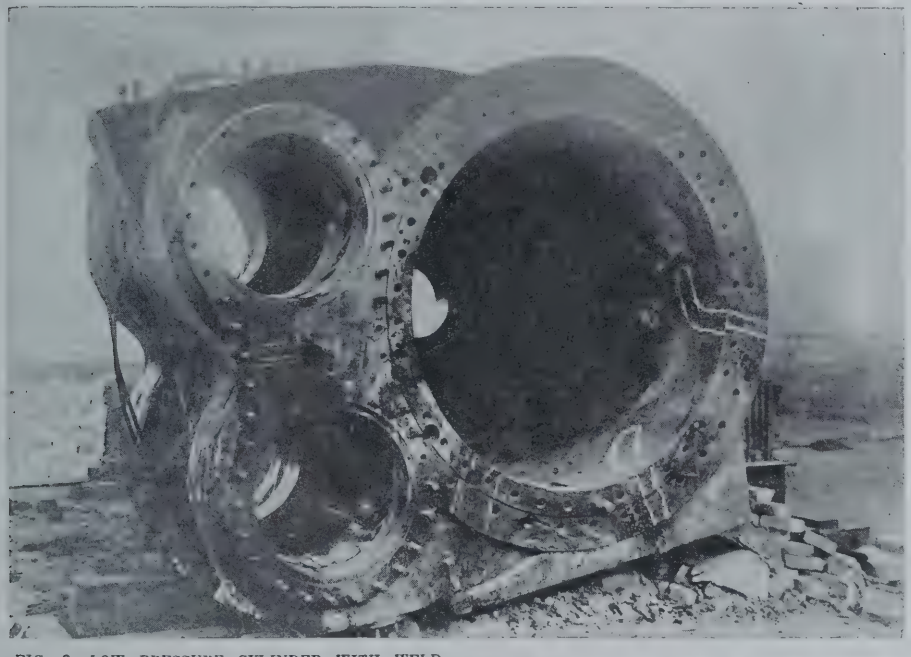


FIG. 3—LOW PRESSURE CYLINDER WITH WELDING COMPLETE—THE WELDS WERE FROM 1 TO 8 FEET LONG

The engine has a 5000-horsepower rating and is designed to give its maximum power while rolling and running at from 100 to about 110 revolutions per minute.

Welders Work in Shifts

While welding inside of the cylinder castings, the operators were forced to relieve each other every 10 minutes because of the intense heat reflected back on them, but while working on the outside the heat was not so intense and one man was able to work 30 minutes before requiring relief. After the cylinders were machined, it is said, it was almost impossible to determine where the cracks had been. Not only did the repair job make it possible to resume operation of the engine at an earlier date but the cost of repair was a small fraction of the replacement.

Table II

High Pressure Cylinder

Cylinder bore, inches	42
Stroke, inches	54
Weight of cylinder, tons	5
Thickness of iron casting, inches	3½ to 6
Total length of weld, inches	54
Preparing and preheating casting, hours	9½
Welding casting, hours	8½
Oxygen consumed, cubic feet	650
Acetylene consumed, cubic feet	650
Cast iron welding rods, pounds	110
Flux, pounds	10
Period of welding shifts, minutes	10 and 30
Number of welders	3

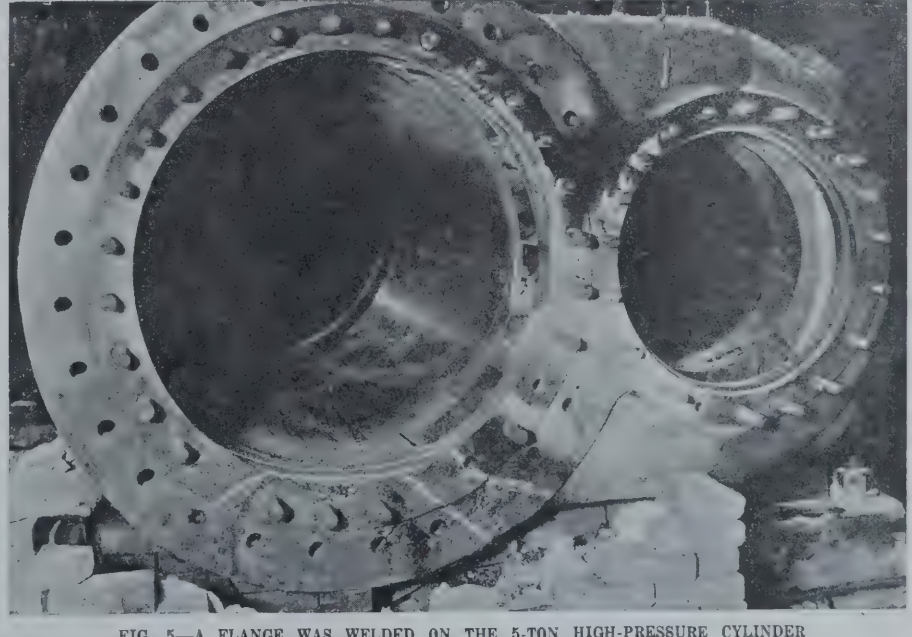


FIG. 5—A FLANGE WAS WELDED ON THE 5-TON HIGH-PRESSURE CYLINDER

Reducing Grinding Wheel Failure

Breakage of Wheels Under Operation is Due to One or More of Nine Causes — Carelessness of Operators Contributes Largely to Failures — Proper Mounting of Wheels is Important

BY HAROLD E. JENKS

GRINDING wheel breakage is a subject which directly concerns wheel consumers as well as manufacturers. In order to reduce breakage to a minimum certain underlying causes should be clearly understood.

Breakage of grinding wheels while in operation may be due to any one or to a combination of two or more of the following causes:

Centrifugal force due to rotation of the wheel; direct pressure exerted by the work on the wheel; heating of the wheel or spindle; grinding on the side of the wheel (side pressure); improper mounting; impact on the side or face of the wheel; cracks or flaws in the wheel structure; lack of balance; and initial stresses.

It is unavoidable that these causes should overlap to some extent; for instance, heating of the wheel is a result of direct pressure by the work. It is thought, however, that the list has been condensed as much as possible to still retain the desirable property of clearness.

By "stress," as used here, is meant force acting between the particles of wheel material per unit of area. Wheel material is much weaker under tensile stress than under compressive stress and for this reason, stresses are herein specified as tensile or compressive, it being understood that compressive stresses are not important as sources of breakage.

Much importance should be attached to the fact that although not one of the existing stresses in a wheel may be excessive, the combination or resultant of two or more of them may be sufficient to cause breakage.

Breakage from Centrifugal Force

In a grinding wheel stresses due to centrifugal force are of two kinds and consist of a radial stress acting in the direction of the radius of the wheel and a tangential stress acting in a direction perpendicular to the radius. Both stresses are tensile. The tangential stress is much the larger of the two, and reaches its greatest value at the inside of the wheel—that is, around the circumference of the hole.

The radial stress has its maximum at a point from one-third to three-fourths the distance from the face of the wheel to the hole. The amounts of both stresses vary as the square of the wheel speed, which means that if the speed is doubled the stresses are quadrupled. For a given peripheral speed and diameter of wheel, the maximum tangential stress increases slightly as the diameter of the hole is made larger, and in cylinder wheels becomes about 20 per cent greater than in disc wheels with ordinary sized holes.

Why Wheels Break

Grinding wheels in operation may break as a result of any one or of a combination of two or more of the following causes:

1. *Centrifugal force due to rotation of the wheel.*
2. *Direct pressure exerted by the work on the wheel.*
3. *Heating of the wheel or spindle.*
4. *Grinding on the side of the wheel (side pressure).*
5. *Improper mounting.*
6. *Impact on the side or face of the wheel.*
7. *Cracks or flaws in the wheel structure.*
8. *Lack of balance.*
9. *Initial stresses.*

Since a grinding wheel in operation is always revolving, stresses due to centrifugal force always exist; and although it is probable that comparatively few wheels in operation break from these stresses alone, others may easily combine with them and produce breakage.

Reliable grinding wheel manufacturers test all wheels before they leave the factory by running them at such speeds that the minimum safety factor is 2½ and the maximum in some cases as high as 5. As a result of this precaution, practically all breakages that occur from centrifugal force alone can be traced to such causes as shifting thoughtlessly from large to small pulleys, placing large wheels on spindles running at speeds intended for small ones, or substituting for a wheel running at the correct speed one of different grain and grade and lower recommended wheel speed. In other words, these breakages are nearly all due to carelessness or ignorance on the part of the operator.

Effect of Excess Direct Pressure

By "direct pressure" is meant pressure on the face of a wheel directed toward its center. Stresses produced by this pressure are radial and tangential, or frictional.

The radial stress is the same as would be produced by direct pressure, if the wheel were not revolving, and is compressive. It is usually small in amount and is unimportant as a cause of breakage.

Contact between the particles of the revolving wheel and the work produces a frictional force whose amount is proportional to the direct pressure and which is in the direction of a tangent to the wheel face. This force causes bending stresses along a diametral section of the wheel which are tensile on one side of the center and compressive on the other. These stresses reach their largest value at the face of the wheel, and are usually small and unimportant.

Heating of the Wheel or Spindle

Considerable heat is developed at the point of contact of wheel and work, and in cases where grinding is done dry the wheel may become very hot. The stresses produced by unequal expansion of different parts of the wheel may in this case reach a large value, and many breakages probably are due to this cause. These stresses are similar to those resulting from centrifugal force and may vary greatly in amount according to variations in temperature of the wheel. An exact determination of their amount is difficult, if not impossible. The greatest tensile stress occurs around the circumference of

From *Grits and Grinds*, November, 1919, published by Norton Co., Worcester, Mass.

the hole and hence combines with the greatest stress due to centrifugal force.

Heating of the spindle may be produced by tight bearings on the machine; and if the wheel bushing fits the spindle tightly, expansion of the latter will cause tensile stresses of considerable magnitude in the wheel, which, adding to the maximum stress due to centrifugal force, may cause breakage.

Side Pressure Causes Wheel Failures

Many breakages are directly caused by side pressure, which occurs to a limited extent when work is being traversed across the face of the wheel, but principally when grinding is done on its side. Also, particularly in snagging operations, large side pressure may be produced by grinding on or working the corners of the wheel face. The effect of side pressure is to produce a bending stress whose maximum reaches all points of the wheel as it revolves, and which is tensile on the side of the wheel which sustains the pressure and compressive on the other.

Properly designed flanges used on wheels of sufficient thickness are the best protection against breakage due to side pressure. They not only greatly reduce the maximum stress due to this pressure, but prevent its attaining its maximum at the circumference of the hole, where it would otherwise combine with the maximum due to centrifugal force.

Evils of Improper Mounting

The essentials of wheel mounting provide that care be taken that the sides of the wheel and the sides of the flanges in contact with the wheel are plane surfaces, in order that an even bearing may be secured. The hole should be of a diameter approximately 0.005-inch larger than the spindle or arbor on which the wheel is to be mounted, and must be at right angles to the sides of the wheel, concentric with the circumference. No portion of the bushing should project beyond the sides of the wheel.

The spindle should be perfectly straight and threaded in a direction such that any tendency for the wheel and nut to turn will tighten the nut.

Flanges are used primarily to transmit power from the shaft to the wheel, and for this reason the inside flange must be keyed to the shaft Both flanges must have plane faces at right angles to the shaft, and should be properly relieved—that is, they should be countersunk so as to bear on the wheel only on the part of the side of the flange nearest the rim.

Blotters or some other form of compressible washers should be used between flange and wheel to insure an even bearing. Their diameter should be at least as large as that of the flanges.

The nut should be tightened only enough to properly hold the wheel. Further tightening is unnecessary and undesirable.

Stresses in the wheel due to improper mounting are particularly important because they all combine directly with the maximum due to centrifugal force.

Forcing a wheel on a spindle for which its hole is too small is extremely likely to result in breakage, as large tensile stresses are induced around the circumference of the hole. If the hole is too small, it should be carefully enlarged by scraping until a perfect fit is obtained.

Impact is Cause of Failure

Side pressure producing large tensile stresses may result from any defect in mounting which tends to produce uneven bearing between flanges and wheel, such as bent or broken flanges; projecting bushings; high spots on bearing surfaces of flanges or wheel; flanges not properly relieved; failure to use proper compresible washers; flanges of different diameters, or excessive tightening of the spindle nut.

Probably most breakages due to impact are the result of carelessness or ignorance on the part of the operator. It should be borne in mind that stresses in a wheel produced by a suddenly applied force are very much larger than those produced by the same force if applied gradually.

The impact of the particles of the wheel on the work in any form of grinding produces certain stresses in the wheel, but these are carried more by the particles in direct contact with the work than by the wheel as a whole, and are not important as a cause of breakage. Cases have been known, however, where ignorant operators, in order to increase the speed of cutting, have hacked the face of the wheel in such manner as to cause breakage due to this form of impact.

Breakages are sometimes caused by bringing heavy pieces of work into too sudden contact with either the face or side of the wheel. Carelessness in snagging castings suspended from chain hoists, for example, might easily produce breakage of this kind.

In work requiring a table traverse, the headstock or footstock may be run into the wheel, which will cause wheel breakage unless something else gives way first. This is not true impact, but approaches it on account of the suddenness of application of the force, and results in large stresses due to side pressure.

Catching of the work between the wheel and the rest in free hand operations is very likely to cause wheel breakage. Such an accident may be due to improper adjustment of the rest or to lack of attention or ignorance on the part of the operator, and may have very serious consequences. This is a true case of impact, the speed of application of the force being practically the speed of the periphery of the wheel.

Flaws in the Wheel

Wheel breakage sometimes occurs because of cracks or flaws which are in the wheel before it is put in operation. Such defects may be entirely under the surface of the wheel and therefore not visible. Flaws are manufacturing defects, while cracks may be due to faulty manufacture or to various other causes such as carelessness in transportation, handling, unpacking, or storage.

The ring of a wheel, or sound produced by its vibration when tapped lightly with some solid object, is used as one indication of interior cracks or flaws. A wheel with a clear ring is fairly certain to be free from such defects, although it has been shown that a poor ring does not necessarily mean a defective wheel.

Lack of Balance is Cause

A wheel that is out of balance has developed in it stresses of rather complex character. In cases where the lack of balance is very great, breakage may result, either from these stresses or from impact. Lack of balance may be due to several causes.

Variations in density in a wheel may cause imperfect balance. However, this can hardly prove serious in the case of wheels furnished by any reliable grinding wheel manufacturer, as the homogeneity of structure of such wheels precludes the possibility of a dangerous amount of lack of balance.

If a wheel goes out of true for any reason, it will also go out of balance, since its center of rotation will no longer be at its center of gravity. Wheels may go out of true from such causes as a bent spindle, loose bearings, loose frame, improper use, or from the hacking of the wheel face previously mentioned. If a wheel is

seriously out of true, it will deliver a series of blows to work thrust against it, thus producing large impact stresses. The stresses due to the centrifugal force of the out of balance portions of the wheel may also become large in this case and will combine with the maximum due to centrifugal force.

A wheel should not be allowed to stand partially submerged in water or other liquid, for when it is started in motion the wet portion is much heavier than any other and hence the wheel is greatly out of balance. Several cases of breakage from this cause are known.

During the process of manufacture of any solid body, initial stresses are sometimes set up in the material of which the body is composed. Unless great care is used in its manufacture, a grinding wheel may have such stresses existing in it. These may be regarded as incipient flaws or cracks and may combine with other stresses to increase the maximum stress in the wheel. No method has yet been devised for determining accurately the existence of initial stresses in wheels.

On account of the number and variety of the possible causes of wheel breakage given above, it is easily seen that the actual determination of the real cause of breakage of a single wheel may be difficult or impossible. In cases, however, where breakages occur consistently with a certain operator or on a certain machine or operation, it may be reasonably assumed that there are one or two principal causes involved which can by a study of the situation be detected and removed. This procedure will reduce wheel breakage to a minimum.

Smelting Titaniferous Ores in 1834

THAT considerable thought is being given to titaniferous ores by blast furnacemen and ore-mine operators in this country, is shown by the number of comments received by THE IRON TRADE REVIEW on one of its editorials in the Nov. 20 issue, entitled "Smelting Titanium-Bearing Ore." Dwight E. Woodbridge, Duluth, Minn., gives additional information on the tests made in 1914 at Port Henry, N. Y., and data on the methods of smelting this grade of ore in 1834, as follows:

With many of the conclusions of this article one can agree heartily, but for the sake of future clarity of discussion I want to call your attention to one error. You say that the experiments carried on in Port Henry in 1914 were with an ore of 13 per cent titanium. This ore was of about 13 per cent TiO_2, which is approximately 8 per cent titanium, instead of 13 per cent. It was used in the furnace mix to a working proportion of 4/16, as you state; this means that the furnace burden, at the time when the greatest successful proportion of titaniferous concentrate was on, carried 2 per cent titanium. At one time during the progress of this experiment the proportion of titaniferous concentrates was 5/16, but this was not for long, nor was it especially successful. Mr. Bachman, who conducted this experiment, was careful of his furnace, and did not invite disaster. One cannot know the instructions under which he worked, but if it was desired to arrive at a full knowledge of the action of titanium in the blast furnace, at limiting proportions of titanium, he should have had a free hand and an uncircumscribed purse. He did most scientific and valuable work and overturned the popular conception as to the smelting of titaniferous magnetities. The results reveal much study. But, notwithstanding that, the experiment was inconclusive. It is not the first time that a furnace has successfully smelted an ore carrying 2 per cent titanium. My recollection is that the pig iron was not high in titanium, and assayed not far from 0.65 per cent. In 1834 catalan forges and small blast furnaces were in operation in the vicinity of the ore used by Mr. Bachman, on Lake Sanford, N. Y. This ore was smelted direct with cold blast, charcoal fuel and a poor local flux without admixture of nontitaniferous ores. The operators did not know the ore had deleterious elements. However, they piled on the charcoal and made an excellent grade of iron. Not long ago some of the iron they made was assayed with this result:

Element	Per cent
Silicon	0.065
Sulphur	0.015
Phosphorus	0.060
Titanium	0.198
Vanadium	0.038
Graphitic carbon	0.025

In those days conditions existed that do not remain; the furnaces were of 2 to 5 tons daily capacity, the magnetic concentration was crude, being usually carried on in a barrel or a hollow log set around the inside with horseshoe magnets. The log was filled partially with broken ore and revolved in a stream bed. The furnaces were situated in forests where the cost of charcoal was not excessive; labor commanded $1 to $1.50 per day, payable largely in trade; and pig iron brought $50 to $70 a ton.

Such concentration as was conducted on this Lake Sanford ore was by the use of Ball-Norton type separators, the machines regularly in use at Mineville. The methods, which were followed, were based on the fact that the ore is a granular aggregate of magnetite, ilmenite and gangue, the latter being composed chiefly of silica. The fact that the magnetite contains some titanium and the ilmenite has iron as one of its integral constituents—ilmenite equals $FeTiO_3$—makes this separation a more difficult and wasteful process than might appear to one who looks on the ore and is able to distinguish with ease the difference in appearance of the two minerals. Magnetic separation cannot readily free the iron from all its titanium, nor can all the titanium be separated from its iron because ilmenite is a chemical combination that cannot be broken mechanically. Therefore, in any attempt to secure a high-grade iron ore, the tailings will be high in iron; and, in an effort to make a titanium ore, the iron is likely to be excessive.

You call attention to the fact that magnetites bearing titanium are likely to be low in phosphorus which is true. One of the great sources of low-phosphorus ores in time is sure to be this type of iron ore. With titanium less a bugbear to furnacemen, these ores will come in more quickly than otherwise, of course. In connection with the possible American supplies of these ores it is somewhat unfortunate that bureau of mines bulletin No. 64 dealing with titaniferous iron ores, does not recognize the size, character and importance of these ores existing in northeastern Minnesota, but reports them as of little consequence. As a matter of fact, Lake and Cook counties, Minnesota, and adjacent regions, are rich in these ores.

French Foundries Resume

An example of the efforts being made to again operate manufacturing establishments in France which suffered from the effects of invasion by the Germans is given in a communication recently received in this coun-

try from the management of the Metallurgical Society of Aubrives and Villerupt. The works of this society are situated at Aubrives, which is in the department of Ardennes in the valley of the Meuse, and at Villerupt, a few kilometers from Longwy in the Meuse-Moselle district. Before the war, the company was actively engaged in manufacturing cast iron pipe for water and gas, waterworks apparatus and accessories for the distribution of water, downcomers, track material, hydraulic pumps, and castings.

Owing to their location near the frontier, the plants were in the invaded district at the beginning of hostilities and with the other plants in this region suffered severely during the period of occupation. Immediately following the evacuation by the Germans and the return of the invaded property to its owners the company undertook the work of reconstruction. After considerable work, operation of the Aubrives foundries was resumed. This plant now is producing a fair tonnage and is contributing largely to the rebuilding of the devastated regions by furnishing pipe and accessory equipment for the restoration of the destroyed or damaged water service. At Villerupt the blast furnaces were destroyed during the war and the machinery and accessories which were not carried off by the Germans were destroyed. The recovery of stolen material has progressed slowly, due to the lack of adequate means of transportation and because of the numerous difficulties inherent in reorganizing the area. In spite of this damage the Villerupt foundries already have been placed in operation. At the time the communication was written the firing of the furnaces was considered only a question of days and it is expected that the society soon will be able to furnish the raw material for both of its foundries.

The society is planning to enter the export market in competition with pipe foundries which have not suffered from the war and already important orders for track equipment, etc., have been received.

Alaskan Tin Production

Production of tin in Alaska dropped from 200,000 pounds in 1917 to 136,000 pounds in 1918, according to a bulletin recently issued by the United States geological survey. The value of the 1918 output was $118,000, while that of the 1917 production was $123,300. The bulletin states that the decrease in output was due to the fact only one dredge was operated during the year. Discovery of placer tin has been reported from Potato and Humboldt creeks, the bulletin further states, as well as on Seward peninsula and from Moran creek, where the gravels are said to contain 2½ pounds of tin and 10 cents in gold to the cubic yard.

Coke is a smokeless and clean fuel and offers the best means of making our large cities smokeless. It is known that in large cities where soft coal is burned for domestic heating about 60 per cent of all the smoke in the atmosphere is made in the residential section in house-heating furnaces. Substituting coke for soft coal will eliminate this 60 per cent of smoke. The smoke made in house-heating furnaces is much more objectionable than the smoke made in industrial plants because it is made in the residence section where it does the most harm.

Designs New Pressure and Volume Indicator

Following many years of experience in the manufacture of industrial instruments, the Bacharach Industrial Instrument Co., Pittsburgh, has just developed a pressure and volume indicator for use in connection with the regulation of the blast for cupolas. This instrument consists of a Pitot tube which is inserted in the blast pipe and connected to the pressure and volume indicator as shown in Fig. 2. The connection from the static opening of the Pitot tube has two branches, one leading to the pressure gage, which gives the static pressure of the blast and the other to one side of the volume indicator. The connection from the impact opening of the tube is led to the other side of the volume indicator. This indicator is an inclined tubegage, completely inclosed so as to be dust proof, and is filled with a liquid which will not freeze or evaporate. The scale is graduated to read in cubic feet of air delivered per minute. By means of the linked valves in the connection to the instrument the zero of the indicator can be checked at any time without breaking any of the connections.

The pressure gage is of the single tube type, and is V-shaped so as to be easily read. It is graduated to read in inches of water. The Pitot tube has large openings so that there is little trouble from clogging due to the dust in the blast.

Where exhaust steam from reciprocating engines is used for heating purposes, a coating of oil usually forms on the inside of the return pipes and protects the metal considerably.

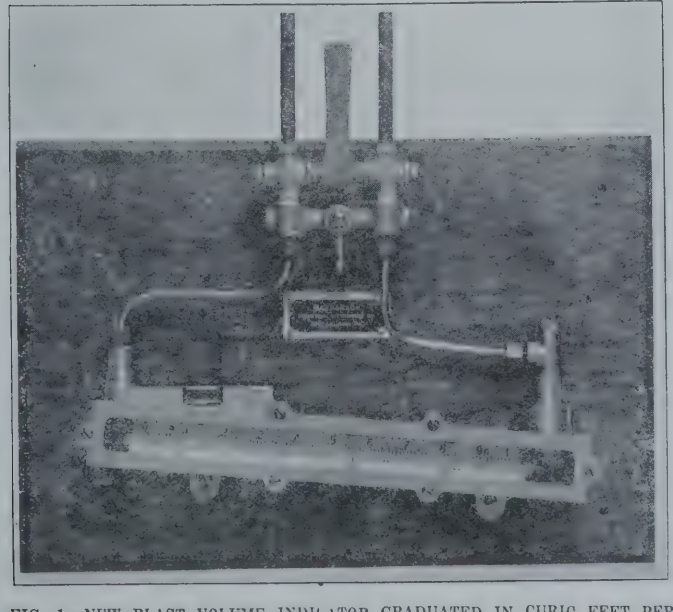


FIG. 1—NEW BLAST VOLUME INDICATOR GRADUATED IN CUBIC FEET PER SECOND

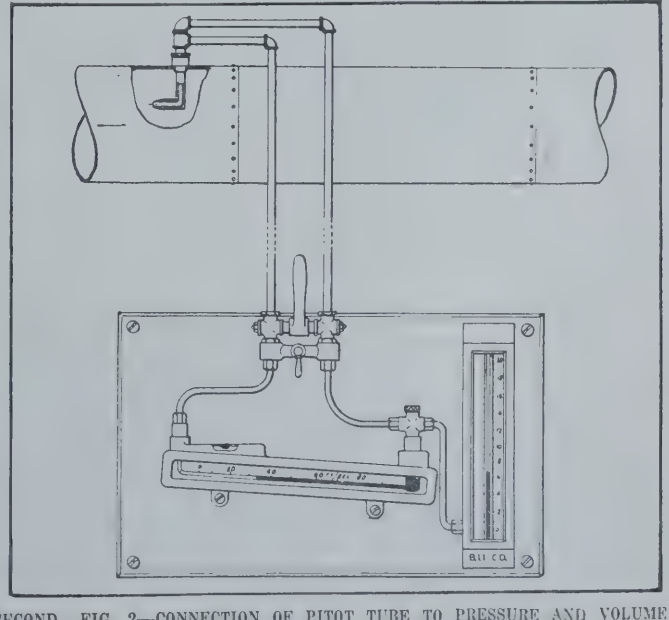
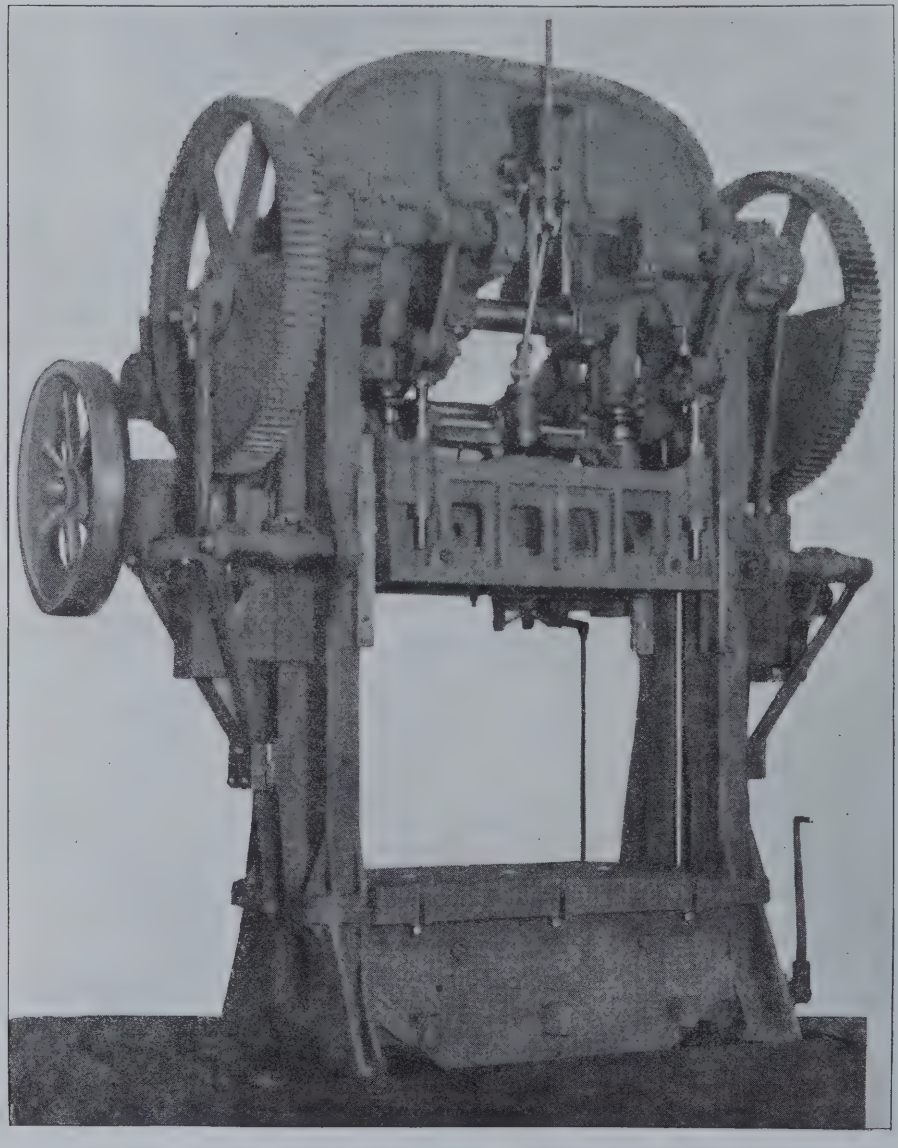


FIG. 2—CONNECTION OF PITOT TUBE TO PRESSURE AND VOLUME INDICATORS

Develops New Heavy Duty Stamping Press

A new double crank toggle drawing and deep stamping press, especially designed for the manufacture of automobile bodies, fenders, hoods, radiators, and other stampings, has been developed by the Toledo Machine & Tool Co., Toledo, O. As shown in the accompanying illustration, the press frame is of four-piece steel tie rod construction, consisting of a base, two uprights and a crown held together by four large rods which are shrunk in place. The blank-holder control mechanism is essentially two complete independent units combined in one frame. There are two pairs of rocker shafts operated from each end, and rotating in bearings of ample size to withstand the blank holding pressure. The blank-holder or outer slide and the plunger or inner slide move in long bearings which provide support and alignment.

The press has twin gear drive on the main shaft, all gears and pinions being machine cut from the solid blanks. All gears are protected by heavy metal guards to protect the operator and to comply with safety laws. The press may be driven by an individual electric motor mounted on a special foundation or on the wall or ceiling and belted direct to the flywheel of the press.



DOUBLE CRANK TOGGLE PRESS FOR AUTOMOBILE STAMPINGS

Education is Aid to Safety

BY T. F. JENNINGS

NINETEEN years have passed since Dr. William H. Tolman started the American Museum of Safety in New York, which is thought to have been the first organized move in the United States against preventable deaths and injuries. The battle against accidents has materially reduced the casualty rate. More important, it has caused an analysis of accidents so thorough that all are becoming experts on dangers to be avoided.

The casualty toll bears out the claim of authorities that 80 per cent of accidents are due to carelessness. It is further illustrated by the accident records of dynamite making. There are few accidents in this industry because the workers know they are in the presence of death. They daily demonstrated that personal caution is the most effective prevention of accidents.

Safety investigations by large employers of labor, including the General Electric Co., have revealed that there are certain ages, hours and days when people relax their vigilance. The most careless age is between 22 to 26. More accidents occur on Monday than any other day. More accidents occur between 9 and 10 in the morning than any other hour of the day or night. It is evident that people have a tendency after a period of rest, to return to work in a careless attitude. The relaxation of the body is accompanied by a relaxation of vigilance and caution. The prevention of accidents can never become automatic. Safety devices help materially, but human caution is the most powerful protection against injury.

Franklin K. Lane, secretary of the interior, recently issued a statement which included the following:

"In mines and in a large number of our most important industries, 50 per cent of the people working there are foreign born and they have signs printed for their welfare and to protect them. These signs have to be printed in seven, eight or nine different languages, and many of the people cannot read them in any language. In the mining industry alone it has been estimated that we can save at least 150,000 accidents a year if those people can be taught to read enough English to understand the signs and directions that are placed before them. Now we have got to turn ourselves into a council of progress and frame a national purpose. It means that democracy, in essence, is that every man has a chance. The very thing to be done now is that we shall put into the hands of every man born in this country the tools by which he can open the archives of Americanism. If we can do this we will produce the greatest of all nations and a new race that will long hold a compelling place in the world."

Americans should not view with contempt foreign-born labor, because as Secretary Lane states, 3,000,000 American farmers cannot read English, and one-fourth of drafted men

were unable to understand officers' orders.

Fortunately, the world is now coming to see that if a man does not know what is good for him in a matter of this kind, the question must be decided for him. The welfare of all, certainly must come prior to the folly of the few.

In teaching men and women the importance of being watchful and careful of their safety, it is the method of teaching and the qualifications of the teacher that count in the long run. One cannot learn this language in a week, nor a month, nor by any other spurt of effort. It must come from his heart with love for his fellowmen.

Builds Blast Furnace Plant in India

IRON and steelmaking in the Far East has received a great impetus during the past decade and in Japan and India numerous blast furnaces and steel works recently have been completed or are under construction. One of the latest companies entering the field in India is the Indian Iron & Steel Co., Ltd., Calcutta. This company was formed early in 1918, with Burns & Co. as managing agents, for the purpose of utilizing iron ore and coal properties which had been prospected and acquired. These holdings showed such promise that during the latter part of 1918, it was decided to build the first unit of a complete steel plant at Asansel, India, a town located on the East India railway about 120 miles north of Calcutta. This location was chosen on account of its proximity to the coal fields.

Under the direction of G. H. Fairhurst, preliminary work was completed and contracts were let for the construction of a complete 350-ton blast furnace and a 168-oven by-product coke plant. Simon-Carves, Ltd., Manchester, England, received the contract for the construction of the coke plant and Arthur G. McKee & Co., Cleveland, were retained as engineers and contractors for the construction of the blast furnace plant. The work of designing was started during March, 1919, and shipments of materials were started during April. Approximately 85 per cent of the materials of construction already have been started overseas and the balance probably will be on shipboard before the end of the year.

During September of the present year, the Indian Iron & Steel Co. decided to further increase its capacity and accordingly orders were issued to proceed with the construction of a second blast furnace of similar design to the first.

Plan for Six Furnaces

The layout of the completed plant provides for the ultimate installation of six blast furnaces, each of from 350 to 400 tons capacity, sufficient coke plant capacity to provide fuel for these furnaces, and the addition later on of open-hearth furnaces and rolling mills to finish all the iron produced in the blast furnaces.

The plan of the proposed blast furnace plant is shown in Fig. 1. No. 1 furnace will be 85 feet high, and will have a hearth 14 feet 6 inches in diameter and a bosh 19 feet in diameter. The furnaces are arranged in pairs, each pair having a common cast house. The product of the furnace is to be disposed of in ladles; tinder cars made by Dewhurst's Engineering Co., Sheffield, Eng., being provided for this slag and 75-ton short-pour ladles for the iron.

Owing to the amount of available ore suitable for making ferromanganese, extra large stove capacity is provided, the installation consisting of five hot blast stoves, each 25 feet in diameter and 95 feet high. The stove linings are of the side combustion type laid up with standard 9-inch brick. All brick linings for stoves and furnaces are manufactured in India with the exception of the furnace hearth and bosh brick, which are being supplied from America. In addition to a dustcatcher, two centrifugal-type dust separators are to be installed, provision being made to later install a dry dust cleaning system.

The skip bridge, hoist engine and

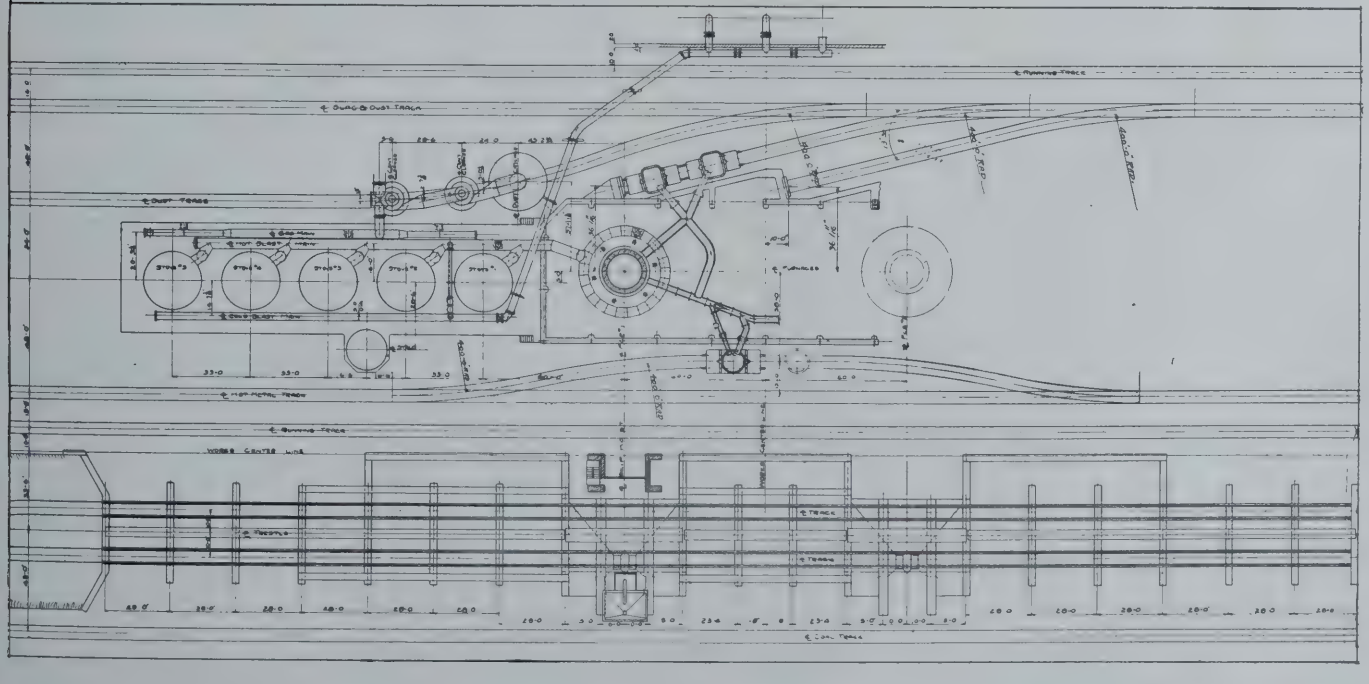


FIG. 1—PLAN OF NEW BLAST FURNACE OF INDIAN IRON & STEEL CO., CALCUTTA. NOTE THE PROVISION MADE FOR FUTURE ADDITIONS

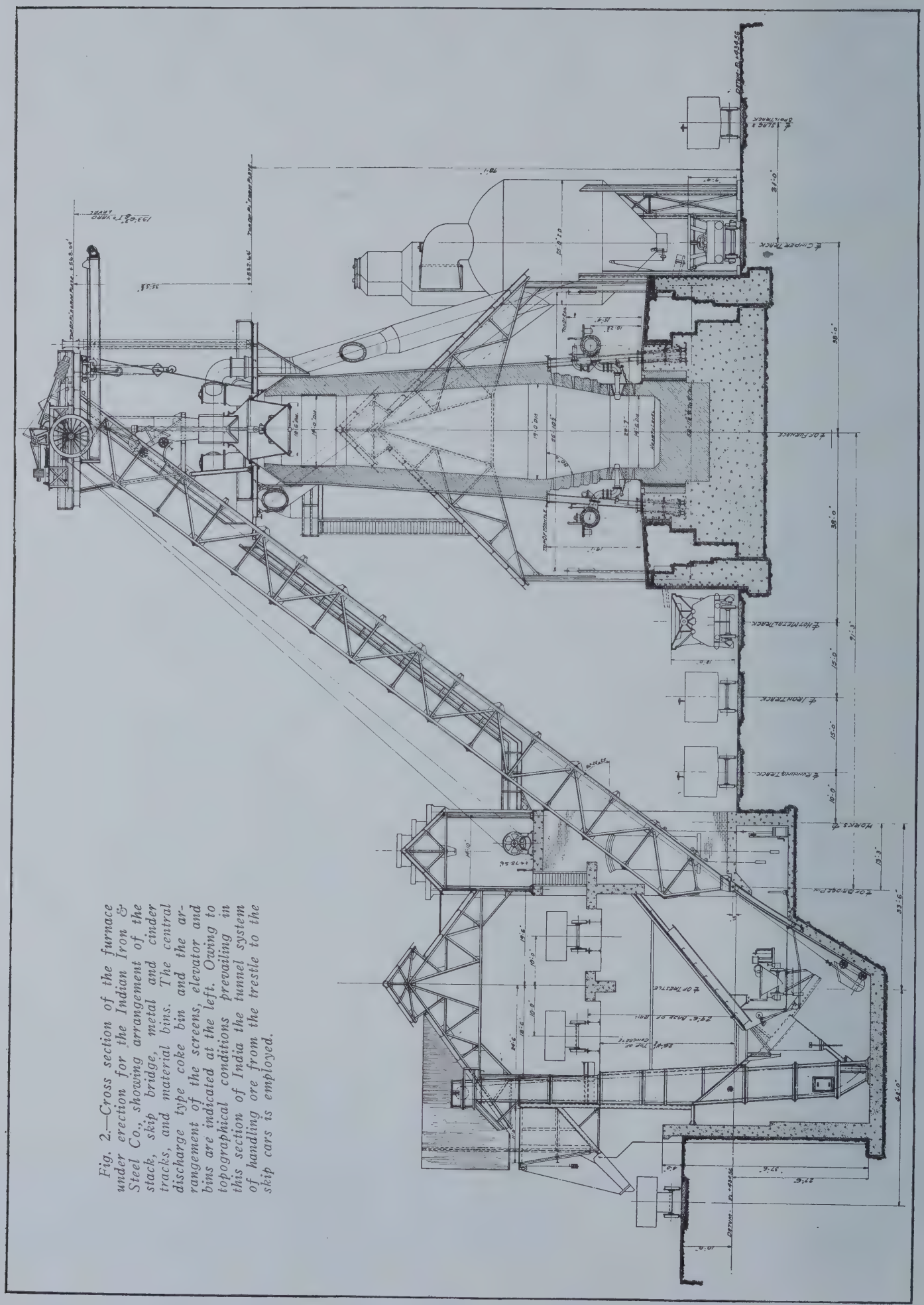


Fig. 2.—Cross section of the furnace under erection for the Indian Iron & Steel Co., showing arrangement of the stack, skip bridge, metal and cinder tracks, and material bins. The central discharge type coke bin and the arrangement of the screens, elevator and bins are indicated at the left. Owing to topographical conditions prevailing in this section of India the tunnel system of handling ore from the trestle to the skip cars is employed.

arrangement of the bell operating mechanism, which are of standard design and construction conforming to modern American practice, are shown in Fig. 2. This drawing also shows a section through the central discharge type coke bin and the arrangement of the coke screens, the coke breeze elevator and bins. A McKee patented revolving stock distributor is provided for distributing the furnace charge.

Due to local topographical conditions the tunnel system for handling the ore from the trestle to the skip cars is employed. The ore and limestone bin and storage system are embodied in a concrete trestle. A tunnel for the scale car runs the entire length of the trestle. The tunnel roof consists of a series of unit bin bottoms, each provided with a series of continuous segmental type gates arranged for hand-operation from the scale car platform. This arrangement provides a continuous line of gates so that practically all the ore and stone held in storage under the trestle is available at the gates for discharge into the scale cars. The entire stock trestle is double tracked, and on account of the heavy rains at certain seasons it is covered with a steel roof structure.

The blast for the furnaces will be supplied by two Parsons-type blowers, each having a capacity of 45,000 cubic feet per minute. The boiler installation consists of 3500-horsepower units, and are to be operated at 200 pounds pressure with 100 degrees superheat. The boilers and blowers are being shipped from England.

For handling the hot metal, two double-strand pig casting machines, equipped with ladle tilting rigs, are to be installed. Work on the foundations is progressing and it is expected that the first furnace will be in operation in the latter part of 1920.

Production Increased

As soon as a sufficient and steady supply of coke is assured, the blast furnace of the Wheeling Steel & Iron Co., at Martins Ferry, O., will be blown in. Everything is in readiness for the lighting of this stack. The last six mills of the tin plate plant of the company at Yorkville, O., has resumed operations. Although this plant was kept in operation for a time after the calling of the steel plant strike as a result of the fact that it was being operated under an agreement with the Amalgamated Association of Iron, Steel and Tin Workers, a strike of the laborers and mechanics resulted in a complete shutdown. With these six mills on, the plant will be at full capacity for the first time in several weeks.

Increased Orders

For Refractories Make Deliveries Difficult—Operations on Increase

Pittsburgh, Dec. 23.—Both orders and specifications for refractories have expanded appreciably in the past week or 10 days and from a condition where manufacturers found it extremely hard to obtain shipping instructions against old orders, most of them now find difficulty in making shipments as fast as they are desired. During the period while the steel strike was a factor in plant operations, neither the steel plant nor blast furnaces had sufficient common labor to handle shipments and consequently held up deliveries. Because of this condition and the embargoes in force against the steel and iron plants, the brick manufacturers were obliged to stock large quantities and conveying the bricks from the sheds is said to involve more labor and to be a much slower process than running them direct from the kilns to the cars.

With the steel plant more or less of a memory and the coal miners' strike settled, iron and steel works are gradually getting back to a normal rate of operation and most of them badly are in need of refractories and are pressing for deliveries. New orders are coming along quite freely, among them being one for 500,000 fire clay brick from an eastern steel company. Although manufacturers' stocks mounted during the period of inactivity, plant operations, which got down to as low as 30 per cent of capacity in some sections of the country, have increased as a result of the larger demands now in evidence. No change is noted in prices, although the market sentimentally is firmer as a result of the better movement.

One Kentucky manufacturer has advanced his prices $1.50 per thousand, effective Dec. 1. It is reported also that some producers in Missouri have been raising their schedule. Operations in the Kentucky district are put at about 80 per cent at the present time.

Refractories

(Per 1000 f.o.b. works)

FIRE CLAY BRICK
(First Quality)

Pennsylvania	$36.00 to 41.00
Ohio	36.00 to 38.00
Kentucky	36.00 to 41.00
Illinois-Missouri	30.00 to 40.00

FIRE CLAY BRICK
(Second Quality)

Pennsylvania	$30.00 to 35.00
Ohio	20.00 to 25.00
Illinois-Missouri	25.00 to 30.00

SILICA BRICK

Pennsylvania	$40.50 to 45.00
Chicago	45.50 to 50.50
Birmingham	46.50 to 51.50

MAGNESITE BRICK
(Pet Net Ton)

9 x 4½ x 2½	$80.00 to 85.00

CHROME BRICK
(Pet Net Ton)

9 x 4½ x 2½	$80.00 to 90.00

BAUXITE BRICK
(Pet Net Ton)

55 per cent	$ 40.00 base
76 per cent	100.00 base

Canada Needs Steel

Shortage of Sheets and Tin Plate May Close Some Plants

Toronto, Ont. Dec. 20.—Conditions as regards the supply of steel are becoming increasingly serious. Importing companies are attempting to provide for the most urgent needs of consumers. Deliveries of black and galvanized sheets have been fair, but only a small proportion of orders for tin plate and steel sheets can be filled, and a number of manufacturers dependent on importation probably will have to close down or curtail production about Jan. 1. Deliveries on new business are likely to be delayed for several months.

D. H. McDougal, president of the Nova Scotia Steel & Coal Co., who with Vice President W. D. Ross, and Col. Thomas Conley has returned from Europe, states that the prospects of export trade, especially in heavy forgings, axles and other finished products, are encouraging. Shipments of iron ore from the company's Wabana mines are delayed by high freight rates and scarcity of ocean tonnage.

The officials completed the purchase of the Belgian interests in the Arcadia Coal Co., giving the Nova Scotia company control of extensive and valuable coal fields in Pictou county.

Tin smelting from the ore, a new industry for Canada, is being undertaken by the Electro-Tin Products Co., of Brantford, Ont., which has installed a plant with a capacity of two tons of metal per day. Bolivian ore will be used and probably will be transshipped from New York. There is a large market for tin in Canada which will be considerably increased by the requirements of the Baldwin Corp. of Toronto, for the manufacture of tin plate.

Coke Prices Await Coal Award

Control is Not to be Relinquished Until After Commission Adjusts Coal Prices, According to Railroad Administration's Understanding of the Situation—Inquiry Brings Out Some Hidden Phases of Preliminary Coal Settlement

WASHINGTON, Dec. 23.—Coke prices likely will remain in effect until after coal prices have been adjusted by the new commission appointed by the President. This is the opinion of an official of the railroad administration. Just now there is no authority other than the President for the removal of any fixed prices, as the powers of the fuel administrator being exercised by Director General Hines do not include those of price adjustments. Fuel Administrator Garfield gave the director general practically all of his powers, but not price fixing, soon after the fuel administrator's office was revived. Apparently there will be no successor to Dr. Garfield until the new commission determines whether it or some other functionary should be clothed with the powers of the Lever act.

Developments further indicating a surrender by the government to the miners in the recent settlement of the coal strike were made last Friday when Attorney General Palmer and others appeared before the senate subcommittee on interstate commerce. The attorney general's statements before that body are viewed as considerably weakening the government's case and indicates that Mr. Palmer, at first so strong for full compliance with the law, was in the front ranks of those capitulating to labor.

Mr. Palmer's admissions before the committee were strengthened by statements made there by Alfred M. Ogle, chairman of the executive committee of the Bituminous Coal Operators' association. Mr. Ogle declared the attorney general himself had tried to win the operators to a compromise which would have given the miners a higher wage increase than that allowed by H. A. Garfield, formerly fuel administrator, who resigned because of the manner in which the strike was settled. Mr. Ogle also said the President's plan of settling the strike was never submitted to the operators nor had it been accepted by them.

Mr. Palmer said the only difference he could see between the actual settlement basis and that proposed by Dr. Garfield was that the President's plan calls for a "tribunal" and the fuel administrators called for a "consulative body." It is a fact, however, that the President's tribunal will supplant the fuel administration and will have all the powers of the Lever act under which to operate. Dr. Garfield's committee would have acted only in an advisory capacity.

The real difference between the two is that the President's plan, as proffered the miners by Mr. Palmer, admittedly provides for the readjustment of both wages and prices, whereas the Garfield plan contemplated only an adjustment of wages. According to Mr. Ogle, however, up to the time of the settlement of the strike it was not a matter of wages and prices, but one of principle whether law and order should be upheld. According to Mr. Palmer, "there was no settlement of the strike, but an arrangement which finally accomplished the object we wanted, the production of coal."

It would appear from Mr. Ogle's remarks that Mr. Palmer held Judge Anderson of the Indianapolis court more or less in contempt. The operator told the committee Mr. Palmer informed the operators' committee when he attempted to win them to a compromise that "Judge Anderson would act in a characterisctic fashion and put some of these men (the miners) in jail for violating his injunction under the Lever act. There might be a general uprising which ought to be avoided." According to Mr. Ogle, the attorney general said regarding Dr. Garfield that he "was only a temporary official and that his proposal of a 14 per cent increase could be set aside."

Coal mining operations last week were so improved as a result of the strike settlement that government officials, some of whom were greatly displeased with the means by which the settlement was achieved, are gratified over the output. The car supply, dislocated by five weeks of inactivity at the mines, is rapidly being adjusted to demands and at the office of the railroad administration the belief was expressed that Monday will perhaps see a record day's output. Dec. 12 saw a production of only 1,058,000 tons, or 52.5 per cent of the prestrike average. Four days later this percentage had increased to nearly 80. the number of tons being 1,595,000.

What this means may be estimated from these figures prepared by the administration. The average daily production in the corresponding week in December, 1917, was 30,000 cars. In the comparative period this year the daily average was 30,392, more than in the same week in 1916 and also in 1918. No more coal is being held in storage on wheels than territorial needs make advisable, Director General Hines said today, and every possible effort is being made with a view to the expeditious handling of empty cars. Practically the only coal restrictions now in effect, except as to prices, is that forbidding export.

The coal cars loaded on Dec. 17 were 110.9 per cent of the daily average loaded in the week ending Dec. 20, 1917. On that day the number of cars was 32,989; in 1918, 29,973; in 1917, 29,752, and in 1916, 29,049. The record loading on Dec. 17 this year was in the Pocahontas region where the loading was 161.3 per cent of 1917. In the Allegheny region it was 117.9 per cent. The eastern and northwestern regions were the only ones in which the Dec. 17 output was lower than in 1917.

Shipping Board Sells Its Surplus Steel

WASHINGTON, Dec. 23.—Disposing of all of its surplus steel, approximately 300,000 tons, consisting almost entirely of plates, shapes and bars, the United States shipping board, Emergency Fleet corporation, at an auction held here last Thursday sold the entire tonnage to L. B. Bardie, of M. Bardie & Sons, Portland, Oreg. Practically half of the tonnage is fabricated. The price paid for the fabricated material, $25 a ton, and for the unfabricated steel was $45 a ton, f.o.b. cars place of location. The price of 2.25c per pound for unfabricated steel compares with prices of 3.25c, 3.00c and 2.90c, Pittsburgh, paid by the Fleet corporation for plates, shapes and bars, respectively, during the war, as against present market

levels of 2.65 to 2.75, 2.45 to 2.60, and 2.35 to 3.00c, Pittsburgh, on plates, shapes and bars, respectively.

The auction, in charge of Chairman John Barton Payne, of the shipping board, was held in accordance with the policy announced some time ago to sell publicly all of the surplus steel and equipment, supplies, etc., which accumulated as the result of the cancellation of shipbuilding contracts and the taking over of material following the adjustment of claims.

The auction was attended by a large number of prospective buyers, principally dealers and jobbers, although some of the large mills were represented but did not show much interest as bidders, partly because they did not know the exact specifications of the steel and its condition. The successful bidder in this large transaction, involving about $10,500,000, did not make known what disposition he proposed to make of the steel. The general opinion is that much of the tonnage can be sold to private shipbuilders, while some may be sold to other dealers or disposed of for remelting. The steel is said to be in good shape for the most part and is located, except in one or two unimportant instances, north of North Carolina and east of the Rocky mountains. The first bids were made at $20 for the fabricated material and $40 for the unfabricated tonnage. The former tonnage consists largely of odd lots, while it is said that plates, shapes and bars, as well as a comparatively small tonnge of sheets, will require considerable work of classification. Of the unfabricated material, practically 70 per cent consists of plates, 20 per cent of shapes and 5 per cent of steel bars.

The next auction, the date of which has not been determined, will involve the disposal of machine tools, dock machinery and equipment, electrical equipment, pipe valves and fittings, boiler fittings and accessories, etc., and will be followed by others until the entire surplus property of the corporation is sold.

Among those who attended the auction were:

Carl R. Briggs, John H. Turvis and L. Greenberg, represented by former Senator J. Hamilton Lewis, as counsel; Ernest L. Dugas, Philadelphia; L. B. Bardie, Portland, Oreg.; J. Russell Hundley, Portland, Oreg.; H. F. Knapp, Carnegie Steel Co.; Frank and A. Harris, Harris Bros., Chicago, represented by Attorney A. L. Thurman; Charles Shongood, New York; H. A. Hitner Sons & Co., Philadelphia, represented by Coleman E. and Joseph G. Hitner; Charles G. A. Pfitson, national bureau of supplies; Thomas Friedeberg, New York, represented by J. J. Cassaday, New York, and W. B. Eichleay, Pittsburgh; R. D. Young, Pittsburgh, represented by Leo Oppenheimer and Stuart G. Gibboney, New York.

Urges Aid for Producers of "War Minerals"

Washington, Dec. 23.—Encouragement by the government of the mining of essential war minerals, preservation of skeleton munition plants, and the creation of a skeleton organization, such as the former war industries board, with the proposal that the organization be centered in the department of commerce, are recommended by Bernard M. Baruch, former chairman of the war industries board, in a report to the President reviewing the activities of the board. The report has been submitted to congress by the President.

"Every possible effort should be made," the report states, "to develop production of manganese, chrome, tungsten, dyestuffs, by-products of coal and all such raw materials usually imported, but which can be produced in this country. Above all immediate and persistent effort must be made to develop production of nitrogen and its substitutes, not alone for war but for agricultural purposes."

Dealing with the work of the board, Mr. Baruch said that "not one default was recorded on any demand" made on it by the military establishment, and that "there was not a slacker to be found among the industries."

France to Select Tools Under Big Contract

Washington, Dec. 23. Details of the contract made by the war department last week with the French government for the sale of $25,000,000 worth of machine tools from the surplus stocks held by the department in the United States now are available. Payment for these tools is to be made in French government bonds, bearing 5 per cent interest, payable in gold in 10 years in the United States. The French government is to make its own selection of tools within one year, subject to prior sale. The tools are to be paid for at prices fixed by the service chart adopted by the war department, Aug. 9.

A special commission has been appointed by the French government to visit the United States shortly to select such tools as may be desired. Sales are to be at point of location of the tools selected and with the tools in the condition in which they exist. The mission will, during the period given for selection, be given complete inventories of all surplus machine tools held by the war department from which selection may be made.

Upon selection and notification to the director of sales, title to any tool so selected passes to the purchaser and delivery is to be deemed as having been made. The tool then remains at the risk of the purchaser and if not removed within 30 days the war department may cause the machine to be removed to storage at the expense of the purchaser. Statements of machine tools purchased will be furnished by the war department every six months and within 60 days payment in French bonds is to be made to the treasurer of the United States. The French government is required to accept only those tools which are suitably priced for its purpose. Resales in the United States are not permitted without the expressed consent of the sales director.

The contract was signed for France by S. Pinchon, minister of foreign affairs; E. L. Klotz, minister of finance, and L. Loucheur, minister of industrial reconstruction. The special mission is to be composed of Monsieur Hedde, as chief, and Messieurs Gouge, Dronzy, Obry, Tribbot, Duteurtre, Maurice, Marchapt, Albat and Hubert.

Two Bids on 13,300 Tons of Ship Plates, Shapes

Washington, Dec. 23.—Only two steel manufacturers submitted bids on the first 13,300 tons of plates and shapes required in the construction of two battle cruisers, to be built at the Philadelphia navy yard. Bids were opened by the bureau of supplies and accounts, navy department, Dec. 19. The Carnegie Steel Co. quoted 2.50c on 10,000 tons of plates and 2.40c on 3300 tons of shapes. The Midvale Steel & Ordnance Co. quoted only on plates.

Joins Trade Board

Washington, Dec. 23.—Confirmation by the senate last week of the President's nomination of Nelson B. Gaskill of New Jersey to succeed J. Franklin Fort, as a member of the federal trade commission increases the personnel of the commission to four but still leaves another vacancy. The successor to William J. Harris, now United States senator from Georgia, has not been named. Besides Mr. Gaskill the personnel of the commission includes Victor Murdock, chairman, Huston Thompson, vice chairman, and William B. Colver.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JAMES H. GROSE, as intimated in the Dec. 18 issue of THE IRON TRADE REVIEW, will be the future president of the Brier Hill Steel Co., Youngstown, O., to succeed William A. Thomas, as is now formally announced. At present he is general superintendent in the Youngstown district for the Carnegie Steel Co. He will be elected on or about Jan. 1, according to a recent announcement of the Brier Hill company's board of directors, when he will leave the Carnegie organization.

John A. Scott, Indiana, Pa., has been made general solicitor of the Rochester & Pittsburgh Coal & Iron Co.

C. E. Beeson, secretary of the Pittsburgh Steel Co., recently was elected a director of the Duquesne National bank, Pittsburgh. Mr. Beeson succeeds the late Wallace H. Rowe.

C. H. Hoefer has been appointed foundry superintendent for the Fluid Compressed Steel Co., Keokuk, Iowa, having had previous steel foundry experience in Dayton, O., and elsewhere.

C. E. Cullum recently resigned as supervisor of foundry practice for the General Motors Truck Co., and has been made production superintendent for the Industrial Foundry Co., St. Johns, Mich.

W. R. Phibbs, assistant general manager of the Steel & Tube Co. of America, Mayville, Wis., resigned recently to become eastern representative of the James A. Brady Foundry Co., Chicago, manufacturr of forced draft convertible stokers.

Charles Unverferth has resigned after 21 years of service with the Platt Iron Works, Dayton, O., to form a new business connection at that city. During that period, Mr. Unverferth rose from the position of stenographer to that of secretary of the company.

J. L. T. Waltz has been elected president of the Bremer-Waltz Corp., 30 Church street, New York, importers and dealers in aluminum and other metals; C. P. Verkruzen, vice president and assistant treasurer; P. B. Adrian, secretary.

William L. Moorhead has resigned as vice president of the Duquesne Electric & Mfg. Co. to join Henry T. Parsons in forming the Parsons-Moorhead Machinery Co., doing a general machinery business, with offices at 237 Fourth avenue, Pittsburgh.

F. B. Herendeen, who has been Pittsburgh district manager of sales for the Witherow Steel Co., Pittsburgh, has been appointed Michigan district sales manager of the company, with headquarters at Detroit and shortly will leave to assume his new position.

Harry Peck, for the past eight years head of the machinery department of the United States Shoe Machinery Co. in Marlboro, Mass., has accepted a position as superintendent of the Mossberg Pressed Steel Corp., Attleboro, Mass. Mr. Peck served as captain in the war.

E. D. Clarage, who has been manager of the Cleveland branch of the Columbia Tool Steel Co., Chicago Heights, Ill., has resigned, effective Jan. 1, 1920. Mr. Clarage expects to spend a month or two in California, after which he will return to Cleveland to enter business for himself.

C. E. Lesher, statistician of the geological survey, in charge of weekly coal and coke production figures, has resigned to associate himself with the National Coal association, with headquarters at Washington. F. G. Tryon is acting for the bureau in the place of Mr. Lesher.

William S. Kies has resigned as a vice president of the American International Corp. to become a general partner in the firm of Aldred & Co., New York, effective Jan. 1. Mr. Kies formerly was vice president of the National City bank. He has been associated with the American International Corp. since its organization.

H. G. Bain, who until recently was attached to the San Francisco sales office of the Midvale Steel & Ordnance Co., now is a member of the sales organization of the Tacony Steel Co., Tacony, Philadelphia, and will represent that company in the upper part of New York state. Mr. Bain, in addition to a long sales experience, has had considerable practical experience in the mills. He is thoroughly conversant with the tool steel, alloy steel and forging branches of the steel business.

D. F. Collins has been appointed eastern representative of the Hill Clutch Co., Cleveland, in charge of its New York office, 50 Church street. Mr. Collins has been connected with the company's general sales department at Cleveland since discharged from military service last summer.

A. H. Fosdick, superintendent of the employment and welfare department of the Bethlehem Steel Co., Bethlehem, Pa., has been appointed assistant to George M. Hohl, superintendent of blast furnaces at Bethlehem. George W. Vary has been appointed superintendent of the employment and welfare department, succeeding Mr. Fosdick.

Myron T. H. Blanchard, lately with the Hydraulic Pressed Steel Co., Cleveland, has been added to the Cleveland sales force of the Tacony Steel Co., Tacony, Philadelphia. Mr. Blanchard has had considerable metallurgical experience, having been connected with the metallurgical departments of the Bethlehem Steel Co., and the Canton Spring & Axle Co.

T. S. Hanna is manager of the office recently established at 30 Church street, New York City, by the Vulcan Crucible Steel Co., Aliquippa, Pa., maker of tool and alloy steels. Mr. Hanna is well known in the tool steel trade, having represented the Howe-Brown Co., and later the Colonial Steel Co., in the New York district, and also William Jessop & Sons, in Boston.

Matthew J. Scammell, formerly assistant general manager of the Sparrows Point, Md. plant of the Bethlehm Steel Co., now is general manager of the Dunbar, Pa., furnaces of the American Manganese Mfg. Co., Bullitt building, Philadelphia. He succeeds L. S. Kerchner, who has been transferred to Pittsburgh, having been placed in charge of the company's office recently established at 940 to 944 Oliver building, that city.

Men of the Machinery Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

FRANK O. WELLS has resigned as president and director of the Greenfield Tap & Die Corp., Greenfield, Mass., and is succeeded as president by Frederick H. Payne, formerly vice president, to whom he has sold his entire holdings. F. G. Echols, vice president and general manager of the company, has been elected a director to fill the vacancy caused by the retirement of Mr. Wells, who will remain with the corporation in an advisory capacity. Mr. Wells is one of the most prominent figures in the screw thread industry in the United States and has given much time and study to its standardization. A few months ago he went abroad to London, Paris, etc., and attended the world congress on the standardization of screw threads.

He was born in Shelburne Falls, Mass., Jan. 6, 1855, and was educated in the common schools and at Petersham academy. At 18 he started work at a daily wage of $1 and three years later he and his brother organized the Wells Bros. Co., with a capital of $1100. Later this organization was merged with the Wiley & Russell Mfg. Co., forming the Greenfield Tap & Die Corp., capitalized at $3,000,000, of which Mr. Wells became and remained president until his recent retirement.

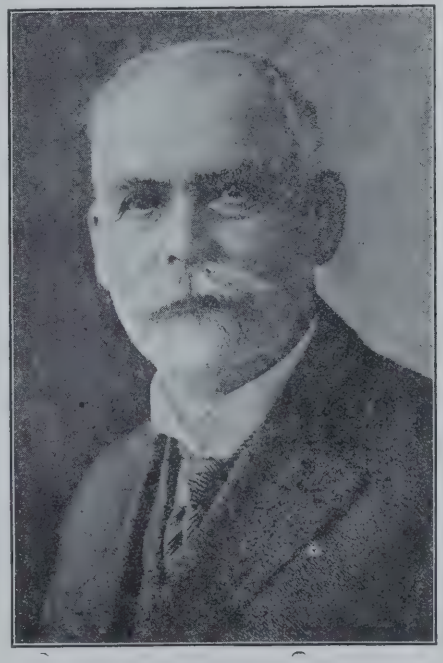
Among his fellow members of the American Society of Mechanical Engineers, Mr. Wells is known as "Wells, the screw-thread man." At Washington he is known as "Wells, the gage man." This latter designation came about because of his war activity, which was fully covered in an article in the April 26, 1917, issue of THE IRON TRADE REVIEW, wherein was told how he studied the problem of making gages for American industry on a wartime basis.

In addition to his activity with the Greenfield corporation, Mr. Wells is interested in various business enterprises. He is director of the Greenfield Machine Co., and of the Lincoln Twist Drill Co.

. Daniel P. Harrower has been promoted to employment manager of the Graton & Knight Mfg. Co., Worcester, Mass., succeeding Theodore C. Greene, resigned, who has gone to the Winchester Repeating Arms Co., New Haven, Conn.

Ernest E. Opitz, for the past two years traffic manager of the Worcester, Mass., chamber of commerce, has resigned to join the traffic department of the Norton Co. in that city, Jan. 2.

D. O. Dugger has been placed in charge of the branch office recently established in the Kansas City Life building, Kansas City, Mo., by Joseph E. Nelson & Sons, Chicago.



FRANK O. WELLS

J. W. Harris has been made Ohio representative for the Austin Western Road Machinery Co., Chicago. He will take charge of the branch plant to be erected soon on property recently acquired in Columbus, O.

William Aitchison, M. R. Rawson and Charles W. Rawson have been elected directors of the Washington Machinery & Supply Co., Spokane, Wash. Harry Rawson has been appointed shop superintendent.

J. C. Mackrell Jr., on Jan. 1 will assume his new duties as sales manager of the Electric Welding Co., Pittsburgh. Mr. Mackrell for several years has been with the Witherow Steel Co., Pittsburgh, having been district manager of sales for the company in Ohio and West Virginia.

Emlen S. Hare, president of the Mercer Motor Co., is to be president of the new Locomobile Co., Bridgeport, Conn., it is announced. O. E. Hunt, H. S. Church, Henry Lansdale and C. L. Guyman, until recently connected with the Packard Motor Car Co., Detroit, are also to become associated with the new Locomobile Co.

C. T. Abbott has been elected secretary of the Winther Motor Truck Co., Kenosha, Wis., and George D. Smith was elected vice president and director. Mr. Smith recently reorganized the company's sales, advertising and service departments. Charles H. Meeker has been placed in charge of the company's new export department and H. D. Snyder has been made assistant general sales manager.

J. D. Smith, formerly works manager of the Timken-Detroit Axle Co., Detroit, has been added to the executive staff of the Torbensen Axle Co., Cleveland, as manufacturing manager; G. W. Veale, formerly production supervisor, and C. W. Carlson, formerly engineer of the Timken plant, have been appointed production superintendent and engineer respectively of the Torbensen company.

E. A. Wilson of the Ingersoll Machine Co., Ltd., Ingersoll, Ont., has been appointed vice president and joint manager with J. A. Coulter of the John Morrow Screw & Nut Co., that city. The Morrow Co. has purchased an interest in the Ingersoll Machine Co., Ltd., and the American Machine Products Co., Inc., Detroit, and will operate them together with the Ingersoll File Co. as subsidiaries.

A. H. Gifford has been placed in charge of the branch office recently established at 521 Chamber of Commerce building, Rochester, N. Y., by the Leland-Gifford Co., Worcester, Mass., maker of sensitive drilling and profiling machines. O. H. Leidy has been added to the company's Chicago sales force, whose headquarters now are located at 621 West Washington boulevard.

Obituaries

WILLIAM H. HART, who died at his home in New Britain, Conn., on Dec. 13, was for many years president of the Stanley Works, New Britain, Conn., with which he was actively identified for more than 65 years. He was one of the best known captains of industry in Connecticut and was called the dean of New Britain manufacturers. He was 85 years old. On May 17, 1914, Mr. Hart relinquished the presidency of the Stanley works and was elected chairman of the board of directors which position he resigned Jan. 10, 1918. He continued on the board of directors up to the time of his death. He largely was instrumental in the development of the business. Due to his work in the early days of the Stanley works its organization was put on a substantial basis and today it occupies a place as one of New Britain's great industries. The little enterprise employing 25 or 30 operatives and having a capital of $30,000 today is giving employment in its several plants to about 4000 people and its capitalization is $2,500,000.

At the age of 19, on May 16, 1854, Mr. Hart became secretary and treasurer of the company, which had been incorporated in 1852. For many years the company had a hard struggle against competition but finally purchased four of the principal companies in the field. Other plants were acquired by the Stanley Works. This company is said to be first to drive pins as well as rivets by machinery; the first to cold-roll iron or steel, and it made wrought butts out of steel six years before others inaugurated that practice. It was Mr. Hart who made the first telescope box for the products of the works and he considered the invention worth $500,000 to the company. Under Mr. Hart's direction the Stanley works also was first in the United States to reduce iron hoops and bands to a uniform thickness and to produce a fine surface by passing the cold metal between highly polished rolls. He also was responsible for placing the company's cold rolling mill in operation in 1873, in addition to its hot rolling mill at Bridewater, Mass.

Stephen P. Brown, civil engineer, who recently resigned as vice president of Ford, Bacon & Davis, New York, was drowned, Dec. 6 at Sebec Lake, Dover, Me. Mr. Brown aided in the construction of the Pennsylvania terminal, New York, and had charge of the work of constructing the Canadian Northern railroad terminal in Montreal.

James Lounsbury Mead, for more than 30 years connected with R. B. & W. Bolt & Nut Co., Greenwich, Conn., died at his home in that city, Dec. 14, aged 59.

Charles Keith Blackwood, president of the Sullivan Machinery Co., Chicago, died Dec. 13, at his home in Kenilworth, Ill., a suburb of Chicago. Burial was in Detroit.

Clarence Stilson, an official of the Scoville Mfg. Co., Waterbury, Conn., died at his summer home, Wildemere, Short Beach, Branford, Conn., Dec. 18.

Benjamin Y. Jeffries, 68, superintendent of the New Castle, Pa. plant of the Stove & Range Co., Pittsburgh, died at his home in New Castle, Dec. 16, of pneumonia.

Frederick A. Brainard, vice president and secretary of the Ingersoll-Rand Co., New York, died recently, at his home in Mt. Vernon, N. Y., aged 58. He was a director in several associated companies.

George A. Weber, son of Henry George Weber, pioneer wagon manufacturer, died Dec. 8, in Chicago. The Weber Wagon Works was founded in 1846 and in 1890 was absorbed by the International Harvester Co., by which it is still operated.

Joseph B. Dickson, aged 58, coal dealer of New York City, formerly chairman of the anthracite committee of the United States fuel administration, died in a hospital in New York, Dec. 12, following an operation. He was buried at Morristown, N. J.

William H. H. Wooster, president of the Seymour Mfg. Co., Seymour, Conn., brass and german silver, and vice president of the H. A. Mathews Mfg. Co., Seymour, bicycle and automobile parts, who was one of the best known manufacturers in Connecticut, died in a New Haven, Conn., hospital, Dec. 17, aged 79 years. He was one of the incorporators of the Seymour Mfg. Co., and its first secretary and treasurer.

Eugene L. Cushman, chairman of the board of directors of the Cushman Chuck Co., Hartford, Conn., which was founded by his father, the late Austin F. Cushman, died at his home in West Hartford, Dec. 17, aged 65 years. He had been sick 18 months following an attack of influenza.

George R. Collingworth, an inventor of special machinery and vice president of the Garvin Machine Co., New York, died on Dec. 15 at his apartments in the Hotel Colonial, that city, aged 82. Mr. Collingworth invented the ticket chopping machine used on the elevated railroads in New York city.

Louis J. Mueller, president of the L. J. Mueller Furnace Co., Milwaukee, and prominent in business circles of that city, died suddenly on Dec. 16, aged 82. Mr. Mueller was born in New York City in 1837, where he obtained his early education. He also learned the tinner's trade in New York and removed to Milwaukee in 1855. Shortly after, he engaged in the hardware business, which later was expanded when the manufacture of furnaces was taken up.

Lyman W. Ellingwood, formerly general manager and secrtary-treasurer of the John Deere Plow Co., Indianapolis, died Dec. 14, aged 45. He retired from business in 1914 on account of ill health. He served as a director of the Syracuse Chilled Plow Co., and was on the board of directors of the Deere company of Syracuse, Baltimore and Atlanta at various times. He was one of the original tentative directors of the consolidated Deere & Co.

William R. Wilson, who as a member of the firm of Wilson & Bates, Philadelphia, jobbers in iron, steel and blacksmith supplies, was engaged in business for 36 years, died Dec. 8, after a 7-weeks illness. When Mr. Wilson's firm retired from business Jan. 1, 1919, he resigned the presidency of the National Iron, Steel and Heavy Hardware association, a position held by him for over six years. He was born in Philadelphia, educated in its public schools and finally was graduated from the Philadelphia college of pharmacy. After following the drug business for several years, he formed the partnership to engage in the jobbing of iron and steel supplies.

New Chain Plant Begins Operations at Yards

A 40-acre cornfield gave way to provide a place for the new electric welding plant of the United States Chain & Forging Co., at York, Pa., operations in which recently started. This plant, which is the largest single chain plant in the world, is housed in a fireproof building of steel, concrete and brick construction, 1½ stories high, with monitor type of roof, 150 feet wide and 800 feet long and contains about three acres of floor space.

Something of a record was established in the time of construction. The company took possession of the land on July 29, cleared it in two days and began the work of erection on Aug. 1. The work was completed exactly three months later. The Fort Bridge Steel Co., which had the contract for the steel for the building, amounting to 27 carloads, erected the material in 12 days. This was accomplished by the laying of a temporary track through the middle of the plant site and the use of an 80-foot boom locomotive crane, the steel being lifted directly from the cars.

At this plant, located on the main line of the Pennsylvania railroad to Baltimore and Washington the company manufactures trace chain, coil chain and up to and including ½-inch machine chain for antiskid devices, chandelier chain and all other classes of welded chain running ½-inch and smaller. It is being operated in conjunction with the other plants of the company located at Columbus and Marietta, O.; Huntington, W. Va. and McKees Rocks, Pa.

The plant is operated entirely by electric power, which at the present is being purchased from a commercial company. Heat for the building is provided from a plant located at one end of the structure. Equipment is all of the company's own designs.

To Build New Stack

The Thomas Iron Co. is dismantling its No. 3 furnace at Hokendauqua, Pa., and will erect in its place a strictly modern blast furnace of about 400 tons daily capacity. It will be provided with a McKee type revolving top with double skip arrangement for charging raw materials. The new furnace is expected to be available by June 1. In connection with the furnaces at Hokendauqua, there is being installed a pig casting machine, and a new boiler plant with water purification system and new steam lines. No. 3 furnace, which now is being dismantled, was built in 1863, rebuilt in 1899 and remodeled in 1914.

Adopt New Schedule on Tacks and Nails

A new schedule of net differentials of tacks and nails for the wholesale hardware trade recently was adopted by the American Tack Manufacturers association and became effective Nov. 19. These differentials are to be added to the base price. The list conforms with the laws governing weights and measures under which all packages must contain full net weight. The table of differentials is as follows:

TACKS

Size of Tack—Number	12 & larger	10	8	6	4	3	2½	2	1½	1
Bill Posters' Tacks										
Bulk 100-lb. Kegs	4.10	4.20	4.30	4.40	4.50	4.75	5.25	6.00		
American Carpet Tacks										
Bulk 100-lb. Kegs	4.50	4.85	5.25	5.50	6.00	7.25				
Upholsterers' Tacks										
Bulk 100-lb. Kegs	4.90	5.55	6.50	7.00	7.50	8.50	10.05	12.30	15.10	20.20
American Cut Tacks										
Bulk 100-lb. Kegs	5.00	5.70	6.65	7.50	8.00	10.30	12.50	17.30	24.10	29.10
Gimp Tacks										
Bulk 100-lb. Kegs	4.90	5.55	6.50	7.00	7.80	8.80	12.65	14.15	16.75	23.40
Lace Tacks										
Bulk 100-lb. Kegs	5.35	5.85	7.25	8.50	11.40	14.00	15.30	18.25	23.30	29.40
Swedes Cut and Trimmer Tacks										
Bulk 100-lb. Kegs	5.25	5.90	6.85	7.70	8.20	10.50	12.65	17.60	24.50	29.65
Basket Tacks										
Bulk 100-lb. Kegs	5.45	6.60	7.55	9.90	10.30	14.00	19.50	23.20	28.70	30.90
Trunk Tacks										
Bulk 100-lb. Kegs	4.90	5.55	6.50	7.00	7.50	8.50				
Solid Head Lining Tacks Japd. or Silvered										
Bulk 100-lb. Kegs	6.00	6.40	6.75	6.95	7.75	9.25	10.75			

NAILS

Size of Nail—Length	1½ & longer	1¼	1⅛	1	⅞	¾	⅝	½	⅜"
Clout Nails									
Bulk 100-lb. Kegs	4.75	4.90	5.00	5.25	5.40	5.60	5.75	6.40	9.80
Trunk Nails									
Bulk 100-lb. Kegs	4.85	5.00	5.25	5.50	5.65	5.85	6.10	6.50	....
Basket Nails and Chair Nails									
Bulk 100-lb. Kegs	5.00	5.50	6.00	6.25	6.50	6.75	7.00	7.50	8.00

The above list prices apply on regular finishes, blued, bright or black, except Solid Head Lining Tacks, which are japanned or silvered.

The above prices are for packing in Bulk 100-pound kegs.

Swedes Carpet Tacks, Baling Tacks, Canvas Tacks, Cheese-box Tacks, Curtain and Shade Tacks, Broom Tacks, Stamp and Gauger Tacks — Same list as Upholsterers' Tacks

Railroad Tacks, Roofing Tacks, Hide Tacks — Same list as Billposters' Tacks.

Looking-glass Tacks, Picture-frame Points, Truckers Tacks, Berry-box Tacks — Same list as Lace Tacks / Same list as Basket Tacks

Net Extras for Finishing

50-lb. boxes add	$0.75 per 100 lbs
25-lb. boxes add	.90 per 100 lbs.
1-5-10-lb. packages add	1.25 per 100 lbs.
½-lb. packages add	1.75 per 100 lbs.
¼-lb. packages add	2.50 per 100 lbs.
⅛-lb. packages add	3.50 per 100 lbs.

Net Extras for Packing

Wash Tinned add	$2.00 per 100 lbs.
Hot Tinned add	5.00 per 100 lbs.
Wash brass Plated add	2.50 per 100 lbs.
Electro brass Plated add	3.50 per 100 lbs.
Copper Plated add	2.00 per 100 lbs.
Japanned add	2.50 per 100 lbs.
Galvanized add	3.50 per 100 lbs.

Contents of Standard Cases

⅛-pound papers packed in packages of 12 papers (called a dozen), and 100 dozen in a full case lot.
¼-pound papers packed in packages of 12 papers (called a dozen), and 50 dozen in a full case lot.
½-pound papers are not dozened and are packed 100 pounds (200 papers) in a full case lot.
1-pound papers are packed 100 pounds (100 papers) to a full case lot.
All goods are packed only as stated above and are full net weight of the size or kind designated.

Established Lengths of Tacks

All kinds of Tacks excepting Gimp and Lace Tacks

No. 1	1½	2	2½	3	4	6	8
3-16	3½-16	4-16	5-16	6-16	7-16	8-16	9-16 Inch
No. 10	12	14	16	18	20	22	24
10-16	11-16	12-16	13-16	14-16	15-16	16-16	18-16 Inch

Gimp and Lace Tacks

No. 1	1½	2	2½	3	4	6	8
3½-16	4-16	5-16	6-16	7-16	8-16	9-16	10-16 Inch
No. 10	12	14	16	18	20		
11-16	12-16	13-16	14-16	15-16	16-16 Inch		

Prices will be quoted on application for goods not covered by this list.

Increases Capacity

The Central Iron & Steel Co., Harrisburg, Pa., has made a number of improvements at its plant during the past year. It placed in operation a new 100-ton open-hearth furnace, increased the piling space at its No. 1 mill shipping shed 100 per cent, installed a new engine to drive its 89-inch mill, and provided a fuel oil system for all of its mills and open-hearth furnaces.

The Empire Machinery Exchange, 915 Citizens building, Cleveland, has taken over the sale of the surplus equipment of the R. & V. Wagner Engineering Co., Moline, Ill., comprising about $400,000 worth of latest type tools.

Court Upholds Workers' Rights

Federal Judge Enjoins Mayor and Police Chief of Cleveland From Barring Importation of Men to Take Place of Steel Strikers—Declares Workers Were Illegally Arrested and Ordered Out of City

IN AN important decision, expected to have a far-reaching effect, Federal Judge Westenhaver in Cleveland recently granted the American Steel & Wire Co., Cleveland, an injunction restraining Mayor Harry L. Davis and Police Chief Smith of that city from interfering with or barring from the city men brought from other cities to take the place of strikers.

Shortly after the outbreak of the steel strike, which was called during the Cleveland political campaign, Mayor Davis issued an order to bar all those who came to the city to work in steel plants. The men were arrested at railroad depots under the suspicious person ordinance and immediately taken to police stations, where they were given the alternative of leaving the city or serving a term in the workhouse. More than 300 were forced to leave the city.

Complaints of No Avail

Complaints against the city officials were made by the local steel companies and business organizations, but to no avail. Finally the American Steel & Wire Co., applied for an injunction. Judge Westenhaver has just made public his complete decision which says in part:

"The so-called 'suspicious person' ordinance of the city of Cleveland confers no authority in conflict with those settled rules of law. It follows then that the procedure pursued by defendants is illegal and that if a violation of plaintiff's rights therefrom that an injunction should issue.

"The affidavits show that on Nov. 22, 1919, 25 men under contract with the plaintiff were thus arrested; that on Nov. 29, 1919, 22 men were thus arrested, and that on Dec. 3, 1919, 55 men were thus arrested. All of these men were held under arrest for several hours before being released. Of these groups, it seems, all except four eventually entered the employment of plaintiff, and that these four, as a result of the humiliation to which they were subjected by such arrest, or for some other reason, elected to return to their former residences.

"The history of defendants' interference with persons employed by plaintiff, or seeking to enter of their own initiative plaintiff's employment, is not fully covered by the affidavits on file. As already stated, this procedure has been pursued since a few days after the declaration of the strike. On one day, Oct. 16, 1919, some 200 persons came to Cleveland for the purpose of entering the employ, either of plaintiff or of some other manufacturer of steel and iron products. All of these were arrested, detained, investigated and escorted by the police out of the city.

"Other affidavits, filed on behalf of plaintiff, assert that as a result of this procedure, plaintiff has, during the months of October, November and December, lost the services of some 400 men, and that the effect is to make it exceedingly difficult to procure men to operate its several plants. That such is the necessary and reasonable consequence of this procedure seems evident.

"That plaintiff is entitled to relief by injunction in this situation is obvious from a consideration of well settled legal principles. It is engaged in a lawful business and has a right to conduct that business without unlawful interference, either by its striking employes or by any other persons. It may solicit and procure persons to work in its plant, no matter where they reside, or whether citizens of the United States or not. No one may lawfully interfere with this right of plaintiff, and if deprived thereof its property is destroyed.

"This is also equally true of all persons desiring to enter into the employment of plaintiff. To deny any such person that right because he does not live in Cleveland would be to abridge or deny to such person privileges and immunities belonging to every citizen of the United States and protected by its constitution from a denial or abridgment by any state. The protection accorded by the constitution of Ohio is equally sweeping. The power to preserve the public peace and to arrest and prosecute persons for crime cannot be made to support action depriving persons of these constitutional rights and privileges.

Pickets' Rights Outlined

"The courts have uniformly protected and enforced these rights by injunction. The legal principles which support equitable jurisdiction are too well known to require the citation of authority. The question has usually arisen in suits to enjoin unlawful interference by striking employes and their pickets. Employes have ordinarily the right to leave an employment at will unless restrained by contract either singly or in combination.

"They have a right peaceably to persuade others to do likewise and to refrain from taking the places thus vacated. They have no right, however, by violence, intimidation, coercion or threats to prevent the former employer from conducting his business at will, or from seeking and entering the places thus vacated. The rights are at least equal. In all cases in which picketing has been allowed, the courts have not hesitated to restrain or regulate picketing in such a way as is necessary to prevent violence, coercion or intimidation being used against the persons employed or seeking to be employed to take the vacant places.

"Defendants in this hearing seek to give a different meaning to the term 'strike breaker,' but the procedure followed since first adopted shows that the illegal arrest and interference has been with persons whose only offense was taking the place of plaintiff's former employes at the time on a strike. The criminal procedure for arresting and prosecuting for crime is no different when applied to strike breakers, as thus defined, than to any other persons guilty of crime.

"A preliminary injunction will be granted as prayed. Bond in the sum of $2000 will be given before the injunction takes effect. The scope of the injunction should be clear from this opinion, but, in order to prevent misunderstanding a provision may be added thereto in these words: That nothing herein contained shall be taken as preventing the arrest of any person on a warrant duly and regularly issued, nor the arrest without warrant of any person as to whom the arresting officer has information or knowledge reasonably calculated to induce the belief that such person be guilty of felony, nor the arrest without warrant upon view of any person found violating any penal statute of the United States or the state of Ohio, or ordinance of the city of Cleveland."

Handling of Men is Big Science, Says Frank

Isaac W. Frank, who recently retired from the presidency of the United Engineering & Foundry Co., Pittsburgh, was the guest of honor of the Pittsburgh Foundrymen's association, of which he was one of the organizers, at its recent annual dinner held at the Elks' club, that city.

Introduced by C. S. Koch, president of the American Foundrymen's association, Mr. Frank, in a brief talk, declared that the management of men was the problem of the day not only of the foundry interests but of industry in general. Handling of workmen was as much a science today as was the chemistry of iron, he said, and was worthy of as much study; that only by the generous injection of the human element into work by the employers could employers hope for the success that would come to them from happy and satisfied employes and that humanity was the only cure for the inefficiency which

had developed among workmen since the ending of the world war.

Mr. Frank made a stirring plea for a strong fight against the various "isms" of the day and for a better Americanism through the Americanization not only of the foreign but the native born. Efficiency and increased production and not increased wages were the solution of the high cost of living problem, he declared.

The speaker reviewed in interesting fashion the early days of the Pittsburgh Foundrymen's association and the evolution of the foundry industry from the days of the eye test for iron and of hand-mixing and ramming of sand.

At this meeting Brig. Gen. Edgar Jadwin, formerly colonel of the Fifteenth engineers, a Pittsburgh regiment, who recently returned from abroad, gave his experiences both in connection with the prosecution of the war and of his missions in Poland and Ukraine. E. Lowry, United States attorney for western Pennsylvania, spoke of bolshevism, its causes, effects and solution.

The affair was in charge of the entertainment committee of the association, which consists of O. C. Dobson, the Carborundum Co., chairman; C. W. Forcier, Pittsburgh representative of the Crucible Steel Forge Co., Cleveland, and the Exeter Machine Works, Pittston, Pa.; G. A. Bauman, of the Jones & Laughlin Steel Co., Pittsburgh; C. L. Kirk, of the Kirk Supply Co., Pittsburgh, and L. W. Mesta, of the Mesta Machine Co., Pittsburgh. More than 350 were present.

Fight Bolshevism With Motion Pictures

Washington, Dec. 23.—Due largely to the impressions obtained by the senate committee on education and labor in its investigation of the steel strike, a national campaign against the bolshevism and radical tendencies has been initiated here. It grew out of conferences between officials of the government, members of congress and representatives of moving picture interests. The idea to present the campaign through moving pictures, however, was that of Secretary of the Interior Franklin K. Lane and resulted in a resolution adopted by the committees on education and labor of the senate and the house of representatives at a joint session.

Secretary Lane outlined to the moving picture men the seriousness of the present social situation in the United States. He declared no medium for the dissemination of truth regarding Americanism gives so much promise as motion pictures.

Production Stimulated by Bonus System

For the past ten years employes of the Cleveland Crane & Engineering Co., Wickliffe, O., have been given a bonus on July 1 and Dec. 31. Each employe who has not been absent from work more than one day each month during a period of six months, unless hindered by sickness or other causes, receives an amount equal to 2 per cent of his wages for each year he has been in the employ of company. A number of the old employes will receive checks Dec. 31 amounting to 20 per cent of their wages for the past six months. This method has stimulated production. Ten per cent of the men on the payroll have not lost a single day for six months.

Study First-Aid Work

Several industrial companies in the Philadelphia district has taken up first aid work under the direction of the south eastern Pennsylvania chapter of the American Red Cross, 218 West Rittenhouse square, Philadelphia. Among the companies listed are the Philadelphia Electric Co.; the Autocar Co., Ardmore, Pa.; Phoenix Iron Works, Phoenixville, Pa., and the Hoopes & Townsend Co., Philadelphia. Classes for instruction of employes are being held during the working hours, conducted usually by the company's surgeon. It is planned to foster this work in other plants in this district.

First Class Graduates

The first class, numbering 79 foreign-born residents of Bethlehem, Pa., has been graduated from the Bethlehem Americanization school, conducted by J. Mark Frey, secretary of the Lehigh Y. M. C. A., who has conducted Americanization work in Bethlehem for some years. Of the initial class only 30 received certificates, the alloted span of two years between the first and second applications not yet having expired for the others. As this period expires the other graduates will receive their certificates.

The class was addressed by R. A. Lewis, general superintendent of the Bethlehem Steel Co., who spoke on "Co-operation," congratulating the men upon their attainments and urging a closer bond between the men and their employers, the new citizens and the citizens by right of birth. Judge C. A. Groman of the Lehigh county court made it plain that no applicant for naturalization will be considered in his court who shows the slightest trace of bolshevism or anarchism, who belongs to any society which has as its purpose the undermining or overthrowing of the American government, and that any applicant who does not subscribe to some religion must pass a rigid examination in other respects. "The court feels very strongly on those matters," said the judge. "When a man believes in God or in some religion, who is not a bolshevist or an anarchist, and who thinks enough of this country to buy property or who has invested in Liberty bonds, or manifests an interest in the affairs of the country in some other manner, the court is satisfied that that man can be made a good citizen."

LABOR NOTES

The Milton Mfg. Co., Milton, Pa., after an idleness of 10 weeks due to the steel strike has resumed full operation in its bar and puddle mills. The old scale of wages is being paid.

* * *

Peabody & Stearns, Boston architects, are drawing plans for 16 brick, 2-story houses to cost $150,000, for the Draper Corp., Hopedale, Mass., for use of its employes. Bids will be asked for shortly.

* * *

The subject of industrial unrest was discussed at the regular monthly meeting of the New England Foundrymen's association at the Exchange club, Boston, Dec. 10. Frank B. Gilbreth, consulting engineer of Providence, R. I., was the speaker.

* * *

The Ford interests are planning stores to be operated on a co-operative basis for the benefit of employes in Highland park and Dearborn, Mich., and wherever they have manufacturing plants. Stocks are to be composed of foodstuffs, wearing apparel and other necessities.

* * *

The National Stove Founders' Defense association, representing stove manufacturers, has agreed to grant employes an 8-hour working day and a 10 per cent increase in wages. The agreement was made with representatives of the International Molders' union at a conference in Atlantic City, N. J., Dec. 13.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE William H. Haskell Mfg. Co., Pawtucket, R. I., bolts, nuts and screw machine products, has completed plans for the erection of a machine shop, which will be two stories, 80 x 140 feet, and will be utilized for the manufacture of machinery for the firm's own use, as well as bolt and cold punched nut machinery for the trade. The shop will be run with electric power and most of the larger machines will be driven by individual motors. At present the company is in the market for planers, vertical and horizontal boring drills, radial drills, milling machines, millers, shapers, grinders, lathes, etc., as well as equipment for a pattern shop and an amount of machine shop furniture.

* * *

THE Malleable Steel Range Mfg. Co., South Bend, Ind., has about completed a large furnace and equipment for the rust resisting treatment it gives to its polished malleable iron range tops. W. R. Swan is in charge of the work.

* * *

THE American Bridge Co., was the successful bidder for the structural steel for the new artillery drill shed of the Hunt armory, Pittsburgh. Its bid was $75,450 for the 760 tons of steel that will be required. Contract for erection was awarded to Eli Abbott, Pittsburgh, at $28,075.

* * *

ERECTION of a new machine shop at the plant of the Seybold Machine Co., Dayton, O., is practically completed, and installation of machine tools, etc., is expected to be started shortly. These tools are now arriving at the plant. The new building, which is 140 x 242 feet, was erected by the Austin Co., Cleveland.

* * *

WORK has been started at Auburn, R. I., on additions to the present foundry of the Universal Winding Co. The new building when completed will be 150 x 470 feet and will have a capacity for melting 50 tons daily. The equipment will be the most modern obtainable and will be adaptable to all foundry purposes. The present construction includes a building, 159 x 200 feet, on the north end of the present foundry of skeleton frame construction and a building, 50 x 159 feet, on the south end which will be of brick, 2 stories. In addition to this, an office building, 25 x 50 feet, will be built as an ell.

* * *

THE Standard Plunger Elevator Co., Worcester, Mass., which builds elevators and metal planers for the Powell Machine Co., under license, is to increase its operations by making other lines of machine tools. A. Bradley Burgess, general manager of the company, says it is not yet ready to announce its plans.

* * *

THE Reznor Mfg. Co., Mercer, Pa., has under consideration the building of a plant in England to take care of the European demands. The company recently secured the necessary permission for the shipment of gas heaters into Great Britain and a consignment of 5000 stoves shortly will be shipped.

* * *

IMMEDIATE erection of an additional plant which will quadruple its present capacity is planned by the Christopher & Simpson Iron Works Co., St. Louis. The main building of the new plant will be of fireproof steel construction, 135 x 500 feet. The addition will cost $300,000, and the completed plant will cover 22 acres.

* * *

THE Wyckoff Drawn Steel Co., Pittsburgh, began operations at its plant at Ambridge, Pa., on Dec. 16, and on Dec. 18, made its initial shipment of cold finished steel, which amounted to several carloads. The plant has a capacity of 6000 tons of finished steel a month and expects to be running full soon after the turn of the new year.

* * *

POWDERED coal firing systems are being installed by the Quigley Furnace Specialties Co., 26 Cortlandt street, New York, for 43 forging furnaces at the plant of the Standard Forgings Co., Indiana Harbor, Ind. The air transport system, manufactured by the Quigley company, will be installed for transporting the fuel from milling plant to furnace bins, for distances totaling approximately 1600 feet. The company hopes to have the installation in operation early in 1920.

* * *

EXHIBITS of its complete line of electric air compressors, drills, valve grinders, etc., will be made by the Black & Decker Mfg. Co., Towson Heights, Baltimore, at the New York and Boston automobile shows. Its 6-foot air compressor as well as a portable tire inflation outfit, designed for all sizes of tires, will be featured.

* * *

CONTRACTS amounting to $111,000 have been obtained by the American Metallurgical Corp., Franklin Trust building, Philadelphia, for the development of about 200 special machines for the Adwear Process Sole Leather Machine Co., that city. The machines are to be equipped with special electric cartridge units, made by the General Electric Co. to melt the wax and heat the machine parts used in connection with the leather processing. Each machine also will be equipped with individual motor drive. The contract carries an option for the placing of 800 additional machines and entails the taking over by the American corporation of the management and operation of the present plant in Philadelphia of the Adwear Process company until the present order is completed.

* * *

CONSIDERABLE new machinery will be required for an addition to the fireproof, brick and concrete plant and office building of the Minneapolis Heat Regulator Co., Minneapolis. The improvement with equipment will call for the expenditure of approximately $100,000. The general contract has been awarded Pike & Cook, and building operations have commenced, in order that the company may avail itself of the increased facilities at the earliest possible moment. The additional space and machinery will treble the company's manufacturing output, it is claimed and call for the doubling of its working force to 300. The company manufactures heat regulators for hot air furnaces, steam or hot water heaters, gas and steam valves, etc., both for domestic and foreign trade.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

EQUIPPED with a 25-ton crane and 16 hammers, a 65 x 300-foot addition is being erected at the drop forge shop of the American Forge & Machine Co., Canton, O. The hammers range in size from 2000 to 8000 pounds. The work is being done by the American Construction Co., Cleveland, and the Canton Bridge Co., Canton, O., was awarded the structural contract. A power plant, equipped with five 500-horsepower boilers is being installed and the exhaust steam from the hammers will be used to operate the turbine. Coal and ashes will be handled by automatic carriers.

* * *

CONSTRUCTION of the new Liberty tunnel through the south hills at Pittsburgh, contract for which has been awarded to Booth & Flinn, Ltd., Pittsburgh, will start soon. It it largely a concrete job and will require only about 1100 tons of steel.

* * *

TO PROVIDE additional capacity to care for increased business, the Melling Forging Co., Lansing, Mich., recently increased its capital stock. According to J. R. Whitney, secretary and treasurer, new equipment has been contracted for and erection of an addition is under way.

* * *

IN ORDER to care for a large increase in the volume of its business, the Detroit Ice Machine Co., 103 Marquette building, Detroit, recently increased its capital. At the present time the company does not plan to install any large amount of additional machinery, but is purchasing small amounts from time to time.

* * *

THE Mascot Stove Mfg. Co. has obtained a lease on the old foundry of the American Brake Shoe & Foundry Co., Chattanooga, Tenn., and is remodeling the plant into a modern stove foundry, J. F. James who is president and general manager of the stove works, announced recently. The foundry has not been in use for about two years. The brake shoe company erected a new plant at Chattanooga a short time ago. The new foundry will be put in operation by Feb. 1. The capacity of the stove works will be trebled.

* * *

CONSTRUCTION of an addition to the plant of the Milwaukee Auto Engine & Supply Co., Milwaukee, is progressing, and when completed will be utilized for the manufacture of automobile accessories. The building is 120 x 120 feet, with a sawtooth roof. New equipment of a special kind will be added gradually.

* * *

AT ITS annual meeting the Economic Machinery Co., Worcester, Mass., elected the following officers: President, Daniel W. Gurnett, Boston; vice president and general manager, Herman Stake; treasurer, Edward B. Moor; clerk, Arthur W. Santry; directors, D. W. Gurnett, Herman Stake, George A. Putnam, Carl Bonney and Edward B. Moor.

* * *

THE Carter Sheet Metal Co., Omaha, Nebr., is erecting a factory building, 1-story, 132 x 162 feet, which will be used for the manufacture of sheet metal products. In addition to the firm's present equipment, it will install a heavy square shear, corrugating rolls, heavy press, elbow machinery, heavy rolls, double seamers, heavy wedge and other small equipment.

* * *

THE Billings & Spencer Co., Hartford, Conn., voted at a stockholders' meeting, Dec. 16, to increase the capital stock from $750,000 to $1,000,000, the proceeds from which will be used for the building and equipping of an addition to its present factory which will cost the full $250,000. The company also plans to erect a 4-story office building addition which will have a frontage of 75 feet.

* * *

THE R. J. Dowd Knife Works, Beloit, Wis., is erecting an addition to its machine shop which, when completed will be equipped with grinding machinery and other machine tools. According to G. A. Dowd, the building is not expected to be ready for occupation for three or four months, due to the delay in obtaining steel. It will be of fireproof construction, of steel, cement and brick.

* * *

THE Tabor Mfg. Co., Philadelphia, recently moved into its new plant at State road and Devereaux street, where it is erecting an addition, 100 x 108 feet. According to H. W. Brown, secretary, the company will be in the market for machine tools in the near future, and now is preparing a list.

* * *

FORMERLY occupied by the Wolverine Tube Co., the 100 x 120-foot building at Thirty-third and McGraw streets, Detroit, has been acquired by the Continental Tool Works, which will commence the manufacture of cutter blades, cutters and special tools, etc., about Jan. 1.

* * *

CONTRACTS for the erection of a large addition to the plant of the Chicago Malleable Castings Co., West Pullman, Ill., have been awarded, and the building when completed, will increase the tonnage output of the plant about 40 per cent. Orders for new equipment, including tumbling barrels, core ovens and molding machines, have been placed. The building is to be ready for occupation by Feb. 1.

* * *

BECAUSE its business has rapidly increased, the Smalley-General Co., Inc., Bay City, Mich., machinery builder, has found it necessary to increase its capital from $50,000 to $525,000. The new stock all has been paid in for purposes of plant and facility expansion and the company has no bonded, mortgage or other funded indebtedness. The company's official personnel remains as follows: John W. Eddy, of the Skinner-Eddy Corp., Seattle; James G. Eddy of the Ferry-Baker Lumber Co., Everett, Wash.; R. B. Eddy of the Eddy Investment Co.; Howard F. Smith of the Michigan Pipe Co.; and J. R. Decker, sales manager of the Smalley-General Co., all of Bay City, Mich. Mr. Smith also is affiliated with the Dominion Sugar Co., Chatham, Ont. The company intends to devote an increased measure of attention to thread milling.

Edge Bill Offers Export Hope

Passage of Much Discussed Measure Clears Way for Foreign Trade in Opinion of Many Bankers—Some Believe Situation is Beyond Act's Aid—Education of American Investors Need—General Financial News

BY JOHN W. HILL, FINANCIAL EDITOR

FINAL enactment of the Edge foreign trade financing bill has opened up a flood of discussion respecting the probable efficacy of this much talked of measure as a corrective and stabilizer of the alarming foreign exchange confusion. A strong conflict of opinion exists on the point among foremost financial authorities in the country, some contending that the situation is beyond the help of the new act, while others believe that its passage has cleared the way for comprehensive foreign financing and rehabilitation of Europe's shattered economic structure by means of American goods and credits. Time and practical results alone will show which of these views is correct.

Will Encourage Organization

The Edge law, which actually is in the form of an amendment to the federal reserve act, authorizes the organization of corporations of not less than $2,000,000 capital for the purpose of facilitating exports through the purchase of bills of foreign importers. Against these bills will be issued debenture bonds which will be offered to American investors. These debentures will be eligible for discount purposes at the federal reserve banks. The law limits the aggregate amount of outstanding liabilities of any one corporation to 10 times the total of its capital stock.

The feeling prevails among some critics that the law is too replete with restrictions and that the freedom of action essential to the highest success in foreign trade financing is not permitted. One instance of this is found in the inclusion of the Clayton act provision against interlocking directorates, preventing directors of a private banking institution from becoming directors of a national banking organization. This will operate to bar directors of those large institutions operating under state charters a number of which have branches all over the world, from acting as directors of Edge act corporations. In defense of the restrictions, however, legislators declare they have endeavored to devise safeguards for the corporations which would inspire confidence of the public and make possible widespread distribution of the debentures.

After all, the ultimate success of the law will depend upon the investing public's attitude toward securities issued under its provisions. It is foreseen that this presents the greatest difficulties in the way of meeting the foreign credit needs. Recent attempts to float foreign securities in this country have met with a cold reception from investors. This is due partly to the fact that they have never been educated to place their funds outside of their own land, and partly to distrust of, and indifference toward, European recovery.

It is widely recognized, therefore, that no matter what the details of financing export credits may be the chief basis for success will be a vigorous campaign of education or propaganda. The burden is too large for the financial institutions to carry it alone and at the same time take care of the domestic credit needs, and it will be necessary for the bulk of the advances abroad to come out of the savings of the investing public. Those who think well of the Edge bill as a vehicle for raising these credits consider that the favorable publicity it has already received, and the fact that corporations based upon it will be under the general supervision of the federal reserve board, should advance the debentures in the favor of investors and attract funds that otherwise might be timid were the corporations of a different character.

The opinion is growing stronger every day among keen students of affairs that nothing less than a nationwide drive along the lines of the liberty loan campaigns will suffice to awaken the public to the urgent needs of making it possible for Europe to recover, both for Europe's sake and for America's, where export trade is menaced by the demoralized exchange rates. Possibility of this was hinted by Eugene Schneider, head of the French mission to the international trade conference at Atlantic City, upon his return to France last week. He said his country would need to buy $600,000,000 worth of food and fuel and raw materials in America next year, and that in order to raise the credits the United States government would loan its liberty bond campaign machinery. Washington has not admitted that there is any such understanding but nevertheless many believe that anything short of this will result in failure.

The law provides that the reserve board shall prescribe the regulations for the corporations to conform with the act and the board's general counsel is at work upon the preliminary draft. Immediately following the holidays the reserve board is expected to begin conferences with bankers respecting the subject and definite regulations will be promulgated. No steps will be taken to effect any organizations until after the board has laid down its rules.

Will Seek Foreign Trade

In the meantime, however, the national committee on financing Europe organized under the auspices of the international trade conference and the United States chamber of commerce and composed of a number of leading American bankers is holding frequent conferences with manufacturers and industrial interests respecting the possibilities of organizing corporations under the Edge law. Members of the committee are scattered throughout the country for the purpose of extending knowledge of conditions affecting foreign commerce and to evolve suggestions which may prove of benefit in financing continued export business. It is being urged upon interests concerned in maintaining exports that it is to their prime advantage to participate in credit arrangements. In New York efforts are being made to underwrite $1,500,000,000 of foreign trade obligations already outstanding and it is probable that the Edge law will point the way to consummate this gigantic deal. It must be remembered that Europe has been buying largely from this country in recent months on credits arranged between buyer and seller and it is desirable that this sum, estimated at $3,000,000,000 be funded until such time as exchange rates improve. Much thought is being devoted to the point of whether better results would be obtained from organizing one great dominating corporation with many millions of capital or a number of smaller ones. The best opinion seems to favor the big corporation which would permit concentration of efforts and propaganda campaigns.

It would be folly to suppose that even generous credits advanced under the Edge bill would work an immediate miracle of completely repairing the ex-

changes. It would improve sentiment but so long as European printing presses continue working overtime turning out additional reams of inflated currency, the confidence of the world cannot be regained.

Pay $256,459,000 Toward Liquidating Contracts

Washington, Dec. 23.—Contracts liquidated by the war department to Dec. 6 include 18,223 formal ones, valued at $1,215,315,000, and 4695 informal, valued at $919,328,000. It has cost $256,459,000 to liquidate these contracts. In addition, partial payments in liquidation amounting to $85,105,000 have been made on other contracts, making the total amount paid in liquidation $341,564,000. The number of contracts suspended totals 27,837, valued at $3,870,945,000, leaving 4919 remaining to be liquidated, and of the latter the value of 2205 is known and amounts to $1,736,302,000. Ordnance contracts constitute 70 per cent of this amount, air service contracts 22 per cent. and contracts made by the director of purchase, 6 per cent. Assuming that future liquidation can be effected at the same rate of cost as obtained in the past, the cost of liquidating these 2205 contracts may be estimated at $232,960,000.

The saving effected by liquidation amounted to $1,878,184,000. Of this, $1,090,002,000 was saved on formal contracts and $788,182,000 on informal.

Rolls-Royce Buys Plant

The Wire Wheel Corp. of America, East Springfield, Mass., has been purchased by the Rolls-Royce of America, Inc., for use as the American branch of the British automobile concern. As soon as machinery is installed soon after the first of the year production expected to reach 400 chassis in 1920 will be started. The officers of the corporation are: President, L. J. Belnap, Montreal; vice president, Ernest A. Claremont; chairman and managing director, Claude Johnson; treasurer, H. C. Beaver, Springfield, Mass.; directors, L. J. Belnap, Charles E. F. Clarke, J. E. Aldred, Henry J. Fuller, Kenneth K. MacKenzie and Joseph Skinner, Holyoke, Mass.; engineer-in-chief, F. Henry Royce; production manager, M. M. Olley.

Murray Ohio Co. Formed

The Murray Ohio Mfg. Co., Cleveland, is offering for sale $500,00 of 8 per cent cumulative preferred stock and 10,000 shares of common stock no par value. The company is a subsidiary of the J. W. Murray Co., Detroit, producer of hoods, fenders, tanks and general sheet metal parts for automobiles. The Ohio company is being established to take care of the parent company's business in that state. A plant has been leased and is now in operation. The parent company which guarantees the dividends and sinking fund upon the preferred stock has total assets of $2,032,45 and its sales have grown from $933,944 in 1913 to $4,082,437 estimated for 1919.

Financial Crop Ends

STOCKHOLDERS of the American Bosch Magneto Co., have authorized an increase in the company's capitalization from 60,000 shares of no par value to 100,000 shares of no par value. Directors of the company are authorized to issue 20,000 shares of the new stock within six months and from time to time, not to exceed 5000 shares for the benefit of employes. It may be subscribed by employes and stockholders at $100 a share.

* * *

The H. R. Lewis Tool & Supply Co., Detroit, has been purchased by the F. R. Fortune Tool & Mfg. Co., Wooster, O., and plant equipment moved to that city. The new capital stock is $200,000. R. K. Evans is works manager.

* * *

Paul O'Connell and others, of New Haven, Conn., have purchased for $22,000 the assets and good will of the Yankee Tool Corp., Bridgeport Conn., and will remove the business to New Haven. They will add to the equipment and continue production on a larger scale than heretofore.

* * *

The Van Dorn Iron Works, Cleveland, has amended its charter placing common stock upon a no par basis. The new capital will consist of $2,000,000 of preferred stock of which $650,000 has been sold and 100,000 shares of common stock of which 80,000 shares will be offered for sale.

* * *

The Grant Motor Car Co. has offered for sale $500,000 of 6 per cent gold notes sold to yield from 7 per cent to 7¼ per cent. The company announces that its present capacity of 15,000 cars a year is being increased to 20,000 cars and that contracts for 17,000 cars have already been let. Total net assets of the company are $2,482,629 and net earnings over the last three years have averaged $182,836 per year.

* * *

Stockholders of the Edward G. Budd Mfg. Co., manufacturer of "all steel" automobile bodies, have approved an increase of $2,000,000 in the 8 per cent preferred stock of the company, bringing the total amount authorized up to $4,251,700. Of the new stock $1.000,000 has been purchased by William A. Read & Co., Brown Brothers & Co., and Frazier & Co., who are offering it for subscription at 99 and accrued dividend. This brings the total amount of the issue outstanding to $3,251,700.

Rising Prices

Continue on Some Coal Tar Products —Ammonium Sulphate Short

New York, Dec. 22.—Advancing one-half cent, prices on naphthaline flakes are now holding at a range of 7 to 8 cents, on both spot and contract business. Naphthaline balls, however, continue to be quoted at the old range of 8½ to 9½ cents. The increase in flakes is due to a steadily improving demand from the drug trade and dye industry, which has resulted in a great shortage of supplies.

A marked scarcity is also noted in sulphate of ammonia, a development which is restricting trading considerably. Contract buying, as a result, is negligible, and export business is being turned away in large volume. Spot business for domestic account also is being materially affected, and what little nearby ammonia is available is moving at advancing prices around $4 per 100 pounds, f.o.b. producers' plants; contract business is purely nominal. A factor in the present shortage of sulphate of ammonia is the large curtailment in production as a result of the coal scarcity.

Although a heavy demand continues for benzol, prices have undergone no further advance, holding at 27 to 31 cents, f.o.b. producers' plants. Ninety per cent benzol is quoted at 23 to 25 cents. Toluol and solvent naphtha is quoted at 28 to 32 cents and 22 to 27 cents, respectively. Demand for this latter product is said to be especially active, due to buying of the rosin manufacturers.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants

Pure benzol	$0.27 to .31
Toluol	.28 to .32
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	0.07 to .08
Naphthalene, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$4.00

Contract

Pure benzol	$0.27 to .31
Toluol	.28 to .32
Solvent naphtha	.22 to .27

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	0.07 to .08
Naphthalene, balls	0.08½ to .09½

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

The National Education association will hold an exhibit in Cleveland during the week of Feb. 23.

Equipment Sellers Hail Jan. 1

Expect Present Lull to be Superseded by Heavy Buying Movement After Holidays—Hammers and Fabricating Equipment Sell Readily—Much Crane Business Pending—Canadian Dealers Active Despite High Prices

HOLIDAYS usually bring a lull to the machine tool and equipment market and this is particularly true at the year-end when they accompany inventory-taking time. While this year is no exception and a falling off in inquiries and orders is noted in practically every selling center, most dealers report satisfactory sales sheets, made up of small orders and are not complaining. They anticipate large orders after Jan. 1.

Activity among users of hammer and forging equipment is particularly marked in Cleveland, one large inquirer being the Steel Improvement & Forge Co., Cleveland. In that city as well as Chicago, most of the orders taken are for one or two tools. Deliveries are receding further and further into the future and one maker of automatic screw machines has sold his entire output for 1920.

Fabricating equipment occupies the center of the stage in the eastern territory. The American Car & Foundry Co. bought $200,000 worth of machine tools including 30 or 40 fabricating machines for its various plants. The Magor Car Co., Passaic, N. J., bought $90,000 worth of this type of equipment. The American Locomotive Co., New York, is buying a larger quantity for its various plants.

Smaller purchasers include the Lycoming Foundry & Machine Co., Williamsport, Pa.; High Speed Tool Corp., Green Island, N. Y.; Coldwell Lawnmower Co., Newburg, N. Y.; Mergenthaler Linotype Co., Brooklyn, N. Y.; Westinghouse Airbrake Co.; Pittsburgh, and the Standard Oil Co., Bayonne, N. J. Sizable lists are expected in New York soon from the Westinghouse Electric & Mfg. Co., East Pittsburgh; Rolls-Royce of America, Inc., Springfield, Mass.; Virginia Railway & Power Co., Norfolk, Va., and Billings & Spencer Co., Hartford, Conn.

Crane sales and inquiries mostly are for one or two units. The Westinghouse Electric & Mfg. Co., however, is to close on 14 overheads for Lester, Pa., and the Union Shipbuilding Co., Baltimore, will buy 12. Revised bids now are in on 22 cranes for Follansbee Bros. Co., Toronto, O., and the order probably will be placed before Jan. 1. The Carpenter Steel Co., Reading Pa., and the New York Shipbuilding Corp., Camden, N. J., each are in the market for two cranes, and a Canadian steel company is understood to be ready to close on 16 cranes.

Canadian sellers likewise are active and expect to be so in increasing measure after Jan. 1, when many building programs will come to a head. High exchange rates have sent prices on American-made machinery skyward, some prices now being 50 per cent over those quoted a few months ago. Price seems of secondary consideration, however, and deliveries are the main factor. Some Canadian inquirers are: The 1900 Washer Co., Toronto; Buhl Stamping Co., Walkerville, Ont., and the Piano Cases & Phonographs Co., Ltd., and Brantford Computing Scale Co., both of Brantford, Ont.

Heavy Buying in East Marks Year's Closing Period

SUBSTANTIAL buying characterizes the eastern machine tool market. A number of small orders are being placed, and at the same time, action is being taken on several sizable lists. The American Car & Foundry Co. has begun to close on approximately $200,000 worth of machine tool equipment, including 30 to 40 fabricating machines. The equipment is to be alloted among its Buffalo, Chicago, Depew, N. Y., and Milton, Pa., plants. The Magor Car Co., Passaic, N. J., has purchased approximately $90,000 worth of machinery, including considerable fabricating equipment. The American Locomotive Co., 30 Church street, New York, is buying machine tools for Montreal, Chester, Pa., Dunkirk and Schenectady, N. Y. The company contemplates issuing additional inquiries within the next week or 10 days. A number of fabricating tools are to be included.

Included in the number of smaller purchasers are: The Lycoming Foundry & Machine Co., Williamsport, Pa., which bought 8 or 10 miscellaneous machine tools. The High Speed Tool Corp., Green Island, N. Y., which closed on a list of tool room equipment. Another buyer of the past week has been the Coldwell Lawnmower Co., Newburg, N. Y., which took several miscellaneous machines. The Mergenthaler Linotype Co., 44 Ryerson street, Brooklyn, N. Y., likewise has been a buyer of a small list of machine tools. The Standard Oil Co. of New Jersey has purchased two friction saws for Roumania, and a heavy shear for Bayonne, N. J. Additional buyers of fabricating equipment have been the New England Iron Works, New Haven, Conn., and the Union Mfg. Co. and the Standard Boiler Works, both of Lebanon, Pa. Buying in each instance was confined to one or two machines. The Westinghouse Airbrake Co., Pittsburgh, has placed orders for machine tools in the East for its plant in that city. The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is expected to be in the market shortly for a number of machine tools. While this company is inquiring for 12 overhead cranes for its new turbine plant at Essington, Pa., it has not, so far as can be learned, issued a list of machine tool requirements.

Another prospective buyer of machine tools is the Rolls-Royce of America, Inc., which has just recently an-

Making Ludlum Tool Steel

Prompt shipments from our warehouse stock at Watervliet, N. Y.; Detroit, Mich.; Chicago, Ill.; or Cambridge, Mass., handled thru our Branch Offices.

LUDLUM
CONSISTENTLY UNIFORM BRANDS

Mohawk Extra
High Speed Steel
Albany
Alloy Tool Steel
Huron
Alloy Die Steel
Seminole
"Foolproof" Chisel Steel
Pompton
Carbon Tool Steel
Oneida
Oil Hardening Tool Steel
Teton
Ball Bearing Steel
Yuma
Chrome Magnet Steel

Heating *Ludlum High Speed Steel Ingots* for rolling means something more than simply getting them hot. It means that the temperature must be brought up gradually to the desired point. If it is brought up too quickly, certain stresses and strains occur which cause fractures.

One reason why Ludlum Steels are consistently uniform is because of the care taken by our ingot heating teams.

Ludlum Steels have been selected by the majority of large users and twist drill and milling cutter manufacturers, as the steels best suited for their purposes.

Ludlum Steel Company

General Office and Works
WATERVLIET, N. Y.

Branch Offices:

Chicago, Cambridge, Mass., Detroit, Buffalo, New York City Cincinnati, Cleveland, Philadelphia, Pittsburgh



nounced the purchase of the plant of the American Wire Wheel Co., Springfield, Mass. Action is expected shortly. An interesting development of the past week in the automobile field is the merger of the Mercer Motors Co., Trenton, N. J., and the Locomobile Co. of America, Bridgeport, Conn. The latter company, it is reported will be known as the Locomobile Co. and will devote a portion of its capacity to the production of medium-priced pleasure cars and ¾ to 5-ton commercial trucks. Whether or not the capacity of the Bridgeport plant will be greatly enlarged is not known; the Mercer plant at Trenton, however, practically will be doubled. It is stated that approximately $650,000 will be expended. The Virginia Railway & Power Co., Norfolk, Va., will expend $1,130,000 for equipment and other improvements in that city. The Billings & Spencer Co., Hartford, Conn., plans an outlay of $250,000 for a plant addition, including equipment. Congress has authorized the purchase by the government of the Curtiss-Elmwood plant at Buffalo for $1,804,300.

Foremost among inquiries of the past week in the eastern crane market is a list of four cranes, from two to 50 tons in capacity, for the Lester, Pa., plant of the Westinghouse Electric & Mfg. Co. The inquiry has been issued through the Pittsburgh office. Additional inquiries include two 10-ton electric cranes, with 42-foot and 68-foot spans respectively, for the Carpenter Steel Co., Reading, Pa. Moses, Pope & Trainer Inc., 356 Fifth avenue, New York City, want a small locomotive crane. The Piedmont-Mt. Airie Auganis Co., Baltimore, fertilizer manufacturer, wants an overhead electric crane. The New York Shipbuilding Corp., Camden, N. J., is in the market for two 5-ton gantry cranes of 40 and 56-foot span respectively. The Midvale Steel & Ordnance Co., Philadelphia, is inquiring for a 5-ton electric crane, with 69-foot span, for Coatesville, Pa.

Included in awards of the past week is a 10-ton electric crane, with 90-foot span, for the Magor Car Co., Passaic, N. J., to the Whiting Foundry & Equipment Co., Harvey, Ill. The Delaware, Lackawanna & Western railroad has placed an overhead crane with the Cleveland Crane & Engineering Co., Wickliffe, O. The Belmont Iron Works, Philadelphia, has placed a 30-ton locomotive crane with the Orton & Steinbrenner Co., Chicago. Another 30-ton locomotive crane has been placed by the Standard Oil Co. for Bayonne, N. J. The Sligo Iron & Steel Co., 42 Broadway, New York City, bought a 15-ton locomotive crane. It is understood that the Toledo Bridge & Crane Co., Toledo, O., has been awarded list of 12 electric cranes for the Union Shipbuilding Co., Baltimore.

Action is expected very shortly on the list of approximately 12 overhead cranes for the American Car & Foundry Co. The International Motors Co., New Brunswick, N. J., and the Todd Shipyards, 15 Whitehall street, New York City, both in the market for 5-ton overhead cranes, are understood to have postponed action until after the first of the year. The Albany Building & Supply Co., Albany, N. Y., has temporarily withdrawn its inquiry for a 10-ton overhead electric crane. Contrary to current reports, the American Locomotive Co., will not be in the market for cranes within the near future. The Export and Import Board of Trade, Baltimore, has formulated a plan which provides for a loan of $50,000,000 for the construction of modern municipal piers and warehouses.

Chicago Dealers Active Despite Lull

DEALERS in machine tools in the Chicago district have no complaint whatever to make as to the volume of business now being offered although the usual holiday and preinventory lull is somewhat in evidence. Most business now consists of small orders and single tools. A matter of interest, which is not really expected to yield actual business, is renewed activity on the part of the Chicago, Burlington & Quincy railroad, which is obtaining revised quotations on the large list put out several months ago. With the probability of railroads returning to their owners Jan. 1 becoming more remote, it is scarcely believed the road will be able to buy. It is expected the aircraft production board will resume selling government-owned machinery shortly after the first of the year.

Deliveries on most tools average at least 90 days with some lines much further delayed. One builder of automatic screw machines has sold his entire output for 1920 and some deliveries will run into 1921. The E. J. List Mfg. Co., at Havana, Ill., is building an addition and will purchase equipment.

Sizable Crane Business Booked and Pending in Pittsburgh

TWO big crane inquiries are expected to be closed in the Pittsburgh district shortly. These are the 14 overheads for the new plant of the Westinghouse Electric & Mfg. Co. at Lester, Pa., and the 12 wanted for the Union Shipbuilding Co., Baltimore. The latter being a subsidiary of the McClintic-Marshall Co., Pittsburgh, the awards will be made from the offices of that company, while all purchases for the Westinghouse company are placed from the main offices in East Pittsburgh. All revised specifications on the 22 cranes wanted for the new plant of the Follansbee Bros. Co., Pittsburgh, at Toronto, O., are understood to be in and an award of this business is looked for before Jan. 1. The Pittsburgh Plate Glass Co., is erecting a new plant at Kokomo, Ind., Stone & Webster, having the contract. A 20-ton crane is wanted for this plant. The Alliance Machine Co., Alliance, O., has been awarded a 15-ton trolley crane for the Vandergrift, Pa., plant of the United Engineering & Foundry Co., Pittsburgh. A large Canadian steel company, which has under construction a new rail and structural mill, is understood to have closed in Pittsburgh for 16 cranes and other equipment. The Allis-Chalmers Mfg. Co., West Allis, Wis., recently took the contract for the equipment for the plant of the Bessemer Limestone Co., Youngstown, O., which includes seven mills, three each, kilns and coolers, as well as driers, rolls, nine motors and two motor generator sets, the order approximating $500,000.

Small machine tools are in steady demand, but few lists are coming out. Most makers of such tools and equipment are sold at least to Feb. 1, and some well through the first half of 1920.

Trading Slack as Year Approaches End

USERS of machine tool equipment who supply their needs in the Cleveland market, apparently are taking advantage of the holiday period to postpone purchases. Inquiries have dropped off considerably and only those orders are being placed which represent badly needed equipment. In connection with steam drop and forge hammers, however, the situation differs slightly; for these the demand is particularly active. Users anticipate a sharp advance Jan. 1, and are endeavoring to place their orders at the present market. Many request that delivery be deferred until April or May, whereas makers are able to deliver in eight to 10 weeks. Such attractive delivery dates, however, do not apply to regular machine tools where makers are able only to make shipment within three to six months.

One of the larger companies to be in the market for hammers, is the Steel Improvement & Forge Co., Cleveland. It is receiving quotations on 3000, 2500, 2000 and 1500-pound standard steam drop hammers. New equip-


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Castings that don't come back for patrons that do—
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STEEL CASTINGS
Farrell-Cheek Steel Foundry Co.
"Makers of Steel Castings that are a little better than the next best."
Sandusky Ohio
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ment is being ordered by the Atlas Drop Forge Co., Lansing, Mich., for a new addition. The American Forge & Machine Co., Canton, O., recently was in the market for hammers, but is understood to have closed with an Alliance, O., maker, on its entire needs.

Several dealers in other cities are endeavoring to locate their customers' requirements through Cleveland dealers. These include Ogden R. Adams, Rochester, N. Y., who wants one 5/8-inch automatic, one 30-inch vertical boring mill; one 24 or 40-inch slab miller with 8-foot bed; one 18-inch x 12-foot heavy duty lathe for rough turning axles and shafts. Howard B. Payne, Pittsburgh, another dealer, wants one 11-inch vertical boring mill for a customer in the West. Homer Strong, Syracuse, N. Y., machine tool dealer, is endeavoring to locate several gear shapers.

No particularly large list of tools is extant at the present time, although several are pending. These include one from the Foote-Burt Machine Co., Cleveland, and another from the Marsh Motor Car Co., which is moving from Massachusetts to Cleveland and has a temporary office in the Hotel Cleveland. The former concern has closed on much of its crane equipment but since its business has increased rapidly, it is believed that it will not dismantle plant No. 1, in which event its machine tool needs will be even larger than at first anticipated. While the Marsh company is understood to be moving 15 or 20 carloads of equipment from its former plant, it now is receiving bids on considerable special machinery.

Among the smaller inquiries is one from the Advance Machinery Co., Van Wert, O., which wants one 42 x 42-inch x 10 to 14-foot planer; one 36 x 36-inch x 8 to 10-foot planer; one 4, 5 or 6-foot radial drill. The Rummell Mfg. Works, Findlay, O., wants a universal tool grinder and a small milling machine, not back-geared. The Manhattan Electrical Supply Co., Ravenna, O., is in the market for one Peck, Stowe & Wilcox No. 0230 series A, with holding attachment, capacity 16 gage, 30-inch cutting blade. The Alloy Parts Mfg. Co., Canton, O., wants a 14-inch disk grinder. The U. S. Mfg. Co., Ontario, Oreg., remains in the market for 10 or 12-foot bending rolls for 1/4-inch or lighter, one 10 or 12-foot squaring shear for 3/16-inch or lighter; one 10-foot power brake for 3/16-inch or lighter and one power or hand angle iron shear.

One Canadian steel company is understood to be closing for approximately $3,000,000 worth of cranes and mill equipment. The Arctic Ice Machine Co., Canton, O., shortly will be in the market for two 15-ton cranes as well as machine tool equipment for an erecting shop 140 x 400 feet. It recently bought a quantity of machine tools for its new machine shop. The Buckeye Traction Ditcher Co., Findlay, O., wants a 5-ton traveling crane for its new building.

Canadian Machine Tool Prices Increased

MANY industrial plants and additions at present under way and proposed for early in 1920 are expected greatly to increase the demand for machinery and machine tools in Canada. Present demand appears to be in excess of supply and dealers continue unable to promise delivery in many standard lines inside of six months. Several Toronto dealers were informed this week that prices have advanced in some lines, another 10 per cent. Such price advances on American tools when shipped into Canada show an advance of about 50 per cent over prices quoted a few months ago, on account of the high duties and the exceptionally high rate of exchange which has been holding in regard to Canadian currency in the United States, since dealers in American machinery and tools have been forced to add the difference between the Canadian and American dollar to the price of the tool. However, the price is of secondary consideration, the main feature being deliveries.

Numerous inquiries for tools are being received. The 1900 Washer Co., 489 King street, west, Toronto, is in the market for a 20-inch, 4-spindle drill, power speed, back geared. The Taylor-Forbes Co., Ltd., Guelph, Ont., is building an addition 70 x 100 feet to its foundry and will install considerable new machinery. The Federal Cement Co., Owen Sound, Ont., will improve its plant and install new machinery. The Buhl Stamping Co., Detroit, has secured a lease for five years on the premises of the Hiram Walker Cooperage Co., Walker road, Walkerville, Ont., and will install presses, etc., for the manufacture of its products for the Canadian market. The Piano Cases & Phonographs, Ltd., Brantford, Ont., will build an addition and install automatics, etc., to double its present capacity. The British American Brewing Co., Ltd., Windsor, Ont., is building a bottling shop, 70 x 140 feet, in which $75,000 worth of machinery will be installed.

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

BATH, ME.—The Watson Frye Co. is turning down business on account of lack of capacity and extensions are looked for soon.

KITTERY, ME.—The E. C. Safechain Co. has been incorporated with $250,000 capital to manufacture automobile accessories. Frank K. Cole is president.

PORTLAND, ME.—The National Oil Transport Co. has been incorporated to build barges, ships, etc., with $1,000,000 capital by R. I. Johnson, H. I. Smith and A. B. Farnham.

WOODSTOCK, ME.—The Peoples Light & Power Co. has been incorporated with $10,000 capital by Mark C. Allen, Thomas W. Gorden and Ned I. Swan.

DOVER, N. H.—The National Wood Working Co. will build a 1-story machine shop.

BOSTON.—The Webber Carburetor Co. has been incorporated with $400,000 capital to manufacture carburetors. Harold E. Clark is president and other incorporators are James L. Doyle and George E. Richardson.

BOSTON.—The Premier Register Table Co. has been incorporated to make tools, mechanical devices, etc., with $100,000 capital by Elbert L. West, James West and William E. Ludden.

BROCKTON, MASS.—The Eagle Motor Co. has been incorporated with $50,000 capital to manufacture motor vehicles.

CAMBRIDGE, MASS.—The Lever Bros. Co. has had plans drawn for a power plant.

CAMBRIDGE, MASS.—Charles N. James, 414 Main street, has had plans prepared for a machine shop, 1-story, 125 x 150 feet, to cost $35,000.

EAST SPRINGFIELD, MASS.—The Storms Drop



U. S. Railroad Administration installation—typical of KREODONE service—90,000 sq. ft. in this one shop.

Kreodone EVERLASTING Wood Block Floors

Crushing weight, cutting contact, splintering shocks, oil drip and general heavyweight abuse—these are some of the factors which quickly establish the service-worth of a floor in a railroad shop.

In the above pictured shop, the U. S. R. R. Adminstration installed 90,000 sq. ft., of our KREODONE wood block floor because of its characteristic ability to absorb punishment—and "come up smiling."

Only the tough steel-fibre-like KREODONE Block, made of selected long-leaf yellow pine and saturated with our special PURE creosote oil, makes possible real service under the above named hard conditions.

And note—KREODONE Blocks do *NOT* bleed tar. Doesn't that mean something to you who are in the market for an honest-to-goodness factory floor?

Write us. Let us give you good, logical, convincing reasons why YOU should put KREODONE into your specifications.

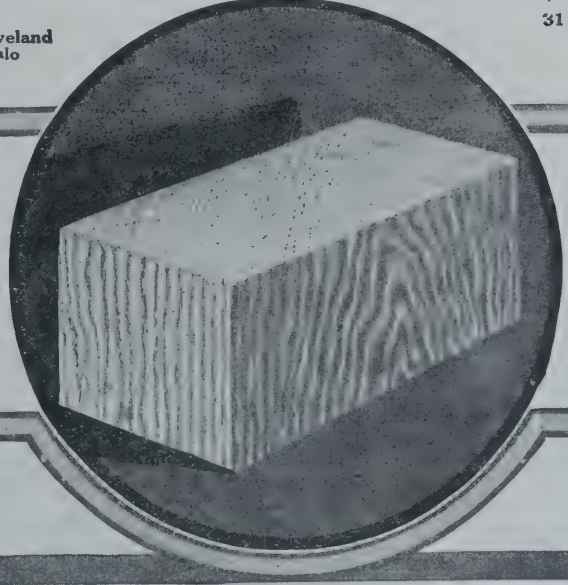
REPUBLIC CREOSOTING COMPANY, Indianapolis, Ind.

Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

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315 Peoples Gas Bldg., Chicago
222 Society for Savings Bldg., Cleveland
206 Erie County Bank Bldg., Buffalo
152 Bay Street, Toronto, Canada
Berkley Ward, Norfolk

BRANCH OFFICES:
31 Transportation Bldg., Philadelphia
828 Plymouth Bldg., Minneapolis
445 Central Bldg., Seattle
Masonic Temple, Mobile
211 Hammond Bldg., Detroit

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Our New Illustrated Catalog is now ready for you. Write for it today.

Forging Co. has purchased five acres and will erect a factory.

FITCHBURG, MASS.—The Simonds Mfg. Co. has let the contract for a 5-story, 60 x 100-foot storage warehouse.

HOPEDALE, MASS.—The Draper Corp. is having plans drawn for 16 houses which it plans to build for its employes.

NATICK, MASS.—The Northway Motors Corp. has let the contract for a 2-story, 70 x 202-foot factory addition, to cost $75,000.

NEW BEDFORD, MASS.—The William Whitman interests have let the contract for a 3-story, 188 x 688-foot mill, office building, picker house and power plant to cost $1,500,000.

PITTSFIELD, MASS.—The General Electric Co. has let a contract for a 1-story, 100 x 300-foot wire enameling building to cost $100,000.

SPRINGFIELD, MASS.—The Cheney Bigelow Wire Works contemplates an addition to be devoted to wire weaving.

SPRINGFIELD, MASS.—Rolls-Royce of America, Inc., has announced the purchase of the former plant of the American Wire Wheel Co.

SPRINGFIELD, MASS.—Bids close Jan. 5 for a 1-story, 50 x 60-foot addition to tho office building of the Moore Drop Forging Co.

TAUNTON, MASS.—Bids closed Dec. 18 for a 1-story, 80 x 206-foot plant for the General Electric Co. in Weir village.

WATERTOWN, MASS.—The Watertown Press Steel Co. has been incorporated with $150,000 capital by Arthur E. Quilty, William H. McDonald and William S. Murray.

WORCESTER, MASS.—The Simplex Piano Action Co. has purchased a tract of land on which it intends to build a factory.

WORCESTER, MASS.—The Standard Plunger Elevator Co. has plans for extensions and the addition of new lines of machine tools.

WORCESTER, MASS.—Lockwood, Greene & Co., Boston, are preparing plans for a 4-story, 75 x 85-foot factory addition for the Curtis & Marble Machine Co.

AUBURN, R. I.—The Universal Winding Co. has started work on two additions to its foundry. One addition is to be 159 x 200 feet and the other 50 x 159 feet.

PROVIDENCE, R. I.—Dutee W. Flint has let the contract for a 1-story, 100 x 147-foot addition to a storage building.

PROVIDENCE, R. I.—The United Wire & Supply Co. has started work on a plant addition, 2-stories, 40 x 250 feet, to cost $100,000.

WESTERLY, R. I.—The Westerly Brass Co. recently was incorporated and has taken over the Smith Granite Co.'s building, to which an addition will be built.

WOONSOCKET, R. I.—The Woonsocket Wagon Mfg. Co. has let the contract for a 2-story, 75 x 200-foot, with a 3-story, 60 x 60-foot ell, factory addition to cost $25,000.

BERLIN, CONN.—For the purpose of manufacturing metal goods, the Mosel Mfg. Co. has purchased the plant of the Hartford Burial Case Co.

BRIDGEPORT, CONN.—The Coulter & McKenzie Machine Co. contemplates a 1-story machine shop.

BRIDGEPORT, CONN.—The Hawie Mfg. Co. contemplates a plant addition, 1-story, 40 x 160 feet.

BRIDGEPORT, CONN.—The Locomobile Co. of America has let a contract for a 2-story, 50 x 80-foot plant addition to cost $25,000.

BRIDGEPORT, CONN.—The Bridgeport Screw Co. contemplates a wire mill.

BRIDGEPORT, CONN.—The Miller Bros. Cutlery Co. will erect an addition.

BRIDGEPORT, CONN.—The Singer Mfg. Co. plans a forge shop, to cost $40,000.

BRIDGEPORT, CONN.—The Bridgeport Motor Truck Co. has been incorporated to make motor vehicles, parts, accessories, etc., with $500,000 capital by W. J. Buckley, P. S. Chapman and S. F. Primrose.

BRIDGEPORT, CONN.—The United Illuminating Co. will erect a power plant, with an initial development of 75,000 horsepower.

BRIDGEPORT, CONN.—Plans are being made for a 3-story, 40 x 142-foot factory for the American Specialty Co., metal stampings.

BRIDGEPORT, CONN.—The Crane Co. has awarded Stone & Webster a contract to erect a combined manufacturing and foundry building, here, to be 3-stories, 80 x 500 feet.

BRIDGEPORT, CONN.—The Connecticut Auto Accessory Co. has been incorporated to make automobile accessories with $200 000 capital by J. H. Solen, H. F. Blackwell and Jacob Massoth.

BRISTOL, CONN.—The G. H. Sessions & Sons Co., manufacturers of trunk hardware, have started work on two large additions.

HARTFORD, CONN.—The Goodyear Tire & Rubber Co. will build a $300,000 building.

HARTFORD, CONN.—The Ainslee Machine Co. has been incorporated for $100,000 to manufacture machines and firearms.

HARTFORD, CONN.—The Lucia Mfg. Co., Inc., has been incorporated with $50,000 capital to manufacture automobile accessories.

HARTFORD, CONN.—The Hartford Special Machinery Co. contemplates a plant, one story, 60 x 200 feet, to cost $30,000.

HARTFORD, CONN.—Approximately 20,000 square feet of floor space will be added to the plant of the Whitlock Coil Pipe Co., at an estimated cost of $50,000.

HARTFORD, CONN.—The Fenn Mfg. Co. has been incorporated with $100,000 capital by W. L. Fenn, W. A. Fenn and S. L. Livingstone, and will manufacture machinery.

HARTFORD, CONN.—The Colt Patent Firearms Mfg. Co., through its president, denies the recent statement that the company's plant in Meriden, Conn., has been sold to the General Motors Co.

HARTFORD, CONN.—The Reising Arms Co. has been incorporatd to manufacture firearms. The authorized capital is $100,000. The incorporators are William Ainslie, John S. Woodard and Alan K. Smith.

KENSINGTON, CONN.—The Mosel Mfg. Co. has been incorporated with $1,000,000 capital to manufacture mill supplies, by H. H. Wessel, F. J. Moran and B. F. Gaffney.

MERIDEN, CONN.—The Meriden Electric Light Co. will build a plant.

MIDDLETOWN, CONN.—The Elder Mfg. Co. has been incorporated with $25,000 capital to make gold and silver articles, by Charles S. Elder, Alfred M. Butts and John L. Ullberg. The company has leased the old plant of the Wilcox Lock Co.

NAUGATUCK, CONN.—Plans are being prepared for a 4-story, 40 x 80-foot extension to the Naugatuck Electric Co.

NEW BRITAIN, CONN.—The New Britain Machine Co. will build an addition to its plant, 32 x 320 feet, to cost $40,000.

NEW HAVEN CONN.—The Arnold Electric Tool Co. is reported planning to increase its capital to finance plant extensions.

NEW HAVEN, CONN.—The William Scholl Horn Co., manufacturers of hardware and cutlery, will build a factory addition, 4-stories, 41 x 131 feet.

NEW HAVEN, CONN.—The Wireless Bell Mfg. Co. has been incorporated with $10,000 capital, by Maurice Serachausky, Louis M. Rudman and Benjamin F. Goldman.

WATERBURY, CONN.—A. C. Campbell & Co. have let the contract for a 4-story, 34 x 100-foot and a 2-story, 34 x 140-foot with a 50 x 60-foot ell, plant.

WESTBROOK, CONN.—The Holbrook Co. has been incorporated to do general contracting, engineering, etc., with $50,000 capital, by J. G. Holbrook, J. A. Holbrook, Chapman Holbrook and C. M. Brainard.

North Atlantic States

BATH, N. Y.—An addition to the municipal electric light and power plant here will be built at once.

BINGHAMTON, N. Y.—The I. G. Jones Supply Corp., engines, boilers and electrical machinery, has been incorporated with $75,000 capital, by I. G. and J. P. Jones and G. H. Winkler.

BINGHAMTON, N. Y.—Wilcox Bros., Inc., have been incorporated to manufacture engines, concrete mixers, etc., with $50,000 capital, by W. H. Wilcox, H. R. Wilcox, B. W. Wilcox and others.

BROOKLYN, N. Y.—The M. Vierengel Machine Co. has been incorporated with $10,000 capital, by M. F. and H. Vierengel, 1050 Greene avenue.

BROOKLYN, N. Y.—The Knight Can Co. has been incorporated with $5000 active capital, by C. E. Knight, A. R. Oelker and C. F. Bailey, 2226 Loring place.

BROOKLYN, N. Y.—The S. Frank Woodworking Co. recently was incorporated with $10,000 capital, by P. and M. M. and S. Frank, 133 Bainbridge street.

BROOKLYN, N. Y.—The Chimbo Wheel Corp. has been incorporated with $50,000 capital, by S. Astarsi, P. Ugaldea and C. Munroe, 130 Glen street.

BROOKLYN, N. Y.—The S. P. Ellsworth Mfg. Co., machinery, recently was incorporated with $15,000 capital, by M. W. and P. G. Morehouse and W. K. Bedell, 479 Greene avenue.

BROOKLYN, N. Y.—The Quarnstrom Automatic Reverse Machine & Mfg. Co. has been incorporated with $100,000 capital, by A. Quarnstrom, G. Boquist and H. Peterson, 11 East Fourth street.

BUFFALO.—The Buffalo Steel Car Co. plans a plant.

BUFFALO.—The American Radiator Co. will build an addition.

BUFFALO.—The Guilford Mfg. Co. will build a boiler room.

BUFFALO.—The Stewart Motor Machinery Co. will build a $10,000 addition.

BUFFALO.—W. A. Case & Sons Mfg. Co. will remodel property on Second street for a warehouse.

BUFFALO.—The Buffalo Porcelain Enamel Co. has let the contract for a $25,000 plant. Frederick H. Williams is manager.

BUFFALO.—The Auto Products Mfg. Co., 128 Erie street, contemplates a plant, one story, 60 x 100 feet, to cost $18,000.

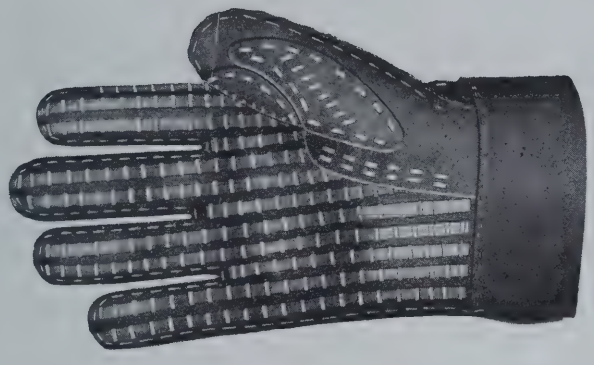
BUFFALO.—The Elliott Machine Co. recently was incorporated with $15,000 capital, by J. E. Cufkowski, W. Bush and D. Wilkinson.

BUFFALO.—The Buffalo Knife Co. has been incorporated with $25,000 capital, by H. A. Schroedel, E. S. Pease and W. R. Daniels.

EAST ORANGE, N. J.—The Motor Starter & Pump Co. recently was incorporated with $200,000 capital to manufacture starters, pumps, compressors, etc.

IRVINGTON, N. Y.—The Burnham Boiler Corp.

When the Job Drags



No. 604 Short Glove

A most serviceable glove for use where gauntlet gloves are not necessary. Reinforced with leather strips and steel ribbons. Steel sewed seams.

Price—per dozen pairs, $16.50



No. 678 Reversible Mitten

A short leather mitten, steel sewed, that can be worn on either hand. Two mittens for the price of one.

Price—per dozen pairs $9.00

It may not be the fault of the organization and frequently you can trace it down to some simple thing like a sore hand that handles the castings.

A sore hand gets good pay but it can't do a good day's work.

The meanest job of sand blasting, handling castings, scrap, etc., is made more comfortable and safe when Steel-Grip gloves are used.

Your workmen have to wear some kind of hand protection and the most economical kind is that which wears the longest and which gives most protection and comfort.

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has been incorporated with $1,000,000 capital, by H. L. Vanderbilt, C. H. Seifert and O. F. P. Korb, 1824 Wallace avenue.

NEW YORK.—Plans are reported contemplated by the Cunard Steamship Co. for a $20,000,000 terminal on the Jersey side of the Hudson river.

NEW YORK.—The Thompson Vehicle Spring Co. has been incorporated with $100,000 capital, by C. D. Ireland, W. H. Duval and J. S. Epstein, 2 Rector street.

NEW YORK.—The Hardened Copper Cutlery, Inc., has been incorporated with $175,000 capital, by R. S. Baker, F. H. Buttehorn and E. S. Hawley, 50 Vanderbilt avenue.

NEW YORK.—The Cyclops Engineering Corp., metal specialties, tools, etc., has been incorporated with $15,000 capital, by W. J. Cook, C. A. Brooks and F. P. Ward, 80 Pine street.

NEW YORK.—The W. M. Levett Corp., metals, tools and implements, has been incorporated with $105,000 capital, by W. M. Levett, J. W. Collins and L. E. Valcourt, 441 East Twenty-third street.

NEW YORK.—The V. & N. Lantern Co., Inc., has been incorporated with $50,000 capital to manufacture railroad lanterns, etc., by F. W. Winton, Weehawken, N. J.; J. Nicchbai, 256 Broadway, New York, and J. Manning, 259 East Fourth street, Brooklyn, N. Y.

NEW YORK.—The George A. Fuller Co., this city, has announced the purchase of a shipbuilding plant in Wilmington, N. C., which was built under an agency contract with the Emergency Fleet Corp. The Fuller company, however, will not assume control until after the government contract has been completed. The yard was built at an estimated cost of $3,500,000, and has been operated through the Carolina Shipbuilding Corp.

OGDENSBURG, N. Y.—The Hudson Brass Works has plans for a plant, 2-stories, 30 x 100 feet.

PATERSON, N. J.—The General Machine Co. has been incorporated with $25,000 capital, by I. B. Hebenstreit, Lillian Hebenstreit and Hugh Townsley.

PHILADELPHIA.—Approximately $1,000,000 will be expended by the Gomery, Schwartz Motor Car Co. The structure will be 137 x 446 feet.

PHILADELPHIA.—A general contract for a $45,000 factory building for the Franklin Process Co. has been awarded to the J. H. Bishop Co., Providence, R. I. The structure will be 75 x 103 feet.

ROCHESTER, N. Y.—The Bodine-Fogg, Inc., wood and iron finishing products, has been incorporated with $50,000 capital, by G. W. Bodine, D. B. Fogg and C. S. Bennett.

SEDGEWICK, N. Y.—The Sedgewick Machine Works has plans for a plant addition, 2-stories, 40 x 100 feet.

SYRACUSE, N. Y.—The Franklin Die Casting Corp. recently was incorporated with $25,000 active capital, by A. B. Pailca, H. C. Skinner and H. L. Franklin.

WHITEHALL, N. Y.—The Hooper Graphite Co. recently was incorporated with $250,000 capital, by F. C. Hooper, W. H. Hill and F. B. Richards, Glens Falls, N. Y.

BUTLER, PA.—The Pittsburgh-Hickson Bedstead Co., East Butler, has sold its plant to the Corona Cord Tire Co., of this city, which is making extensive improvements. T. W. Phillips Jr., is president of the Corona company.

CONNELLSVILLE, PA.—The Yough Electric Co. is having plans prepared for a power plant here.

ERIE, PA.—The Lakeside Forge Co. plans a forge shop addition, 1-story, 55 x 75 feet.

ERIE, PA.—The Erie Malleable Iron Works has a permit to erect a 4-story office building, 45 x 67 feet, to cost $45,000.

FRANKLIN, PA.—The foundry owned by Frank D. Lane, a building 40 x 50 feet, recently was damaged by fire. It will be rebuilt.

PITTSBURGH.—The Jones & Laughlin Steel Co. will build a pumping station.

PITTSBURGH.—The Star Bronze Foundry & Machine Co. has let the contract for a machine shop.

PHILADELPHIA.—A. F. Knipe has awarded the general contract for the erection of a crane runway and storage building to W. E. Hall. Approximately $22,700 will be expended.

READING, PA.—An increase in capital of $1,350,000, to cover costs of new improvements, principally additional equipment and power transmission lines, has been announced by the Metropolitan Edison Co.

SHARON, PA.—The National Malleable Castings Co. will build an addition 100 x 325 feet here.

YORK, PA.—The York Metal & Alloys Co. will build an addition.

EAST ORANGE, N. J.—The Motor Starter & Air Pump Co. has been incorporated with $200,000 capital, by Gordon E. Picking and M. Y. McKenzie.

IRVINGTON, N. J.—The Irvington Plating & Tool Co. recently was incorporated with $50,000 capital, by J. L. McKenna, Newark, N. J., Edward Roesken, Belleville, N. J., and J. L. Rafferty.

NEWARK, N. J.—Plans have been completed by the L. E. Waterman Co. for the first unit of a plant to cost more than $1,000,000. The unit will be eight stories. Each of the side wings will measure 80 x 240 feet, and will be connected by a building 60 x 240 feet.

TRENTON, N. J.—With a view to tripling its output, the Mercer Motors Co. plans to expend approximately $650,000.

BALTIMORE.—The American Spike Co. according to a report, plans a plant.

Central States Activity

BARTON, WIS.—The Stevenson Mfg. Co. expects to occupy its new plant about Feb. 1 and has placed orders for drill presses, lathes, forges and other equipment for manufacturing steel barn equipment.

BRILLION, WIS.—The village board of trustees will have plans made for a municipal water works, fire protection and sewerage system to be constructed during the coming year at an approximate cost of $75,000.

CLAYTON, WIS.—Articles of incorporation have been filed by the Joel Electric Co., Clayton, Polk county. The capital stock is $20,000 and the purpose to build and operate an electric light and power plant. Menus Johnson and F. J. Anderson are the promoters.

COLUMBUS, WIS.—The Standard Oil Co. has purchased a site, 48 x 150 feet, and will erect a warehouse.

FOND DU LAC, WIS.—The Northern Casket Co., maker of wood and metal coffins, will take bids for a 3-story factory addition, 100 x 100 feet.

FOX LAKE, WIS.—The Six Wheel Truck Co. has been incorporated with a capital of $60,000 to manufacture a combination motor truck and trailer. F. N. Pettegrew, H. M. Howard and W. C. O'Connell are the organizers.

GREEN BAY, WIS.—The Oneida Motor Truck Co. is laying foundations for the first of a series of shop extensions.

HARTFORD, WIS.—The Hartford Foundry Co. has been incorporated with $10,000 capital, by I. L. Bonniwell, R. LaPoint and others.

IOLA, WIS.—J. A. Rosholt will erect a 1-story garage and general machine repair works, 56 x 120 feet.

JANESVILLE, WIS.—The Samson Tractor Co. will build two foundries, 322 x 500 feet. F. D. Chase, Inc., 645 North Michigan avenue, Chicago, is engineer.

KENOSHA, WIS.—The Frost Mfg. Co., manufacturer of brass goods and general plumbing and steam heating supplies, has awarded contracts for two additions, each 66 x 76 feet, to its brass foundry and machine shop. New equipment is being purchased.

LA CROSSE, WIS.—The Iron Products Corp. has been chartered with $100,000 capital, by C. R. Pieper, O. M. Schlabach, Harry Dahl and A. J. Boberge. The company has purchased a site, on which it plans a foundry, 100 x 150 feet.

MELLEN, WIS.—A general machine shop and repair works has been opened here by John Lundwuist.

MILWAUKEE.—The Pelton Steel Co. is erecting an addition, 30 x 100 feet, to its electric steel foundry.

MILWAUKEE, WIS.—The Milwaukee Reliance Boiler Works, 1102 Thirty-second street, will build a 1-story plant, 70 x 180 feet. A. D. Koch, Wells building, is architect.

MILWAUKEE.—The Manufacturers Box Co., 130 Reservoir avenue, has let the contract for a 1-story factory, 100 x 300 feet. The company plans to spend $125,000 for the building and machinery. Frank L. Weyenberg is president.

MILWAUKEE.—The Manufacturers Foundry Co., Fifteenth and Oklahoma avenues, contemplates important enlargement to its gray iron and malleable shop during the coming year.

MILWAUKEE.—The Cadillac Motor Car Co., Detroit, has awarded the general contract for a branch assembling plant here, three stories, 150 x 250 feet, to cost $250,000.

MILWAUKEE.—The Seaman Body Corp., 480 Virginia street, has awarded contracts for a plant, to consist of four units, each 180 x 420 feet, and cost about $1,500,000.

MILWAUKEE.—The Northwestern Bridge & Iron Co. has the contract for building a 160-foot craneway extension and general alterations at the main works of the Nash Motor Co.

MILWAUKEE.—The Sterling Tool & Mfg. Co., capitalized at $25,000, has been chartered to manufacture tools and machinery by Harry R. Kuntz, Louis Wiener and E. G. Patek.

MILWAUKEE, WIS.—The Bankers' Automatic Alarm Corp., capitalized at $500,000, has been chartered to manufacture alarm systems by J. A. Baer, F. J. Jannings and L. B. Miller.

MILWAUKEE.—Klug & Smith, consulting engineers, Mack block, have the contract to construct a $75,000 car barn addition, 80 x 200 feet, for the Milwaukee Electric Railway & Light Co.

MILWAUKEE.—Articles of incorporation have been filed by the Precision Machine Co. The capital stock is $6000 and the objects to manufacture and deal in machinery, tools, fixtures and other metalworking equipment. The incorporators are Charles F. Hussey, August J. Raddatz and A. G. Schwefel, attorney.

OCONOMOWOC, WIS.—H. Kirk White, secretary, board of education, is taking bids until Jan. 15 for a $200,000 high school, which will include a complete manual training department.

OSHKOSH, WIS.—A 1-story machine shop addition, 30 x 240 feet, will be erected for the Wisconsin Parts Co. W. E. Rockwell is general manager.

RACINE, WIS.—The Harvey Spring & Forging Co. is having plans prepared for a manufacturing addition, part two stories, 100 x 200 feet.

SHEBOYGAN, WIS.—The Globe Foundry Co. will build a gray iron foundry 100 x 128 feet, a pattern shop and core building 70 x 150 feet, costing $100,000. G. F. Honold is president.

SHEBOYGAN, WIS.—Verhulst Bros. have the contract to build a $75,000 gray iron foundry, 100 x 128 feet, and an auxiliary building, 70 x 150 feet, for the Globe Metal Products Co.

TOMAH, WIS.—The Tomah Electric Co. intends to engage an engineer to outline plans for a new combination steam and water power light plant. Louis W. Barnes is manager.

WEST ALLIS, WIS.—The Avery Co., Peoria, Ill.,

is spending about $65,000 in erecting an addition to its engine works here. James Pinson is general manager.

WESTFIELD, WIS.—Architects Parkinson & Dockendorff, La Crosse, Wis., are preparing plans for a high school building estimated to cost $100,000. A manual training department will be included.

DETROIT.—The Burroughs Adding Machine Co. contemplates a 2-story plant.

DETROIT.—The Michigan Electric Plating Co., 110 South Antoine street, has plans for a plant, 1-story, 25 x 125 feet.

DETROIT.—The Monarch Foundry Co., 907 Greenwood avenue, will build a 1-story foundry 100 x 200 feet to cost $100,000.

CHICAGO.—The International Harvester Co. has plans for an extension, to cost $15,000.

CHICAGO.—The Pullman Co. has a permit to erect a plant extension at an estimated cost of $150,000.

CHICAGO.—The Advance Machine Co., 4645 Ravenswood avenue, has plans for a 2-story plant, to cost $10,000.

CHICAGO.—The Channel Chemical Co., 1419 Carroll avenue, will build a 4-story plant 150 x 300 feet, costing $400,000.

CHICAGO.—The Great Western Laundry Co., 2319 Madison avenue, contemplates a laundry and power house, to cost $200,000.

CHICAGO.—The Economy Fuse Mfg. Co., 328 West Kinzie street, is finishing plans for a plant, 1-story 130 x 264 feet, to cost $135,000.

CHICAGO.—The Continental Can Co., T. G. Cornwell president, 111 West Washington street, will build a 3-story plant, 114 x 125 feet, costing $200,000. S. Scott Joy, 2001 West 39th street, is architect.

HAVANA, ILL.—The E. J. List Mfg. Co., recently chartered with $35,000 capitalization, is building an addition and is seeking equipment for the manufacture of clutches and other devices.

ROCKFORD, ILL.—The Rockford Milling Machine Co. plans a plant addition, 1-story, 53 x 65 feet.

ANDERSON, IND.—The plant of the Barber Bed Spring Co. recently was damaged by fire. The loss has been estimated at $75,000.

EAST CHICAGO, IND.—The Lever Coil Spring Co., capitalized at $200,000, has been chartered by Richard T. Hamilton, Charles S. Rhoades and Clarence C. Smith.

INDIANAPOLIS.—The L. V. Zelander Mfg. Co. has been incorporated with $25,000 capital to manufacture electrical supplies. The directors are L. V. Zelander, R. A. Coombs and Elmer Kidwell.

INDIANAPOLIS.—The Multi-Aircraft & Motors Co., a Delaware corporation, capitalized at $3,000,000, has established headquarters here at 112 East Market street, and will manufacture airplanes, as soon as a plant is completed.

KOKOMO, IND.—The Instant Starter Co. recently was incorporated with $25,000 capital, by Raymond W. Nichols, M. W. Haynes and Charles G. Kerlin.

LOGANSPORT, IND.—The Logansport Body Works, capitalized at $200,000, has been chartered to manufacture automobile bodies by S. O. Coke, Edwin Ash and William O. Murdock.

RICHMOND, IND.—The Jenkins Vulcan Spring Co., T. B. Jenkins president, will build a one and 2-story plant, 75 x 400 feet. John W. Mueller, Leeds building, is architect.

TERRE HAUTE, IND.—The Standard Wheel Co. has been incorporated with $600,000 capital, by Carl D. Fischer, Emil J. Fischer and W. C. Clark.

AKRON, O.—The Paragon Electrical Mfg. Co. has been incorporated with $10,000 capital, by M. Moskovitz, S. Kail and others.

AKRON, O.—The Wildey Machine & Mfg. Co. recently was incorporated with $50,000 capital, by Carl A. Wildey, J. R. Hoffman and others.

CANTON, O.—A building at the plant of the United Alloy Steel Corp. recently was damaged by fire.

CANTON, O.—The State Iron & Metals Co. recently was incorporated with $60,000 capital, by Louis H. Kayen, David Levine and others.

CANTON, O.—The Federal Foundry Co. recently was incorporated with $25,000 capital, by Clarence M. Converse, I. A. Converse, Frank A. Peter, A. M. Peter and Russell J. Burt.

CINCINNATI.—The Kind Machine Tool Co. has awarded a contract for a plant addition, to cost $50,000.

CINCINNATI.—The Langhaar Ball Bearing Co. has been incorporated with $100,000 capital, by R. E. Simonds Jr., M. J. McCauley and others.

CLEVELAND.—The Cuyahoga Spring Co. is reported planning a building at an estimated cost of $57,000.

CLEVELAND.—The Bender Body Co. is said to be planning a foundry, 133 x 350 feet, to cost $50,000.

CLEVELAND.—The Economy Appliance Co. has been incorporated with $30,000 capital, by Samuel I. Rice, Olin J. Fulton and others.

CLEVELAND.—The Morse-Rogers Steel Co. recently was incorporated with $100,000 capital, by F. H. Morse, H. V. Morse, 1881 East Eighty-seventh street, and others.

CLEVELAND.—The Eaton Axle Co. has been incorporated with $3,000,000 capital, by J. O. Eaton, S. H. Tolles and others, and will build a plant for the manufacture of axles, etc.

COLUMBUS, O.—The Austin Western Road Machinery Co., Chicago, has leased a building here which will be used for assembling purposes. The company is said to have also taken an option on a 10-acre tract, on which it plans to erect a plant in the future.

CUYAHOGA FALLS, O.—The Bridgewater Machine Co., Akron, O., is said to have purchased a tract here, on which it contemplates a plant.

ELYRIA, O.—The Steel Products Co. is expected to start work shortly on a plant.

HAMILTON, O.—The plant of the Niles Tool Works recently was damaged by fire.

PAINESVILLE, O.—The Lake Erie Foundry Co. has been incorporated with $50,000 capital, by H. K. Wade, L. H. De Forest, M. C. Price, Fred M. Wyss and C. A. Newport.

TOLEDO, O.—The Fast Feed Drill & Tool Corp. is reported planning extensive plant additions.

TOLEDO, O.—The plant of the Milburn Wagon Co. recently was damaged by fire. The loss has been estimated at $900,000. The damaged part of the plant includes the finishing and assembling departments and the company's offices.

ZANESVILLE, O.—The Federal Radiator Co. recently was incorporated with $525,000 capital.

GERMANTOWN, KY.—The Mason-Bracken Electric Co. has been organized by H. L. Corlis and others, and will operate an electric light and power plant.

CHARLESTON, W. VA.—The American Armature Engineering Co. has been incorporated with $25,000 capital, by G. E. Stupalsky, A. A. Grant and A. D. Knight.

SISTERVILLE, W. VA.—The Sisterville Tank & Boiler Works plans a building to be devoted to the manufacture of steel derricks, etc.

TUCKER, W. VA.—The Dawson-Connellsville Collieries Co. will spend $75,000 for improvements to its mine and equipment here.

Throughout the West

DULUTH.—P. G. Phillips, commissioner of public utilities, is having plans prepared for a new building for the waterworks and electric light plants.

MINNEAPOLIS.—The Minneapolis Heat Regulator Co. contemplates a plant addition, two stories, 61 x 127 feet, to cost $100,000.

BRITT, IOWA.—The Hawkeye Woven Wire Fence Co. has completed its organization and is now preparing plans for its plant. Officers of the company are: President, J. Q. A. McClurg; vice president, M. G. O'Brien and secretary, V. W. Erwin.

MASON CITY, IOWA.—The Mason City Foundry & Machine Co., capitalized at $30,000, has been chartered by L. G. Dreyer and R. E. Wilcox.

JOPLIN, MO.—Waterworks improvements costing $1,500,000 are being planned including pumping station, reservoir, settling tanks and mains.

KANSAS CITY, MO.—The Kansas City Railways Co. plans a power plant, to cost $27,000.

ST. LOUIS.—The Schlueter Bros. Mfg. Co., tinware, plans a 2-story building.

ST. LOUIS.—The Standard Stamping Co. contemplates a machine shop, 1-story, 24 x 41 feet.

ST. LOUIS.—The Wilson Stove Co. is having plans drawn for a plant, two stories, 100 x 120 feet.

ST. LOUIS.—The Emerson Electric Mfg. Co. is selling $1,000,000 worth of preferred stock, the proceeds to be used for a factory building.

ST. LOUIS.—The Whitney Milling Machine Co., Hugh Whitney, Webster Groves, Mo., president, will build a plant for the manufacture of tools at a cost of $100,000.

ST. LOUIS.—The Liberty Auto Lock Co. has been organized with offices at 2209 Pine street, by E. W. Link, John L. Malone and others, to engage in the manufacture of locks. The company plans a plant to include a foundry.

FT. SMITH, ARK.—The Ft. Smith Light & Traction Co. plans a plant addition to cost $250,000.

LITTLE ROCK, ARK.—The Fones Bros. Hardware Co. plans a plant, five stories, 130 x 200 feet, to cost $300,000.

TEXARKANA, ARK.—The Chandler Welding & Machine Co., capitalized at $25,000, has been chartered to enlarge and re-equip the small plant it now operates. M. B. Chandler is president.

DALLAS, TEX.—Sutton, Steele & Sutton, Inc., manufacturer of mining and oil well machinery, will build an addition costing about $200,000, including a structure 40 x 100 feet, a 50 x 80 foot building and smaller units.

EASTLAND, TEX.—The Howard Tools Works has been incorporated with $50,000 capital, by D. M. Howard, P. S. Wolfe and H. L. Durlin.

FT. WORTH, TEX.—The Boicourt Co., 1001 Railroad avenue, is installing an iron foundry. J. L. Boicourt controls the company.

FT. WORTH, TEX.—The Ft. Worth Drilling Tool Co., capitalized at $400,000, recently chartered to manufacture tools and oil well equipment, has started the first unit which includes a machine shop 90 x 120 feet, a forge shop, 50 x 122 feet, and other structures.

McGREGOR, TEX.—The Texa Implement & Mfg. Co., capitalized at $200,000, has been chartered to manufacture implements and tools by G. H. Caulfield, M. A. Jones and J. F. Cavitt.

RANGER, TEX.—The Crescent Sheet Metal Co. has been incorporated with $10,000 capital, by F. E. Skinner, W. E. Skinner and A. M. Fitzgerald.

CLEVELAND, OKLA.—The city of Cleveland has voted $40,000 in bonds for a gas plant and mains. D. B. Heller is clerk.

TAHLEQUAH, OKLA.—This city will install an

(Concluded on Page 1746)

Iron and Steel Prices

Corrected to Tuesday Noon

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 iron	$6.45
Mesabi Bessemer, 55 iron	6.20
Old range non-Bess., 51½ iron	5.70
Mesabi non-Bes., 51½ iron	5.55

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 60c per unit, nominal.

Indian, 45 to 50 per cent, c.i.f. Atlantic ports, 60c per unit, nominal.

Warehouse Prices

Steel bars, Boston	4.00c
Steel bars, Chicago	3.37c
Steel bars, Cleveland	3.52c
Steel bars, Detroit	3.33c
Steel bars, Philadelphia	3.64c
Steel bars, New York	3.37c to 3.62c
Steel bars, St. Louis	3.44c
Steel bars, Cincinnati	3.58c
Steel bars, St. Paul	3.595c
Steel bars, Buffalo	3.365c
Iron bars, Boston	4.50c
Iron bars, Buffalo	3.95c
Iron bars, Chicago	3.37c
Iron bars, Detroit	3.33c
Iron bars, St. Louis	3.44c
Iron bars, Cincinnati	3.58c
Iron bars, Philadelphia	3.60c
Iron bars, New York	4.00c
Shapes, Chicago	3.47c
Shapes, Detroit	3.43c
Shapes, Boston	4.00c
Shapes, St. Louis	3.54c
Shapes, St. Paul	3.695c
Shapes, New York	3.47c
Shapes, Cleveland	3.62c
Shapes, Philadelphia	3.70c
Shapes, Buffalo	3.55c
Shapes, Cincinnati	3.68c
Plates, Buffalo	3.665c
Plates, Chicago	3.67c
Plates, Detroit	3.63c
Plates, Boston	3.95c
Plates, St. Louis	3.74c
Plates, St. Paul	3.895c
Plates, New York	3.67c
Plates, Cleveland	3.82c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.80c
No. 10 blue anl. sheets, N. Y.	5.07c to 6.00c
No. 10 blue anl. sheets, Phila.	5.25c
No. 10 blue anl. sheets, Chicago	4.57c
No. 10 blue anl. sheets, Cleveland	4.72c to 4.97c
No. 10 blue anl. sheets, Boston	5.30c
No. 10 blue anl. sheets, Buffalo	4.565c
No. 10 blue anl. sheets, St. L.	4.64c
No. 10 blue anl. sheets, Cincinnati	4.78c
No. 10 blue anl. sheets, St. Paul	4.79c
No. 10 blue anl. sheets, Detroit	4.53c
No. 28 black sheets, Chicago	5.62c
No. 28 black sheets, New York	6.25c to 7.50c
No. 28 black sheets, Phila.	6.50c
No. 28 black sheets, Cleveland	5.52c to 5.77c
No. 28 black sheets, Boston	7.65c
No. 28 black sheets, Cincinnati	4.93c
No. 28 black sheets, Detroit	5.58c
No. 28 black sheets, St. Louis	5.69c
No. 28 black sheets, St. Paul	5.845c
No. 28 black sheets, Buffalo	5.865c
No. 28 galv. sheets, Chicago	6.97c
No. 28 galv. sheets, New York	7.50 to 9.50c
No. 28 galv. sheets, Phila.	7.50c
No. 28 galv. sheets, Boston	9.00c
No. 28 galv. sheets, Cleveland	6.87c to 7.12c
No. 28 galv. sheets, Cincinnati	6.28c
No. 28 galv. sheets, Detroit	6.93c
No. 28 galv. sheets, Buffalo	7.215c
No. 28 galv. sheets, St. Louis	7.04c
Bands, New York	4.22c
Bands, Boston	5.20c
Bands, Detroit	4.03c
Bands, Buffalo	4.065c
Hoops, Buffalo	4.065c
Hoops, Boston	5.45c
Hoops, New York	4.47c
Hoops, Detroit	4.03c
Cold rolled shafting, Buffalo	4.85c
Cold rolled shafting, New York	5.00c
Cold rolled flats, squares and hexagons, New York	5.50c

Sheet Schedule—(Black)

Differentials for gage, per 100 pounds.

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Galvanized and Long Terne

Differentials for gage, per 100 pounds.

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	—15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inc., 24, 26, 28, 30 and 36 in. wide by 72, 84, 96 and 120 in. long. Extras for width and length to be added.

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70

Buffalo to:

Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90

Virginia furnaces to:

Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40

Birmingham, Ala., to:

Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40

Chicago to:

St. Louis	4.25
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90

Ironton and Jackson, O., to:

Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	24.5 cents
Boston	30.0 cents
Buffalo	21.5 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	1.25
Pacific coats (tin plate)	1.25

Blue Annealed

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Steel Pipe

Pittsburgh basing discounts to jobbers in carloads

STANDARD WEIGHT

Butt Weld

	Black	Galv.
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44

Lap Weld

2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	..
15-inch	38½	..

PLUGGED AND REAMED

Butt Weld

1 to 3-inch	55½	42
2-inch	48½	36

Lap Weld

2½ to 6-inch	51½	39

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44

Lap Weld

2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28

DOUBLE EXTRA STRONG PLAIN

Butt Weld

½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37

Lap Weld

2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
⅛-inch	1	+14
¼-inch	24½	+ 2½
⅜-inch	25½	+ 1½
½-inch	29½	11½
¾ to 1½-inch	34½	18½

Lap Weld

2-inch	28½	14½
2½ to 6-inch	30½	17½
7 to 12-inch	27½	14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld

⅛, ¼-inch	+21	+36
⅜-inch	23½	6½
½-inch	28½	15½
¾ to 1½-inch	34½	19½

Lapp Weld

2-inch	29½	16½
2½ to 4-inch	31½	19½
4½ to 6-inch	30½	18½
7 and 8-inch	22½	10½
9 and 12-inch	17½	5½

DOUBLE EXTRA STRONG PLAIN ENDS

Butt Weld

	Balck	Galv.
½-inch	15½	3½
¾ to 1½-inch	20½	8½

Lap Weld

2-inch	16½	4½
2½ to 4-inch	18½	9½

Lapweld Boiler Tubes

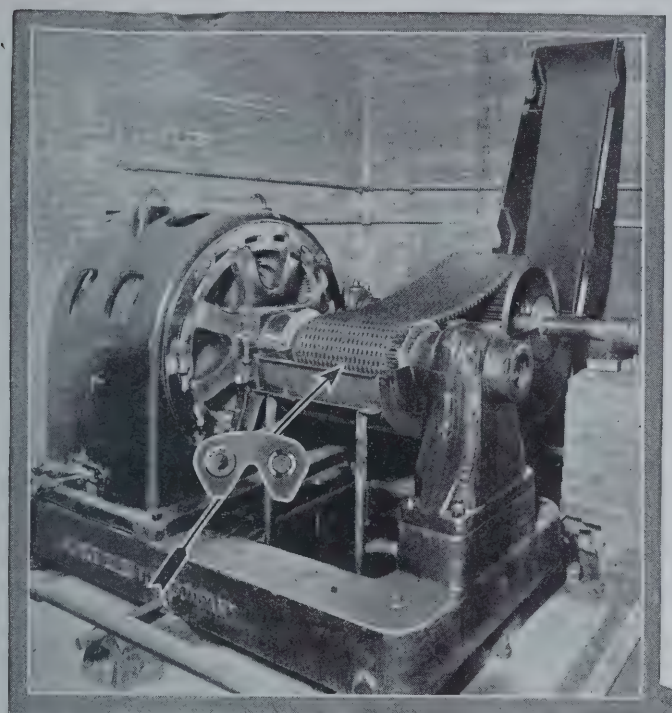
Discounts off manufacturers' standard list, in carloads; less carloads, 4 points less.

Steel

1¾ and 2-inch	19
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

Iron

1¾-inch	+20
2 and 2¼-inch	+10
2½ and 2¾-inch	+ 1
3 and 3¼-inch	— 1½
3½ to 4½-inch	—16



Why Link-Belt Silent Chain is the Correct Drive

COULD any other form of power transmission operate with efficiency on the short centers shown in these illustrations? This drive like hundreds of others, is operating almost continuously—it has never been shut down for repairs. The plant in which it is installed depends upon its constant daily performance.

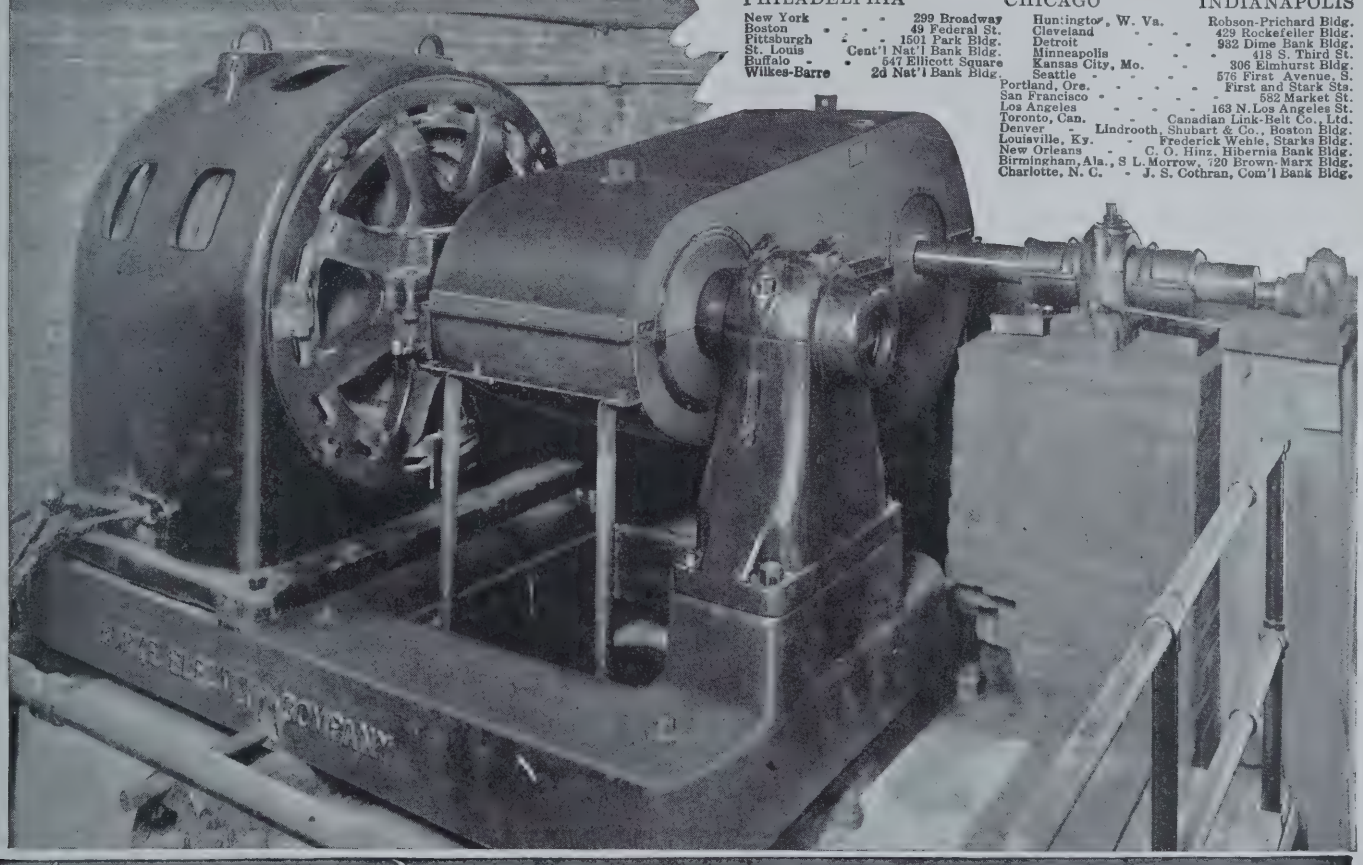
Note the drive is enclosed in the patented Link-Belt oil-tight, dust-proof casing. Lubrication automatically reaches the chain. Safety to employees is assured. And the drive is, like all Link-Belt Silent Chain Drives, 98.2% efficient.

Let us show you where you can use an efficient Link-Belt Silent Chain Drive in your plant.

LINK-BELT COMPANY

384

PHILADELPHIA		CHICAGO		INDIANAPOLIS
New York	299 Broadway	Huntington, W. Va.		Robson-Prichard Bldg.
Boston	49 Federal St.	Cleveland	429 Rockefeller Bldg.	
Pittsburgh	1501 Park Bldg.	Detroit	932 Dime Bank Bldg.	
St. Louis	Cent'l Nat'l Bank Bldg.	Minneapolis	418 S. Third St.	
Buffalo	547 Ellicott Square	Kansas City, Mo.	306 Elmhurst Bldg.	
Wilkes-Barre	2d Nat'l Bank Bldg.	Seattle	576 First Avenue, S.	
		Portland, Ore.	First and Stark Sts.	
		San Francisco	582 Market St.	
		Los Angeles	163 N. Los Angeles St.	
		Toronto, Can.	Canadian Link-Belt Co., Ltd.	
		Denver	Lindrooth, Shubart & Co., Boston Bldg.	
		Louisville, Ky.	Frederick Wehle, Starks Bldg.	
		New Orleans	C. O. Hinz, Hibernia Bank Bldg.	
		Birmingham, Ala.,	S. L. Morrow, 720 Brown-Marx Bldg.	
		Charlotte, N. C.	J. S. Cothran, Com'l Bank Bldg.	



We Also Make

- ☐ Elevators and Conveyors
- ☐ Link-Belt and Sprockets
- ☐ Silent Chain Drives
- ☐ Truck and Tractor Chains
- ☐ Electric Hoists
- ☐ Locomotive Cranes
- ☐ Portable Loaders
- ☐ Coal and Ashes Systems
- ☐ Coal Pockets

Write for Catalogs
Place X in Square

LINK-BELT
SILENT CHAIN DRIVES

Iron and Steel Scrap Prices

Corrected to Tuesday Noon

Steel Works Scrap

Gross Tons Delivered to Consumer

HEAVY MELTING STEEL

Pittsburgh	$25.00
Chicago	22.50 to 22.75
Eastern Pennsylvania	22.00 to 24.00
Cleveland	21.25 to 22.00
St. Louis	24.00 to 24.50
Buffalo	23.00 to 23.50
New York (dealers)	18.50 to 19.00
Cincinnati	19.50 to 20.00
Birmingham	20.00 to 21.00
Valleys	23.00 to 23.50
Boston (dealers)	17.50 to 18.00

BUNDLED SHEETS

Pittsburgh	17.50 to 18.00
Eastern Pennsylvania	19.00 to 20.00
Cleveland	14.00 to 14.50
Buffalo	16.50 to 17.00
Cincinnati	14.00 to 15.00
St. Louis	24.00 to 24.50

STEEL RAILS, SHORT

Chicago	$26.00 to 26.50
Boston (dealers)	15.50 to 16.00
Cleveland	20.50 to 21.00
St. Louis	24.50 to 25.00
Birmingham	21.00 to 22.00
Cincinnati	14.50 to 15.00
Eastern Pennsylvania	22.50 to 23.00

STOVE PLATE

Pittsburgh	$23.00 to 24.00
Chicago	29.50 to 30.00
Eastern Pennsylvania	22.50 to 23.50
Cleveland	25.50 to 26.00
St. Louis	29.00 to 29.50
Buffalo	24.00 to 24.50
New York	20.50 to 21.00
Cincinnati	19.00 to 20.00
Birmingham	22.00 to 23.00
Boston	21.00 to 21.50

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops	$30.00 to 31.00
Chicago, billet and bloom crops	24.00 to 25.00
Eastern Penn. (guaranteed)	27.00 to 29.00
Buffalo	27.00 to 28.00

SHOVELING STEEL

Chicago	$22.00 to 22.25
St. Louis	22.00 to 22.50

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$25.50 to 26.00
Chicago	25.00 to 25.50
St. Louis	26.00 to 26.50

BALED SHEETS

Pittsburgh	21.00 to 21.50
Chicago	16.00 to 16.50

FROGS, SWITCHES, GUARDS

Chicago	$22.50 to 22.75
St. Louis	25.00 to 25.50
Eastern Pennsylvania	22.00 to 24.00

BOILER PLATE, CUT

Chicago, No. 1	$19.00 to 19.50
St. Louis	17.00 to 17.50

ANGLE BARS—STEEL

Chicago	$24.50 to 25.00
St. Louis	27.00 to 27.50

Iron Mill Scrap

Gross Tons Delivered to Consumer

RAILROAD WROUGHT

Pittsburgh, No. 1	$27.00 to 28.00
Pittsburgh, No. 2	25.00
Chicago, No. 1	27.00 to 28.00
Chicago, No. 2	24.00 to 24.50
Eastern Pennsylvania, No. 1	30.00 to 32.00
Cleveland, No. 1	24.50 to 25.00
St. Louis, No. 1	25.75 to 26.25
St. Louis, No. 2	24.00 to 24.50
Buffalo	28.00 to 29.00
Cincinnati, No. 1	20.00 net
Birmingham, No. 1	20.00 to 21.00
New York, No. 1 (dealers)	27.50 to 28.00
Boston (dealers)	25.50 to 26.00

WROUGHT PIPE

Eastern Pennsylvania	$22.00 to 23.00
Eastern Pennsylvania, ungraded	17.00 to 18.00
Buffalo	19.00 to 20.00
New York (dealers)	18.50 to 19.00
Boston (dealers)	18.00 to 18.50

YARD WROUGHT

Eastern Pennsylvania, No. 1	$26.00 to 27.00

CITY WROUGHT

New York, long (dealers)	21.50 to 22.50

BUSHELING

Chicago, No. 1	$22.00 to 22.50
Chicago, No. 2	16.50 to 17.00
Cleveland, No. 1	20.00 to 20.50
Cleveland, No. 2	15.00 to 15.50
St. Louis, No. 1	23.50 to 24.00
Buffalo, No. 1	20.00 to 21.00
Cincinnati, No. 1	18.00 to 18.50
Eastern Pennsylvania, No. 1	20.00 to 21.00

MACHINE SHOP TURNINGS

Pittsburgh	$15.00 to 16.00
Chicago	12.00 to 12.50
Eastern Pennsylvania	17.00 to 18.00
Eastern Pennsylvania (blast furn.)	18.00 to 18.50
Eastern Pennsylvania (chemical)	25.00 to 26.00
Cleveland	12.75 to 13.00
Buffalo	14.50 to 15.00
New York (dealers)	14.50 to 15.00
St. Louis	15.00 to 15.50
Cincinnati	11.00 to 12.00
Birmingham	12.00 to 13.00
Valleys	14.50 to 14.75
Boston (dealers)	13.00 to 13.50
Boston (blast furnace) (dealers)	11.50 to 12.00

CAST IRON BORINGS

Pittsburgh	$18.00 to 18.50
Chicago	14.50 to 15.00
Eastern Pennsylvania	22.00 to 23.00
Eastern Pennsylvania (chemical)	25.00 to 26.00
Cleveland	15.50 to 16.00
St. Louis	13.00 to 13.50
Buffalo	18.00 to 18.50
New York (dealers' price)	16.50 to 17.00
Cincinnati	12.00 to 12.50
Birmingham	12.00 to 13.00
Valleys	17.00 to 17.50
Boston (dealers)	18.00 to 18.50
Boston (blast furnace) (dealers)	11.50 to 12.00

IRON AXLES

Pittsburgh	$44.00 to 45.00
Chicago	39.50 to 40.50
Eastern Pennsylvania	38.00 to 40.00
Cleveland	35.00 to 36.00
St. Louis	38.50 to 39.00
Buffalo	35.00
Cincinnati	29.50 to 30.00
Birmingham	29.00 to 30.00

IRON RAILS

Chicago	29.50 to 30.00
Cleveland	27.00 to 28.00
St. Louis	27.00 to 27.50
Buffalo	28.00 to 29.00
Cincinnati	25.00 to 25.50

PIPES AND FLUES

Chicago	20.00 to 20.50
Cleveland	17.50 to 18.00
St. Louis	20.00 to 20.50
Cincinnati	15.00 to 16.00

GRATE BARS

Chicago	30.00 to 30.50
Cleveland	26.00 to 27.00
Buffalo	22.50 to 23.00
New York	19.50 to 20.00
Eastern Pennsylvania	25.00 to 26.00

FORGE FLASHINGS

Cleveland, large	$16.75 to 17.25
Cleveland, small	18.00 to 18.50
Chicago, small	17.50 to 18.00
Boston (dealers)	14.00 to 14.50

FORGE SCRAP

Chicago	24.00 to 24.50
Eastern Pennsylvania, No. 1	18.00 to 19.00
Boston	14.00 to 14.50

ARCH BARS AND TRANSOMS

Chicago	33.50 to 34.00
St. Louis	32.00 to 32.50

ANGLE BARS—IRON

Chicago	$31.00 to 31.50
St. Louis	26.00 to 26.50

Iron and Steel Works Scrap

Gross Tons Delivered to Consumer

AXLE TURNINGS

Pittsburgh	$19.00 to 19.50
Eastern Pennsylvania	19.00 to 20.00
Boston (dealers)	15.00 to 15.50
St. Louis	17.50 to 18.00
Cleveland	19.00 to 19.50
Buffalo	19.50 to 20.00
Chicago	18.50 to 19.00

STEEL CAR AXLES

Pittsburgh	$34.00 to 35.00
Eastern Pennsylvania	35.00 to 36.00
Cleveland	34.00 to 35.00
St. Louis	34.50 to 35.00
Buffalo	35.00
Chicago	33.50 to 34.50
New York (dealers)	34.00 to 35.00
Birmingham	28.00 to 29.00
Boston (dealers)	27.00 to 28.00

SHAFTING

Eastern Pennsylvania	$34.00 to 36.00
St. Louis	32.00 to 32.50
New York (dealers)	27.00 to 28.00
Chicago	30.00 to 30.50

Iron Foundry Scrap

Gross Tons Delivered to Consumer

CAR WHEELS

Pittsburgh, iron	$31.00 to 32.00
Pittsburgh, steel	25.50 to 26.00
Chicago, iron	31.50 to 32.00
Eastern Pennsylvania, iron	31.00 to 33.00
Cleveland, iron	29.00 to 30.00
St. Louis, iron	28.50 to 29.00
Buffalo, iron	32.00 to 33.00
Birmingham, iron	26.00 to 27.00
Birmingham, tram car	26.00 to 27.00
Boston	26.00 to 27.00
Cincinnati	22.00 to 22.50

NO. 1 CAST SCRAP

Pittsburgh, cupola	$30.00 to 31.00
Chicago, cupola	36.50 to 37.00
Eastern Pennsylvania, cupola	32.00 to 34.00
Cleveland, cupola	30.00 to 30.50
New York, cupola (dealers)	29.00 to 30.00
Cincinnati, No. 1, cupola	25.00 to 26.00
Birmingham, cupola	26.00 to 27.00
St. Louis, railroad	32.30 to 33.00
St. Louis, agricultural	32.50 to 33.00
Buffalo	30.00 to 31.00
Boston	34.00 to 35.00
Valleys	30.00 to 31.00

HEAVY CAST

New York (dealers)	27.00 to 28.00
Buffalo	25.00 to 26.00
Pittsburgh	26.00 to 27.00
Cleveland	23.00 to 24.00
Boston	28.00 to 28.50

MALLEABLE

Pittsburgh, railroad	$25.00 to 26.00
Pittsburgh, agricultural	23.00 to 24.00
Chicago, railroad	29.00 to 30.00
Chicago, agricultural	29.50 to 30.00
Eastern Pennsylvania, railroad	25.00 to 27.00
Cleveland, railroad	26.50 to 27.50
Cleveland, agricultural	21.00 to 22.00
St. Louis, railroad	26.00 to 26.50
St. Louis, agricultural	26.00 to 26.50
Cincinnati, railroad	20.00 to 21.00
Cincinnati, agricultural	20.00 to 21.00
Boston, railroad	23.00 to 24.00
Buffalo	24.00 to 25.00

Miscellaneous Scrap

Gross Tons Delivered to Consumer

REROLLING RAILS
5 feet and over

Pittsburgh	$30.00 to 31.00
Chicago	32.00 to 32.50
Eastern Pennsylvania	33.00 to 35.00
Cleveland	30.00 to 31.00
St. Louis	32.00 to 32.50
Birmingham	26.00 to 27.00
Boston (dealers)	26.00 to 27.00

LOCOMOTIVE TIRES

Chicago	24.00 to 25.00
St. Louis	23.00 to 23.50

BOILER PUNCHINGS

Chicago	24.50 to 25.00
Eastern Pennsylvania	27.00 to 28.00

Christmas Greetings

We wish to extend to our friends all good wishes of the season, and hope that you will enjoy health, happiness and prosperity during the coming year.

S-ee us.
C-oncerning Your
R-equirements
A-nd our
P-rices

MILLCO
SERVICE

S-ell
C-arloads
R-ight
A-nd be
P-leased

The James S. Miller Company
360 McCormick Bldg — Chicago.

(*Concluded from Page* 1741)

electric light and power plant at an estimated cost of $100,000.

WYNONA, OKLA.—The Wynona Light, Power & Water Co. has been incorporated with $50,000 capital, by Frank Watson, William Watson and F. M. Overless.

SCOTLAND, S. DAK.—The L. & K. Mfg. Co. has been incorporated to manufacture metal fence posts with $50,000 capital, by L. L. Spencer, J. R. Wilson and H. H. Kesler.

HELENA, MONT.—The Basin Power & Smelting Co. has been incorporated with $8,000,000 capital.

IDAHO FALLS, IDAHO.—A special election will be held soon on issuing $500,000 in bonds for a filtration plant.

Business in Canada

NOKOMIS, SASK.—The council is making arrangements and is receiving quotations on equipment for an electric lighting plant to cost $21,000.

BROWNSBURG, QUE.—The Dominion Cartridge Co., 120 St. James street, Montreal, has let the general contract for a factory here to cost $50,000.

CHICOUTIMI, QUE.—Tremblay & Dufour, Ltd., have been incorporated to manufacture tools, etc., with $50,000 capital, by Ernest Roy, Romeo Langlais, Armand Lavergne and others.

HULL, QUE.—The Eastern Canada Motor Truck Co. has let the general contract for a plant here.

LACHINE, QUE.—The Dominion Bridge Co. is having plans prepared for a foundry here. This plant will be constructed and used in connection with the company's new undertaking, the manufacture of paper mill machinery and turbo machinery.

MONTREAL, QUE.—The McClary Mfg. Co., manufacturer of stoves and furnaces, is having plans prepared for a 4-story extension.

MONTREAL, QUE.—The United Shoe Machinery Co., 1010 Bennett avenue, has awarded contracts in connection with a manufacturing building to cost $44,000.

MONTREAL, QUE.—The Dominion Engineering & Machinery Co., Ltd., has been incorporated to manufacture machinery, with $3,000,000 capital, by L. H. Ballantyne, F. G. Bush and George R. Drennan.

MONTREAL, QUE.—The Scientific Experimenter, Ltd., has been incorporated to manufacture telegraph and telephone apparatus, with $100,000 capital, by Colville Sinclair, Shirley G. Dixon and Ralph E. Allan.

MONTREAL, QUE.—The Canadian Nathan, Ltd., has been incorporated to manufacture machinery, etc., with $100,000 capital, by Henry A. Burbidge, John R. Marshall, Arthur B. Turner and others, all of Hamilton, Ont.

MONTREAL, QUE.—Simmons, Ltd., has been incorporated to manufacture iron, steel, and brass products, beds, springs, etc., with $10,000,000 capital, by William S. Morlock, 85 Bay street; Sydney E. Wedd, 162 Jameson avenue; Roy B. Whitehead and others.

BRIDGEBURG, ONT.—The Reliance Fuse Co., of Canada, Ltd., is making arrangements for a plant here. A. W. Plumley, Mutual Life building, Buffalo, is interested.

CHATHAM, ONT.—The Chatham public utilities commission plans extension of local hyroelectric system to cost $90,000.

FORT MATCHEWAN, ONT.—A British syndicate has engaged Sutcliffe & Neelands, engineers, New Liskeard, Ont., to select a site and prepare plans for a power plant to cost $250,000.

GODERICH, ONT.—The Dominion Road Machinery Co. will build a plant addition to cost $15,000.

HAMILTON, ONT.—The Tallman Brass Co. has purchased 14 acres on Burlington street, as a site for plant extensions.

HAMILTON, ONT.—The MacPherson Wire Co., Ltd., has been incorporated by John A. MacPherson, George Carley, Henry Dunham and others, with $400,000 capital, to take over the plant and business now carried on under the name of the MacPherson Mfg. Co., Ltd., and to manufacture wire, tools, metal products, etc.

HAMILTON, ONT.—The B. Greening Wire Co., 55 Queen street north, has let the general contract for a manufacturing plant.

NIAGARA FALLS, ONT.—The Bissel Carpet Sweeper Co., Ltd., has been granted a license to carry on business in the province with $100,000 capital and has appointed Percy D. Weston its representative.

OTTAWA, ONT.—Fred Menagh, 101 Pintey street, has started work on a foundry to cost $60,000.

PALMERSTON, ONT.—The I. X. L. Mfg. Co., Ltd., has been incorporated to manufacture woodenware, metalware, dynamos, electrical equipment, machinery, etc., with $40,000 capital, by John Youngson, Charles Forrest, Robert G. Scott and others.

SARNIA, ONT.—The plant of the Covered Metal Corp. recently was damaged by fire. The loss has been estimated at $250,000.

ST. CATHARINES, ONT.—The Gear Products of Canada, Ltd., has been incorporated by George H. Allington and Harvey T. Harrison, William G. Tingle, 12 Laurier avenue, Toronto, Ont., and others, with $250,000 capital, to manufacture gears, cutters, axles, tools, etc.

TORONTO, ONT.—Soren Bros., 549 King street west, manufacturers of sheet metal products, etc., will call for bids shortly for a plant to cost $200,000.

TORONTO, ONT.—The Western Motors, Ltd., has been incorporated by Alfred W. Briggs, room 50, 33 Richmond street, Roy W. Lent and others, with $40,000 capital, to manufacture automobiles, etc.

TORONTO, ONT.—The Multiple Electric Products Co., Inc., has been granted a license to carry on business in the province in the manufacture of electrical machinery, appliances, etc., with $5000 capital and has appointed Albert E. Fleming, 10 Britannia avenue, its representative.

Business Changes Recently Announced

THE Worcester Machine Screw Co., Worcester, Mass., has dismantled its plant and is shipping the machinery to the Hartford, Conn., plant. Labor trouble is said to have hastened the departure of the company from Worcester. The company manufactured screws and specialties. A part of the building will be used now to carry a stock of parts for Worcester and the county trade.

* * *

The southern sales office of the Bucyrus Co., South Milwaukee, Wis., has been removed from New Orleans, La., to 212 Jefferson County bank building, Birmingham, Ala.

* * *

The Consolidated Steel Corp., 165 Broadway, New York, has opened a sales office at 1419-20 L. C. Smith building, Seattle, with Arthur H. Jones in charge.

* * *

The Western Structural & Machine Works, Peoria, Ill., has taken over the plant and business of the J. C. Armstrong Machine Co.

* * *

Avery & Saul, South Boston, Mass., sheet metals, have removed their headquarters to 297-299 Dorchester avenue, South Boston.

* * *

The Lebanon Machine Co., Lebanon, N. H., has disposed of its auger bit department to the Winchester Repeating Arms Co., New Haven, Conn., and it will be removed to that city. The company retains its machine shop and foundry.

* * *

A. Burlingame Co., engineers and machinists of Worcester, Mass., announce the removal of their offices to larger quarters at 149 Commercial street.

* * *

Nielson & Maxwell, Ltd., Glasgow, Scotland, iron and steel merchants, have established a branch office in this country at 136 Liberty street, New York City. James Gilchrist is in charge.

* * *

The Sharon Iron & Metal Co., of Sharon, has filed notice of change of its name to the Sharon-Warren Iron & Metal Co., of Sharon.

* * *

J. G. Eurengy & Co., have opened offices at 17 Battery place, New York City, to deal in iron and steel scrap.

* * *

The Walcott Lathe Co., Jackson, Mich., recently established a display room at 1316 Ontario street, Cleveland, with Frank H. Wheaton in charge.



"To Advance the Foundry Business"

Philadelphia Greets Foundrymen

BACK again in Philadelphia for the greatest of all its conventions and exhibitions—in the city where it was born 23 years ago—the American Foundrymen's association, thriving and alive with the busy spirit of the times bears evidence of the wisdom of co-operative organization.

Its success, measured in experience, the cumulative result of the exchange of knowledge, or translated in a monetary sense, is all that its founders and the pioneers of the casting industry might well have wished for it. Its prestige established, continuation now must be its watchword, continuation along the constructive and progressive lines which have placed it among the foremost trade organizations in the world, and which must make it a still more active force for the welfare of its members and the good of those whose interests are bound up with theirs.

A significant feature of the convention this year, will be the attendance of a number of visitors from abroad. The association's work and its exhibits are commanding the attention of some of the most prominent firms, foundrymen and metallurgists in European countries. Industrial America's interests are linked inseparably with those of other nations, and perhaps this quickened spirit and recognition of far-reaching relationship may foreshadow a still greater association, an international association to include the representative foundrymen of the world.



Thus time improves perspective. The declaration of dependence, that pledge of mutuality and helpfulness on the part of a small group of foundrymen in Philadelphia in 1896 was the foundation of an association which in 1919 has attained international fame, just as the principles of government enunciated in that city 143 years before now ring throughout the world.

Many of those identified with the organization of the association still are included among its membership. For those who have worked unstintingly "for the advancement of the foundry business" the twenty-fourth annual convention must be a source of great gratification.

The first convention was held in the Manufacturers' club, and there was no exhibit of foundry equipment. In 1916 in Cleveland 38,000 square feet of space was occupied by the exhibits; in 1917 in Boston, 44,000 square feet; in 1918 in Milwaukee, 42,000. And more than a month ago as much as 60,000 square feet of space had been reserved for the convention of 1919. Considered from the standpoint of exhibits, this represents a growth of nearly 33 per cent in one year! There is cause for congratulation.

But the big thought that must dominate the convention is progress, continued progress and a progress that counts the achievements of the past only as guide-posts to a greater future.

Quaker City, Association's Cradle

Men Prominent in the Formation of Philadelphia's Local Foundry Society Were Instrumental in Bringing About the First National Convention—Growth and Progress Throughout the Industry Have Followed

PHILADELPHIA'S history is intimately bound up with the birth and growth of the nation. The city is justly cherished as the birthplace and existing symbol of American independence. Established to champion the radical and then despised principle of religious freedom, the community continually has been a pioneer in social and industrial advancement. The first daily newspaper, the first circulating library, the first corporate bank, the first



JOHN A. PENTON — FRANCIS SCHUMANN — HOWARD EVANS

These officers of the American Foundrymen's association elected at the first convention in Philadelphia had been strongly instrumental in bringing about the formation of the national organization

National congress, President and National capital, and the immortal Declaration all are Philadelphia's own by history and association.

It is eminently fitting that Philadelphia, the cradle of independence, should have been the birthplace of the American Foundrymen's association. This statement sounds trite, but an analogy exists. Representatives from 13 aggrieved colonies of Great Britain chose Philadelphia in which to meet in council for protection. There they banded themselves together for mutual support and fathered certain principles which formed the groundwork of the nation. One hundred and twenty years later another group was gathered together, likewise for mutual help. These latter, representatives of the great casting industry, did not fear the oppression of a regal tyrant, nor the active opposition of any outside power. They were, however, bound by the shackles of adherence to age-old practice and held back by petty jealousy between individuals from the benefits of mutual co-operation and the interchange of ideas. Called together by Philadelphians, the foundrymen met in the first national convention in May, 1896, to seek means of correcting existing abuses and of advancing the industry through the interchange of ideas.

Six years before, in the later months of 1890, a few prominent foundrymen of Philadelphia had met together to discuss problems of common interest connected with the conduct of their business. These men for want of a better meeting place, congregated in a bar room. The idea which brought them together was the promotion of better fellowship among men in the same industry. Their underlying hope was that acquaintanceship would militate against price cutting, as it was ever easier to practice unfair business methods against strangers. These early meetings represented the first feeble stirring of the spirit which brought forth the American Foundrymen's association. The sessions were not always well attended for occasionally only the president and secretary met at the appointed time, but at every scheduled meeting "two or three were gathered together."

In July, 1891, the organization meeting of the Philadelphia Foundrymen's association was held in response to a call sent out by Howard Evans then with the J. Emerick Co. Among those found on the first official membership list are Harry Asbury; Thomas Glover, Morris Tasker & Co.; Harry Ruhland, Ruhland & Redman; Josiah Thompson, Josiah Thompson & Co.; A. C. Mott, Abram Cox Stove Co.; A. E. Outerbridge Jr., William Sellers & Co.; A. C. Pessano, Geo. V. Cresson Co.; Godfrey R. Redmann, Otis Elevator Co.; W. F. Sauter, American Engineering Co.; W. H. Ridgway, C. Ridgway & Son Co., Coatsville, Pa.; James S. Stirling, Hilles & Jones Co., Wilmington, Del.; Walter T. Bickley, Penn Steel Casting & Machinery Co., Chester, Pa.; J. S. Hibbs, J. W. Parson Co.; Samuel J. Creswell, S. T. Creswell Iron Works; S. A. Waters, Goodell & Waters; Thomas Devlin, Thomas Devlin & Co.; James M. Blankley, Way & Blankley; Francis Schumann, Tacony Iron & Metal Co., Tacony, Philadelphia; Justice H. Schwacke, Wm. Sellers & Co.; W. S.

Hollowell, Harrison Safety Boiler Co.; E. E. Brown, E. E. Brown & Co.; T. Howard Sheeler, Sheeler-Hemsher Co.; Wilfred Lewis, Tabor Mfg. Co.; J. D. Harvesy, Monarch Engineering & Mfg. Co.

These and a few others formed the nucleus about which the Philadelphia association was built up. Most of them were identified prominently with the growth of the national organization and some few of them still are active along this line.

The bar room meetings were abandoned as being subject to misinterpretation, and a more commodious meeting place was sought and obtained at the Manufacturers' club which had been erected a short time previously. Regular meetings resulted in increased attendance and the association was established upon a firm footing.

In 1896, the Philadelphia Foundrymen's association conceived the idea of a national organization formed of those engaged in the foundry industry. The benefits of the local body were so apparent that it was the earnest desire of those broad-thinking men to bring within its influence all who were engaged in manufacturing castings. Accordingly a movement was started and an active campaign inaugurated which was carried out through the earnest personal efforts of a number of individuals. Chief among these were Francis Schumann and Howard Evans, president and secretary of the Philadelphia association, and John Penton, editor and proprietor of *The Foundry,* which at that time was published in Detroit. The Western Foundrymen's association joined with Philadelphia in arranging for a meeting to form a national body.

The true spirit of Philadelphia, the City of Brotherly Love, was stated in the aims of the meeting set forth in the invitation which was sent to prominent foundrymen in all parts of the United States and Canada. The invitation stated:

"The object of this convention is to bring about a more friendly feeling among the foundrymen of this country and to present and discuss papers on interesting subjects and to encourage the formation of foundry associations in every part of the United States where it is possible to do so, believing in the end good results must follow, the idea being to advance the foundry business in every way."

The ideals upon which this great industrial association was built were correctly stated in this announcement. The interpretation of these ideals and the growth even beyond the hopes of its founders reflect credit upon the vision of those who have consistently adhered to the set purpose, "to advance the foundry business in every way."

In his keynote speech welcoming the delegates on May 12, 1896, Francis Schumann pointed out that those present represented an industry consisting of nearly 4000 separate establishments, employing 120,000 persons. These produced some 2,600,000 castings with a total disbursement for labor of $114,000,000 upon an aggregate invested capital of $115,000,000. He pointed out that the excessive, and in some cases artificial competition had brought a general movement toward combinations for the purpose of combating "unrestrained and dangerous rivalry." The downward course of prices had resulted in deteriorating the character of products and undermining the finer sense of honor in the individuals so competing. The national organization was to correct these conditions.

Landmarks of Progress

NO better evidence is offered of progress in the foundry industry during the last decade than is presented by a contrast of the accompanying program delivered in 1896, *with that prepared for the* 1919 *convention of American foundrymen. The chemistry of iron the use of such common equipment as traveling cranes, compressed air, sand blast and molding machines were just beginning to appear on the horizon of better methods. The influence of the American Foundrymen's association needs no better tribute than that offered by a consideration of the progress made in the industry between the first and twenty-fourth annual meetings.*

The subjects treated upon at the 1896 *meeting were as follows:*

"Chemistry of Iron, with Determinations and Their Value," by Charles James, M. E., of Henry Disston & Sons, Philadelphia, and W. C. Henderson chemist, of Thomas Devlin & Co., Philadelphia.

"The Strength of Cast Iron, with Samples," by W. J. Keep, Detroit, Mich.

"Apprenticeships, Their Value and How to Make New Molders," by D. J. Matlack, of I. P. Morris Co.

"Foundry Cranes, the Different Power Used to Drive Them," accompanied by lantern slides, by A. E. Outerbridge, Jr., of Wm. Sellers & Co., Inc., Philadelphia.

"Acid Open Hearth vs. Basic Open Hearth and the Wahand-Legensel Bessemer Process," by Jos. Hartshorne, M. E., of Pottstown, Pa.

"The Air Compressor for Use in the Foundry," by C. W. Shields, of Ingersoll, Sergeant Drill Co., Easton, Pa.

"Cupolas and Cupola Practice Up to Date," by Dr. Edw. Kirk, Philadelphia.

"Entertainment of the Delegates," by Mr. John Birkinbine, M. E., of Philadelphia.

"Utility and Advancement of Green Dry and Loam Sand Molding," by Thomas D. West, Sharpsville, Pa.

"Gear Molding and Gear Molding Machines," by S. Grove, of Taylor, Wilson & Co., Pittsburgh, Pa.

"The Sand Blast for Cleaning Castings," by Fred C. Brooksbank, of Ward & Nash, Boston, Mass.

"Molding Machines and Their Appreciation," by Harris Tabor, of Tabor Mfg. Co., of Elizabeth, N. J.

It was felt at that time that a more friendly feeling between the men engaged in the same work would tend to more satisfactory prices through the reduction of reckless bidding and a better knowledge of costs of production. Even at this early date the need of standard physical tests for cast iron was strongly expressed. Labor difficulties, too, engaged the attention of the delegates. The question of convict labor was presented and informal conferences between delegates brought out plans to avoid strikes and lockouts and to enforce a universal apprenticeship system. It thus may be seen that the first steps of the organization were directed along the paths of material and practical rather than technical and business advance. The transition and broadening of activities of the association since its inception will be appreciated by those who are familiar with the work of the organization at the present time.

The first meeting was held at the Manufacturers' club, where the guests registered and were assigned a numbered badge. The numbers with the delegates' names to correspond were printed in the *Daily Foundry* which was issued on each of the three days of the convention. Francis Schumann, Tacony Iron & Metal Co., Tacony, Philadelphia, and Howard Evans, J. W. Paxson & Co., Philadelphia, were elected unanimously as chairman and secretary respectively to preside during the meeting. Upon resolution presented by F. A. Riehle, Riehle Bros., Philadelphia, a committee of five was appointed to draw up a suitable constitution to govern the national association. The members of this committee were A. Sorge Jr., Chicago; R. Taylor, Pittsburgh; Frank A. Magee, Boston; J. Best, Montreal, and C. S. Bell, Hillsboro, Ohio.

The discussion of a suitable title for the organization brought out the statement that this was not to be a national association, because such a title might carry the intimation that membership was confined to the United States alone. The hope was expressed that a large number of foundrymen, experts in their line, who were located in Canada, would cooperate in the work of the association. The wisdom of this course has been fully vindicated.

Interesting sessions were held where discussions followed the lines indicated by the program which is shown

on page 101. The demonstration of processes for determining the chemical constituents of iron was stated to be one of the most interesting features of the meeting. The first feeble stirring of interest in the vital scientific control of metal mixtures was evidenced at this time. Previously iron was judged by fracture in most cases and with a few exceptions the effects of silicon, manganese, sulphur and phosphorus were a closed book to the practical foundryman. Pioneers such as W. J. Keep, Thomas D. West and others had begun to exert an influence toward technical knowledge which grew through their activity in the association. The first steps in this direction at the first convention aroused the greatest interest and appreciation among members.

Labor even at that day occasioned anxiety to foundry executives. However, the phases discussed concerned the concrete points of apprenticeship, classes of labor and wages, rather than the broader aspects of increased output, and efficiency. Compressed air was sufficiently novel to invite attention and discussion. Cranes and molding machines still were in the early stages of development. Jib cranes were defended against the opinion sometimes expressed that they were becoming obsolete due to the advances in the "traveling" crane, but the statement was made that the overhead type had its uses in heavy foundries. The generally used cranes of the day were shown to be steam-driven jibs with an occasional electric or hydraulic pillar crane. The paper on molding machines attracted great interest as foundrymen were coming to realize that the fraction of a cent on the cost of making a casting was a most important item in meeting the keen competition that then existed. This factor rather than the saving in manpower was the motive which attracted them to labor-saving machinery.

First Officers Prominent

The third day's session was occupied in discussing the constitution and electing officers. Francis Schumann who had been president of the Philadelphia body since its formation was chosen as the first president of the American Foundrymen's association. Mr. Schumann was at that time in his fifty-second year. He had been an engineer with railroad experience. He served under General Meade in the Army of the Potomac during the Civil War and later had been superintendent and manager of a foundry and machine shop. Mr. Schumann had established the firm of Schumann & Lynch, Tacony, Philadelphia, which later became the Tacony Iron & Metal Co. Mr. Schumann served as president and general manager of this company.

Howard Evans, who was a partner in the firm of J. W. Paxson & Co. and had been in the foundry supply business all of his life, was chosen treasurer of the national organization. At the time of the convention he was secretary of the Philadelphia section and to his energy and ability is due much of the credit for the successful launching of the American Foundrymen's association. John A. Penton, editor and proprietor of *The Foundry,* was elected secretary.

Twenty-three states were represented by 350 delegates registered. The association desired to establish active units in various parts of the country. Accordingly vice presidents were elected to lead the geographical sections as follows: New England, F. W. Gibby, Boston; Middle States, Robert G. Taylor, Pittsburgh; Southern States, Henry Clay Evans, Chattanooga; Central Western States, John M. Sweeney, Chicago; Southwestern States, W. S. Mosher, Dallas, Tex.; Pacific States, Irving Scott, San Francisco; Canada, Joseph Best, Montreal.

Eleven years after this initial meeting the American Foundrymen's association again came together in Philadelphia. In the interim many changes had been made in policy and details of organization but the underlying principles of the body were the same. All questions of labor as concerned wages and hours had been banished and the price question too was dropped as without the scope of a national association. All questions brought before the sessions of the American Foundrymen's association after about 1900 concerned the production of the best possible castings at the lowest shop cost. In 1907 when the second Philadelphia convention was held, the American Foundrymen's association was recognized as a factor in the evolution of the industry. Dr. Richard Moldenke, who was secretary of the association at this time said:

"To the American Foundrymen's



JOSIAH THOMPSON THOMAS D. WEST W. J. KEEP

These men, two of whom were most intimately identified with the development of the science of founding, were among the active delegates to the first convention

Those Who Attended First Convention

Charles Ashbury, Enterprise Mfg. Co., Philadelphia.
Robert Allison, Franklin Iron Works, Port Carbon, Pa.
George R. Allen, Thirteenth and Buttonwood streets, Philadelphia.
Alonzo D. Amsden, Phoenix Foundry, Providence.
William Adams, Wm. Adams & Co., Ninth and Girard avenue, Philadelphia.
James W. Arrote Jr., Standard Mfg. Co., Pittsburgh.
William W. Ackerman, Samuel L. Moore & Sons, Eilzabethport, N. J.
E. T. Adams, Juniata Furnace & Foundry Co., Marlborough and Beach streets, Philadelphia.
James Anderson, Sotter Bros., Pottstown, Pa.
K. J. Bougher, J. W. Paxson & Co., Philadelphia.
John Braun, Philadelphia Lawn Mower Co., Twenty-third and Turner streets, Philadelphia.
James H. Blankley, Blankley Bros. & Co., Twenty-second and Allegheny avenue, Philadelphia.
Elmer E. Brown, E. E. Brown & Co., McKean and Meadow streets, Philadelphia.
John T. Brown, Damascus Bronze Co., Pittsburgh.
Andrew Banholzer, Birmingham Machine & Foundry Co., Birmingham, Ala.
T. S. Bishop, Russell & Irwin Mfg. Co., New Britain, Conn.
J. J. Burgen, Lane Mfg. Co., Montpelier, Vt.
John W. Burr, Burr & Houston Co., Brooklyn.
James A. Beckett, W. A. Wood Mowing & Reaping Co., Hoosick Falls, N. Y.
Clinton S. Buckley, Damascus Bronze Co., Pittsburgh.
Joseph Best, Warden King & Son, Montreal, Canada.
John F. Brayer, Co-operative Foundry Co., Rochester, N. Y.
Howard J. Bing, 3737 Filbert street, Philadelphia.
Frank N. Brayer, Co-operative Foundry Co., Rochester, N. Y.
F. C. Brooksbank, Ward & Nash, Riverton, N. J.
Felix Brown Jr., A. & F. Brown, Elizabethport, N. J.
R. D. Berge, Clinton Iron & Steel Co., New York.
James Bailey, Wilmington Malleable Iron Co., Wilmington, Del.
W. P. Barba, Midvale Steel Co., Nicetown, Philadelphia.
C. R. Baird, C. R. Baird & Co., Philadelphia.
C. S. Bell, C. S. Bell Co., Hillsboro, O.
J. A. Buckwalter, the Buckwalter Stove Co., Royersford, Pa.
Robert Blyth, Walker Pratt Mfg. Co., Watertown, Mass.
James T. Bradshaw, Twenty-first and Diamond streets, Philadelphia.
J. W. Booth, American Steel Casting Co., Thurlow, Pa.
A. H. Blackburn, Fuel Economizer Co., Matteawan, N. Y.
A. E. Barlow, Morris & Barlow, Newark, N. J
Charles Bailey, Reliance Steel Casting Co., Pittsburgh.
John Birkinbine, 25 N. E. Penn square, Philadelphia.
T. D. Buckwalter, Buckwalter Stove Co., Royersford, Pa.
William P. Bement, Bement, Miles & Co., Philadelphia.
Richard H. Bate, W. T. Bate & Son, Conshohocken, Pa.
R. Blickenderfer, Lancaster, Pa.
Henry G. Bates, New York.
Albert D. Brown, Chester, Pa.
Archer Rogers Brown, Brown & Warner, New York.
Charles A. Brown, A. & F. Brown, Elizabethport, N. J.
Cyrus Borgner, Twenty-third and Vine streets, Philadelphia.
E. T. Betts, Betts Machine Co., Wilmington, Del.
W. J. Coane, Joseph Dixon Crucible Co., 38 N. Fourth street, Philadelphia.
Robert Caskey, Diller, Caskey & Co., Sixth and Berks streets, Philadelphia.
Mr. Cox, Cramps Brass Foundry, Philadelphia.
Twining Campbell, Paterson, N. J.
Robert J. R. Cullingworth, Wetherill & Co., Chester, Pa.
T. R. Coggeshell, Girard college, Philadelphia.
F. E. Cook, Westinghouse Air Brake Co., Pittsburgh.
Charles N. Choate, Bridgeport Door, Bronze & Metal Co., Bridgeport, Conn.
Theodore Colvin, Providence.
Justice Cox Jr., 218 S. Fourth street, Philadelphia.
A. C. Carleton, Pratt & Whitney Co., Hartford, Conn.
W. W. Cheney, S. Cheney & Son, Manilus, N. Y.
William Carpenter, H. A. Carpenter & Sons, Providence.
W. H. Coffin, Buffalo Foundry Supply Co., Buffalo.
H. A. Carpenter, H. A. Carpenter & Sons, Providence.
A. G. Curtin, L. & R. Wister & Co., Philadelphia.
A. J. Caldwell, Henry R. Worthington, New York.
Charles D. Cramp, William Cramp & Sons, Philadelphia.
W. Y. Cruickshank, Jackson & Woodin Manufacturing Co., Berwick, Pa.
L. M. Codington, Standard Gas Fixture Co., Somerville, N. J.
Millard F. Carr, J. W. Paxson & Co., Philadelphia.
William H. Derbyshire, Bement, Miles & Co., Twenty-first and Callowhill, Philadelphia.
William Dette, Rogers, Brown & Warner, Bullitt building, Philadelphia.
J. M. Darke, General Electric Co., Lynn, Mass.
J. H. Dalton, Walburn, Swenson & Co., Chicago.
Walter Devlin, Philadelphia Hardware & Malleable Iron Co., Philadelphia.
Henry C. Dimond, Bushwell & Glessner, Springfield, O.
J. F. Donaldson, Ingersoll, Sergeant Drill Co., Easton, Pa.
W. J. Devlin, Philadelphia Hardware & Malleable Iron Works, Ninth and Jefferson streets, Philadelphia.
George C. Davies, C. R. Baird & Co., Philadelphia.
Harry Drinkhouse, Devlin & Co., American and Lehigh avenue, Philadelphia.
E. M. Drummond, Drummond Manufacturing Co., Louisville, Ky.
J. K. Dimmick, Anniston Pipe & Foundry Co. Anniston, Ala.
George Danleady, Ingersoll, Sergeant Drill Co., New York.
M. O. Donoghue, Valentine Iron Co., Bellefonte, Pa.
E. E. Durant, G. F. Warner Mfg. Co., New Haven, Conn.
Howard Evans, J. W. Paxson & Co., Philadelphia.
C. N. Elliott, C. N. Elliocott & Co., Philadelphia.
E. Edwards, General Electric Co., Lynn, Mass.
George N. Elliott, Southwark Foundry & Machinery Co., Fifth and Washington avenue, Philadelphia.
W. H. Echternach, foundry of Girard college, Philadelphia.
George S. Emerick, George S. Emerick Co., White Haven, Pa.
Daniel Eagan, American Steel Casting Co., Thurlow, Pa.
Stanley G. Flagg Jr., Stanley G. Flagg & Co., Nineteenth and Pennsylvania avenue, Philadelphia.
William Ferguson, Gates Iron Works, Chicago.
Isaac W. Frank, Frank, Kneeland Machine Co., Pittsburgh.
George Flagg, Stanley G. Flagg & Co.., Philadelphia.
John Fetz, Hanover Foundry & Machine Co., Hanover, Pa.
Edward P. Farrell, Baltimore.
A. I. Findley, The Iron Trade Review, Cleveland.
H. E. Floyd, James R. & Sons, New York.
William E. Fulton, Waterbury Farrell Foundry & Machine Co., Waterbury, Conn.
Y. C. Freed, Royersford Machine Co., Royersford, Pa.
J. W. Friend, Clinton Iron & Steel Co., Pittsburgh.
J. H. Ferguson, Brownell & Co., Philadelphia.
J. T. Friend, Clinton Iron & Steel Co., Pittsborgh.
George W. French, J. J. Mohr, Philadelphia.
F. A. Goodrich, F. A. Goodrich & Co., Detroit.
George H. Gibby, Condor Iron Foundry Co., Boston.
Samuel Taylor Groves, Wilson & Co., Pittsburgh.
F. W. Gibby, Mechanics Foundry Co., Boston.
Max F. Gross, Evening Star, Pa.
Henry M. Garrett, Westinghouse Machine Co., Pittsburgh.
J. H. Gill, Raleigh, N. C.
John H. Glover, Glover Bros., Frankford, Philadelphia.
George S. Goodwin, The "Item," Philadelphia.
William Gisriel, Maryland Brass & Metal Works, Baltimore.
Thomas Glover, Glover Bros., Philadelphia.
Samuel F. Given, Bement, Miles & Co., Twenty-first and Callowhill streets, Philadelphia.
Ralph J. Greider, Paul S. Reeves & Son, Broad and Catherine streets, Philadelphia.
George H. Graham, Oriskany Malleable Iron Co., Oriskany, N. Y.
W. H. Green Jr., Vulcan Iron Works, Chester, Pa.
H. W. Gadd, J. Wesley Pullman, Philadelphia.
John F. Gilliams, U. S. Smelting Co., Philadelphia.
Arthur W. Howe, 430 Bourse building, Philadelphia.
Thomas Hobson, The Iron Age, Philadelphia.
John W. Harrison, Shickels, Harrison & Howard, St. Louis.
F. P. Howe, William Wharton Jr. & Co., Twenty-fifth and Washington avenue, Philadelphia.
Thomas R. Holman, Holyoke Machine Co., Worcester, Mass.
John S. Hill, Obermayer Co., Cincinnati.
T. B. Harkins, T. B. Harkins Foundry Co., Bristol, Pa.
John Hanes, Woodstown, N. J.
James M. Hodge, Crane Iron Works, Catasauqua, Pa.
H. B. Hirsh, Midvale Foundry Co., Allentown, Pa.
Herman Hayssen, Kohler Hayssen & Stehn Mfg. Co., Sheboygan, Wis.
William C. Henderson, Thomas Devlin & Co., Philadelphia.
William A. Harris, Baush & Harris Machine Tool Co., Springfield, Mass.
S. C. Hartpence, Columbia Foundry Co., Philadelphia.
H. Hunsicker, Mt. Penn Stove Works, Reading, Pa.
W. H. Hunt, William Adams & Co., Philadelphia.
George Hetherington, 222 Greenwich street, Philadelphia.
Benjamin F. Hiesland, Marietta Casting Co., Marietta, Pa.
William Hanson, Pennsylvania Iron Works Co., Fiftieth and Merion avenue, Philadelphia.
John C. Hubley, Hubley Mfg. Co., Lancaster, Pa.
C. H. Haeseler, Pedrick & Ayer Co., Tenth and Hamilton streets, Philadelphia.
T. M. Henry, North & Judd Mfg. Co., New Britain, Conn.
Alfred E. Hammer, Malleable Iron Fittings Co., Branford, Conn.
V. L. Hammer, Malleable Iron Fittings Co., Branford, Conn.
Joseph S. Hibbs, J. W. Paxson & Co., Philadelphia.
Amos Jones, Jones & Scullin, Philadelphia.
Frank R. Jones, Jerome, Kelley & Co., Philadelphia.
Charles James, Henry Disston & Sons, Tacony, Philadelphia.
Alex Jarecki, Jarecki Mfg. Co., Erie, Pa.
Jesse Jones, William Cramp & Sons, Philadelphia.
Charles L. Jobb, Londonberry Iron Co., Ltd., Londonberry, N. S.
George T. Johnson, Thomas Iron Co., Hokendauqua, Pa.
Thomas Jones, the Capitol Machine Tool Co., Auburn, N. Y.
James A. Janner Jr., Janner & Steinmetz, Philadelphia.
Henry J. Julian, Gray's Ferry Foundry & Brass Works, Philadelphia.
Thomas Kavanagh, Kavanagh & McDermott, Fifteenth and Lehigh avenue, Philadelphia.
John C. Knoppel, Buffalo Forge Co., Buffalo.
A. F. Koons, Webster, Camo & Co., Akron, O.
Joseph Koons, L. V. R. R. Co., Weatherly, Pa.
W. J. Keep, Michigan Stove Co., Detroit.
T. J. Kelly, Moore, Kelley & Co., Philadelphia.
J. M. Kohler, Kohler Hayssen & Stehn, Sheboygan, Wis.
William T. Koken, Koken Iron Works, St. Louis.
Dr. Edw. Kirk, 535 N. Tenth street, Philadelphia.
F. C. Kuken, George R. Allen, Thirteenth and Buttonwood streets, Philadelphia.
R. B. Kelly, T. B. Harkins Foundry Co., Bristol, Pa.
W. G. Kimball, S. G. Kimballs Sons, Newburgh, N. Y.
C. Kirchoff, "The Iron Age," New York.
Joseph A. Kelly, Scaife Foundry & Machine Co., Pittsburgh.
T. P. Kelly, T. P. Kelley & Co., New York.
G. B. Keating, G. B. Keating & Co., Philadelphia.
Peter Lindsey, Manayunk, Philadelphia.
Peter Lindsey Jr., Manayunk, Philadelphia.
K. J. Lambert, Syracuse Chilled Plow Co., Syracuse, N. Y.
John A. Logan, Jones & Laughlin, Ltd., Pittsburgh.
George H. Lincoln, G. H. Lincoln & Co., Boston.

(Concluded on Page 105)



A. C. MOTT WALTER WOOD WILLIAM FERGUSON

History is a summation of commanding personalities, and the progress of the industry may be traced by the achievements of individuals who are engaged in its acitivities

association may be directly ascribed the change in the purchase and sale of pig iron by analysis instead of by fracture. The metallurgists all over the world, working in iron and steel, were benefited by the standardizing bureau of the association, originated and watched over by Thomas D. West, an ex-president of this body. The standardized drillings made by this bureau were admitted as authoritative in disputes concerning the correctness of analyses. The work of this bureau has been taken over by the United States government, the drillings of cast iron, duly standardized, being distributed by the bureau of standards at the present time. Standard methods of analyzing cast iron now are in the course of completion.

* * *

"Much work has been done on systems of apprenticeship, trade schools, cost systems, and instruction papers intended to help the foundryman educate younger workmen. In general, the work of the association has been directed toward awakening the great foundry industry to the need of more and better trained men to man the shops."

Thought Trend Changed

W. H. McFadden, Mackintosh, Hemphill & Co., Pittsburgh, who had been elected at the Cleveland convention in 1906, presided at the second Philadelphia meeting. Dr. Richard Moldenke was secretary at this time, C. J. Caley, John W. Burr, Stanley G. Flagg Jr., J. H. Whiting, W. J. Keep, J. P. Golden, Lawrence L. Anthes and T. W. Sheriffs all were vice presidents.

The program followed includes papers which give an interesting sidelight on the trend of thought in the association and the industry 12 years ago. The question of technical school training on foundry subjects was presented by five speakers. The design and construction of foundry buildings and the various departments therein were dealt with in five papers. The metallurgy of iron, steel and nonferrous castings was discussed by such men as William M. Saunders, Charles J. Caley, C. E. Johnson, James F. Webb, and H. E. Diller. The business side of the gray-iron, steel, and malleable foundry was discussed by



F. W. GIBBY JOSEPH BEST I. W. FRANK

Some foundrymen who were prominent figures in the early history of the association and left their influence on the growth of the national body

Those Who Attended First Convention

James T. Lanigahn, Davis Foundry Co., Lawrence, Mass.
James J. Lacy, James J. Lacy & Co., Baltimore.
Jacob Loomis, Elwood Iron Works, Elwood, Ind.
W. C. Lockhart, W. C. Scott Foundry, Reading, Pa.
H. M. Lane, Lane & Bodley Co., Cincinnati.
W. M. Laughlan, Pickands, Mather & Co., Cleveland.
F. P. Leonard, Dighton Furnace Co., Taunton, Mass.
J. H. Longstreet, Riverview Iron Works, Bordentown, N. J.
William W. Lobdell, Lobdell Car Wheel Works, Wilmington, Del.
T. S. Lewis, Waterbury Farrell Foundry & Machine Co., Waterbury, Conn.
E. J. Lane, R. D. Wood & Co., 400 Chestnut street, Philadelphia.
George C. Matlack, I. P. Morris Co., 1021 Richmond street, Philadelphia.
D. J. Matlack, I. P. Morris Co., 1021 Richmond street, Philadelphia.
J. S. McCormick, J. S. McCormick & Co., Pittsburgh.
E. McLean, Pennsylvania railroad, Altoona, Pa.
May De Courcy, Dickson Mfg. Co., Scranton, Pa.
W. J. W. Moore, Crane Iron Works, Philadelphia.
George Mesta, Leechburg Foundry & Machine Co., Pittsburgh.
Frank A. Magee, Magee Furnace Co., Boston.
C. M. Mott, Abram Cox Stove Co., Lansdale, Pa.
W. S. Mosher, Mosher Foundry & Mfg. Co., Dallas, Tex.
George L. Messick, Pusey & Jones Co., Wilmington, Del.
N. Mager Jr., A. & P. Roberts & Co., Pencoyd, Pa.
T. E. McDermott, Kavanagh & McDermott, Philadelphia.
George R. Michender, Philadelphia.
Louis J. McGrath, Devlin & Co., American and Lehigh avenue, Philadelphia.
F. C. Mosedale, Richards, Mather & Co., New Haven, Conn.
A. B. Moore, Samuel L. Moore & Sons Co., Elizabeth, N. J.
Henry Morris, Philadelphia.
John F. Mills, Abendroth Bros., Port Chester, N. Y.
Abram C. Mott, Abram Cox Stove Co., Philadelphia.
O. Miller, Westinghouse Air Brake Co., Pittsburgh.
Ernest E. Mann, American Radiator Co., Detroit.
H. B. Murless, Rockville, Conn.
H. J. McCartney, American Telephone & Telegraph Co., New York.
G. K. Mohr, J. J. Mohr, Philadelphia.
Alfred Marshall, Marshall Bros. & Co., Philadelphia.
E. M. Mumford, Elizabeth, N. J.
F. F. Moore, Monitor Iron Works, New York.
T. L. Morton, R. D. Wood & Co., Philadelphia.
F. M. Morris, Jeanesville Iron Works, Jeanesville, Pa.
John W. Neave, W. Pusey & Jones Co., Wilmington, Del.
Roberts I. Newkirk, William Wharton Jr. & Co., Philadelphia.
W. H. Nichols, P. R. R., Renova, Pa.
Edward P. Osgood, Osgood & Hart, Charlestown, Mass.
William Osborne, Du Bois Iron Works, Du Bois, Pa.
A. E. Outerbridge, William Sellers & Co., Inc., Philadelphia.
George Ormrod, Donaldson Iron Co., Emaus, Pa.
John D. Ormrod, Donaldson Iron Co., Emaus, Pa.
John Paxson, J. W. Paxson & Co., Philadelphia.
C. L. Prince, Camden Iron Works, Camden, N. J.
Henry J. Pepper, "The Iron Age," 19 S. Fourth street, Philadelphia.
W. H. Pfahler, Abram Cox Stove Co., Philadelphia.
Edw. P. Osgood, Osgood & Hart, Charlestown,
J. M. Payne, Rogers, Brown & Warner, Bullitt building, Philadelphia.
Leonard Peckitt, Crane Iron Works, Catasaqua, Pa.
M. J. Perault, Fitchburg, Mass.
Henry C. Pickles, Wilmington Pipe & Foundry Co., Wilmington, Del.
J. M. Peterson, Vaul & Murdoch, Charleston, S. S.
E. B. Pierce, Wheeler Foundry Co., Worcester, Mass.
Thomas Pele, Bement, Miles & Co., Philadelphia.
George F. Pettinos, Pettinos Bros., Philadelphia.
C. E. Pettinos, Pettinos Bros., Bethlehem, Pa.
H. O. Patch, American Glutrose Works, Ninth and Chestnut streets, Philadelphia.
W. C. Pearse, American Glutrose Works, Ninth and Chestnut streets, Philadelphia.
William Peacock, Union Lock & Hardware Co., Lancaster, Pa.
Henry Potts, Pottstown, Pa.
A. J. Picard, Clinton Iron & Steel Co., Pittsburgh.
John A. Penton, "The Foundry," Detroit.
W. S. Rhoades, W. S. Rhoades & Co., Twenty-third and Master streets, Philadelphia.
George R. Rominger, Girard Iron Works, Twenty-third and Master streets, Philadelphia.
John Rohland, Coxe Iron Mfg. Co., Drifton, Pa.
Thomas I. Rankin, Abram Cox Stove Co., Philadelphia.
J. M. Ribert, Hubley Mfg. Co., Lancaster, Pa.
John O. Reed, Standard Mfg. Co., Pittsburgh.
Joseph B. Rorke, P. & R. Iron Foundry, Reading, Pa.
Edw. Robinson, Wells Light Mfg. Co., New York.
Godfrey G. Rebmann, Rebmann & Co., Philadelphia.
Fred A. Riehle, Riehle Bros., Ninth and Master streets, Philadelphia.
Harry G. Rebmann, G. Rebmann & Co., Philadelphia.
H. Ruhland, Girard Iron Works, Philadelphia.
Jos. Richards, Delaware Metal Refiinery, Philadelphia.
H. R. Rea, Robinson & Rea Mfg. Co., Pittsburgh.
W. C. Robinson, Robinson & Rea Mfg. Co., Pittsburgh.
John R. Russel, Russel Wheel & Foundry Co., Detroit.
V. H. Rood, Jeansville Iron Works, Jeanesville, Pa.
G. R. Rebmann, Morse, Williams & Co., Philadelphia.
W. T. Rainey, Harrison Bldg., Philadelphia.
A. C. Rex, A. C. Rex & Co., Frankford, Philadelphia.
Theodore C. Search, Philadelphia.
Francis Schumann, Tacony Iron & Metal Co., Tacony, Philadelphia.
Howard R. Shepard, Isaac A. Sheppard & Co., Philadelphia.
William F. Sauter, G. Rebmann & Co., Philadelphia.
W. W. Stevens, W. W. & R. S. Stevens, Ninth and Montgomery avenue, Philadelphia.
H. H. Stone, Pennsylvania railroad, Altoona, Pa.
A. Sorge Jr., 1533 Marquette Bldg., Chicago.
William H. Stein, Ticonderoga Mch. Co., Ticonderoga, N. Y.
A. G. Sutherland, K. V. Wire & Iron Works, Kansas City, Mo.
George P. Smyser, E. G. Smyser's Sons, York, Pa.
John Smith Jr., S. H. Hodge & Co., Detroit.
Curtis W. Shields, Ingersoll Sergeant Drill Co., Easton, Pa.
J. P. B. Sadtler, Baltimore Link Sash Weight & Fdy. Co., Baltimore.
Bartlett M. Shaw, Walker Pratt Mfg. Co., Boston.
James L. Steward, Armstrong Iron Works, Vineland, N. J.
S. D. Sleeth, Westinghouse Air Brake Co., Pittsburgh.
J. S. Seaman, Seaman Sleet & Black, Pittsburgh.
J. C. Sawyer, Somersworth Mch. Co., Dover, N. H.
John Speara, Columbia Gray Iron Co., Columbia, Pa.
George F. Stilbgen, Marietta Casting Co., Marietta, Pa.
James S. Stirling, Harlan & Hollingsworth Co., Wilmington, Del.
E. C. Saunier, Clinton Iron & Steel Co., New York.
Pemberton Smith, N. Y. Car Wheel Works, Buffalo.
F. B. Shaffer, Union Foundry Co., Elizabeth, N. J.
E. U. Scoville, Manlius, N. Y.
George B. Scoville, Waterbury, Conn.
Edw. A. Summer, American Radiator Co., Detroit.
Frank Schumann, Tacony Iron & Metal Co., Tacony, Philadelphia.
J. M. Sherrard, Taylor Iron & Steel Co., High Bridge, N. J.
W. H. Smith, Whitehead Bros. Co., New York.
Howard Stauffer, Columbia Gray Iron Co., Columbia, Pa.
J. A. Steinmetz, Jannery & Steinmetz, Drexel Bldg., Philadelphia.
James A. Smyser, E. G. Smyser's Sons, Baltimore.
Ross G. Smith, Medeira, Hill & Co., Philadelphia.
Charles P. Shoen, Shoen Mfg. Co., Pittsburgh.
M. F. Smearmann, Pennsylvania railroad, Altoona, Pa.
Josiah J. Thompson, Thompson & Co., Philadelphia.
Robert Taylor, Taylor, Wilson & Co., Pittsburgh.
Benjamin Talbot, Pencoyd, Pa.
C. A. Treat, C. A. Treat Mfg. Co., Hannibal, Mo.
C. L. Tittle, Blairsville, Pa.
D. Townsend, Philadelphia Roll & Mch. Works, Philadelphia.
R. J. Taylor, R. J. Taylor & Son, Philadelphia.
H. B. Taylor, Pettinos Bros., Philadelphia.
Robert Tolmie, Loddell Car Wheel Co., Wilmington, Del.
Walter B. Tyler, Southern Fdy. & Mach. Works, Fredericksburg, Va.
Clarence Taylor, Philadelphia.
H. R. Valentine, M. D. Valentine & Bro. Co., Woodbridge, N. J.
G. W. Van Tine, Singer Mfg. Co., Elizabeth, N. J.
Charles F. Voight, Sterling Metal Ref. Co., Philadelphia.
Walter R. D. Wood, Wood & Co., Philadelphia.
John S. Wilbraham, Wilbraham Baker Blower Co., Philadelphia.
John M. Warner, Rogers, Brown & Warner, Philadelphia.
Asa W. Whitney, S. Whitney & Sons, Philadelphia.
I. W. Winchester, Magee Furnace Co., Chelsea, Mass.
Thomas Wathey, United Verde Copper Co., Jerome. Ariz.
Thomas D. West, Sharpsville, Pa.
George Wiard, Wiard Plow Co., Batavia, N. Y.
A. J. Wittingham, Moore, Kelly & Co., Philadelphia.
J. P. Winlock, Barbour, Stockwell & Co., Cambridge, Mass.
Arthur W. Walker, Walker & Pratt Mfg. Co., Boston.
Jerome Weyhemmeyer, Jeanesville Iron Works, Jeanesville, Pa.
E. E. Weaver, Midvale Foundry Co., Allentown. Pa.
Andrew Wheeler, Morris, Wheeler & Co., Philadelphia.
V. L. Whitehead, Whitehead Bros. Co., Buffalo.
C. W. Whiting, Van Bergen & Co., Ltd., Carbondale, Pa.
William R. Webster, Philadelphia.
Harris Whittemore, Naugatuck Mall. Iron Co., Naugatuck, Conn.
Amos Walder, Genesee Foundry, Rochester, N. Y.
George R. Walker, J. Thompson & Co., Philadelphia.
R. M. Wortham, Keystone Brass Foundry, Philadelphia.
Thomas H. Williams, A. A. Griffing Iron Works, Jersey City, N. J.
W. W. Walker, Pusey & Jones Co., Wilmington, Del.
C. R. Wood, R. D. Wood & Co., Philadelphia.
A. D. Wilson, Gray's Ferry Fdy. & Brass Works, Philadelphia.
William Yagle, William Yagle & Co., Ltd., Pittsburgh.
M. B. Young, Philadelphia.

Thomas D. West, W. M. Carr and Dr. Richard Moldenke. respectively. Two papers which were presented gave indication of the growing international influence of the association. These were on a new method of preparing molding sand, and molding machines two subjects which were presented by E. Ronceray, Paris, France.

Practically every state in the union was represented among the 1391 registered visitors at the convention, and over 100 foundrymen from Canada were in attendance. Thomas Devlin, as president of the Philadelphia association welcomed the members of the association at the initial session. Howard Evans, who had been the first secretary of the Philadelphia body, still occupied the same office. Over 65 different manufacturers exhibited their products at the supply show which was conducted in connection with this convention.

Prominent Foundrymen of Philadelphia and Vicinity



THOMAS DEVLIN
President, Philadelphia Foundrymen's Association.



H. M. BOUGHER
Chairman, Clearing House Committee

G. F. PETTINOS
Chairman, Information Committee

C. R. SPARE
Chairman, Publicity Committee

HOWARD EVANS
Secretary, Philadelphia Foundrymen's Ass'n.

C. P. POND
Chairman, Finance Committee

W. J. SHENNAN
Bethlehem Steel Company

GEORGE C. DAVIES
Chairman, Visitation of Plants Committee

FRANK KRUG
Chairman, Entertainment Committee

F. J. RYAN
American Metallurgical Co., Philadelphia



H. F. REBMANN
American Engineering Co., Philadelphia

F. E. SCHWARZE
Cleveland Pneumatic Tool Co., Cleveland

THOMAS KAVENY
Herman Pneumatic Machine Co., Pittsburgh

W. G. SUMMERS
Phoenix Iron Co., Philadelphia

H. E. MANDEL
Lindsay Chaplet & Mfg. Co., Philadelphia

H. W. GLEDHILL
Shepard Electric Crane & Hoist Co.

G. R. SULLIVAN
Rogers, Brown & Co., Philadelphia

C. T. BIRD
Pangborn Corporation, Hagerstown, Md.

H. L. HENSZY
Carborundum Co., Philadelphia



T. E. EYNON
Eynon, Evans Co., Philadelphia

W. S. QUIGLEY
Quigley Furnace Specialty Co., New York

W. H. RIDGWAY
C. Ridgway & Sons Co., Coatesville, Pa.

A. G. WARREN
J. W. Paxson Co., Philadelphia

D. P. HOPKINS
U. S. Cast Iron Pipe & Foundry Co.

C. H. NEWCOMB
Crocker Bros., Philadelphia

GEORGE C. DAVIS
Chemist, Philadelphia

JOSIAH THOMPSON
J. Thompson & Co., Philadelphia

S. G. FLAGG Jr.
S. G. Flagg & Co., Stowe, Pa.



W. W. HEARNE
Matthew-Addy Co., Philadelphia

G. H. CLAMER
Ajax Metal Co., Philadelphia

S. J. BECK
Pusey & Jones Co., Wilmington, Del.

D. E. HADLEY
W. W. Sly Mfg. Co., New York

S. M. TOMLINSON
Frank Samuel, Philadelphia

J. S. STIRLING
Hilles Jones Co., Wilmington, Del.

W. J. JOHNSON
Baldwin Locomotive Works, Eddystone, Pa.

J. S. HIBBS
J. W. Paxson Co., Philadelphia

E. M. TAGGART
J. W. Paxson Co., Philadelphia

Eastern Pennsylvania Rich in Romance of Iron

By Richard Peters Jr.

OLD Pennsylvania! Her sons, like her soil, rough outside but solid stuff within; plenty of coal to warm her friends; plenty of iron to cool her enemies!" The position of the Keystone state as an iron producer may be truly epitomized by the foregoing toast, proposed by William Lyman, an eminent ironmaster of Pottsville on the occasion of celebrating the successful making of pig iron with anthracite coal as fuel in 1839. From the early days of the province down through the great world war just past, the pig iron from blast furnaces of the commonwealth of Pennsylvania has had the premier position in furnishing the sinews of war in the struggles to prove to mankind that "right makes might." The merchant pig-iron industry of eastern Pennsylvania had its foundation in the primitive forges and furnaces scattered through the almost unbroken forests of the province. The product of these early enterprises in the shape of the crude iron or direct castings was exchanged through the markets of trade for the necessities of life, or its luxuries, depending upon the prosperity of the times or the vanities of the ironmaster. The history of the early days of the iron industry prior to the Revolution is full of romantic interest and it is gratifying to find this subject is exceedingly well treated in an interesting volume published recently by the Pennsylvania Society of Colonial Dames of America, entitled, "The Forges and Furnaces in the Province of Pennsylvania." The first blast furnace in Pennsylvania was located at Colebrookdale near Pottstown, in 1720, although history tells us that the iron industry had its start four years



RUINS OF CODORUS FURNACE IN YORK COUNTY, PA., STILL STANDING. NOTE THE HOT BLAST OVEN BUILT ON TOP OF THE STONE STACK, TYPICAL CONSTRUCTION BEFORE CIVIL WAR



CRANE IRON WORKS AT CATASAUQUA, PA., AS IT APPEARED IN 1852. THIS WAS ONE OF THE LARGEST OF THE PIONEER PLANTS IN AMERICA

previous by the erection of the Manatawny Forge.

The early furnaces were built of stone in the shape of a truncated pyramid, and lined usually with sandstone. These primitive stacks ranged from 20 to 40 feet in height and were located by a hillside to afford an easy method of charging the raw materials. The ore was supplied from nearby banks where the richer material was picked out, while the neighboring forests yielded wood for the charcoal. These furnaces were operated with cold blast blown through one tuyere with huge bellows or wooden tubs, the power being generated by a water wheel. The tops were open and at night the countryside was lighted up by the flames which, like a mythical oriflamme, rose and fell with the pulsations of the blast.

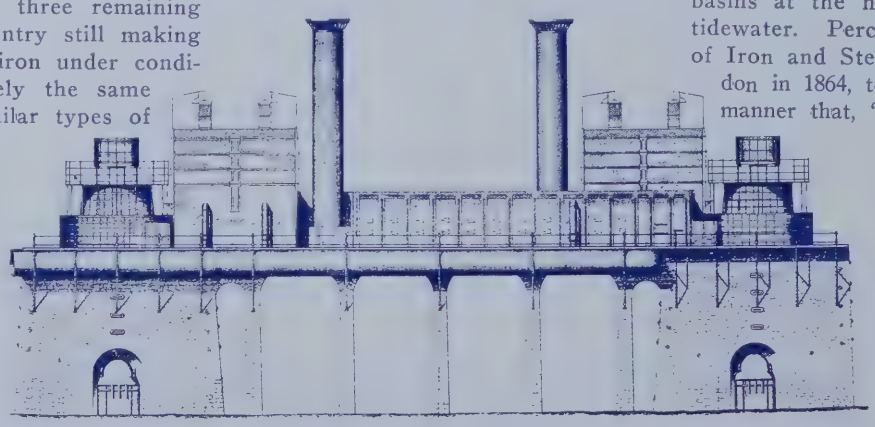
Five or six tons of iron a day was a good output, and the product was usually conveyed in wagons through the country to market, or floated on barges down some nearby stream. The ruins of a number of these ancient stacks are still scattered in remote spots through the state, but it is interesting to note that at Curtin and Milesburg in the Bald Eagle valley are two of the three remaining furnaces in this country still making cold blast charcoal iron under conditions almost precisely the same as did those of similar types of 125 years ago. The early iron industry of the state developed rapidly through the southeastern section in the territory which now comprises Cumberland, Berks, Bucks, Chester, Lancaster and Montgomery counties. During its advancing stages many of the early operators augmented their plants by adding puddle and rolling mills to refine and work up the metal for the trade.

These industries flourished in the more favored localities until the advent of steel brought about competition which they could no longer meet, resulting in the abandonment of a large majority of the plants. There were iron manufacturers also who were content to allow others to convert the crude pig metal to the uses of the trade, and whose plants were so located as to combat the effects of changing conditions. By keeping abreast of developments in the smelting process, and by taking advantage of their natural location in regard to source of supply of materials and the market, these more favored works became the forerunners of the merchant furnace plants of today.

As an example, attention is called to the furnace of the Robesonia Iron Co., at Robesonia, whose beginning dates back from 1793. This stack when originally built was known as the Reading furnace and, although the enterprise changed hands several times, there always has been a pig iron producer on the site. Robesonia furnace, which draws its main source of ore supply from the famous Cornwall deposits, enjoys a unique mineral right which has stood the test of years of litigation and still operates. This grant provided that the owners should have sufficient ore to operate one furnace "as long as grass grows and water runs." A thoroughly modern plant now occupies the site at Robesonia in place of the crude stone stack built 125 years ago in a clearing in the Lebanon valley.

After the invention of the hot blast in 1828, the next era of development was brought about by the use of anthracite coal as a fuel in the blast furnace. Ironmakers in many localities tried the experiment of replacing the charcoal fuel with anthracite, but it remained for William Lyman to have the honor of operating successfully the Pioneer furnace at Pottsville for a period of three months in 1839. A view of this plant at a somewhat later date appears with this article.

It was natural that the valleys of the Lehigh, Schuylkill and lower Susquehanna rivers should quickly respond to the development of the anthracite iron industry, with the building of canals from the coal basins at the heads of the rivers to tidewater. Percy, in his "Metallurgy of Iron and Steel," published in London in 1864, tells us in a picturesque manner that, "the principal manufacture (in America) must always cling to the Lehigh, Schuylkill and lower Susquehanna valleys in Pennsylvania where the ore is abundant, the coal near at hand and the flux on the spot; where the whole land is a



ELEVATION OF THOMAS IRON CO.'S PLANT AT HOKENDAUQUA, PA., IN 1865. THIS DRAWING SHOWS THE TYPICAL CONSTRUCTION OF EARLY LEHIGH VALLEY ANTHRACITE FURNACES

garden and, therefore, food cheap and labor plentiful and the great seaports not far off."

Indeed, there was a period when there could be counted along the banks of the Lehigh river what was equivalent to a furnace for every mile of the distance between Mauch Chunk and Easton.

Mr. Percy described the furnace plant of the Thomas Iron Co., at Hokendauqua. An elevation plan of this plant is reproduced from the book quoted, because it represents the typical construction of the anthracite furnaces as they were built in the fifties. The hot blast ovens and the boilers were erected on huge masonry arches, it being apparent that the early engineers felt there would be a greater saving of gas by having these accessories as close to the tunnel head as possible. There still stands one of the arches of the old Coleraine furnace along the Lehigh river between Bethelehem and Easton. Professor Lesley in his treatise "American Iron Manufacture," published in 1859, gives a poetical description of one of the old Lehigh valley plants, now long since torn down:

"The Allentown anthracite steam furnaces rise together from the river plane in the grandest and most picturesque style, throwing into shade many of the castles of Europe. No finer object of art invites the artist. The still higher pile of the Crane works on the opposite side of the river a little higher up, is rendered less striking by the vicinity of the hills. The Allentown works rise undisturbed and unrivaled by surrounding heights, a world of stone and iron in the air, its summits crowned with tall chimneys like the turrets of Caernarvon, flames issuing from its tunnel heads, and cars traveling up and down its planes, long trains of ore mules passing to and fro across its lofty bridges, while other trains of railroad cars wait below to carry off its iron. The repose of bygone centuries seems to sit upon its immense walls, while the roaring energy of the present day fills it with a truer and better life than the revelry of Kenilworth or the chivalry of Heidelberg. Its archways conceal a perfected alchemy where the spirit of the wind converts earth to iron and dross to gold, condensing around this pile of matter a little world of intellectual and moral happiness and energy to which poets and statesmen might profitably travel to learn more than is read in books or declaimed in congress."

Doubtless the sublime utterances of the good professor may sound ludicrous to our more prosaic way of looking at these things, but to somewhat appreciate Lesley's descriptions, one only has to refer to the illustrations of the Allentown, Crane and Thomas plants, reproduced from old ambrotypes in Henry's "History of the Lehigh Valley."

While Mr. Lyman had successfully made iron with anthracite as fuel at the Pioneer furnace at Pottsville, it remained for the present two leading merchant iron industries of the Lehigh valley to establish works which have continued operating ever since.



PIONEER FURNACES AT POTTSVILLE, PA., FROM AN ENGRAVING MADE ABOUT 1875. AT THIS PLANT PIG IRON WAS MADE SUCCESSFULLY BY THE USE OF ANTHRACITE IN 1839

In 1837, David Thomas at the Yniscedwyn furnace in Wales, commercially solved the problem of smelting iron with anthracite by utilizing the hot blast invented by Neilson 10 years previous. The news of this successful venture having reached this country, arrangements were made by the Lehigh Coal & Navigation Co., whose mines and waterways needed development, to send Erskine Hazard of their company to Europe to engage Mr. Thomas to come to America.

George Crane was a part owner of the Yniscedwyn works and when the first organization of the new enterprise was effected it was determined that Mr. Crane should be honored by having the company bear his name. Accordingly the Lehigh-Crane Iron Co. was organized and David Thomas was engaged to come to this country to establish a furnace on the Lehigh river. Mr. Thomas arrived with his family in the early summer of 1839 and immediately started to lay out the first furnace at Catasauqua. His son, the late Samuel Thomas, described the building of this plant and its subsequent starting in an interesting monograph published some 20 years ago.

On July 4, 1840, the first cast of iron was made at Catasauqua, and from that day to the present Crane iron has always been on the market. From the small furnace originally built the plant grew until at one time it had five stacks on the banks of the Lehigh canal. Changes and improvements in the ensuing years reduced the units to only two, although the production was inversely increased. At present the plant is again being modernized by an addition of a skip hoist with other labor-saving devices. Leonard Peckitt, president of the Empire Steel & Iron Co., which operates the Crane Iron Works, has been its leading spirit for many years. Mr. Peckitt's activities in the recent war as a member of the committee on distribution of pig iron will long be remembered by the foundry trade and the eastern furnace operators, as he had the entire responsibility of allocating pig iron in that district under the direction of the war industries board. The Empire company in addition to owning the Crane works, operates the Topton and Macungie furnaces, and also has a modern plant at Oxford, N. J., in which district are located the principal ore mines of the company.

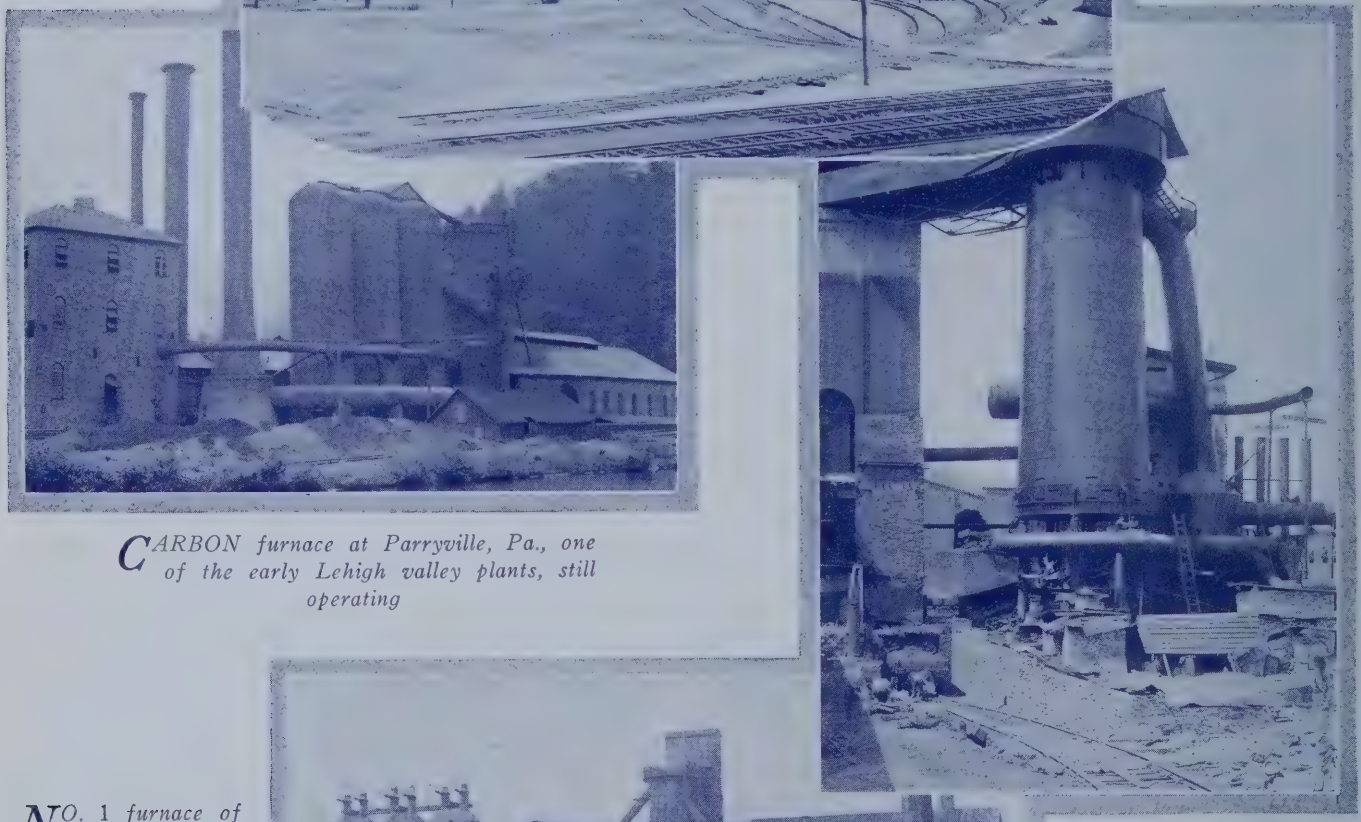
David Thomas was known as "the father of the American anthracite iron industry," and after he had successfully started the Crane works, he joined with 25 other enterprising citizens of the Lehigh valley in the formation of the Thomas Iron Co., in February, 1854. The first two furnaces were built at Hokendauqua and were put in operation in June and October, 1855. Later four other stacks were added, and subsequently the company absorbed the Lock Ridge Iron Co., operating two furnaces at Alburtis, the Keystone furnace at Island Park near Easton, and the Sau-



ABOVE, one of the stacks of the Glendon Iron Co., on the Lehigh river, near Easton, Pa., in 1881



AT the right, Chickies furnace No. 1, built in 1845, remodeled in 1887, and last active in 1900



CARBON furnace at Parryville, Pa., one of the early Lehigh valley plants, still operating



NO. 1 furnace of the old Warwick Iron Co., Pottstown, Pa., predecessor of the modern plant now operated by Eastern Steel Co.

NO. 1 Swede furnace, built in 1850 and rebuilt in 1897, showing old brick hoist tower since demolished. The furnace was again rebuilt in 1905, and is now producing foundry iron





ORIGINAL plant of Glendon Iron Co., near Easton, Pa., as it appeared about 1870. Note the blowing engine house between furnaces

ABOVE, Pine Grove furnace in Cumberland county, Pa., built in 1771, remodeled in 1877, and dismantled in 1902. In 1877, when the photograph was taken, the furnace was one of the most modern charcoal iron plants



DURHAM furnace, built by Cooper & Hewitt in 1874-1875 on a site where iron had been manufactured since 1727



HECLA furnace at Milesburg, Pa., built in 1864. It still is in operation, making cold-blast charcoal iron

con Iron Co., located at Hellertown.

At the plant of the Saucon Iron Co. was erected probably one of the first of the furnaces in this country to be built with an iron shell on cast columns. The original plan of the Hokendauqua plant was completely modified, and in place of the six stone stacks originally erected there were two modern skip-filled ones. Dr. B. F. Fackenthal, of Rieglesville, who is prominent in historical research regarding the early iron industry, wrote an interesting history of the Thomas Iron Co. on the fiftieth anniversary of the organization of the company, of which he was president at the time. The Keystone furnace recently was acquired by the Northern Ore Co., and is being repaired for further operation.

In commenting on the Thomas works, Mr. Lesley in 1857 said:

"The No. 1 furnace made 9731¼ tons while the No. 2 furnace produced 8366¾ tons. The consumate skill of long experience of the manager must no doubt avoid or redress the ordinary troubles of the process, but this immense production even from these first-class stacks can be accounted for only by the enormous consumption of oxygen which they are allowed. In a word, here stands the demonstration that a large and well built crucible properly stocked with good ores and properly blown with power to spare, must be a great and continual success."

At this point, may be mentioned an interesting incident connected with the eastern Pennsylvania iron market of 1879 which had started early in that year around $16 per ton. There was a sudden demand for pig iron which could not be met and the price was forced up steadily to $43. The owners of one ironmaking enterprise having seen that the high prices in this country were resulting in a large tonnage of scrap being imported from abroad, decided that they would forestall further movements by making a liberal cut in the price of their pig iron. Accordingly they notified all their trade that immediately the price of their iron would be reduced $10 a ton. This startling announcement from such a producer had the effect of immediately stopping all buying. The market fell more rapidly than it had advanced and it did not reach an equilibrium until the price was around $22. Not many years later the company liquidated and dismantled its plant at Glendon, which had consisted of five furnaces.

At Parryville, just above the picturesque gap where the Lehigh river breaks through Blue mountain, is located the Carbon furnace. Built in 1869, it is the survivor of a plant of three stacks which at one time were connected with a pipe foundry, and after several changes in ownership now is operated by the Carbon Furnace Co. This furnace is stocked by probably one of the last of the water hoists, its working dependent upon the alternate filling and emptying of a square tank forming the bottom of the cage. This unique arrangement is quite automatic and operates with little or no cost, as the water is under pressure from the surrounding hills.

Establish More Furnaces

In the lower Susquehanna valley the successful use of anthracite as fuel caused a number of furnaces to be built, particularly in Lancaster county. Of the several works established, the Chickies stacks were probably of greatest interest, as their career extended from 1845 to 1900. The original one of these furnaces, called "Chikiswalungo," was erected by Henry Haldeman in 1845, and for over 47 years it was never out of blast for more than six months at a time, which included the entire rebuilding of the plant at one period. During all the time the Chickies furnaces were in blast they were operated by the family of Horace L. Haldeman, now the president of the Pulaski Iron Co. The latter has in his possession interesting notes and records of the operations of the company. General Haldeman, while now guiding the destinies of this prominent Virginia interest, directs it from Philadelphia, and may well be claimed by the eastern Pennsylvania iron trade as one of its own. His active connection with the old Chickies plant for many years, and his association with the Pennsylvania iron men of his day, have made him a prominent figure in the pig iron fraternity. He is one of the few men living who operated furnaces through the radically changing conditions of the pig iron business and is still active today.

Vesta furnace at Marietta was built in 1868, and after passing through several changes in ownership was abandoned in 1903, to be revived and rebuilt in 1917 by the Lavino Furnace Co., which used it to manufacture ferromanganese.

Lebanon has always been an iron center, due to its close proximity to the Cornwall ore banks. The original Cornwall furnace was built in 1742 and is still preserved as a relic. The Coleman and Grubb families were prominent in the establishment of iron works in this district and operated the Bird Coleman, Colebrook, North Cornwall and North Lebanon furnaces. At the present time all the various plants in the Cornwall district, with one exception, have passed into the hands of the Bethlehem Steel Co. and are used by this corporation for supplying its customers with foundry iron.

In the Schuylkill valley the Warwick plant has had the most interesting history. Originally built in 1737 some 10 miles from Pottstown, the old Warwick furnace was actively engaged in casting cannon for the Revolution and for many years was an important industry. In 1875 the first furnace of the present plant was built but not on the same site and by other interests who recognized the fame of the older enterprise. Through the energies of the late Edgar S. Cook the Warwick furnace rapidly took a foremost place in the industry and many important experiments were made at that plant. In 1900 Mr. Cook erected the first 100-foot furnace in the East, which commanded the keenest attention of the iron men at the time. The present plant at Pottstown consists of two modern furnaces, and while they are controlled by the Eastern Steel Co., they belong to the foundry iron producing class, in that much of their product still finds its way to local markets.

Further up the Schuylkill river at Birdsboro is the furnace of the E. & G. Brooke Iron Co., the operations of which have been guided by the Brooke family for several generations. The present plant has succeeded three old stacks built in the seventies which had a total output of only one-half

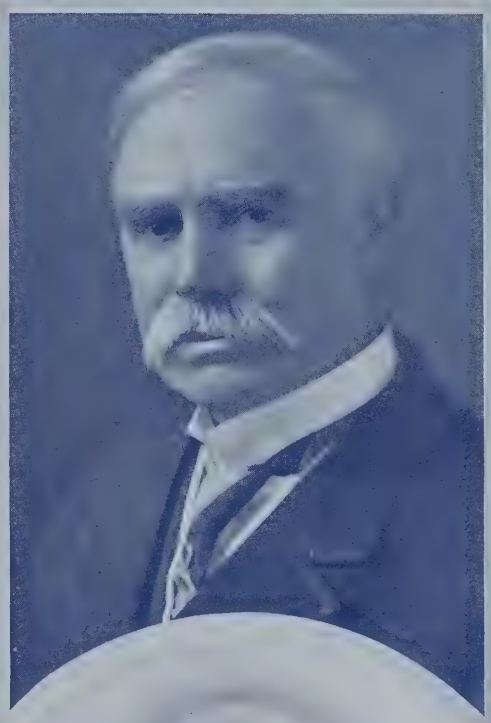
Prize Photographs of Old Iron Works

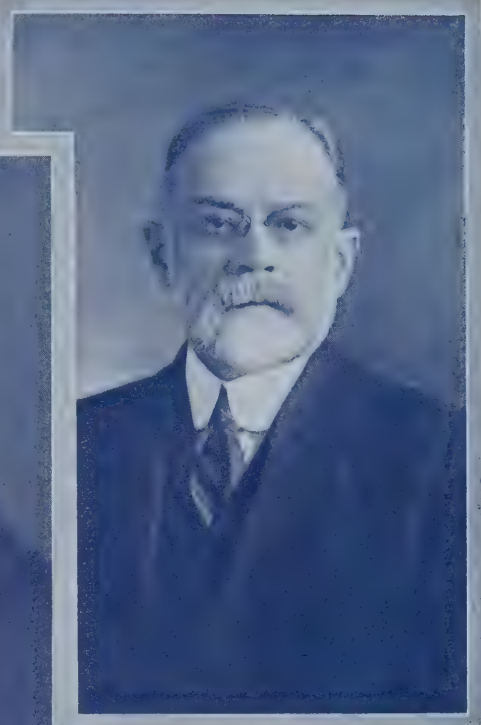
THIS comprehensive and authoritative account of the development of the merchant iron industry of eastern Pennsylvania is illustrated with some of the oldest and most treasured photographs in the possession of those whose interests have been identified with the industry. The photographs were obtained from the collections of Horace L. Haldeman, president, Pulaski Iron Co., Philadelphia; Harry Firmstone, Longdale, Va.; Birkinbine Engineering Offices; Frank C. Roberts & Co.; B. F. Fackenthal Jr.; Robert C. Lea & Co.; H. F. Hallman; J. S. Stillman, of the Empire Steel & Iron Co.; J. E. Rotthaus, of the Thomas Iron Co. and the author of the article.



LEONARD PECKITT, president, Empire Steel & Iron Co., who served as eastern representative on pig iron during war

JOSEPH E. THROPP, Pennsylvania's only surviving iron master





HORACE L. HALDEMAN, of an historic family of Pennsylvania ironmasters, now president of Pulaski Iron Co.

B F. FACKENTHAL JR., who as president guided the Thomas Iron Co.'s development for two decades



EDGAR S. COOK, who built the first 100-foot stack in the East. Mr. Cook died in 1917



DAVID THOMAS, known as the founder of the American anthracite iron industry and who, as a practical iron man, started the Crane Iron Works and Thomas Iron Co. He was born at Tyllwyd, South Wales, Eng., Nov. 3, 1794, and died June 20, 1882



of what the modern Brooke furnace produces today.

Pottsville, Reading, Leesport, Norristown and other towns along the Schuylkill have had their vicissitudes in the iron trade, and the older men in the business may still recall the brand names of Annville, Edgehill, Henry Clay, Merion, Monocacy, Moselum, Pioneer, Plymouth, Lucinda and William Penn, all of which have been out of the market for many years. The Reading Iron Co. operates the Keystone furnace at Reading and also the plant at Emaus.

At Swedeland, a few miles above Philadelphia, are the Swede furnaces, formerly operated by the Philadelphia & Reading Coal & Iron Co., which corporation at one period was active in manufacturing pig iron. Professor Lesley in his work previously quoted says:

"The Swede Iron Co. Nos. 1 and 2, form a noble pile visible from afar on the plane of the right bank of the Schuylkill. The double stack with its lofty round arches is as fine a study in its way for artists as the Allentown stacks, gaining in effective height what it lacks in width and mass."

These furnaces were later operated by the Richard Heckscher & Sons Co., but no part exists today of these old works. They have been completely replaced by a thoroughly modern plant of three furnaces served with by-product coke ovens, and are operated as an adjunct to the plant of the Alan Wood Iron & Steel Co., across the river, with which they are connected by a convenient hot-metal bridge.

Figured in Revolution

For many years the Durham furnace at Riegelsville in Bucks county enjoyed the distinction of being the most easterly plant in the state. A furnace stood there from 1727 to 1912, and much of interest can be written of the history of the Durham plant. The Durham flat boats, used for transporting the pig metal in the olden days, figured in Washington's historic crossing of the Delaware. Dr. Fackenthal, who resides near the site of the old Durham works, has made a study of old stove plates cast at the early Pennsylvania furnaces, and has been able in many cases to locate the possible place of manufacture of these castings by careful analysis of the iron from which they were made. From his knowledge of the peculiarity of the analysis of the ores which were in the neighborhood of the old furnaces, he could determine the character of iron that was produced, and hence could check the probable origin of the stove plate castings.

With the passing of Durham and the demolishing in 1890 of the blast furnace that was built in the Kensington district of Philadelphia in 1873, the plant at Chester became the only furnace on the Delaware river. Originally built in 1880 as an adjunct to the Chester Rolling Mills, it was in its day the most modern of all the eastern Pennsylvania furnaces, and had the distinction of being one of the first to produce what is now known as low phosphorus iron. The writer's father, long connected with this plant, is authority for the interesting information that at these mills were rolled plates for the first American steel squadron, the ATLANTA, BOSTON, CHICAGO and DOLPHIN, the steel being made partly from iron produced at the local furnace. The late S. T. Wellman developed at this plant his inventions which have resulted in great saving in the cost of producing steel. The rolling mills long since have passed into history but the original furnace plant with a few modern additions still produces pig iron and has been operated by the Delaware River Steel Co. for the past decade.

In the eastern slopes of the Alleghenies are a number of furnace plants the output from which finds its way to the eastern foundry markets. The most important in this district is operated individually by Joseph Earlston Thropp, whose position in the trade is unique, in that he is today the only actual ironmaster of the state. Mr. Thropp has extensive coal and iron holdings in Bedford county, having acquired some years ago the idle plants of the Saxton Furnace Co., at Saxton, and the Everett Iron Co., at Everett, both of which he completely remodeled. Mr. Thropp gained his early practical experience in the seventies at J. B. Morehead's works in the Schuylkill valley, and later operated the Edge Hill furnace as lessee. At Riddlesburg, also in Bedford county, the Colonial Iron Co. has a thoroughly modern furnace erected on the site of the two stone stacks built in 1869 and 1870 by the Kemble Coal & Iron Co. The Emporium furnace in Cameron county was built in 1888 by the Cameron Iron & Coal Co., and passed through several ownerships before it was leased by A. Brady and operated as the Emporium Iron Co. The Bellefonte and Nittany furnaces, built in 1887 in Center county, had checkered careers and were abandoned and dismantled a few years ago.

During the decade from 1870 to 1880 occurred important changes in the construction of furnace plants in eastern Pennsylvania as elsewhere. The stone stack with the iron extension afterwards added to increase the height, gave way to the steel or iron shell supported on cast columns. The iron hot blast oven began to find its nemesis in the advent of the Whitwell and Cowper regenerative stoves, which were introduced in 1877. Dunbar furnace in western Pennsylvania was the first stack in the state to be thus equipped, and the Crane works in the Lehigh district followed shortly after. The ironmasters of the day had heated discussions of the merits of the new type of stoves as compared with the older method of heating the blast, but in the end, as well known, the regenerative stoves won out. Nevertheless, several furnaces in the Lehigh region still are operating iron pipe stoves.

In this same period, chemists were first employed at the eastern blast furnaces. B. F. Fackenthal Jr., then operating Durham furnace, took a special course in chemistry at Lafayette college, while about the same time Edgar S. Cook installed a laboratory at the Warwick furnace at Pottstown. From 1880 and through the present century there appeared many further changes in the types of construction. The stone cast-houses fashioned with great care, gradually gave way to those of light steel construction, and the broad inclined planes and wooden hoist towers were replaced with steel elevators or skipways. Later pig-casting machines, gas washers, improved boilers, more powerful blowing equipment and pumps were added, so that today there is little in common between the present blast furnace and its predecessor.

Engineers Superintend Remodeling

As the plants grew and rebuilding became more involved, trained engineers were called into consultation to redesign and superintend the remodeling. John Hartman, of Philadelphia, was one of the older engineers of this type. Frank C. Roberts, also of Philadelphia, was probably one of the first men to specialize in blast furnace construction, acting in a consulting capacity and also as a contractor.

While the development of the pig iron industry in Virginia is hardly germane to this article, yet it is interesting to follow the Pennsylvania iron men who directed their further energies in the Old Dominion state. The Firmstones, after their successes at Glendon, joined the Pardees in building Longdale, while over the mountain on the James river, Wilton

MODERN furnace of Colonial Iron Co., Riddlesburg, Pa., erected in 1911 on site of stone stacks built in 1869-70





MODERN furnaces at Hokendauqua, Pa., of Thomas Iron Co., which has been a leading eastern pig iron producer since 1864

COLEBROOK furnaces at Lebanon, typical of the construction of the furnaces built in that district





FURNACE of Delaware River Steel Co., Chester, Pa., which made pig iron used for making plates that went into the first American steel naval squadron

MODERN blast furnace of E. & G. Brooke Iron Co., Birdsboro, Pa., where stacks have been operated by Brooke family for several generations





MODERN stack of Robesonia Iron Co., Robesonia, Pa., which with its predecessors, has been producing iron from Cornwall ore banks for 125 years

Cook, of Wrightsville, was operating Princess furnace. Samuel A. Crozer, a wealthy cotton manufacturer of Chester, established the plant at Roanoke bearing his name in 1882. The Radford-Crane Iron Co. erected a furnace in 1890 at Radford with Samuel Dixon, who was president of the Crane Iron Works, as president, and W. S. Pilling, now president of the Northern Iron Co., as secretary and treasurer. Both the Crozer and Radford furnaces now are the property of the Virginia Iron, Coal & Coke Co., which is the leading interest in the Virginia iron field today.

Knew Iron Business Thoroughly

All these establishments had their reverses peculiar to the Virginia district, but it remained for the Pulaski Iron Co. to become a success from the time the furnace was first blown in, February, 1888. A. J. Dull, of Harrisburg, was the first president, and associated with him were E. P. Borden, Abram S. Patterson, Charles L. Bailey, James T. Doran, John W. Eckman and F. J. Kemble, the president of the Norfolk & Western railway, all Pennsylvania men who knew the iron business thoroughly. All these men have passed away, but as mentioned previously, the present guiding spirit of the company is Horace L. Haldeman, of Marietta. The Alleghany Ore & Iron Co., operating furnaces at Iron Gate and Buena Vista, is controlled by the Lukens Steel Co., of Coatesville, a leading eastern producer of plate.

The iron industry developed an unusually sturdy type of men and it was not at all unusual in Pennsylvania to find the heritage of the industry handed down from father to son. Many of the iron manufacturers became leaders in the affairs of the state and nation. Ethelbert Watts, long in the consular service of the nation, and who died within the last few months, for many years was an officer of the old organization which operated Vesta furnace at Marietta. The father of Andrew Curtin, who was the governor of the commonwealth during the Civil war, was a pioneer in the iron business in Center county. The family of the present governor, William C. Sproul, has been in the iron business in Pennsylvania for several generations. His great-grandfather, Charles Sproul, was a forgewright and afterward became a forge owner on the smaller water powers in the Schuylkill valley. Charles Sproul's son, James, was quite an extensive manufacturer for the early days and up to his death in 1847 conducted large forges and bloomeries along the Octorara creek, and the charcoal blast furnace at Black Rock in Lancaster county. Mr. Sproul was one of the largest land owners in Lancaster and Chester counties and controlled much forest territory from which he made charcoal. His sons continued the business until the advent of the railroad and steam power caused a centralization of the ironworking in other communities. William H. Sproul, the governor's father, concluded his business career as an official of the Chester Rolling Mills, operating the blast furnace at Chester. Governor Sproul is president of the Lebanon Valley Iron & Steel Co., Lebanon, Pa., a large maker of iron mill products.

The old ironmaster of Pennsylvania has gone and with him the romantic side of the pig iron industry. The furnace plants which once were the center of their individual communities have been replaced by modern types. Instead of the old hillside stack with its wooden sheds and its mule and ox teams, draying in the ore and charcoal, we have the modern furnace almost outflanked by the towering stoves and stacks, while a minature railroad system is necessary to handle its daily needs of raw material and ship its product to market.

Many Old Plants Abandoned

There are but few men now in the trade who can bring to memory the roll call of euphonious names that once stood for busy furnace plants, such as Aurora, Augusta, Big Pond, Bloom, Cordelia, Caledonia, Coleraine, Conestoga, Duncannon, Donegal, Dauphin, Glamorgan, Glendon, Greenwood, Irondale, Johanna, Lackawanna, Mill Hall, Mount Laurel, Mount Hope, Montebello, Montour, Maranda, Maiden Creek, Norway, New Market, Pine Grove, Roaring Creek, Rock Hill, Swatara and Safe Harbor. Yet these and many others once supplied the foundries of Pennsylvania with their most important raw material.

The long list of abandoned plants serves to illustrate the changes wrought by time and by new methods. But the growing needs of the foundrymen of eastern Pennsylvania are well balanced by the greater pig iron outputs of today, concentrated in fewer furnaces and operated in an era of applied technical knowledge.



Floor of Cylinder Molds in the Baldwin Locomotive Works



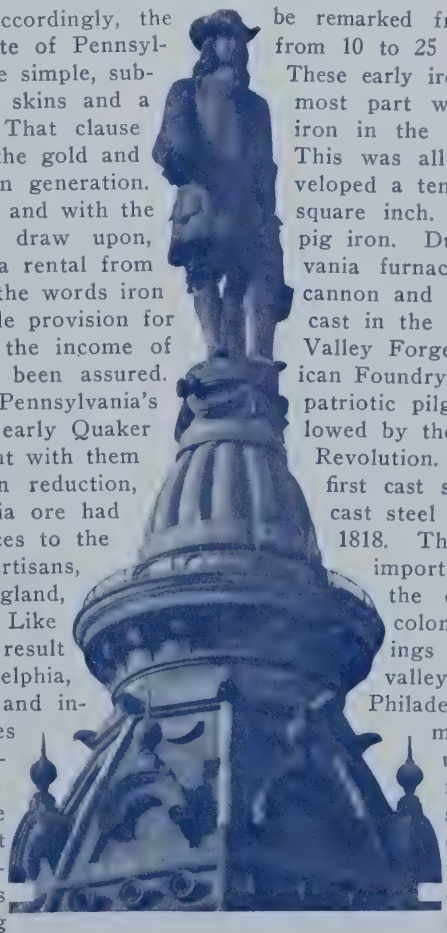
Old Ironsides America's First Locomotive Made in Philadelphia

Philadelphia as a Foundry Center

BY D. M. AVEY

LOOKING down from the lofty tower of Philadelphia's city hall is an imposing statue of William Penn, the city's founder. This wonderful specimen of the art of ornamental casting stands 37 feet high, measured from the simple pedestal to the crown of the Quaker hat. Aside from its interest as an example of the foundry art, this figure bears an especial significance. The casting was produced in the plant of the Tacony Iron & Metal Co. under direction of Francis Schumann, the first president of the American Foundrymen's association, and was raised to its commanding eminence shortly before the first convention.

WHEN Charles II, England's most frivolous king, conveyed Pennsylvania to William Penn, he felt sure he had made a good bargain. He had rid himself of the importunities of an insistent Quaker who felt that even monarchs should pay their debts. Furthermore, the territory lying along the Delaware meant little to his royal imagination as the country was wild, the settlers were hardly worth taxing and the resources were extremely doubtful. Accordingly, the land, representing almost the entire state of Pennsylvania was vested in William Penn in fee simple, subject only to a quit-rent of two beaver skins and a fifth of all the gold and silver ore. That clause requiring the payment of a portion of the gold and silver ore is illuminating to the modern generation. Here was a king who in all his wisdom, and with the unbounded realms of imagination to draw upon, specifying only gold and silver ore as a rental from Pennsylvania. Now had he only added the words iron and coal, and had he made some suitable provision for collection through established agencies the income of at least one royal family would have been assured. Gold and silver had she none, but of Pennsylvania's iron—that again is another story. The early Quaker settlers who founded Philadelphia brought with them a knowledge of the processes of iron reduction, forging and casting. Native Pennsylvania ore had suggested forges and later small furnaces to the settlers. The news of these attracted artisans, workers in metal who came from England, Wales, Scotland, Germany and Sweden. Like attracts like in industrial lines. The result was most clearly demonstrated in Philadelphia, where a small industrial nucleus grew and increased until today a circle of 200 miles diameter, circumscribed about old Independence Hall as a center would embrace practically 40 per cent of the foundry business of America and almost 50 per cent of the hardware manufacturing of the world. In the early days Philadelphia throve along metal working lines in proportion even as it does today. The Schuykill and the Delaware offered wonderful facilities for transporting iron from the forges and furnaces further up-state. Originally the foundry industry was one and inseparable with the smelting of iron. In Swank's history of iron-making in Pennsylvania is recorded the fact that the first stoveplate cast in this country, inscribed 1763, was made at the Colebrookdale furnace. By remarkable coincidence the first English cast-iron pots, kettles and other hollow ware by the use of sand molds was produced at the original Colebrookdale furnace in Shropshire, shortly after 1709. In 1789 there were said to have been 14 furnaces in Pennsylvania. These were small, as may be remarked from the fact that they produced only from 10 to 25 tons of pig iron and castings a week.



These early iron works of Pennsylvania were for the most part within 40 miles of Philadelphia. Pig iron in the early days sold at about $15 a ton. This was all cold blast, charcoal iron which developed a tensile strength up to 40,000 pounds per square inch. Castings brought twice as much as pig iron. During the Revolutionary war, Pennsylvania furnaces contributed a large share of the cannon and round shot which in most cases were cast in the sand directly in front of the furnaces. Valley Forge, where many members of the American Foundrymen's association will no doubt make a patriotic pilgrimage during the convention, is hallowed by the memory of the darkest hours of the Revolution. In this vicinity some of America's first cast steel is said to have been made. Here cast steel for use in saws was made as early as 1818. The clay for making the crucibles was imported from England. Philadelphia formed the center for the greater part of the colonial iron business. Bar iron and castings which were made in the Schuykill valley were transported down by boat to Philadelphia. The city itself furnished a fair market for the castings which were in use in pre-Revolutionary days. The field was extremely limited. The simplest of kettles and hollow-ware embraced the greater part of what would be considered castings for domestic use. Municipal castings also were unknown. The early waterworks system of Philadelphia was primitive and called for little from the foundry. All the mains were logs, bored through the center and joined by a simple form of flanged connection. These connections were the only iron fittings used. Some of these, which were used in the late years

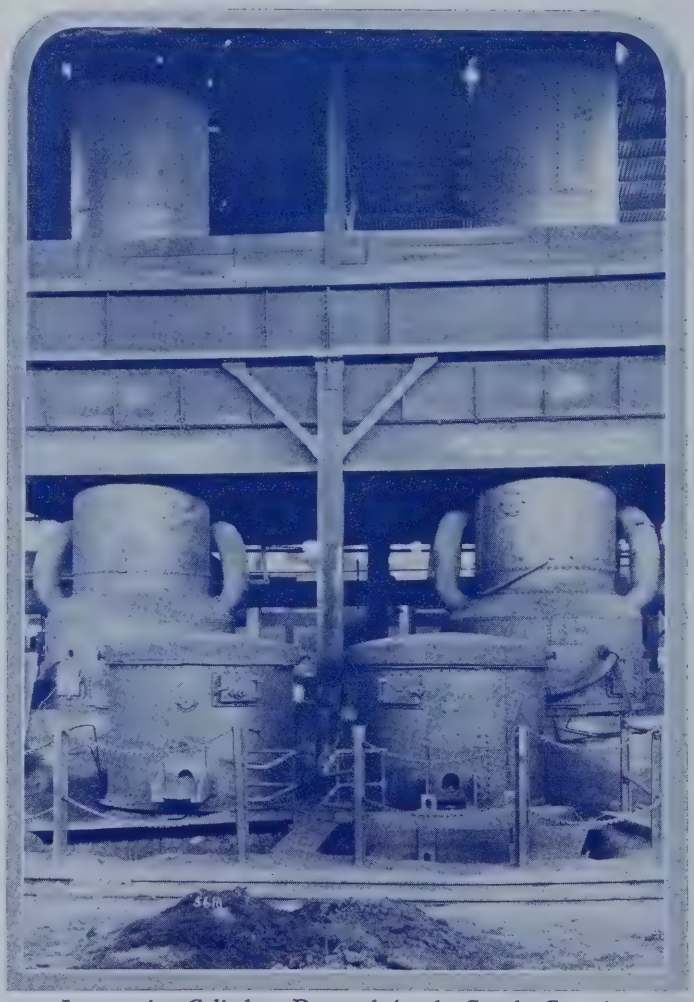
of the 18th century may be seen today in the Franklin institute located in Philadelphia. The first mention of cast iron pipe used in the city refers to some laid in 1817. This was made in England. About this time, R. D. Wood & Co., Philadelphia, made some of the first cast pipe which was produced in this country. This was only 2 or 3 inches in diameter, and was molded horizontally in 9-foot lengths. Some of the earliest examples of pipe founding have been removed during late years and have been found to be in a remarkable state of preservation. It is interesting to note that the firm of R. D. Wood & Co., which was established soon after the Revolutionary war and which is said to have produced some of the first pipe molded in America still is an active concern, producing cast iron pipe and a varied line of equipment. The offices of this company are in Philadelphia and the main foundry is at Florence, N. J. The present executive of this company is a son of the founder of the institution, who dates back to the early eighties. Careless thought has attributed to the city of Philadelphia a somnolent character, slow, plodding and at times somewhat behind the procession in ideas. It is only necessary to point to a few concrete examples to refute this characterization. Franklin, statesman, philosopher, and inventive genius dominated with his personality the last half of the 18th century and his mastery alone gave to Philadelphia the lead in political, social and scientific thought during that period. Even the foundry industry bears the touch of Franklin's master hand. He published in 1744 a pamphlet describing a newly invented stove or "Pennsylvania fireplace." This was in effect a cast covering for the front of a fireplace, without oven or chimney. The first stoves made in America are thought to have been cast by Christopher Sower of Germantown, which is located only a short ride from the city. Philadelphia's ascribed sluggishness and inertia again is challenged by a name which always is linked with that of the Quaker City, and is known through all the lands where steel rails have shortened time and space. Matthias W. Baldwin was a Philadelphia jeweler. Had the alleged lethargy of the community possessed him, his hall-mark might have adorned a few odd pieces of plate preserved in vaults of some of Philadelphia's old families and hundreds of "Pershing" locomotives might have been built in Sheffield, Newcastle or in Birmingham. Mr. Baldwin formed a partnership in 1825 with David Mason, a machinist, to manufacture bookbinders' tools and cylinders for calico printing. An engine which was purchased to operate some machinery in the factory proved unsatisfactory and as engines were few and similar in design in those days, Mr. Baldwin designed and constructed one on his own ideas. This led to the manufacture of stationary engines and directed Mr. Baldwin's attention to the practicability of steam as a propelling power for traction purposes. In 1830 a few British-made locomotives of a primitive type had been imported, and one which was only partially successful had been built previously by the West Point Foundry, New York. About this time, Franklin Peale, director of the Philadelphia Museum requested Mr. Baldwin to build a miniature locomotive for exhibition purposes. Basing his design on published descriptions of locomotives that had taken part in the Rainhill competition of steam-propelled vehicles held in England, Mr. Baldwin, in April, 1831, completed a small locomotive which ran about a circular wooden track in the museum. This miniature was so successful that in the same year Mr. Baldwin received an order for a locomotive to operate upon the Philadelphia, Germantown and Norristown railroad, a six-mile trunk line, operating horse-drawn cars for passenger traffic. Mr. Baldwin, in company with Mr. Peale inspected the loose parts of a locomotive which had been sent from England. With this scant basis for design, work was started in Mr. Baldwin's small but efficient machine shop. The difficulties of this undertaking may be appreciated when one visits today the modern plants of the Baldwin Locomotive Works



Huge Locomotives Are Assembled Progressively



Cutting the Riser From a Large Bronze Propeller



Locomotive Cylinders Demand Ample Cupola Capacity

in Philadelphia, or at Eddystone, Pa. No machine tools were at hand for producing and machining the parts. The foundry operations were practically without precedent. Cylinders were bored with a chisel fixed in a block of wood and turned by hand. The wheels were made with heavy cast-iron hubs, wood spokes and rims and wrought-iron tires.

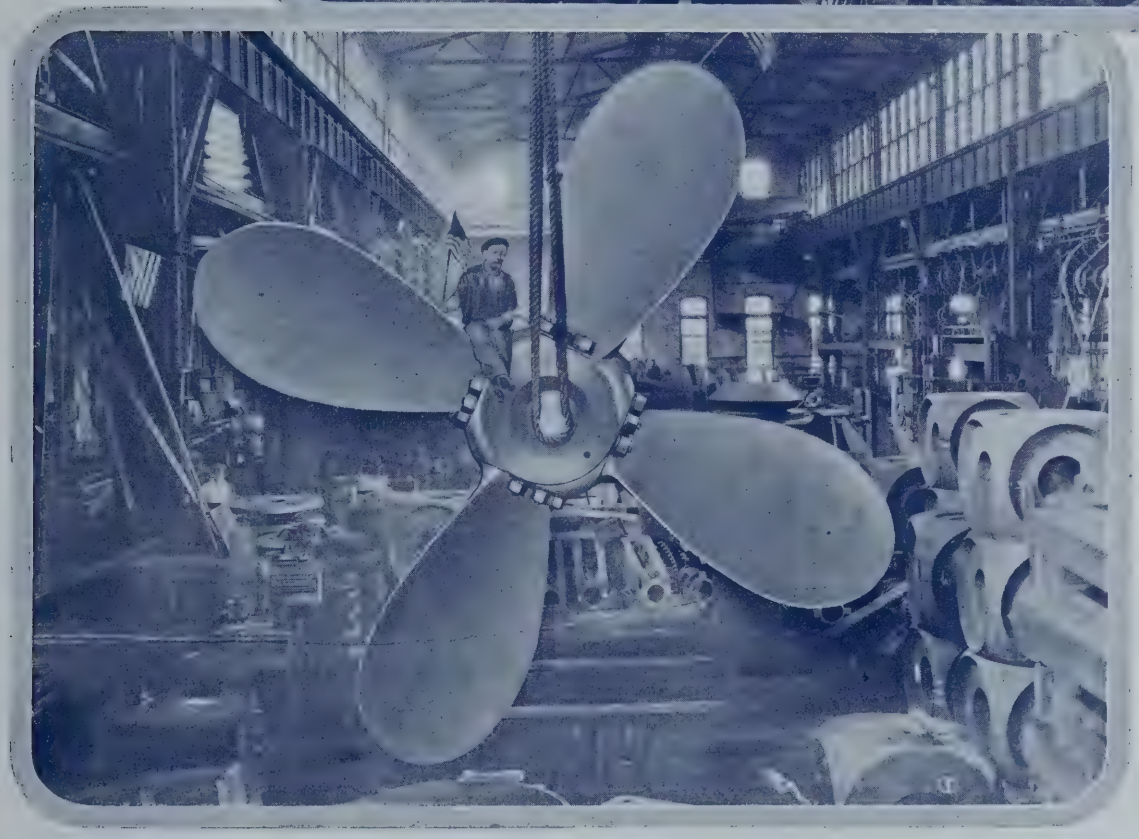
The entire locomotive when completed weighed about five tons. In the trial trip made Nov. 23, 1832, a speed of 28 miles per hour was attained, and it was predicted that a load of 30 tons could be drawn at an average speed of 40 miles per hour on a level road. This locomotive, Old Ironsides, continued for some time a great attraction for the traveler who sought a new sensation. It occupied the place now being taken by the indigent air-plane taken about from place to place to afford rural dwellers a short trial flight.

The Baldwin interests passed through numerous viscissitudes during the early years of locomotive construction, but steadily maintained a place in the lead of advanced construction. The Civil War found the company prepared to aid to the fullest extent in supplying locomotives for government service. Similarly the outbreak of the Great War brought burdens which were handled admirably.

As early as November, 1914, 30 locomotives were ordered for Russia. This was only the first of a series of orders from the allies, and finally from the United States government. In the summer of 1917 the initial order of 150 standard gage locomotives for the American Expeditionary Forces was placed. The first of these was completed on Aug. 10 and the last on Oct. 1. Orders which followed rapidly called for large numbers of similar locomotives, popularly known as "Pershing" locomotives, which were shipped completely assembled with the exception of smoke-stacks, cabs and a few minor details. At the time of the armistice the program of the company called for the completion of 300 engines of this type per month. This was in addition to special-type steam and gasoline locomotives, some of which



The Size and Weight of Ship Castings Demand Great Capacity for Pit and Floor Molding Operations



The First Propeller Delivered to the Hog Island Shipyard Weighed 34,000 Pounds and Was 18½ feet in Diameter

carried steam reservoirs filled from a central boiler. The latter were for use in the immediate vicinity of explosives, where no fire could be permitted. The different types of locomotives which were constructed for all the belligerent nations during the war included the following:

Broad gage steam locomotives	3246
Narrow gage steam locomotives	1146
Broad gage gasoline locomotives	20
Narrow gage gas'l'n locomotives	1139
Total	5551

In addition to this work which was directly in line with the company's facilities over six million shells of various sizes were manufactured by the Eddystone Ammunition Corp., and the Eddystone Munitions Co., subsidiaries of the Baldwin Works. A very important undertaking which was handled with credit to the Baldwin company was the construction of 11 railway gun mounts for the 14-inch navy type gun. This super-gun which was used with deadly effect during the closing months of the war, has been fully described previously in THE IRON TRADE REVIEW. The aggregate of war work handled by the Baldwin works, the associated companies mentioned and the Standard Steel Works Co., another affiliated interest, totaled over $250,000,000.

The foundry capacity necessary for this great establishment has kept pace with the growth of the manufacturing plant. During 1906 a tract of 184 acres was purchased at Eddystone, Pa., about 12 miles from Philadelphia. Here extensive foundries and blacksmith shops were erected. Since 1907 extensive additions to this plant have been erected from time to time. These include further foundry facilities, pattern shops, pattern storage building and erecting shops. All gray iron, malleable and brass castings, are produced in the company's own foundries. All parts of locomotives with the exception of boiler and tank plates, chilled wheels, boiler tubes, and special patented appliances are made in the works of the Baldwin company from raw materials.

The growth of railway transportation did much to bring Philadelphia to the front as a manufacturing city. It also did much to establish its precedence as a foundry center. The trackless pathways of the seven seas, also have brought into being establishments which rival even the Baldwin plant. The city is ideally situated for a seaport. The broad Delaware and the Schuylkill furnish an irregular water front of almost 75 miles, where some 250 ships can be berthed at the same time. Thus natural facilities predestined Philadelphia, the second seaport of the United States, as a shipbuilding center. Hog Island only a short distance from the city is too well known to





Jobbing Shops, Stove and Furnace Foundries and Machinery Plants Contribute to the City's Foundry Supremacy







This 6-inch Cast Iron Water Pipe Was Laid in 1827 and Removed in 1915 to Provide a Larger Main

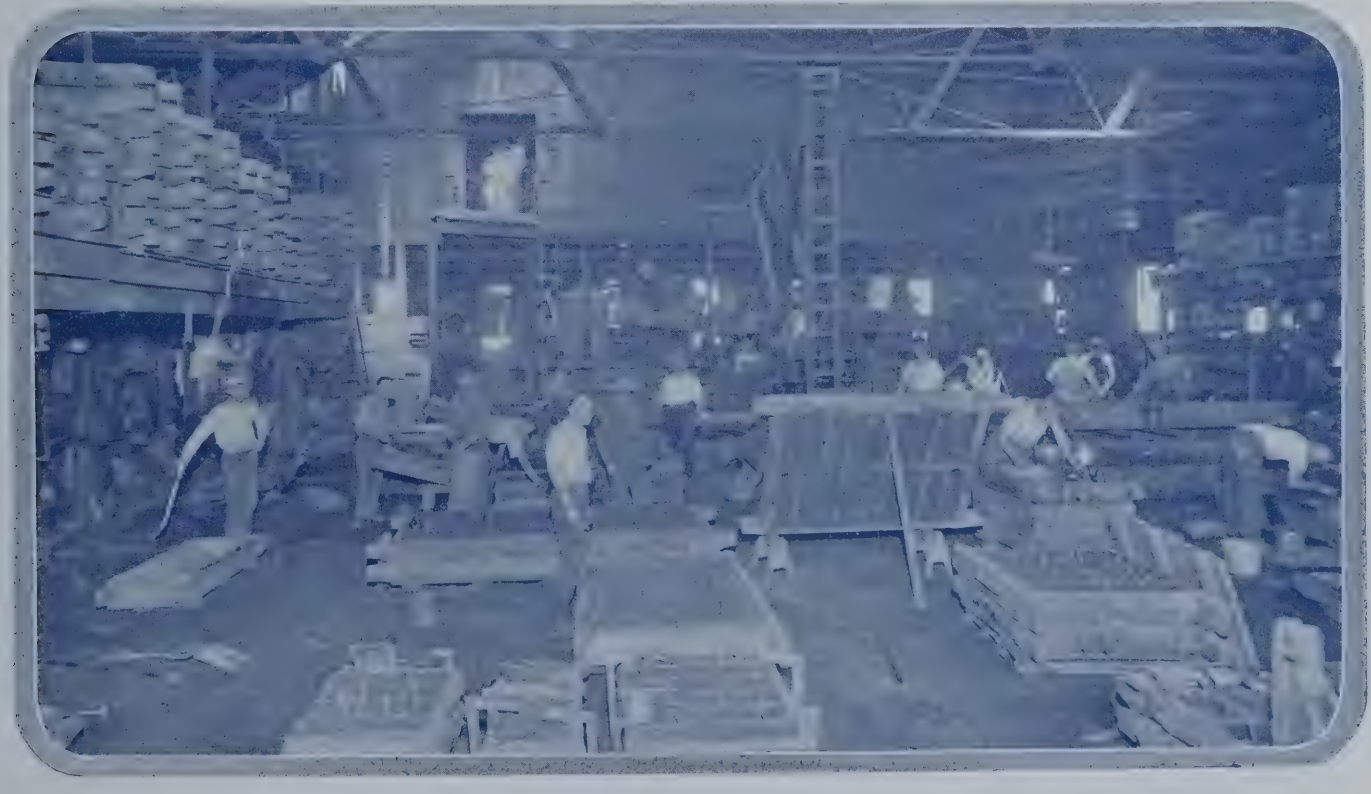
need more than mention. The League Island navy yard at the lower end of the city is particularly interesting to those engaged in the foundry industry through the recent completion of a $1,500,000 casting plant equipped to handle practically any class of work required for the vessels of the navy. This shop is equipped wih four cupolas capable of melting 71 tons of metal per hour in addition to a 3-ton electric furnace.

Along the Delaware is one of the oldest established shipyards in the country. This is the William Cramp & Sons Ship & Engine Building Co. William Cramp commenced building ships in 1830, almost at the same time when Matthias W. Baldwin turned from jewelry to locomotives. The Cramp company was incorporated in 1872. The first man-o-war built in this plant was the New Ironsides, launched in 1862. From time to time, since that date, this yard has contributed its services to the government in the construction of fighting ships, and several foreign battleships were built previous to 1914. The Cramp yard has constructed over 400 vessels since its founding, and from an early date the gray iron, steel and nonferrous metal castings required have been produced in plants operated by the Cramp interests. The foundries of this company have furnished as high as 3,000,000 pounds of iron, 2,000,000 pounds of steel and 1,000,000 pounds of bronze castings per month for use in vessels under construction in its own or other shipyards.

The interdependence of various industries is illustrated by a condition governing in Philadelphia. William Sellers & Co., Inc., is one of the largest manufacturers in America of machine tools for locomotive and railway equipment construction and for shipyard use. It specializes in heavy horizontal boring machines for locomotive cylinders, car wheel boring



Much of the Equipment Used in the Quaker City Foundries is Supplied by Philadelphia Manufacturers



Some of the Oldest Jobbing Shops in Philadelphia Still Are in Existence and Continue to be Actively Engaged

and turning mills, plate and boiler drills, bending machines, hammers, lathes, and slotting machines for locomotive frames. This company is one of the pioneers in metalworking in Philadelphia, and is particularly interesting from its large and splendidly equipped foundries.

The present firm was started in Philadelphia in 1848 by Messrs. Bancroft and William Sellers. In 1853 the firm erected machine shops, forge shops, brass and iron foundries and pattern shops in a number of buildings which still are occupied by the company. The old foundry with its allied shops occupied about 8600 square feet. The death of Mr. Bancroft in 1855 resulted in William Sellers and John Sellers Jr., assuming control of the business. The firm built a new foundry to accommodate its growing requirements in 1883. This has been extended until now the space occupied by the various casting departments is over 57,000 square feet.

The foresight of the designers of the foundry built at that early date is attested by the fact that it still is in use, and the arrangement and equipment provided are regarded as thoroughly efficient for the class of work handled. The foundry built in 1883 originally was provided with power and hand jib cranes which were superseded in 1885 by overhead power traveling cranes. These were indeed remarkable for their day, as previous to this time the slow-speed cranes available had been mere hoisting machines.

Early Molding Machines Used

Molding machines were used in the Sellers' foundry as early as 1860-61, and since that time the development of both hydraulic and pneumatic machines has been followed closely. The Sellers foundries at present do almost no outside work as the company's own requirements utilize over 8,600,000 pounds of castings annually.

So far only those foundries which serve large manufacturing establishments have been considered. These though larger individually constitute only a small portion of the foundry resources of Philadelphia and vicinity. The city leads the world in the production of hardware, including springs, locks, plumbing supplies, mechanics' and household tools. It produces over $40,000,000 worth of general hardware annually, and of this amount exports practically 40 per cent of all such commodities sent out of this country.

An old established house making general hardware, ship chandlery, fittings and jobbing castings is the Thomas Devlin Mfg. Co., headed by Thomas Devlin, who for years has been the president of the Philadelphia Foundrymen's association and was one of the founders of the national body. This company was started in 1865 immediately after the close of the Civil War. Hardware and meat choppers which were just invented formed the main products of the original company.

In 1870 Mr. Devlin became a member of the firm which was known as Carr, Crawley & Devlin. Later Mr. Devlin and Louis J. McGrath started in the malleable fittings business, and in 1880 a new plant was constructed at another location in Philadelphia. In 1902 the Thomas Devlin Mfg. Co. was incorporated and a large plant was built at Burlington, N. J., where a full line of malleable fittings now are manufactured. The two Philadelphia plants still forming part of the Devlin company make various general hardware, meat choppers, lard presses, hot air registers, etc.

When the foundrymen gathered in Philadelphia in 1896 they were advised to visit the stove foundries of the Abram Cox Stove Co., "presided over by A. C. Mott," who was one of those who founded the American Foundrymen's association. This plant still continues a point of special interest as one of the large stove factories of the country. The company was established over 72 years ago. Two foundries are operated, one in Lansdale, Pa., and the other, the original plant in Philadelphia. Every known apparatus for heating or cooking with coal or gas is made at these two factories.

A distinctive and highly specialized class of foundry work is represented in the plant of the American Manganese Bronze Co., located in Holmesburg, a suburb of Philadelphia. This company makes castings, forgings, ingots, rods and sheets of bronze. It specializes in marine propeller wheels, but the varied demands of industry call for the production of heavy hydraulic castings, turbine runners and casings, valves, and gears at various times.

Jobbing foundries handling brass, steel and iron are liberally represented in the city. A characteristic foundry of the latter class is the Girard Iron Works which has been in continuous operation since 1864. This plant produces from 10 to 12 tons per day of medium and light weight castings, particularly high grade machinery castings. The Aetna Foundry which operates the plant formerly owned by the Tioga Foundry Co. is a similar plant which produces about 20 tons per day of castings weighing from a few pounds up to 10 tons.

The Enterprise Mfg. Co. which makes hardware specialties, particularly food choppers, has an interesting foundry which was established over 50 years ago. This plant produces about 25 to 35 tons of small castings per day. These all are utilized by the company of which the foundry is a part.

The extensive textile industry of the eastern states supports a large foundry capacity in Philadelphia. An example of this classification is the Fletcher Works, successors to Schaum & Uhlinger. This company manufactures looms and textile machinery, and centrifugal machines for extracting liquids from raw or finished fabrics, hides, pulp, chemical salts, ore, sand and chemicals and for reclaiming paint, oil and grease from turnings, used containers, rags and waste.

While probably not so well represented in the steel casting branches the Philadelphia community possesses some notable steel foundries. The Midvale Steel & Ordnance Co. which was particularly active during the war produces in normal times over 2200 tons of acid and 6500 tons of basic open-hearth steel castings annually in addition to 9000 tons of iron castings used within the plant itself.

A highly specialized branch of the industry is represented by the Ajax Metal Co. which was established in 1880. This company makes railway and machinery bearings and bearing metals. This was the first company excepting the Cramp interest to enter upon the commercial production of ingot manganese bronze. A complete plant for the recovery and refining of by-products, known as copper-bearing material is operated and recently a new plant has been added to manufacture a type of electric furnace which has been used successfully in the company's own foundries.

Obviously it is impossible to enumerate all the 133 foundries of Philadelphia proper. The city ranks third in the number of casting plants and probably excels all other American cities in the tonnage of castings produced. Furthermore, it is the hub of a great industrial district including other important foundry centers such as Camden, Chester, Burlington, Lansdale and Pottstown. Foundrymen who visit the Inter-Allied Foundrymen's Convention and Exhibition will have an opportunity to visit and inspect some of the most modern and efficient molding and casting plants in the world.

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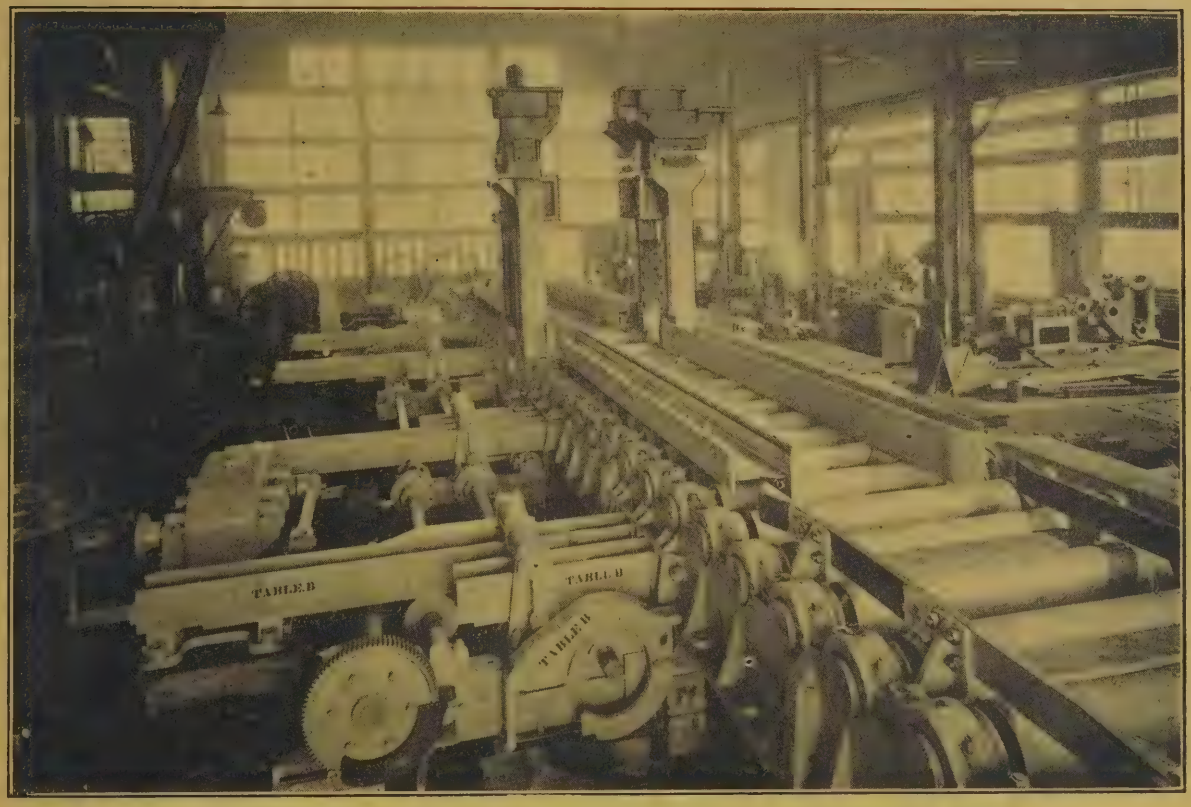
THE IRON TRADE REVIEW

Published weekly
VOL. LXV. No. 26

CLEVELAND, DECEMBER 25, 1919
Entered as second-class matter at the post-office in Cleveland, Ohio, under the act of March 3, 1879

Four Dollars a Year
Single Copies 15 Cents

TREADWELL
BLOOMING MILLS

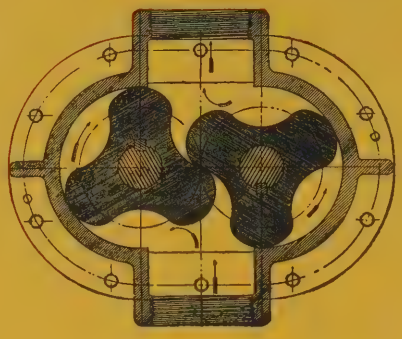


34" TREADWELL TWO-HIGH REVERSING BLOOMING MILL
for the Automobile M. Berliet, Usines de Venissieux, Rhone, France, on our Erection Floor.

DESIGNERS and BUILDERS
MODERN
ROLLING MILL MACHINERY
AND
STEEL WORKS EQUIPMENT

TREADWELL ENGINEERING CO.
EASTON, PA., U.S.A.

Advertisers' Index, pages 210-211
Engineering Directory, pages 180-181
Contents 1686 (Editorial)
"Where-to-Buy", page 116
Classified Advertisements, pages 191-209



CONNERSVILLE VALVELESS ROTARY PUMPS

Are extremely simple, rugged and efficient.

The above illustrates internal construction showing the two symmetrical rotating parts which are called impellers.

These do not come in contact with the case or with each other but are separated by a small clearance.

The pump discharges six times per revolution resulting in a smooth flow with the minimum of shock.

Heavy steel shafts are pressed and keyed into the impellers and rest in bearings of generous size which are lined with genuine babbitt.

These pumps are suitable for handling nearly all liquids or for maintaining either high or low vacuums.

Quotation and descriptive matter on request.

The Connersville Blower Company

Connersville Indiana U.S.A.

Chicago, Monadnock Block New York, 114 Liberty Street



High Lift Pump | Circulating Pump | Vacuum Heating Pump | Lubricating Oil Pump | Paper Mill Pump | Pump and Condenser

TOOL STEELS

Blue Chip

High Speed

and other

FIRTH-STERLING TOOL STEELS

THE knowledge, experience and skill of SHEFFIELD combined with the best PITTSBURGH practice have made these steels the standards of QUALITY and UNIFORMITY wherever Tools are used

FIRTH-STERLING STEEL COMPANY

McKeesport, Pa.

NEW YORK BOSTON PHILADELPHIA
CLEVELAND PITTSBURGH
CHICAGO

HAGAN

INDUSTRIAL FURNACES

are continually gaining popularity in

ROLLING MILLS and STEEL PLANTS

for FORGING, ANNEALING and HEAT TREATING

These furnaces are designed not only for stoker firing, but also for hand firing, producer gas, natural gas, oil, and pulverized coal.

We also do sheet and tin mill work.

Let us know your requirements.

George J. Hagan Company

4th Floor People's Bank Bldg.
PITTSBURGH, PA.

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CLEVELAND

Sales Representatives for

Combustion Engineering Corporation

11 Broadway, New York, N. Y.

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WHEN YOU WANT IT

High Speed Steel
Oil Hardened Steel
Chrome and Nickel Steels
Tool and Drill Steels
Pick, Wedge and Hammer Steels
Annealed Cutter Blanks
Music Wire for Springs
Cold Rolled Steels
Forgings, Specialties
Tool Holder Steel
Vanadium Steel
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Aborn Welding Wire
Spring Steels
Machinery Steels
Drill Rods
Tempered Spring Wire
Drawn Steels
Iron

You'll Get Action

by placing your steel orders with Aborn, not excuses and procrastination, no stalling, no kidding, no "hums or haws."

Try a little Aborn action on your next steel order, big or little.

ABORN STEEL COMPANY, Inc.

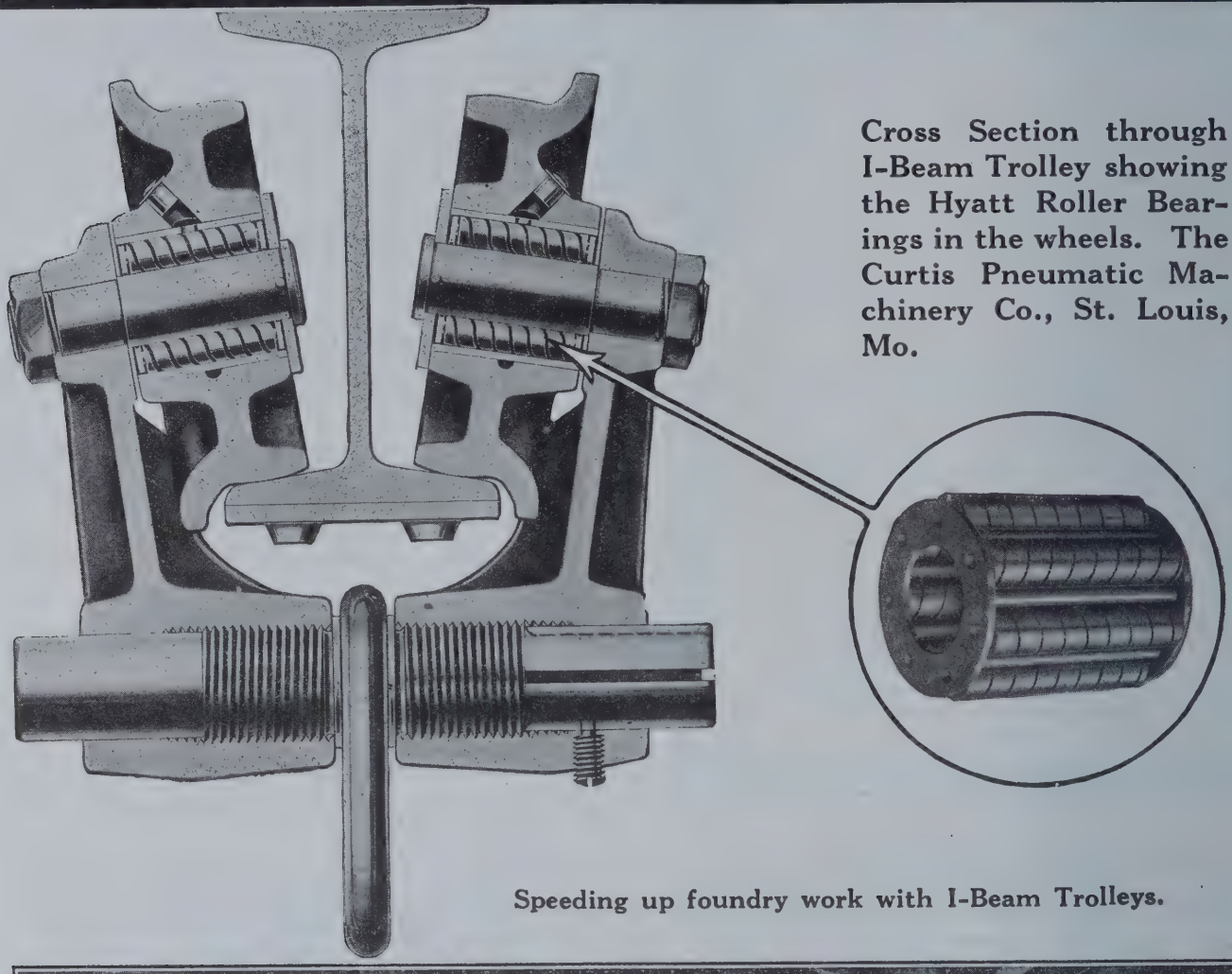
Century Crucible Steel Works
Ontario Electric Steel Works

24 Clarke St., New York, N. Y.

Boston, Mass.—171 High St.
Buffalo, N. Y.—520 Marine Trust Bldg.
Philadelphia, Pa.—269 Drexel Bldg.
Pittsburgh, Pa.—59 Conestoga Bldg.
Rochester, N. Y.—133 Andrews St.
San Francisco, Cal.—320 Market St.

229

ECONOMICAL TROLLEY OPERATION



Cross Section through I-Beam Trolley showing the Hyatt Roller Bearings in the wheels. The Curtis Pneumatic Machinery Co., St. Louis, Mo.

Speeding up foundry work with I-Beam Trolleys.



Hyatt Roller Bearings for

MEANS HYATT ROLLER BEARINGS

The handling of material to and from machines and from department to department, during the process of manufacture, is one of the most important items entering into the cost of production. The economy and labor saving value of I-beam trolleys for this purpose is universally recognized.

In order to secure the most economical results from such a trolley system, it is essential that the trolleys be easy starting and easy running, thoroughly dependable and capable of years of satisfactory operation.

That is why HYATT ROLLER BEARINGS are a logical and necessary part of every durable, dependable, quality trolley.

Hyatt Roller Bearings are rugged, practical bearings that eliminate over 50% of the dragging friction of plain bearings. They assure an easy starting and easy running trolley. These modern bearings require lubrication only three or four times a year. Their durability is such that they operate for years with an absolute minimum of attention.

In other words, Hyatt Roller Bearings have all the qualities that are essential for modern, efficient, economical trolley operation—they are easy running, durable, self lubricating, dependable.

It will pay you to specify modern, economical trolleys—those equipped with Hyatt Roller Bearings.

MOTOR BEARINGS DIVISION
DETROIT, MICHIGAN

HYATT ROLLER BEARING COMPANY
INDUSTRIAL BEARINGS DIVISION
METROPOLITAN TOWER, NEW YORK

TRACTOR BEARINGS DIVISION
CHICAGO, ILLINOIS

Manufacturers of Bearings for Mine Cars, Ore Cars, Steel Mill Cars, Roller Tables, Trolleys, Cranes, Hoists, Machine Tools, Line Shafts, Countershafts, Concrete Machinery, Textile Machinery, Conveyors, Lift Trucks, Industrial Trucks, Railway Service Cars, Storage Battery Locomotives, etc.

768

Cranes, Trolleys and Hoists

Say you saw it in THE IRON TRADE REVIEW



Preparing for a successful shot.

DRILLING THE HOLE requires skill and judgement—but it's the right kind of dynamite given to your miners which will insure the maximum tonnage from each blast.

Aetna is always full strength and always the same. You can depend on each grade to do what it is made for every time. The low freezing types require no thawing in ordinary winter weather. Use our Lion fulminate of mercury electric blasting caps and Lion blasting machines and be assured of best possible results every time.

Write today to our nearest branch for further particulars.

AETNA EXPLOSIVES

AETNA EXPLOSIVES CO., INC., 165 Broadway, New York. BRANCHES: Birmingham, Ala.; Buffalo, N. Y.; Chicago, Ill.; Denver, Colo.; Duluth, Minn.; Joplin, Mo.; Louisville, Ky.; New Orleans, La.; Norristown, Pa.; Pittsburg, Pa.; Pottsville, Pa.; Roanoke, Va.; St. Louis, Mo.; Wilkesbarre, Pa.

THE AETNA LINE
Dynamite
Gelatine
Permissible Powders
Black Blasting Powder
Blasting Caps
Electric Blasting Caps
Blasting Machines
Safety Fuse
Leading & Connecting Wire
Etc., Etc.

PRODUCER ASECO CONSUMER

Tell the World

In an effort to capitalize America's foreign trade expansion, many schemes are being devised and foisted on our manufacturers. The mails are deluged with appeals from publishers of export media, good, bad and indifferent, offering ostensibly to solve what they are pleased to term your "problem".

The methods employed by American manufacturers in speeding up business at home can be extended in developing international trade.

Success will hinge upon working out a sales policy based largely on an accurate knowledge of conditions in the foreign market and of the products to be marketed.

Publicity is essential in telling your story but it must be followed up closely—the man on the job—the heart to heart talk with the representative who knows his line and knows also his customers requirements, are necessary to gain your objective.

HERE IS WHERE ASECO CAN BE OF SERVICE TO YOU. Our own exclusive representatives are stationed at every trade center. They are familiar not only with the requirements of their individual market but with American products and standards as well.

And this is but the first step of ASECO SERVICE in telling your story to the world—linking producer and consumer.

PRODUCER ASECO CONSUMER

American Steel Export Company

Woolworth Building **New York, U. S. A.**

PARCO

SERVICE Simplifies Foreign Trade



Reaching the markets of the world is a problem of great study and expense to the American Manufacturer who desires to internationalize the sale of his product. It means picking men, training them, and then years of "breaking-in" in the field.

Parco Service extends to you the skill and knowledge of trained Americans, experienced in the handling of American products in foreign lands, and thoroughly conversant with the foreign methods of doing business.

PRODUCTS FOR EXPORT

Machinery and Equipment for	Rolling Mills Steel Mills Railroad Shops Railroads	Wood Working Machine Shops Paper Mills Power Plants	Mines Gas Plants Contractors
Iron and Steel Products	Shapes, Plates, Bars, Sheets (Black Galvanized, Blue Annealed and Corrugated), Tin Plate, Hoops, Tool Steel, Nails, Wire and Wire Products, Steel Rope and Cable, Rails and Track Accessories, Hardware, Tubes, Pipes, Forgings.		
Pig Iron			
Motor Department	Automobiles, Trucks, Internal Combustion Engines, Electric Motors and Generators, Portable Steam Power Plants.		

THE PARKER COMPANY

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Engineers Manufacturers' Representatives Contractors

CABLE ADDRESS: PARKERCO, NEW YORK

165 Broadway New York City U.S.A.

REPRESENTATIVES IN— SAN FRANCISCO YOKOHAMA SHANGHAI HARBIN COPENHAGEN STOCKHOLM FRANCE ITALY NORWAY FINLAND

Sole Purchasing Agents In The U. S. A. For Japan Paper Industries Co.

FEDEX

For Shipment First Quarter

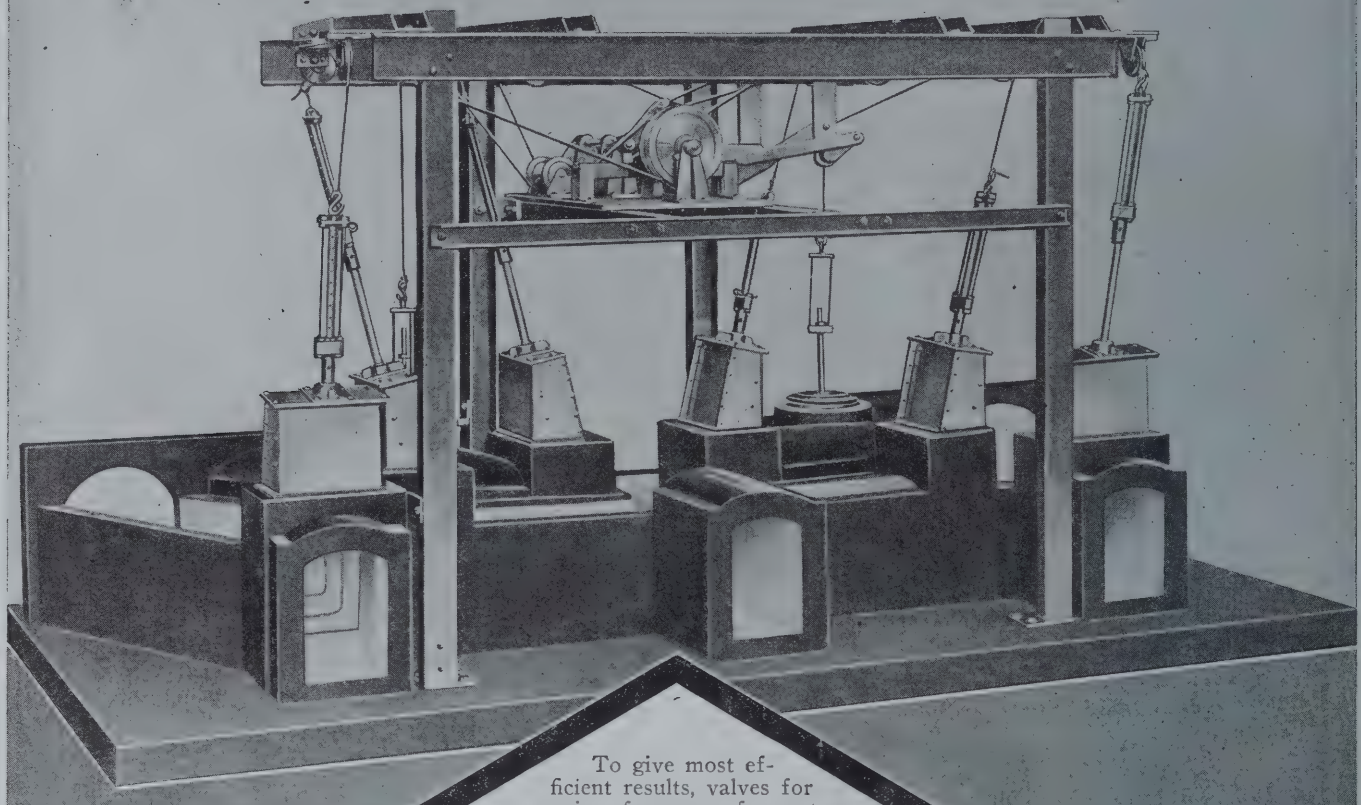
We are in excellent position to supply quick specifications to manufacturers who may have a limited tonnage to offer for shipment during the first quarter.

Federal Export Corporation

42 Broadway New York

Say you saw it in THE IRON TRADE REVIEW

Reversing Furnaces-



To give most efficient results, valves for reversing furnaces of any type must

(1) Prevent the loss of draft. (2) Increase life of the checkers. (3) Maintain proper ratio between air and gas to checkers. (4) Prevent loss of gas. (5) Regulate the proper amount of air and gas to each end of the furnace. (6) Make Sunday shutdowns possible without the loss of gas.

All these essentials, and more, are assured when you use Knox patented Water Cooled Reversing Valves.

Our engineers will be pleased to study your problem—call them in for consultation.

Write for further data.

BLAW-KNOX COMPANY,
615 Farmers' Bank Bldg.,
PITTSBURGH, PA.
New York, Boston,
Chicago, Detroit,
San Francisco



HANDLING SLAG WITH A BLAW BULLDOG BUCKET

BLAW-KNOX

These products are built and trade-marked by Blaw-Knox Company

BLAW STEEL FORMS for all kinds of concrete work — sewers, tunnels, aqueducts, dams, culverts, bridges, retaining walls, factory buildings and warehouses, columns, floors, foundations, manholes, subways, reservoirs, piers, roads, sidewalks, etc.

BLAW CLAMSHELL BUCKETS and Automatic Cableway Plants for digging and rehandling earth, sand, gravel, coal, ore, limestone, tin, scrap, slag, cinders, fertilizers, rock products, etc.

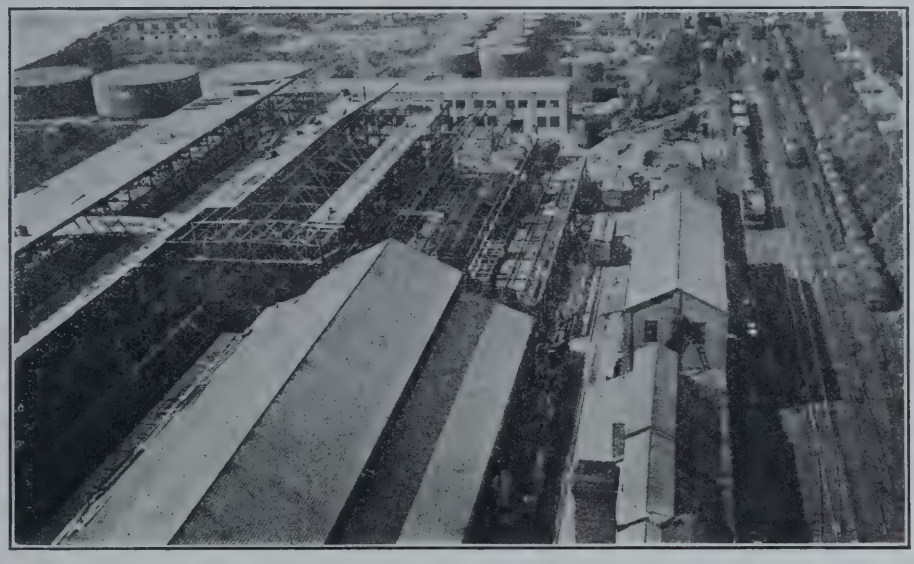
FABRICATED STEEL—mill buildings, manufacturing plants, bridges, crane runways, trusses, etc.

PLATE WORK—Riveted and Welded steel plate products of every description; annealing boxes; kettles; ladles; pens; penstocks; etc.

KNOX PATENTED WATER-COOLED doors, door frames, front and back wall coolers, ports, reversing valves, etc., for open hearth, glass and copper regenerative furnaces; water-cooled shields, boshes, standings, etc., for sheet and tin mills.

TOWERS for supporting high-tension transmission lines.

1884
35 years experience in engineering and construction work.
W·C·K



CHICAGO PNEUMATIC TOOL COMPANY, FRANKLIN, PA.
Extensions to Machine Shop, new Erecting Shop, Storage Building, Power Plant
Design and Construction by W C K

ENGINEERS and CONSTRUCTORS
A purely engineering organization with nothing to sell but service
W·C·K

PRODUCTION

Is Your Production Failing to Meet Demand?

If the demand for your products exceeds the capacity of your present plant and you wish to increase production we will do for you what we are doing for many manufacturers in a similar situation.

First we will make an engineering study of your plant and make recommendations for extensions if such are required. We will then design and construct the additions.

The service which we can perform is thus complete, extending from the preliminary study to the last brushful of paint on the finished work.

"Work Done"—shortly to be issued—pictures some of the plants we have extended, as well as many new plants which we have designed and built complete. If you contemplate plant construction of any kind we shall be glad to send a copy of this book.

Westinghouse, Church, Kerr & Co., Inc.

Engineers and Constructors

37 Wall Street, New York

WASHINGTON CHICAGO DALLAS SAN FRANCISCO MONTREAL

When Walworth Began



WALWORTH MANUFACTURING COMPANY

Oldest continuous manufacturers in the United States (since 1842) of a complete line of valves, fittings and tools for steam, water, gas and air.

Originators of the Famous "GENUINE WALWORTH STILLSON" Wrench and the "KEWANEE" Union.

BRANCHES:
Boston, Chicago, New York, Philadelphia, Seattle

BOSTON

WESTERN DIVISION:
Office: Chicago, Ill. Works: Kewanee, Ill.

Sales Offices: San Francisco, Johannesburg, Havana, Mexico City, Buenos Aires, Santiago, Sydney, London, Paris, Sao Paulo

Say you saw it in THE IRON TRADE REVIEW

Business in 1842—

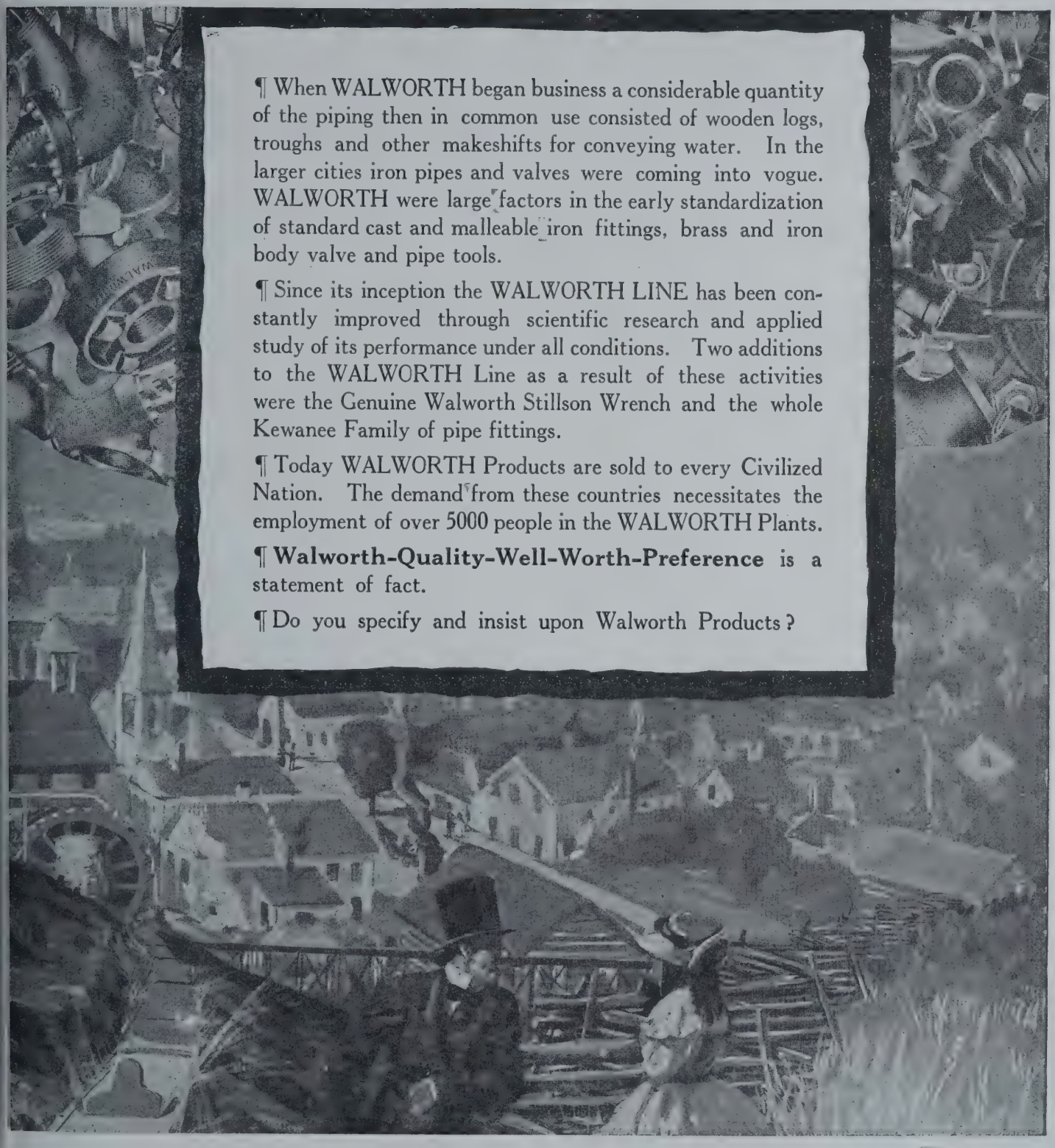
¶ When WALWORTH began business a considerable quantity of the piping then in common use consisted of wooden logs, troughs and other makeshifts for conveying water. In the larger cities iron pipes and valves were coming into vogue. WALWORTH were large factors in the early standardization of standard cast and malleable iron fittings, brass and iron body valve and pipe tools.

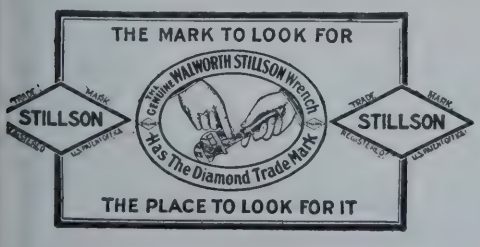
¶ Since its inception the WALWORTH LINE has been constantly improved through scientific research and applied study of its performance under all conditions. Two additions to the WALWORTH Line as a result of these activities were the Genuine Walworth Stillson Wrench and the whole Kewanee Family of pipe fittings.

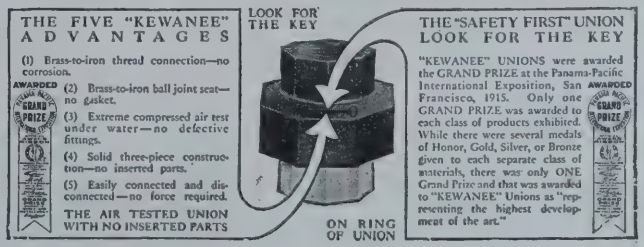
¶ Today WALWORTH Products are sold to every Civilized Nation. The demand from these countries necessitates the employment of over 5000 people in the WALWORTH Plants.

¶ **Walworth-Quality-Well-Worth-Preference** is a statement of fact.

¶ Do you specify and insist upon Walworth Products?









TACONY

BIT AND JAR STEEL

and

MINING DRILL STEEL

Tacony was a pioneer in the development of Bit and Jar Steel for oil, gas and artesian well drilling. Years of manufacturing experience and research have evolved a specialty which successfully meets the most exacting demands made upon well drilling.

Tacony Mining Drill Steel, another difficult specialty, is uniform, welds readily, and hardens well in the bit. It is made in all shapes, octagons, quarter-octagons, hexagon, fluted cruciform, four-leaf clover, rounds and flats.

BIT AND JAR STEEL MINING DRILL STEEL
ROLLED BARS FORGINGS
SMALL SPECIAL SHAPES

TACONY STEEL COMPANY

GENERAL OFFICES AND WORKS

TACONY, PHILADELPHIA, PA.

SALES OFFICES

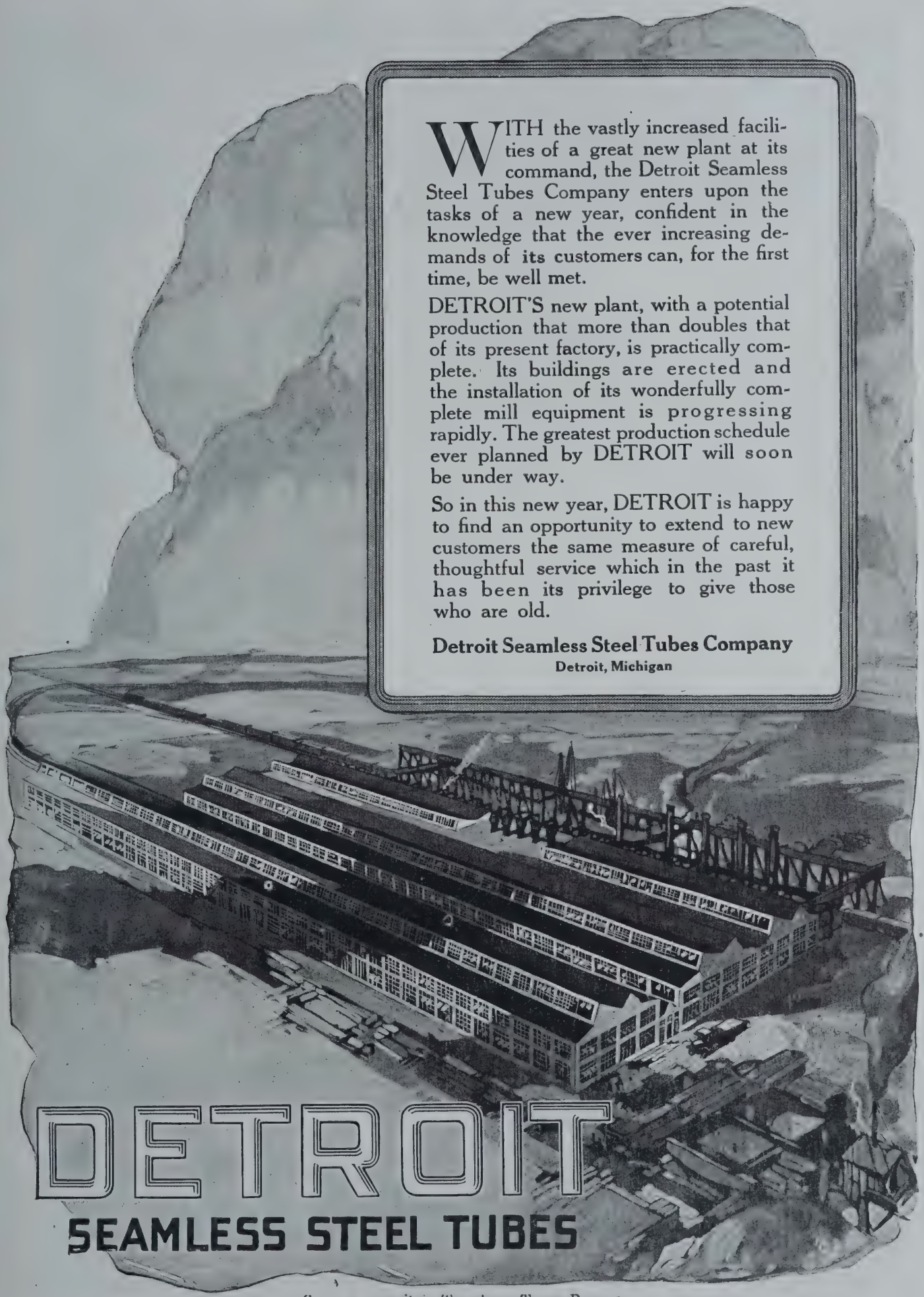
New York: No. 2 Rector Street
Boston: 141 Milk Street
Detroit: 832 Dime Savings Bank Bldg.
Cleveland: Swetland Building
Philadelphia: Tacony, Pa.
Bridgeport: 245-267 Water St.

WITH the vastly increased facilities of a great new plant at its command, the Detroit Seamless Steel Tubes Company enters upon the tasks of a new year, confident in the knowledge that the ever increasing demands of its customers can, for the first time, be well met.

DETROIT'S new plant, with a potential production that more than doubles that of its present factory, is practically complete. Its buildings are erected and the installation of its wonderfully complete mill equipment is progressing rapidly. The greatest production schedule ever planned by DETROIT will soon be under way.

So in this new year, DETROIT is happy to find an opportunity to extend to new customers the same measure of careful, thoughtful service which in the past it has been its privilege to give those who are old.

Detroit Seamless Steel Tubes Company
Detroit, Michigan



DETROIT
SEAMLESS STEEL TUBES

Say you saw it in THE IRON TRADE REVIEW

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN OHIO

YOUNGSTOWN

YOUNGSTOWN

QUALITY

is the outstanding characteristic of our products. They are manufactured entirely in our own plant and are under our supervision constantly from the time the ore is mined.

The Youngstown Sheet & Tube Company

Youngstown **Ohio**

AMERICAN SALES OFFICES:

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NEW YORK—30 Church Street
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ATLANTA—Healey Building
PITTSBURGH—Oliver Building
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CHICAGO—McCormick Building
ST. LOUIS—1139 Olive Street
DENVER—First National Bank Bldg.
DALLAS—Great Southern Life Bldg.
SAN FRANCISCO—604 Mission Street
SEATTLE—Central Building

Export Sales Agents—The Consolidated Steel Corporation, 165 Broadway, New York City

YOUNGSTOWN

STEEL AND IRON PIPE - SHEETS - PLATES
BARS - WIRE - WIRE PRODUCTS
CONDUITS - ARMORED CABLES

Say you saw it in THE IRON TRADE REVIEW

"SHELBY" Seamless Steel Tubing for Mechanical Purposes



Group of Sizes and Shapes of "SHELBY" Seamless Steel Tubing

"SHELBY" Seamless Steel Tubing for Mechanical Purposes is made in a wide range of sizes and thicknesses. The sizes run from ¼ inch to 20 inches O. D., and the thicknesses, depending on the diameter, from No. 20 gauge to 1½-inch wall.

¶ Several different grades of steel are used which are individually treated to various degrees of annealing. For work requiring the greatest stiffness and rigidity, it is shipped *unannealed;* for all ordinary requirements it is *finish annealed,* just sufficiently to remove the cold drawing strains; for large radii bends, small flanges and light deformations, it is furnished *medium annealed;* and for very short radii bends or exceptional manipulations, it is made very soft, either in retorts or in the open furnace.

¶ To insure smoothness and accuracy "SHELBY" Seamless Steel Tubing for Mechanical Purposes receives a number of passes through the dies to finish to size.

¶ It is made in square, rectangular, oval and other special sections, a few of which are shown above.



The Recognized Standard of Seamless Steel Tubing for Mechanical Purposes

Ask for booklet No. 103—"SHELBY" Seamless Mechanical Tubing.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

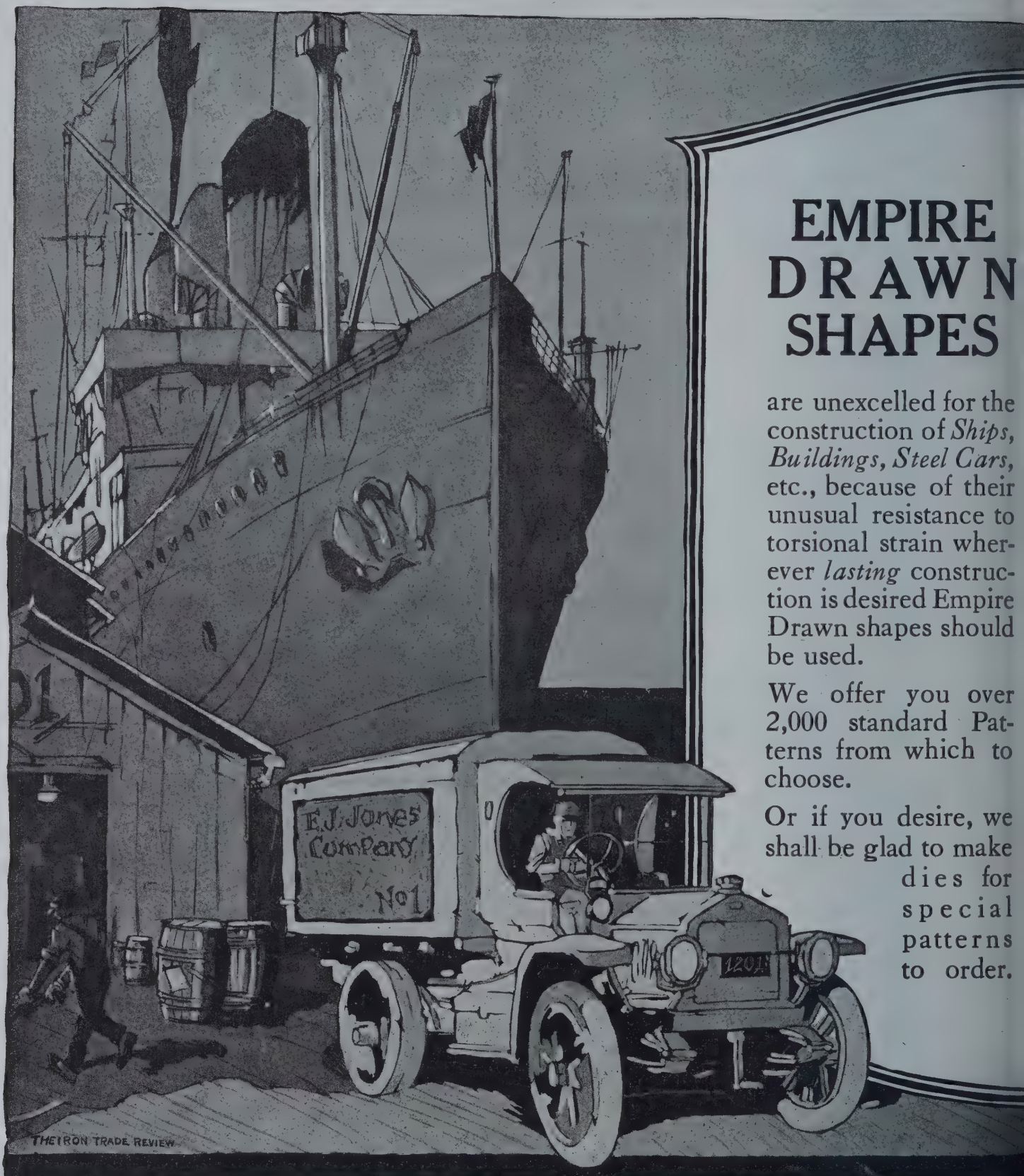
General Sales Offices: Frick Building

DISTRICT SALES OFFICES

Atlanta Boston Chicago Denver Detroit New Orleans New York Salt Lake City Philadelphia Pittsburgh St. Louis St. Paul

PACIFIC COAST REPRESENTATIVES: U. S. Steel Products Co. San Francisco Los Angeles Portland Seattle

EXPORT REPRESENTATIVES: U. S. Steel Products Co. New York City



EMPIRE DRAWN SHAPES

are unexcelled for the construction of *Ships, Buildings, Steel Cars,* etc., because of their unusual resistance to torsional strain wherever *lasting* construction is desired Empire Drawn shapes should be used.

We offer you over 2,000 standard Patterns from which to choose.

Or if you desire, we shall be glad to make dies for special patterns to order.

EMPIRE ART METAL CO
COLLEGE POINT · NEW YORK

Say you saw it in THE IRON TRADE REVIEW

EMPIRE TUBING

is another Empire product of permanent endurance. It is a tubing of real character that is being used by many of the most particular manufacturers of

Automobiles
Aeroplanes
Auto Trucks
Motorcycles
Tricycles
Velocipedes
Pumps
Beds etc.

We also make round and square sections for every purpose.

We shall be glad to estimate on your requirements.



EMPIRE ART METAL CO
COLLEGE POINT · NEW YORK

Say you saw it in THE IRON TRADE REVIEW

C. R. WILSON
C. ED. BEATTY
H. S. LEWIS
E. J. DILLS
L. H. KELLY
F. A. COOPER

INTERNATIONAL FUEL CORPORATION

Gas, Steam COAL By-Product

—AND—

Foundry COKE Furnace

Crushed

General Offices—Frick Building—PITTSBURGH

FORGING BILLETS

made of Special High Grade
BASIC OPEN HEARTH STEEL



"ANDREWS STEEL"

The foundation upon which many a successful business has been built

"Quality begets quality." Therefore if you wish to turn out products of superiority, it is up to you to see that you start out on the quality basis—which means **Andrews Steels.**

We specialize
Special High Grade Open Hearth Steel
FORGING BILLETS
SLABS
SHEET AND TIN BARS
CHROME STEEL
CHROME VANADIUM
NICKEL STEEL
CHROME NICKEL
and
SPECIAL STEELS
for all purposes

Then let us fill your next requirements.

THE ANDREWS STEEL CO.

NEWPORT, KENTUCKY

District Sales Offices
1515 McCormick Bldg. - Chicago
1919 Park Bldg. - Pittsburgh

NOVO SUPERIOR

"The High Speed Steel Without an Equal"

Procrastination—

Is the thief of time.

Don't wait any longer before you decide to adopt Novo Superior Patent I & Z Sections—you are wasting time which, properly translated is *money*.

I & Z Sections save all the forging time and much of the grinding time which is usually spent in preparing tools from the solid bar.

Don't procrastinate—order today.

Of course we can supply you with "Novo Superior" in solid flats, rounds, squares and tool bits.

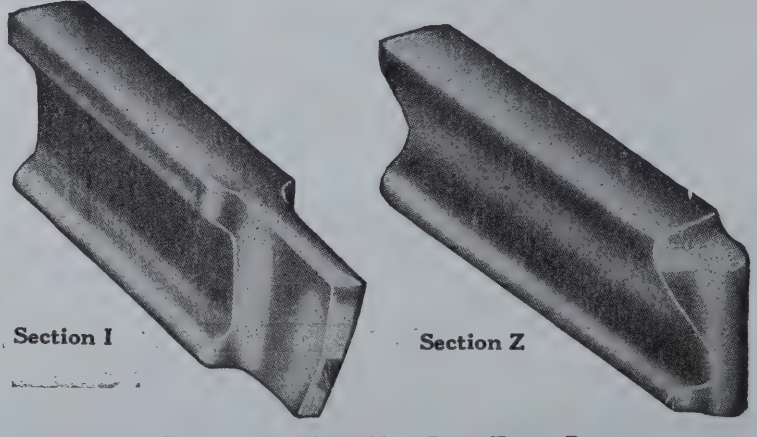
H. BOKER & CO., Inc.

Established 1837

101 Duane St., New York City

Chicago Detroit Boston Cleveland Philadelphia Montreal

Pacific Coast Representatives:
Berger & Carter Co., 400 Mission St., San Francisco, Cal.



Section I **Section Z**

CAMDEN



PLAIN REASONING

substantiated by the experienced use of our completely equipped micrographic chemical and physical laboratories, assures the purchaser of

CAMDEN FORGINGS

just that quality of steel called for by his requirements.
We quote upon and make the general type of forgings given in our

BUYERS' MEMO.

High and Low Carbon Bars
Press Columns and Rams
Pull Back Cylinders
Water Cylinders
Valve Bodies
Plungers
Weldless Steel Rings
Lathe Spindles, solid and hollow bored
Long Feed Screws
Power Press Crank Shafts
Rudder Arms

Rudder Stocks
Cam Shafts
Eccentric Shafts
Crusher Shafts
Gear and Pinion Blanks
Locomotive { Side and Main Rods, Crank Pins, Axles, Rod Straps, Guides, Parts of frame, both in iron and steel

Hammered Iron Bars for locomotive repairs
Marine Shafts
Marine Connecting and Eccentric Rods
Rolls { Bending, Feed, Straightening, *Embossing*
Large Wrenches
Saw Arbors

Steam Engine Forgings
Pump Crank Shafts
Pump Connecting Rods
Large Nuts
Turbine Shafts
Mill Shafting
Trolley Car Axles
Electric Motor Axles
Any forging to your print, and specifications, in either iron or steel.

CAMDEN FORGE CO.
CAMDEN, N.J., U.S.A.

Say you saw it in THE IRON TRADE REVIEW



Little Giant Air Drills are more than drills

Having drilled out the stud-bolt holes in the casting pictured above, this "Little Giant" is now busy tapping them. Setting the stud-bolts will be its next job; and every operation will be characterized by the same speed-economy factors. Rugged, long-wearing construction, ease of control and economy of air consumption, are leading features in the performance of Little Giant Air Drills. For quantity production they are a power indeed. In many shops today they are being put to uses entirely new, their desirable qualities being introduced into step after step of the production processes. New applications for air drills are being discovered daily—and thousands of "Little Giants" in use throughout the world form an almost universally recognized standard in air drill construction and design.

Little Giant Air Drills are built in a wide variety of sizes and types to meet every requirement of drilling, reaming, tapping, screw setting, nut and bolt tightening, etc. Write for Bulletin.

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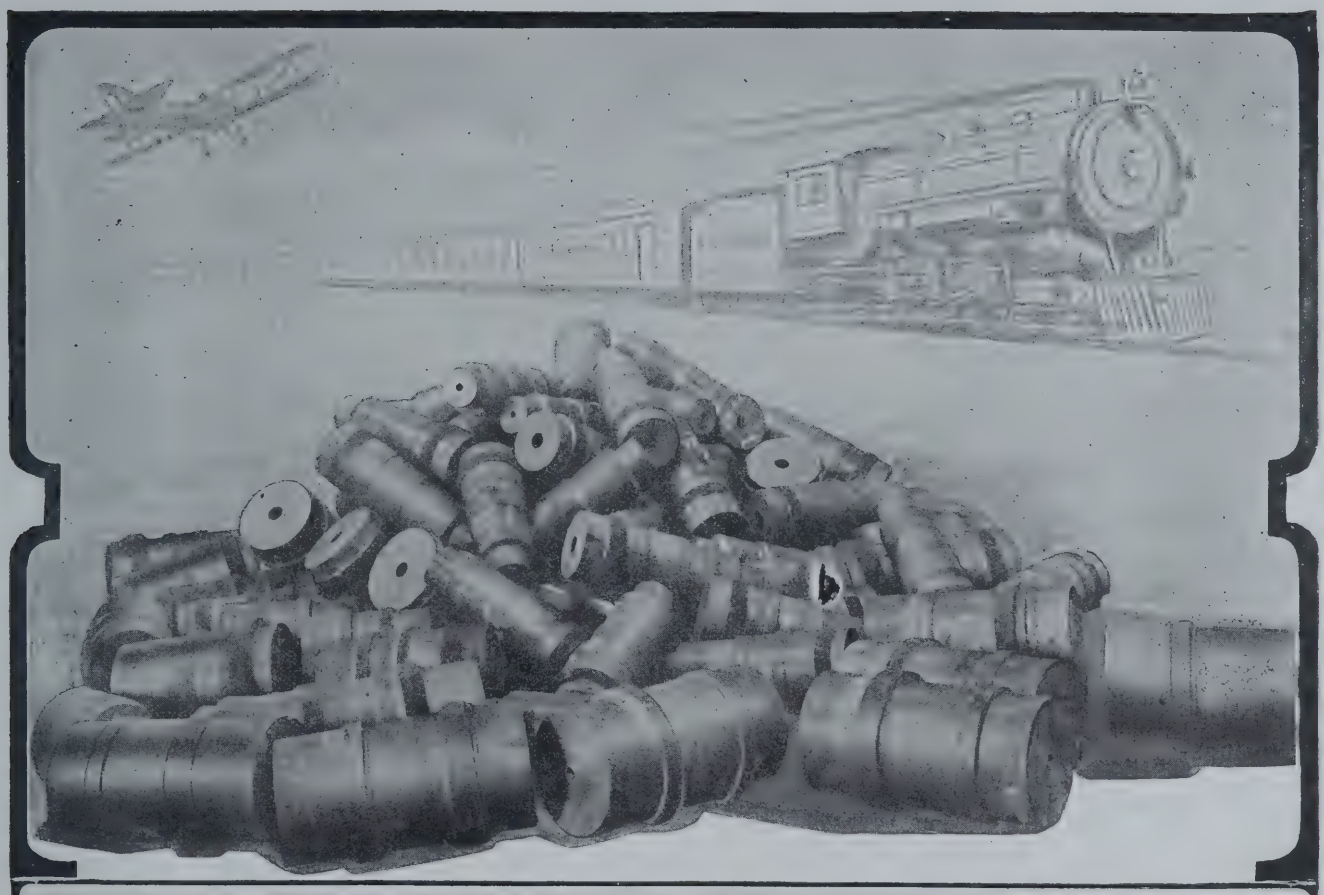
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P-36

BOYER PNEUMATIC HAMMERS··LITTLE GIANT PNEUMATIC AND ELECTRIC TOOLS
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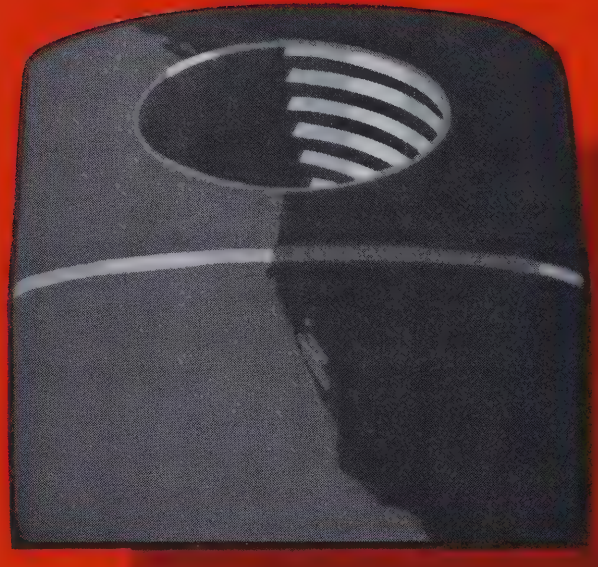
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Series Number 107-C

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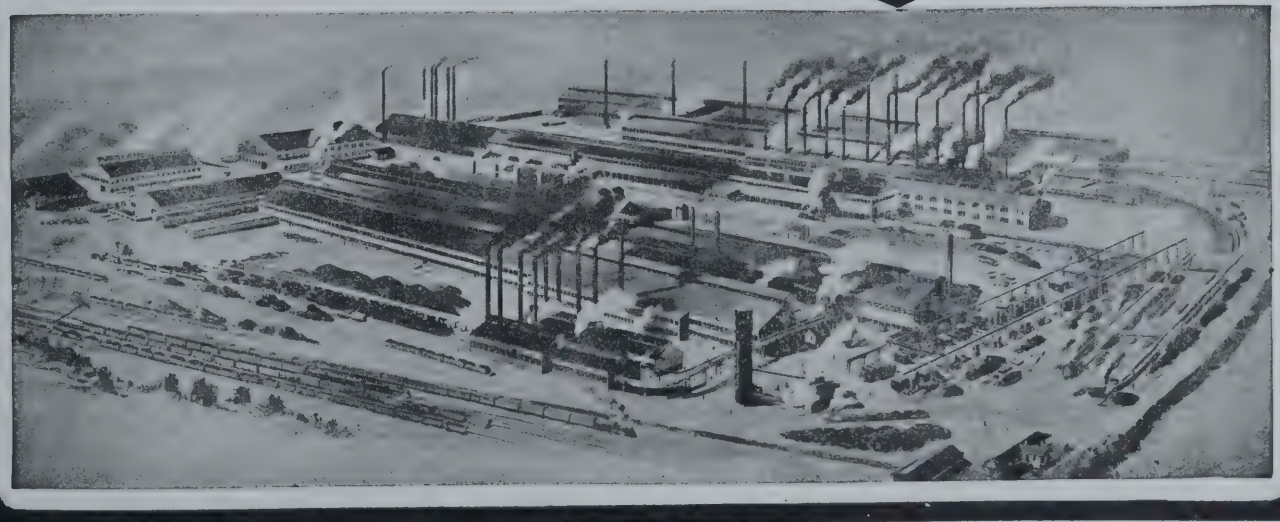
(3) The purchasing of the Mary Furnace from the Ohio Iron and Steel Company, thus giving us the supervision of our Pig Iron.

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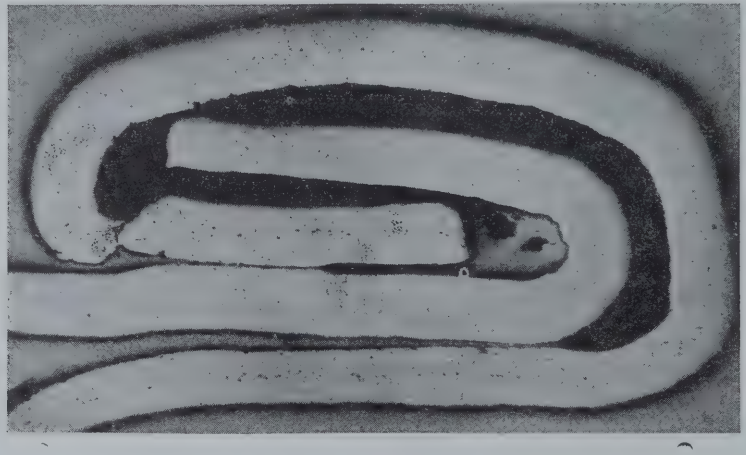


TITANIUM TALKS

No. 71

CLEAN STEEL IS IMPORTANT FOR TIN-PLATE





A majority of the troubles encountered by canners in the lasting qualities of their cans, and by can manufacturers in the working properties of tin-plate, may be blamed on dirty steel. In the accompanying illustrations, for instance, cross-sections are shown of can seams, or the sealed joints between the bottoms and sides of ordinary tin-cans. The tightness of the can is dependent on the perfection of this rather complicated folded joint, and in both cases illustrated (magnification 30 diameters) one of the sheets is seen to have cracked. A close examination will show an abundance of minute dark inclusions in the cracked sheets, while the sheets that bent without cracking are pratically free from impurities.

Here then is a clear comparison of the working properties of dirty steel and clean steel, and the need for clean metal in tin-plate could hardly be more plainly shown.

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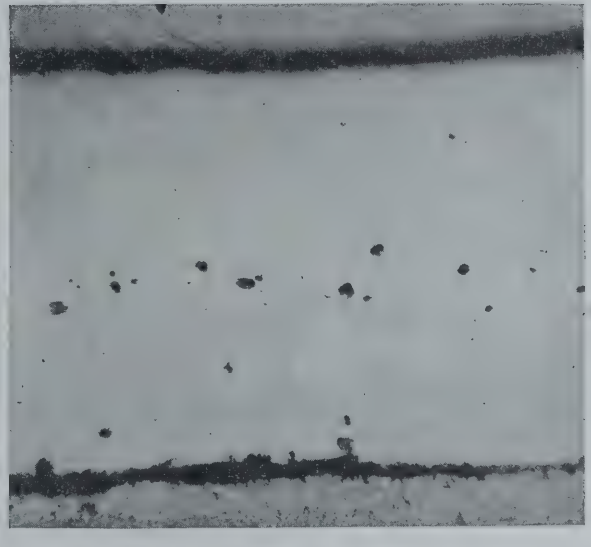
TITANIUM TALKS

No. 71

The nature of the inclusions shown as specks in the illustrations referred to above can be determined by magnification of the samples to 200 diameters. View taken near one of the breaks, and one in a straight part of the tin-plate, are shown herewith, and the appearance indicates without doubt that alumina was the cause of this trouble.

Something must have gone wrong with this heat of steel when it was made, and the ingots probably did not act properly when they solidified, so aluminum was added as a corrective. Naturally dirty steel resulted, and after all the expense of rolling, tinning and can manufacture, cracking of the sheets brought only loss and dissatisfaction. To avoid troubles of this kind, why not make good clean steel with the aid of FERRO CARBON-TITANIUM, and remove the temptation to use aluminum or other dirt producing additions?





The Titanium Alloy Mfg. Company

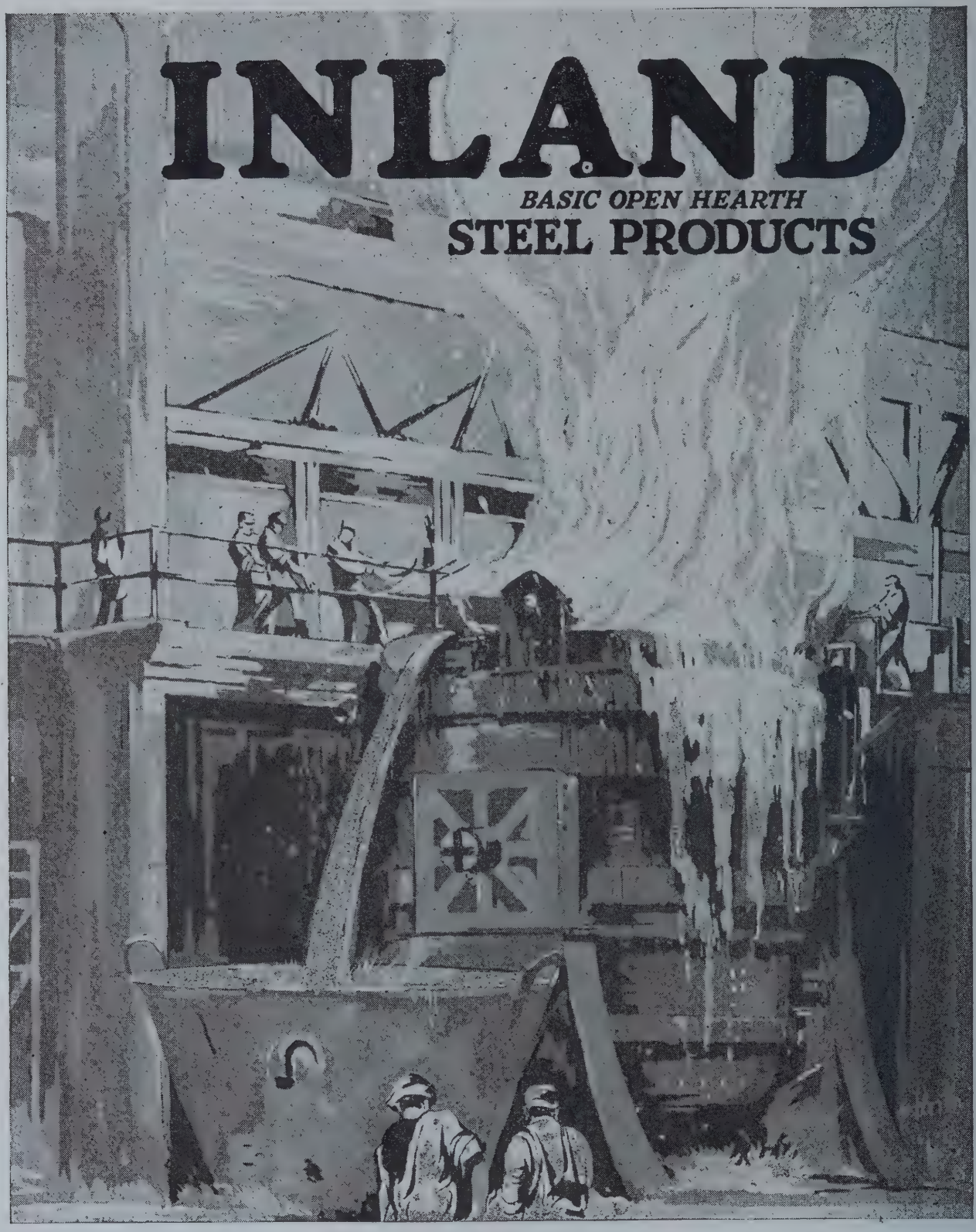
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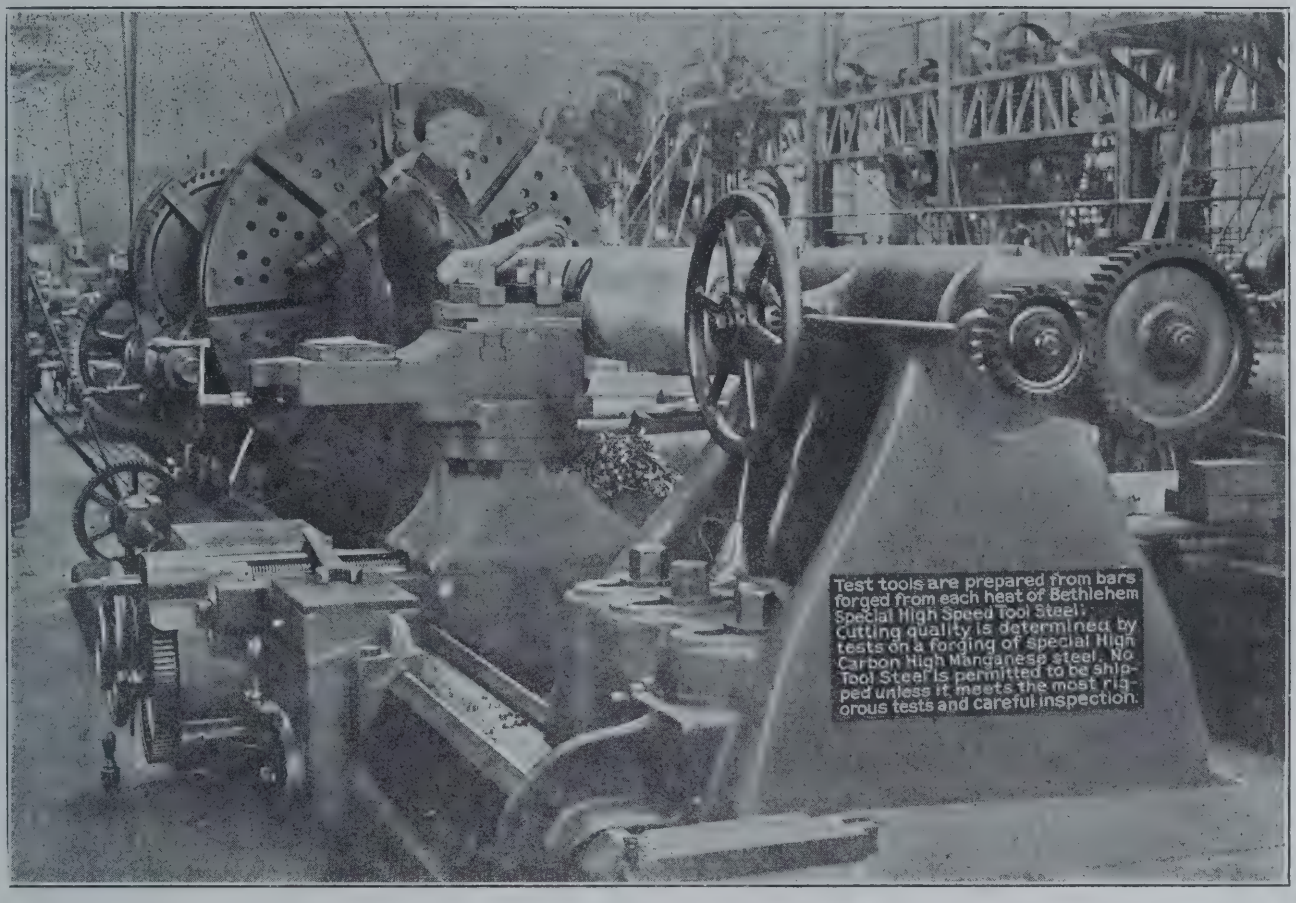
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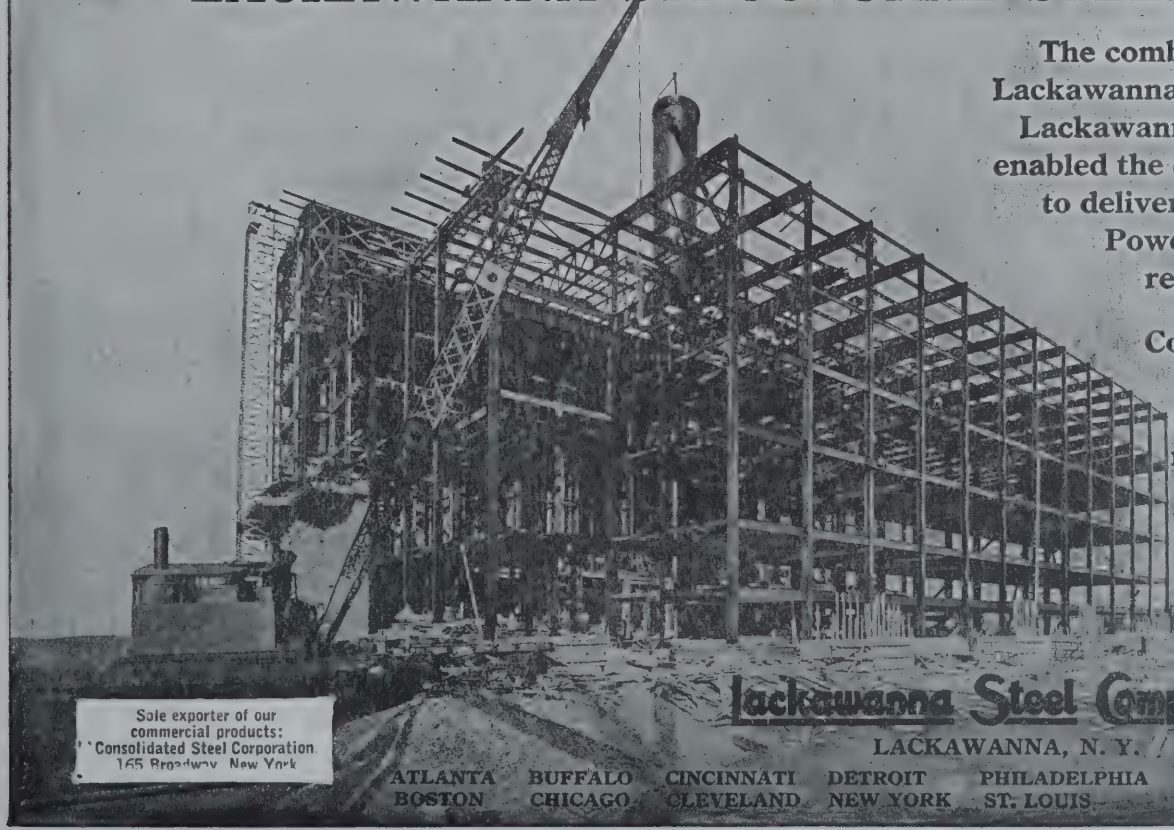
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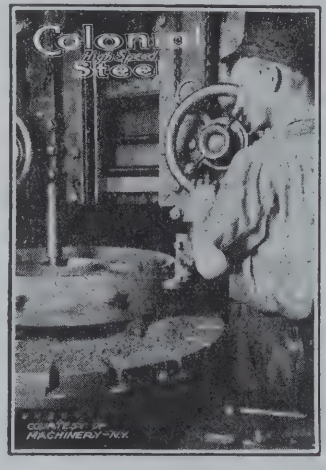
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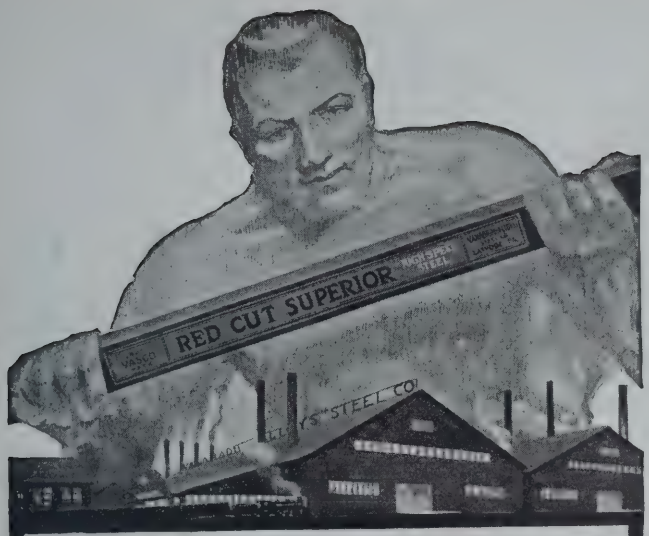
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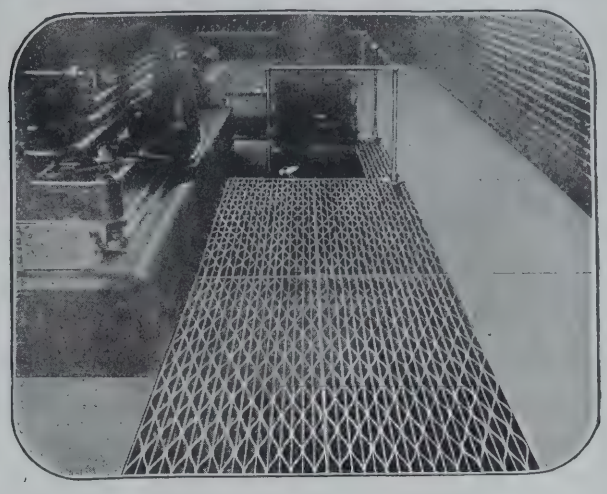
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STANDARD BASIC AND BESSEMER PIG IRON

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FURNACE AND FOUNDRY COKE, COAL FOR BY-PRODUCT AND PRODUCER GAS USERS

Own and Operate
CLAIRE FURNACE COMPANY
Sharpsville, Pa.
ELLA FURNACE COMPANY
West Middlesex, Pa.
WESTMORELAND CONNELLSVILLE COAL & COKE COMPANY
RELIANCE COKE COMPANY

STAINLESS STEEL

Here is a steel that will make a reputation for your products, or add to the prestige of a reputation that has already been made.

Stain less

STAINLESS STEEL DOES NOT RUST

It preserves fine tools, etc., indefinitely from that steel destroying disease, *Erosion.* It is immune from erosion. We are anxious to send you complete details regarding Stainless Steel. Why not write us at once?

For
CUTLERY
SPORTING TOOLS
MACHINE PARTS
ENGINE PARTS
GENERAL PURPOSES
—including pump rods, rams, cotters, evaporating pans, hot punches, marine gearing, acid pumps, etc.

American Stainless Steel Co.
1542 Oliver Building Pittsburgh, Pa.

MONONGAHELA IRON AND STEEL Co
(formerly Carter Iron Co.)

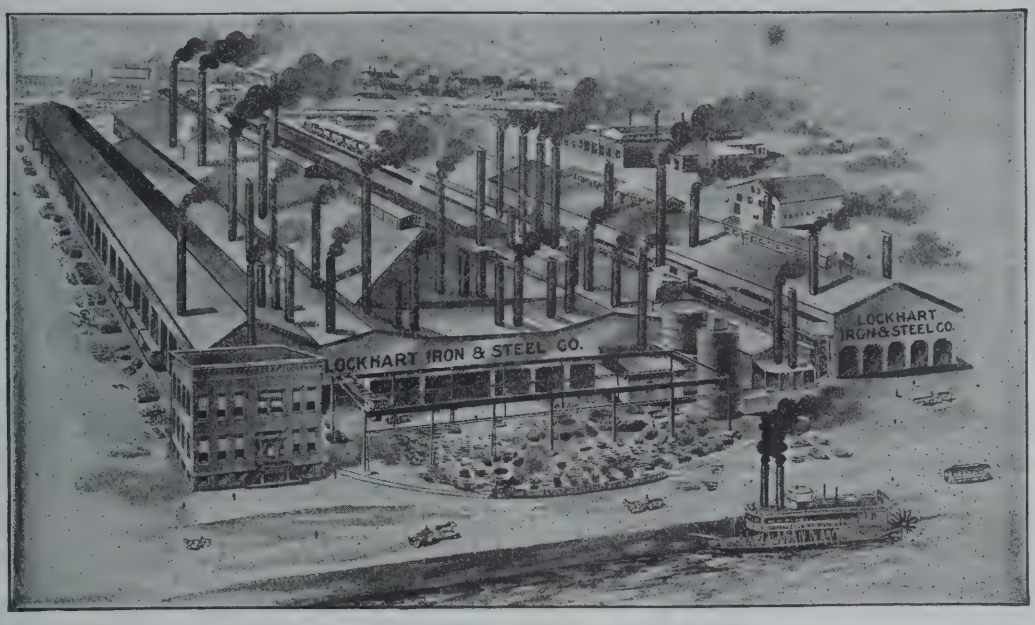
Manufacturers of Low Phosphorus

MELTING BAR IRON

GUARANTEED ANALYSES

Offices:
Oliver Bldg.
PITTSBURGH, PA.

Mills:
Paden City, W. Va.



Our Brands:

REFINED
for ordinary users.

VULCAN
for special purposes.

Vulcan Special
for engine bolts.

VULCAN XX
for locomotive stay bolts.

To wholly preserve the high standard of quality that has always been recognized in ***Vulcan Iron*** we still adhere to the old-fashioned method of puddling.

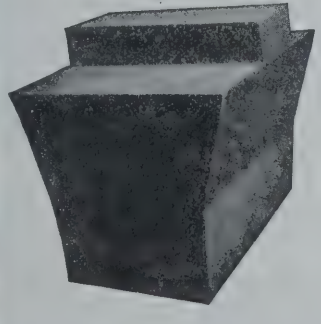
Vulcan Iron is made by the ***quality*** process, not the ***quantity*** process.

LOCKHART IRON & STEEL CO.
PITTSBURGH, PA.

ADAMITE

PATENTED

"ADAMITE" Hammer Dies for Hard and Heavy Forgings



7 times ordinary service

This "ADAMITE" Die, used on a 2500-lb. hammer, forging high-speed steel, gave more than seven times the life of any other die—just another "Record of Performance". We recommend "ADAMITE" Dies for finishing and welding work.

How much can we save you?

Pittsburgh Iron & Steel Foundries Co.

Executive Offices, PITTSBURGH Foundries, MIDLAND, PA.

Looking Back

Pretty soon we shall be looking back at 1919—and ahead at 1920. Some folks may have misgivings. We have none. We are quite firmly of the opinion that the policy of a square deal for every square man will work, and that any other policy in the long run—simply won't.

THE FITZSIMONS COMPANY

YOUNGSTOWN *"A good concern to do business with"* OHIO

Cold Drawn Steels and Shafting. Rounds, Squares, Flats, Hexagons and Special Shapes.

PENN IRON AND STEEL COMPANY

Manufacturers
of

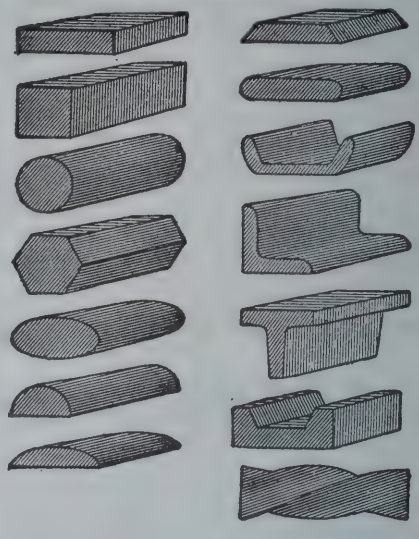
LEWIS BRANDS
of
High Grade Iron

Lewis Special Stay Bolt Iron
Lewis Engine Bolt Iron
U. S. Navy Chain Iron
Low Phos Melting Bar

Office and Works, Creighton, Pa.
(Pittsburgh District)

G. T. Lewis, President and General Manager
C. J. Nieman. Secretary and Treasurer
Lewis W. Hicks, Vice Pres. S. N. Hicks, Vice Pres.

BARS IN STOCK



Have all above shapes in Standard Steel Bars, also have first four shapes in Cold Rolled Steel, and first three in Common Iron. We solicit your inquiries for these Bars and other steel products we handle. See our Stock List.

SCULLY STEEL & IRON CO.

CHICAGO NEW YORK

"PEERLESS"
COLD DRAWN STEEL PRODUCTS

Alloy Steels — Special Shapes — Screw Stocks
Rounds, Flats, Hexagons, Squares, every Analysis

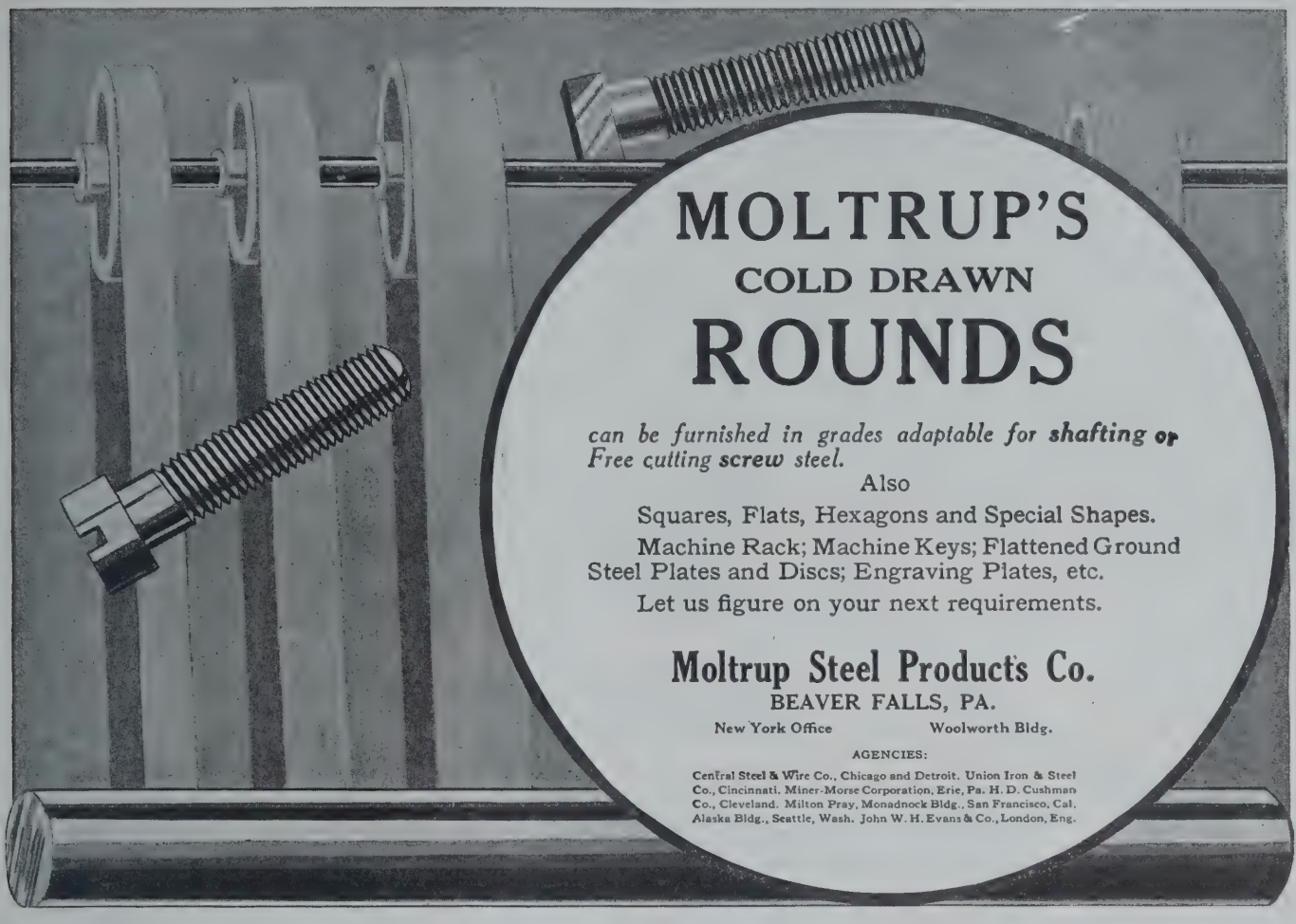
THE PEERLESS DRAWN STEEL COMPANY

Main Office and Works
MASSILLON, OHIO

Please address your inquiries to our nearest office

DISTRICT SALES OFFICES:

New York—J. E. Vincent, Jr., Manager, Liberty Tower Bldg.
Rochester—E. E. Guntert, Manager, 510 Cutler Bldg.
Cleveland—J. T. Auwerter, Manager, 811 Citizens Bldg.
Detroit—L. H. Carlisle, Manager, 1938 Penobscot Bldg.
Chicago—F. H. Johnson, Manager, 208 S. La Salle St.
San Francisco—A. W. Dow, Manager, Call Bldg.
Cincinnati—R. V. Mann, Manager, 1019 First National Bank Bldg.



MOLTRUP'S
COLD DRAWN
ROUNDS

can be furnished in grades adaptable for ***shafting*** *or Free cutting* ***screw*** *steel.*

Also

Squares, Flats, Hexagons and Special Shapes.

Machine Rack; Machine Keys; Flattened Ground Steel Plates and Discs; Engraving Plates, etc.

Let us figure on your next requirements.

Moltrup Steel Products Co.
BEAVER FALLS, PA.
New York Office Woolworth Bldg.

AGENCIES:
Central Steel & Wire Co., Chicago and Detroit. Union Iron & Steel Co., Cincinnati. Miner-Morse Corporation, Erie, Pa. H. D. Cushman Co., Cleveland. Milton Pray, Monadnock Bldg., San Francisco, Cal. Alaska Bldg., Seattle, Wash. John W. H. Evans & Co., London, Eng.

Agricultural Sections
Alloy Steels—
Angles
Arch Bars
Armor Plate
Auto Sections
Axles
Bands
Beams
Billets
Blooms
Braddock Joints
Bulb Sections
Car Wheels
Channels
Checkered Plates
Coal By-Products
Ammonium Sulphate
Benzol
Napthalene
Solvent Naptha
Tar
Toluol
Concrete Bars
Corrugated Plates
Cotton Ties
Crane Wheels
Crank Shafts
Cross Ties
Crushed Slag
Duquesne Joints
Ferro-Manganese

5 Points
Where Your Urgent Steel Demands Can Be Met

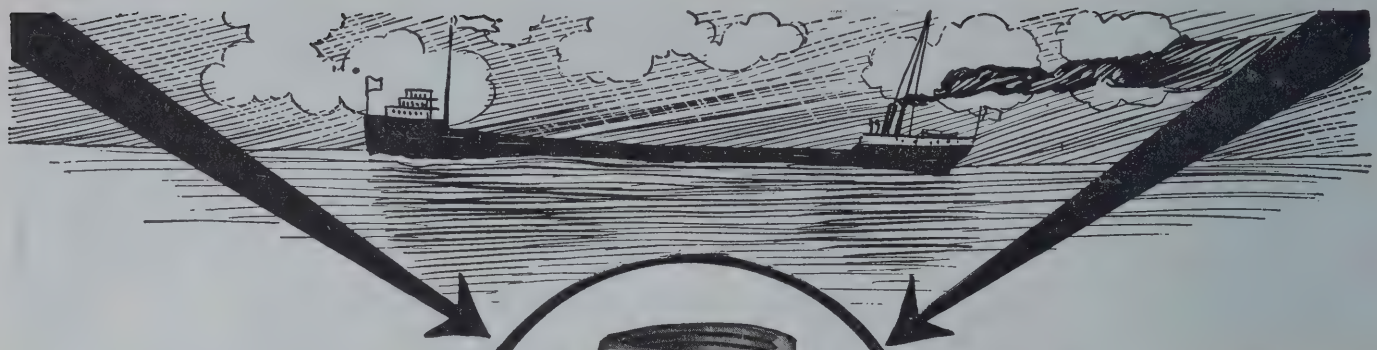


Stock List and Prices Sent on Request.

Carnegie Steel Company
General Offices: Carnegie Building, Pittsburg, Pa.

Forgings
Gear Blanks
Granulated Slag
Hand Rail Tees
Hoops
Industrial Wheels
Merchant Bars
Mine Timbers
Oil Derricks
Plates
Rails
Rivet Rods
Sheet Bars
Sheet Piling
Skelp
Slabs
Slack Barrel Hoops
Spiegeleisen
Splice Bars
Spring Steel
Structural Shapes
Tees
Threading Steel
Tin Bars
Tire
Track Accessories
Trough Plates
Twisted Squares
Vault Plates
Welding Steel
Wheel Blanks
Window Sections
Zees

1341



A pressure wasting union is as bad as a lazy fireman—

Mark Unions are dependable on high or low pressure lines regardless of temperature changes.

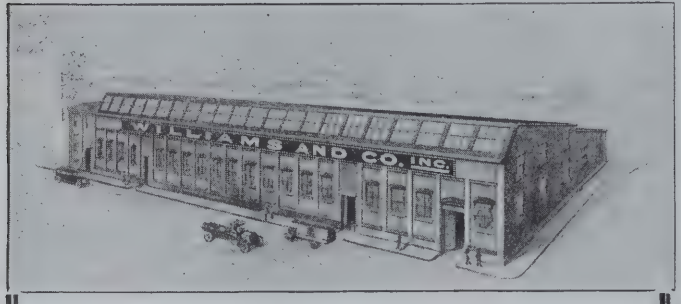


The brass seat, an integral part of the union, is welded in.

This brass to steel contact will stop that expensive waste in your pipe lines.

Send for your sample Mark Union now—just tell us the size.

MARK MANUFACTURING COMPANY
1907 Dempster Street Evanston, Ill., U. S. A.
General Offices: 2111 Conway Bldg., 111 W. Washington St., Chicago, Ill.



MAKE THIS PLANT YOUR HEADQUARTERS FOR

BRASS

RODS—TUBING—PIPE

Nickel Rods, Wire, Castings

MONEL METAL Rods, Wire Castings Shot, Bolts Nuts, Washers

Send for stock list.

WILLIAMS & CO., Inc.
901-937 Pennsylvania Ave.
Pittsburgh, Pa.

Distributors of "Shelby" Steel Tubing for Western Penna. and West Va.

JONES & LAUGHLIN STEEL COMPANY

Manufacturers of

VARIOUS STEEL PRODUCTS

Branch Offices:

Boston	Cleveland	San Francisco
Buffalo	Detroit	St. Louis
Chicago	New York	Seattle
Cincinnati	Philadelphia	Washington, D. C.

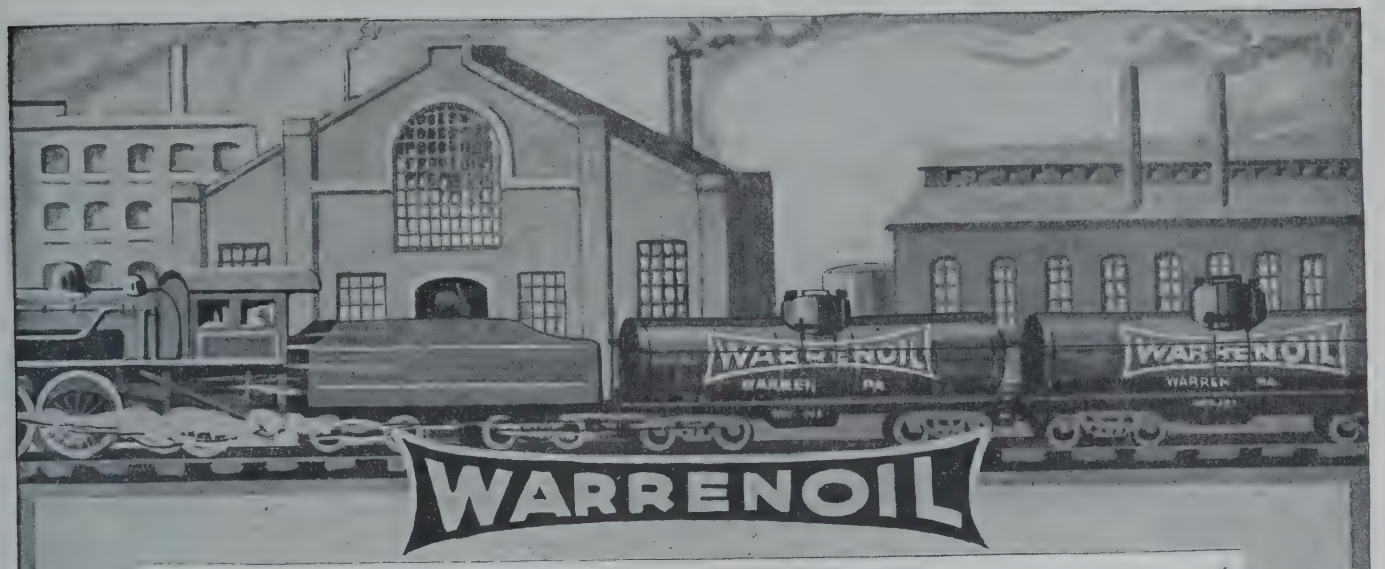
Works:

South Side Works	Keystone Works
Soho Department	Aliquippa Works

Eliza Furnaces and Coke Ovens

General Offices:
Jones & Laughlin Building
PITTSBURGH

122



WARRENOIL

Fuel problems do not worry "Warrenoil" users

Their *fuel oil* is furnished by a concern that operates 1000 privately owned tank cars and that is located in the center of the world's greatest oil district.

Consider the desirability of establishing connection with a dependable and adequate source of supply to cover your *fuel oil* requirements this winter.

WARREN OIL COMPANY OF PENNSYLVANIA
WARREN, PA.
New York Pittsburgh Chicago Buffalo



Non-Ferrous Tubing

Brass—Bronze—Gunmetal
3 inches to 30 inches diameter
Fluid Compressed

Tubes furnished complete machined, free from imperfections of whatever description, lengths up to 250 inches. No patterns needed.

Fluid Compressed Seamless Tubes have close and homogeneous grain, increased tensile strength and elongation. Every tube is carefully inspected prior to shipment. Our shop permits neither peening or plugging.

We shall be pleased to go over your proposition thoroughly with you, furnishing estimate of just about what you can save. *Drop us a line today.*

Following are a few users taken from our many customers:

American Bridge Co.
Duluth Iron Works
Westinghouse Elec. & Mfg. Co.
Mesta Machine Co.
Vulcan Iron Works
Merchant & Evans Co.
Southwark Fdy. & Machine Co.
United Engineering & Foundry Co.
Hydraulic Machinery Co.
International Harvester Co.
Metals Product Co.
Allis-Chalmers
United States Navy,
Dominion Steel Products Co.
Keystone Driller Co.
Railway Steel Spring Co.
North American Copper Co.
Worthington Pump & Machinery Corporation
Fore River Shipbuilding Corp., and many others.

May we take up our proposition with you in detail?

THE SANDUSKY FOUNDRY & MACHINE CO.
Sandusky, Ohio
Eastern Representative:
Nelson, Lodge & Snyder, 428 Widener Bldg., Philadelphia, Pa.

Automobile Sheets

Deep Drawing and Extra Deep Drawing Auto Body Stock. Deep Drawing and Extra Deep Drawing Crown Fender Stock. Hood Stock.

Prompt Service

The Mansfield Sheet & Tin Plate Company

Mansfield, Ohio

DISTRICT SALES OFFICES

GEO. W. HOUSE
Ford Building
Detroit, Mich.

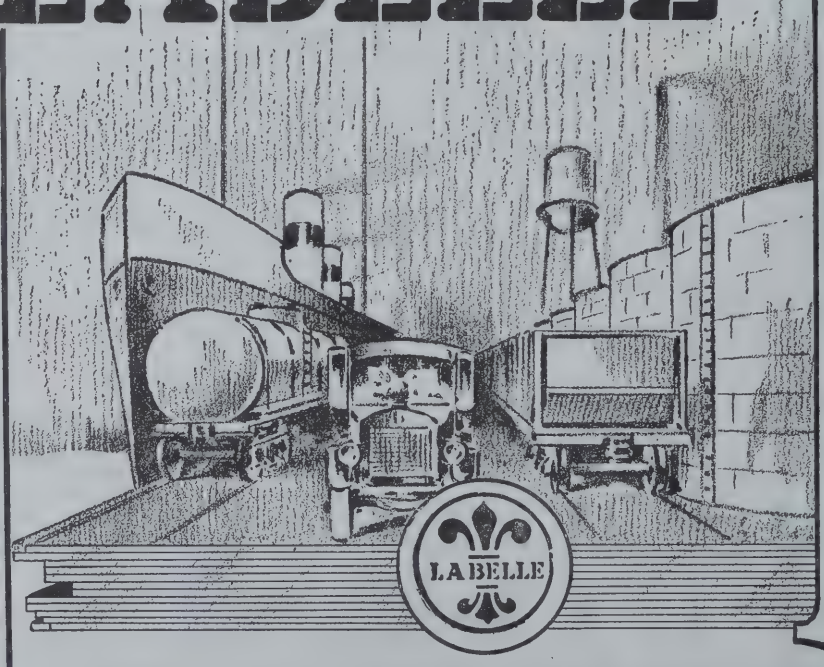
D. B. COEY
1134 National Life Bldg.
Chicago, Ill.

T. C. COLEMAN & SON
1319 Starks Bldg.
Louisville, Ky.

WM. P. HORN CO.
Rialto Bldg.
San Francisco, Calif.
and
301 Kerckhoff Bldg.
Los Angeles, Calif.

EDWIN SCHOFIELD
24 Dalhousie St.
Toronto, Ont., Canada
and
26 Victoria Square
Montreal, Canada

LABELLE



SHEETS, PLATES

Sheets and Plates for Steel Tanks, Cars, Truck and Steamships, where great resistance of torsional strain is positively essential.

Without a doubt La Belle Sheets and Plates will serve your purpose best.

Sheets 3/16 inch to 30 gauge.
Plates 30 gauge to 1 inch.

The Fleur de Lis, the mark of satisfaction.

LA BELLE IRON WORKS

"From Mine to Market"

General Offices:
Steubenville, Ohio.

Plants:
Steubenville, Ohio.
Wheeling, W. Va.

LA BELLE-FOR CONSTRUCTIVE STRENGTH

REPUBLIC

RELIABILITY

BACK OF

SHEETS And PLATES

STEEL SHEETS { GALVANIZED, BLACK, STOVE PIPE BLUE, BLUE ANNEALED, SINGLE PICKLED

PLATES { BOILER, FLANGE, TANK

Manufactured by

Republic Iron & Steel Company

General Office: Republic Bldg.
YOUNGSTOWN, O.

SALES OFFICES:

Birmingham, New York, Cleveland, Chicago, San Francisco, Cincinnati, St. Louis, Buffalo, Detroit, Dallas, Philadelphia, Boston

Consolidated Steel Corporation, 165 Broadway, New York, is the sole exporter of our commercial products. Address all export inquiries to them.

Say you saw it in THE IRON TRADE REVIEW

WHITAKER STEEL AND STEEL PRODUCTS

Black, Galvanized and Blue Annealed Sheets, Sheet Bars,

Slabs and Billets

Portsmouth Iron Ohio Metal

Your inquiries respectfully solicited

WHITAKER-GLESSNER COMPANY

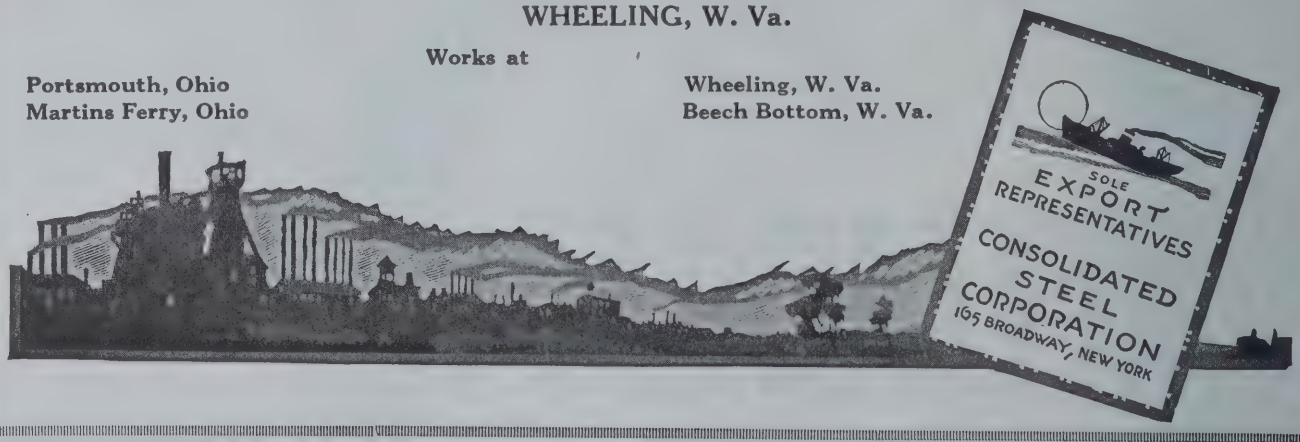
General Sales Department

WHEELING, W. Va.

Works at

Portsmouth, Ohio
Martins Ferry, Ohio

Wheeling, W. Va.
Beech Bottom, W. Va.



HUDSON SHEET & TIN PLATE CO.

TIN PLATE

Mill: Marietta, Ohio

Address all Correspondence to
GENERAL SALES OFFICE:
Hickox Bldg., Cleveland, O.

New York Sales Representative
W. M. MacCleary
2 Rector St.

CARNAHAN

The sign of Quality

COKE TIN PLATE

If it is the BEST—We make it

THE CARNAHAN TIN PLATE & SHEET CO.

CANTON, OHIO

BRANCH SALES OFFICES:

CARNAHAN TIN PLATE & SHEET CO., NEW YORK
JOS. R. MARTIN & CO., MONTREAL
WALTER G. CLARK, Inc., ST. LOUIS
SAN FRANCISCO
ROLPH, MILLS & CO. LOS ANGELES
SEATTLE
PORTLAND

Say you saw it in THE IRON TRADE REVIEW



"GENUINE" OPEN HEARTH IRON

CORRUGATED SHEETS

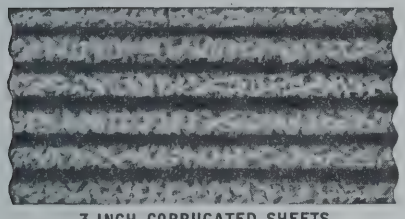
All Size Corrugations

"GLOBE" BRAND

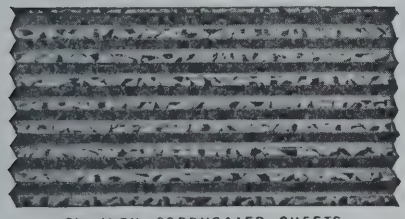
BLACK and GALVANIZED SHEETS

BLUE ANNEALED SHEETS

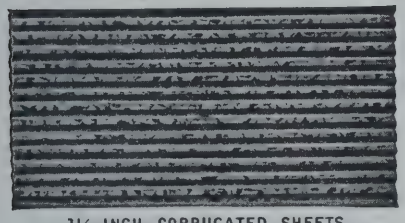
TANK PLATE



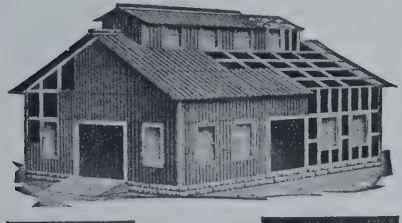
3-INCH CORRUGATED SHEETS

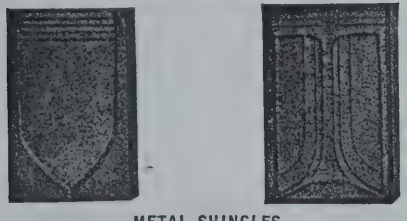


2½-INCH CORRUGATED SHEETS

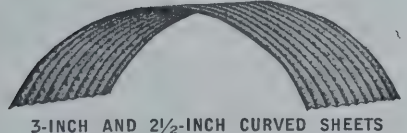


1¼-INCH CORRUGATED SHEETS

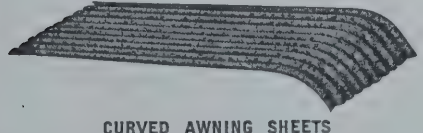




METAL SHINGLES



3-INCH AND 2½-INCH CURVED SHEETS



CURVED AWNING SHEETS

"GLOBE" BRAND

Black and Galvanized SHEETS

Blue Annealed SHEETS

Tank Plate

all Gauges, Widths and Lengths

Corrugated Sheets, Corrugated Arches, Corrugated Awnings, Corrugated Culverts, Corrugated Elevator Siding, Corrugated Ridge Roll, Corrugated Flashing, Metal Weather Board Siding, Beaded Siding and Ceiling, Steel Ceiling, Metal Shingles, Cluster Shingles, Pressed Brick Siding, Rock Face Brick Siding, Rock Face Stone Siding, Metal Corner Boards, Hip Shingles, Formed Shingle Valley, Plain Ridge Roll.

SHEET METAL BUILDING MATERIAL

OF EVERY DESCRIPTION

Let us know Your Requirements

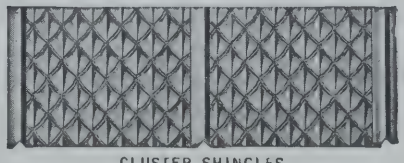
Our Catalog Should Be On Your Desk

NEWPORT ROLLING MILL CO.

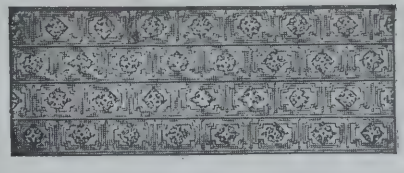
NEWPORT, KY.



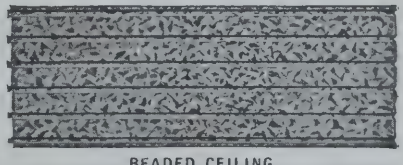
5 V CRIMP ROOFING



CLUSTER SHINGLES



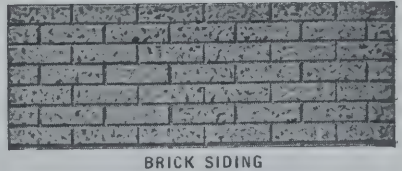
GLOBE CEILING



BEADED CEILING



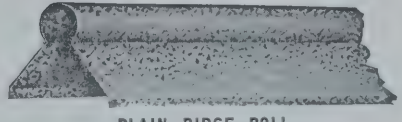
WEATHERBOARD SIDING



BRICK SIDING



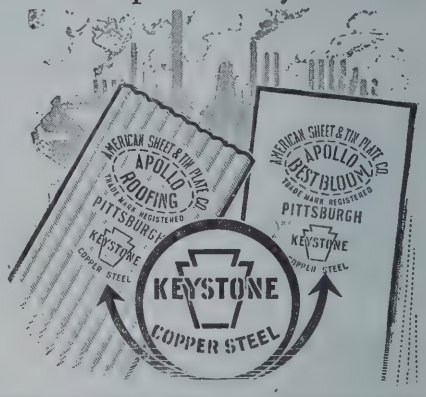
ROCK FACE STONE SIDING



PLAIN RIDGE ROLL

Keystone Quality

THE only way to obtain *Keystone Quality* is to use *Keystone Copper Steel.* In buying this better product you will get the benefit of our exhaustive series of weather tests and research work, which have been conducted to develop the most *durable* and highly *rust-resistant* sheet metal manufactured.



Keystone Copper Steel

is unequaled for Culverts, Flumes, Tanks, Roofing, Siding and all forms of exposed sheet metal work. Look for the Keystone added to brands.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis

Export Representatives: United States Steel Products Company, New York City

Pacific Coast Representatives: United States Steel Products Company, San Francisco, Los Angeles, Portland, Seattle

BOX BANDS
BUNDLING BANDS

We are prepared to furnish bands for boxing, crating and bundling

CUT TO LENGTH AND GALVANIZED

PRICES CHEAPER THAN ORDINARY BLACK BANDS

IMMEDIATE SHIPMENTS

PITTSBURGH GALVANIZING Co., 991 Union Arcade, Pittsburgh

SENECA SHEETS



One Pass Black Steel
Single Pickled One Pass
Three Pass Stock for Japanning

The brand that stands for Quality

Our range in flat sheets is not over 42" wide and 144" long.

Enameling Finish for Enameled Products

Black and Painted Roofing 2½" and 1¼" Gauges, No. 14 to No. 28. Any length not over 12 feet.

Seneca Iron & Steel Co. **Buffalo, N. Y.**


"MAVASCO"
HIGH GRADE
SHEET STEEL
Automobile Sheets
We specialize in the manufacture of sheets for automobile construction.
These sheets are made from the highest grade sheet bars, carefully rolled, annealed, pickled and cold passed to an extremely high finish.
Especially adapted for Automobile Bodies, Fenders, Hoods, etc.
Let us know your requirements.
THE MAHONING VALLEY STEEL CO.
NILES OHIO



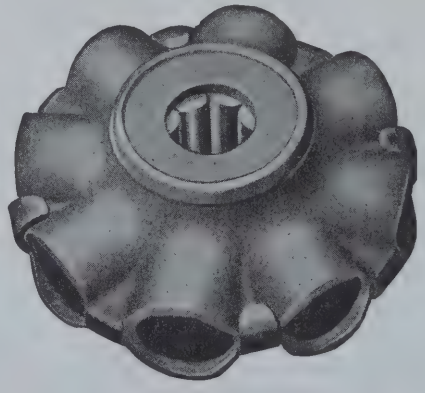
THE STANLEY WORKS NEW BRITAIN, CONN.
NEW YORK CHICAGO

Instead of castings use
Crosman Stamped Parts

All classes of **High Grade Sheet Metal Stampings, Difficult Metal Drawings** and **Die Designing.**

Let us figure on your requirements.

THE CROSMAN STAMPING CO.
YPSILANTI, MICH.



GEN-



The roughest treatment only serves to show how well GEN-WIRE springs are made.

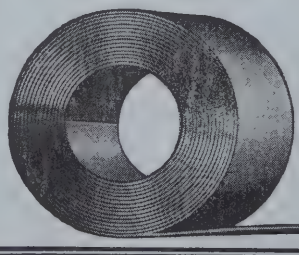
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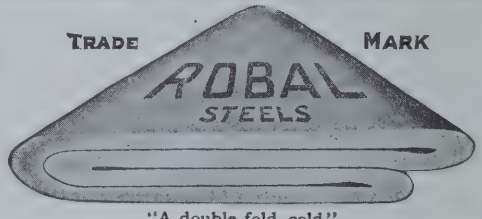
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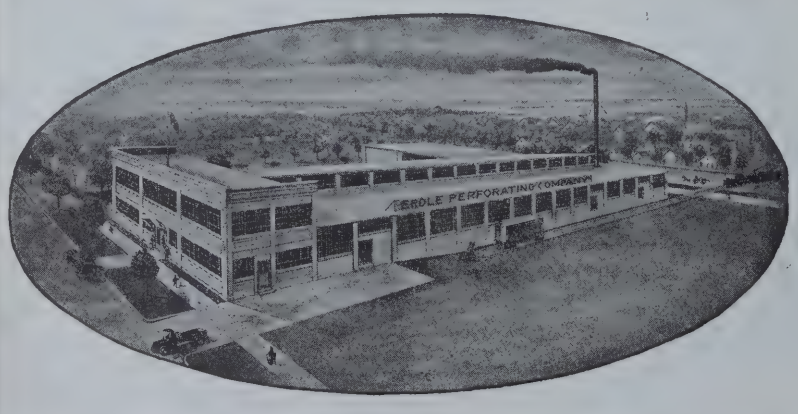
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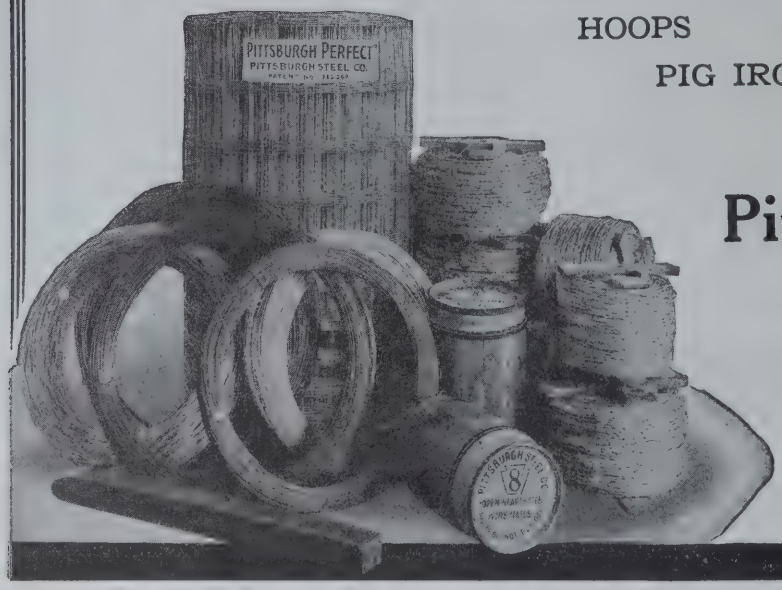
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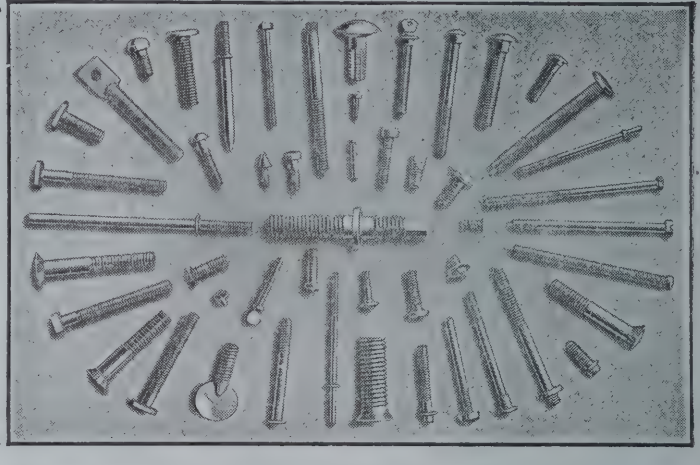
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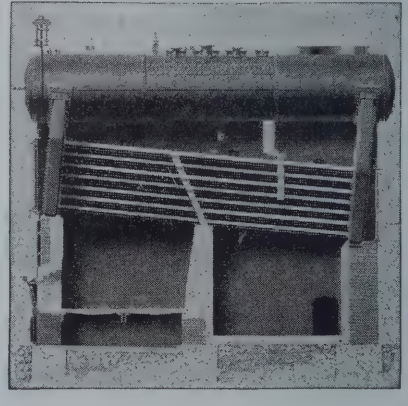


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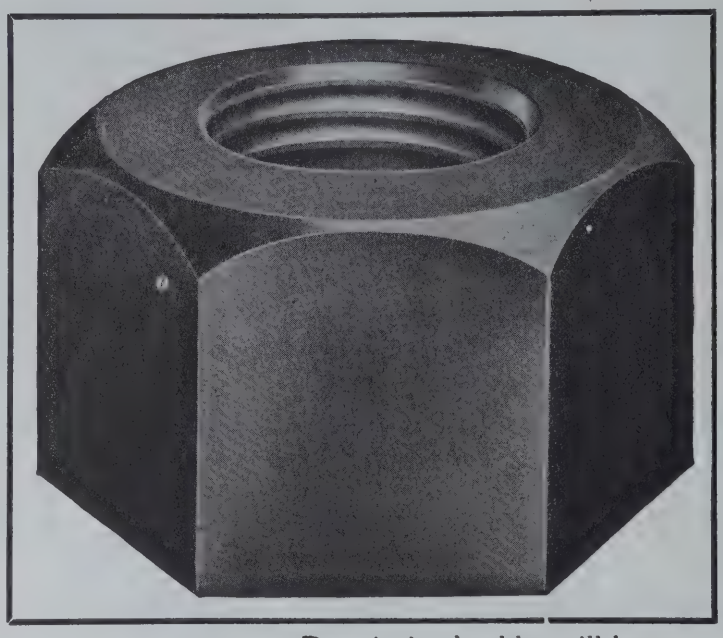
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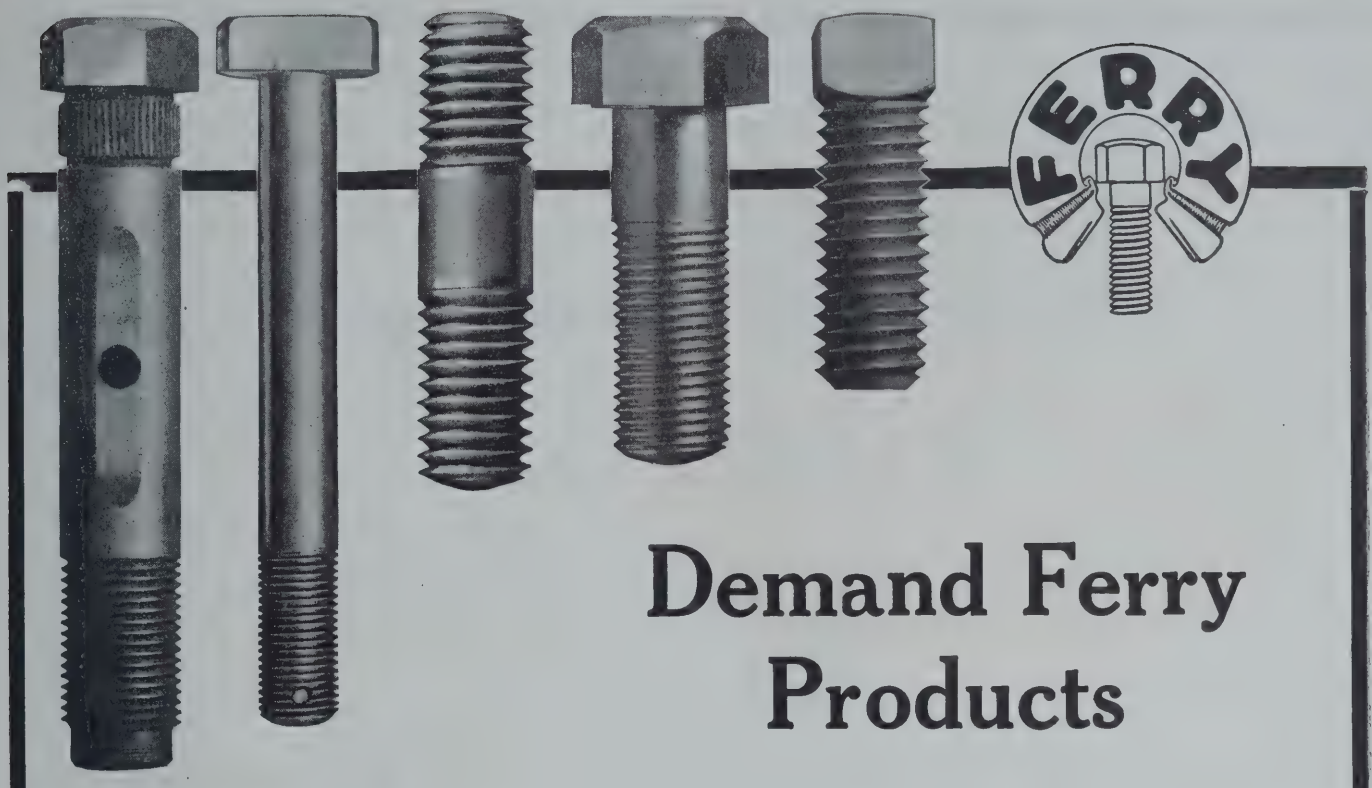
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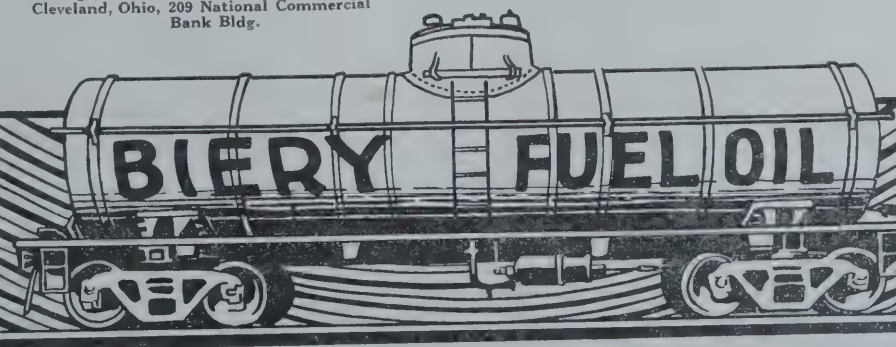
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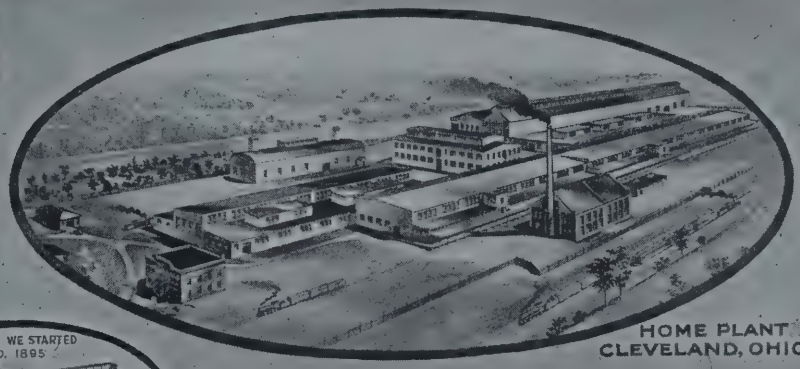
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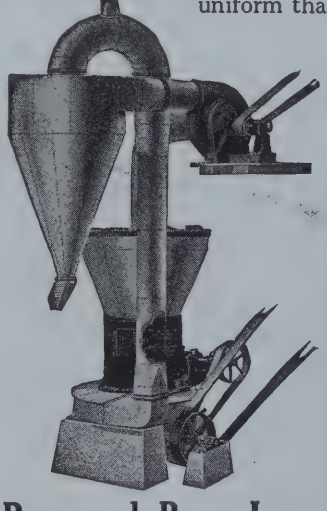
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The use of **Pulverized Coal** in **Open Hearth Furnaces** was not a success until the **RAYMOND SYSTEM** was used for grinding the coal.

With the Raymond System of Pulverizing and Air-Separation instead of screen separation you get any fineness of coal desired and the resultant product is so uniform that it burns immediately when introduced into the furnace. It is for this reason that the Raymond System has played such an important part in the development of Pulverized Coal as a Metallurgical Fuel.



A full description of this System will be mailed you upon request.

Raymond Bros. Impact Pulverizer Co.
1313 North Branch St. Chicago, Ill.
WESTERN REPRESENTATIVE
The Dry Milling Engineering Co.
213 Boston Building, Denver.

MAGNEFER is a hard-burned, dense, granular, basic refractory especially manufactured as a bottom material for open hearth and electric furnaces.

Comparative tests have shown that MAGNEFER is the most successful dolomitic base of this kind on the market.

MAGNEFER is synthetically prepared containing less than 5% silica and over 30% magnesia—will stand up longer than any other specially-treated dolomite and is extremely economical in use.

Build up your Furnace bottoms with MAGNEFER and increase your tonnage.

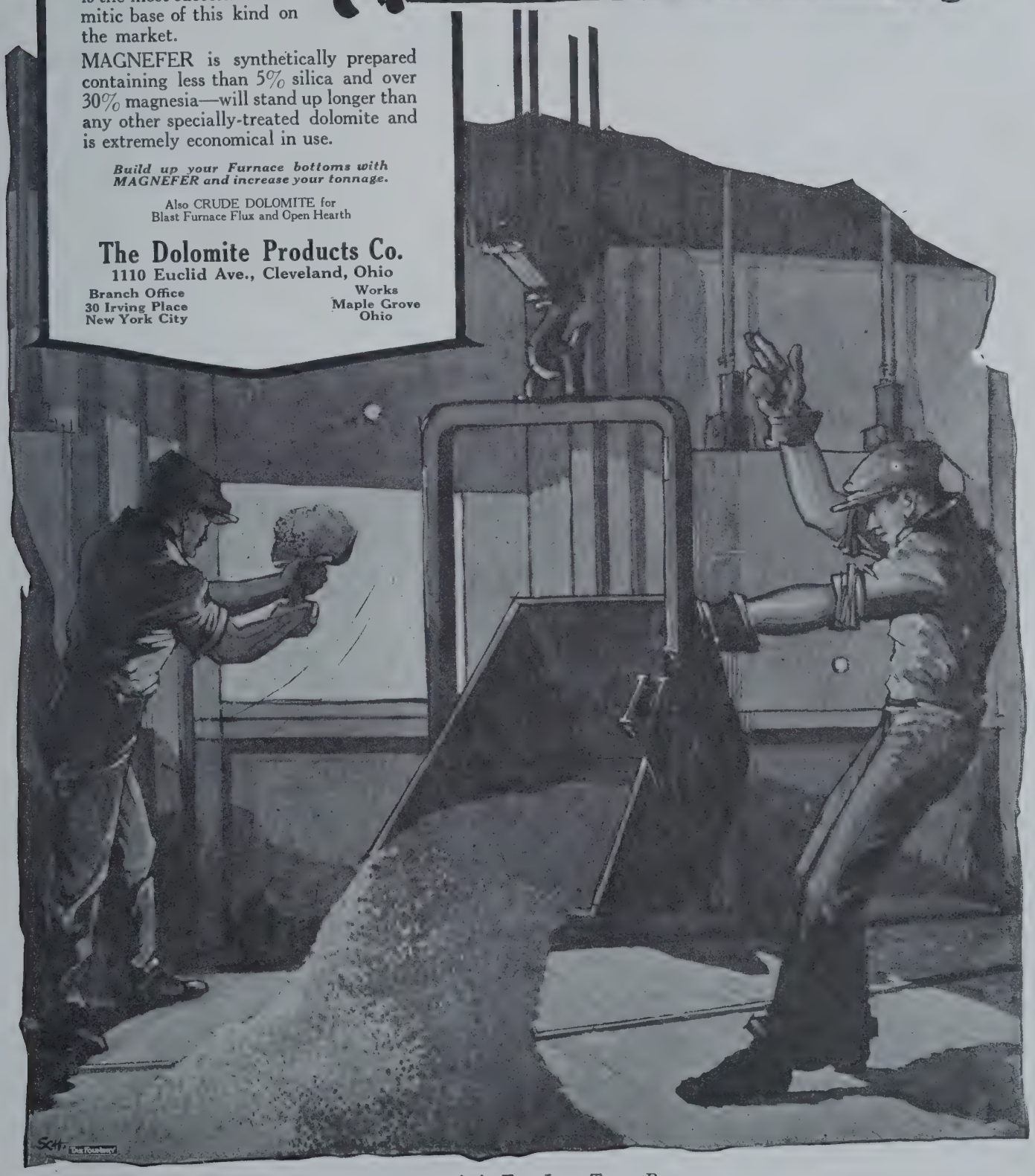
Also CRUDE DOLOMITE for
Blast Furnace Flux and Open Hearth

The Dolomite Products Co.
1110 Euclid Ave., Cleveland, Ohio

Branch Office
30 Irving Place
New York City

Works
Maple Grove
Ohio

MAGNEFER
THE RELIABLE REFRACTORY



Say you saw it in THE IRON TRADE REVIEW



Here's part of another installation of

ROCKWELL ECONOMIZER FURNACES

Owner tried one and has bought many more since. Why? Because, as users say, these economizer furnaces assure:

Saving of fuel. Protection of the operator. Greater output. Use of one system of piping. Less heating area. Reduction in quantity of scale. Cleaner shops.

Complete information in Catalog 34-G

Chicago—Ellsworth Bldg.
Cleveland—Guardian Bldg.
Detroit—Majestic Bldg.

W. S. ROCKWELL CO. INDUSTRIAL ESTABLISHED 1888 FURNACES 50 CHURCH ST. NEW YORK

Heating Furnaces

Equipped with

Type H Stokers

The Standard Practice
In Modern Mills

Get in Touch With Us

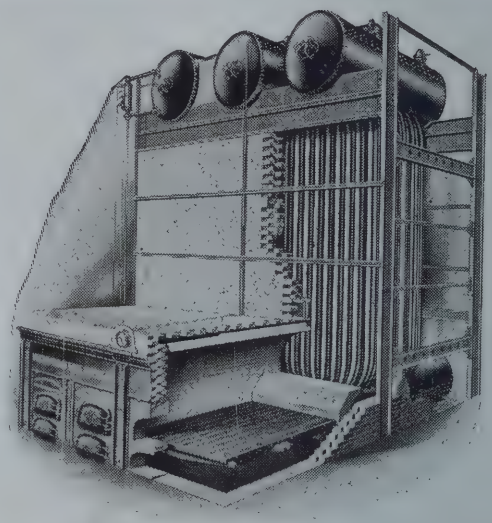
Combustion Engineering Corporation

11 Broadway, New York City

REPRESENTED BY

GEORGE J. HAGAN CO.

IN PITTSBURG, PA.
(4th Floor People's Bank Bldg.)



Waste Heat—Blast Furnace Gas
Stoker or Hand Fired

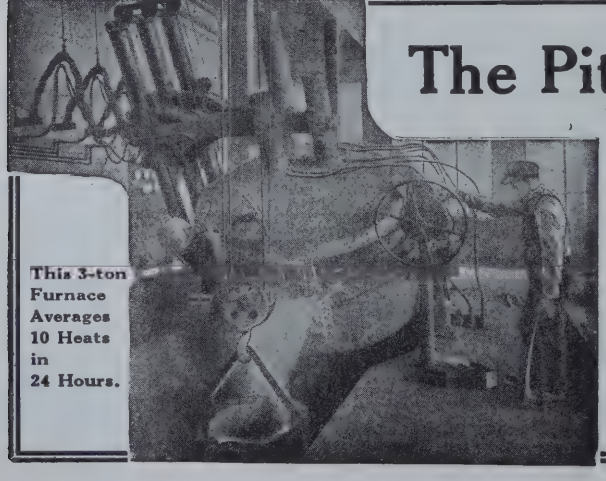
THE C-H VERTICAL WATER TUBE BOILER

No Handhole plates. No Restricted Circulation.
Great Overload Capacity. Large Water Storage.
Sizes up to 1000 H. P. Pressures up to 250 lbs.

THE CASEY-HEDGES CO.

Chattanooga, Tenn.

Chicago, Ill. Birmingham, Ala. New York



This 3-ton Furnace Averages 10 Heats in 24 Hours.

The Pittsburgh Electric Furnace

Moore Patents

The most Rapid Melting, High Powered Furnace. For Refining High Quality Steels.

These furnaces effect large economies over other steel making methods in steel foundries.

Basic or Acid Lined.

Pittsburgh Furnace Company

Public Service Building **Milwaukee, Wis.**

Gilbert & Barker's

Self-Measuring Pumps and Tanks have stopped the waste of oil and are saving time and labor at the

American Fork & Hoe Company

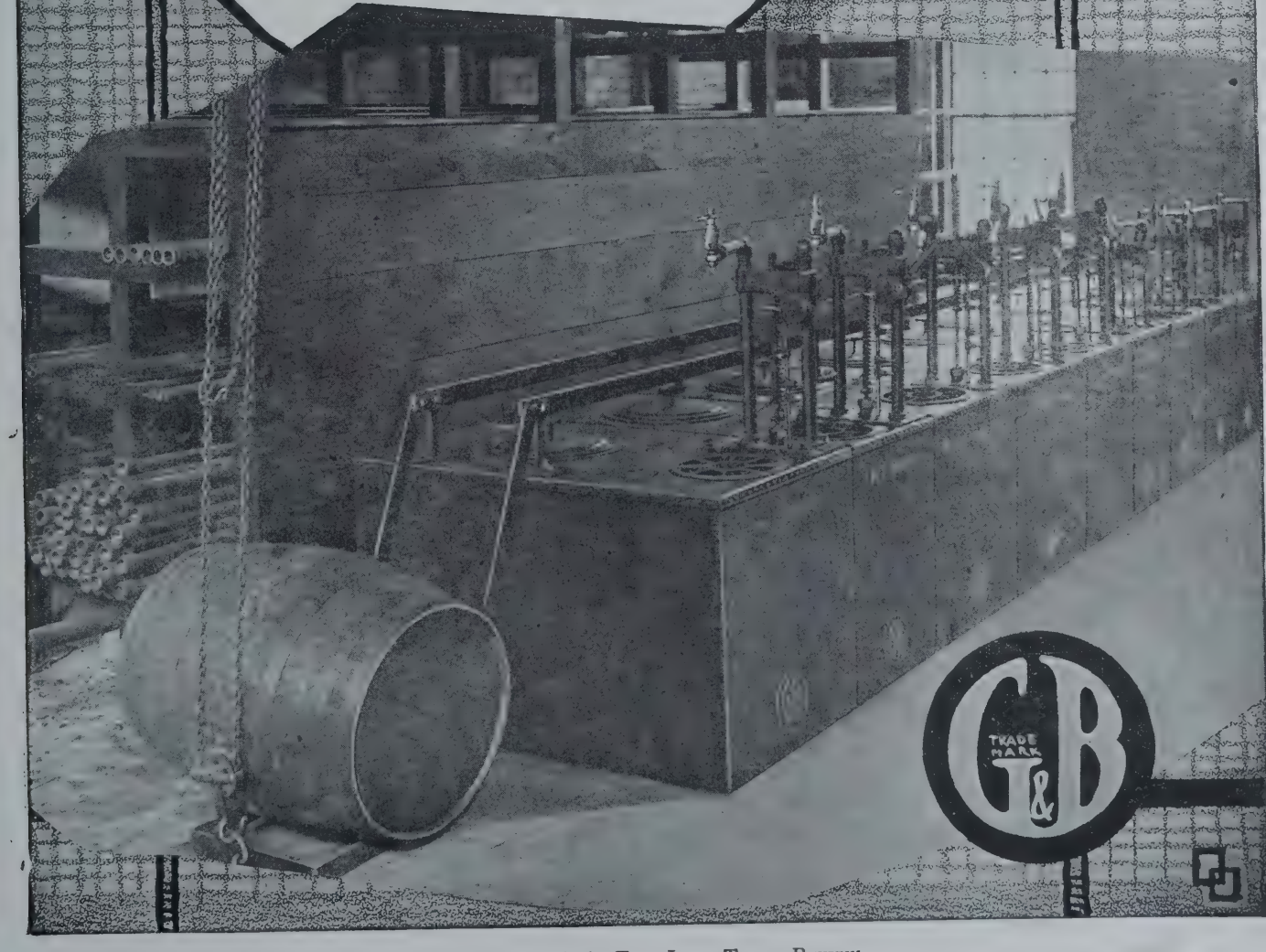
Lubricating efficiency demands clean oil. Present-day economy demands the elimination of waste. Common sense demands that fire risks shall be reduced to a minimum.

All of these demands will be complied with by the installation of the Gilbert & Barker Equipment suited to your requirements.

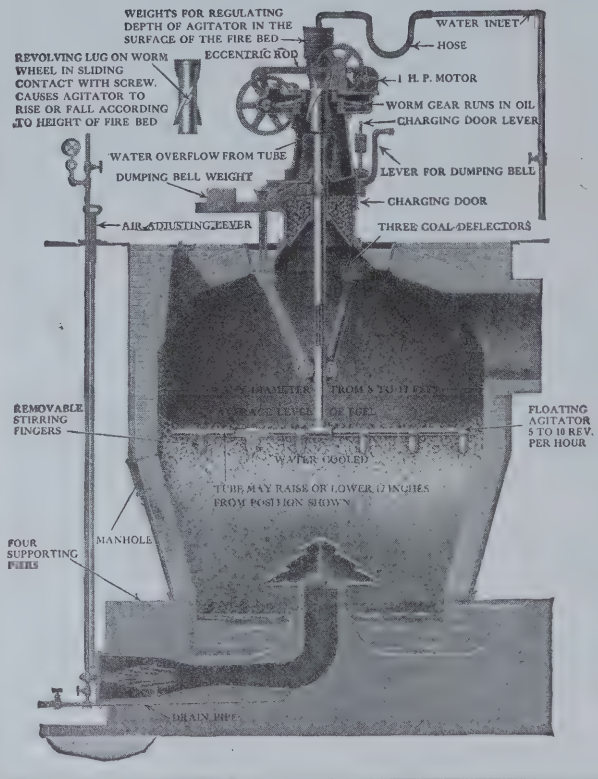
Take the first step to-day. Send for Bulletin 22

GILBERT & BARKER MFG. CO.

22 Union Street
Springfield, Mass., U. S. A.
Established 1865



Chapman Floating Agitator



For any type of Stationary Gas Producer

A mechanical device which saves fuel and labor, and materially increases producer capacity.

Built with or without Automatic Feed

Wonderful results are being obtained with these Machines in the Steel Industry.

Write us for complete information and descriptive bulletin

Chapman Engineering Company

MT. VERNON, OHIO

11 Broadway, New York 1323 Oliver Bldg., Pittsburg

WHOLESALE LUMBER

E. J. BRADLEY
POTTSVILLE
PA.

Pattern Lumber

Boxing and Crating Lumber

Construction Timbers in Yellow Pine and Oak

LARGE GEARS

CUT OR MACHINE MOLDED



TAYLOR-WILSON MFG. CO

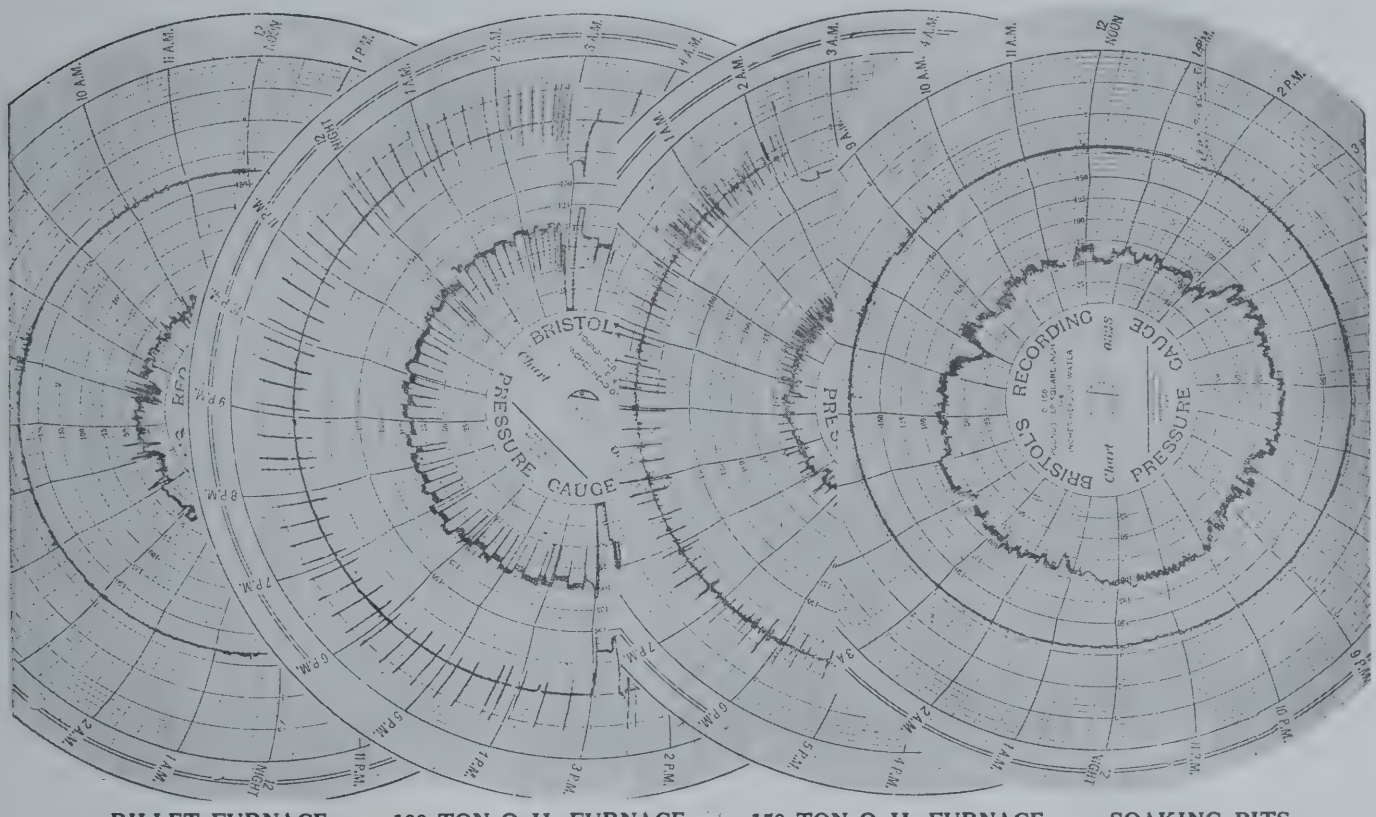
ENGINEERS-FOUNDERS-MACHINISTS

MAIN OFFICE AND WORKS MIKEES ROCKS, PA.

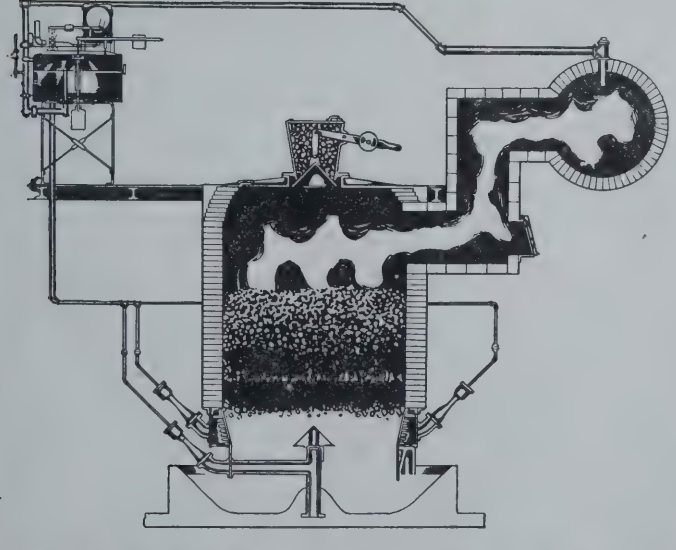
Constant Gas Pressure?

If you wish to make your Raw Gas Producers deliver a Constant Gas Pressure to your Furnaces, lose no time in installing

Chowning Raw Gas Producer Regulators



BILLET FURNACE 100 TON O. H. FURNACE 150 TON O. H. FURNACE SOAKING PITS



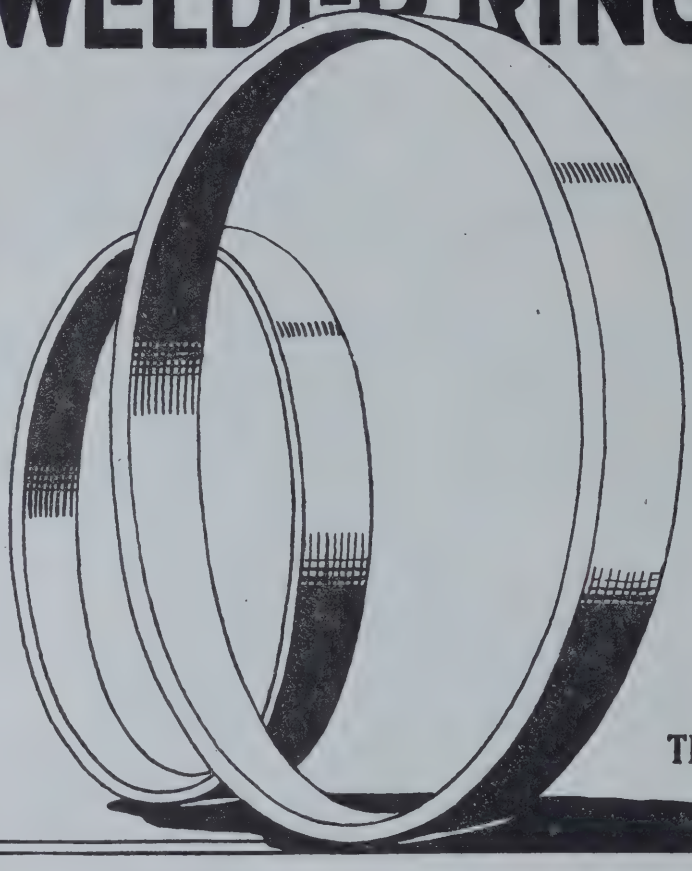
There is no *over* gas pressure or *under* gas pressure where Chowning Raw Gas Producer Regulators are in use. You can install them to either Mechanical or Hand Poked Producers. They will control from one to ten producers in one battery.

Large numbers of these regulators are in successful operation in the Steel, Glass and Ceramic industries.

Write us, and we shall be glad to send you complete information and descriptive bulletin.

CHOWNING REGULATOR CORPORATION, Corning, N. Y.

WELDED RINGS AND BANDS



ALL SIZES

No matter what your requirements may be as to size, weight, width or thickness, we can satisfactorily meet your requirements for *Gear Ring Blanks, Core Ring Blanks* or *Sprocket Blanks.* Our long experience in forging and welding work is a guarantee of the quality of our workmanship and an assurance of our responsibility.

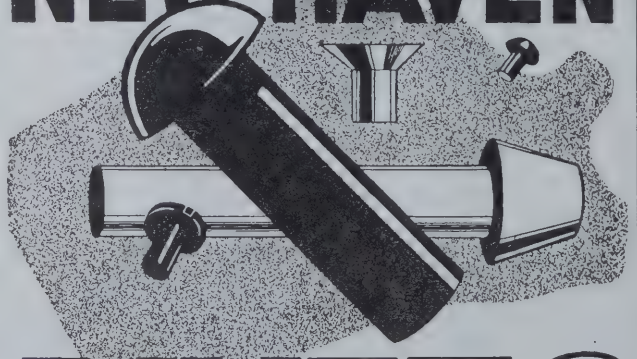
"Forgings that stand the test"

Akron-Selle Welded Rings and Bands have been used by large manufacturers for years with excellent results. They have not only stood the test for quality but also for long service and durability.

Let us fill your next requirements.

THE AKRON-SELLE CO., AKRON, O.

NEW HAVEN



RIVETS

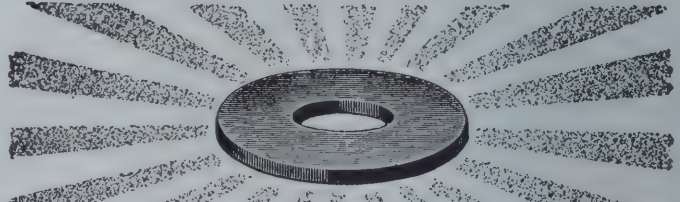
Made from the highest grade material in

Copper, Brass and Iron

Made in any size up to 3/8"
Especially adaptable for all kinds of light metal work

Write for quotations

New Haven Rivet Co.
New Haven, Conn.



WASHERS

Wrought and Steel Plate

The Highest Grade, of All Descriptions.

Standard sizes shipped promptly. *Special* sizes on short notice. Also

Annealed Rivet Burrs
Felloe Plates, Etc.

Let us know your requirements. We guarantee Quality and Service.

Wrought Washer Mfg. Co.
MILWAUKEE, WIS.

EMPIRE TUBE & STEEL CORPORATION

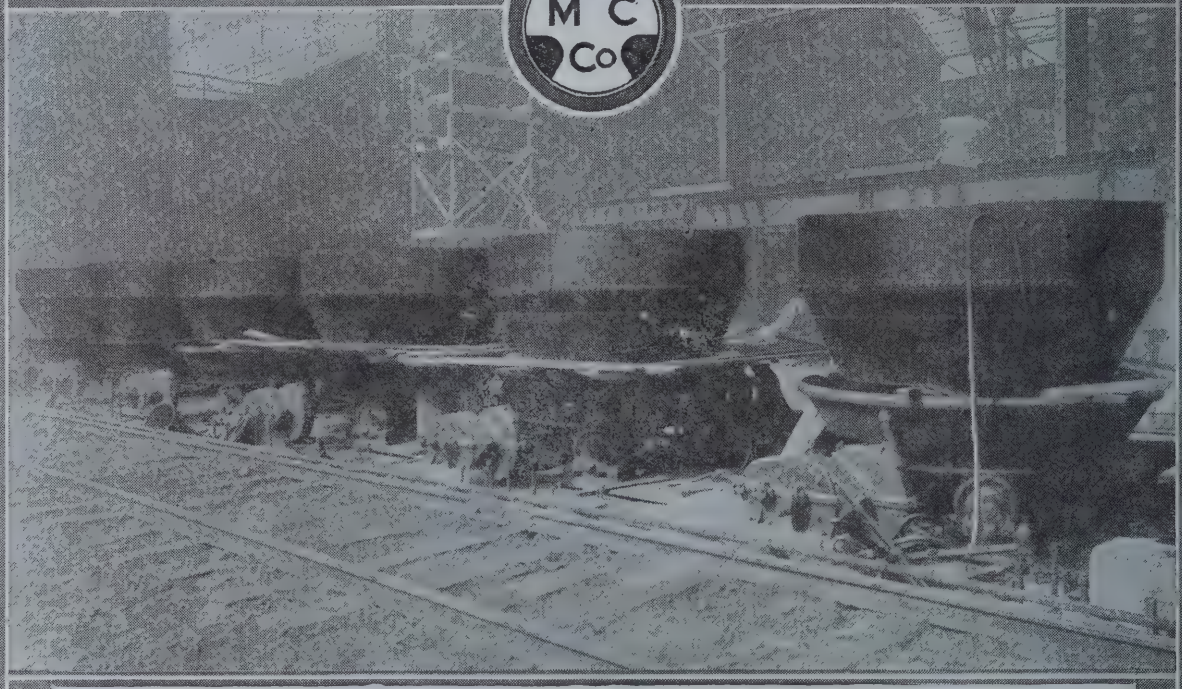
STEEL TUBING

MILL: COLLEGE POINT, N. Y.

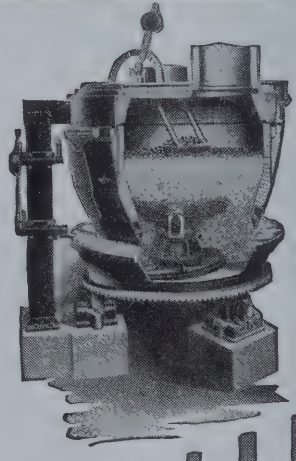
Despite the Scarcity of Steel, we are in a position to Offer Exceptional Deliveries on all Kinds of Tubular Products

MORGAN
OF WORCESTER
PRODUCER GAS MACHINES
COMPLETELY AUTOMATIC

M C Co



A Battery of six Morgan Producer Gas Machines in course of erection at the Open Hearth of the Youngstown Sheet and Tube Company This photograph was taken before the producer house structure was erected

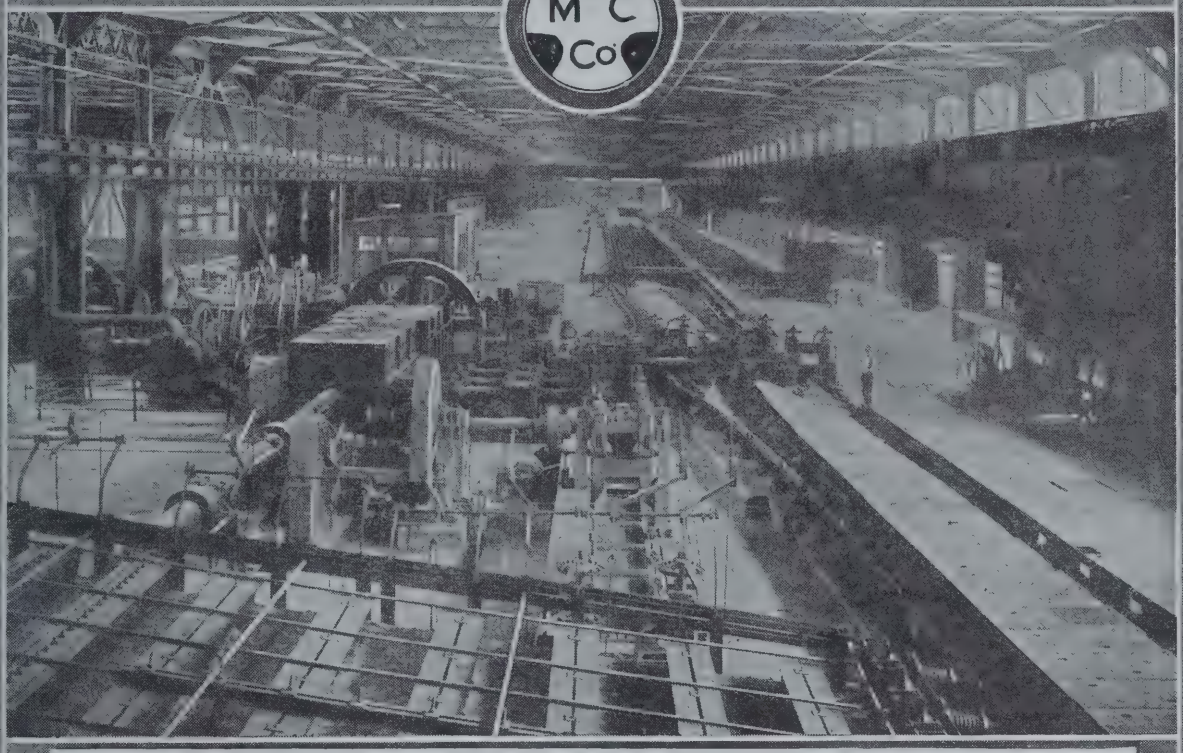




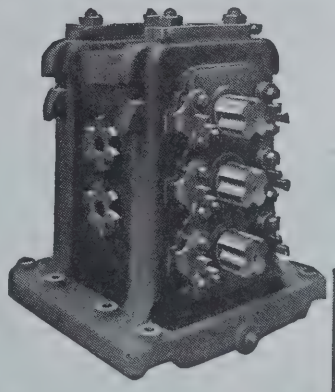
MORGAN CONSTRUCTION CO.
WORCESTER, MASS. U.S.A.

MORGAN
OF WORCESTER
CONTINUOUS ROLLING MILLS
STANDARD OF THE WORLD

M C Co



12" Merchant Mill in plant of the Youngstown Sheet and Tube Company
Continuous Morgan Heating Furnace
Continuous 14" Roughing Mill.
12" Staggered Duo Finishing Mill.
300 Ft. Horizontal Universal Cooling Bed.
Product—Merchant Rounds, Squares, Flats, and Angles. Building 1100 ft. long
Output upward of 10,000 tons per month





MORGAN CONSTRUCTION CO.
WORCESTER, MASS. U.S.A.

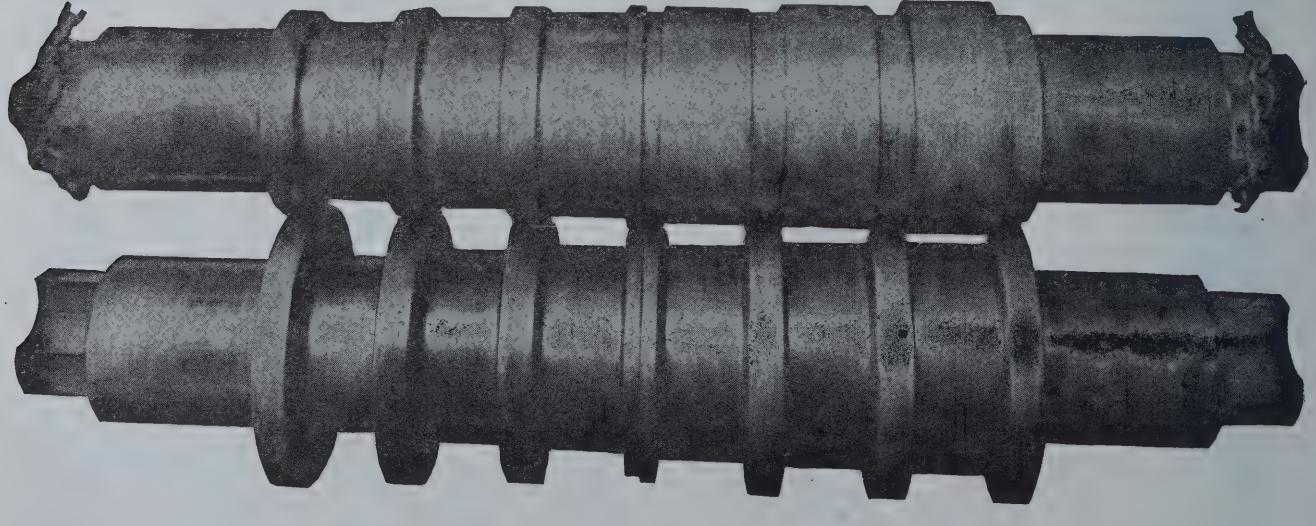


STEEL ROLLS
SUPER-STEEL ROLLS

CHILLED ROLLS
SAND ROLLS

ROLLING MILL MACHINERY
SPECIAL MACHINERY
STEEL CASTINGS
IRON CASTINGS

WHEELING MOLD & FOUNDRY CO.
WHEELING, W. VA.



Say you saw it in THE IRON TRADE REVIEW

Largest Single Unit Reversing Type Motor

—Now Building In Our Shops

(When assembled, a view of this motor with engineering facts surrounding the installation, will be presented.)

Timely Improvements Under Way

Steel men are now undertaking improvements that will later afford greater economy of operation, increased capacity and a product of improved quality.

The course largely pursued by many, has been to determine what parts of the plant warrant improvement and to formulate a definite outline of the changes to be made with respect to first cost, the time needed to remodel and the advantages to be attained.

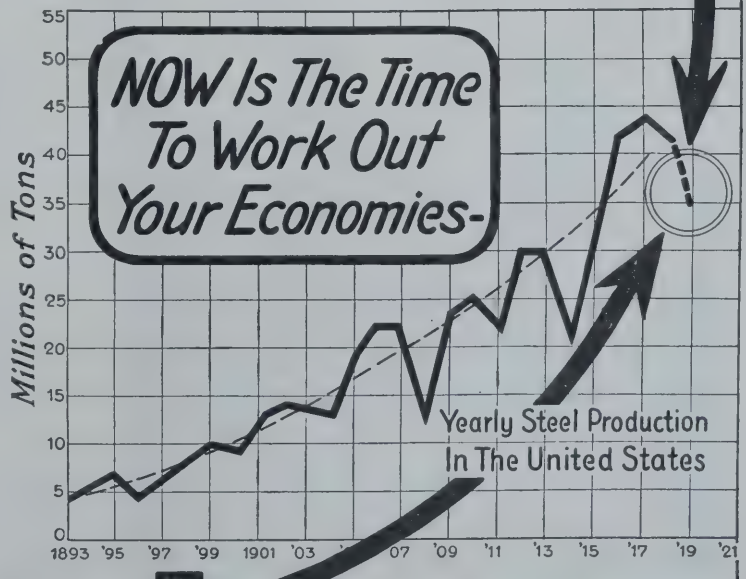
Those activities which have so far taken definite form, indicate that electric drive will be a big, if not the chief factor in effecting the needed economies.

Owing to the time required to build and install main motor units, it is only logical to see rehabilitation commence in this department.

Orders for two electric reversing mill drives to replace existing engines have recently been placed with this company. These mills are 40 and 44-inch respectively. In addition, the largest single reversing type motor is now building in our shops.

The broad experience of Westinghouse engineers is available at all times in the solution of power problems.

Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pa.



Westinghouse

ROLLS

SAND—CHILLED—STEEL

DURITE (PATENTED)

INGOT MOLDS, sand and chill cast, split or solid, all sizes and for all purposes

Hydraulic Machinery

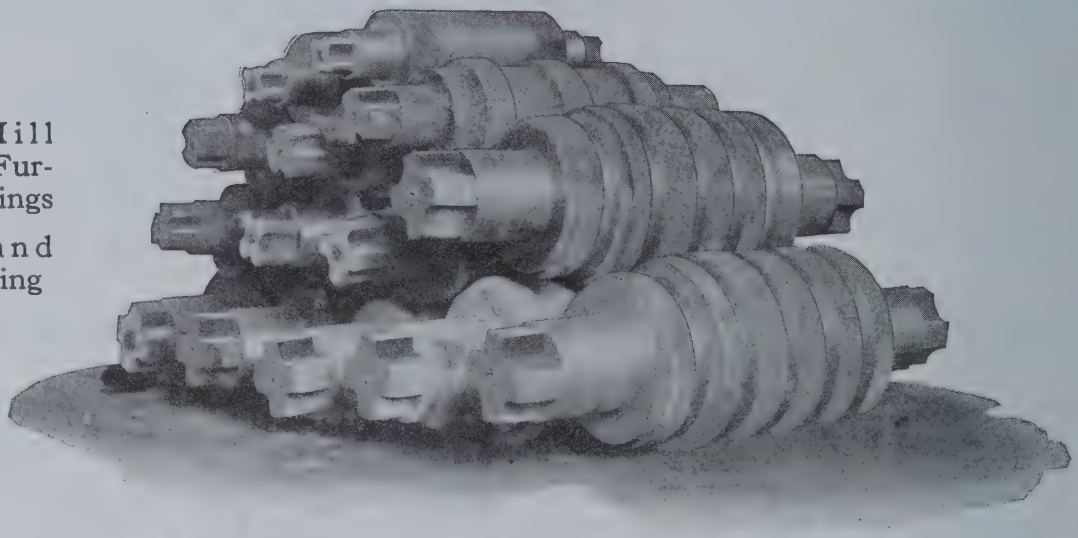
Rolling Machinery

Rolling Mill and Blast Furnace Castings

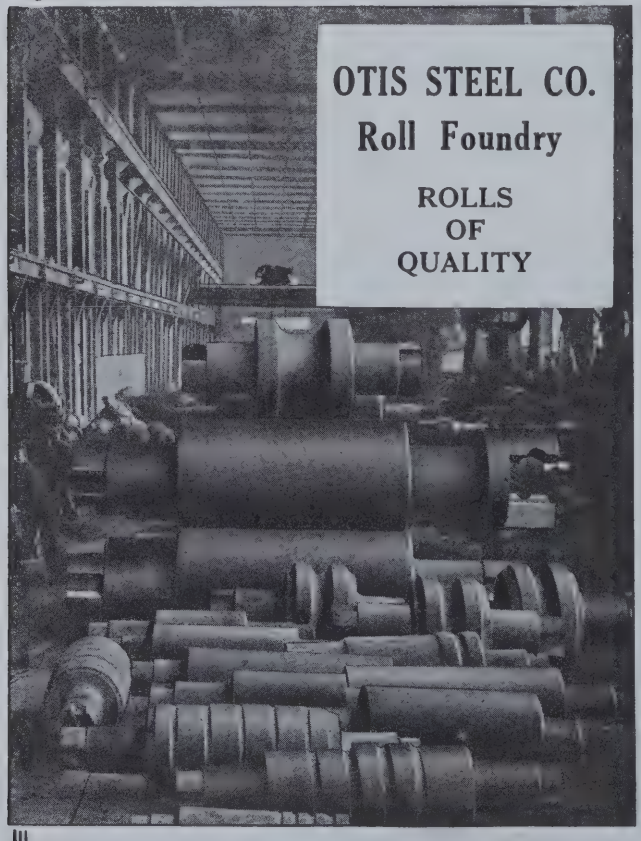
Crushing and Concentrating Machinery

Jackson Belt Lacing Machines

Special Machinery



Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa.



STEEL AND OTISCO ROLLS

Made to suit Mill Conditions to reduce Mill Costs.

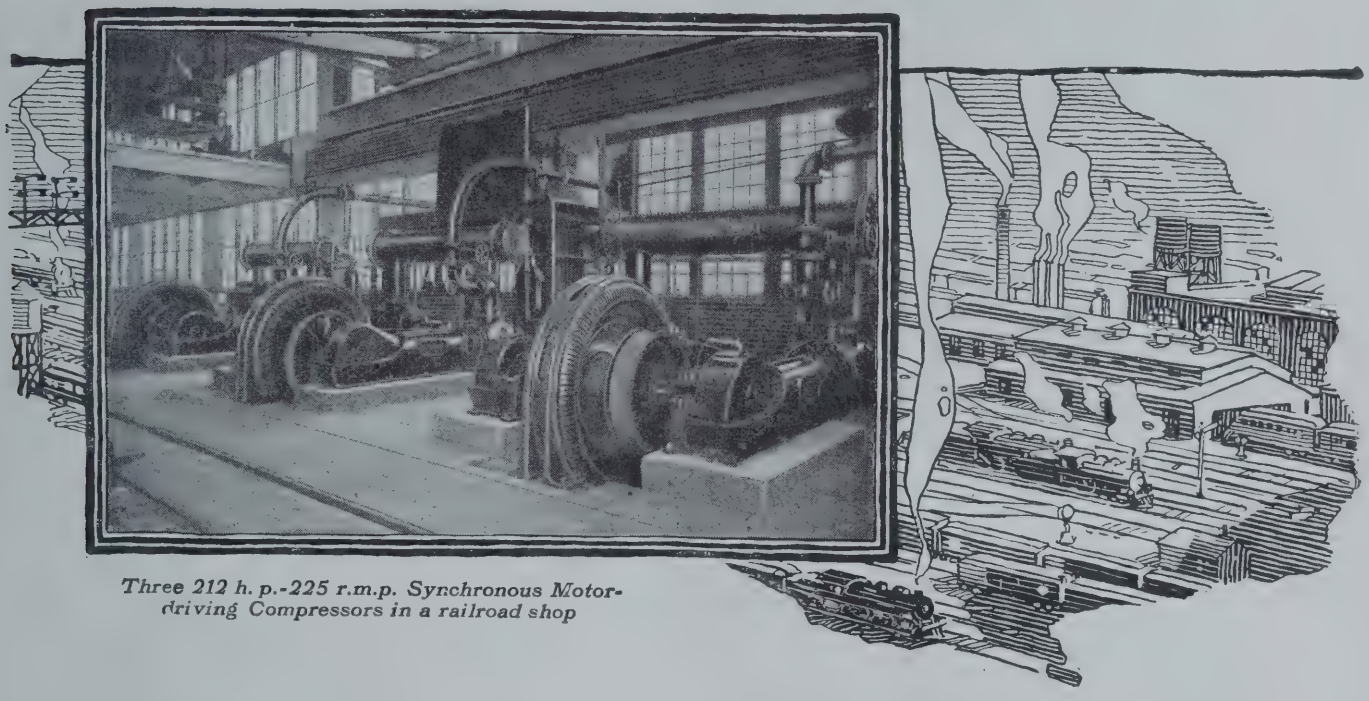
Quality—Tough and Hard
Great Strength
Long Service
Less Dressing

Delivery—Prompt

THE OTIS STEEL CO., Cleveland, Ohio

Makers of Steel Castings, from 1 lb. to 150,000 lbs. each. Rolled Steel Plates and Blue Annealed Sheets

The high efficiency and dependability of G-E Synchronous Motors are relied upon in many industries today.



Three 212 h. p.-225 r.m.p. Synchronous Motor-driving Compressors in a railroad shop

88,000 h.p. of synchronous motors supplied in 1918 for air compressor drive

FOR a quarter century the General Electric Company has supplied synchronous motors designed for the particular work to be done. The first ones furnished are still in continuous service requiring maximum dependability.

For industrial drives these motors are furnished from 25 to 2000 h.p. capacity with speeds from 80 to 1800 r.p.m. and are designed to start any load met with in commercial practice without excessive current demands upon the power circuit.

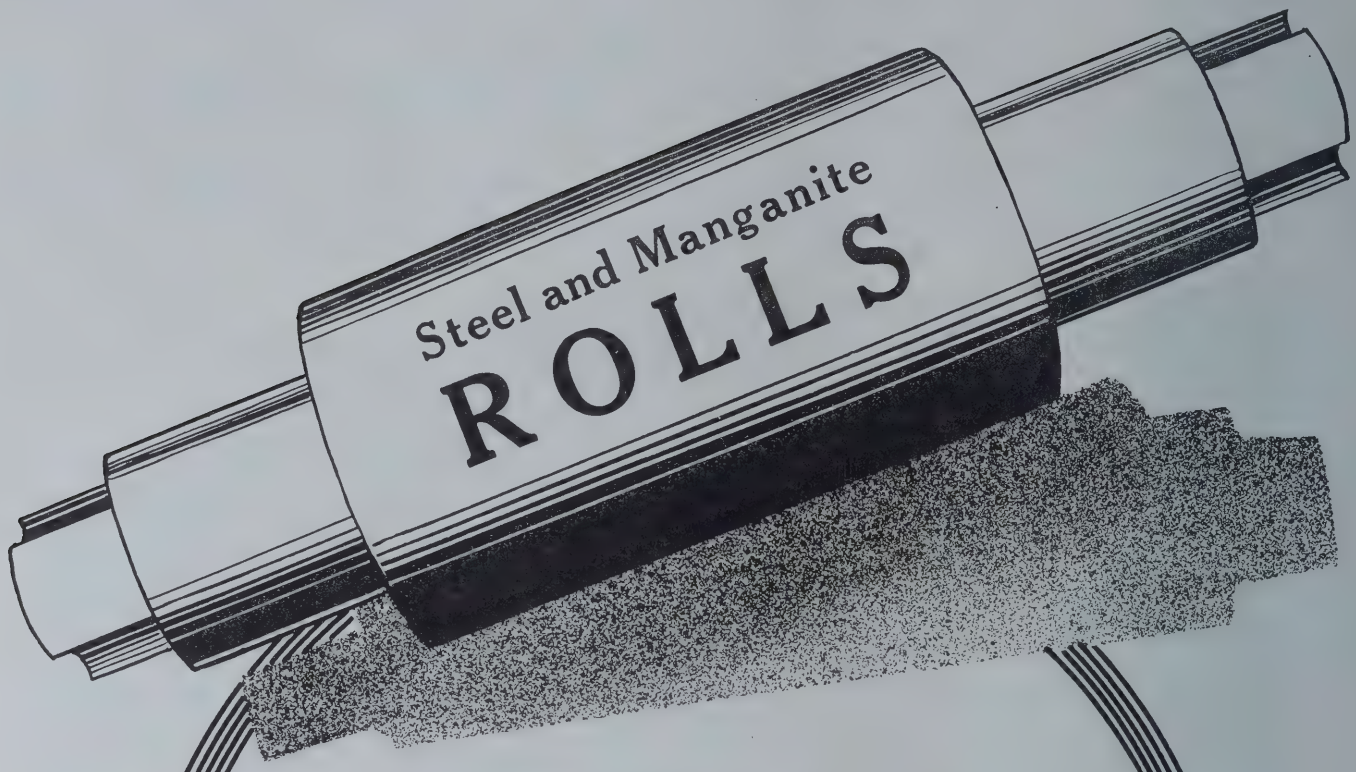
The very high efficiency and dependability of these motors are due to their excellent design which is based on thorough testing of both raw materials and finished motors.

Our engineers will be pleased to supply additional information on these motors.

48-168

General Electric Company

General Office Schenectady, N.Y.



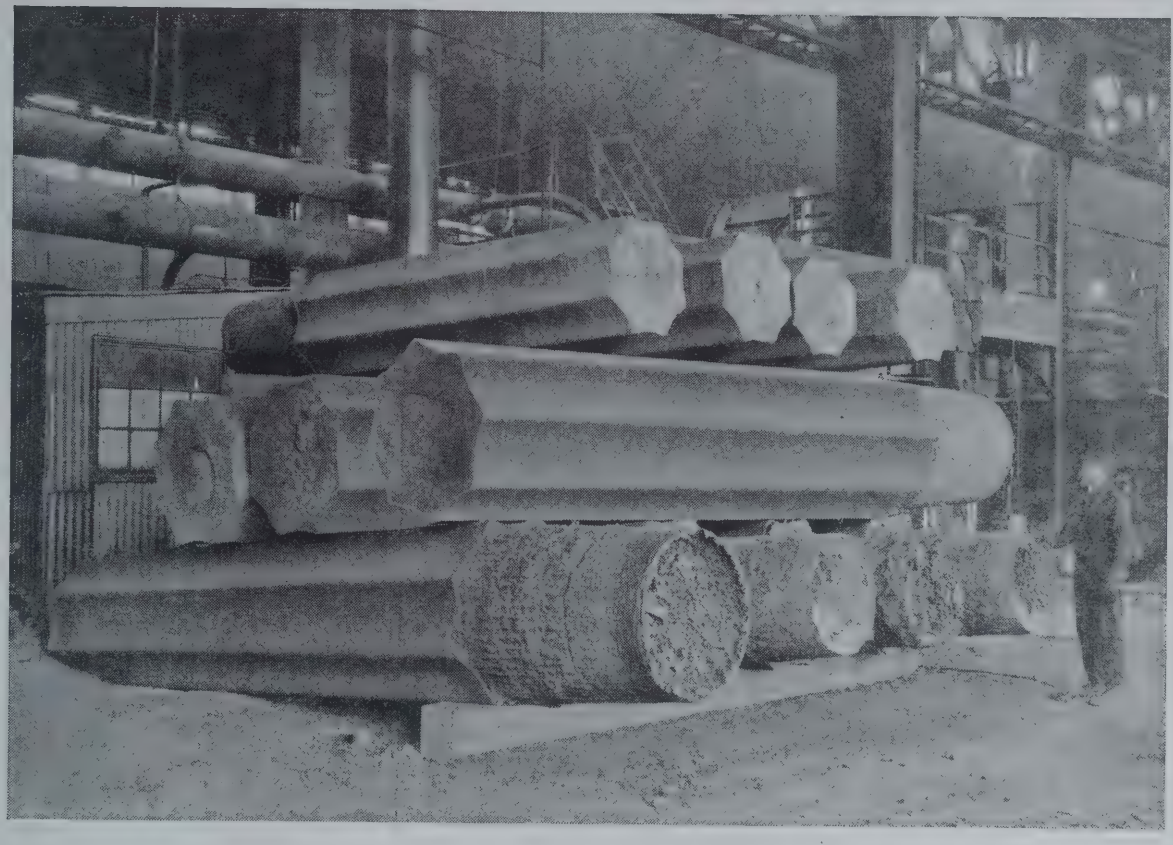
"The Best in Rolling Mill Machinery"

MACKINTOSH HEMPHILL & CO

FORT PITT FOUNDRY

12TH & ETNA STS., PITTSBURGH, PA.

MESTA FORGING INGOTS



LOWER YOUR FORGING COST BY ELIMINATING REJECTIONS

We manufacture acid open hearth mold cast, bottom poured **Forging Ingots** with hot tops—the best for manufacturing high grade forgings. Sizes up to 56".

Prompt deliveries. Your inquiries solicited.

MESTA MACHINE COMPANY
PITTSBURGH PENNSYLVANIA

Manufacturers of

Gas and Steam Engines, Blowing Engines, Reversing Engines, Rolling Mill Machinery, Forging Presses, Gear Drives, Air Compressors, Condensers, Rolls, Pinions, Cut and Machine Molded Gears, Iron and Steel Castings, Forgings, Forging Ingots, etc.

Say you saw it in THE IRON TRADE REVIEW

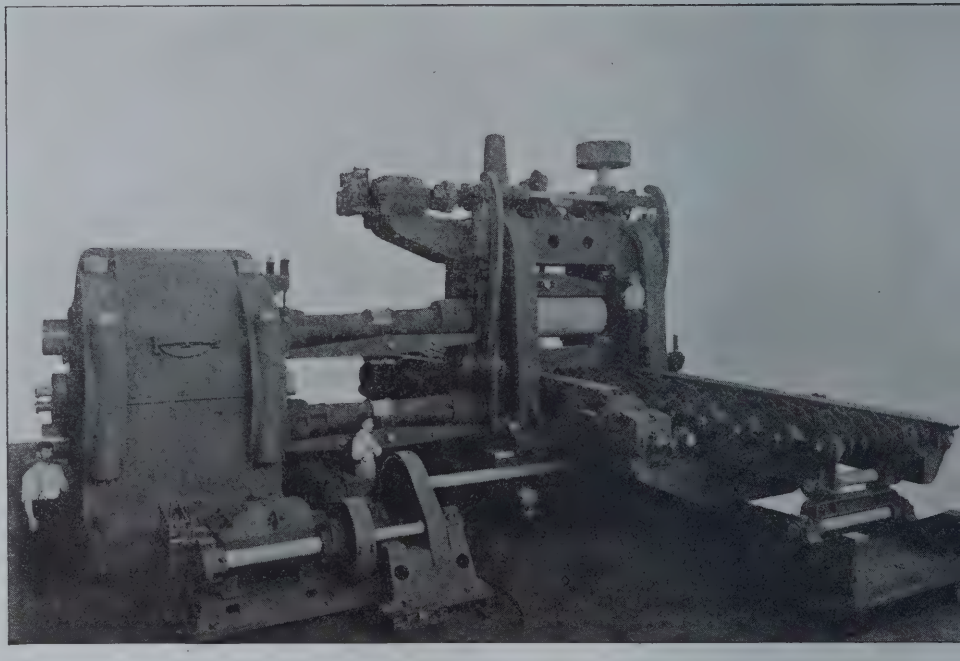
MOR EQUIP

MORGAN
THE WORLDS STANDARD
EQUIPMENT

DESIGNERS and BUILDERS

Overhead Traveling Cranes
Gantry Cranes
Jib Cranes
Overhead and Floor Type Chargers
Soaking Pit Cranes
Electric Ingot Strippers
Ladle Cranes
Steam Hammers
Steam Hydraulic Forging Presses
Hydraulic Presses
Hydraulic and Motor Driven Shears
Blooming, Plate, Structural, Slabbing and Billet Mills.
Coke Pushers

BRANCH OFFICES
New York Chicago
Pittsburgh Birmingham, Ala.



Morgan 84 Inch 3-High Plate Mill.

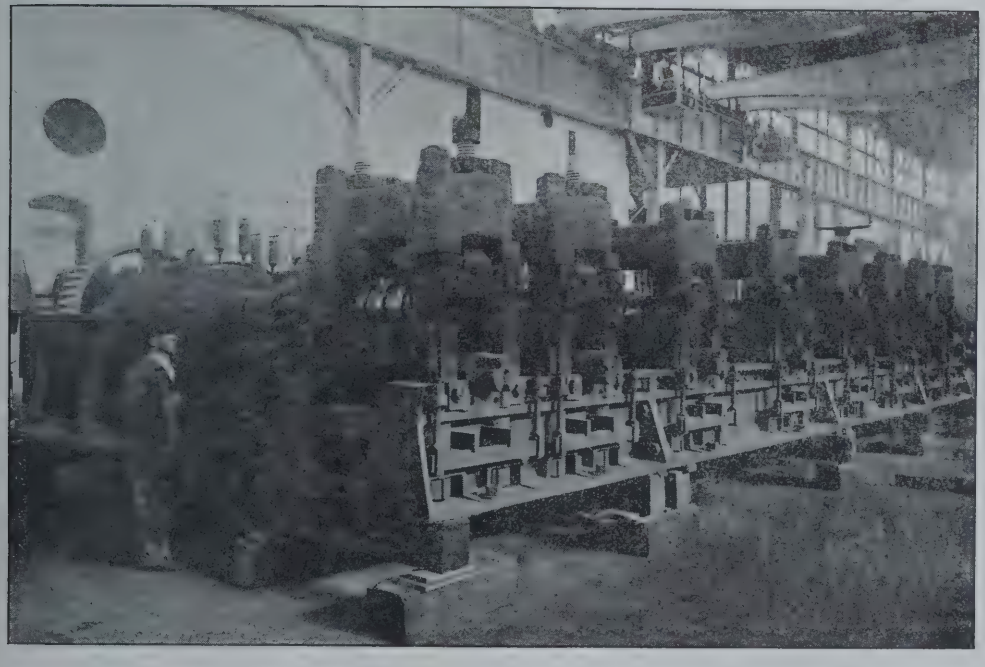
Designed and built for The Otis Steel Company, Cleveland, Ohio.

Housings are of the dished type to provide maximum room for the tables. There are no working parts beneath the shoes as the middle roll operating mechanism is on the outside of housings.

Send for our Rolling Mill Machinery Bulletin No. 16—It shows some interesting installations.

THE MORGAN ALLIANCE

GAN MENT



Morgan 14 Inch Continuous Roughing Mill.

Designed and built for The Imperial Steel Works, Japan. Mill is composed of eight stands, and driven through a train of spur gears with cut teeth.

Reducing gears and mill pinions are contained in one housing. The entire installation as built by us included Continuous Roughing Mill, Belgian Loop Mill with Rope Drive, Feed Tables, Chutes, Floor Plates, Reels, Bundle Conveyor, etc.

MORGAN THE WORLDS STANDARD EQUIPMENT

DESIGNERS and BUILDERS

- Tire Mills and Plants Complete
- Bending Machines
- Flanging Machines
- Riveting Machines
- Joggling Machines
- Shipbuilding Machinery
- Forging Plants Complete
- Steel Plants Complete
- Electric Controllers
- Structural Work
- Iron Castings up to 100 tons
- Bronze and Acid Resisting Castings
- Steel Castings up to 100 tons

FOREIGN OFFICES

London Paris
Tokio Milan
Petrograd

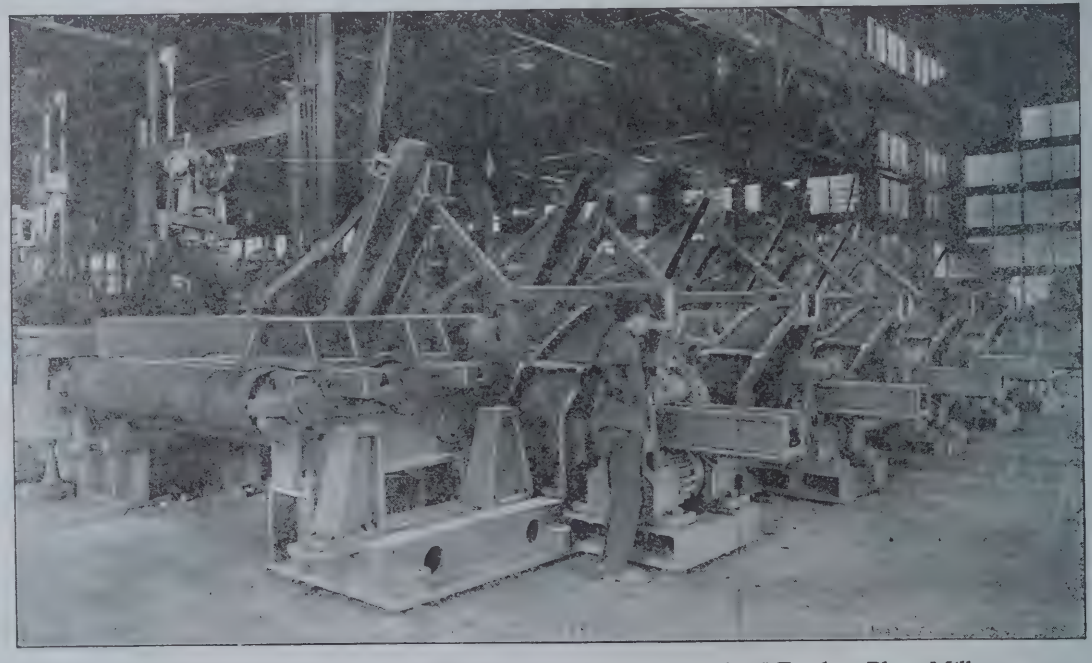
ENGINEERING CO.
OHIO U.S.A.

TREADWELL

STEEL WORKS EQUIPMENT



Treadwell Means Service not only in the fulfillment of specifications, but also in the sense of assisting you to produce efficiently and economically.



Forsstrom Plate Turnover and Inspection Table for 84" and 96" Tandem Plate Mill

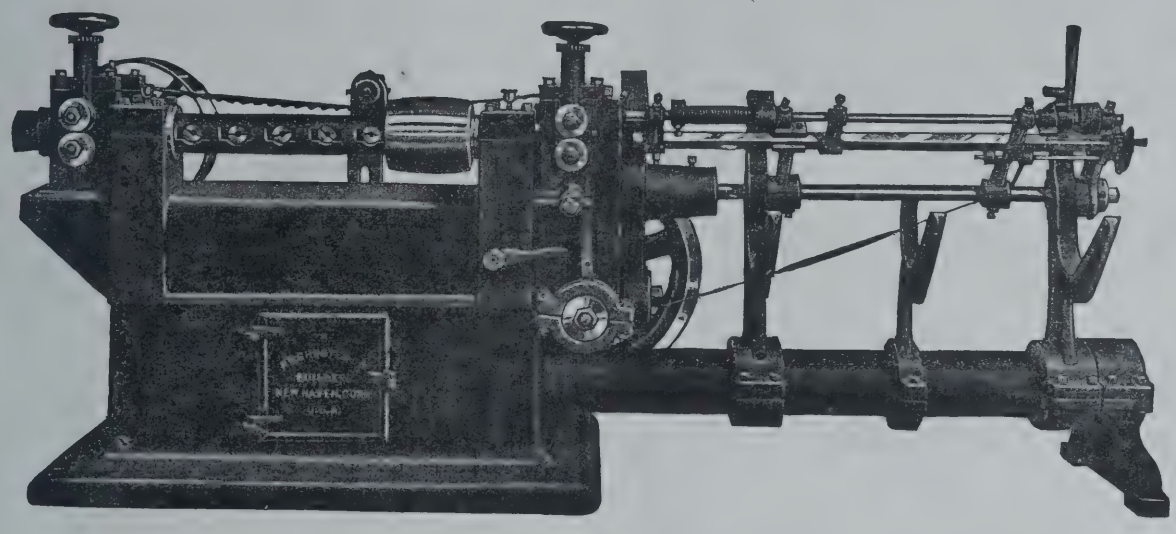
We are prepared to design and build all kinds of Rolling Mill and Steel Works Equipment.

We specialize on Mill Tables, Crop Conveyors, Shears, Ingots and Charging Box Cars.

TREADWELL ENGINEERING COMPANY
EASTON, PENNA.

Say you saw it in THE IRON TRADE REVIEW

STRAIGHT WIRE ACCURATE LENGTHS



One user of our AUTOMATIC WIRE STRAIGHTENING AND CUTTING MACHINE is cutting lengths 9 feet 6 inches long at the rate of 57,000 feet per day, and at this rate it took him only a few weeks to pay for the machine.

Every piece is *perfectly straight* and each length is an exact duplicate of the preceding one.

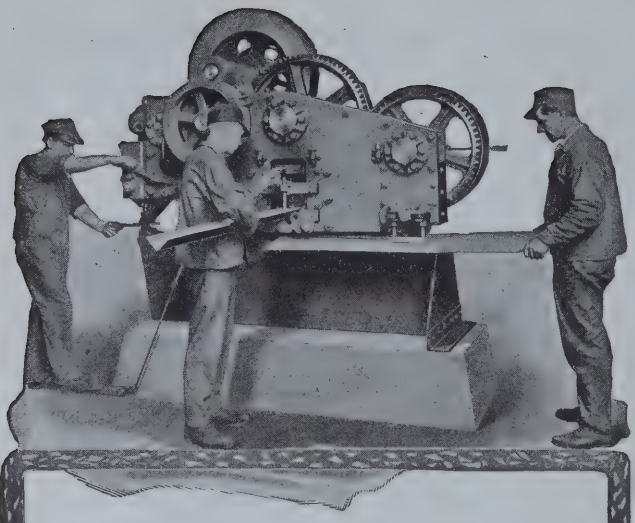
Catalogue T and full information on receipt of specification of the work you want to do.

THE F. B. SHUSTER CO.

Formerly John Adt & Son

NEW HAVEN, CONN. Established 1866

Also makers of Straightening and Cutting Machinery for squares, hexagons, flats, etc.



Buffalo "Universals"

SEVEN and one-half times as strong as cast iron and only one-third as heavy, for the same capacity.

That's why Uncle Sam used these machines so extensively during the war—that's why they should prove equally popular as a Peace Time manufacturing investment.

They will perform three separate operations at one time.

Write for Catalog 325-30

Buffalo Forge Company
BUFFALO, N. Y.

New York Boston Philadelphia Pittsburgh
Cleveland Chicago Los Angeles

"Buffalo"

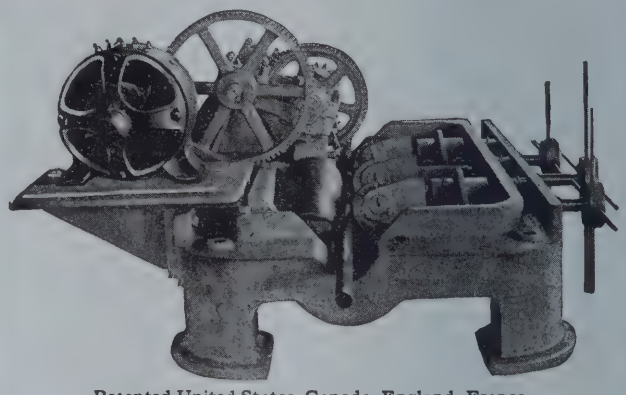
Give your customers

STRAIGHT BARS

Deliver your products in better condition and obtain the highest market price. You can improve your products by using

ABRAMSEN STRAIGHTENING MACHINES

for straightening rounds. Notice that all driving gears are arranged at top. ¶ Write for prices. ¶ We also manufacture straightening machines for shapes, flats, squares and hexagons.



Patented United States, Canada, England, France.

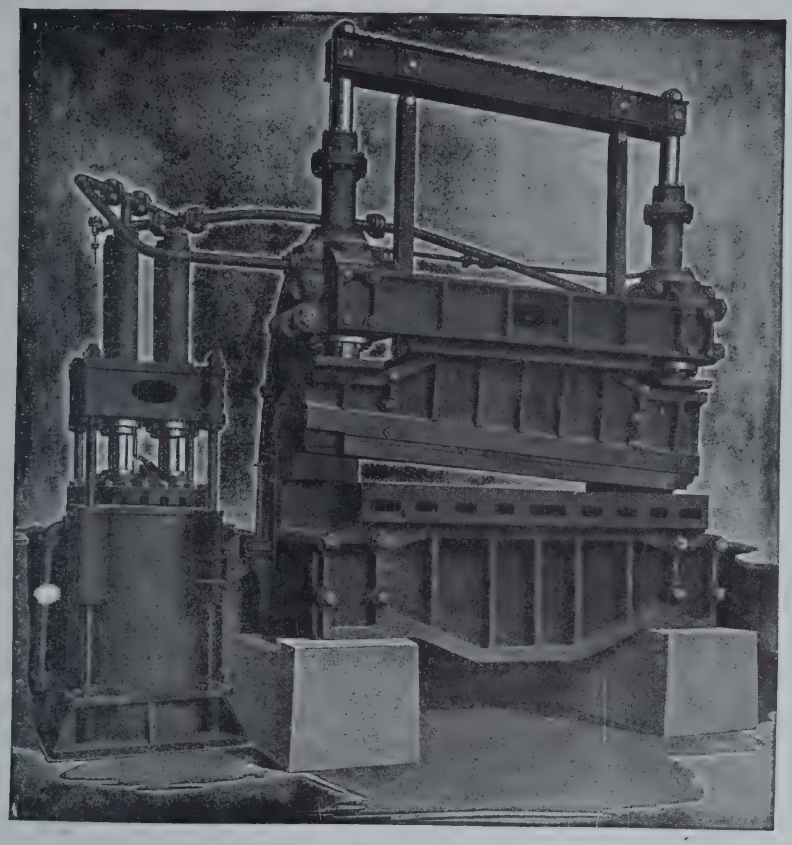
Abramsen Engineering Co.
Union Bank B'dg., Pittsburgh, Pa. Plant: Bellefonte, Pa.

Cutting Off Machine
FOR TUBES
with lever gripping chuck



Tube Mill Machinery (Seamless and Welded)
Rolling Mill Equipment
Rolls (sand and chilled)
Pipe Threading Machinery
Castings—gray iron, semi-steel, cupola and air furnace
Machine work to drawings

Standard Engineering Co.
ELLWOOD CITY, PA., U. S. A.



STEAM HYDRAULIC PLATE SHEAR—2¼" x 215"

SHEARS

We build hydraulic shears for plates and billets, equipped with steam hydraulic or triple power intensifier. Accumulators, Valves, Piping and Hydraulic Cup Leathers.

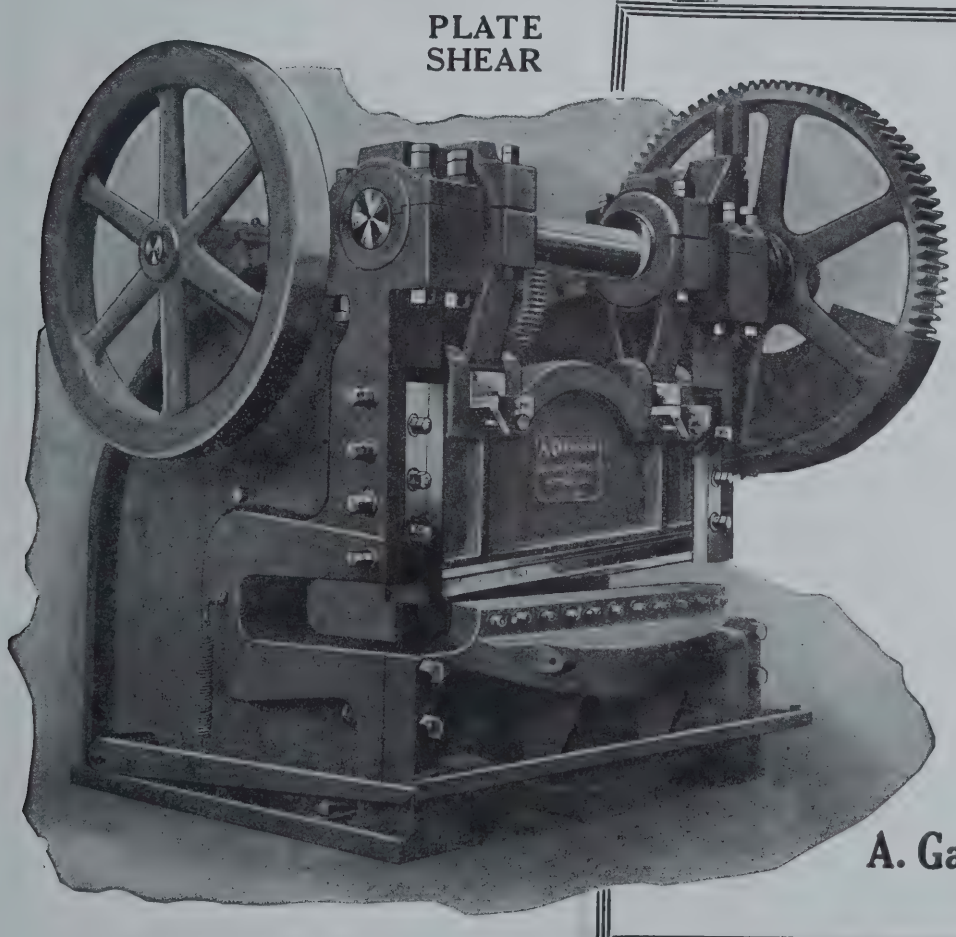
Gas Holders
Gas Producers
Theisen Gas Washers
Centrifugal Pumps

Illustrated catalog sent on request.

Founded 1848

CAMDEN IRON WORKS

Heulings Lippincott & Alfred J. Major, Receivers
CAMDEN, N. J.



Compact AND Powerful

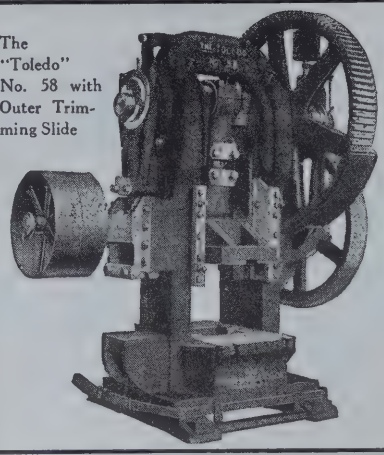
ALL SIZES

Complete Machinery and Equipment for Iron, Steel, Tube, Zinc, Brass and Aluminum Works. Forging Presses. Sand and Chilled Rolls.

THE FIRST TO MAKE LASTING ROLLING MILL EQUIPMENT

A. Garrison Foundry Co.

PITTSBURGH, PA.



The "Toledo" No. 58 with Outer Trimming Slide

THE "TOLEDO" Trimming Presses

Strong, rigid, durable and modern to a degree untouched by others.
Connection is massive and provided with screw adjustment.
Slide has screw adjustment to provide for dies of varying heights or to take up for the wear of cutters.
We make various types of trimming presses — in all sizes — each extraordinarily efficient and economical.

THE TOLEDO MACHINE & TOOL CO., Toledo, Ohio

OVER-SEAS REPRESENTATIVE
ALMACOA ALLIED MACHINERY COMPANY OF AMERICA ALMACOA
51 CHAMBERS ST. NEW YORK, U.S.A.
PARIS TURIN ZURICH BARCELONA





We Make Them AND Make Them Right

Thirty years experience as manufacturers of punches, dies, rivet sets, rivet busters, drift and barrel pins, etc., is assurance that Cleveland Small Tools are made right. From the selection of the material and until the small tool is shipped quality production is the guiding principle.

May we send you a copy of the Cleveland Hand Book of Small Tools?

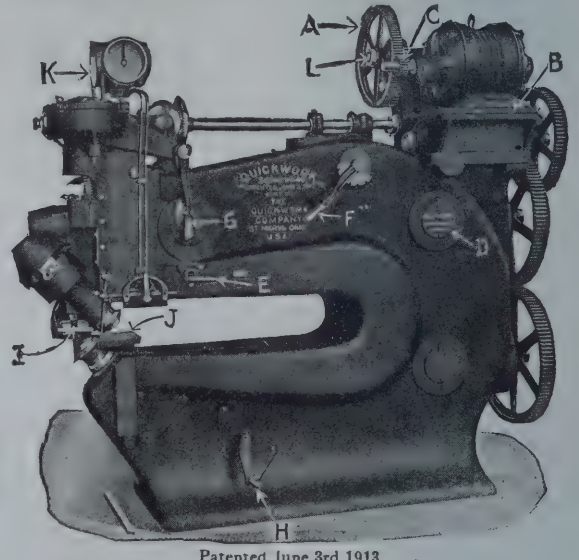
The CLEVELAND PUNCH & SHEAR WORKS CO.
Main Office & Works CLEVELAND, OHIO
PITTSBURGH - CHICAGO - PHILADELPHIA - NEW YORK

"QUICKWORK"
REGISTERED IN U. S. A. AND FOREIGN COUNTRIES

ROTARY SHEARS

MADE IN 7 SIZES

Cut all gauges of sheet and plate metal up to 1 inch thick in straight or irregular shapes and openings without cutting in from the side of sheet. Leaves square true edge that requires no finishing.
Used in building ships, boilers, tanks, cars and general plate and sheet metal work.



Patented June 3rd 1913

SAVE 50% TO 90%

Eliminates Oxy-acetylene Cutting and Plate Planing.

WRITE FOR CATALOGUE NO. 60.

THE QUICKWORK COMPANY, St. Marys, Ohio, U.S.A.
Cable Address "QUICKWORK." CODES: W. U. & GENERAL

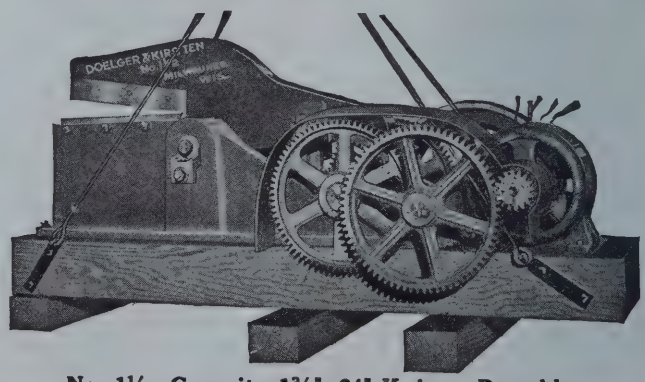
MILWAUKEE SHEARS
STEEL ALL STEEL

Why Buy
Cast Iron or Semi-Steel
When You Can Buy All

STEEL SHEARS

5 Sizes, up to 5 Inch Rounds

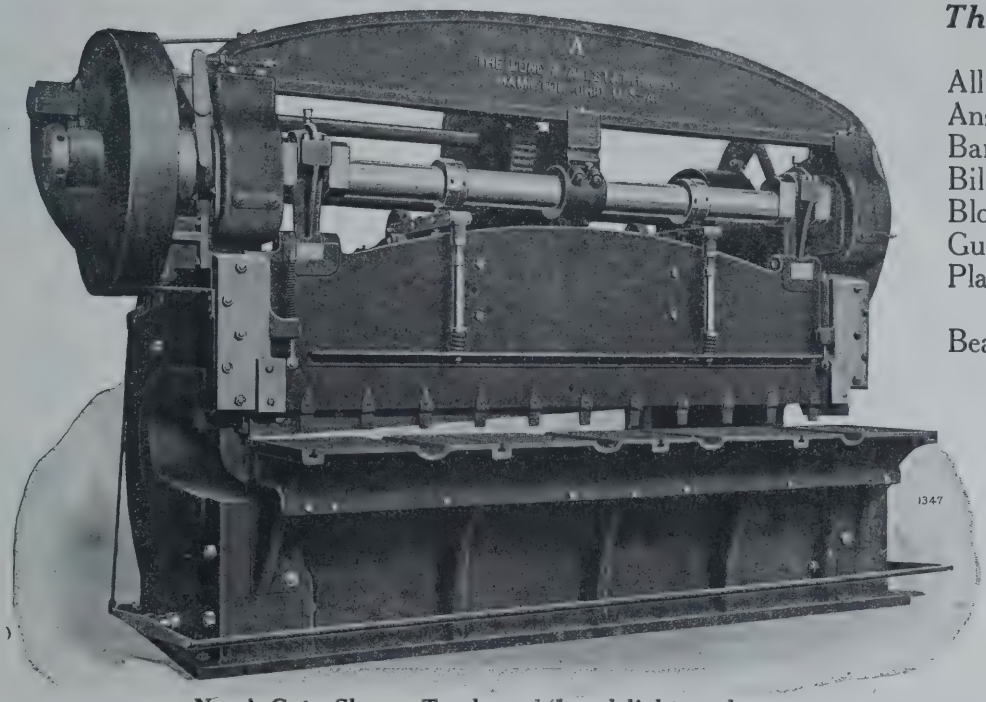
DOELGER & KIRSTEN
Milwaukee, Wisconsin



No. 1½—Capacity 1¾", 24" Knives; Portable

"The Quality Line"

ESTABLISHED 1856 INCORPORATED 1878



No. A Gate Shear—To shear ½" and lighter plates.

The L & A Line includes:

Alligator Shears
Angle Iron Shears
Bar Iron Shears
Billet Shears
Bloom Shears
Guillotine Shears
Plate Splitting Shears
Beam Punching Machinery
Boiler Punches
Disc Punches
Horizontal Punches
Multiple Punches
Structural Punches, etc.

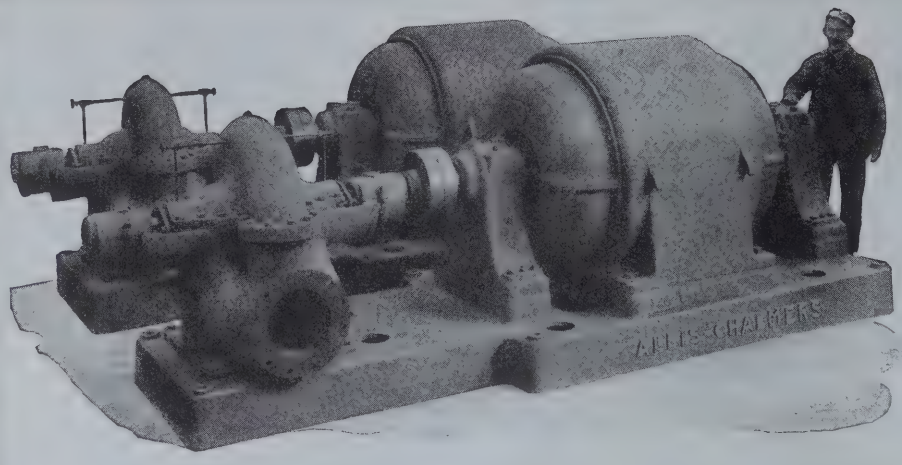
Write for Catalog

New Machines for Prompt Shipment

No. 1 Single Punch and Shear, 30" throat, Arch. Jaw, Capacity 1½" through 1".
No. 1½ Single Punch and Shear, 24" throat, Arch. Jaw, Capacity 1¼" through 1".
No. 2 Single Punch and Shear, 24" throat, Arch. Jaw, Capacity 1" through 1".
No. 1 Double Angle Shear, capacity 6 x 6 x ¾" angles.
No. B Double Angle Shear, one shaft, capacity 6 x 6 x 1" angles.
No. B Double Angle Shear, two shafts, capacity 6 x 6 x 1" angles.
No. 18 Lever or Alligator Shear, capacity 2¼" square bar.
No. 38 Lever or Alligator Shear, capacity 1¾" square bar.
No. 1½ Bar Iron Shear, capacity 6x1⅛" flat, 1⅞" round, 1½" square, or 4x4x½" angles.
600 lb. Board Drop Hammer.
400 lb. Board Drop Hammer.
No. 5 Tire Welder, capacity 2 x ½" and smaller tires.
No. 4 Tire Welder, capacity 2½" x ⅝" and smaller tires.
No. 6 Single Punch and Shear 6" throat, capacity ½" through ½".
No. 7 Single Punch and Shear 5" throat, capacity ⅜" through ⅜".
2 No. 4 Single Punches and Shears, 24" throat, capacity ¾" through ¾".

THE LONG & ALLSTATTER CO.

AMERICAN PUNCH AND SHEAR WORKS
HAMILTON, OHIO, U. S. A.



HARD SERVICE

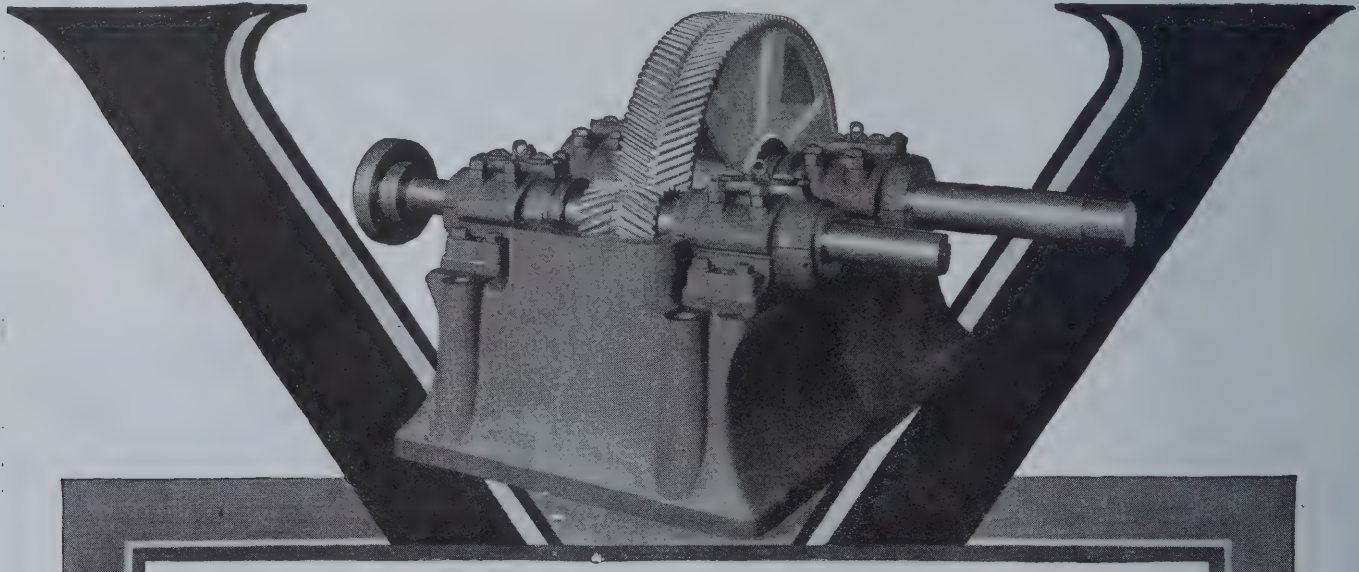
AND NO REGRETS IS A REWARD OF BUYING THE BEST—ALLIS-CHALMERS CENTRIFUGAL PUMPS

Four bearing shells are all the repairs which have been ordered from us in two years for the 4-12" type "S" pumping units (two illustrated above) which were furnished the American Steel and Wire Company for their main mill supply. Allis-Chalmers conservatively selected and carefully tested pumping units can be depended on for the most reliable service.

WRITE FOR BULLETIN 1632 B

ALLIS-CHALMERS

MILWAUKEE, WISCONSIN

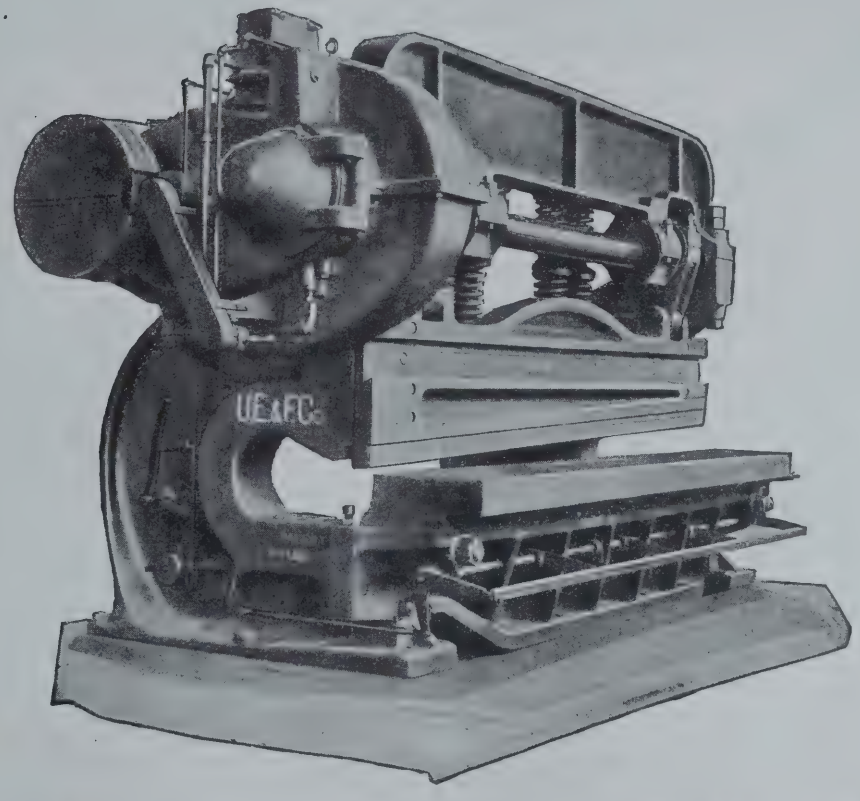


Sizes from 50-1000 HP. Speed ratios from 3-1 to 8-1.

VAUGHN DRIVES are built in horizontal and vertical types. They are self-contained units and operate with a minimum of noise due to their weight and rigidity and the use of cut double helical gears.

THE TURNER, VAUGHN & TAYLOR COMPANY
Cuyahoga Falls, Ohio
Manufacturers of Complete Wire Drawing Machinery and Equipment

"UNITED" ROLLING MILL EQUIPMENT



"UNITED" PLATE SHEARS

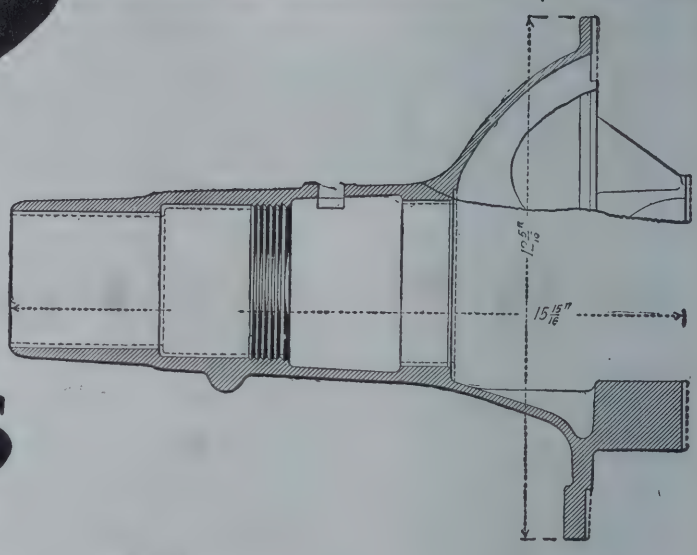
We build a great variety of Plate Shears ranging in capacity from 1/4" to 2" in thickness and up to 192" in width. They are all arranged for motor drive and when necessary we attach our patented hold-down which securely holds the plates in position while being cut. A good shearing equipment is one of the most essential parts of a plate mill installation.

UNITED ENGINEERING & FOUNDRY CO
PITTSBURGH, PA.

The World's Greatest Manufacturers of Rolls and Rolling Mill Machinery.

GIS

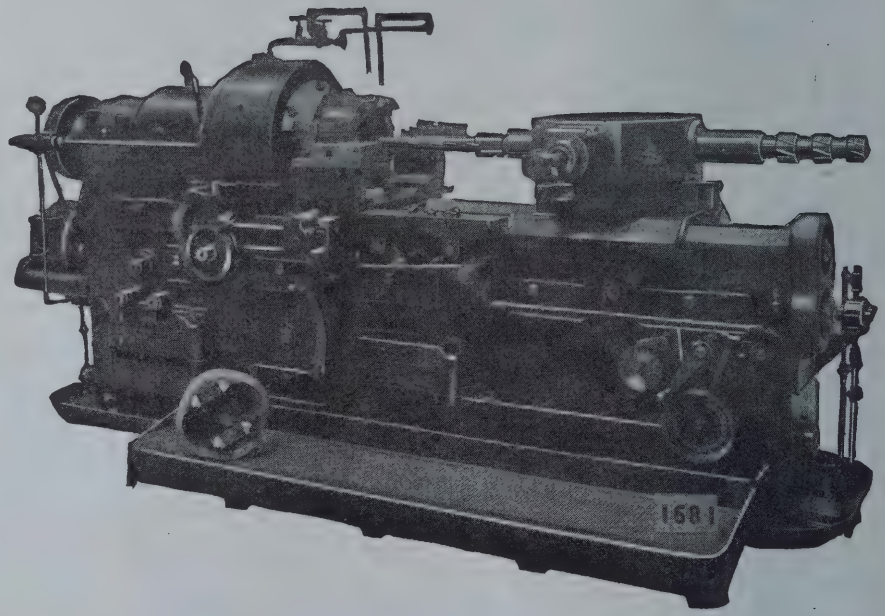
Eight Minutes



The Gisholt Automatic time for machining this Differential Carrier is eight minutes.

When you buy Gisholt Automatic Turret Lathes, you invest in minutes saved; you are actually buying profitable production.

If you have any Automatic Chucking work, let us tell you how the Gisholt Automatic will cut your costs.



GISHOLT MACHINE COMPANY, 1203 EAST

Builders of Standard and Automatic
Boring Mills, Tool Grinders,

Eastern Sales Office: 30 Church St., New York.

AGENTS

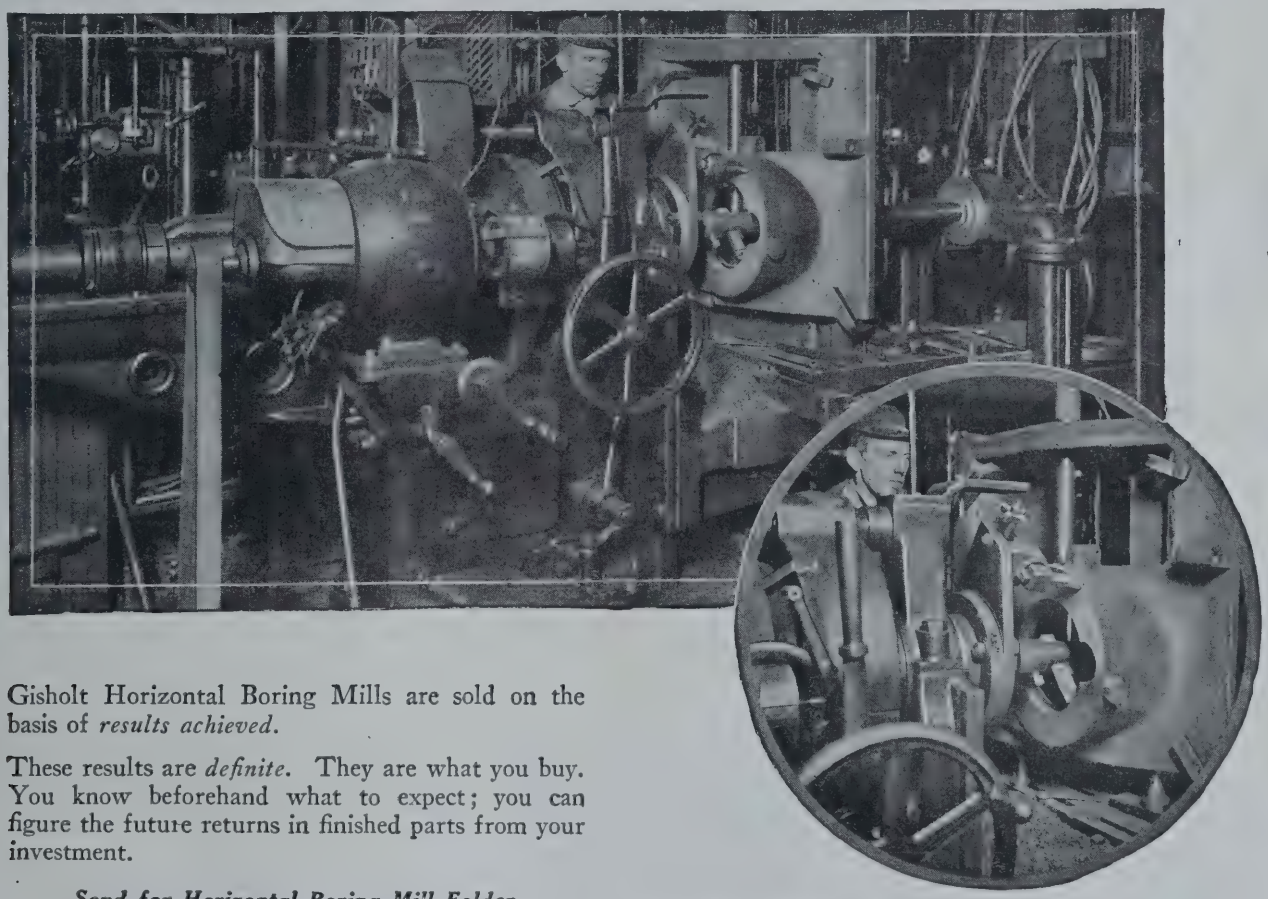
Atlanta, Ga.: Seeger Machine Tool Co.
Buffalo, N. Y.: J. L. Osgood
Chicago, Ill.: Stocker-Rumely-Wachs Co.
Denver, Colo.: Hendrie & Bolthoff Mfg. & Supply Co.
Detroit, Mich.: Chas. A. Strelinger Co.
Indianapolis, Ind.: Vonnegut Machinery Co.
Los Angeles, Calif.: Smith-Booth-Usher Co.
New Orleans, La.: P. H. Ardle
Philadelphia, Pa.: Swind Machinery Co.
Portland, Ore.: Portland Machinery Co.
Rochester, N. Y.: Odgen R. Adams
St. Louis, Mo.: Colcord-Wright Machinery & Supply Co.

CANADA: Canadian Fairbanks-Morse Co., Calgary, Hamilton, Montreal, Ottawa, Quebec, St. John's, Toronto, Vancouver, Winnipeg.

Say you saw it in THE IRON TRADE REVIEW

HOLT

Results Count



Gisholt Horizontal Boring Mills are sold on the basis of *results achieved.*

These results are *definite.* They are what you buy. You know beforehand what to expect; you can figure the future returns in finished parts from your investment.

Send for Horizontal Boring Mill Folder.

Gisholt Methods Insure Accuracy and Economy

WASHINGTON AVE., MADISON, WIS., U. S. A

Turret Lathes, Vertical and Horizontal
Small Tools, Special Machinery, etc.

Works: Madison, Wis., Warren, Pa.

AGENTS

St. Paul, Minn.: Savage & Winter Co.
Salt Lake City, Utah: Salt Lake City Hardware Co.
San Francisco, Calif.: F. O. Stallman Supply Co.
Seattle, Wash.: Perine Machinery Co.

FOREIGN: Australia: Benson Bros., Sydney, Melbourne; Belgium: Ateliers Demoor, Brussels; British Isles: Burton, Griffiths & Co., London, Birmingham, Manchester (Glasgow, Scotland); France: Aux Forges de Vulcain, Paris; Italy: Emanuele Mascherpa, Milan; Japan: Andrews & George, Tokyo; Norway: Union Machine Co., Christiania; Sweden: Axel Ryden, Stockholm; Switzerland: J. Lambercier & Co., Geneva.

Say you saw it in THE IRON TRADE REVIEW

Speed—

Speed up your production

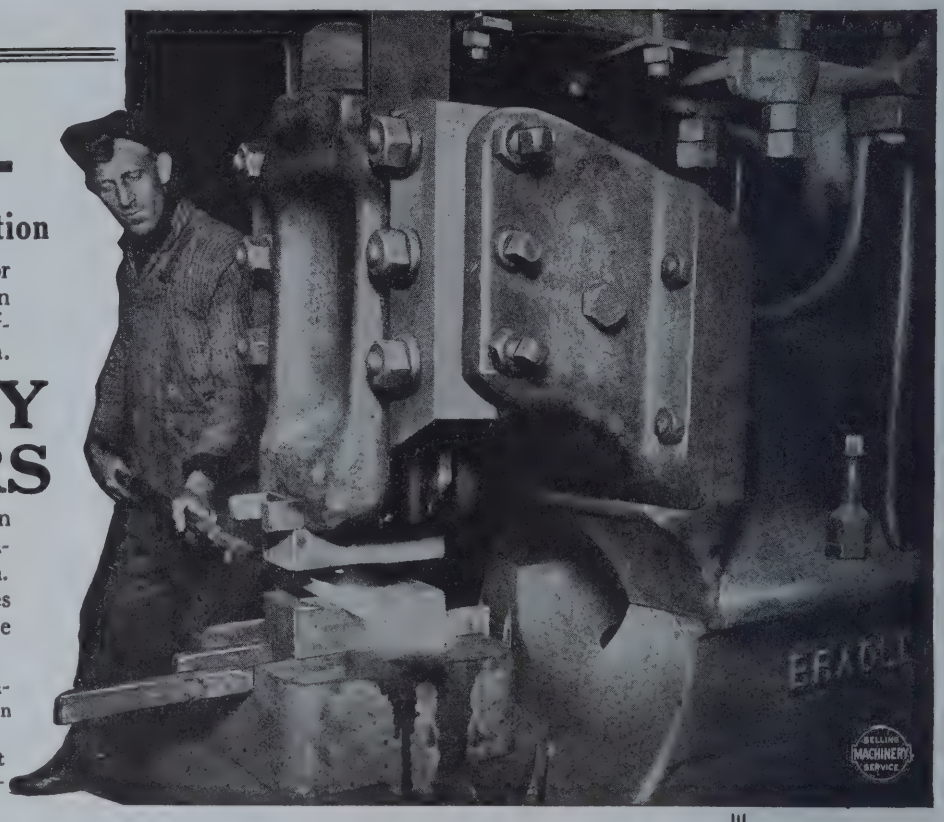
Quick response in starting or stopping saves much time in forging, and makes a big difference in the day's production.

BRADLEY HAMMERS

Slight pressure of the foot upon the treadle of a Bradley Hammer produces instant action. Varying this pressure regulates the force and rapidity of the blow.

Speed up your forging by installing Bradley Hammers. Made in the following types:

Cushioned Helve Hammers, Upright Strap Hammers, Upright Helve Hammers, Compact Hammers.



C. C. Bradley & Son, Inc., Syracuse, N. Y.

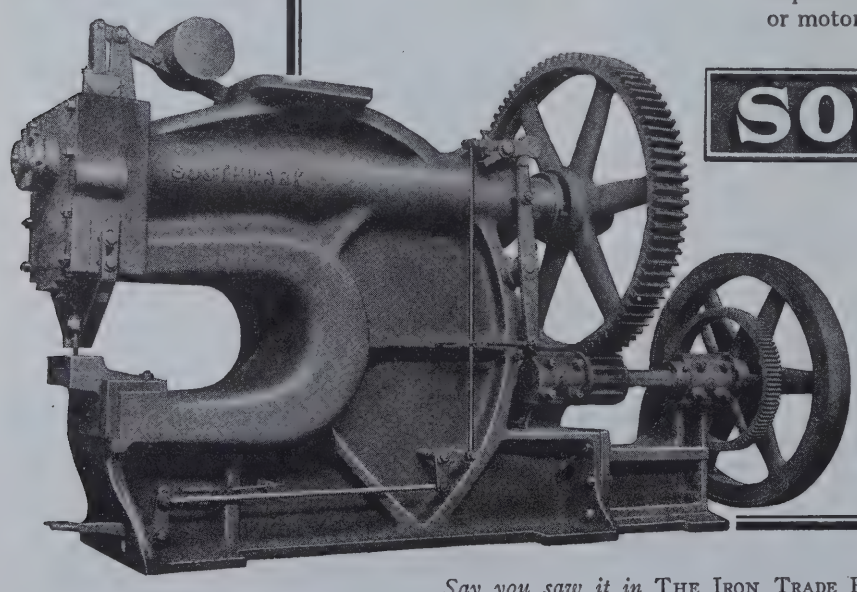
FOREIGN AGENTS

England—Buck & Hickman, Ltd., London.
France—Fenwick Freres & Co., Paris; Fenwick Freres & Co., Lyon, Rhone.
Italy—Fenwick Freres & Co., Turin.
Belgium Fenwick Freres & Co., Liege.
Brazil—Fenwick Freres & Co., Rio de Janeiro.
Switzerland—Fenwick Freres & Co., Zurich.
Portugal—Fenwick Freres & Co., Lisbon.
Spain—Fenwick Freres & Co., Barcelona.

Power Punches

Built with regard for strength, rigidity, accuracy and durability. The c utch is an improved type that insures quick response to the foot treadle. Sizes from ¼″ x ¼″ to 3″ x 3″ capacities; throat depths from 12″ to 72″ by 12″ increments. Belt or motor drive.

48″ Single End Punch



SOUTHWARK

Ask for catalogue of strongly built Single and Double End Vertical Punches and Shears, Horizontal Punches and Benders, Horizontal and Vertical Bending Rolls, etc.

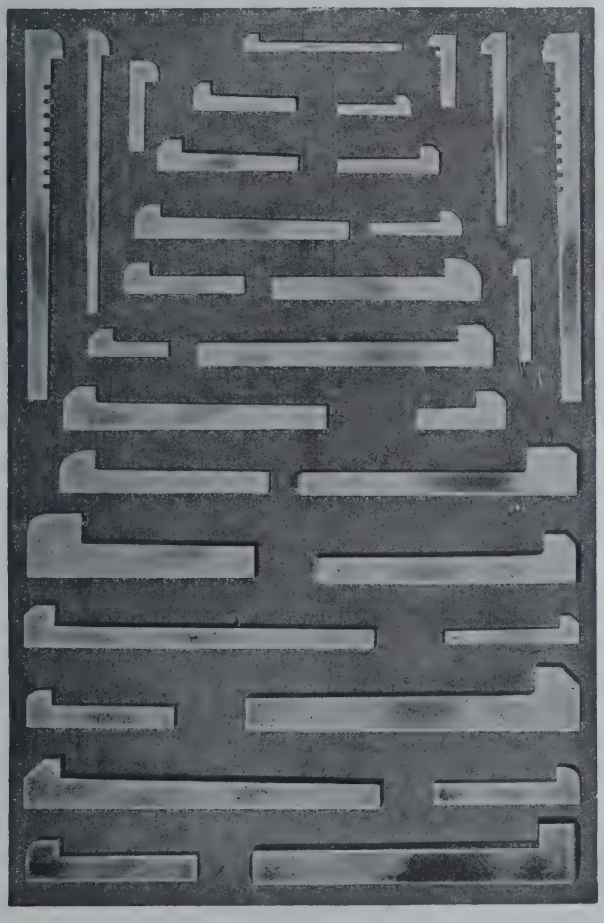
SOUTHWARK FOUNDRY & MACHINE COMPANY

Philadelphia Pennsylvania

Finished Machine Keys

All standard shapes and sizes. Special shapes made to meet particular requirements.

Accuracy, quality and finish guaranteed.



We also manufacture Turned and Cold Drawn Steel Shafting; Finished Rounds; Flats; Squares; Hexagons; Angles; Channels; Special Shapes; Compressed Steel Elevator Guides; Machine Racks; Machine Keys, etc.

Write for prices.

Standard Gauge Steel Co.
Beaver Falls, Pa.



Thor Chipping, Calking and Beading Hammer.

Thor punch has helped put across many-a job

Time is one of the most important items involved in every contract job.

The speed with Thor Hammers, Drills and other Tools work has pulled many a contract thru on time.

Write for our Thor Catalog No. 10.

Independent Pneumatic Tool Company

Chicago, New York, Cleveland, Pittsburgh, Detroit, Birmingham, San Francisco, Montreal, Toronto

Thor



"HUNTER"

PNEUMATIC HAMMER

RIVET SETS

—AND—

CHISEL BLANKS

The shanks of our Rivet Sets are faced to a slight radius. This insures the piston coming in contact in line with the axis of set, increasing the effect of piston stroke on rivets, a particular advantage when hammer cylinders are worn, with a marked reduction in shank breakage.

Standard Chisel blanks are made from ¾ x 9" or ⅞ x 8" Octagon steel.

Standard sizes and types carried in stock.

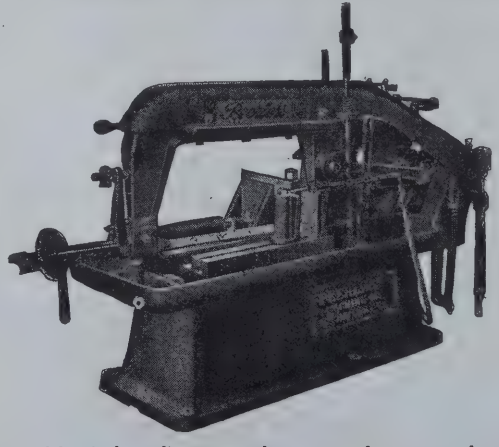
We also manufacture a full line of metal cutting circular saw blades.

HUNTER SAW & MACHINE COMPANY

PITTSBURGH, PA.

Peerless HIGH SPEED

The Standard Metal Saw of TODAY



While labor is demanding more and more, manufacturers are demanding machines of greater output. The "Peerless" meets that demand. It is the standard metal saw of TODAY.

With its rapid cut and various time-saving features, it easily increases production from 50 to 100 per cent. With its automatic feed, straight line pull, positive blade clamp and general rigidity, it gets the maximum results of which a blade is capable and reduces breakage to a minimum.

Our Six-Speed Gear Box

(not shown in cut) further increases output and saves blades wherever soft steel or metals of varying degrees of hardness have to be cut. The "Peerless" is furnished either with or without this feature, also with or without motor.

A trial order at our risk and expense is convincing

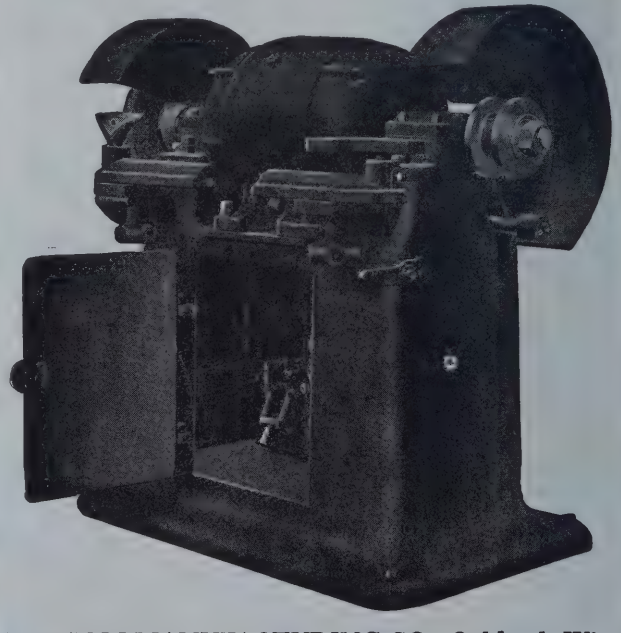
Peerless Machine Company

1605 Racine Street **RACINE, WISCONSIN**

For REAL SERVICE use

Ransom Grinding Machines

The Ransom Patent Speed Controller is a safety device that prevents the possibility of overspeeding and yet enables the operator to maintain a constant periphery speed to the wheel as it wears smaller in diameter.



RANSOM MANUFACTURING CO., Oshkosh, Wis.

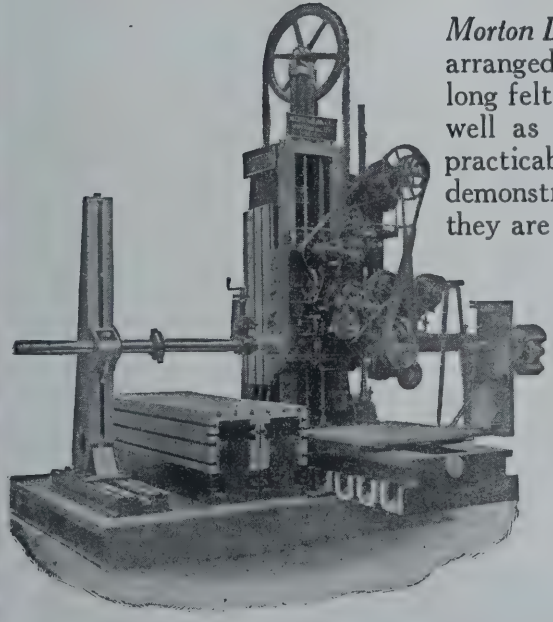
WYCO STEELS

Stands for *SERVICE* and *QUALITY*
from the most MODERN MILLS in the world,
devoted to Cold Drawing and Cold Finishing Steels

ROUNDS, HEXAGONS, SQUARES, FLATS, SPECIAL SHAPES
FREE CUTTING AND TURNING SCREW STOCK
TURNED AND POLISHED SHAFTING—ALLOY STEELS
CAPACITY 6000 TONS PER MONTH

WYCKOFF DRAWN STEEL COMPANY
Works: Ambridge, Pa. *General Offices:* Frick Building, Pittsburgh, Pa.

A high quality of products, the first time and all the time!



Arranged or Boring

Morton Draw-Cut Traveling Head Planers, arranged for Boring and Milling fill a long felt want in the manufacturing as well as in the general shop, and their practicability and efficiency have been demonstrated in the many shops where they are installed. Not only while new do they operate with high efficiency, but the strength and durableness of their construction insure long, lasting service.

Let us mail you our Bulletin No. 8 H. which describes in detail the construction and operation of Morton Planers.



Arranged for Vertical Milling and Boring

MORTON MANUFACTURING CO.
Muskegon Heights, Mich. U. S. A.

Attention Chicago Users of bright finished steel!



Chicago Warehouse

Here is your service station

Located at 570 West Adams St. In charge of a competent manager and a corps of able assistants who are ever ready to assist you in the selection of your steel.

Our other Offices and Warehouses are:

New York, 460-466 Washington St.; Philadelphia, Ninth and Willow Sts.; Cincinnati, Spring Grove Ave.; Detroit, 69 Jos. Campau Ave.

Sales Offices: Boston, 95 Milk St.; Buffalo, White Building; Cleveland, Rockefeller Building.

We carry in stock a complete line of Bessemer, Open Hearth, Nickel, Chrome and Vanadium Steel, Cold Drawn Shafting, Elevator Guides, Screw Stock, Rounds, Squares, Flats and Hexagons.

UNION DRAWN STEEL CO.

MAIN OFFICE: BEAVER FALLS, PA.

Works: Beaver Falls, Pa., and Gary, Ind.

WAREHOUSE SERVICE FOR THE EAST



FOR THE CONVENIENCE OF THE TRADE WE ARE CARRYING IN OUR

BOSTON WAREHOUSE

THE LARGEST AND MOST COMPLETE STOCK OF COLD FINISHED STEELS IN THE EAST. WILL CUT TO ANY SPECIAL OR SHORT LENGTHS.

COLUMBIA STEEL & SHAFTING CO.

Mills and General Offices
PITTSBURGH, PA.

Eastern Sales Department and Warehouse
BOSTON, MASS.

Sales Offices: CHICAGO—CLEVELAND—DETROIT—NEW YORK—PHILADELPHIA—WASHINGTON

AMERICAN BRIDGE COMPANY

HUDSON TERMINAL-30 CHURCH STREET, NEW YORK

Manufacturers of Steel Structures of all classes particularly BRIDGES AND BUILDINGS

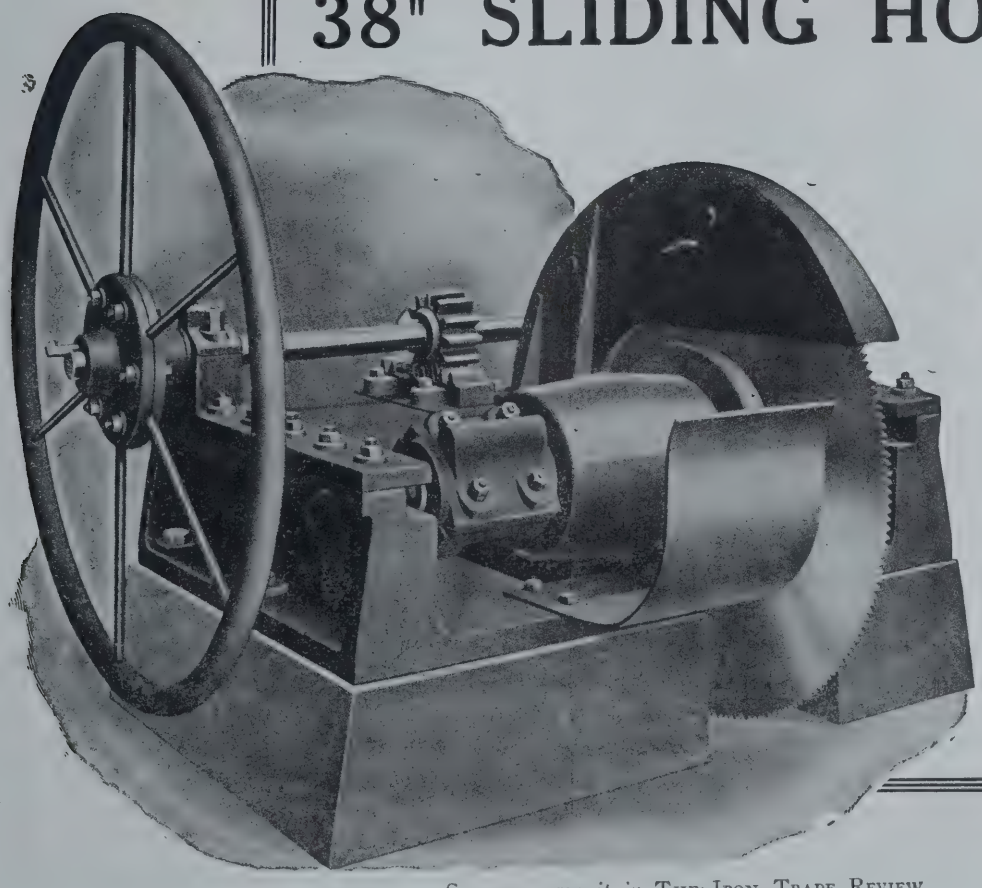
Sales Offices

NEW YORK, N. Y.	30 Church Street	St. Louis, Mo.	Third National Bank Building
Philadelphia, Pa.	Widener Building	Denver, Colo.	First National Bank Building
Boston, Mass.	John Hancock Building	Salt Lake City, Utah	Walker Bank Building
Baltimore, Md.	Continental Trust Building	Duluth, Minn.	Wolvin Building
PITTSBURGH, PA.	Frick Building	Minneapolis, Minn.	7th Ave. & 2nd St., S. E.
Buffalo, N. Y.	Marine National Bank		
Cincinnati, Ohio	Union Trust Building	*Pacific Coast Representative:*	
Atlanta, Ga.	Candler Building	*U. S. Steel Products Co., Pacific Coast Dept.*	
Cleveland, Ohio	Guardian Building	San Francisco, Cal.	Rialto Building
Detroit, Mich.	Beecher Ave. & M. C. R. R.	Portland, Ore.	Selling Building
CHICAGO, ILL.	208 South La Salle Street	Seattle, Wash.	4th Ave. So., Cor. Conn. St.

Export Representative: United States Steel Products Co., 30 Church St., N. Y.

ASK US ABOUT THIS

38" SLIDING HOT SAW



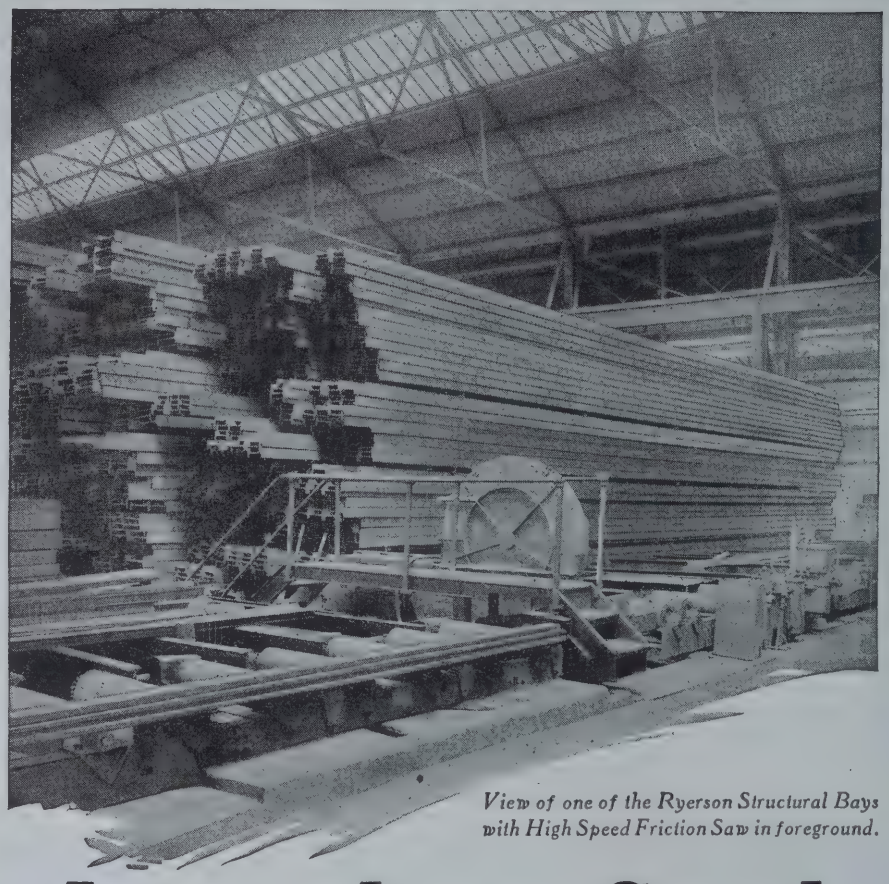
We are Specialists in the making of High Grade

ROLLS

The National Roll & Foundry Co.

AVONMORE
PENNSYLVANIA

Say you saw it in THE IRON TRADE REVIEW



View of one of the Ryerson Structural Bays with High Speed Friction Saw in foreground.

Immediate Steel

Five Ryerson Steel-Service Plants maintain large and comprehensive stocks of the products of all the mills from the heaviest structural to the lightest bar, sheet or rivet.

Every product meets the standard specification of its class. Every product is stored in rooms or space especially provided to preserve its quality and finish.

High powered, accurate equipment is used and no effort is spared in making immediate shipments.

The unequalled Ryerson reputation, built up through over three-quarters of a century of business, protects every Ryerson customer.

OFFICES: PHILADELPHIA MILWAUKEE TOLEDO NEWARK PITTSBURGH

ESTABLISHED 1842 INCORPORATED 1888

JOSEPH T. RYERSON & SON

CLYDE M. CARR, PRESIDENT JOSEPH T. RYERSON, VICE-PRES.

IRON STEEL MACHINERY

PLANTS: CHICAGO NEW YORK BUFFALO ST. LOUIS DETROIT

OFFICES: SAN FRANCISCO KANSAS CITY CLEVELAND BOSTON HOUSTON MINNEAPOLIS

AIRCO OXYGEN AND ACETYLENE SERVICE

Pure oxygen, pure acetylene —and a distributing station near every Airco user.

AIRCO

PRODUCTS

OXYGEN
ACETYLENE
WELDING AND CUTTING
APPARATUS AND SUPPLIES
ACETYLENE GENERATORS
CARBIDE
NITROGEN



The lower picture shows a damaged chuck before being repaired with the Airco Welding Torch.

The large picture shows the chuck welded and ready for machining.

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*Pittsburgh, Pa.
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Penn Seaboard Steel Corp., 1417 Sansom St., Philadelphia, Pa.

ANGLE PLANERS
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Detroit Steel Casting Co., 1200 Michigan Ave., Detroit, Mich.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Garwood Bronze & Iron Works, Garwood, N. J.
Hammond Malleable Iron Co., Hammond, Ind.
Pittsburgh Malleable Iron Co., Pittsburgh, Pa.
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United Engrg. & Foundry Co., Pittsburgh, Pa.
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Illinois Steel Co., 208 So. La Salle St., Chicago.
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Merchant & Evans Co., Philadelphia, Pa.
Ryerson, Joseph T., & Son, Chicago, Ill.
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BALING PRESSES (Waste Material)
Chicago Baling Press Mfg. Co., 315 South La Salle St., Chicago.

BALLS (Steel)
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Boker, H., & Co., Inc., 101 Duane St., N. Y. C.

BANDS (Forged Steel)
Akron-Selle Co., The, Akron, O.

BANDS (Iron)
Lockhart Iron & Steel Co., Pittsburgh, Pa.

BANDS (Steel)
Carnegie Steel Co., Pittsburgh, Pa.
Sharon Steel Hoop Co., Sharon, Pa.

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National Bank of Commerce of New York, New York City.

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Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

BARGES (Steel)
American Bridge Co., New York City.

BARREL SAND BLASTS
American Foundry Equipment Co., 52 Vanderbilt Ave., New York City.
Pangborn Corporation, Hagerstown, Md.

BARS (Alloy)
Bethlehem Steel Co., So. Bethlehem, Pa.

BARS (Boring)
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.

BARS (Charcoal Iron)
Carnahan Tin Plate & Sheet Co., Canton, O.

BARS (Concrete Reinforcing)
Bethlehem Steel Co., Bethlehem, Pa.
Bourne Fuller Co., The, Cleveland, O.
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Inland Steel Co., 1st Nat'l Bk. Bldg., Chicago.
Laclede Steel Co., Federal Reserve Bank Bldg., St. Louis, Mo.
Pacific Coast Steel Co., San Francisco, Cal.
Truscon Steel Co., Youngstown, O.

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Carbon Steel Co., Pittsburgh, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Cincinnati Iron & Steel Co., Cincinnati, O.
Donner Steel Co., Inc., Buffalo, N. Y.
Federal Export Corp., 42 Broadway, N. Y. C.
Franklin Steel Works, Franklin, Pa.
Harvey, Arthur C., Co., Boston, Mass.
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Illinois Steel Co., Warehouse Dept., Chicago, Ill.
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Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Lackawanna Steel Co., Buffalo, N. Y.
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Shippers Car Line, New York City.
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Truscon Steel Co., Youngstown, O.
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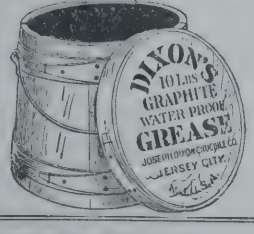
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Bourne Fuller Co., The, Cleveland, O.
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Empire Art Metal Co., College Pt., N. Y.
Federal Export Corp., 42 Broadway, New York City.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., Chicago, Ill.
Inland Steel Co., 1st Nat'l Bk. Bldg., Chicago.
Pacific Coast Steel Co., San Francisco, Cal.
Ryerson, Joseph T., & Son, Chicago, Ill.
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Shippers Car Line, New York City.
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Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.

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BEARINGS (Roller)
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Dixon, Joseph, Crucible Co., Dept. 64-B, Jersey City, N. J.
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Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chgo.

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Flexible Steel Lacing Co., 522 S. Clinton St., Chgo.

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Link-Belt Co., Chicago, Ill.

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Chicago Belting Co., 113 North Green St., Chicago.
Chicago Rawhide Mfg. Co., 1302 Elston Av., Chicago
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Mackintosh, Hemphill & Co., Pittsburgh, Pa.
Morgan Engineering Co., Alliance, O.
Niles-Bement-Pond Co., 111 Broadway, N. Y.
Simmons Machine Co., Inc., Albany, N. Y.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

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Koppers Co., The, Pittsburgh, Pa.

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Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Bourne-Fuller Co., Cleveland, O.
Brier Hill Steel Co., Youngstown, O.
Cambria Steel Co., Philadelphia, Pa.
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Donner Steel Co., Inc., Buffalo, N. Y.
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Lackawanna Steel Co., Buffalo, N. Y.
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United Alloy Steel Corp., Canton, O.
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Wickwire Steel Co., Buffalo, N. Y.
Wood, Alan, Iron & Steel Co., Philadelphia, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

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Empire Art Metal Co., College Pt., N. Y.

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Mackintosh-Hemphill & Co., Pittsburgh, Pa.

BLAST GATES
Rockwell, W. S., Co., 50 Church St., N. Y .C.

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BLASTING POWDER (Black)
Aetna Explosives Co., Inc., 165 Broadway, N.Y.C.

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Aetna Explosives Co., Inc., 165 Broadway, N.Y.C.

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Carnahan Tin Plate & Sheet Co., Canton, O.

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Connersville Blower Co., The, Connersville, Ind.
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Westinghouse Elec. & Mfg. Co., E. Pbgh., Pa.

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National Machinery Co., Tiffin, O.
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Webster & Perks Tool Co., P. O. Box 1200, Springfield, O.

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Ferry Cap & Set Screw Co., 2151 Scranton Rd., Cleveland, O.

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BOLTS (Heat Treated)
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BOLTS (Spring and Shackle)
Bowen Products Corp., Auburn, N. Y.
Ferry Cap & Set Screw Co., 2151 Scranton Rd., Cleveland, O.
Upson Nut Co., The, Cleveland, Ohio.

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Star Expansion Bolt Co., 147 Cedar St., New York City.

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Bayonne Bolt & Nut Co., Bayonne, N. J.
Beals, McCarthy & Rogers, Buffalo, N. Y.
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Bourne-Fuller Co., Cleveland, O.
Camden Forge Co., Camden, N. J.
Clark Bros. Bolt Co., Millidale, Conn.
Ferry Cap & Screw Co., 2151 Scranton Rd., Cleveland, O.
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New Haven Rivet Co., Webster St., New Haven, Conn.
Oliver Iron & Steel Co., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Peerless Nut Co., 4300 Perkins Ave., Cleveland, O.
Rockford Bolt Co., 220 Mill St., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Chicago, Ill.
Upson Nut Co., The, Cleveland, Ohio.

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Hill-Clarke & Co., Inc., Boston, Mass.

BORING MILLS
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Colburn Machine Tool Co., Franklin, Pa.
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.
Milwaukee Electric Crane & Mfg. Co., Milwaukee.
New York Machinery Exchange, Inc., N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.

BORING AND TURNING MACHINES
Baker Bros., Toledo, O.
Espen-Lucas Machine Works, Front and Girard Ave., Philadelphia.
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.
Newton Machine Tool Works, Inc., 23rd and Vine St., Philadelphia.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.
Toomey, Frank, Inc, Philadelphia, Pa.

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Sivyer Steel Casting Co., Milwaukee, Wis.

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Electric Controller & Mfg. Co., Cleveland, Ohio.
General Electric Co., Schenectady, N. Y.
Toledo Bridge & Crane Co., 2900 Dorr St., Toledo, O.

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Erdle Perforating Co., Rochester, N. Y.

BRASS GOODS
Lunkenheimer Co., The, Cincinnati, O.

BRASS MANUFACTURERS
Wheeler Condenser & Engineering Co., Cateret, N. J.

BRASS RODS AND TUBES
Williams & Co., Inc., 901-937 Pennsylvania Ave., Pittsburgh, Pa.

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Warner & Swasey Co., The, Cleveland, Ohio.

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Oxweld Acetylene Co., Newark, N. J.

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American Refractories Co., Union Arcade Bldg., Pittsburgh, Pa.
Orth, Frank, 3437 Fir St., Indiana Harbor, Ind.
Pyro Clay Products Co., The, Oak Hill, O.
Seisson, Jos., Fire Brick Co., Connellsville, Pa.
Stowe-Fuller Co., Cleveland, O.
Union Mining Co. Mount Savage Md.

BRICK INSULATING (See Insulating Brick)

BRICKMAKING MACHINERY
Stevenson Co. The, Wellsville, O.

BRIDGES (See Bridges, Buildings and Viaducts)

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Alliance Structural Co., Alliance, O.
American Bridge Co., New York City.
Bellefontaine Bridge & Steel Co., The, Bellefontaine, O.
Birmingham Steel Corp., Birmingham, Ala.
Case Crane & Engineering Co., Columbus, O.
Chesapeake Iron Works, Baltimore, Md.
Eichleay, John Jr., Co., So. 20th and Wharton Sts., Pittsburgh, Pa.
Erie Steel Construction Co., Inc., Erie, Pa.
McClintic-Marshall Co., Pittsburgh, Pa.
McMyler Interstate Co., Cleveland, O.
Mt. Vernon Bridge Co., Mt. Vernon, O.
Pittsburgh-Des Moines Steel Co., Curry Bldg., Pittsburgh, Pa.
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See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

THE C. & G. COOPER CO.

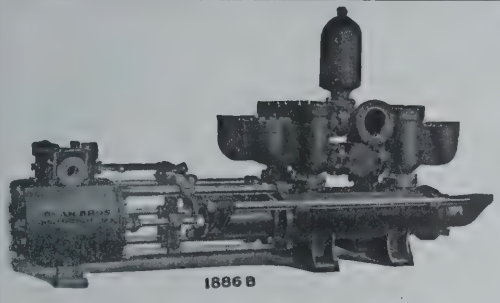
Mt. Vernon, Ohio

ENGINE BUILDERS

Corliss Engines - 50 to 10,000 H.P.

Gas Engines - - 100 to 3,000 H.P.

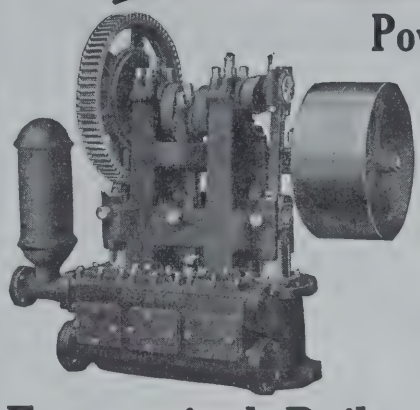
Heavy Special Machinery, including Rope Wheels, Mills, etc.



The valve movement of Dean Bros. **Durable Duplex Steam Pump** is the most important improvement that has been made on the Duplex Pump for twenty-five years. *Send for Catalog 103.*

DEAN BROS. STEAM PUMP WORKS. **INDIANAPOLIS.**

Deming



Power Pumps for Industrial Service

Deming Triplex Power Pump Fig. 50 with tight and loose pulleys. Designed for any power drive.

Economical Boiler Feeding

A Deming User writes:

"A Deming Triplex Boiler Feed Pump Fig. 50 was installed in place of a steam driven Duplex Pump to feed two 150 H. P. boilers. *Aside from the saving in power* (about one-third that required for the steam driven pump) a great saving has been effected in the packing. The first set of packing lasted 18 months. In the steam pump using the same brand the packing of four plungers had to be replaced every three weeks."

Deming catalog and booklet "Feeding Boilers in Power Plants" sent on request.

THE DEMING CO., SALEM, O.

"Hand and Power Pumps for all uses."

Chicago: Henion & Hubbell

Pittsburgh: Harris Pump & Supply Co.

Distributors in All Principal Cities

WATER

SCAIFE AND WE-FU-GO

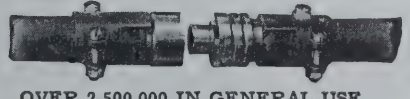
PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES

WM. B. SCAIFE & SONS CO. PITTSBURGH, PA.

Bowes AIR HOSE COUPLINGS and CLECO AIR-HOSE FITTINGS and HOSE CLAMPS

Write for Bulletins Nos. 34A, 41 and 43

Saves Air Time and Money



Tight Under all Pressures

OVER 2,500,000 IN GENERAL USE

Manufactured by

THE CLEVELAND PNEUMATIC TOOL CO., Cleveland, O.

CHAMBERSBURG

STEAM HAMMERS
HYDRAULIC MACHINERY

Built in all sizes for every class of work.

ECONOMICAL—RELIABLE—EFFICIENT

CHAMBERSBURG ENGINEERING CO., Chambersburg, Pa.



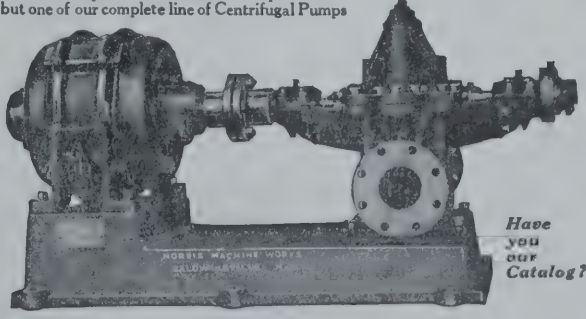
Electric Blue Printing Machines

Write for Catalogue D-2

Buckeye Engine Co.

Salem, Ohio

Horizontal Split Double Suction Pump. This is but one of our complete line of Centrifugal Pumps



Have you our Catalog?

Morris Machine Works

Builders of Dredges, Centrifugal Pumps and Steam Engines

BALDWINSVILLE, N. Y.

Branch Offices in Principal Cities Established 1864

BRIQUETTING
General Briquetting Co., 25 Broad St., N. Y. C.

BRONZE (Manganese)
Bethlehem Steel Co., The, S. Bethlehem, Pa.

BRUSHES (Dynamo)
Dixon, Joseph, Crucible Co., Dept. 64-B, Jersey City, N. J.

BUCKETS (Clam Shell)
Hayward Co., The, 50-54 Church St., N. Y. C.
Williams, G. H., Co., Erie, Pa.

BUCKETS (Drag Line)
Hayward Co., The, 50-54 Church St., N. Y. C.

BUCKETS (Dumping)
Atlas Car & Mfg. Co., Dept. E, Cleveland, O.

BUCKETS (Electric)
Federal Malleable Co., Milwaukee, Wis.

BUCKETS (Elevator)
Hendrick Mfg. Co., Carbondale, Pa.

BUCKETS (For All Purposes)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pbgh.

BUCKETS (Grab)
American Bridge Co., New York City.
Brosius, Edgar E., Pittsburgh, Pa.
Brown Hoisting Machinery Co., Cleveland, O.
Case Crane & Engineering Co., Columbus, O.
Hayward Co., The, 50-54 Church St., N. Y. C.
Industrial Works, Bay City, Mich.
Link-Belt Co., Chicago, Ill.
McMyler Interstate Co., Cleveland, O.
Orton & Steinbrenner Co., 612 S. Dearborn St., Chicago.
Pawling & Harnischfeger Co., Milwaukee, Wis.
Williams, G. H., Co., Erie, Pa.

BUGGIES (Wire)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

BUILDINGS (Steel)—See BRIDGES, BUILDINGS AND VIADUCTS

BULLDOZERS
Long & Allstatter Co., Hamilton, O.
Simmons Machine Co., Inc., Albany, N. Y.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

BUNDLES—SCRAP, WIRE AND ROD
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

BURNERS (Acetylene)—See TORCHES AND BURNERS (Acetylene, Blow, Oxy-acetylene)

BURNERS (Fuel Oil, Gas and Combination)
Davison, N. C. Gas Burner & Welding Co., 3145 Penn Ave., Pittsburgh, Pa.
Gilbert & Barker Mfg. Co., 22 Union St., Springfield, Mass.
Maxon Premix Burner Co., Muncie, Ind.

BUSHINGS (Bronze)
Johnson Bronze Co., New Castle, Pa.

BUSINESS CARDS (Engraved)
Wiggins, John B., Co., 705 Peoples Gas Bldg., Chgo.

BUTT WELDING MACHINES (Electric)
Thomson Electric Welding Co., Lynn, Mass.

BY-PRODUCT COKE OVENS
Koppers Co., The, Pittsburgh, Pa.

CABINET SAND BLASTS
American Foundry Equipment Co., 52 Vanderbilt Ave., New York City.
Pangborn Corporation, Hagerstown, Md.

CABLEWAYS AND TRAMWAYS
Macomber & Whyte Rope Co., Kenosha, Wis.

CALCIUM CARBIDE
Canada Carbide Sales Co., 30 Church St., N. Y. C.

CAPS (Blasting)
Aetna Explosives Co., Inc., 165 Broadway, N.Y.C.

CARS (Industrial and Mining)
American Bridge Co., New York City.
Atlas Car & Mfg. Co., Dept. E, Cleveland, O.
Chase Fdy. & Mfg. Co., Columbus, O.
Koppel Industrial Car & Equipment Co., Koppel, Pa.
Shippers Car Line, New York City.
Treadwell Engineering Co., Easton, Pa.
Whiting Fdy. Equipment Co., Harvey, Ill.

CARS (Ingot and Open Hearth Charging)
Birdsboro Steel Fdy. & Mach. Co., Birdsboro, Pa.
Lindsay, W. W., & Co., Inc., Harrison Bldg., Philadelphia, Pa.
Pennsylvania Engineering Wks., New Castle, Pa.
Treadwell Engineering Co., Easton, Pa.
Wellman-Seaver-Morgan Co., Cleveland, Ohio.

CARS (Slag and Hot Metal)
Treadwell Engineering Co., Easton, Pa.

CARS (Steel)
Cambria Steel Co., Philadelphia, Pa.

CASE HARDENING
Bidle, W. S., Co., 1411 E. 45th St., Cleveland, O.

CASE HARDENING BOXES
Sivyer Steel Casting Co., Milwaukee, Wis.

CASTINGS (Alloy Steel)
American Steel Foundries, McCormick Bldg., Chicago.
Bethlehem Steel Co., Bethlehem, Pa.
Bonney-Floyd Co., The, Columbus, Ohio.
Champion Engineering Co., Kenton, O.
Duquesne Steel Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Otis Steel Co., Cleveland, O.

CASTINGS (Brass, Bronze and Aluminum)
Arcade Mfg. Co., Dept. C, Freeport, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Bronzbraswyt Metals Co., Pittsburgh, Pa.
France Equipment Co., N. Baltimore, O.
Johnson Bronze Co., New Castle, Pa.
Klotz Machine Co., Sandusky, O.
McKinnon Iron Works Co., Ashtabula, O.
Mackintosh, Hemphill & Co., Pittsburgh.
Morgan Engineering Co., Alliance, O.
Sandusky Foundry & Machine Co., Sandusky, O.
Star Aluminum Co., Ashland, Ohio.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Venango Bronze Metal Co., 13th St., Franklin, Pa.

CASTINGS (Die)
Lubricating Metal Co., 2 Rector St., New York City.

CASTINGS (Electric Process)
Acme Steel & Malleable Iron Works, Buffalo, N. Y.
American Metallurgical Corp., Franklin Trust Bldg., Philadelphia, Pa.
American Steel Foundries, McCormick Bldg., Chicago.
Electric Steel Company of Indiana, Indianapolis, Ind.
Latrobe Electric Steel Co., Latrobe, Pa.
Maynard Electric Steel Castings Co., Milwaukee, Wis.
Milwaukee Steel Foundry Co., 101-121 S. Water St., Milwaukee, Wis.
Pelton Steel Co., Milwaukee, Wis.
Racine Steel Castings Co., Racine, Wis.
Sivyer Steel Casting Co., Milwaukee, Wis.
Treadwell Engrg. Co., Easton, Pa.
United Alloys Steel Corp., The, Canton, O.

CASTINGS (Gear)
American Steel Foundries, McCormick Bldg., Chicago.
Bonney-Floyd Co., The, Columbus, Ohio.
Dayton Steel Foundry Co., Dayton, O.
Detroit Steel Casting Co., 1200 Michigan Ave., Detroit, Mich.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Link-Belt Company, Chicago, Ill.
Milwaukee Steel Foundry Co., 101-121 S. Water St., Milwaukee, Wis.
Otis Steel Co., Cleveland, O.
Sivyer Steel Casting Co., Milwaukee, Wis.
Standard Steel Castings Co., Cleveland, O.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

CASTINGS (Gray Iron)
Adamson Machine Co., Akron, O.
Aetna Foundry & Machine Co., Warren, O.
Allegheny Foundry & Machine Co., Glassmere, Pa.
Allyne-Ryan Foundry Co., Cleveland, O.
American Bridge Co., New York City.
Arcade Mfg. Co., Dept. C, Freeport, Ill.
Atlantic Foundry Co., 182 Beaver St., Akron, O.
Bay View Foundry Co., Sandusky, O.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Birdsboro Steel Fdy. & Mach. Co., Birdsboro, Pa.
Bowler Foundry Co., 1688 Columbus Rd., Clevel'd.
Carroll Foundry & Machine Co., Bucyrus, O.
Cascade Foundry Co., Erie, Pa.
Champion Engineering Co., Kenton, O.
Christopher & Simpson Iron Works Co., St. Louis, Mo.
City Foundry Co., Cleveland, O.
Cyclops Foundry Co., Pittsburgh, Pa.
Erie Foundry Co., Erie, Pa.
Farrar & Trefts, Buffalo, N. Y.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Franklin Valveless Engine Co., Franklin, Pa.
Johnston & Jennings, Cleveland, O.
Klotz Machine Co., Sandusky, O.
Lake Shore Engine Works, Marquette, Mich.
Landsdale Foundry Co., Landsdale, Pa.
Lansing Foundry Co., Lansing, Mich.
Link-Belt Company, Chicago, Ill.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
McKinnon Iron Works Co., Ashtabula, O.
Merrill Iron Works, Merrill, Wis.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Engineering Co., Alliance, O.
National Foundry Co., Erie, Pa.
Newark Stamping & Foundry Co., Newark, O.
North Buffalo Hdwe. Fdy. Co., Buffalo, N. Y.
Ohio Foundry Co., Cleveland, O.
Pettis, W. W., Co., Cincinnati, O.
Phoenix Iron Works Co., Meadville, Pa.
Standard Engrg. Co., Ellwood City, Pa.
Standard Foundry Co., Buffalo, N. Y.
Star Aluminum Company, Ashland, O.
St. Louis Malleable Casting Co., St. Louis, Mo.
Stevenson Co., The, Wellsville, O.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
U. S. Cast Iron Pipe & Foundry Co., Burlington, N. J.
Wheeling Mold & Foundry Co., Wheeling, W. Va.
Williamson, J. E., Co., Bellwood, Pa.

CASTINGS (Malleable)
Acme Steel & Malleable Iron Works, Inc., Buffalo, N. Y.
American Malleable Castings Association, 1900 Euclid Ave., Cleveland, O.
American Malleable Castings Co., Marion, O.
Columbia Malleable Castings Co., Inc., Columbia, Pa.
Columbus Malleable Iron Co., Columbus, O.
Danville Malleable Iron Co., Danville, Ill.
Dayton Malleable Iron Co., Dayton, O.
Decatur Malleable Iron Co., Decatur, Ill.
Erie Malleable Iron Co., Erie, Pa.
Fanner Mfg. Co., Dept. T, Cleveland, O.
Frazer & Jones, Syracuse, N. Y.
Hammond Malleable Iron Co., Hammond, Ind.
Illinois Malleable Iron Co., Chicago, Ill.
Iowa Malleable Iron Co., Fairfield, Iowa.
Kalamazoo Malleable Iron Co., Kalamazoo, Mich.
Lakeside Malleable Castings Co., Racine, Wis.
Lancaster Foundry Co., Lancaster, Pa.
Link-Belt Company, Chicago, Ill.
Mal-Gra Castings Co., Cambridge City, Ind.
Marion Malleable Iron Works, Marion, Ind.
Missouri Malleable Iron Co., E. St. Louis, Ill.
Moline Malleable Iron Co., St. Charles, Ill.
Northern Malleable Iron Co., St. Paul, Minn.
Northwestern Malleable Iron Co., Milwaukee, Wis.
Peoria Malleable Castings Co., Peoria, Ill.
Pittsburh Malleable Iron Co., Pittsburgh, Pa.
Rockford Malleable Iron Works, Rockford, Ill.
Ross-Meehan Foundries, Chattanooga, Tenn.
Standard Malleable Iron Co., Muskegon, Mich.
St. Louis Malleable Castings Co., St. Louis, Mo.
Vermillion Malleable Iron Co., Hoopeston, Ill.
Wisconsin Malleable Iron Co., Miwaukee, Wis.
Zanesville Malleable Iron Co., Zanesville, O.

CASTINGS (Semi-Steel)
Adamson Machine Co., Akron, O.
Allyne-Ryan Fdy. Co., Cleveland, O.
Carroll Foundry & Machine Co., Bucyrus, O.
Champion Engineering Co., Kenton, O.
City Foundry Co., Cleveland, O.
Cyclops Foundry Co., Pittsburgh, Pa.
Farrar & Trefts, Buffalo, N. Y.
Franklin Valveless Engine Co., Franklin, Pa.
Morgan Engineering Co., Alliance, O.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

CASTINGS (Steel)
Adamson Machine Co., Akron, O.
Aetna Steel Castings Co., Cleveland, O.
Allegheny Steel Co., Pittsburgh, Pa.
American Bridge Co., New York City.
American Metallurgical Corp., Franklin Trust Bldg., Philadelphia, Pa.
American Steel Foundries, Chicago, Ill.
Atlantic Foundry Co., 182 Beaver St., Akron, O.
Atlantic Steel Castings Co., Chester, Pa.
Atlas Steel Casting Co., Buffalo, N. Y.
Bayonne Steel Casting Co., Bayonne, N. J.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Birdsboro Steel Fdy. & Machine Co., Birdsboro, Pa.
Bonney-Floyd Co., The, Columbus, Ohio.
Burnside Steel Co., Chicago.
Canton Steel Foundry Co., Canton, O.
Columbia Steel Co., San Francisco, Cal.
Connecticut Elec. Steel Co., Inc., Hartford, Conn.
Connellsville Fdry. Mach. & Steel Casting Co., Connellsville, Pa.
Crucible Steel Casting Co., Cleveland, Ohio.
Crucible Steel Casting Co., Lansdowne, Pa.
Dayton Steel Foundry, Dayton, O.
Detroit Steel Casting Co., 1200 Michigan Ave., Detroit, Mich.
Duquesne Steel Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Fahnestock Mfg. Co., Avonmore, Pa.
Falk Company, Milwaukee, Wis.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Federal Steel Foundry Co., Chester, Pa.
Hubbard Steel Foundry Co., E. Chicago, Ind.
Kelly & Jones Co., Greensburg, Pa.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
Maynard Electric Steel Castings Co., Milwaukee.
Mesta Machine Co., Pittsburgh, Pa.
Michigan Steel Castings Co., Detroit, Mich.
Millbury Steel Foundry Co., Millbury, Mass.
Milwaukee Steel Fdy. Co., 101-121 S. Water St, Mil.
Modern Steel Castings Co., Milwaukee, Wis.
National Brake & Elec. Co., Milwaukee, Wis.
National Car Coupler Co., Attica, Ind.
National Foundry Co., Erie, Pa.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

Your Scrap Metal

Worth Most in Dense Bundles

To avoid loss by oxidization, get larger charges into the furnace and need less heat for melting, mills prefer the compact bundles made by our

Hydraulic Scrap Bundling Presses

Write for Particulars

Logemann Brothers Company
3126 Burleigh Street, Milwaukee, Wisconsin

MASSILLON

Single Frame—Double Frame
and
STEAM DROP HAMMERS

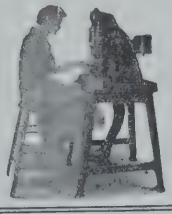
The Massillon Foundry & Machine Co.
Massillon - - - Ohio

Thomas Spacing Machine Co.

THOMAS SPACING TABLES Fulton Bldg., Pittsburgh, Pa. **THOMAS MULTIPLE PUNCHES**

See our descriptive advertisement in the December 4th issue. Send for Bulletin 109-II. advise us your conditions, and let us advise you how to increase your punch shop output and reduce your labor cost

BOLT, NUT, FORGING and WIRE NAIL MACHINERY
"National" Wedge Grip Bolt and Rivet Headers, National Bolt Cutters, National Heavy-Pattern Forging Machines, Etc.
We solicit your inquiries
THE NATIONAL MACHINERY COMPANY
TIFFIN, OHIO, U. S. A.



PANNIER METAL TAG ADDRESSOR
A quick, easy way of addressing your own metal shipping tags. Write for particulars and prices.
PANNIER BROS. STAMP CO.
PITTSBURGH, PA.

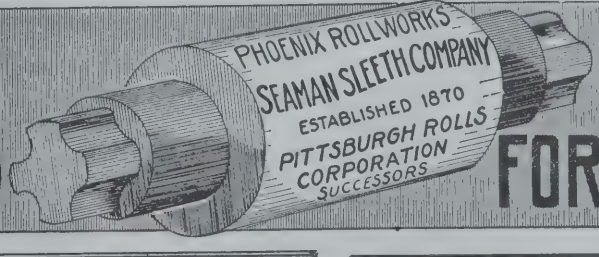


"THE STANDARD" SCALES
"The Standard" Scales are made in every style and capacity for every purpose—strong, durable and accurate. High grade only. Catalogue 76 on request.
THE STANDARD SCALE & SUPPLY CO.
1631 Liberty Avenue PITTSBURGH
New York, 145 Chambers St.
Philadelphia, 523 Arch St.
Chicago, 169 N. May St.
Cleveland, 1547 Columbus Road.
Baltimore, 409 N. Gay St.

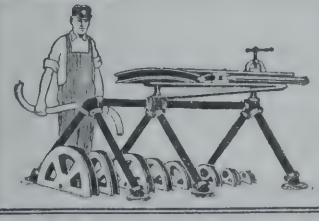
Electrical Repairs

A factory equipped to manufacture, rebuild or repair any kind or size of electrical machinery.
CLEVELAND ARMATURE WORKS, Inc.
Est. 1895 4732-4-6 St. Clair Ave. Inc. 1918
CLEVELAND, OHIO

ROLLS



EXCLUSIVELY FOR ALL PURPOSES



POWER BENDERS THREE NEW MODELS
"Wonder" Pipe Bending Machines (pat.) electrically operated to bend from 1" to 20". Send for printed matter. We also manufacture TEN other sizes, hand operated to bend from ⅛" to 8".
American Pipe Bending Machine Co.
93 Pearl St., BOSTON, MASS., U. S. A.

Lewis Foundry & Machine Co.

PITTSBURGH, PA., U. S. A.

WE CAN MAKE PROMPT DELIVERY

of

Chilled and Sand Rolls, Rolling Mill Equipment, Gear Drives, Roll Trains, Shears, Roll Lathes, Punches, Etc.

Consult Our Engineer If Planning Improvements

Sand—ROLLS—Chilled

Roll Lathes Shears Special Machinery
Engineers Founders Machinists

The Youngstown Foundry & Machine Co., Youngstown, Ohio

CASTINGS (Steel) (Continued)
National Roll & Foundry Co., Avonmore, Pa.
Otis Steel Co., Cleveland, O.
Penn Seaboard Steel Corp.,
1417 Sansom St., Philadelphia, Pa.
Pittsburgh Iron & Steel Foundries Co., Pittsburgh.
Racine Steel Castings Co., Racine, Wis.
Reading Steel Casting Co., Reading, Pa.
Reliance Steel Casting Co.,
28th and Smallman Sts., Pittsburgh, Pa.
Ross-Meehan Foundries, Chattanooga, Tenn.
Sharon Foundry Co., Sharon, Pa.
Sivyer Steel Casting Co., Milwaukee, Wis.
Smith, George H., Steel Casting Co., Milwaukee.
Standard Steel Castings Co., Cleveland, O.
Strong Steel Fdy. Co., 33 Norris St., Buffalo, N. Y.
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.
Treadwell Engineering Co., Easton, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
West Steel Casting Co., Cleveland, O.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

CASTINGS (Stellite)
Haynes Stellite Co., The, Kokomo, Ind.

CASTINGS (White Metal)
Bronsbraswyt Metals Co., Pittsburgh, Pa.

CASTORS (Plate Mill)—See PLATE CASTORS

CAUSTIC POTS
Farrar & Trefts, Buffalo, N. Y.

CEMENT (Furnace, High Temperature)
Clinton Metallic Paint Co., Clinton, N. Y.
Quigley Furnace Specialties Co, 26 Cortlandt, N.Y.C.

CEMENT MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Vulcan Iron Wks., 1739 Main St., Wilkes-Barre, Pa.

CEMENT WATERPROOFING
Texas Co., Dept. T, 17 Battery Pl., New York City.

CENTRAL STATION EQUIPMENT
Smith Gas Engrg. Co., The, Dayton, O.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

CENTRIFUGAL COAL DRIERS
Link-Belt Company, Chicago, Ill.

CHAIN BLOCKS
Speidel, J. G., 412 Gordon St., Reading, Pa.
Yale & Towne Mfg. Co., 9 E. 40th St., N. Y. C.

CHAIN DRIVES
Link-Belt Company, Chicago, Ill.

CHAIN MACHINERY (Coil Chain)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

CHAINS
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Link-Belt Company, Chicago, Ill.
Speidel, J. G., 412 Gordon St., Reading, Pa.

CHAINS (Conveyor)
Link-Belt Company, Chicago, Ill.

CHAINS (Power Transmitting)
Link-Belt Company, Chicago, Ill.

CHANNELS (See Steel Structural)

CHAPLETS
Champion Mch. & Forging Co., Cleveland, O.
Erdle Perforating Co., Rochester, N. Y.
Fanner Mfg. Co., Dept. T, Cleveland, O.

CHARCOAL
Hillman Coal & Coke Co.,
First National Bank Building, Pittsburgh.

CHECKS (Time, Tool and Pay)
Pannier Bros. Stamp Co., 207-209 Sandusky St. Pgh.

CHEMICALS
Ford, J. B., Co., Wyandotte, Mich.

CHEMISTS AND METALLURGISTS
Steel Improvement & Forge Co., Cleveland, O.

CHROME ORE
Blackwell, Geo. G., Sons & Co, Ltd, Liverpool, Eng.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.

CHROME VANADIUM STEEL (Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

CHUCKING MACHINES (Automatic)
Gisholt Machine Co.,
1203 E. Washington Ave., Madison, Wis.

CHUCKS
Chicago Pneumatic Tool Co.,
1041 Fisher Bldg., Chicago, Ill.
Modern Tool Co., 3rd and French Sts., Erie, Pa.
Toomey, Frank, Inc., Philadelphia, Pa.

CHUCKS (Lathe)
Gisholt Machine Co.,
1203 E. Washington Ave., Madison, Wis.
Whiton, B. E., Mach. Co., New London, Conn.

CHUCKS (Verical Boring Mill)
Gisholt Machine Co.,
1203 E. Washington Ave., Madison, Wis.

CIRCUIT BREAKERS
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

CLAY MACHINERY
Stevenson Co., The, Wellsville, O.

CLEANER (Metal)
Ford, J. B., Co., Wyandotte, Mich.

CLEANERS (Electric)
Wisconsin Electric Co., 3517 16th St., Racine, Wis.

CLEANING SPECIALTIES
Ford, J. B., Co., Wyandotte, Mich.

CLOCKS (Time)
Gisholt Machine Co.,
1203 E. Washington Ave., Madison, Wis.

CLUTCHES
Carlyle Johnson Mach. Co., Manchester, Conn.
Link-Belt Company, Chicago, Ill.

CLUTCHES (Couplings)
Carlyle Johnson Mach. Co., Manchester, Conn.

CLUTCHES (Friction)
Carlyle Johnson Mach. Co., Manchester, Conn.

CLUTCHES (Pulley)
Carlyle Johnson Mach. Co., Manchester, Conn.

COAL AND COKE
Addy, Matthew, Co., The, Cincinnati, O.
Bethlehem Steel Co., Bethlehem, Pa.
Crocker Bros., New York City.
Eaton, Rhodes & Co., Cincinnati, O.
Hanna, M. A., & Co., Cleveland, O.
Hickman, Williams & Co.,
1343 Oliver Bldg., Pittsburgh, Pa.
Hillman Coal & Coke Co.,
First National Bank Building, Pittsburgh.
International Fuel Corp., 614 Frick Bldg., Pittsbg.
Iron Trade Products Co.,
903 Farmers Bank Bldg., Pittsburgh, Pa.
McKeefrey & Co., Leetonia, O.
Mohr, J. J., & Son, Philadelphia, Pa.
Mudge, Edmund W., & Co., Frick Bldg., Pittsburgh
National Trading Co.,
1302 Swetland Bldg., Cleveland, O.
Oliver & Snyder Steel Co.,
S. 10th and Muriel Sts., Pittsburgh, Pa.
Pickands, Brown & Co.,
332 South Michigan Ave., Chicago, Ill.
Reilly-Peabody Fuel Co., Pittsburgh, Pa.
Rogers, Brown & Co., Cincinnati, O.
Semet-Solvay Co., Syracuse, N. Y.
Snyder, W. P., Co., Pittsburgh, Pa.
Tennessee Coal, Iron & R. R. Co.,
Birmingham, Ala.

COAL CRUSHERS AND PULVERIZERS
Bartlett & Snow, C. O., Co., Cleveland, O.
Fuller-Lehigh Co., Fullerton, Pa.
Link-Belt Company, Chicago, Ill.
Orton & Steinbrenner Co.,
612 S. Dearborn St., Chicago.
Pulverized Fuel Equipment Corp.,
30 Church St., New York, N. Y.
Raymond Bros. Impact Pulverizer Co.,
1313 N. Branch St., Chicago.

COAL, ORE AND ASH HANDLING MACHINERY
American Bridge Co., New York City.
Bartlett & Snow, C. O., Co., Cleveland, O.
Brown Hoisting Machinery Co., Cleveland, O.
Hayward Co., The, 50-54 Church St., N. Y. C.
Link-Belt Company, Chicago, Ill.
Orton & Steinbrenner Co.,
612 S. Dearborn St., Chicago.

COAL SCREENS
Audubon Wire Cloth Co., Inc., Audubon, N. Y.

COAL TIPPLES
Link-Belt Company, Chicago, Ill.

COAL WASHERS
Link-Belt Company, Chicago, Ill.

COCKS (Brass and Iron Body)
Walworth Manufacturing Co., Boston, Mass.

COILS (Pipe)
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
Roessing-Ernst Co., Etna, Pittsburgh, Pa.

COKE OVEN MACHINERY
Wellman-Seaver-Morgan Co., Cleveland, O.

COKE OVENS (By-Product)
Koppers Co., The, Pittsburgh, Pa.

COMPRESSORS (Air)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Chicago Pneumatic Tool Co., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Mackintosh, Hemphill & Co., Pittsburgh.
Norwalk Iron Works Co., So. Norwalk, Conn.
Wickes Brothers, Dept. A, Saginaw, Mich.

COMPRESSORS (Gas)
Norwalk Iron Works Co., So. Norwalk, Conn.

CONCRETE INSERTS
Dayton Malleable Iron Co., Dayton, O.

CONCRETE MIXERS—See MIXERS (Concrete)

CONDENSERS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Connersville Blower Co., The, Connersville, Ind.
Cooper, C. & G., Mt. Vernon, O.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Mesta Machine Co., Pittsburgh, Pa.
Wheeler Condenser & Engineering Co.,
Cateret, N. J.

CONDENSERS (Surface)
Smalley-General Co., Bay City, Mich.

CONDUCTORS (Armored Electric)
Youngstown Sheet & Tube Co., Youngstown, O.

CONDUITS (Electric)
Youngstown Sheet & Tube Co., Youngstown, O.

CONTRACT WORK
Lansing Stamping & Tool Co., Lansing, Mich.

CONTRACTORS (See Engineers and Contractors)

CONTROLLERS (Electric)
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Electric Controller & Mfg. Co., Cleveland, O.
General Electric Co., Schenectady, N. Y.
Morgan Engineering Co., Alliance, O.
Toledo Bridge & Crane Co.,
2900 Dorr St., Toledo, O.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

CONVERTERS (Bessemer)
Pennsylvania Engineering Works, New Castle, Pa.

CONVERTERS (Steel Castings)
Whiting Foundry Equipment Co., Harvey, Ill.

CONVEYORS (Elevating and Conveying)
Bartlett & Snow, C. O., Cleveland, O.
The Godfrey Conveyor Co., Elkhart, Ind.
Link-Belt Company, Chicago, Ill.
McMyler Interstate Co., Cleveland, O.
Roots, P. H., & F. M., Co., Connersville, Ind.
Vulcan Iron Wks., 1739 Main St., Wilkes-Barre, Pa.

COOLING BEDS
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.

COPPER
United Smelting & Al. Co., New Haven, Conn.

COPPER (Boronic All-Metal in Shot Form)
American Boron Products Co., Inc.,
636 Court St., Reading, Pa.

COPPER ALUMINUM (Boronic All-Metal in Shot Form)
American Boron Products Co., Inc.,
636 Court St., Reading, Pa.

COPPER AND BRASS ROLLING MILL EQUIPMENT
Garrison, A., Foundry Co., Bingham St., Pittsb'gh

COPPER NICKEL (Boronic All-Metal in Shot Form)
American Boron Products Co., Inc.,
636 Court St., Reading, Pa.

CORE MAKING MACHINES
Cleveland-Osborn Mfg. Co.,
5401 Hamilton Ave., Cleveland, O.
Pridmore, Henry E., Chicago, Ill.

CORE OVENS
Whiting Fdy. Equipment Co., Harvey, Ill.

CORRUGATED FASTENERS
Acme Steel Goods Co., 2840 Archer Ave., Chicago.

COVERINGS (Pipe and Boiler)
Armstrong Cork & Insulation Co., 101 24th St., Pgh.

COUNTER BORES
Cleveland Milling Machine Co.,
18511 Euclid Ave., Cleveland, O.

COUNTING MACHINES
Hart, R. A., Mfg. Co.,
79 Wilson Court, Battle Creek, Mich.

COUPLINGS
Connersville Blower Co., The, Connersville, Ind.
Mark Mfg. Co., 1907 Dempster St., Evanston, Ill.
Roots, P. H., & F. M., Co., Connersville, Ind

COUPLINGS (Carriage)
Bradley, C. C., & Son, Inc., Syracuse, N. Y.

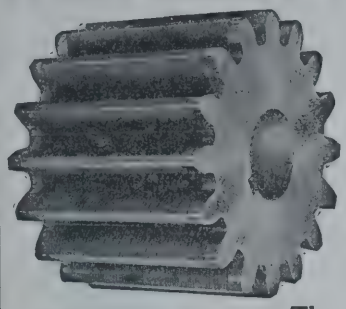
CRANES
Champion Engineering Co., Kenton, O.
National Products Co., East Liverpool, O.
New York Machinery Exchange, Inc., N. Y. C.
Toledo Bridge & Crane Co.,
2900 Dorr St., Toledo, O.

CRANES (Charging)
Alliance Machine Co., Alliance, O.
Cleveland Crane & Engrg. Co., Wickliffe, O.
Morgan Engineering Co., Alliance, O.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Pawling & Harnischfeger Co., Milwaukee, Wis.

CRANES (Electric Traveling)
Alliance Machine Co., Alliance, O.
Box, Alfred, & Co., Inc.,
Front and Poplar Sts., Philadelphia, Pa

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

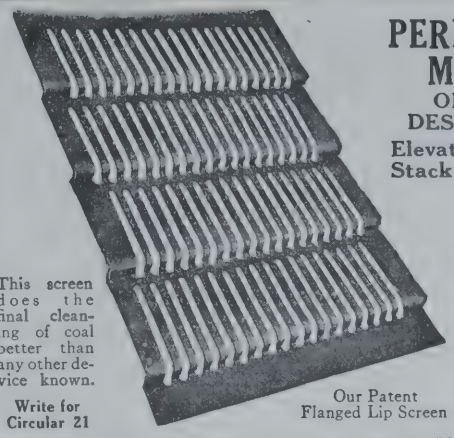
CUT GEARS
SPUR—BEVEL—SPIRAL—WORM—ETC.



Peerless Rawhide Pinions are being widely used in many of the largest shops—because they can always be depended upon to produce desired results.

Write us at once for full information

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CLEVELAND, OHIO



This screen does the final cleaning of coal better than any other device known.

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Our Patent Flanged Lip Screen

PERFORATED METALS
OF EVERY DESCRIPTION
Elevator Buckets, Stacks and Tanks

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Carbondale, Pa.

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Systems
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WOLFF, MILLER & CO.
Certified Public Accountants

1328 Broadway
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Greeley 2156-7



CUT GEARS
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Write for our latest catalog
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PITTSBURGH, PA.

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Unclimbable, rustless and fireproof chain link woven steel fences. Unequalled for durability and protection. See our display advertisements in the first and third issues each month.

Catalogs or Counsel
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Prepared, Distributed and Burned by
THE QUIGLEY METHOD
is backed by the Quigley Organization of experienced Fuel and Furnace Engineers. We make reports, design, construct and operate complete plants for preparing, distributing and burning powdered coal.
Quigley Furnace Specialties Co., Inc. 26 Cortlandt Street New York

FAWCUS HERRINGBONE GEARS
Mill Drives Turbine Transmissions
Spur Gears Bevel Gears Worm Gearing
FAWCUS MACHINE COMPANY, PITTSBURGH, PA.

CREOSOTED
FLOOR BLOCKS
PAVING BLOCKS
CROSSTIES
TIMBER
PILING
Pittsburgh Wood Preserving Co.
Century Building Pittsburgh, Pa.

CENTURY WOOD BLOCKS
THE FLOORING WITHOUT A FAULT

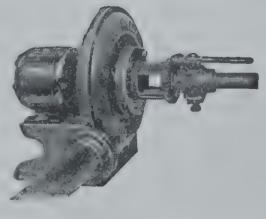
The Woodard Machine Co.
WOOSTER, OHIO
CUT GEARS
SPUR, BEVEL AND HELICAL
ROLLING MILL MACHINERY

FULLER-LEHIGH
Pulverized Coal Equipment
PULVERIZER MILLS, CRUSHERS, DRYERS, FURNACE FEEDERS

The satisfactory performance of FULLER-LEHIGH Equipment warrants your investigation. May we send you catalogue No. 71?

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London, England: 25 Victoria St., Westminster S.W. 1
Germany: Hamburg 1, "Wallhof," Glockengiesserwall 2.

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MUNCIE, INDIANA





MAKERS EXCLUSIVELY OF
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Champion Engineering Co., Kenton, O.
Chesapeake Iron Works, Baltimore, Md.
Cleveland Crane & Engineering Co., Wickliffe, O.
Erie Steel Construction Co., Inc., Erie, Pa.
Euclid Crane & Hoist Co., Dept. B, Euclid, O.
Link-Belt Company, Chicago, Ill.
Milwaukee Elec. Crane & Mfg. Co., Milwaukee.
Morgan Engineering Co., Alliance, O.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Northern Engineering Works, Detroit, Mich.
Pawling & Harnischfeger Co., Milwaukee, Wis.
Payne, N. B., & Co., New York, N. Y.
Pittsburgh Crane & Equip. Co., Sharpsburg, Pa.
Schoonmaker, A. G., & Sons, New York City.
Shaw Electric Crane Co., New York City.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Toledo Bridge & Crane Co., 2900 Dorr, Toledo, O.
Whiting Foundry Equipment Co., Harvey, Ill.

CRANES (Hand)
Case Crane & Engrg. Co., The, Columbus, O.
Champion Engineering Co., Kenton, O.
Chesapeake Iron Works, Baltimore, Md.
Cleveland Crane & Engrg. Co., Wickliffe, O.
Link-Belt Company, Chicago, Ill.
Milwaukee Elec. Crane & Mfg. Co., Milwaukee.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Pawling & Harnischfeger Co., Milwaukee, Wis.
Speidel, J. G., 412 Gordon St., Reading, Pa.
Toledo Bridge & Crane Co., 2900 Dorr St., Toledo, O.
Whiting Foundry Equipment Co., Harvey, Ill.

CRANES (Hydraulic)
Alliance Machine Co., Alliance, O.
Chambersburg Engrg. Co., Chambersburg, Pa.
Cleveland Crane & Engrg. Co., Wickliffe, O.
Morgan Engineering Co., Alliance, O.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

CRANES (Jib)
Case Crane & Engineering Co., Columbus, O.
Chesapeake Iron Works, Baltimore, Md.
Toledo Bridge & Crane Co., 2900 Dorr St., Toledo, O.
Whiting Foundry Equipment Co., Harvey, Ill.

CRANES (Locomotive)
Brown Hoisting Machinery Co., Cleveland, O.
Byers, The John F., Machine Co., Ravenna, Ohio.
Cleveland Crane & Engrg. Co., Wickliffe, O.
Industrial Works, Bay City, Mich.
Link-Belt Company, Chicago, Ill.
McMyler Interstate Co., Cleveland, O.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Orton & Steinbrenner Co., 612 S. Dearborn St., Chicago.
Pawling & Harnischfeger Co., Milwaukee, Wis.
Shaw Electric Crane Co., New York City.
Terry, Edward F., Mfg. Co., Grand Central Terminal, New York City.
U. S. Crane Co., 122 South Michigan Ave., Chicago, Ill.

CRANES (Pillar)
Whiting Foundry Equipment Co., Harvey, Ill.

CRANES (Portable)
Byers, The John F., Machine Co., Ravenna, O.

CRANES (Steam Cleaning House)
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

CRANES (Steam and Pneumatic, Wire Mills)
Cleveland Crane & Engrg. Co., Wickliffe, O.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

CRANES (Wall)
Champion Engineering Co., Kenton, O.
Toledo Bridge & Crane Co., 2900 Dorr St., Toledo, O.

CRANK SHAFTS
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Camden Forge Co., Camden, N. J.
Ellwood City Forge Co., Ellwood City, Pa.
Kropp Forge Co., 2512 W. 21st St., Chicago, Ill.
Leard, The Wm., Co., New Brighton, Pa.
Moltrup Steel Products Co., Beaver Falls, Pa.
National Forge & Tool Co., Irvine, Warren Co., Pa.
Standard Gauge Steel Co., Beaver Falls, Pa.
Tacony Steel Co., Tacony, Pa.

CRAYONS
National Products Co., East Liverpool, O.

CROSS ARMS (Creosoted)
Republic Creosoting Co., Indianapolis, Ind.

CRUCIBLES
Dixon, Joseph, Crucible Co., Dept. 64-B, Jersey City, N. J.

CRUSHING, GRINDING AND PULVERIZING MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
American Clay Machinery Co., Bucyrus, O.
Fuller-Lehigh Co., Fullerton, Pa.
Link-Belt Co., 39th and Stewart Ave., Chicago.
Pulverized Fuel Equipment Corp., 30 Church St., New York, N. Y.
Raymond Bros. Impact Pulverizer Co., 1313 S. Branch St., Chicago, Ill.
Stevenson Co., The, Wellsville, O.
Vulcan Iron Wks., 1739 Main Ct., Wilkes-Barre, Pa.

CUP LEATHERS (Hydraulic)
Camden Iron Works, Heulings Lippincott & Alfred J. Major, Receivers, Camden, N. J.

CUPOLA BLOCKS
Mutton Hollow Fire Brick Co., The, Woodbridge, N. J.

CUPOLA, FURNACE AND FORGE LININGS—See Linings (Cupola, Furnace and Forge)

CUPOLAS
Whiting Fdy. Equipment Co., Harvey, Ill.

CUPRO-VANADIUM
American Vanadium Co., Pittsburgh, Pa.

CUT-OFF COUPLINGS
Carlyle Johnson Mach. Co., Manchester, Conn.

CUTTERS (Keyway)
Morton Mfg. Co., Muskegon Heights, Mich.

CUTTERS (Milling)
Becker Milling Machine Co., Boston, Mass.
Boker, H. & Co., Inc., 101 Duane St., N. Y. C.
Cleveland Milling Machine Co., 18511 Euclid Ave., Cleveland, O.
National Tool Co., Cleveland, O.

CUTTERS (Pipe)
Hunter Saw & Machine Co., Pittsburgh.
Pgh. Saw & Mfg. Co., 32nd & Smallman Sts., Pgh.

CUTTERS (Stellite)
Haynes Stellite Co., The, Kokomo, Ind.

CUTTERS LINK (Coil Chain)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

CUTTING AND WELDING (Oxy-Acetylene Process)—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)

CUTTING AND WELDING APPARATUS (Elecric)
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

CUTTING OFF MACHINES
Cleveland Punch & Shear Works Co., Cleveland, O.
Espen-Lucas Machine Wks., Front and Girard, Phila.
Hill-Clarke & Co., Inc., Boston, Mass.
Newton Mach. Tool Wks., Inc., 23rd & Vine, Phila.
New York Machinery Exchange, Inc., N. Y. C.
Peerless Machine Co., 1605 Racine St., Racine, Wis.
Racine Tool & Machine Co., Racine, Wis.
Toomey, Frank, Inc., Philadelphia, Pa.

CYANIDE POTS
Detroit Steel Casting Co., 1200 Michigan Ave., Detroit, Mich.
Sivyer Steel Casting Co., Milwaukee, Wis.

CYLINDERS (Acetylene)—See ACETYLENE IN CYLINDERS

CYLINDERS (Oxygen)—See OXYGEN IN CYLINDERS

CYLINDERS (Pressure)
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.

DEOXIDIZERS (Boronic All-Metal in Shot Form)
American Boron Products Co., Inc., 636 Court St., Reading, Pa.

DERRICKS AND FITTINGS
American Bridge Co., New York City.
Case Crane & Engineering Co., Columbus, O.
Hayward Co., The, 50-54 Church St., N. Y. C.
Terry, Edward F., Mfg. Co., Grand Central Terminal, New York City.
Williams, G. H., Co., Erie, Pa.

DIE BLANKS
Detroit Steel Casting Co., 1200 Michigan Ave., Detroit, Mich.

DIE BLOCKS
American Steel Foundries, McCormick Bldg., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Colonial Steel Co., Keystone Bank Bldg., Pittsburgh, Pa.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Hammond Steel Co., Inc., Syracuse, N. Y.
Heppenstall Forge & Knife Co., Pittsburgh, Pa.
National Forge & Tool Co., Irvine, Warren Co., Pa.
Otis Steel Co., Cleveland, O.
Tacony Steel Co., Tacony, Pa.

DIE BLOCKS (Pressed and Hammered)
Bethlehem Steel Co., Bethlehem, Pa.
General Steel Co., Public Service Bldg., Milwaukee.

DIE HEADS (Automatic)
Rickert-Shafer Co., 612 W. 12th St., Erie, Pa.

DIES
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Crosman Stamping Co., Ypsilanti, Mich.
Detroit Steel Casting Co., 1200 Michigan Ave., Detroit, Mich.
Jones & Lamson Mch. Co., Springfield, Vt.
Landis Machine Co., Waynesboro, Pa.
Lansing Stamping & Tool Co., Lansing, Mich.
Long & Allstatter Co., Hamilton, O.
Modern Tool Co., 3rd and French Sts., Erie, Pa.
Sivyer Steel Casting Co., Milwaukee, Wis.
Standard Tool & Mfg. Co., 70 Lafayette Blvd., E., Detroit, Mich.
Toledo Machine & Tool Co., Toledo, O.
Vanadium Corp. of America, Equitable Bldg., New York.

DIES (For Special Shapes)
Empire Art Metal Co., College Pt., N. Y.

DIES (Lettering and Embossing)
Pannier Bros. Stamp Co., 207-209 Sandusky St., Pittsburgh.

DIGGING AND EXCAVATING MACHINERY
Hayward Co., The, 50-54 Church St., N. Y. C.
Williams, G. H., Co., Erie, Pa.

DIES AND PUNCHES
Richards, I. P., Co., Inc., Providence, R. I.

DOLOMITE (Dead Burned)
Davison, Allen S., Co., Pittsburgh, Pa.
Dolomite Products Co., 1110 Euclid Ave., Cleveland, Ohio.

DOORS (Hollow Steel)
Empire Art Metal Co., College Pt., N. Y.

DOORS AND SHUTTERS (Steel Rolling)
Edwards Mfg. Co., 401-451 Culvert St., Cincinnati.
Kinnear Mfg. Co., The, Columbus, O.

DOORS (Rolling and Bifolding, Steel and Wood)
Kinnear Mfg. Co., The, Columbus, O.

DRAW BENCHES
Morgan Construction Co., Worcester, Mass.

DRAWING TABLES
Economy Drawing Table Co., Adrian, Mich.
Hein Furniture Co., 126-136 S. Huron St., Toledo, O.

DREDGES (Hydraulic)
Morris Machine Works, Baldwinsville, N. Y.

DRILL PRESSES
Colburn Machine Tool Co., Franklin, Pa.

DRILLING MACHINERY
Baker Bros., Toledo, O.
Gisholt Machines Co., Madison, Wis.
Milwaukee Electric Crane & Mfg. Co., Milwaukee.
National Machinery Co., The, Tiffin, O.
Newton Machine Tool Works, Inc. 23rd and Vine St., Philadelphia.
New York Machinery Exchange, Inc., N. Y. C.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.
Toomey, Frank, Inc., Philadelphia, Pa.
Van Dorn & Dutton Co., The, Cleveland, O.
Van Dorn Electric Tool Co., Cleveland, O.

DRILLS
Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
Chicago Pneumatic Tool Co., 1041 Fisher Bldg., Chicago, Ill.
Latrobe Tool Co., The, Latrobe, Pa.
Newton Machine Tool Wks., Inc., 23rd & Vine, Phila.
Wickes Brothers, Dept. A, Saginaw, Mich.
Wisconsin Electric Co., 3517 16th St., Racine, Wis.

DRILLS (Electric)
Independent Pneumatic Tool Co., 600 West Jackson Blvd., Chicago, Ill.
Van Dorn Electric Tool Co., The, Cleveland, O.

DRILLS (Pneumatic)
Chicago Pneumatic Tool Co., Chicago, Ill.
Cleveland Pneumatic Tool Co., Cleveland, O.
Independent Pneumatic Tool Co., 600 West Jackson Blvd., Chicago, Ill.

DRILLS (Rock)
Chicago Pneumatic Tool Co., 1041 Fisher Bldg., Chicago, Ill.
Wickes Brothers, Dept. A, Saginaw, Mich.

DRILLS (Test)
National Forge & Tool Co., Irvine, Warren Co., Pa.

DRILLS (Twist)
Boker, H., & Co., 101 Duane St., N. Y. C.

DRYERS (Ore)
Fuller-Lehigh Co., Fullerton, Pa.

DRYERS (Sand, Coal, Ores, Chemicals, etc.)
Bartlett & Snow, C. O., Co., Cleveland, O.

DUST EXHAUSTER (Arrester System)
Pangborn Corporation, Hagerstown, Md.
Whiting Foundry Equipment Co., Harvey, Ill.

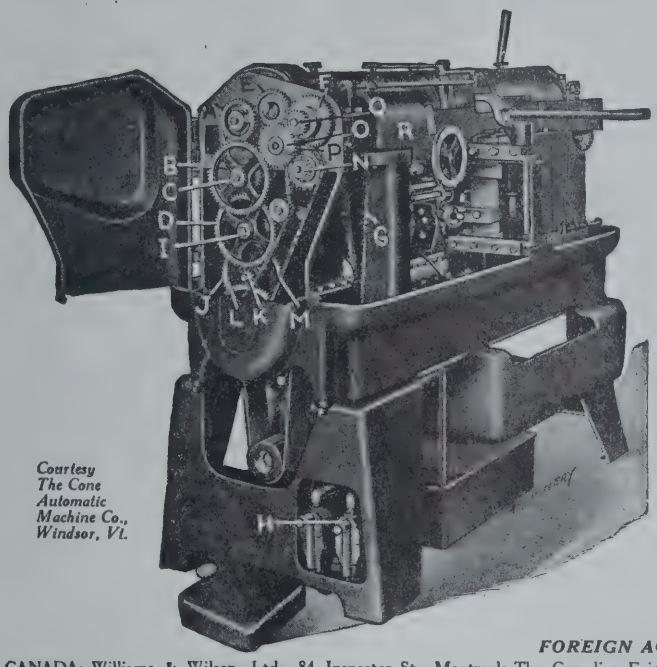
DUST HANDLING EQUIPMENT
Clarage Fan Co., Kalamazoo, Mich.
Pangborn Corporation, Hagerstown, Md.

DYNAMITE
Aetna Explosives Co., Inc., 165 Broadway, N. Y. C.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

THE JOHNSON FRICTION CLUTCH

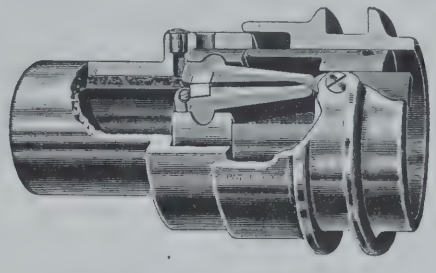
A Part of the New Mechanical Prodigy



Courtesy The Cone Automatic Machine Co., Windsor, Vt.

The Cone Automatic Machine Company makes the JOHNSON FRICTION CLUTCH a part of the equipment of the new Cone Automatic. The designers of this machine required a Clutch that was dependable—and the JOHNSON FRICTION CLUTCH installed at "R" has answered the need successfully in this case as it has in the hundreds of others The test of JOHNSON superiority is in service. Makers of the best machines ultimately fit JOHNSON FRICTION CLUTCHES to their machines and settle all doubt on clutch equipment forever.

Write for our White Catalog



Single Clutch—Interior—Clutch Disengaged

FOREIGN AGENTS:

CANADA: Williams & Wilson, Ltd., 84 Inspector St., Montreal; The Canadian Fairbanks-Morse Co., Ltd., Montreal and Branches. ENGLAND: The Efandem Co., Ltd. 22 Newman St., Oxford St., W. 1., London, Sole Agent for British Isles. AUSTRALIA: Edwin Wood, Pty., Hardware Chambers, 231 Elizabeth Street, Melbourne, Victoria. JAPAN: Andrews & George Co. 16 Takegawa-cho, Kiobashiku, Tokyo. SOUTH AFRICA: D. Drury & Co., Main St., Johannesburg. FRANCE: Anciens Etab Glaenzer & Perreaud, 18 Faubourg de Temple, Paris.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

MACHINE TOOLS

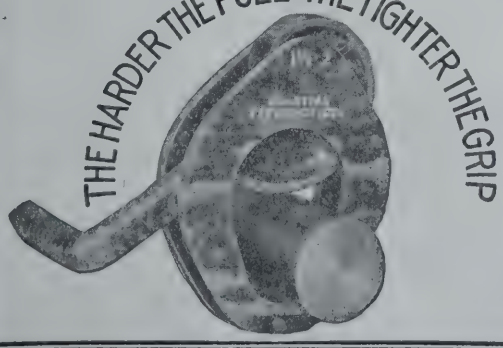
Electric Travelling Cranes - Steam Hammers

NILES-BEMENT-POND CO.

GENERAL OFFICES, 111 BROADWAY, NEW YORK

BOSTON PHILADELPHIA BIRMINGHAM PITTSBURGH CINCINNATI CLEVELAND DETROIT CHICAGO ST. LOUIS SAN FRANCISCO

Efficiency Dogs and Dog Efficiency



Efficiency:—Save 95% of time consumed in using the antiquated set screw dogs.

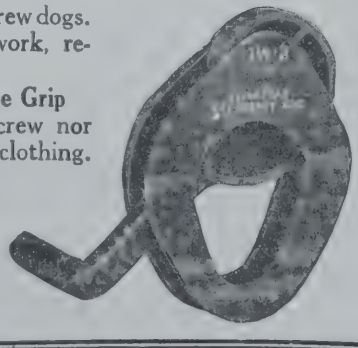
Grip:—Swing the cam open, insert work, release, then:—

The Harder the Pull—The Tighter the Grip

Safety:—Absolutely safe. No set screw nor other projection to catch the clothing.

Quality:—Steel drop forgings, heavily case-hardened.

Buy Of Your Jobber, or Direct From Us.



Efficiency Device Corporation
Eighth St., Long Island City, N. Y.

ELECTRICAL EQUIPMENT
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Duquesne Electric & Mfg. Co., Pittsburgh, Pa.
Electric Controller & Mfg. Co., Cleveland, O.
General Electric Co., Schenectady, N. Y.

ELECTRIC LIGHT EQUIPMENT
Smith Gas Engrg. Co., The, Dayton, O.

ELECTRIC MACHINERY (Second Hand)
Klein, Nathan, & Co., Inc., New York City.
Power Equipment Co., Philadelphia, Pa.

ELECTRICAL REPAIRS
Cleveland Armature Works, Inc.,
4732 St. Clair Ave., Cleveland, Ohio.

ELECTROLYTIC CELLS
Electrolabs Co., The, 15 William St., New York.

ELECTROLYTIC OXYGEN AND HYDROGEN GENERATORS
Electrolabs Co., The, 15 William St., New York.

ELEVATOR GUIDES
Union Drawn Steel Co., Beaver Falls, Pa.

ELEVATORS
Speidel, J. G., 412 Gordon St., Reading, Pa.
Whiting Foundry Equipment Co., Harvey, Ill.

ELEVATORS (Bucket)
Bartlett & Snow, C. O., Co., Cleveland, O.
Link-Belt Company, Chicago, Ill.
Stevenson Co., The, Wellsville, O.

ENGINE LATHES—See LATHES (Engine)

ENGINEERS AND CONTRACTORS
Abramsen Engineering Co., Pittsburgh, Pa.
American Bridge Co., New York City.
Birmingham Steel Corp., Birmingham, Ala.
Case Crane & Engrg. Co., The, Columbus, O.
Chase, Frank D., 645 N. Michigan Av., Chicago, Ill.
Chesapeake Iron Works, Baltimore, Md.
Erie Steel Construction Co., Inc., Erie, Pa.
Garrison, A., Foundry Co., Bingham St., Pgh.
Freyn, Brassert & Co., Peoples Gas Bldg., Chicago
Kratzer, W. N., Co., 3212 Smallman St., Pbgh.
Laughlin, Alex, & Co.,
First Nat'l Bk. Bldg., Pittsburgh, Pa.
McClintic-Marshall Co., Pittsburgh, Pa.
McClure, Geo. W., Sons & Co., Pittsburgh, Pa.
McKee, Arthur G., & Co.,
Rockefeller Bldg., Cleveland, O.
Morgan Construction Co., Worcester, Mass.
Morgan Engineering Co., Alliance, O.
Parker Company, 165 Broadway, New York City.
Smythe, S. R., The, Co., Pittsburgh, Pa.
Swindell, Wm., & Bros., Pittsburgh, Pa.
Toledo Bridge & Crane Co.,
2900 Dorr St., Toledo, O.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Westinghouse-Church-Kerr & Co.,
37 Wall St., New York City.

ENGINEERS (Consulting)
Birnie, Hawkins & Watson,
511 Fifth Ave., New York City.
Chase, Frank D., 645 N. Michigan Av., Chicago, Ill.
Duff, Samuel E., Empire Bldg., Pittsburgh, Pa.
Ellis, Frank L., Farmers Bk. Bldg., Pittsburgh.
Freyn, Brassert & Co., Peoples Gas Bldg., Chicago
Gellert Engineering Co., Widener Bldg., Phila.
Gilbreth, Frank B.,
68 Eagle Rock Way, Montclair, N. J.
Kennedy, Julian, Pittsburgh, Pa.
Moore, W. E., & Co., Union Bk. Bldg., Pittsb'gh.
Morgan Construction Co., Worcester, Mass.
Parker Company, 165 Broadway, New York City.
Shover, Barton R., Pittsburgh, Pa.
Trundle, George T., Jr., Engineers Bldg., Cleveland
Westinghouse-Church-Kerr & Co.,
37 Wall St., New York City.

ENGINEERS (Foundry, Mechanical and Electrical)
Chase, Frank D., 645 N. Michigan Av., Chicago, Ill.
Standard Sand & Mach. Co., Cleveland, O.

ENGINEERS (Industrial)
Chase, Frank D., 645 N. Michigan Av., Chicago, Ill.
Price, T. W., Engineering Co.,
Woolworth Bldg., New York.

ENGINES, BLOWING (Gas or Steam)
Mesta Machine Co., Pittsburgh, Pa.

ENGINES (Gas, Gasoline and Oil)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Chicago Pneumatic Tool Co.,
1041 Fisher Bldg., Chicago, Ill.
Cooper, C. & G., Co., Mt. Vernon, O.
Franklin Valveless Engine Co., Franklin, Pa.
Mesta Machine Co., Pittsburgh, Pa.
Standard Scale & Supply Co.,
1631 Liberty St., Pittsburgh, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

ENGINES (Hoisting and Hauling)
Vulcan Iron Wks., 1739 Main St., Wilkes-Barre, Pa.

ENGINES (Marine)
Carlyle Johnson Mach. Co., Manchester, Conn.

ENGINES (Steam)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Clarage Fan Co., Kalamazoo, Mich.
Cooper, C. & G., Co., Mt. Vernon, O.
Dake Engine Co., Grand Haven, Mich.
Erie City Iron Works, Erie, Pa.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
Mesta Machine Co., Pittsburgh, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Toomey, Frank, Inc., Philadelphia, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Vulcan Iron Works,
1739 Main St., Wilkes-Barre, Pa.

ENGRAVERS (Steel and Copper Plate)
Wiggins, John B., Co., 705 Peoples Gas Bldg., Chgo.

EXHAUSTERS (Gas)—See GAS EXHAUSTERS

EXHIBITIONS
International Machinery Exposition,
Grand Central Palace, New York City.

EXPANDED AND PERFORATED METAL
Harold McCalla Co., The,
531-33 N. Fourth St., Philadelphia, Pa.

EXPANSION BOLTS—See BOLTS (Expansion)

EXPLOSIVES (Blasting)
Aetna Explosives Co., Inc., 165 Broadway, N.Y.C.

EXPORTERS
American Steel Export Co., New York City.
Federal Export Corp., 42 Broadway, New York City
Parker Company, 165 Broadway, New York City.
Rownson, Drew & Clydesdale, Inc.,
68 William St., New York City.

EYEBARS
American Bridge Co., New York City.

EYE PROTECTORS
Standard Optical Co., Geneva, N. Y.

FACINGS (Foundry)
Dixon, Joseph, Crucible Co.,
Dept. 64-B, Jersey City, N. J.

FACTORY BUILDINGS—See BRIDGES, BUILDINGS AND VIADUCTS

FANS (Heating and Ventilating)
Buckeye Blower Co., Columbus, O.
Clarage Fan Co., Kalamazoo, Mich.

FANS (Mechanical Draft)
Buckeye Blower Co., Columbus, O.
Clarage Fan Co., Kalamazoo, Mich.

FENCES—See WIRE FENCES

FERRO-ALLOYS
Canada Carbide Sales Co., 30 Church St., N. Y. C.
Davison, Allen S., Co., Pittsburgh, Pa.
Fairbanks, Morse & Co., New York City.
Iron Trade Products Co.,
903 Farmers Bank Bldg., Pittsburgh, Pa.
Keokuk Electro-Metals Co.,
136 So. La Salle St., Chicago, Ill.
Metal & Thermit Corp., 120 Broadway, N. Y. C.
Southern Ferro Alloys Co., Chattanooga, Tenn.
United States Ferro Alloys Corp.,
28 East 42nd St., New York, N. Y.

FERRO-CARBON TITANIUM
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

FERRO-CHROME
Brooks, Clyde,
1701 Farmers Bank Bldg., Pittsburgh, Pa.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.
United States Ferro Alloys Corp.,
28 East 42nd St., New York, N. Y.

FERRO-MANGANESE
Bethlehem Steel Co., Bethlehem, Pa.
Blackwell, Geo. G., Sons & Co, Ltd, Liverpool, Eng.
Crocker Bros., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.
Marshall, Edward E., Bullitt Bldg., Philadelphia.
Rogers, Brown & Co., Cincinnati, O.
Samuel, Frank, Harrison Bldg., Philadelphia, Pa.
Tennessee Coal, Iron & R. R. Co.,
Birmingham, Ala.

FERRO-MOLYBDENUM
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.

FERRO-SILICON
Blackwell, Geo. G., Sons & Co, Ltd, Liverpool, Eng.
Canada Carbide Sales Co., 30 Church St., N. Y. C.
Crocker Bros., New York City.
Davison, Allen S., Co., Pittsburgh, Pa.
Eaton, Rhodes & Co., Cincinnati, O.
Globe Iron Co., Jackson, O.
Keokuk Electro-Metals Co.,
136 So. La Salle St., Chicago, Ill.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.
Niagara Electric Furnace Co., Inc.,
Niagara Falls, N. Y.
Rogers, Brown & Co., Cincinnati, O.
Samuel, Frank, Harrison Bldg., Philadelphia, Pa.
Southern Ferro Alloys Co., Chattanooga, Tenn.
United States Ferro Alloys Corp.,
28 East 42nd St., New York, N. Y.

FERRO-TUNGSTEN
Fairbanks, Morse & Co., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.
Vanadium Alloys Steel Co., Pittsburgh, Pa.

FERRO-VANADIUM
Vanadium Corp. of America,
Equitable Bldg., New York.

FILES
Barnett, G. & H., Co., Philadelphia, Pa.
Disston, Henry, & Sons, Inc., Philadelphia, Pa.
Nicholson File Co., Providence, R. I.
Searle Manufacturing Co., Anderson, Ind.

FILMS (Industrial)
Rothacker Film Mfg. Co.,
1339 Diversey Parkway, Chicago, Ill.

FILTERS (Water)
Scaife, Wm. B., & Son, Oakmont, Pa.

FIREBRICK AND CLAY
American Fire Clay & Products Co., Cleveland, O.
Ashland Fire Brick Co., Ashland, Ky.
Blackwell, Geo. G., Sons & Co, Ltd, Liverpool, Eng.
Brighton Fire Brick Co., New Brighton, Pa.
Crescent Refractories Co.,
Curwensville, Clearfield Co., Pa.
Dover Fire Brick Co., Cuyahoga Bldg., Cleveland.
Eureka Fire Brick Works, Mt. Braddock, Pa.
Harbison-Walker Refractories Co., Pittsburgh, Pa.
Kier Fire Brick Co., Pittsburgh, Pa.
Louisville Fire Brick Co., Highland Park, Ky.
Mutton Hollow Fire Brick Co., The,
Woodbridge, N. J.
Pope, Frank B., Co.,
1403 Arrott Bldg., Pittsburgh, Pa.
Portsmouth Refractories Co., Portsmouth, O.
Pyro Clay Products Co., The, Oak Hill, O.
Savage Mountain Fire Brick Co., Frostburg, Md.
Sharon Fire Brick Co., Sharon, Pa.
Stowe-Fuller Co., Cleveland, O.
Union Mining Co., Mt. Savage, Md.
West Virginia Fire Clay Mfg. Co.,
Diamond Bank Bldg., Pittsburgh, Pa.

FIRE BRICK CEMENT
Clinton Metallic Paint Co., Clinton, N. Y.
Quigley Furnace Specialties Co, 26 Cortlandt, N.Y.C.

FIRE DOORS AND SHUTTERS
Merchant & Evans Co., Philadelphia, Pa.

FIREPROOF CLOTHING
Holcomb Safety Garment Co.,
14 S. Jefferson St., Chicago, Ill.

FLAG POLES (Steel)
Walworth Manufacturing Co., Boston, Mass.

FLANGING PRESSES
Southwark Foundry & Machine Co., Philadelphia.

FLANGES (Pipe)
Dart, E. M., Mfg. Co., Providence, R. I.

FLASK LUMBER
Johnson, Thomas V., Inc.,
1532 First National Bank Bldg., Milwaukee.

FLASKS (Foundry)
Newark Stamping & Foundry Co., Newark, O.

FLOORING (Creosoted Wood Block)
Pgh. Wood Preserving Co., Century Bldg., Pgh.
Republic Creosoting Co., Indianapolis, Ind.

FLOORING (Fireproof, Metallic, Nonslipping, Ventilating)
Irving Iron Works Co., Long Island City, N. Y.

FLUE WELDERS
Southwark Foundry & Mach. Co., Philadelphia, Pa.

FLUOR-SPAR
Hickman, Williams & Co.,
1343 Oliver Bldg., Pittsburgh, Pa.
Iron Trade Products Co.,
903 Farmers Bank Bldg., Pittsburgh, Pa.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.
Rogers, Brown & Co., Cincinnati, O.

FLUXES (Boronic All-Metal in Shot Form)
American Boron Products Co., Inc.,
636 Court St., Reading, Pa.

FLY WHEELS
United Engrg. & Fdy. Co., Pittsburgh, Pa.

FORGES
Bradley, C. C., & Son, Inc., Syracuse, N. Y.
Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.

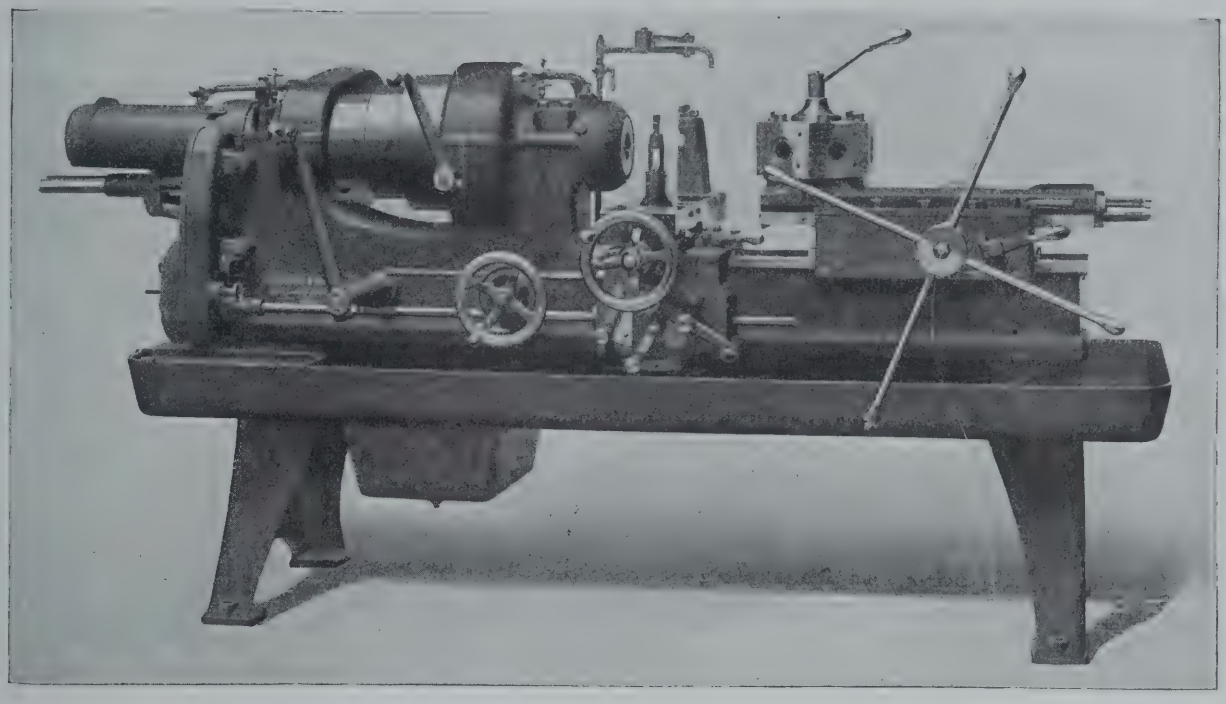
FORGES (Rivet Heating)
Mahr Mfg. Co., Minneapolis, Minn.

FORGING BARS (Alloy Steel)
Witherow Steel Co., Pittsburgh, Pa.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

The new W & S Turret Lathe

has more power—is easier to operate



This new No. 6 Turret Lathe is stronger, has more power and a greater speed range. With its *double friction back gears* it has almost double the power of the single back geared machine. It has three spindle speeds instead of two for every shift of the belt.

The *heavy duty carriage* with six power cross feeds, together with the double friction back gears, make possible greater production on this new No. 6 than on any other machine of its size.

In addition to greater output, this No. 6 will finish parts in its size range which require strength and excess power just as well as the heavier and more expensive machines. This new No. 6 finishes at lower cost gear blanks, forgings and tough alloy steel parts.

2¼" Bar Capacity
20⅜" Maximum Swing

The Warner & Swasey Company

CLEVELAND, OHIO, U. S. A.

New York Office—Singer Bldg. **Boston Office**—Oliver Bldg. **Buffalo Office**—Iroquois Bldg.
Detroit Office—Ford Bldg. **Chicago Office and Show Room**—618-622 Washington Blvd.

FOREIGN AGENTS:

Charles Churchill & Company, Ltd., London, Birmingham, Manchester, Bristol, Newcastle-on-Tyne, Glasgow
Allied Machinery Company, Paris, Turin, Zurich, Barcelona, Brussels
Wilhelm Sonesson Company, Malmo, Copenhagen, Stockholm, Gothenburg
R. S. Stokvis en Zonen, Rotterdam
Benson Bros., Sydney, Melbourne, Adelaide
Yamatake & Company, Tokio
McLeod & Company, Calcutta
Anderson, Meyer & Company, Ltd., Shanghai, Tiensin, Pekin, Hankow, Canton, Yumanfu, Changhau, Kalgan
Brossard-Mopin & Company, Saigon, Singapore, Haiphong

DOMESTIC AGENTS:

Fulton Supply Company, Atlanta, Ga.
Young & Vann Supply Company, Birmingham, Ala.
Woodward, Wight & Company, New Orleans, La.
Salt Lake Hardware Company, Salt Lake City, Utah
Smith-Booth-Usher Company, Los Angeles, Calif.
Fred Ward & Son, San Francisco, Calif.
Portland Machinery Company, Portland, Ore.
Hallidie Machinery Company, Seattle, Wash.

CANADIAN AGENTS:

A. R. Williams Machinery Co., Ltd., Toronto, Winnipeg, Vancouver and St. John's
Williams & Wilson, Ltd., Montreal

FORGING BILLETS (Alloy and Carbon Steel)

Andrews Steel Co., Newport, Ky.
Cambria Steel Co., Philadelphia, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
Inland Steel Co., 1st Nat'l Bank Bldg., Chicago.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
La Belle Iron Works, Steubenville, O.
Republic Iron & Steel Co., Youngstown, O.
Sharon Steel Hoop Co., Sharon, Pa.
Tacony Steel Co., Tacony, Pa.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
United Alloy Steel Corp., Canton, O.

FORGING INGOTS

Allegheny Steel Co., Pittsburgh, Pa.
Andrews Steel Co., Newport, Ky.
Brier-Hill Steel Co., Youngstown, O.
Camden Forge Co., Camden, N. J.
Canton Steel Foundry Co., Canton, O.
Illinois Steel Co., Chicago, Ill.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Lackawanna Steel Co., Buffalo, N. Y.
Latrobe Electric Steel Co., Latrobe, Pa.
Mesta Machine Co., Pittsburgh, Pa.
Nagle Steel Co., Pottstown, Pa.
Tacony Steel Co., Tacony, Pa.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
United Alloys Steel Corp., Canton, O.
Wickwire Steel Co., Buffalo, N. Y.

FORGING MACHINERY

Bliss, E. W., Co., 8 Adams St., Brooklyn.
Erie Foundry Co., The, Erie, Pa.
Garrison, A., Foundry Co., Bingham St., Pgh.
Morgan Engineering Co., Alliance, O.
Simmons Machine Co., Inc., Albany, N. Y.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

FORGINGS (Bronze and Copper)

Kropp Forge Co., 2512 W. 21st St., Chicago, Ill.

FORGINGS (Drop)

Bacon & Matheson Forge Co., Seattle, Wash.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Brewer-Titchener Corp., Cortland, N. Y.
Champion Mch. & Forging Co., Cleveland, O.
Cleveland Hardware Co., Cleveland, O.
Columbus Forge & Iron Co., Columbus, O.
Drop Forging Co. of New York, Jersey City, N. J.
Eccles, Richard, Co., Auburn, N. Y.
General Drop Forge Co., Buffalo, N. Y.
Henry & Allen, Inc., Auburn, N. Y.
Herbrand Company, Fremont, O.
Ingalls-Shepard Forging Co., McCormick Bldg. Chicago, Ill.
Kropp Forge Co., 2512 W. 21st St., Chicago, Ill.
Lakeside Forge Co., Erie, Pa.
Pan Motor Co., St. Cloud, Minn.
Pittsburgh Knife & Forge Co., Pittsburgh, Pa.
Rockford Drop Forge Co., Rockford, Ill.
Scranton Forging Co., Scranton, Pa.
Steel Car Forge Co., Pittsburgh, Pa.
Steel Improvement & Forge Co., Cleveland, O.
Vanadium Corp. of America, Equitable Bldg., New York.
Wilcox, D., Mfg. Co., Mechanicsburg, Pa.
Williams, J. H., & Co., 58 Richards St., Brooklyn, N. Y.

FORGINGS (Iron and Steel)

Akron-Selle Co., Akron O.
Allis-Chalmers Mfg. C. Milwaukee, Wis.
American Bridge Co., New York City.
American Steel Export Co., New York City.
American Vanadium Co., The, Pittsburgh, Pa.
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Bradley, C. C., & Son, Inc., Syracuse, N. Y.
Brewer-Titchener Corp., Cortland, N. Y.
Camden Forge Co., Camden, N. J.
Champion Mch. & Forging Co., Cleveland, O.
Cleveland Hardware Co., Cleveland, O.
Cleveland Knife & Forge Co., Cleveland, O.
Columbus Forge & Iron Co., Columbus, O.
Cruse-Crawford Mfg. Co., Birmingham, Ala.
Drop Forging Co. of N. Y., Jersey City, N. J.
Hammond Steel Co., Inc., Syracuse, N. Y.
Heppenstall Forge & Knife Co., Pittsburgh, Pa.
Irving Iron Works Co., 4th and Creek Sts., Long Island City, N. Y.
Jersey Forging Works, 16th St. and Jersey Ave., Jersey City, N. J
Johnston & Jennings Co., Cleveland, O.
Joliet Forge Co., Joliet, Ill.
Kropp Forge Co., 2512 W. 21st St., Chicago, Ill.
Leard, The Wm., Co., New Brighton, Pa.
Mesta Machine Co., Pittsburgh, Pa.
Midvale Steel & Ordnance Co., Philadelphia, Pa.
Morgan Engineering Co., Alliance, O.
National Forge & Tool Co., Irvine, Warren Co., Pa.
Niles Forge & Mfg. Co., Niles, O.
Oliver Iron & Steel Co., Pittsburgh, Pa.
Pettis, W. W., Co., Cincinnati, O.
Pollak Steel Co., Carthage, Cincinnati, O.
Steel Car Forge Co., Pittsburgh, Pa.
Steel Improvement & Forge Co., Cleveland, O.
Tacony Steel Co., Tacony, Pa.

FORMS (Concrete Construction)

Blaw-Knox Co., 602 Farmers Bank Bldg., Pgh.

FOUNDRY EQUIPMENT AND SUPPLIES

Arcade Mfg. Co., Dept. C, Freeport, Ill.
Cleveland-Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland, O.
National Engineering Co., Machinery Hall Bldg., 549 W. Washington St., Chicago, Ill.
Pridmore, Henry E., Chicago, Ill.
Standard Sand & Machine Co., Cleveland, O.
Whiting Foundry Equipment Co., Harvey, Ill.

FOUNDRY GLOVES

Hickory Steel-Grip Glove Co., 2539 W. Schubert Ave., Chicago, Ill.

FOUNDRY PATTERN PLATES (Steel)

Moltrup Steel Products Co., Beaver Falls, Pa.

FOUNDRY PLANTS

Whiting Foundry Equipment Co., Harvey, Ill.

FRAMES (Wire Drawing)

Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

FROGS AND SWITCHES (Railroad and Trolley)

Bethlehem Steel Co., The, So. Bethlehem, Pa.
Morrison & Risman, Buffalo, N. Y.

FUEL OIL

Biery Oil Co., Franklin Tr. Bldg., Franklin, Pa.
Clarendon Refining Co., Clarendon, Pa.
Johnson Oil Refining Co., 208 South La Salle St., Chicago, Ill.
Roxana Petroleum Co., Arcade Bldg., St. Louis.
Sloan & Zook, Bradford, Pa.
Southern Oil Corporation, Security Bldg., Kansas City, Mo.
Texas Co., Dept. T, 17 Battery Pl., New York.
Union Petroleum Co., Chicago, Ill.
Universal Petroleum Co., Richards Bldg., Tulsa, Okla.
Warren Oil Company of Penna., Warren, Pa.
White Eagle Oil & Refining Co., Wichita, Kans.

FUEL OIL BURNING SYSTEMS AND OIL PLANTS

Davison, N. C., Gas Burner & Welding Co., 3145 Penn Ave., Pittsburgh, Pa.
Gilbert & Barker Mfg. Co., 22 Union St., Springfield, Mass.

FURNACE INSULATION

Celite Products Co., 11 Broadway, N. Y. C.

FURNACES (Annealing, Case Hardening and Heat Treating)

American Incandescent Heat Co., Inc., 10 P. O. Square, Boston, Mass.
Dempsey, H. B., Furnace Co., 253 Broadway, N. Y. C.
General Combustion Co., Monadnock Bldg., Chicago
General Electric Co., Schenectady, N. Y.
Gilbert & Barker Mfg. Co., 22 Union St., Springfield, Mass.
Hagan, Geo. J., Co., Pittsburgh, Pa.
Rockwell, W. S., Co., 50 Church St., N. Y. C.
Swindell, Wm., & Bros., Pittsburgh, Pa.

FURNACES (Blast)

Hagan, Geo. J., Co., Peoples Bk. Bldg., Pittsb'gh.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
McKee, Arthur G., & Co., Rockefeller Bldg., Cleveland, O.
Pennsylvania Engrg. Works, New Castle Pa.
Smythe, S. R., Co., Pittsburgh, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

FURNACES (Brass, Electric)

American Metallurgical Corp., Franklin Trust Bldg., Philadelphia, Pa
Pittsburgh Electric Furnace Corp., Pittsburgh, Pa.

FURNACES (Crucible)

Laughlin, Alex, & Co., First Nat'l Bk. Bldg., Pittsburgh, Pa.
Whiting Fdy. Equipment Co., Harvey, Ill.

FURNACES (Electric)

Electric Furnace Construction Co., Finance Bldg., Philadelphia, Pa.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Hamilton & Hansell, Inc., Park Row Bldg., New York, N. Y.
Industrial Electric Furnace Co., 53 W. Jackson Blvd., Chicago, Ill.
Ludlum Electric Furnace Corp., New York City.
Pittsburgh Electric Furnace Corp., Pittsburgh, Pa.
Pittsburgh Furnace Co., 215 Sycamore, Milwaukee.
Price, T. W., Engineering Co., Woolworth Bldg., New York.
Webb Electric Furnace Corp., 36 Church St., New York City.

FURNACES (Forging)

Gilbert & Barker Mfg. Co., 22 Union St., Springfield, Mass.

FURNACES (Melting)

Industrial Electric Furnace Co., 53 W. Jackson Blvd., Chicago, Ill.
Ludlum Electric Furnace Corp., New York, N. Y.
Pittsburgh Furnace Co., 215 Sycamore, Milwaukee.

FURNACES (Open Hearth and Heating)

Laughlin, Alex, & Co., First National Bank Bldg., Pittsburgh, Pa.
Lindsay, W. W., & Co., Inc., Harrison Bldg., Philadelphia, Pa.
Miller, W. R., Co., Pittsburgh, Pa.
Orth, Frank, 3437 Fir St., Indiana Harbor, Ind.
Smythe, S. R., Co., Pittsburgh, Pa.
Wellman-Seaver-Morgan Co., Cleveland, O.

FURNACES (Tempering, Cyanide and Lead)

Gilbert & Barker Mfg. Co., 22 Union St., Springfield, Mass.

FURNACES (Water Cooled Specialties for Open Hearth)

Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh.

FURNACES (Wire Annealed)

Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

GALVANIZED WIRE (Equipment)

Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Tayler Co., Cuyahoga Falls, O.

GALVANIZING EQUIPMENT

American Bridge Co., New York City.
Erie Foundry Co., Erie, Pa.

GALVANIZING KETTLES

Wilfong, Millard F., Iron Works Co., Philadelphia, Pa.

GALVANIZING PLANTS

Wilfong, Millard F., Iron Works Co., Philadelphia, Pa.

GALVANIZING (Hot)

Cattie, Joseph P., & Brothers, Inc., Adams and Gaul Sts., Philadelphia, Pa.
Pittsburgh Galvanizing Co., Inc., 991 Union Arcade, Pittsburgh, Pa.

GAS BOOSTERS (Rotary Positive Pressure)

Connersville Blower Co., The, Connersville, Ind.
General Electric Co., Schenectady, N. Y.
Roots, P. H., & F. M., Co., Connersville, Ind.

GAS EXHAUSTERS

Connersville Blower Co., Connersville, Ind.
General Electric Co., Schenectady, N. Y.
Roots, P. H., & F. M., Co., Connersville, Ind.

GAS PRODUCERS

Camden Iron Works, Heulings Lippincott & Alfred J. Major, Receivers, Camden, N. J.
Chapman Engineering Co., Mt. Vernon, O.
Hagan, Geo. J., Co., Peoples Bk. Bldg., Pittsb'gh
Koppers Co., The, Pittsburgh, Pa.
Miller, W. R., Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Smith Gas Engine Co., The, Dayton, O.
Wellman-Seaver-Morgan Co., Cleveland, O.
Wood, R. D., & Co., 400 Chestnut St., Phila.

GAS RECOVERY COKE OVENS

Koppers Co., The, Pittsburgh, Pa.

GAS WASHERS

Camden Iron Works, Heulings Lippincott & Alfred J. Major, Receivers, Camden, N. J.

GASKETS (Leather)

Chicago Belting Co., 113 N. Green St., Chicago, Ill.
Graton & Knight Mfg. Co., The, Worcester, Mass.

GEAR BLANKS

Akron-Selle Co., Akron, O.
Camden Forge Co., Camden, N. J.
Carnegie Steel Co., Pittsburgh, Pa.
Jersey Forging Works, 16th and Jersey Ave., Jersey City, N. J.
National Forge & Tool Co., Irvine, Warren Co., Pa.

GEAR CUTTING MACHINERY

Gleason Works, 1000 University Ave., Rochester, N. Y.
National Tool Co., Cleveland, O.
Newton Machine Tool Works, Inc., 23rd and Vine St., Philadelphia, Pa.
New York Machinery Exchange, Inc., N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.

GEAR TESTING MACHINERY

Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.

GEARS AND GEAR CUTTING (Iron and Steel)

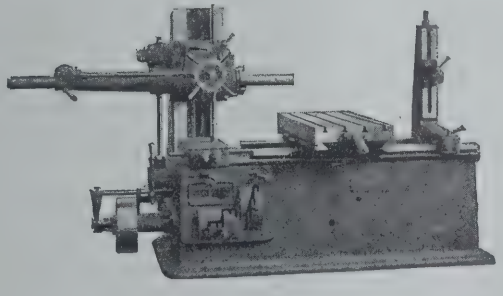
Akron Gear & Engineering Co., 927 High St., Akron, Ohio.
Detroit Steel Casting Co., 1200 Michigan Ave., Detroit, Mich.
Duquesne Steel Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Falk Company, Milwaukee, Wis.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Farrell Foundry & Machine Co., Ansonia, Conn.
Fawcus Machine Co., Pittsburgh, Pa.
Gleason Works, 1000 University Ave., Rochester, N. Y.
Grant Gear Wks., Inc., 151 Pearl St., Boston, Mass.
Horsburgh & Scott Co., 5114 Hamilton Ave., Cleveland, O.
Hubbard Steel Fdy. Co., E. Chicago, Ill.
Lansing Foundry Co., Lansing, Mich.
Link-Belt Company, Chicago, Ill.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
Mesta Machine Co., The, Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
National Roll & Foundry Co., Avonmore, Pa.
Newton Machine Tool Works, Inc., 23rd and Vine Sts., Philadelphia, Pa.
Pittsburgh Iron & Steel Foundries, Pittsburgh.
Rathbone, A. B., & J., Palmer, Mass.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

The Reliability of the Cleveland Horizontal

Boring
Drilling
Milling
Machines

is assured under any conditions that may arise.



This is proven by the excellent service these machines are giving in this country and abroad, both in government and private shops. Have you our illustrated catalog?

THE CLEVELAND MACHINE TOOL COMPANY

Established 1907

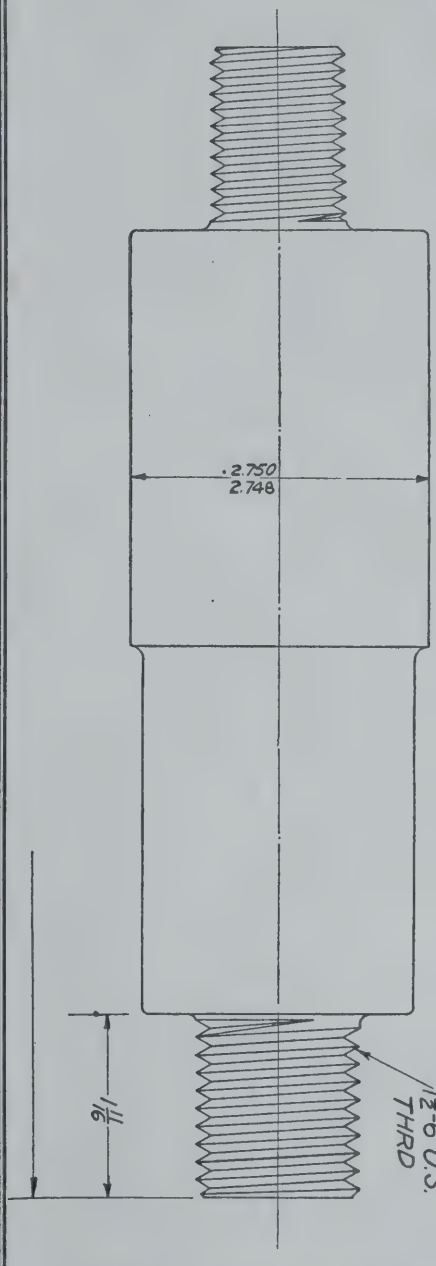
3215 Superior Ave.

CLEVELAND, OHIO, U. S. A.

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Chicago Office: 435 Stock Exchange Building
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Mills Internal, External, Right or Left Hand, Straight or Tapered

The Smalley-General
Standard Thread Miller
No. 24



a single purpose machine especially designed for production work.

Below is a typical operation and time study of work performed by this machine.

Machine- Smalley - General Thread Miller No. 24.

Piece Milled- Main Idler Gear Pin.

Thread- Diameter 1½ in., length 1 11/16 in., 6 pitch U. S. Standard.

Material- Cold Rolled Steel.

Time Study 2 minutes and 30 seconds floor to floor. 55 seconds for milling thread.

SMALLEY-GENERAL COMPANY, INC.

BAY CITY, MICHIGAN

AGENCIES

E. L. Essley Machinery Co., Chicago and Milwaukee
The Luster Machinery Co., Philadelphia, Pa.
Rudel-Belnap Machinery Co., Montreal and Toronto
Thomas I. Cochran, Addison Hotel, Detroit, Mich.

GEARS AND GEAR CUTTING (Iron and Steel) (Continued)
Ross-Meehan Foundries, Chattanooga, Tenn.
Simonds Mfg. Co., Pittsburgh, Pa.
Sivyer Steel Casting Co., Milwaukee, Wis.
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Van Dorn & Dutton Co., The, Cleveland, O.
Wappat Gear Works, 7123 Hamilton Ave., Pittsburgh, Pa.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
Woodard Machine Co., Wooster, O.

GEARS (Herringbone)
Falk Company, Milwaukee, Wis.
Fawcus Machine Co., Pittsburgh, Pa.
Gleason Works, 1000 University Ave., Rochester, N. Y.
Mesta Machine Co., Pittsburgh, Pa.
Woodward Machine Co., Wooster, O.

GEARS (Rawhide)
Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chgo.
Grant Gear Works, Inc., 151 Pearl St., Boston, Mass.
Horsburgh & Scott Co., 5114 Hamilton Ave., Cleveland, O.
Van Dorn & Dutton Co., The, Cleveland, O.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

GEARS (Reverse, Marine)
Carlyle Johnson Mach. Co., Manchester, Conn.

GENERATORS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Wickes Brothers, Dept. A, Saginaw, Mich.

GENERATORS (Direct and Alternating Current)
Duquesne Electric & Mfg. Co., Pittsburgh, Pa.
General Electric Co., Schenectady, N. Y.
Reliance Electric Engineering Co., 1088 Ivanhoe Rd., Cleveland, O.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

GENERATORS (Oxy-acetylene, oxygen, hydrogen)
Electrolabs Co., The, 15 William St., New York.

GLASS (Wire)
Truscon Steel Co., Youngstown, O.

GLOVES AND MITTS (Asbestos)
Holcomb Safety Garment Co., 14 S. Jefferson St., Chicago, Ill.

GLOVES (Sand Blast)
Hickory Steel-Grip Glove Co., 2539 N. Schubert Ave., Chicago, Ill.

GLOVES (Steel Grip)
Hickory Steel-Grip Glove Co., 2539 N. Schubert Ave., Chicago, Ill.

GLOVES (Workmen's)
Hickory Steel-Grip Glove Co., 2539 N. Schubert Ave., Chicago, Ill.

GOGGLES
Standard Optical Co., Geneva, N. Y.

GOLD (Boronic All-Metal in Shot Form)
American Boron Products Co., 636 Court St., Reading, Pa.

GRAIN FOR POLISHING
Norton Company, Worcester, Mass.

GRAPHITE
Dixon, Joseph, Crucible Co., Dept. 64-B, Jersey City, N. J.
Isley, Doubleday & Co., 231 Front St., New York City.

GRATE BARS
Bowler Fdry. Co., 1688 Columbus Rd., Cleveland.

GRATING (Flooring, Subway, Step and other Purposes)
Irving Iron Works Co., Long Island City, N. Y.

GREASES
Dixon, Joseph, Crucible Co., Dept. 64-B, Jersey City, N. J.
Isley, Doubleday & Co., 231 Front St., New York City.
Texas Co., Dept. T, 17 Battery Pl., New York City.

GREASE CUPS
Bowen Products Corp., Auburn, N. Y.

GRINDERS (Electric)
Cincinnati Electric Tool Co., 1501 Freeman Ave., Cincinnati, O.
Independent Pneumatic Tool Co., 600 West Jackson Blvd., Chicago, Ill.

GRINDERS (Electric Portable)
Van Dorn Electric Tool Co., Cleveland, O.

GRINDERS (Inserted Tooth)
Hunter Saw & Machine Co., Pittsburgh, Pa.
Pittsburgh Saw & Mfg. Co., 32nd and Smallman Sts., Pittsburgh, Pa.

GRINDERS (Pneumatic)
Chicago Pneumatic Tool Co., Chicago, Ill.
Cleveland Pneumatic Tool Co., Cleveland, O.
Independent Pneumatic Tool Co., 600 West Jackson Blvd., Chicago, Ill.

GRINDERS (Profile)
Cleveland Milling Machine Co., 18511 Euclid Ave., Cleveland, O.

GRINDING MACHINES
Blake & Johnson Co., Waterbury, Conn.
Fitchburg Grinding Mach. Co., Fitchburg, Mass.
Landis Tool Co., Waynesboro, Pa.
Modern Tool Co., 3rd and French Sts., Erie Pa.
Murray-Mylrea Machine Co., Antigo, Wis.
Newton Machine Tool Works, Inc., 32nd and Smallman Sts., Pittsburgh Pa.
New York Machinery Exchange, Inc., N. Y. C.
Norton Company, Worcester, Mass.
Ransom Mfg. Co., Oshkosh, Wis.
Simmons Machine Co., Inc., Albany, N. Y.
Toomey, Frank, Inc., Philadelphia, Pa.
Universal Grinding Mch. Co., Fitchburg, Mass.
Webster & Perks Tool Co., P. O. Box 1200, Springfield, O.
Wisconsin Electric Co., 3517 16th St., Racine, Wis.

GRINDING MACHINES (Tool)
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.

GRINDING AND POLISHING MACHINERY, SUPPLIES AND ACCESSORIES
Webster & Perks Tool Co., P. O. Box 1200, Springfield, O.

GRINDING PANS
Phillips & McLaren Co., Pittsburgh, Pa.

GRINDING WHEEL DRESSERS
Norton Company, Worcester, Mass.

GRINDING WHEELS
Norton Company, Worcester, Mass.

GRIT (Angular and Steel)
Globe Steel Co., Mansfield, Ohio.
Harrison Bros., Inc., Amesbury, Mass.
Harrison Supply Co., Boston, Mass.
Pittsburgh Crushed Steel Co., Pittsburgh, Pa.

GUARDS (Machine)
Meyers, Fred J., Mfg. Co., Hamilton, Ohio.
Page Steel & Wire Co., Adrian, Mich.

GUIDES (Locomotive)
Camden Forge Co., Camden, N. J.

GUIDES (For Wire, Rod and Billet Mills)
Morgan Construction Co., Worcester, Mass.

HAMMERS (Chipping and Riveting)
Chicago Pneumatic Tool Co., Chicago, Ill.
Cleveland Pneumatic Tool Co., Cleveland, O.
Independent Pneumatic Tool Co., 600 West Jackson Blvd., Chicago, Ill.
Oldham, Geo., & Sons Co., Philadelphia, Pa.

HAMMERS (Drop)
Alliance Machine Co., Alliance, O.
Beaudry & Co., Inc., 141 Milk St., Boston, Mass.
Bliss, E. W., Co., 8 Adams St., Brooklyn, N. Y.
Chambersburg Engrg. Co., Chambersburgh, Pa.
Erie Foundry Co., Erie, Pa.
Long & Allstatter Co., Hamilton, O.
Massillon Foundry & Mach. Co., Massillon, O.
Morgan Engineering Co., Alliance, O.
New York Machinery Exchange, Inc., N. Y. C.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Simmonds Machine Co., Inc., Albany, N. Y.
Toledo Machine & Tool Co., Toledo, O.
Toomey, Frank, Inc., Philadelphia, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
United Hammer Co., Oliver Bldg., Boston, Mass.

HAMMERS (Link Welding)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

HAMMERS (Power)
Beaudry & Co., Inc., 141 Milk St., Boston, Mass.
Bradley, C. C., & Son, Inc., Syracuse, N. Y.
Chambersburg Engrg. Co., Chambersburg, Pa.
Cleveland Punch & Shear Works Co., Cleveland, O.
Erie Foundry Co., Erie, Pa.
Morgan Engineering Co., Alliance, O.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.
United Hammer Co., Oliver Bldg., Boston, Mass.
Yoder Co., The, Engineers Bldg., Cleveland, O.

HAMMERS (Rawhide)
Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.

HAND PADS (Steel Grip)
Hickory Steel-Grip Glove Co., 2539 W. Schubert Ave., Chicago, Ill.

HANGERS (Shaft)
Hyatt Roller Bearing Co., Industrial Bearing Div., Metropolitan Tower, New York City.

HARDWARE (Wagon)
Cleveland Hardware Co., Cleveland, O.
Oliver Iron & Steel Co., Pittsburgh, Pa.

HEATERS (Feed Water)
Harrisburg Pipe & Pipe Bend'g Co., Harrisburg, Pa.

HEATING SYSTEMS
Buckeye Blower Co., Columbus, O.

HEAT INSULATING (Brick and Powder)
Celite Products Co., 11 Broadway, New York City.

HEAT TREATING
Bidle, W. S., Co., 1411 E. 45th St., Cleveland.
National Forge & Tool Co., Irvine, Warren Co. Pa.
Pan Motor Co., St. Cloud, Minn.
Pollak Steel Co., Carthage, Cincinnati, O.
Steel Improvement & Forge Co., Cleveland.

HOISTING ENGINES (Electric, Steam, Gasoline)
Byers, The John F., Machine Co., Ravenna, O.

HOISTING MACHINERY
Alliance Machine Co., Alliance, O.
Box, Alfred, & Co., Inc., Front and Poplar Sts., Philadelphia, Pa.
Brown Hoisting Machinery Co., Cleveland, O.
Byers, The John F., Machine Co., Ravenna, O.
Case Crane & Engineering Co., Columbus, O.
Cleveland Crane & Engrg. Co., Wickliffe, O.
Dake Engine Co., Grand Haven, Mich.
Illinois Malleable Iron Co., Chicago, Ill.
Industrial Works, Bay City, Mich.
Link-Belt Company, Chicago, Ill.
Morgan Engineering Co., Alliance, O.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Pawling & Harnischfeger Co., Milwaukee, Wis.
Shepard Elec. Crane & Hoist Co., Montour Falls, N. Y.
Toledo Bridge & Crane Co., 2900 Dorr St., Toledo, O.
Wellman-Seaver-Morgan Co., Cleveland, O.
Whiting Foundry Equipment Co., Harvey, Ill.
Williams, G. H., Co., Erie, Pa.

HOISTS (Chain)
Shepard Elec. Crane & Hoist Co., Montour Falls, N. Y.
Speidel, J. G., 412 Gordon St., Reading, Pa.

HOISTS (Electric)
Chicago Pneumatic Tool Co., 1041 Fisher Bldg., Chicago, Ill.
Euclid Crane & Hoist Co., Dept. B, Euclid, O.
Pawling & Harnischfeger Co., Milwaukee, Wis.
Shepard Elec. Crane & Hoist Co., Montour Falls, N. Y.
Toledo Bridge & Crane Co., 2900 Dorr St., Toledo, O.
Yale & Towne Mfg. Co., 9 E. 40th St., N. Y. C.

HOISTS (Pneumatic)
Chicago Pneumatic Tool Co., Chicago, Ill.
Curtis Pneumatic Machinery Co., St. Louis, Mo.
Northern Engineering Works, Detroit, Mich.
Shepard Elec. Crane & Hoist Co., Montour Falls, N. Y.

HOLDERS (Tool)—See TOOL HOLDERS

HOOPS AND BANDS
Bourne Fuller Co., The, Cleveland, O.
Illinois Steel Co., Chicago, Ill.
Pittsburgh Steel Co., Pittsburgh, Pa.
Ryerson, Joseph T., & Son, Chicago, Ill.
Sharon Steel Hoop Co., Sharon, Pa.
Weirton Steel Co., Weirton, W. Va.
West Leechburg Steel Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

HOOPS, BANDS, AND SHAPES (Galvanized)
Harold McCalla Co., The, 531-33 N. Fourth St., Philadelphia, Pa.

HOSE CLAMPS
Newark Stamping & Foundry Co., Newark, O.

HOSE (Pneumatic)
Chicago Pneumatic Tool Co., Chicago, Ill.
Cleveland Pneumatic Tool Co., Cleveland, O.
Independent Pneumatic Tool Co., 600 West Jackson Blvd., Chicago, Ill.

HOT BEDS
Morgan Construction Co., Worcester, Mass.

HOT BLAST STOVES
Sharpsville Boiler Works Co., Sharpsville, Pa.

HOUSES (Ready Cut)
Aladdin Co., 249 Aladdin St., Bay City, Mich.

HYDRAULIC MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Mackintosh-Hemphill & Co., Pittsburgh, Pa.
Morgan Engineering Co., Alliance, O.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

HYDRAULIC PRESS—See Presses (Hydraulic)

HYDROGEN GENERATING APPARATUS
Electrolabs Co., The, 15 William St., New York.

INDICATOR ATTACHMENTS
Lunkenheimer Co., Cincinnati, O.

INDUSTRIAL HAULAGE EQUIPMENT
Mercury Mfg. Co., 4118 S. Halsted St., Chicago.

INDUSTRIAL RAILWAYS
Foster, L. B., Co., Park Bldg., Pittsburgh, Pa.
Koppel Industrial Car & Equip. Co., Koppel, Pa.

INGOT (Electric Furnace Steel)
Latrobe Electric Steel Co., Latrobe, Pa.

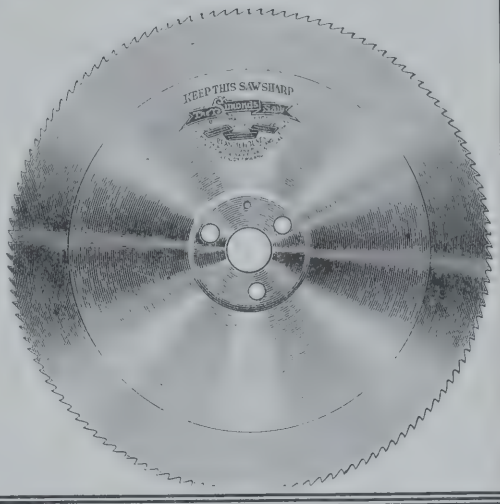
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SIMONDS METAL SAWS

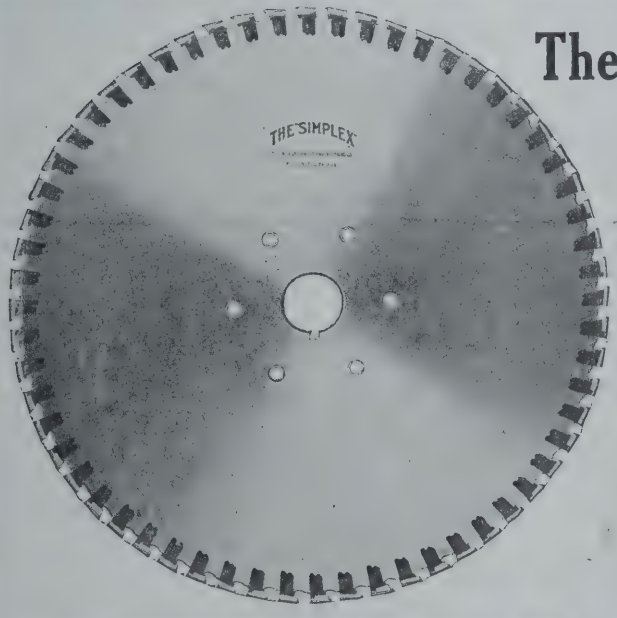
Quality, durability and cutting service are combined in Simonds Metal Cutting Saws. These saws are made by first-class mechanics, and are of quality steel from our own Steel Mills. Simonds Inserted Tooth or Solid Metal Saws are started right and finished right. You will find them in all parts of the world giving satisfaction on all kinds of metal cutting jobs.

Write for prices.



SIMONDS MANUFACTURING COMPANY
"THE SAW MAKERS"
FITCHBURG, MASS.

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PORTLAND, ORE.	VANCOUVER, B. C.	SEATTLE, WASH.
LOCKPORT, N. Y.	LONDON, ENGLAND.	ST. JOHN, N. B.



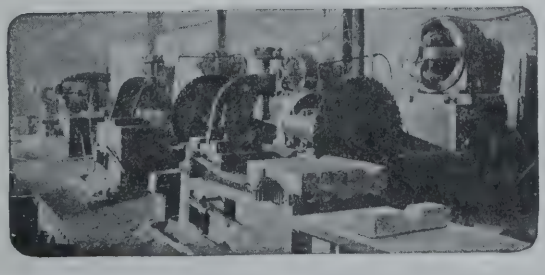
The SIMPLEX

The Inserted Tooth Saw that sets a New Goal for Sawing Efficiency—

Designed for cutting of the toughest metal. Every tooth an independent cutting tool in itself, which can be removed and sharpened separately. Blades made of superior quality crucible alloy steel, heat treated and finished by our own special process. Exceptionally strong and durable. Especially adapted for cutting rails, forgings, billets, blooms, bars, structural material, etc.

We also manufacture Slitting Saws, Milling Saws, Hot Saws, High Speed Friction Discs, Tube Saws, Pipe Cutters, Milling Cutters, Shear Blades, etc.

Write for Catalog No. 10.



PITTSBURGH SAW & MFG. CO.

Main Office and Works: — PITTSBURGH, PA.

Branches:—Philadelphia, Detroit, Chicago

INGOT MOLDS
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Fdy. & Mach. Co., Birdsboro, Pa.
Penn Mold & Mfg. Co., Wheeling, W. Va.
Pittsburgh Iron & Steel Foundries Co., Pittsburgh.
Valley Mould & Iron Corp., Sharpsville, Pa.

INGOT STRIPPERS
Price, T. W., Engineering Co., Woolworth Bldg., New York.

INGOTS (Steel)
American Rolling Mill Co., Middletown, O.
American Tube & Stamping Co., Bridgeport, Ct.
Brier Hill Steel Co., Youngstown, O.
Cambria Steel Co., Philadelphia, Pa.
Canton Steel Foundry Co., Canton, O.
Carnegie Steel Co., Pittsburgh, Pa.
Inland Steel Co., 1st Nat'l Bank Bldg., Chicago.
McConway & Torley Co., Arsenal Station, Pittsburgh.

INSERT (Steel)
Truscon Steel Co., Youngstown, O.

INSTRUMENTS (Electric Indicating and Recording)
Smith Gas Engrg. Co., The, Dayton, O.

INSULATING BRICK
Celite Products Co., 11 Broadway, New York City.
Quigley Furnace Specialties Co., 26 Cortlandt, N.Y.C.

INSULATION (Cold Storage)
Armstrong Cork & Insulation Co., 101 24th, Pittsburgh, Pa.

INSULATION (Furnaces, Boiler Settings, Ovens, Steam Pipe, Etc.)
Armstrong Cork & Insulation Co., 101 Twenty-fourth St., Pittsburgh, Pa.
Celite Products Co., 11 Broadway, New York City.

IRON
Andrews Steel Co., Newport, Ky.
Beals, McCarthy & Rogers, Buffalo, N. Y.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Monongahela Iron & Steel Co., Oliver Bldg., Pittsburgh, Pa.
Newport Rolling Mill Co., Newport, Ky.
Penn Iron & Steel Co., Creighton, Pa.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Whitaker-Glessner Co., Wheeling, W. Va.

IRON AND TIMBER LANDS
Neely, Benjamin C., Crystal Falls, Mich.

IRON (Bar)
Bourne Fuller Co., The, Cleveland, O.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Monongahela Iron & Steel Co., Oliver Bldg., Pittsburgh, Pa.

IRON (Boronic All-Metal in Shot Form)
American Boron Products Co., Inc., 636 Court St., Reading, Pa.

IRON (Chain)
Bethlehem Steel Co., So. Bethlehem, Pa.
Penn Iron & Steel Co., Cheighton, Pa.

IRON (Ornamental)
Belmont Iron Works, Philadelphia, Pa.

IRON (Silvery)
Globe Iron Co., Jackson, O.

IRON (Staybolt)
Penn Iron & Steel Co., Creighton, Pa.

IRON (Swedish)
Federal Tool & Alloy Steel Corp., Woolworth Bldg., New York City.

IRON (Vanadium)
Thomas Iron Co., The, Hokendauqua, Pa.

IRON ORE
Blackwell, Geo. G., Sons & Co., Ltd., Liverpool, Eng.
Breitung, E. N., & Co., Cleveland, O.
Cleveland-Cliffs Iron Co., Cleveland, O.
Hanna, M. A., & Co., Cleveland, O.
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh.
La Belle Iron Works, Steubenville, O.
Merritt, Franklin, E., 514 Plymouth Bldg., Minneapolis.
Oglebay, Norton & Co., Cleveland, O.
Pickands, Brown & Co., 332 South Michigan Ave., Chicago, Ill.
Pickands, Mather & Co., Cleveland, O.
Snyder, W. P., & Co., Pittsburgh, Pa.
Tod-Stambaugh Co., Perry-Payne Bldg., Cleveland.

IRON ORE (Manganiferous)
Marshall, Edward E., Buillitt Bldg., Philadelphia.

JIGS AND FIXTURES
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.

JOISTS AND STUDS (Pressed Steel)
Truscon Steel Co., Youngstown, O.

JOLT RAMMING MACHINES
Pridmore, Henry E., Chicago, Ill.

KEYS AND COTTERS (Machine)
Leard, Wm., Co., New Brighton, Pa.
Moltrup Steel Products Co., Beaver Falls, Pa.
Morton Mfg. Co., Muskegon Heights, Mich.
Standard Gauge Steel Co., Beaver Falls, Pa.

KEYSEATERS
Baker Bros., Toledo, O.
New York Machinery Exchange, Inc., N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.

KNIVES (Circular)
Hunter Saw & Machine Co., Pittsburgh, Pa.
Pittsburgh Saw & Mfg. Co., 32nd and Smallman Sts., Pittsburgh, Pa.

LADLE BRICK
McLain Fire Brick Co., Pittsburgh, Pa.

LADLES
Pennsylvania Engrg. Works, New Castle, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Sharpsville Boiler Works Co., Sharpsville, Pa.
Whiting Foundry Equipment Co., Harvey, Ill.

LADLES AND TRUCKS
Price, T. W., Engineering Co., Woolworth Bldg., New York.

LAMP GUARDS
Flexible Steel Lacing Co., 522 S. Clinton St., Chgo.

LAMPS (Arc and Incandescent)
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

LATH (Expanded Metal)
Truscon Steel Co., Youngstown, O.

LATHE DOGS (Safety)
Efficiency Device Corp., 199 Eighth St., Long Island City, N. Y.
Williams, J. H., & Co., 58 Richards St., Brooklyn, N. Y.

LATHE SPINDLES
National Forge & Tool Co., Irvine, Warren Co., Pa.

LATHE TOOLS (Turret)
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.
Warner & Swasey Co., The, Cleveland, Ohio.

LATHES
Acme Machine Tool Co., Cincinnati, O.
Bullard Machine Tool Co., Bridgeport, Conn.
Cincinnati Iron & Steel Co., Cincinnati, O.
Cleveland Duplex Machinery Co., 1224 W. 6th St., Cleveland, O.
Greaves-Klusman Co., Cincinnati, O.
Hill-Clarke & Co., Inc., Boston, Mass.
Jones & Lamson Mach. Co., Springfield, Vt.
Manning, Maxwell & Moore, Inc., 119 W. 40th St., New York City.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Pryibil Machine Co., Inc., P., 512-524 W. 41st St., New York.
Simmons Machine Co., Inc., Albany, N. Y.
Toomey, Frank, Inc., Philadelphia, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Warner & Swasey Co., Cleveland, O.

LATHES (Automatic and Semi-Automatic)
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.

LATHES (Chucking, Vertical)
Bullard Machine Tool Co., Bridgeport, Conn.
Simmons Machine Co., Inc., Albany, N. Y.

LATHES (Engine)
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.
New York Machinery Exchange, Inc., N. Y. C.
Toomey, Frank, Inc., Philadelphia, Pa.

LATHES (Horizontal Turret)
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.

LATHES (Spinning)
Pryibil Machine Co., Inc., P., 512-524 W. 41st St., New York.

LATHES (Turret)
Warner & Swasey Co., The, 5809 Carnegie Ave., Cleveland, Ohio.

LATHES (Vertical Turret)
Bullard Machine Tool Co., Bridgeport, Conn.
New York Machinery Exchange, Inc., N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.

LEAD
United Smelting & Al. Co., New Haven, Conn.

LEATHER (Hydraulic)
Chicago Belting Co., 113 N. Green St., Chicago, Ill.
Graton & Knight Mfg. Co., Worcester, Mass.

LEATHER BELTING—See BELTING (Leather)

LEATHER (Belt Lace)
Chicago Belting Co., 113 N. Green St., Chicago, Ill.
Graton & Knight Mfg. Co., Worcester, Mass.

LEG AND FOOT PROTECTORS
Holcomb Safety Garment Co., 12-14 S. Jefferson St., Chicago, Ill.
Safety First Shoe Co., P. O. Box 1164, Providence, R. I.
Simplex Safety Apparel Co., 1360 North Wells St., Chicago, Ill.

LETTERHEADS (Engraved)
Wiggins, John B., Co., 705 Peoples Gas Bldg., Chicago, Ill.

LIFTING MAGNETS
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
Electric Controller & Mfg. Co., Cleveland, O.
Ohio Electric & Controller Co., 5900 Maurice Ave., Cleveland, O.

LIMESTONE
Davison, Allen S., Co., Pittsburgh, Pa.
Dolomite Products Co., 1110 Euclid Ave., Cleveland, Ohio.

LININGS (Brass and Bronze)
Sandusky Foundry & Machine Co., Sandusky, O.

LININGS (Cupola, Furnace and Forge)
American Fire Clay & Products Co., Cleveland, O.
Brighton Fire Brick Co., New Brighton, Pa.
Louisville Fire Brick Works, Highland Park, Ky.
Mutton Hollow Fire Brick Co., Woodbridge, N. J.

LINK BELTING
Link-Belt Company, Chicago, Ill.

LOCKERS (Metal)
Edwards Mfg. Co., 401-451 Culvert St., Cincinnati.
Medart, Fred, Mfg. Co., Potomac and DeKalb Sts., St. Louis, Mo.

LOCOMOTIVE CRANES
Industrial Works, Bay City, Mich.
Shippers Car Line, Inc., New York City.
U. S. Crane Co., 112 S. Michigan Ave., Chicago, Ill.

LOCOMOTIVES
Koppel Industrial Car & Equip. Co., Koppel, Pa.
Vulcan Iron Wks., 1739 Main St., Wilkes-Barre, Pa.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

LOCOMOTIVES (Electric)
Atlas Car & Mfg. Co., Dept. E, Cleveland, O.
Baldwin Locomotive Works, Philadelphia, Pa.

LOCOMOTIVES (Second Hand)
Duquesne Electric & Mfg. Co., Pittsburgh, Pa.
Zelnicker, Walter A., Supply Co., St. Louis, Mo.

LUMBER (Pattern, Crating, Boxing)
Bradley, E. J., Thompson Bldg., Pottsville, Pa.
Dixon, Joseph, Crucible Co., Dept. 64-B, Jersey City, N. J.
Texas Co., Dept. T, 17 Battery Pl., N. Y. C.

MACHINE KEYS—See KEYS AND COTTERS (Machine)

MACHINE SHOP EQUIPMENT
Carpenter, Geo., B., & Co., Dept. 26, 440 N. Wells St., Chicago, Ill.
Efficiency Devices Corp., 199 Eighth St., Long Island City, N. Y.

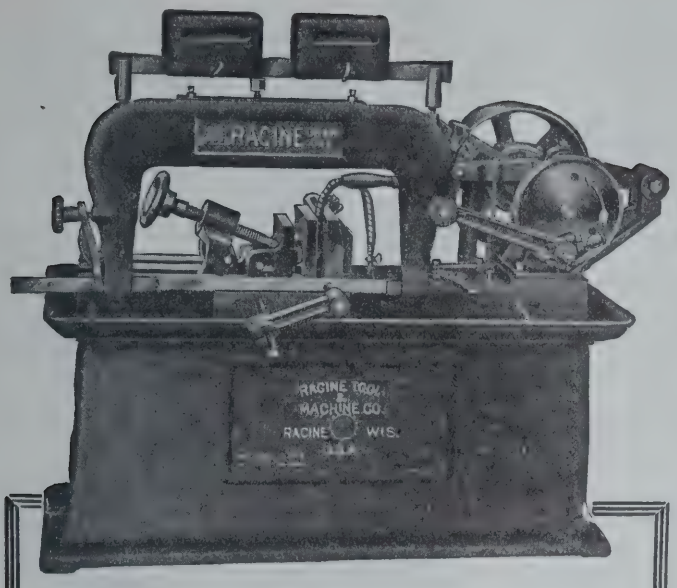
MACHINE WORK
Adamson Machine Co., Akron, O.
Aetna Foundry & Machine Co., Warren, Ohio.
Bettcher Stamping & Mfg. Co., Clark Ave., Cleveland, Ohio.
Blake & Johnson Co., Waterbury, Conn.
Bliss, E. W., Co., 8 Adams St., Brooklyn, N. Y.
Case Crane & Engrg. Co., The, Columbus, O.
Erie Foundry Co., Erie, Pa.
Hill Pump Valve Co., Chicago, Ill.
Ingram-Richardson Mfg. Co., Beaver Falls, Pa.
Klotz Machine Co., Sandusky, O.
Link-Belt Company, Chicago, Ill.
Mackintosh-Hemphill & Co., Pittsburgh, Pa.
Manning, Maxwell & Moore, Inc., 119 W. 40th St., New York City.
McKinnon Iron Works Co., Ashtabula, O.
Merrill Iron Works, Merrill, Wis.
Metal Machining Co., The, Cleveland, O.
Morgan Engrg. Co., Alliance, O.
Newbold, R. S., Son & Co., Norristown, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Standard Tool & Mfg. Co., 70 Lafayette Blvd., E., Detroit, Mich.
Toledo Bridge & Crane Co., 2900 Dorr St., Toledo, O.
Traylor Engineering & Mfg. Co., Allentown, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

MACHINERY (Pipe Bending)
American Pipe Bending Machine Co., 93 Pearl St., Boston, Mass.

MACHINERY (Second Hand)—See USED AND REBUILT EQUIPMENT

MACHINERY (Special)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Cuyahoga Machine & Tool Co., 12416 Euclid Ave., Cleveland.
Howard Iron Wks., 281 Chicago St., Buffalo, N.Y.
Lammert & Mann Co., Chicago, Ill.
Parker Company, 165 Broadway, New York City.
Treadwell Engineering Co., Easton, Pa.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



Faster, truer and more economical cutting——

Ordinarily, metal cutting is a slow, tedious and expensive job requiring frequent saw replacements.

THE "RACINE"

HIGH SPEED

METAL CUTTING MACHINES

have placed metal cutting upon an entirely different and much more efficient basis. With these machines the saw blade touches the material only upon the cutting stroke, while upon the non-cutting stroke the blade is lifted entirely free from the metal. This prolongs the life of the saw blade almost 500% and greatly increases its cutting efficiency.

There is a "Racine" made for every metal cutting purpose.

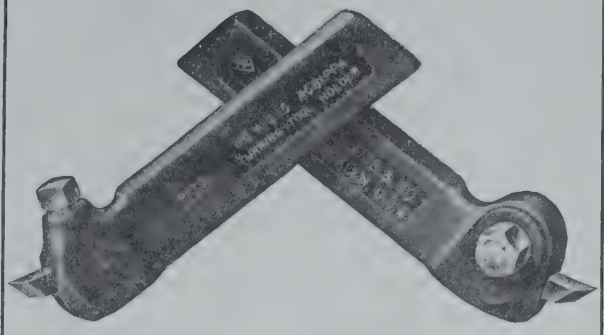
Let us know your requirements.

CATALOG D.

USE "RACINE" H. S. TUNGSTEN BLADES STANDARD THE WORLD OVER

RACINE TOOL AND MACHINE COMPANY

RACINE, WIS., U. S. A.



Williams' "Agrippa" Turning-Tool Holders Set Screw Pattern

TO provide increased and abundant variety of selection in Williams' "Agrippa" line of Tool Holders, we offer this Set Screw Pattern of Turning-tools primarily for those who use Cutters made of steel which has been hammered or rolled with a greater variation in size than is common to usual mill practice. But for the majority of users who purchase Cutters of accurate size, we recommend the original "Agrippa" Turning-tool of Cam Pattern as being stronger, more reliable and more generally satisfactory than any other method of Cutter-fastening. Both patterns are illustrated above.

The Screws, made of a fine grade of Alloy Steel, are accurately machined and carefully heat-treated and hardened. They are unusually tough and strong and give the maximum efficiency obtainable from this type of Cutter-fastening.

Right and Left Hand Offset and Straight Shanks in stock at same prices as Cam Pattern of Corresponding size.

A copy of our Machinist's Tools Booklet will be sent on request.

J. H. Williams & Co.

58 Richards St., Brooklyn, N. Y.
58 Vulcan St., Buffalo, N. Y.
58 South Clinton, Chicago, Ill.

MACHINES (Metal Working)
Joseph T. Ryerson & Son, Chicago, Ill.

MAGNESITE
Davison, Allen S., Co., Pittsburgh, Pa.

MAGNESITE (Calcined, Crude, Dead Burned)
Davison, Allen S., Co., Pittsburgh, Pa.

MAGNETS (Lifting)—See LIFTING MAGNETS

MANGANESE ORE
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.
Marshall, Edward E., Bullitt Bldg., Philadelphia.

MARINE EQUIPMENT AND HARDWARE
Camden Forge Co., Camden, N. J.

MATCH PLATES
Newark Stamping & Foundry Co., Newark, O.

MELTING BAR (Low Phosphorus)
Penn Iron & Steel Co., Creighton, Pa.

MERCHANT MILL EQUIPMENT
Morgan Construction Co., Worcester, Mass.

METAL CLEANER
Ford, J. B., Co., Wyandotte, Mich.

METAL CUTTING MACHINES
Peerless Mach. Co., 1605 Racine St., Racine, Wis.
Racine Tool & Machine Co., Racine, Wis.

METAL CUTTING TOOLS (Stellite)
Haynes Stellite Co., The, Kokomo, Ind.

METAL SPECIALTIES AND PARTS
Erdle Perforating Co., Rochester, N. Y.
White, L. & I. J., Co.,
15 Columbia St., Buffalo, N. Y.

METAL STAMPING
Crosman Stamping Co., Ypsilanti, Mich.

METALLIC PAINT
Clinton Metallic Paint Co.. Clinton, N. Y.

METALLURGISTS
American Metallurgical Corp.,
Franklin Trust Bldg., Philadelphia. Pa.
Haynes Stellite Co., The, Kokomo, Ind.
Steel Improvement & Forge Co., Cleveland. O.

METAL (Perforated)
Erdle Perforating Co.. Rochester, N. Y.

METALS (Nonferrous)
Blackwell, Geo. G., Sons & Co.. Ltd., Liverpool, Eng.
Lubricating Metal Co., 2 Rector St., New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

METERS (Gas and Air)
Cutler-Hammer Mfg. Co., Milwaukee, Wis.

MILL AND MINE SUPPLIES
Colonial Supply Co., Pittsburgh, Pa.

MILLING MACHINES
Becker Milling Machine Co., Boston, Mass.
Cincinnati Milling Mach. Co., Cincinnati, O.
Cleveland Milling Machine Co.,
18511 Euclid Ave., Cleveland, O.
Espen Lucas Machine Works,
Front and Girard Ave., Philadelphia, Pa.
Gisholt Machine Co., Madison, Wis.
Kempsmith Mfg. Co., Milwaukee, Wis.
Newton Machine Tool Works, Inc.,
23rd and Vine St., Philadelphia, Pa.
New York Machinery Exchange, Inc., N. Y. C.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.
Smalley-General Co., Bay City, Mich.
Toomey, Frank, Inc., Philadelphia, Pa.

MILLING MACHINES (Thread)
Gisholt Machine Co.,
1203 E. Washington Ave., Madison, Wis.
Smalley-General Co., Bay City, Mich.

MILLING STAR PLATES
Newark Stamping & Foundry Co., Newark, O.

MILLS (Blooming, Universal, Plate, Sheet, Tin, Bar)
Garrison, A., Foundry Co., Bingham St., Pbgh.
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.

MILLS (Boring and Turning, Vertical)
Bullard Machine Tool Co., Bridgeport, Conn.

MINING MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Link-Belt Company, Chicago, Ill.
McMyler Interstate Co., Cleveland, O.

MITTENS (Steel Grip)
Hickory Steel-Grip Glove Co.,
2539 W. Schubert Ave., Chicago, Ill.

MIXERS (Concrete)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pbgh.
Standard Scale & Supply Co., Pittsburgh, Pa.

MIXERS (Hot Metal)
Pennsylvania Engineering Works, New Castle, Pa.

MIXERS (Sand)
National Engineering Co., Machinery Hall Bldg.,
549 W. Washington St., Chicago, Ill.

MIXING, KNEADING, TEMPERING AND PUGGING MACHINERY
American Clay Machinery Co., Bucyrus, O.
National Engineering Co., Machinery Hall Bldg.,
549 W. Washington St., Chicago, Ill.
Stevenson Co., The, Wellsville, O.

MOLDERS SHOES
Safety First Shoe Co.,
P. O. Box 1164, Providence, R. I.

MOLDING (Automobile)
Empire Art Metal Co., College Pt., N. Y.

MOLDING MACHINES
Arcade Mfg. Co., Dept. C, Freeport, Ill.
Cleveland-Osborn Mfg. Co.,
5401 Hamilton Ave., Cleveland, O.
Pridmore, Henry E., Chicago, Ill.

MOLDS (Ingot)
Penn Mold & Mfg. Co., Wheeling, W. Va.
Valley Mould & Iron Co., Sharpsville, Pa.

MONEL METAL
Williams & Co., Inc.,
901-937 Pennsylvania Ave., Pittsburgh, Pa.

MOTION PICTURE ADVERTISING FILMS
Rothacker Film Mfg. Co.,
1339 Diversey Parkway, Chicago, Ill.

MOTORS
Wickes Brothers, Dept. A, Saginaw, Mich.

MOTORS (Air)
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

MOTORS (Electric)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Duquesne Electric & Mfg. Co., Pittsburgh, Pa.
General Electric Co., Schenectady, N. Y.
Reliance Electric Engineering Co.,
1088 Ivanhoe Rd., Cleveland, O.
Toomey, Frank, Inc., Philadelphia, Pa.
Westinghouse Electric & Mfg. Co.,
E. Pittsburgh, Pa.
Wisconsin Electric Co., 3517 16th St., Racine, Wis.

MOTORS (Second Hand)
Carrell, W. A., & Co., Pittsburgh, Pa.
Duquesne Electric & Mfg. Co., Pittsburgh, Pa.
Klein, Nathan, & Co., Inc., New York City.

MOVING AND SHORING
Eichleay, John, Jr., Co.,
So. 20th and Wharton Sts., Pittsburgh, Pa.

MUFFLERS (Wire Mill Equipment)
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

NAIL MACHINERY (Wire)
National Machinery Co., Tiffin, O.
Sleeper & Hartley, Inc., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

NAILS
American Steel Co., Pittsburgh, Pa.
Cambria Steel Co., Philadelphia, Pa.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
La Belle Iron Works, Steubenville, O.
Pittsburgh Steel Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

NAME PLATES (Cast Bronze, Stamped and Etched)
Pannier Bros. Stamp Co, 207-209 Sandusky St., Pgh.

NICKEL
Boker, H., & Co., Inc., 101 Duane St., N. Y. C.
Williams & Co., Inc.,
901-937 Pennsylvania Ave., Pittsburgh, Pa.

NICKEL (Boronic All-Metal in Shot Form)
American Boron Products Co., Inc.,
636 Court St., Reading, Pa.

NICKEL STEEL (Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

NUTS (See Bolts and Nuts)

NUTS (Semi-Finished)
Camden Forge Co., Camden, N. J.

OIL (Fuel)—See FUEL OIL

OIL (Lubricating)
Biery Oil Co., Franklin Tr. Bldg., Franklin, Pa.
Texas Co., Dept. T, 17 Battery Place, N. Y. C.

OIL CUPS
Bowen Products Corp., Auburn, N. Y.

OPEN HEARTH FURNACES (See Furnaces—Open-Hearth)

ORE (Chrome)
Blackwell, Geo. G., Sons & Co., Ltd., Liverpool, Eng.

ORE DOCKS
American Bridge Co., New York City.

ORE HANDLING MACHINERY
Brown Hoisting Machinery Co., Cleveland, O.
Hayward Co., The, 50-54 Church St., N. Y. C.
Toledo Bridge & Crane Co.,
2900 Dorr St., Toledo, O.
Wellman-Seaver-Morgan Co., Cleveland, O.

OVENS (Coke, By-Product Recovery)
Koppers Co., The, Pittsburgh, Pa.

OXY-ACETYLENE WELDING AND CUTTING—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)

OXYGEN AND HYDROGEN GENERATING EQUIPMENT
Electrolabs Co., The, 15 William St., New York.

OXYGEN IN CYLINDERS
Linde Air Products Co., 30 E. 42nd St., N. Y. C.
Oxweld Acetylene Co., Newark, N. J.

PACKING (Leather)
Chicago Belting Co.,
113 N. Green St., Chicago, Ill.
Graton & Knight Mfg. Co., Worcester, Mass.

PACKING (Metallic)
Lubricating Metal Co., 2 Rector St., New York City

PAINT (Silica-Graphite)
Dixon, Joseph, Crucible Co.,
Dept. 64-B, Jersey City, N. J.

PANS (Lathe and Shop)
American Bridge Co., New York City.

PATENT ATTORNEY
Boyle, John Jr., Attorney at Law,
Ouray Bldg., Washington, D. C.

PATTERN LUMBER
Johnson, Thomas V., Inc.,
1532 1st Nat. Bank Bldg., Milwaukee.

PATTERN PLATES (Aluminum)
Newark Stamping & Foundry Co., Newark, O.

PATTERN PLATES (Steel)
Moltrup Steel Products Co., Beaver Falls, Pa.

PATTERNS (Electric Furnace)
Acme Steel & Malleable Iron Wks., Buffalo, N. Y.

PATTERNS (Wood and Metal)
Arcade Mfg. Co., Dept. C, Freeport, Ill.
Empire Art Metal Co., College Pt., N. Y.
Hammond Malleable Iron Co., Hammond, Ind.
Howard Iron Wks., 281 Chicago St., Buffalo, N. Y.
Johnston Pattern Co., 320 Rex Ave., Canton, O.
Newark Stamping & Foundry Co., Newark, O.
Pridmore, Henry E., Chicago, Ill.

PICKLING MACHINES
Mesta Machine Co., Pittsburgh, Pa.

PIG IRON
Addy, The, Matthew, Co., Cincinnati, O.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Brier Hill Steel Co., Youngstown, O.
Central Iron & Steel Co., Harrisburg, Pa.
Cleveland-Cliffs Iron Co., Cleveland, O.
Crocker Bros., New York City.
Davison, Allen S., Co., Pittsburgh, Pa.
Delaware River Steel Co., Chester, Pa.
Donner Steel Co., Inc., Buffalo, N. Y.
Globe Iron Co., Jackson, O.
Hanna, M. A., & Co., Cleveland, O.
Hickman, Williams & Co.,
1343 Oliver Bldg., Pittsburgh, Pa.
Illinois Steel Co., Chicago, Ill.
Inland Steel Co., 1st Nat'l Bk. Bldg., Chicago.
Iron Trade Products Co.,
903 Farmers Bank Bldg., Pittsburgh, Pa.
La Belle Iron Works, Steubenville, O.
McKeefrey & Co., Leetonia, O.
Mitchell-Diggins Iron Co., Cadillac, Mich.
Mohr, J. J., & Son, Bullitt Bldg., Philadelphia.
Mudge, Edmund W., & Co., Frick Bldg., Pittsb'gh
National Trading Co.,
1302 Swetland Bldg., Cleveland, O.
Pickands, Brown & Co.,
332 South Michigan Ave., Chicago, Ill.
Pickands, Mather & Co., Cleveland, O.
Republic Iron & Steel Co., Youngstown, O.
Rogers, Brown & Co., Cincinnati, O.
Snyder, W. P., & Co., Pittsburgh, Pa.
Stewart Iron Co., Ltd., Cleveland, O.
Struthers Furnace Co., The, Cleveland, O.
Tennessee Coal, Iron & R. R. Co.,
Birmingham, Ala.
Thomas Furnace Co., Milwaukee, Wis.
Thomas Iron Co., The, Hokendauqua, Pa.
Wickwire Steel Co., Buffalo, N. Y.

PIG IRON CASTING MACHINES
Pittsburgh Coal Washer Co.,
312 Fulton Bldg., Pittsburgh, Pa.

PILE DRIVERS
Industrial Works, Bay City, Mich.

PILING (Creosoted)
Republic Creosoting Co., Indianapolis, Ind.

PILING (Steel Sheet)
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Lackawanna Steel Co., Buffalo, N. Y.

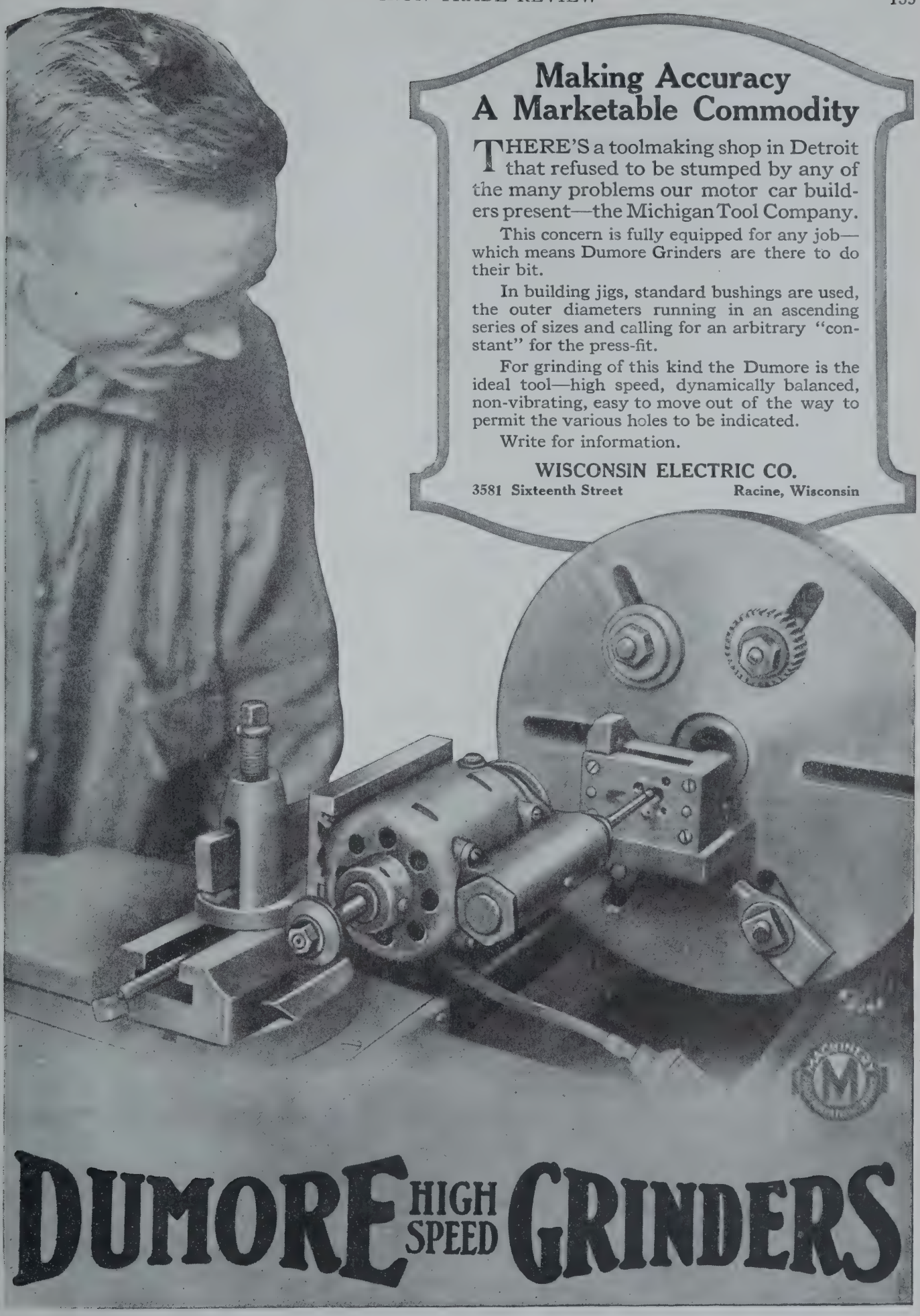
PINION ROD AND WIRE
Rathbone, A. B. & J., Palmer, Mass.

PINIONS (See Gears and Gear Cutting)

PINS
Camden Forge Co., Camden, N. J.
Champion Rivet Co., The, Cleveland, O.

PIPE (Culvert)
Newport Rolling Mill Co., Newport, Ky.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



Making Accuracy A Marketable Commodity

THERE'S a toolmaking shop in Detroit that refused to be stumped by any of the many problems our motor car builders present—the Michigan Tool Company.

This concern is fully equipped for any job—which means Dumore Grinders are there to do their bit.

In building jigs, standard bushings are used, the outer diameters running in an ascending series of sizes and calling for an arbitrary "constant" for the press-fit.

For grinding of this kind the Dumore is the ideal tool—high speed, dynamically balanced, non-vibrating, easy to move out of the way to permit the various holes to be indicated.

Write for information.

WISCONSIN ELECTRIC CO.

3581 Sixteenth Street Racine, Wisconsin

DUMORE HIGH SPEED GRINDERS

PIPE (Iron and Steel)
American Bridge Co., New York City.
American Steel Export Co., New York City.
Central Tube Co., Pittsburgh, Pa.
Cincinnati Iron & Steel Co., Cincinnati, O.
Empire Art Metal Co., College Point, N. Y.
La Belle Iron Works, Steubenville, O.
Mark Mfg. Co., 1907 Dempster St., Evanston, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Reading Iron Company, Reading, Pa.
Republic Iron & Steel Co., Youngstown, O.
Wheeling Steel & Iron Co., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE (Wrought Iron)
Reading Iron Company, Reading, Pa.

PIPE (Wrought Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

PIPE BENDING MACHINES
American Pipe Bending Machine Co.,
93 Pearl St., Boston, Mass.

PIPE BENDS
American Tube & Pipe Bending Co., The,
Cleveland, O.
Pittsburgh Piping & Equipment Co., Pittsburgh.
Power Piping Co., Pittsburgh, Pa.

PIPE FITTINGS
Illinois Malleable Iron Co., Chicago, Ill.
Lunkenheimer Co., The, Cincinnati, O.
Pittsburgh Piping & Equip. Co., Pittsburgh, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Walworth Manufacturing Co., Boston, Mass.

PIPE MACHINES
New York Machinery Exchange, Inc., N. Y. C.

PIPE MILL MACHINERY
Landis Machine Co., Waynesboro, Pa.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

PIPE THREADING MACHINERY
Standard Engrg. Co., Ellwood City, Pa.
Toomey, Frank, Inc., Philadelphia, Pa.
Treadwell Engineering Co., Easton, Pa.

PIPING CONTRACTORS
Pittsburgh Piping & Equip. Co., Pittsburgh, Pa.
Power Piping Co., Pittsburgh, Pa.

PISTON RODS
Bay City Forge Co., Erie, Pa.
Camden Forge Co., Camden, N. J.
Heppenstall Forge & Knife Co., Pittsburgh, Pa.

PISTON RODS (Hammered)
National Forge & Tool Co., Irvine, Warren Co., Pa.

PLANERS
Cincinnati Planer Co., Cincinnati, O.
Cleveland Planer Company, Cleveland, O.
Cleveland Punch & Shear Works Co., Cleveland, O.
Manning, Maxwell & Moore, Inc.,
119 W. 40th St., New York City.
Morton Mfg. Co., Muskegon Heights, Mich.
Newton Mch. Tool Wks., Inc., 23d & Vine St., Phil.
New York Machinery Exchange, Inc., N. Y. C.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.
Toomey, Frank, Inc., Philadelphia, Pa.

PLATE CASTORS
Hyatt Roller Bearing Co., Industrial Bearing
Division, Metropolitan Tower, New York City.
Phoenix Iron Works Co., Meadville, Pa.
Terry, Edward F., Mfg. Co.,
Grand Central Terminal New York City.
Treadwell Engineering Co., Easton, Pa.

PLATE PUNCH TABLES
Terry, Edward F., Mfg. Co.,
Grand Central Terminal, New York City.

PLATES (Rolled Steel—Floor)
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Wood, Alan, Iron & Steel Co., Philadelphia, Pa.

PLATES (Sheared and Universal)
Steel & Tube Co. of America,
111 W. Washington St., Chicago, Ill.

PLATES (Steel and Iron)
Allegheny Steel Co., Pittsburgh, Pa.
American Rolling Mill Co., Middletown, O.
Belmont Iron Works, Philadelphia, Pa.
Bethlehem Steel Co., So. Bethlehem, Pa.
Brier Hill Steel Co., Youngstown, O.
Carbon Steel Co., Pittsburgh, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Central Iron & Steel Co., Harrisburg, Pa.
Cincinnati Iron & Steel Co., Cincinnati, O.
Cleveland Steel Co., Cleveland, O.
Illinois Steel Co., Chicago, Ill.
Illinois Steel Co., Warehouse Dept., Chicago, Ill.
Inland Steel Co., 1st Nat'l Bk. Bldg., Chicago.
La Belle Iron Works, Steubenville, O.
Lackawanna Steel Co., Buffalo, N. Y.
Midvale Steel & Ordnance Co., Philadelphia, Pa.
Nagle Steel Co., Pottstown, Pa.
National Pressed Steel Co., Massillon, O.
Otis Steel Co., Cleveland, O.
Parker Company, 165 Broadway, New York City.
Republic Iron & Steel Co., Youngstown, O.
Rownson, Drew & Clydesdale, Inc.,
68 William St., New York City.
Ryerson, Jos. T., & Son, Chicago, Ill.
Scully Steel & Iron Co., 1127 New Continental
& Commercial Bank Bldg., Chicago, Ill.
Sharon Steel Hoop Co., Sharon, Pa.
Shippers Car Line, New York City.
Tennessee Coal, Iron & R. R. Co.,
Birmingham, Ala.
Whitaker-Glessner Co., Wheeling, W. Va.
Wood, Alan, Iron & Steel Co., Philadelphia, Pa.
Worth Steel Co., Claymont, Del.
Youngstown Sheet & Tube Co., Youngstown, O.

PLATES (Terne and Tin) See TIN PLATE

PLATING
Bellevue Mfg. Co., Bellevue, O.

PLUNGERS (For Pumps)
Camden Forge Co., Camden, N. J.

POINTERS (Wire and Rod)
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

POLES (Tubular Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

POLISHERS AND BUFFERS (Electric)
Wisconsin Electric Co., 3517 16th St., Racine, Wis.

POLISHING MACHINERY
Webster & Perks Tool Co.,
P. O. Box 1200, Springfield, O.

POWDER (Blasting)
Aetna Explosives Co., Inc., 165 Broadway, N.Y.C.

POWDERED COAL EQUIPMENT
Fuller-Lehigh Co., Fullerton, Pa.
Pulverized Fuel Equipment Corp.,
30 Church St., New York, N. Y.
Quigley Furnace Specialties Co.,
26 Cortlandt St., New York City.
Raymond Bros. Impact Pulverizer Co.,
1313 N. Branch St., Chicago, Ill.
Stevenson Co., The, Wellsville, O.

POWER TOOLS
Southwark Foundry & Mach. Co., Philadelphia, Pa.

POWER TRANSMITTING MACHINERY
Link-Belt Co., Chicago, Ill.
Westinghouse Elec. & Mfg. Co., E. Pbgh., Pa.

PRESSED METAL
Empire Art Metal Co., Inc., College Pt., N. Y.
Gler Pressed Steel Co., Lansing, Mich.
National Pressed Steel Co., Massillon, O.
Truscon Steel Co., Youngstown, O.

PRESSED METAL (Service for Buyers of)
E. W. Bliss Co., 8 Adams St., Brooklyn, N. Y.

PRESSES
Birdsboro Steel Fdy. & Mach. Co., Birdsboro, Pa.
Bliss, E. W., Co., 8 Adams St., Brooklyn, N. Y.
Chambersburg Engrg. Co., Chambersburg, Pa.
Cleveland Punch & Shear Works Co., Cleveland, O.
Erie Foundry Co., Erie, Pa.
Garrison, A., Foundry Co., Bingham St., Pbgh.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
Massillon Foundry & Mach. Co., Massillon, O.
Morgan Engineering Co., Alliance, O.
New York Machinery Exchange, Inc., N. Y. C.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Southwark Foundry & Machine Co.,
430 Washington Ave., Philadelphia, Pa.
Toledo Machine & Tool Co., Toledo, O.
Toomey, Frank, Inc., Philadelphia, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Wood, R. D., & Co., Philadelphia, Pa.

PRESSES (Forcing)
Logemann Brothers Co.,
3120 Burleigh Ave., Milwaukee, Wis.
New York Machinery Exchange, Inc., N. Y. C.
Southwark Fdy. & Mach. Co., Philadelphia, Pa.

PRESSES (Hydraulic)
Bethlehem Steel Co., Bethlehem, Pa.
Logemann Brothers Co.,
3120 Burleigh Ave., Milwaukee, Wis.
Mesta Machine Co., Pittsburgh, Pa.
Wood, R. D., & Co., 400 Chestnut St., Phila.

PRESSES (Scrap Bundling)
Chicago Baling Press Mfg. Co.,
315 South La Salle St., Chicago.
Logemann Brothers Co.,
3120 Burleigh Ave., Milwaukee, Wis.

PRESSURE REGULATORS
Connersville Blower Co., The, Connersville, Ind.

PUBLIC ACCOUNTANTS
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1328 Broadway, New York City.

PULLEYS (Friction Clutch)
Carlyle Johnson Mach. Co., Manchester, Conn.

PUMPS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
Chambersburg Engrg. Co., Chambersburg, Pa.
Connersville Blower Co., The, Connersville, Ind.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Deming Co., Salem, O.
Prescott Company, Menominee, Mich.
Roots, P. H. & F. M., Co., Connersville, Ind.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Vulcan Iron Wks., 1739 Main St., Wilkes-Barre, Pa.

PUMPS (Centrifugal)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Camden Iron Works, Heulings Lippincott &
Alfred J. Major, Receivers, Camden, N. J.
Morris Machine Works, Baldwinsville, N. Y.
Wheeler Condenser & Engineering Co.,
Carteret, N. J.

PUMPS (Electric)
Prescott Company, Menominee, Mich.

PUMPS (Fuel Oil)
Gilbert & Barker Mfg. Co.,
22 Union St., Springfield, Mass.

PUMPS (Hydraulic)
Logemann Brothers Co.,
3120 Burleigh Ave., Milwaukee, Wis.
Prescott Company, Menominee, Mich.

PUMPS (Mine)
Prescott Company, Menominee, Mich.

PUMPS (Motor Driven)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

PUMPS (Power)
Prescott Company, Menominee, Mich.

PUMPS (Steam)
Prescott Company, Menominee, Mich.

PUNCHES AND DIES
Richards, I. P., Co., Inc., Providence, R. I

PUNCHES (Multiple)
Thomas Spacing Mach. Co., Fulton Bldg., Pittsbg.

PUNCHING AND SHEARING MACHINERY
Alliance Machine Co., Alliance, O.
Bliss, E. W., Co., 8 Adams St., Brooklyn, N. Y.
Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
Cleveland Punch & Shear Works Co., Cleveland, O.
Erie Foundry Co., Erie, Pa.
Garrison, A., Foundry Co., Bingham St., Pbgh.
Long & Allstatter Co., Hamilton, O.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
Morgan Engineering Co., Alliance, O.
New York Machinery Exchange, Inc., N. Y. C.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Quickwork Co., St. Marys O.
Simmons Machine Co., Inc., Albany, N. Y.
Southwark Foundry & Machine Co., Philadelphia.
Thomas Spacing Mach. Co., Fulton Bldg., Pittsbg.
Toomey, Frank, Inc., Philadelphia, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Wood, R. D., & Co., Philadelphia, Pa.

PYROMETERS
Brown Instrument Co., Philadelphia, Pa.

RACKS (Steel or Tool)
Angle Steel Stool Co., Otsego, Mich.
Empire Art Metal Co., Inc., College Pt., N. Y.

RAIL JOINTS
Lackawanna Steel Co., Buffalo, N. Y.

RAILROAD SUPPLIES
Carpenter, Geo. B., & Co.,
Dept. 26, 440 N. Wells St., Chicago, Ill.
Zelnicker, Walter A., Supply Co., St. Louis, Mo.

RAILS
American Steel Export Co., New York City.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Cambria Steel Co., Johnstown, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Foster, L. B., Co., Park Bldg., Pittsburgh, Pa.
Green, L. A., Pittsburgh, Pa.
Illinois Steel Co., Chicago, Ill.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Lackawanna Steel Co., Buffalo, N. Y.
Morrison & Risman, Buffalo, N. Y.
Pennsylvania Rail Co.,
5 Nassau St., New York City.
Tenn. Coal, Iron & R. R. Co., Birmingham, Ala.

RAILS (Girder)
Bethlehem Steel Co., The, So. Bethlehem, Pa.

RAILS (High Tee)
Bethlehem Steel Co., The, So. Bethlehem, Pa.

RAMMERS (Pneumatic)
Chicago Pneumatic Tool Co.,
1041 Fisher Bldg., Chicago, Ill.
Oldham, Geo., & Sons Co., Philadelphia, Pa.

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Aladdin Co., 249 Aladdin St., Bay City, Mich.

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1041 Fisher Bldg., Chicago, Ill.
Cleveland Milling Machine Co.,
18511 Euclid Ave., Cleveland O.
McCroskey Tool Corp., Meadville, Pa.
National Tool Co., Cleveland, O.

REAMERS (Bridge)
Boker, H., & Co., Inc., 101 Duane St., N. Y. C.

REAMERS (Electric Portable)
Van Dorn Electric Tool Co., Cleveland, O.

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RECORDERS (Time)
Gisholt Machine Co.,
1203 E. Washington Ave., Madison, Wis

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Cleveland Milling Machine Co., 18511 Euclid Ave., Cleveland, O.

RHEOSTATS
Electric Controller & Mfg. Co., Cleveland, O.

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Akron-Selle Co., The, Akron, O.
Camden Forge Co., Camden, N. J.

RINGS (Steel and Weldless)
Bay City Forge Co., Erie, Pa.
Camden Forge Co., Camden, N. J.
Tacony Steel Co., Tacony, Pa.

RIVETERS (Electric)
Thomson Electric Welding Co., Lynn, Mass.

RIVETERS (Pneumatic)
Chicago Pneumatic Tool Co., Chicago, Ill.
Cleveland Pneumatic Tool Co., Cleveland, O.

RIVETING MACHINERY
Allen, John F., Co., 372 Gerard Ave., N. Y. C.
Chambersburg Engrg. Co., Chambersburg, Pa.
Shuster, The, F. B., Co., New Haven, Conn.
Southwark Fdy. & Mch. Co., Philadelphia, Pa.

RIVETS
Atlas Bolt & Screw Co., Ivanhoe Rd., Cleveland.
Bethlehem Steel Co., Bethlehem, Pa.
Bourne Fuller Co., The, Cleveland, O.
Carlin, Anthony, Co., Cleveland, O.
Champion Rivet Co., The, Cleveland, O.
Illinois Steel Co., Warehouse Dept., Chicago, Ill.
Inland Steel Co., First Nat'l Bk. Bldg., Chicago.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
National Bolt & Nut Co., Pittsburgh, Pa.
New Haven Rivet Co., Webster St., New Haven, Conn.
Oliver Iron & Steel Co., Pittsburgh, Pa.
Progressive Mfg. Co., Torrington, Conn.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos., T., & Son, Chicago, Ill.

ROD MILLS
Treadwell Engineering Co., Easton, Pa.

RODS
United Smelting & Al. Co., New Haven, Conn.

RODS (Connecting)
Bay City Forge Co., Erie, Pa.
Camden Forge Co., Camden, N. J.
Leard, Wm., Co., New Brighton, Pa.
Standard Gauge Steel Co., Beaver Falls, Pa.

RODS (Drill)
Aborn Steel Co., Inc., 24 Clarke St., N. Y. C.
Boker, H., & Co., Inc., 101 Duane St., N. Y. C.
Kidd Drawn Steel Co., Aliquippa, Pa.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.

RODS (Iron and Steel)
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Federal Export Corp., 42 Broadway, New York City.

RODS (Welding)—See WELDING RODS

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Hyatt Roller Bearing Co., Industrial Bearing Division, Metropolitan Tower, New York City.

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Abramsen Engrg. Co., Pittsburgh, Pa.
Alliance Machine Co., Alliance, O.
Birdsboro Steel Fdy. & Mach. Co., Birdsboro, Pa.
Blake & Johnson Co., Waterbury, Conn.
Bonney-Floyd Co., The, Columbus, Ohio.
Farrel Foundry & Machine Co., Ansonia, Conn.
Garrison, A., Foundry Co., Bingham St., Pbgh.
Hubbard Steel Fdy. Co., E. Chicago, Ind.
Hyde Park Fdy. & Mch. Co., Hyde Park, Pa.
Industrial Works, Bay City, Mich.
Lewis Foundry & Machine Co., The, Pbgh., Pa.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Morgan Engineering Co., Alliance, O.
National Roll & Foundry Co., Avonmore, Pa.
Newbold, R. S., & Son Co., Norristown, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Standard Engineering Co., Ellwood City, Pa.
Treadwell Engineering Co, Easton, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Wellman-Seaver-Morgan Co., Cleveland, O.
Wheeling Mold & Fdy. Co., Wheeling, W. Va.
Woodard Machine Co., Wooster, O.

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Birdsboro Steel Fdy. & Mach. Co., Birdsboro, Pa.
Camden Forge Co., Camden, N. J.
Canton Steel Foundry Co., Canton, O.
Duquesne Steel Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Farrel Fdy. & Mach. Co., Ansonia, Conn.
Garrison, A., Fdy. Co., Bingham St., Pittsburgh.
Hubbard Steel Fdy. Co., E. Chicago, Ind.
Hyde Park Fdy. & Mach. Co., Hyde Park, Pa.
Lewis Foundry & Machine Co., The, Pittsburgh.
Mackintosh-Hemphill & Co., Pittsburgh, Pa.
Mesta Machine Co., Pittsburgh, Pa.
National Roll & Foundry Co., Avonmore, Pa.
Otis Steel Co., Cleveland, O.
Pittsburgh Iron & Steel Foundries Co., Pbgh., Pa.
Pittsburgh Rolls Corporation, Pittsburgh, Pa.
Seaman, Sleeth & Co., Pittsburgh, Pa.
Standard Engrg. Co., Ellwood City, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Wheeling Mold & Foundry Co., Wheeling, W. Va.
Youngstown Fdy. & Mch. Co., Youngstown, O.

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Camden Forge Co., Camden, N. J.
Mackintosh-Hemphill & Co., Pittsburgh, Pa.
New York Machinery Exchange, Inc., N. Y. C.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

ROLLS (Brass, Bronze and Copper)
Sandusky Foundry & Machine Co., Sandusky, O.

ROLLS (Hardened Steel)
Bethlehem Steel Co., So. Bethlehem, Pa.

ROLLS (Sand Chilled and Steel)
Wheeling Mold & Foundry Co., Wheeling, W. Va.

ROLLS (Wood)
Dart, E. M., Mfg. Co., Providence, R. I.

ROOFING AND SIDING (Composite)
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Texas Co., Dept. T, 17 Battery Pl., New York City.

ROOFING AND SIDING (Iron and Steel)
American Rolling Mill Co, Middletown, O.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Brier Hill Steel Co., Youngstown, O.
Inland Steel Co., First Nat'l Bk. Bldg., Chicago.
La Belle Iron Works, Steubenville, O.
Mahoning Valley Steel Co., Niles, O.
Newport Rolling Mill Co., Newport, Ky.
Republic Iron & Steel Co., Youngstown, O.
Whitaker-Glessner Co., Wheeling, W. Va.

ROPE (Manila)
Waterbury Company, 63 Park Row, New York City.

ROPE DRESSING
Macomber & Whyte Rope Co., Kenosha, Wis.
Texas Co., Dept. T, 17 Battery Pl., N. Y. C.

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National Tube Co., Frick Bldg., Pittsburgh, Pa.

SAFETY DEVICES (Electric)
Efficiency Devices Corp., 199 Eighth St., Long Island City, N. Y.
Electric Controller & Mfg. Co., Cleveland, O.

SAFETY STEPS AND TREADS
Irving Iron Works Co., Long Island City, N. Y.

SAND
Gordon Sand Co., Inc., The, Conneaut, O.
Portage Silica Co., The, 602 Stambaugh Bldg., Youngstown, O.
Standard Sand & Machine Co., Cleveland, O.
U. S. Silica Co., 122 S. Michigan Ave., Chicago.

SAND (Sand Blast)
Portage Silica Co., The, 602 Stambaugh Bldg., Youngstown, O.
U. S. Silica Co., 122 S. Michigan Ave., Chicago.

SAND BLAST (Shot)
Globe Steel Co., Mansfield, O.

SAND BLAST EQUIPMENT AND ACCESSORIES
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Hoevel Mfg. Corp., 154 Ogden Ave., Jersey City, N. J.
Pangborn Corporation, Hagerstown, Md.

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Hickory Steel-Grip Glove Co., 2539 W. Schubert Ave., Chicago, Ill.

SAND BLAST GRIT AND SHOT
Globe Steel Co., Mansfield, Ohio.
Harrison Bros., Inc., Amesbury, Mass.
Harrison Supply Co., Boston, Mass.
Pittsburgh Crushed Steel Co., Pittsburgh, Pa.

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Bartlett & Snow, C. O., Co., Cleveland, O.
Link-Belt Company, Chicago, Ill.
Standard Sand & Machine Co., Cleveland, O.

SAND DRYERS
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Pangborn Corporation, Hagerstown, Md.

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American Foundry Equipment Co., 52 Vanderbilt Ave., New York, N. Y.
Arcade Mfg. Co., Dept. C, Freeport, Ill.
National Engineering Co., Machinery Hall Bldg., 549 W. Washington St., Chicago, Ill.
Standard Sand & Machine Co., Cleveland, O.
Stevenson Co., The, Wellsville, O.
Whiting Foundry Equip. Co., Harvey, Ill.

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SAND SEPARATOR
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Truscon Steel Co., Youngstown, O.

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Pgh. Saw & Mfg. Co., 32d & Smallman Sts., Pgh.

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Hunter Saw & Machine Co., Pittsburgh, Pa.
Pgh. Saw & Mfg. Co., 32d & Smallman Sts., Pgh.

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Hunter Saw & Machine Co., Pittsburgh, Pa.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
National Roll & Foundry Co., Avonmore, Pa.
Newton Machine Tool Works, 23rd and Vine Sts., Philadelphia.
New York Machinery Exchange, Inc., N. Y. C.
Peerless Machine Co., 1605 Racine St., Racine, Wis.
Pgh. Saw & Mfg. Co., 32d & Smallman Sts., Pgh.
Racine Tool & Machine Co., Racine, Wis.
Simmons Machine Co., Inc., Albany, N. Y.
Simonds Mfg. Co., Fitchburg, Mass.
United Engrg. & Fdy. Co., Pittsburgh, Pa.

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Standard Scale & Supply Co., Pittsburgh, Pa.

SCALES (Automatic Dial)
Standard Scale & Supply Co., Pittsburgh, Pa.

SCALES (Railroad)
Standard Scale & Supply Co., Pittsburgh, Pa.

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The Hendrick Mfg. Co., Carbondale, Pa.
Link-Belt Company, Chicago, Ill.

SCREW MACHINE PRODUCTS
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Barnes, Wallace, Co., Bristol, Conn.
Fernald Manufacturing Co., North East, Pa.
Ferry Cap & Set Screw Co., 2151 Scranton Rd., Cleveland, O.
Metal Machining Tool Co., Cleveland, O.
New Haven Rivet Co., Webster St., New Haven, Conn.
Standard Screw Products Co., Detroit, Mich.

SCREW MACHINES
Acme Machine Tool Co., Cincinnati, O.
New York Machy. Exchange, Inc., New York City.
Simmons Machine Co., Inc., Albany, N. Y.
Warner & Swasey Co., Cleveland, O.

SCREW STEEL (Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

SCREW STOCK (Free Cutting)
Betz-Pierce Co., Cleveland, O.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Miner-Morse Corp., 15th and Ash Sts., Erie, Pa.
Standard Gauge Steel Co., Beaver Falls, Pa.
Wyckoff Drawn Steel Co., 728 Frick Bldg., Pbgh.

SCREWS
Atlas Bolt & Screw Co., Ivanhoe Rd., Cleveland.
Clark Bros. Bolt Co., Milldale, Conn.
Ferry Cap & Set Screw Co., 2151 Scranton Rd., Cleveland, O.
F. P. Screw Co., 2279 E. 77th St., Cleveland, O.
Milton Mfg. Co., Milton, Pa.
Progressive Mfg. Co., Torrington, Conn.
Russell, Burdsall & Ward Bolt & Nut Co, Port Chester, N. Y.

SCREWS (Cap and Set)
Ferry Cap & Set Screw Co., 2151 Scranton Rd., Cleveland, O.

SEAMLESS STEEL TUBING—See TUBES (Cold Drawn Seamless Steel)

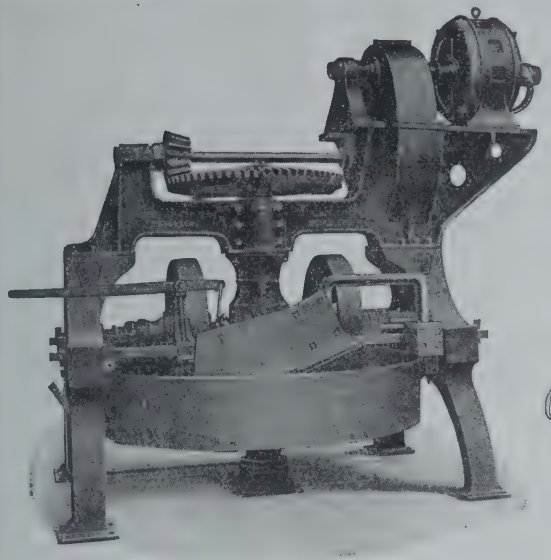
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SHAFT AND PIPE STRAIGHTENERS (Hydraulic)
Logemann Brothers Co., 3120 Burliegh Ave., Milwaukee, Wis.

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SHAFTING
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Cambria Steel Co., Philadelphia, Pa.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Cumberland Steel Co., Cumberland, Md.
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Fitzsimons Co., Youngstown, O.
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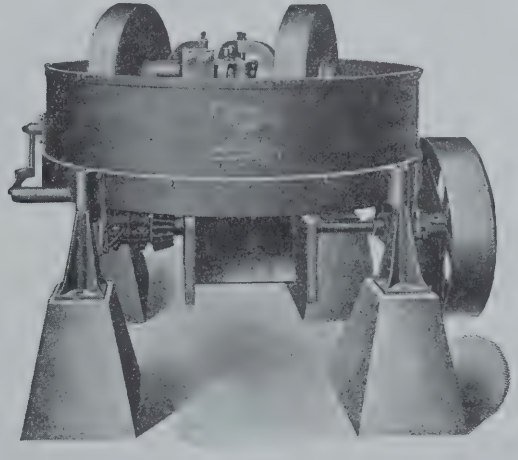
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Moltrup Steel Products Co., Beaver Falls, Pa.
National Forge & Tool Co., Irvine, Warren Co., Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Republic Iron & Steel Co., Youngstown, O.
Joseph T. Ryerson & Son, Chicago, Ill.
Standard Gauge Steel Co., Beaver Falls, Pa.
United Alloy Steel Corp., Canton, O.
Vanadium Corp. of America,
Equitable Bldg., New York.
Ward's, Edgar T., Sons Co.,
44 Farnsworth St., Boston, Mass.
Wyckoff Drawn Steel Co., 728 Frick Bldg., Pbgh.

SHAFTING (Cold Drawn)

Bethlehem Steel Co., Bethlehem, Pa.
Union Drawn Steel Co., Beaver Falls, Pa.

SHAFTING (Turned)

Union Drawn Steel Co., Beaver Falls, Pa.

SHAPERS

Cleveland Punch & Shear Works Co., Cleveland, O.
Manning, Maxwell & Moore, Inc.,
119 W. 40th St., New York City.
Morton Mfg. Co., Muskegon Heights, Mich.
Newton Machine Tool Works, Inc.,
23rd and Vine Sts., Philadelphia, Pa.
New York Machinery Exchange, Inc., N. Y. C.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Simmons Machine Co., Inc., Albany, N. Y.
Toomey, Frank, Inc., Philadelphia, Pa.

SHAPES (Cold Drawn)

Empire Art Metal Co., College Point, N. Y.

SHAPES (Flat, Round and Hexagon)

Empire Art Metal Co., College Point, N. Y.
Fitzsimons Co., Youngstown, O.
Tacony Steel Co., Tacony, Pa.

SHAPES (Iron and Steel)

Belmont Iron Works, Philadelphia, Pa.
Bethlehem Steel Co., So. Bethlehem, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Empire Art Metal Co., Inc., College Pt., N. Y.
Illinois Steel Co., Chicago, Ill.
Interstate Iron & Steel Co.,
104 S. Michigan Ave., Chicago, Ill.
Moltrup Steel Products Co., Beaver Falls, Pa.
Phoenix Iron Co., 20 S. 15th St., Philadelphia.
Republic Iron & Steel Co., Youngstown, O.
Tacony Steel Co., Tacony, Pa.
Ward's, Edgar T., Sons Co.,
54 Farnsworth St., Boston, Mass.

SHAPES (Special)

Empire Art Metal Co., College Point, N. Y.
Fitzsimons Co., Youngstown, O.

SHEAR BLADES AND KNIVES

Cleveland Knife & Forge Co., Cleveland, O.
Heppenstall Forge & Knife Co., Pittsburgh, Pa.
Pittsburgh Knife & Forge Co., Pittsburgh, Pa.
White, L. & I. J., Co.,
15 Columbia St., Buffalo, N. Y.

SHEARS

Bliss, E. W., Co., 8 Adams St., Brooklyn, N. Y.
Doelger & Kirsten, Milwaukee, Wis.
Erie Foundry Co., Erie, Pa.
Garrison, A., Foundry Co., Bingham St., Pbgh.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
Mesta Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
New York Machinery Exchange, Inc., N. Y. C.
Quickwork Co., St. Marys, O.
Simmons Machine Co., Inc., Albany, N. Y.
Toledo Machine & Tool Co., Toledo, O.
Treadwell Engineering Co., Easton, Pa.
United Engrg. & Fdy. Co., Pittsburgh, Pa.
Yoder Co., The, Engineers Bldg., Cleveland, O.

SHEARS (Alligator, automatic)

Doelger & Kirsten, Milwaukee, Wis.
Mesta Machine Co., Pittsburgh, Pa.

SHEARS (For cutting scrap iron and for special shearing)

Doelger & Kirsten, Milwaukee, Wis.

SHEET BARS

Andrews Steel Co., Newport, Ky.
Brier-Hill Steel Co., Youngstown, O.
Carnegie Steel Co., Pittsburgh, Pa.
Harrisburg Pipe & Pipe Bending Co.,
Harrisburg, Pa.
Illinois Steel Co., Chicago, Ill.
Inland Steel Co., 1st Nat'l Bank Bldg., Chicago.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
La Belle Iron Works, Steubenville, O.
Lackawanna Steel Co., Buffalo, N. Y.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Mudge, Edmund W., & Co., Frick Bldg., Pittsb'gh
Republic Iron & Steel Co., Youngstown, O.
Sharon Steel Hoop Co., Sharon, Pa.
United Alloy Steel Corp., Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEET METAL STRAIGHTENER

Shuster, The F. B., Co., New Haven, Conn.

SHEET METAL WORK

Bellevue Mfg. Co., Bellevue, O.
Crosby Co., 183 Pratt St., Buffalo, N. Y.
Waverly Co., The, Indianapolis, Ind.

SHEET METAL WORKING MACHINERY

Bliss, E. W., Co., 8 Adams St., Brooklyn, N. Y.
National Roll & Foundry Co., Avonmore, Pa.
Quickwork Co., St. Marys, O.
Yoder Co., The, Engineers Bldg., Cleveland, O.

SHEET ZINC

United Smelting & Alum. Co., New Haven, Conn.

SHEETS

Allegheny Steel Co., Pittsburgh, Pa.
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Carnahan Tin Plate & Sheet Co., Canton, O.
Central Iron & Steel Co., Harrisburg, Pa.
Cleveland Steel Co., Cleveland, O.
Hudson Sheet & Tin Plate Co.,
Hickox Bldg., Cleveland, O.
Illinois Steel Co., Chicago, Ill.
Illinois Steel Co., Warehouse Dept., Chicago, Ill.
Inland Steel Co., Chicago, Ill.
La Belle Iron Works, Steubenville, O.
Mahoning Valley Steel Co., Niles, O.
Mansfield Sheet & Tin Plate Co., Mansfield, O.
Nagle Steel Co., Pottstown, Pa.
Newport Rolling Mill Co., Newport, Ky.
Otis Steel Co., Cleveland, O.
Parker Company, 165 Broadway, New York City.
Pittsburgh Galvanizing Co., Inc.,
991 Union Arcade, Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Rownson, Drew & Clydesdale, Inc.,
68 William St., New York City.
Ryerson, Jos. T., & Son, Chicago, Ill.
Seneca Iron & Steel Co., Buffalo, N. Y.
Sharon Steel Hoop Co., Sharon, Pa.
Trumbull Steel Co., Warren, O.
Weirton Steel Co., Weirton, W. Va.
Whitaker-Glessner Co., Wheeling, W. Va.

SHEETS (Automobile)

Brier Hill Steel Co., Youngstown, O.
Mahoning Valley Steel Co., Niles, O.
Mansfield Sheet & Tin Plate Co., Mansfield, O.
Otis Steel Co., Cleveland, O.
Sharon Steel Hoop Co., Sharon, Pa.
Trumbull Steel Co., The, Warren, Ohio.
Whitaker-Glessner Co., Wheeling, W. Va.

SHEETS (Black)

American Sheet & Tin Plate Co., Pittsburgh, Pa.
Brier Hill Steel Co., Youngstown, O.
Bourne Fuller Co., The, Cleveland, O.
Canton Sheet Steel Co., Canton, Ohio.
Carnahan Tin Plate & Sheet Co., Canton, O.
Inland Steel Co., First Nat'l Bk., Bldg., Chicago.
La Belle Iron Works, Steubenville, O.
Mahoning Valley Steel Co., Niles, O.
Mansfield Sheet & Tin Plate Co., Mansfield, O.
Newport Rolling Mill Co., Newport, Ky.
Republic Iron & Steel Co., Youngstown, O.
Seneca Iron & Steel Co., Buffalo, N. Y.
Sharon Steel Hoop Co., Sharon, Pa.
Trumbull Steel Co., The, Warren, Ohio.
Wheeling Steel & Iron Co., Wheeling, W. Va.
Whitaker-Glessner Co., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Blue Annealed)

American Sheet & Tin Plate Co., Pittsburgh, Pa.
Brier Hill Steel Co., Youngstown, O.
Bourne Fuller Co., The, Cleveland, O.
Canton Sheet Steel Co., Canton, Ohio.
Inland Steel Co., First Nat'l Bk. Bldg., Chicago.
La Belle Iron Works, Steubenville, O.
Mahoning Valley Steel Co., Niles, O.
Newport Rolling Mill Co., Newport, Ky.
Otis Steel Co., Cleveland, O.
Republic Iron & Steel Co., Youngstown, O.
Sharon Steel Hoop Co., Sharon, Pa.
Trumbull Steel Co., The, Warren, Ohio.
Whitaker-Glessner Co., Wheeling, W. Va.
Wood, Alan, Iron & Steel Co., Philadelphia, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Cold Rolled)

Mahoning Valley Steel Co., Niles, O.
Seneca Iron & Steel Co., Buffalo, N. Y.
Sharon Steel Hoop Co., Sharon, Pa.
Ward's, Edgar T., Sons Co.,
54 Farnsworth St., Boston, Mass.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Corrugated)

American Sheet & Tin Plate Co., Pittsburgh, Pa.
Brier Hill Steel Co., Youngstown, O.
Canton Sheet Steel Co., Canton, Ohio.
Inland Steel Co., First Nat'l Bk. Bldg., Chicago.
La Belle Iron Works, Steubenville, O.
Mahoning Valley Steel Co., Niles, O.
Newport Rolling Mill Co., Newport, Ky.
Republic Iron & Steel Co., Youngstown, O.
Seneca Iron & Steel Co., Buffalo, N. Y.
Trumbull Steel Co., The, Warren, Ohio.
Whitaker-Glessner Co., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Dead Soft)

American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
La Belle Iron Works, Steubenville, O.
Mahoning Valley Steel Co., Niles, O.
Mansfield Sheet & Tin Plate Co., Mansfield, O.
Newport Rolling Mill Co., Newport, Ky.
Sharon Steel Hoop Co., Sharon, Pa.
Whitaker-Glessner Co., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Deep Stamping)

Brier Hill Steel Co., Youngstown, O.
Mahoning Valley Steel Co., Niles, O.
National Pressed Steel Co., Massillon, O.
Sharon Steel Hoop Co., Sharon, Pa.

SHEETS (Deoxidized)

Carnahan Tin Plate & Sheet Co., Canton, O.
Sharon Steel Hoop Co., Sharon, Pa.

SHEETS (Electrical)

American Sheet & Tin Plate Co., Pittsburgh, Pa.
Sharon Steel Hoop Co., Sharon, Pa.
Trumbull Steel Co., The, Warren, Ohio.

SHEETS (Galvanized)

Allegheny Steel Co., Pittsburgh, Pa.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Brier Hill Steel Co., Youngstown, O.
Canton Sheet Steel Co., Canton, Ohio.
Inland Steel Co., First Nat'l Bk. Bldg., Chicago.
La Belle Iron Works, Steubenville, O.
Newport Rolling Mill Co., Newport, Ky.
Pittsburgh Galvanizing Co., Inc.,
991 Union Arcade, Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Joseph T. Ryerson & Son, Chicago, Ill.
Sharon Steel Hoop Co., Sharon, Pa.
Trumbull Steel Co., The, Warren, Ohio.
Whitaker-Glessner Co., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Nickel)

Boker, H., & Co., Inc., 101 Duane St., N. Y. C.
Newport Rolling Mill Co., Newport, Ky.

SHEETS (Perforated)

Erdle Perforating Co., Rochester, N. Y.

SHEETS (Polished and Planished)

Carnahan Tin Plate & Sheet Co., Canton, O.
Mahoning Valley Steel Co., Niles, O.
Mansfield Sheet & Tin Plate Co., Mansfield, O.

SHEETS (Roofing)—See ROOFING AND SIDING

SHEETS (Tin)—See TIN PLATE

SHELVING (Steel)

Edwards Mfg. Co., 401-451 Culvert St., Cincinnati
Empire Art Metal Co., Inc., College Pt., N. Y.
Medart, Fred, Mfg. Co.,
Potomac and DeKalb Sts., St. Louis, Mo.

SHIPBUILDERS' EQUIPMENT AND TOOLS

Carpenter, Geo. B., & Co.,
Dept. 26, 440 N. Wells St., Chicago, Ill.

SHIPBUILDING SHAPES

Bethlehem Steel Co., So. Bethlehem, Pa.

SHOES (Molders)

Safety First Shoe Co.,
P. O. Box 1164, Providence, R. I.

SHOP FURNITURE

Western Tool & Mfg. Co., Springfield, O.

SHOT (Steel Sand Blast)

Globe Steel Co., Mansfield, O.
Harrison Bros., Inc., Amesbury, Mass.
Harrison Supply Co., Boston, Mass.
Pittsburgh Crushed Steel Co., Pittsburgh, Pa.

SHUTTERS (Steel Rolling)

Kinnear Mfg. Co., The, Columbus, O.

SILICA BRICK

American Refractories Co., Chicago, Ill.

SILVER (Boronic All-Metal in Shot Form)

American Boron Products Co., Inc.,
636 Court St., Reading, Pa.

SINTERING (Fine Ores)

Aerican Ore Reclamation Co.,
71 Broadway, New York City.

SKELP (Grooved)

Steel & Tube Co. of America,
111 W. Washington St., Chicago, Ill.

SKELP (Open Hearth Basic)

Sharon Steel Hoop Co., Sharon, Pa.

SKIP HOISTS

Bartlett & Snow, C. O., Co., Cleveland, O.

SLABS

Andrews Steel Co., Newport, Ky.
Donner Steel Co., Inc., Buffalo, N. Y.
Federal Export Corp., 42 Broadway, N. Y. C.
La Belle Iron Works, Steubenville, O.
Lackawanna Steel Co., Buffalo, N. Y.
Mudge, Edmund W., & Co., Frick Bldg., Pittsb'gh
Steel & Tube Co. of America,
111 W. Washington St., Chicago, Ill.
Whitaker-Glessner Co., Wheeling, W. Va.

SLEEVES (Brass and Bronze)

Sandusky Foundry & Machine Co., Sandusky, O.

SLEEVES AND NOZZLES

Bessemer Brick Co., Monongahela, Pa.
Manown Mfg. Co., Oliver Bldg., Pittsburgh, Pa.

SLOTTERS

New York Machy. Exchange, Inc., New York City.

SOLDER

United Smelt'g & Alum. Co., New Haven, Conn.

SPACING TABLES

Thomas Spacing Mach. Co., Fulton Bldg., Pittsbg.

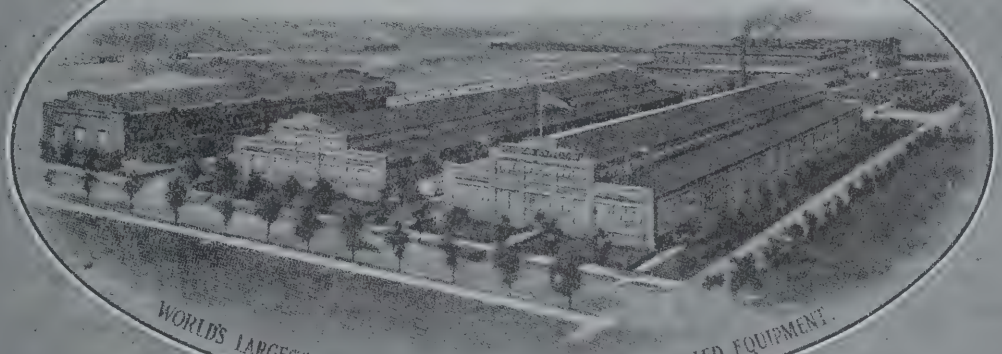
See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

PANGBORN INVESTMENT

1920

ALL-WAYS SERVICE AND ALWAYS

PANGBORN CORPORATION
HAGERSTOWN, MD.



WORLD'S LARGEST MANUFACTURERS SAND BLAST AND ALLIED EQUIPMENT

Let us Serve YOU



Best efforts throughout the organization are inspired by this appeal in each department

PANGBORN
SAND BLAST SPECIALISTS
P. O. BOX 858

SPELTER
United Smelting & Alum. Co., New Haven, Conn.

SPIEGELEISEN
Bethlehem Steel Co., Bethlehem, Pa.
Marshall, Edward E., Bullitt Bldg., Philadelphia.

SPIKES
Bethlehem Steel Co., So. Bethlehem, Pa.
Illinois Steel Co., Chicago, Ill.
Republic Iron & Steel Co., Youngstown, O.

SPOT WELDING
Soss Mfg. Co., Brooklyn, N. Y.

SPOT WELDING MACHINES (Electric)
Thomson Spot Welder Co., Lynn, Mass.

SPRINGS
Barnes, Wallace, Co., Bristol, Conn.
Duer Spring & Mfg. Co., Pittsburgh, Pa.
Fort Pitt Spring & Mfg. Co., Pittsburgh, Pa.
General Spring & Wire Co., Detroit, Mich.
Raymond Mfg. Co., Center St., Corry, Pa.
Vanadium Corp. of America,
Equitable Bldg., New York.

SQUEEZER MOLDING MACHINES
Pridmore, Henry E., Chicago, Ill.

SQUEEZERS (Power)
Pridmore, Henry E., Chicago, Ill.

STACKS (Steel)
American Bridge Co., New York City.
Phoenix Iron Works Co., Meadville, Pa.
Sharpsville Boiler Works Co., Sharpsville, Pa.

STAIR STEPS AND TREADS (Nonslipping)
Irving Iron Works Co., Long Island City, N. Y.

STAMP HOLDERS (Steel)
Pannier Bros. Stamp Co.,
207-9 Sandusky St., Pittsburgh, Pa.

STAMPINGS
American Tube & Stamp'g Co., Bridgeport, Conn.
Bellevue Mfg. Co., Bellevue, O.
Bettcher Stamping & Mfg. Co., Cleveland, O.
Bossert Corporation, The, Utica, N. Y.
Brewer-Tichener Corp., Cortland, N. Y.
Crosby Co., 183 Pratt St., Buffalo, N. Y.
Crosman Stampings Co., Ypsilanti, Mich.
Dow Wire & Iron Works, Louisville, N. Y.
Empire Art Metal Co., Inc., College Pt., N. Y
Erdle Perforating Co., Rochester, N. Y.
Fernald Manufacturing Co., North East, Pa.
Gier Pressed Steel Co., Lansing, Mich.
Lansing Stamping & Tool Co., Lansing, Mich.
Newark Stamping & Foundry Co., Newark, O.
New Haven Rivet Co.,
Webster St., New Haven, Conn.
Standard Tool & Mfg. Co.,
70 Lafayette Blvd. E., Detroit, Mich.
Toledo Bridge & Crane Co.,
2900 Dorr St., Toledo, O.
Truscon Steel Co., Youngstown, O.
Youngstown Pressed Steel Co.,
32131 Wilson Ave., Youngstown, O.

STAMPINGS IN BLACK IRON (Baked or Porcelain Enamel Finish)
Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

STAMPINGS (Service for Buyers of)
E. W. Bliss Co., 8 Adams St., Brooklyn, N. Y.

STAMPS (Steel)
Pannier Bros. Stamp Co.,
207-9 Sandusky St., Pittsburgh, Pa.

STAPLES (Wire)
Pittsburgh Steel Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

STARTERS (Electric Motor)
Electric Controller & Mfg. Co., Cleveland, O.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

STEAM APPLIANCES
Pgbh. Valve, Foundry & Construction Co., Pbgh.

STEEL
Aborn Steel Co., Inc., 24 Clarke St., N. Y. C.
American Steel Export Co., New York City.
American Tube & Stamping Co., Bridgeport, Conn.
American Bridge Co., New York City.
Andrews Steel Co., Newport, Ky.
Beals, McCarthy & Rogers, Buffalo, N. Y.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Birmingham Steel Corp., Birmingham, Ala.
Brier Hill Steel Co., Youngstown, O.
Cambria Steel Co., Philadelphia, Pa.
Carbon Steel Co., Pittsburgh, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Federal Export Corp., 42 Broadway, N. Y. C.
Franklin Steel Works, Franklin, Pa.
Hickman, Williams & Co.,
1343 Oliver Bldg., Pittsburgh, Pa.
Illinois Steel Co., Chicago, Ill.
Illinois Steel Co., Warehouse Dept., Chicago, Ill.
Interstate Iron & Steel Co.,
104 S. Michigan Ave., Chicago, Ill.
Kidd Drawn Steel Co., Aliquippa, Pa.
La Belle Iron Works, Steubenville, O.
Latrobe Electric Steel Co., Latrobe, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Morris, Wheeler & Co.,
30th and Locust St., Philadelphia, Pa.
Nagle Steel Co., Pottstown, Pa.
National Pressed Steel Co., Massillon, Ohio.
National Trading Co.,
1302 Swetland Bldg., Cleveland, O.
Otis Steel Co., Cleveland, O.
Pacific Coast Steel Co., San Francisco, Cal.
Parker Company, 165 Broadway, New York City.
Pittsburgh Galvanizing Co., Inc.,
991 Union Arcade, Pittsburgh, Pa.
Rownson, Drew & Clydesdale, Inc.,
68 William St., New York City.
Stanley Works, The, New Britain, Conn.
Steel & Tube Co. of America,
111 W. Washington St., Chicago, Ill.
Tacony Steel Co., Tacony, Pa.
United Alloys Steel Corp., The, Canton, O.
Vanadium-Alloys Steel Co., Pittsburgh, Pa.
Ward's, Edgar T., Sons Co.,
44 Farnsworth St., Boston, Mass.
Weirton Steel Co., Weirton, W. Va.
West Leechburg Steel Co., Pittsburgh, Pa.
Whitaker-Glessner Co., Wheeling, W. Va.
Wickwire Steel Co., Buffalo, N. Y.
Wyckoff Drawn Steel Co., 728 Frick Bldg., Pbgh.

STEEL (Agricultural)
Cambria Steel Co., Philadelphia, Pa.

STEEL (Alloy)
Aborn Steel Co., Inc., 24 Clarke St., N. Y. C.
Andrews Steel Co., Newport, Ky.
Betz-Pierce Co., Cleveland, O.
Boker, H., & Co., Inc., 101 Duane St., N. Y. C.
Bourne Fuller Co., The, Cleveland, O.
Carbon Steel Co., Pittsburgh, Pa.
Century Steel Co. of America, Poughkeepsie, N. Y.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Federal Tool & Alloy Steel Corp.,
Woolworth Bldg., New York City.
Firth-Sterling Steel Co., McKeesport, Pa.
Hammond Steel Co., Inc., Syracuse, N. Y.
Hess Steel Corp., Baltimore, Md.
Interstate Iron & Steel Co.,
104 S. Michigan Ave., Chicago, Ill.
Latrobe Electric Steel Co., Latrobe, Pa.
Ludlum Steel Co., Watervliet, N. Y.
McConway & Torley Co., Arsenal Station, Pbgh.
National Pressed Steel Co., Massillon, O.
Peerless Drawn Steel Co., Massillon, O.
Simonds Mfg. Co., Fitchburg, Mass.
Tacony Steel Co., Tacony, Pa.
Union Electric Steel Co.,
Keystone Bank Bldg., Pittsburgh.
United Alloys Steel Corp., The, Canton, O.
Vanadium-Alloys Steel Co., Pittsburgh, Pa.
Vanadium Corp. of America,
Equitable Bldg., New York.
Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.

STEEL (Alloy, Stellite)
Haynes Stellite Co., The, Kokomo, Ind.

STEEL (Boronic All-Metal in Shot Form)
American Boron Products Co., Inc.,
636 Court St., Reading, Pa.

STEEL (Bessemer Screw Stock)
Peerless Drawn Steel Co., Massillon, O.
Wyckoff Drawn Steel Co., 728 Frick Bldg., Pbgh.

STEEL (Carbon)
Bethlehem Steel Co., Bethlehem, Pa.
Carbon Steel Co., Pittsburgh, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Tacony Steel Co., Tacony, Pa.

STEEL (Chrome)
Ludlum Steel Co., Watervliet, N. Y.

STEEL (Chrome-Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

STEEL (Cold Drawn)
Aborn Steel Co., Inc., 24 Clarke St., N. Y. C.
Barnes, Wallace, Co., Bristol, Conn.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Fitzsimons Co., Youngstown, O.
Kidd Drawn Steel Co., Aliquippa, Pa.
Miner-Morse Corp., 15th and Ash Sts., Erie, Pa.
Moltrup Steel Products Co., Beaver Falls, Pa.
Peerless Drawn Steel Co., Massillon, O.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Joseph T. Ryerson & Son, Chicago, Ill.
Standard Gauge Steel Co., Beaver Falls, Pa.
United Alloys Steel Corp., The, Canton, O.
Weirton Steel Co., Weirton, W. Va.
West Leechburg Steel Co., Pittsburgh, Pa.
Wyckoff Drawn Steel Co., 728 Frick Bldg., Pbgh.

STEEL (Crucible)
Bethlehem Steel Co., S. Bethlehem, Pa.
Boker, H., & Co., Inc., 101 Duance St., N. Y. C.
Bourne Fuller Co., The, Cleveland, O.
Disston, Henry, & Sons, Inc., Philadelphia, Pa.
Firth-Sterling Steel Co., McKeesport, Pa.
Illingsworth, The John Co., Philadelphia, Pa.
Ludlum Steel Co., Inc., Watervliet, N. Y.
Pittsburgh Cold Rolled Steel Co., Verona, Pa.
Simonds Mfg. Co., Fitchburg, Mass.
Vanadium Alloys Steel Co., Pittsburgh, Pa.

STEEL (Die)
Boker, H., & Co., Inc., 101 Duane St., N. Y. C.
Carbon Steel Co., Pittsburgh, Pa.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Tacony Steel Co., Tacony, Pa.
Vanadium-Alloys Steel Co., Pittsburgh, Pa.

STEEL (Electric Furnace)
Allegheny Steel Co., Pittsburgh, Pa.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Carbon Steel Co., Pittsburgh, Pa.
Connecticut Electric Steel Co., Inc., Hartford, Conn.
Ford, R. M., & Co., Inc., New York City.
Hess Steel Corp., Baltimore, Md.
Illinois Steel Co., Chicago, Ill.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Simonds Mfg. Co., Fitchburg, Mass.
Union Electric Steel Co.,
Keystone Bank Bldg., Pittsburgh.
United Alloys Steel Corp., The, Canton, O.

STEEL (High Carbon)
Ludlum Steel Co., Watervliet, N. Y.
Tacony Steel Co., Tacony, Pa.

STEEL (High Speed)
Aborn Steel Co., Inc., 24 Clarke St., N. Y. C.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Betz-Pierce Co., Cleveland, O.
Boker, H., & Co., Inc., 101 Duane St., N. Y. C.
Bourne Fuller Co., The, Cleveland, O.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Colonial Steel Co.,
Keystone Bank Bldg., Pittsburgh, Pa.
Firth-Sterling Steel Co., McKeesport, Pa.
Illingsworth, The John Co., Philadelphia, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Midvale Steel & Ordnance Co., Philadelphia, Pa.
Onondaga Steel Co., Syracuse, N. Y.
Syracuse Alloy Steel Co., Inc., Syracuse, N. Y.
Vanadium-Alloys Steel Co., Pittsburgh, Pa.
Ward's, Edgar T., Sons Co.,
44 Farnsworth St., Boston, Mass.
Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.

STEEL (High Speed—Reclaimed)
Onondaga Steel Co., Syracuse, N. Y.

STEEL (High Speed, Stellite)
Haynes Stellite Co., The, Kokomo, Ind.

STEEL (Hot and Cold Rolled)
Betz-Pierce Co., Cleveland, Ohio.

STEEL (Open-Hearth)
Andrews Steel Co., Newport, Ky.
Betz-Pierce Co., Cleveland, O.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa.
Illinois Steel Co., Chicago, Ill.
La Belle Iron Works, Steubenville, O.
McConway & Torley Co., Arsenal Station, Pgh.
Nagle Steel Co., Pottstown, Pa.
Peerless Drawn Steel Co., Massillon, O.
Steel & Tube Co. of America,
111 W. Washington St., Chicago, Ill.
Tacony Steel Co., Tacony, Pa.
Tennessee Coal, Iron & R. R. Co.,
Birmingham, Ala.
Whitaker-Glessner Co., Wheeling, W. Va.
Wyckoff Drawn Steel Co., 728 Frick Bldg., Pbgh.

STEEL (Open-Hearth—Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.
Wyckoff Drawn Steel Co., 728 Frick Bldg., Pbgh.

STEEL (Rock Drill)
Colonial Steel Co.,
Keystone Bank Bldg., Pittsburgh, Pa.

STEEL (Soft)
Bethlehem Steel Co., Bethlehem, Pa.
Miner-Morse Corp., 15th and Ash Sts., Erie, Pa.

STEEL (Spring)
Bethlehem Steel Co., So. Bethlehem, Pa.
Bourne Fuller Co., The, Cleveland, O.
Carnegie Steel Co., Pittsburgh, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Tacony Steel Co., Tacony, Pa.
United Alloys Steel Corp., The, Canton, O.

STEEL (Stainless)
American Stainless Steel Co.,
1542 Oliver Bldg., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Firth-Sterling Steel Co., McKeesport, Pa.

STEEL (Stamping and Drawing)
American Tube & Stamping Co., Bridgeport, Conn.
National Pressed Steel Co., Massillon, O.
Sharon Steel Hoop Co., Sharon, Pa.
Stanley Works, The, New Britain, Conn.
Weirton Steel Co., Weirton, W. Va.

STEEL (Strip, Hot and Cold Rolled)
American Tube & Stamping Co., Bridgeport, Conn.
Carnahan Tin Plate & Sheet Co., Canton, O.
Columbia Steel Company, Elyria, O.
Disston, Henry, & Sons, Inc., Philadelphia, Pa.
Griffin Mfg. Co., Erie, Pa.
Morris & Bailey Steel Co.,
Wilson Station, Pittsburgh, Pa.
National Pressed Steel Co., Massillon, O.
Pittsburgh Cold Rolled Steel Co., Verona, Pa.
Joseph T. Ryerson & Son, Chicago, Ill.
Stanley Works, The, New Britain, Conn.
Steel & Tube Co. of America,
111 W. Washington St., Chicago, Ill.
Trumbull Steel Co., The, Warren, Ohio.
Weirton Steel Co., Weirton, W. Va.
West Leechburg Steel Co., Pittsburgh, Pa.

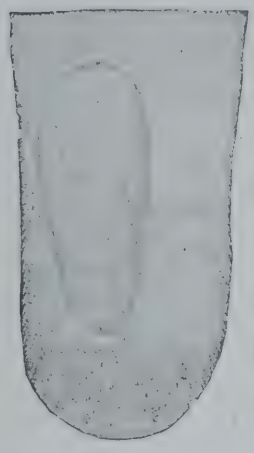
STEEL (Structural)
Alliance Structural Co., Alliance, O.
American Bridge Co., New York City.
Bellefontaine Bridge & Steel Co., The,
Bellefontaine, O.
Belmont Iron Works, Philadelphia, Pa.
Birmingham Steel Corp., Birmingham, Ala.
Blaw-Knox Co., 602 Farmers Bank Bldg., Pgh.
Bourne Fuller Co., The, Cleveland, O.
Cambria Steel Co., Philadelphia, Pa.
Case Crane & Engineering Co., Columbus, O.
Cincinnati Iron & Steel Co., Cincinnati, O.
Eichleay, John, Jr., Co.,
So. 20th and Wharton Sts., Pittsburgh, Pa.
Empire Art Metal Co., Inc., College Pt., N. Y.
Erie Steel Construction Co., Inc., Erie, Pa.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., Chicago, Ill.
Illinois Steel Co., Warehouse Dept., Chicago, Ill.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

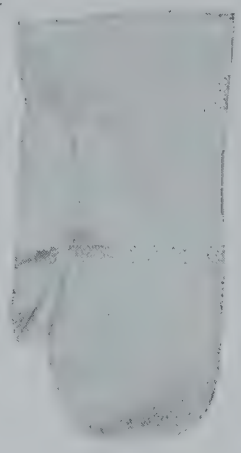
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Asbestos Reversible Mitten

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Jones & Laughlin Steel Co., Pittsburgh, Pa.
Kratzer, W. N., Co., 3212 Smallman St., P'b'gh.
Lackawanna Steel Co., Buffalo, N. Y.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
McClintic-Marshall Co., Pittsburgh, Pa.
National Pressed Steel Co., Massillon, O.
Parker Company, 165 Broadway, New York City.
Phoenix Iron Co., 20 S. 15th St., Philadelphia.
Pittsburgh-Des Moines Steel Co., Curry Bldg., Pittsburgh, Pa.
Joseph T. Ryerson & Son, Chicago, Ill.
Scully Steel & Iron Co., Suite 1127 New Continental and Commercial Bank Bldg., Chicago.
Shippers' Car Line, inc., New York City.
Snead Architectural Iron Works, Louisville, Ky.
Tenn. Coal, Iron & R. R. Co., Birmingham, Ala.
Toledo Bridge & Crane Co., 2900 Dorr St., Toledo, O.
Truscon Steel Co., Youngstown, O.
Whitaker-Glessner Co., Wheeling, W. Va.

STEEL (Tool)
Aborn Steel Co., Inc., 24 Clarke St., N. Y. C.
Atlas Crucible Steel Co., Dunkirk, N. Y.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Boker, H., & Co., Inc., 101 Duane St., N. Y. C.
Bourne Fuller Co., The, Cleveland, O.
Carbon Steel Co., Pittsburgh, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Cleveland Steel Supply Co., 769 Hippodrome Annex, Cleveland, O.
Colonial Steel Co., Keystone Bank Bldg., Pittsburgh, Pa.
Columbia Steel & Shafting Co., Pittsburgh, Pa.
Connecticut Elec. Steel Co., Inc., Hartford, Conn.
Federal Tool & Alloy Steel Corp., Woolworth Bldg., New York City.
Firth-Sterling Steel Co., McKeesport, Pa.
Hammond Steel Co., Inc., Syracuse, N. Y.
Hess Steel Corp., Baltimore, Md.
Latrobe Electric Steel Co., Latrobe, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Midvale Steel & Ordnance Co., Philadelphia, Pa.
Onondaga Steel Co., Syracuse, N. Y.
Joseph T. Ryerson & Son, Chicago, Ill.
Syracuse Alloy Steel Co., Inc., Syracuse, N. Y.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
United Alloy Steel Corp., Canton, O.
Vanadium-Alloys Steel Co., Pittsburgh, Pa.
Ward's, Edgar T., Sons Co., 44 Farnsworth St., Boston, Mass.

STEEL (Tool, Stellite)
Haynes Stellite Co., The, Kokomo, Ind.

STEEL BUILDINGS—See BRIDGES, BUILDINGS AND VIADUCTS

STEEL BUILDINGS
Truscon Steel Co., Youngstown, O.

STEEL PLATE CONSTRUCTION
Blaw-Knox Co., 602 Farmers Bank Bldg., Pbgh.
Colonial Iron Works Co., Cleveland, O.
Erie City Iron Works, Erie, Pa.
Gerstner Boiler Works, 39th St. and Junction R. R., Pittsburgh, Pa.
Hammond Iron Works, Warren, Pa.
Keystone Boiler Works, Manayunk, Philadelphia.
N. Y. Central Iron Works Co., Hagerstown, Md.
Pennsylvania Engrg. Works, New Castle, Pa.
Phoenix Iron Works Co., Meadville, Pa.
Sharpsville Boiler Works Co., Sharpsville, Pa.
Youngstown Boiler & Tank Co., The, Youngstown, O.

STEEL PLATES—See PLATES (Iron and Steel)

STEEL STAMPINGS
American Tube & Stamping Co., Bridgeport, Conn.
Griffin Mfg. Co., Erie, Pa.
Kempsmith Mfg. Co., Milwaukee, Wis.

STEEL TUBING (Cold Drawn)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

STELLITE
Haynes Stellite Co., The, Kokomo, Ind.

STEPS (Ladder and Stair, Nonslipping)
Irving Iron Works Co., Long Island City, N. Y.

STOKERS
Babcock & Wilcox Co., The, New York City.
Combustion Engineering Corp., 11 Broadway, New York City.
Erie Foundry Co., Erie, Pa.
Hagan, Geo. J., Co., Peoples Bk. Bldg., Pittsb'gh

STOOLS (Metal)
Angle Steel Stool Co., Otsego, Mich.

STRAIGHTENING MACHINERY
Abramsen Engineering Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Shuster, The F. B., Co., New Haven, Conn.

STRAPS (Connecting)
Bay City Forge Co., Erie, Pa.
Camden Forge Co., Camden, N. J.

STRIP STEEL STRAIGHTENERS
Shuster, The F. B., Co., New Haven, Conn.

STRUCTURAL IRON AND STEEL—See STEEL (Structural)

STRUCTURAL IRON AND STEEL WORK
Bethlehem Steel Co., So. Bethlehem, Pa.

STUDS (Milled)
Ferry Cap & Set Screw Co., 2151 Scranton Rd., Cleveland, O.

SUBWAY GRATING
Irving Iron Works Co., Long Island City, N. Y.

SULPHURIC ACID
Cleveland-Cliffs Iron Co., Cleveland, O.

SUPPLIES AND ACCESSORIES (Sand Blast)
Pangborn Corporation, Hagerstown, Md.

SWITCHES (Electric)
Electric Controller & Mfg. Co., Cleveland, O.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

SWITCH STANDS
Bethlehem Steel Co., The, So. Bethlehem, Pa.

SYNDOLAG
Davison, Allen S., Co., Pittsburgh, Pa.

TABLE SAND BLASTS
Pangborn Corporation, Hagerstown, Md.

TACHOMETERS
Brown Instrument Co., Philadelphia, Pa.

TACKS
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.

TANK CARS
Shippers Car Line, New York City.

TANKS (Acetylene)
Linde Air Products Co., 30 E. 42nd St., N. Y. C.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Prest-O-Lite Co., Inc., 30 E. 42nd St., N. Y. C.

TANKS (Second Hand)
Zelnicker, Walter A., Supply Co., St. Louis, Mo.

TANKS (Steel and Wood)
Air Tight Steel Tank Co., Pittsburgh, Pa.
American Bridge Co., New York City.
Birmingham Steel Corp., Birmingham, Ala.
Erie City Iron Works, Erie, Pa.
Farrar & Trefts, Buffalo, N. Y.
Franklin Valveless Engine Co., Franklin, Pa.
Hammond Iron Works, Warren, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
N. Y. Central Iron Works Co., Hagerstown, Md.
Phoenix Iron Works Co., Meadville, Pa.
Pittsburgh-Des Moines Steel Co., Curry Bldg., Pittsburgh, Pa.
Sharpsville Boiler Works Co., Sharpsville, Pa.
Shippers Car Line, New York City.
Youngstown Boiler & Tank Co., The, Youngstown, O.

TAPPING MACHINES
New York Machinery Exchange, Inc., New York City.
Rickert-Shafer Co., 612 W. 12th St., Erie, Pa.

TAR EXTRACTORS
Smith Gas Engrg. Co., The, Dayton, O.

TEMPERATURE INSTRUMENTS
Taylor Instrument Companies, Rochester, N. Y.

TEMPLET LUMBER
Johnson, Thomas V., Inc., 1532 1st Nat. Bk. Bldg., Milwaukee.

THERMOMETERS
Brown Instrument Co., Philadelphia, Pa.
Taylor Instrument Companies, Rochester, N. Y.

THREAD CUTTING TOOLS
Landis Machine Co., Waynesboro, Pa.

TREADS (Nonslipping)
Irving Iron Works Co., Long Island City, N. Y.

TIE PLATES
Bethlehem Steel Co., Bethlehem, Pa.
Inland Steel Co., First Nat'l Bk. Bldg., Chicago.

TIES (Creosoted Wood)
Republic Creosoting Co., Indianapolis, Ind.

TIES (Steel Mine)
Cambria Steel Co., Philadelphia, Pa.

TILE (Fire Clay)
Union Mining Co., Mt. Savage, Md.

TILE (Metal)
Truscon Steel Co., Youngstown, O.

TIN
United Smelting & Al. Co., New Haven, Conn.

TINNED WIRE (Equipment)
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

TINNING
Cattie, Joseph P., & Brothers, Inc., Adams and Gaul Sts., Philadelphia, Pa.

TIN PLATE
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
American Steel Co., Pittsburgh, Pa.
American Steel Export Co., New York City.
Bethlehem Steel Co., Bethlehem, Pa.
Carnahan Tin Plate & Sheet Co., Canton, O.
Hudson Sheet & Tin Plate Co., Hickox Bldg., Cleveland, O.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Merchant & Evans Co., Philadelphia, Pa.
Standard Tin Plate Co., Canonsburg, Pa.
Taylor, N. & G., Co., Inc., 300 Chestnut St., Phila.
Trumbull Steel Co., The, Warren, Ohio.
Weirton Steel Co., Weirton, W. Va.
Wheeling Steel & Iron Co., Wheeling, W. Va.

TIN PLATE MILL EQUIPMENT
Birdsboro Steel Fdy. & Machine Co., Birdsboro, Pa.
National Roll & Fdy. Co., Avonmore, Pa.
Treadwell Engineering Co., Easton, Pa.
United Eng. & Fdy. Co., Pittsburgh, Pa.

TIRES (Locomotive and Car Wheel)
Midvale Steel & Ordnance Co., Philadelphia, Pa.

TITANIUM
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

TOGGLE BOLTS—See BOLTS (Toggle)

TOOL BITS (High Speed)
Boker, H., & Co., Inc., 101 Duane St., N. Y. C.
Firth-Sterling Steel Co., McKeesport, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Onondaga Steel Co., Syracuse, N. Y.

TOOL HOLDER BITS (Treated)
Bethlehem Steel Co., Bethlehem, Pa.
Vanadium-Alloys Steel Co., Pittsburgh, Pa.

TOOL HOLDERS
Gisholt Machine Co., 1203 E. Washington Ave., Madison, Wis.
Western Tool & Mfg. Co., Springfield, O.
Williams, J. H., & Co., 58 Richards St., Brooklyn, N. Y.

TOOLS
American Instrument Works, Inc., 18 East Lacock St., N. S., Pittsburgh, Pa.
Cleveland Milling Machine Co., 18511 Euclid Ave., Cleveland, O.
Cleveland Pneumatic Tool Co., Cleveland, O.
Crosman Stamping Co., Ypsilanti, Mich.
Haynes Stellite Co., The, Kokomo, Ind.
Lansing Stamping & Tool Co., Lansing, Mich.
National Tool Co., Cleveland, O.
Ryerson, Jos. T., & Son, Chicago, Ill.
Standard Tool & Mfg. Co., 70 Lafayette Blvd. E., Detroit, Mich.
White, L. & I. J., Co., 15 Columbia St., Buffalo, N. Y.

TOOLS (Electric)
Van Dorn Electric Tool Co., Cleveland, O.

TOOLS (Grinding)
Economy Tool Holder Co., 103 Park Ave., N. Y. C.

TOOLS (Pneumatic)
Chicago Pneumatic Tool Co., 1041 Fisher Bldg., Chicago, Ill.
Independent Pneumatic Tool Co., 600 West Jackson Blvd., Chicago, Ill.
Oldham, Geo., & Sons Co., Philadelphia, Pa.

TOOLS (Portable Electric)
Chicago Pneumatic Tool Co., 1041 Fisher Bldg., Chicago, Ill.

TORCHES AND BURNERS (Acetylene, Blow, Oxy-Acetylene)
Linde Air Products Co., 30 E. 42nd St., N. Y. C.
Oxweld Acetylene Co., Newark, N. J.

TORCHES (Foundry)
Mahr Mfg. Co., Minneapolis, Minn.

TOWERS (Transmission)—See TRANSMISSION (Towers)

TRACK AND RAIL SUPPLIES
American Steel Export Co., New York City.
Bethlehem Steel Co., The, So. Bethlehem, Pa.
Chase Foundry & Mfg. Co., Columbus, O.
Illinois Steel Co., Chicago, Ill.
Illinois Steel Co., Warehouse Dept., Chicago, Ill.
Inland Steel Co., First Nat'l Bk. Bldg., Chicago.
Lackawanna Steel Co., Buffalo, N. Y.

TRACTORS (Electric, Industrial)
Mercury Mfg. Co., 4118 S. Halsted St., Chicago.

TRAMRAILS (Overhead Systems)
Whiting Foundry Equipment Co., Harvey, Ill.

TRAMWAYS
Link-Belt Company, Chicago, Ill.

TRAMWAYS (Wire Rope)
Macomber & Whyte Rope Co., Kenosha, Wis.

TRANSFORMERS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

TRANSMISSION CHAINS
Link-Belt Company, Chicago, Ill.

TRANSMISSION TOWERS
Birmingham Steel Corp., Birmingham, Ala.
Blaw-Knox Co., 602 Farmers Bank Bldg., Pbgh.

TREADS (Non-Slipping)
Irving Iron Works Co., Long Island City, N. Y.

TROLLEYS
Cleveland Crane & Engrg. Co., Wickliffe, O.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Speidel, J. G., 412 Gordon St., Reading, Pa.
Toledo Bridge & Crane Co., 2900 Dorr St., Toledo, O.
Whiting Foundry Equipment Co., Harvey, Ill.

TRUCKS (Automatic Lift)
Lewis-Shepard Co., 48 Binford St., Boston, Mass.

TRUCKS (Factory and Foundry)
Koppel Industrial Car & Equip. Co., Koppel, Pa.
Mercury Mfg. Co., 4118 S. Halsted St., Chicago.
Whiting Foundry Equipment Co., Harvey, Ill.

TRUCKS (Industrial)
Angle Steel Stool Co., Otsego, Mich.
Atlas Car & Mfg. Co., Dept. E., Cleveland, O.
Mercury Mfg. Co., 4118 S. Halsted St., Chicago.

TRUCKS (Small Hand)
Angle Steel Stool Co., Otseko, Mich.

TRUCKS (Wire Mill)
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

TUBE MILL MACHINERY
Standard Engrg. Co., Ellwood City, Pa.

TUBES
Empire Art Metal Co., Inc., College Pt., N. Y.
La Belle Iron Works, Steubenville, O.
Midvale Steel & Ordnance Co., Philadelphia, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Wheeling Steel & Iron Co., Wheeling, W. Va.

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15-Ton Whiting Malleable Furnace recently furnished Great Lakes Malleable Co., Milwaukee, Wis. Customer reports installation is giving "exceptionally fine service."

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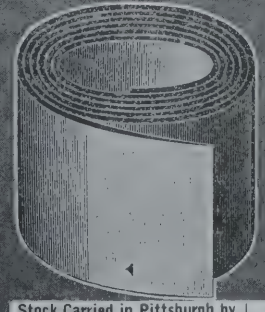
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Detroit Seamless Steel Tube Co., Detroit, Mich.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Ward's, Edgar T., Sons Co., 54 Farnsworth St., Boston, Mass.
Wilson Welder & Metals Co., 8 Rector St., New York City.

TUBING (Acetylene Welded)
Empire Art Metal Co., College Point, N. Y.
Ohio Steel Products Co., The, Mineral Ridge Station, Niles, Ohio.

TUBING (Bronze)
Sandusky Foundry & Machine Co., Sandusky, O.

TUBING (Seamless Brass and Copper)
Sandusky Foundry & Machine Co., Sandusky, O.
Wheeler Condenser & Engineering Co., Carteret, N. J.

TUBING (Seamless Steel and Lap-Welded)
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Standard Seamless Tube Co., 313 Sixth Ave., Pittsburgh, Pa.
Williams & Co., Inc., 901-937 Pennsylvania Ave., Pittsburgh, Pa.

TUBS (Wire Mill Cleaning House)
Morgan Construction Co., Worcester, Mass.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

TUMBLING MILLS
Whiting Fdy. Equipment Co., Harvey, Ill.

TURBINES (Steam)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

TURNBUCKLES
American Bridge Co., New York City.
Merrill Brothers, Maspeth, N. Y.
Michigan Bolt & Nut Works, Detroit, Mich.
Republic Iron & Steel Co., Youngstown, O.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.

TURNING (Steel)
Bidle, W. S., Co., 1411 E. 45th St., Cleveland, O.

TURNTABLES
American Bridge Co., New York City.
Atlas Car & Mfg. Co., Dept. E, Cleveland, O.
Chase Foundry & Mfg. Co., Columbus, O.
Koppel Industrial Car & Equip. Co., Koppel, Pa.
Whiting Foundry Equipment Co, Harvey, Ill.

UNIONS
Walworth Manufacturing Co., Boston, Mass.

UNION COUPLINGS (Cold Drawn Steel)
Mark Mfg. Co., 1907 Dempster St., Evanston, Ill.

UNIONS (Pipe)
Dart, E. M., Co., Providence, R. I.
Illinois Malleable Iron Co., Chicago, Ill.
Mark Mfg. Co., 1907 Dempster St., Evanston, Ill.

USED AND REBUILT EQUIPMENT
Aetna Machinery Co., Newark, N. J.
American Machy. Exchange, New York City.
Biggs-Watterson Co., Cleveland, O.
Carrell, W. A., & Co., Pittsburgh, Pa.
Castle & Wilson, Pittsburgh, Pa.
Cleveland Duplex Machinery Co., 1224 W. 6th St., Cleveland, O.
Davis, J. F., Chicago, Ill.
Duquesne Electric & Mfg. Co., Pittsburgh, Pa.
Foss, Geo. F., Mach. & Supply Co., N. Y. C.
Green, L. A., Pittsburgh, Pa.
Harris Brothers Co., Chicago, Ill.
Hill-Clarke & Co., Inc., Boston, Mass.
Hill Clarke Co. of Chicago, Chicago, Ill.
Homer Strong, Rochester, N. Y.
Lind-Farquhar Co., Boston, Mass.
Lucas, J. L., & Son, Inc., Bridgeport, Conn.
McCoy-Brandt Machy. Co., 210 Penn Ave., Pbgh.
Morey & Co., Inc., New York, N. Y.
Morton Machinery Co., New York, N. Y.
Niles, F. H., & Co., Inc., New York, N. Y.
Niles-Bement-Pond Co., 111 Broadway, N. Y. C.
Pettler, P., & Son, Beaver Falls, Pa.
Power Equipment Co., Philadelphia, Pa.
Reliance Machinery Sales Co., Pittsburgh, Pa.
Russell Machine Co., Pittsburgh, Pa.
Schoonmaker, A. G., & Sons, New York City.
Simmons Machine Co., Inc., Albany, N. Y.
Sun Machinery Co., New York, N. Y.
Toomey, Frank, Inc., Philadelphia, Pa.
Wayne Machinery Co., Fort Wayne, Ind.
Zelnicker, Walter A., Supply Co., St. Louis, Mo.

VALVE LEATHERS
Chicago Belting Co., 113 N. Green St., Chicago, Ill.
Graton & Knight Mfg. Co., Worcester, Mass.

VALVES (Brass and Iron Body)
Walworth Manufacturing Co., Boston, Mass.

VALVES (Gas and Air Reversing)
Blair Engineering Co., 17 Battery Place, New York City.
Morgan Construction Co., Worcester, Mass.
Wellman-Seaver-Morgan Co., Cleveland, O.

VALVES AND FITTINGS
Chambersburg Engrg. Co., Chambersburg, Pa.
Colonial Supply Co., Pittsburgh, Pa.
Connersville Blower Co., The, Connersville, Ind.
Dayton Steel Foundry Co., Dayton, O.
Homestead Valve Mfg. Co., Pittsburgh, Pa.
Jenkins Brothers, 80 White St., New York City.
Lunkenheimer Co., The, Cincinnati, O.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
Mackintosh, Hemphill & Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Powell, Wm., Co., 1200 Draper St., Cincinnati, O.

VANADIUM
Vanadium Corp. of America, Equitable Bldg., New York.

VENTILATING SYSTEMS
Buckeye Blower Co., Columbus, O.
Clarage Fan Co., Kalamazoo, Mich.
Merchant & Evans Co., Philadelphia, Pa.

VIADUCTS (Steel)—See BRIDGES, BUILDINGS AND VIADUCTS

VISES
Hollands Mfg. Co., Erie, Pa.
Williams, J. H., & Co., 58 Richards St., Brooklyn, N. Y.

WAREHOUSES (Iron and Steel)
Harold McCalla Co., The, 531-33 N. Fourth St., Philadelphia, Pa.

WASHED METAL
Brier Hill Steel Co., Youngstown, O.

WASHER CUTTING MACHINES
Southwark Foundry & Mach. Co., Philadelphia, Pa.

WASHERS (Iron and Steel)
Allegheny Steel Co., Pittsburgh, Pa.
Bayonne Bolt & Nut Co., Bayonne, N. J.
Bethlehem Steel Co., Bethlehem, Pa.
Bettcher Stamping & Mfg. Co., Cleveland, O.
Milton Mfg. Co., Milton, Pa.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Wrought Washer Mfg. Co., Milwaukee, Wis.

WASHERS (Leather)
Chicago Belting Co., 113 N. Green St., Chicago, Ill.
Graton & Knight Mfg. Co., The, Worcester, Mass.

WASHING MACHINES (Metal Parts)
Crescent Washing Machine Co., 842 Larrabee St., Chicago, Ill.

WASHING MATERIAL (Rags)
Ford, J. B., Co., Wyandotte, Mich.

WATER CINDER MILLS
Whiting Foundry Equipment Co., Harvey, Ill.

WATER COOLED STANDINGS (For Sheet and Tin Mills)
National Roll & Foundry Co., Avonmore, Pa.

WATER SOFTENING AND PURIFYING APPARATUS
Scaife, Wm. B., & Son Co., Oakmont, Pa.

WATER TOWERS (Steel)
Pittsburgh-Des Moines Steel Co., Curry Bldg., Pittsburgh, Pa.

WELDED PRODUCTS (Electric)
Standard Screw Products Co., Detroit, Mich.

WELDED STEEL PLATE CONSTRUCTION
Blaw-Knox Co., 602 Farmers Bk. Bldg., Pgh., Pa.

WELDING AND CUTTING (Oxy-Acetylene)—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)

WELDING AND CUTTING APPARATUS (Electric)
General Electric Co., Schenectady, N. Y.
Long & Allstatter Co., Hamilton, O.
Thomson Electric Welding Co., Lynn, Mass.
Thomson Spot Welder Co., Lynn, Mass.
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Pa.

WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)
Air Reduction So., 120 Broadway, New York City.
Linde Air Products Co., 30 E. 42nd St., N. Y. C.
Oxweld Acetylene Co., Newark, N. J.
Prest-O-Lite Co., Inc., 30 E. 42nd St., N. Y. C.

WELDING GLASSES
Oxweld Acetylene Co., Newark, N. J.

WELDING RODS
Federal Tool & Alloy Steel Corp., Woolworth Bldg., New York City.
Linde Air Products Co., 30 E. 42nd St., N. Y. C.
Oxweld Acetylene Co., Newark, N. J.
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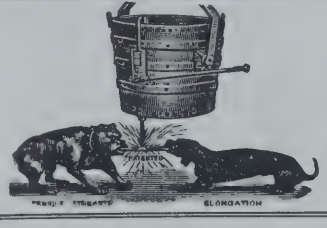
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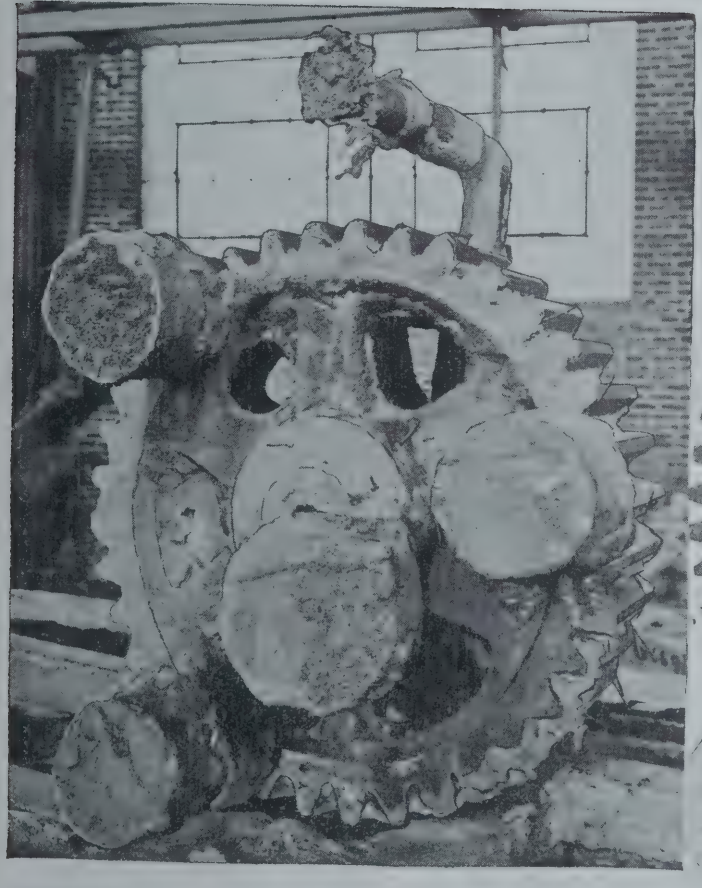
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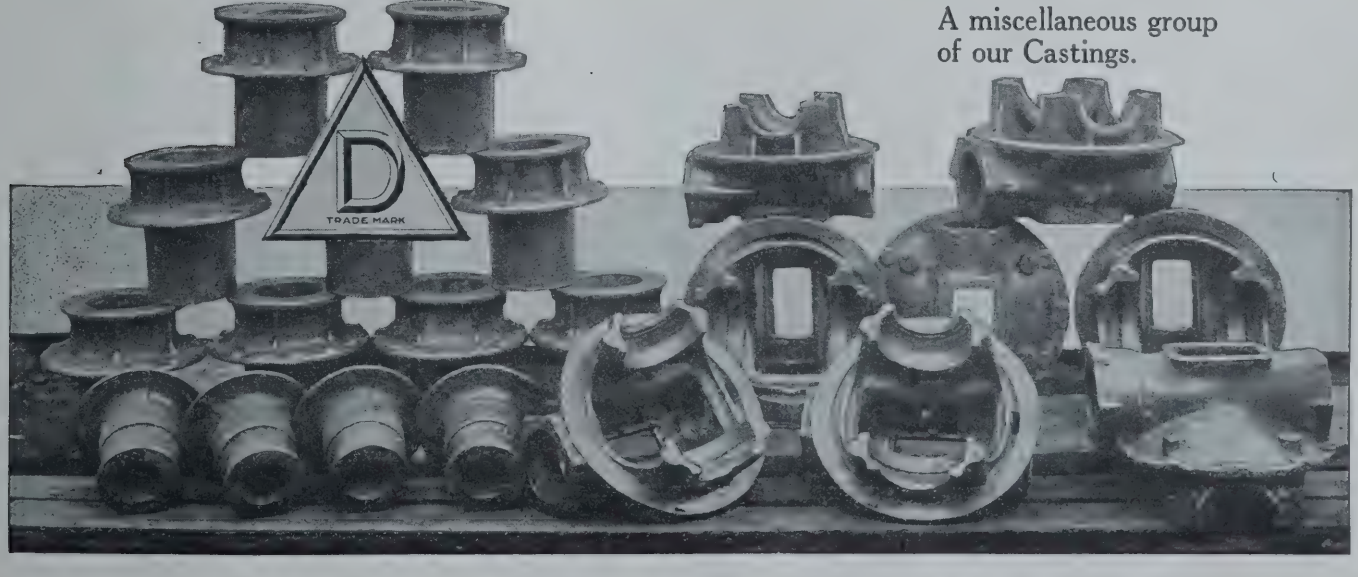
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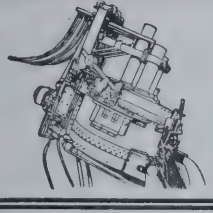
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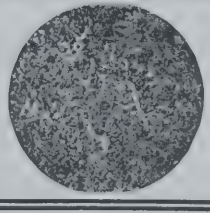


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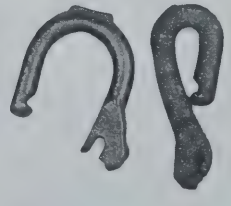
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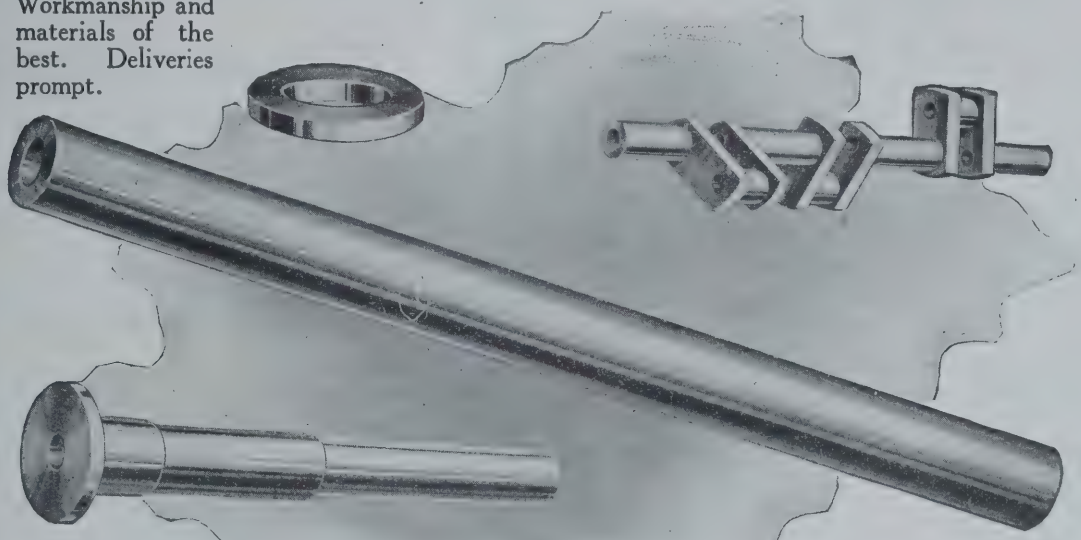
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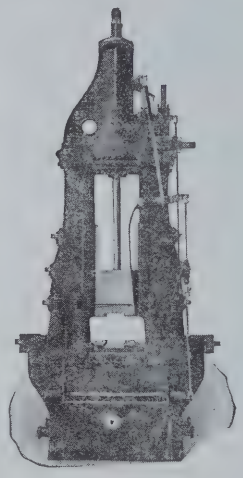
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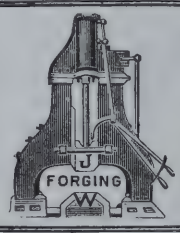
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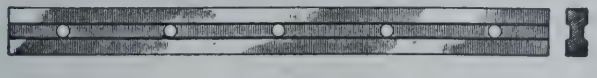
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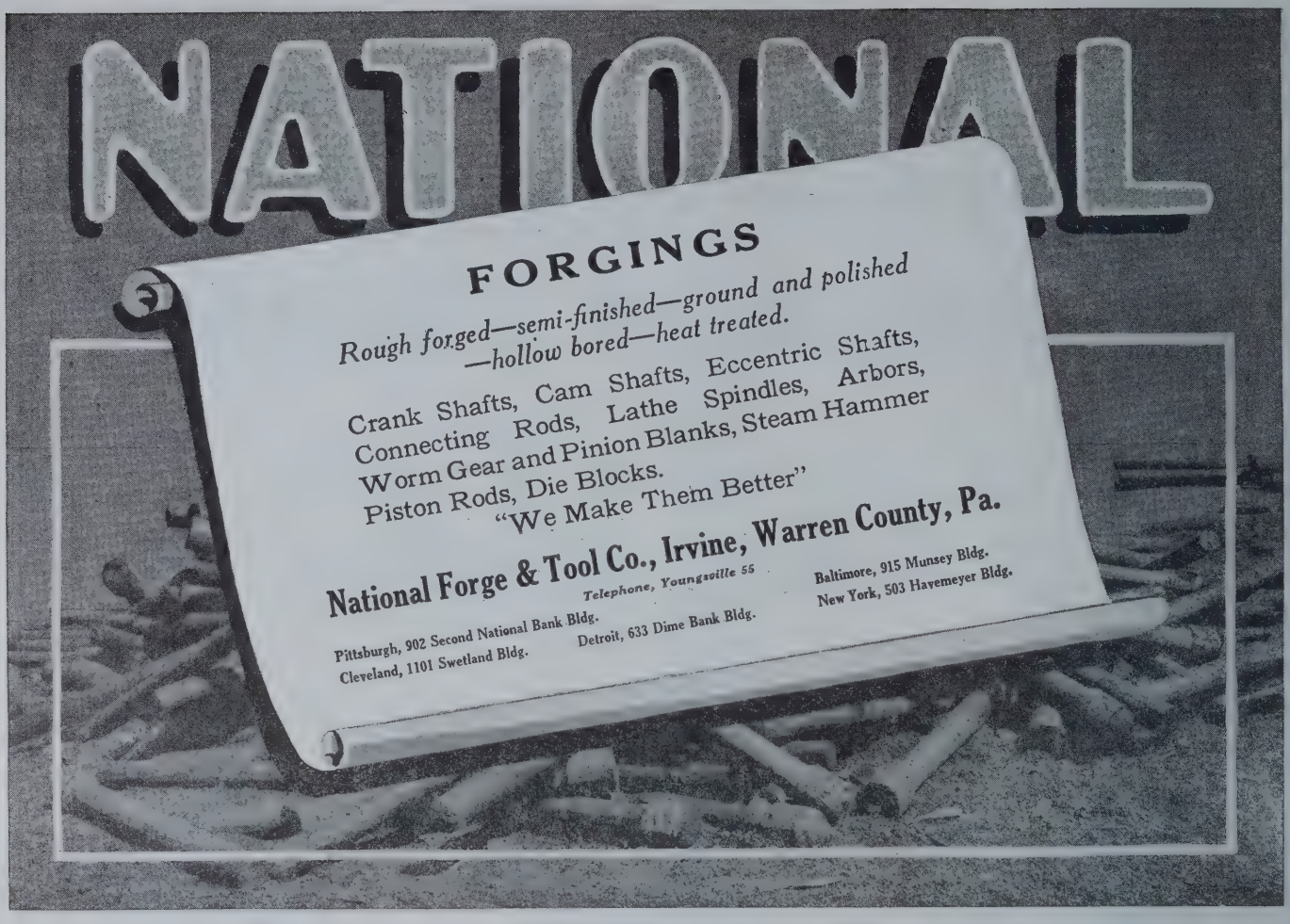
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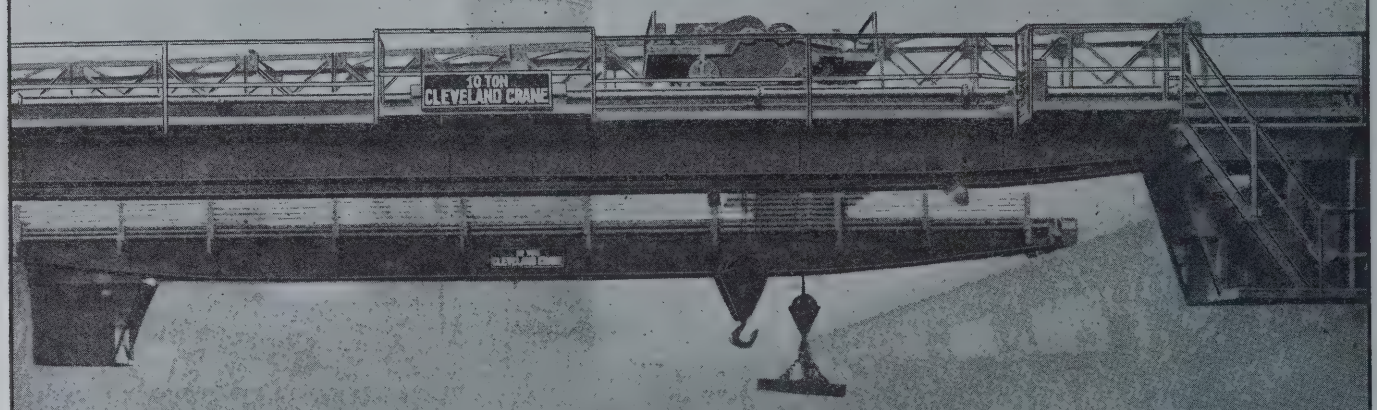
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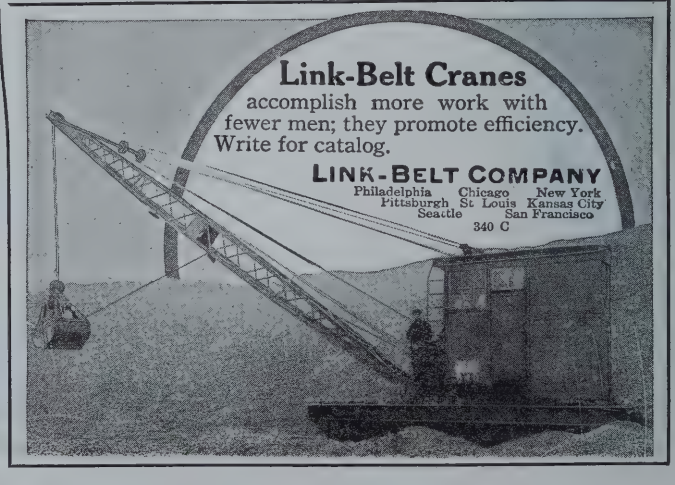
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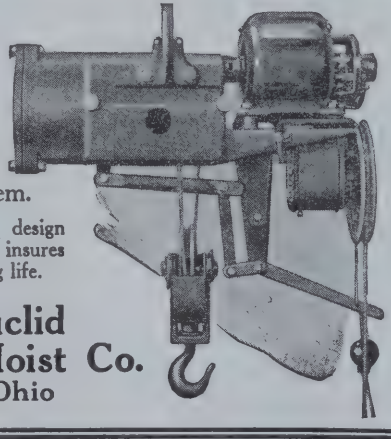
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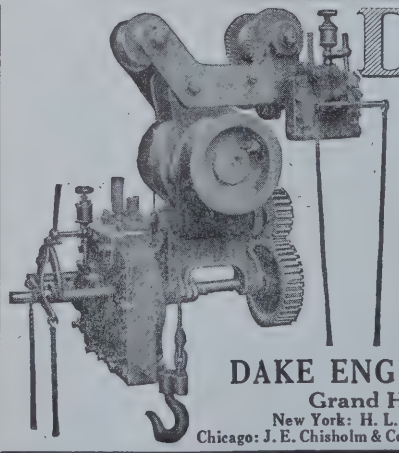
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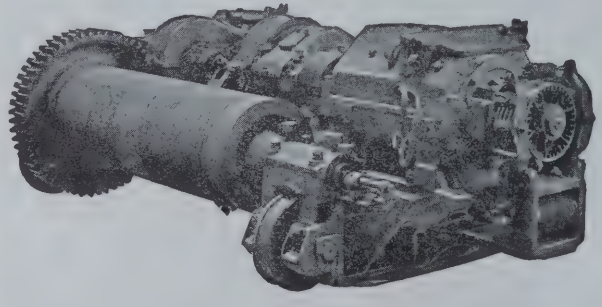
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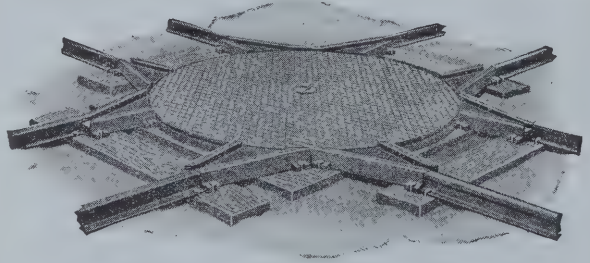
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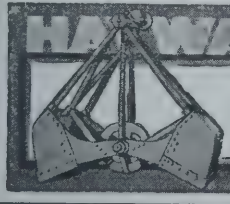
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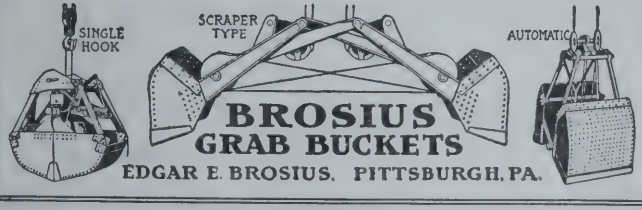
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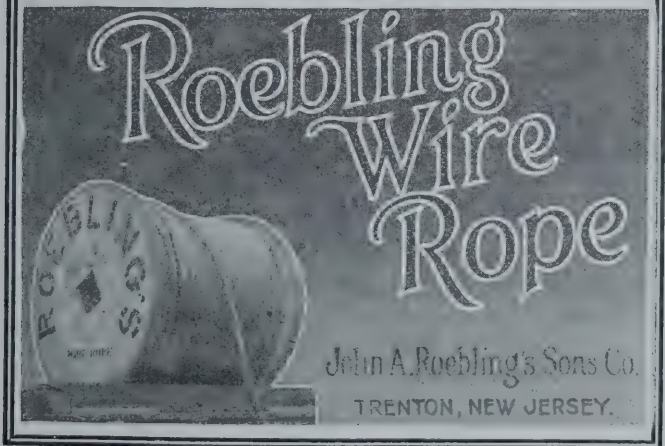


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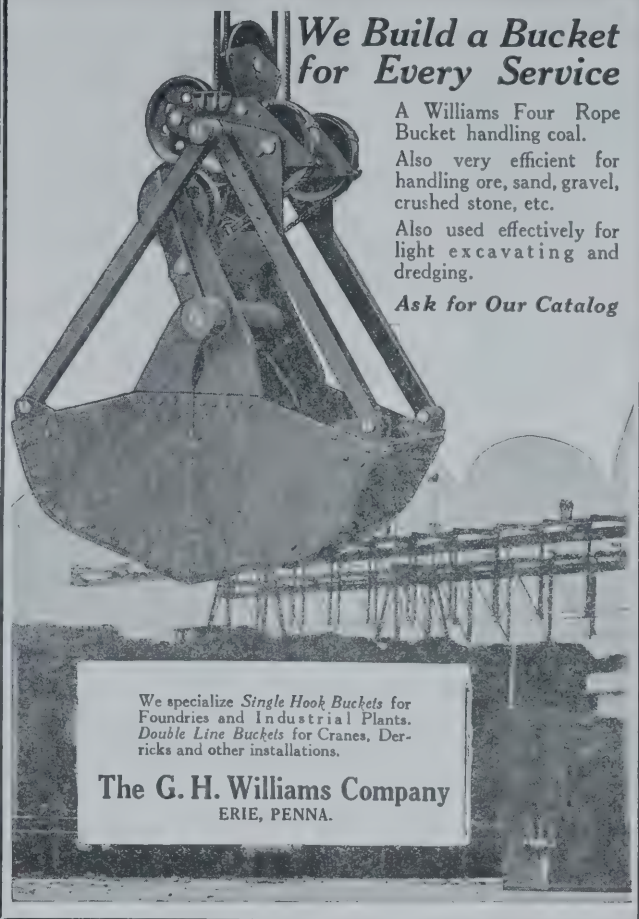
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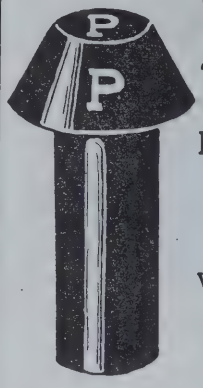


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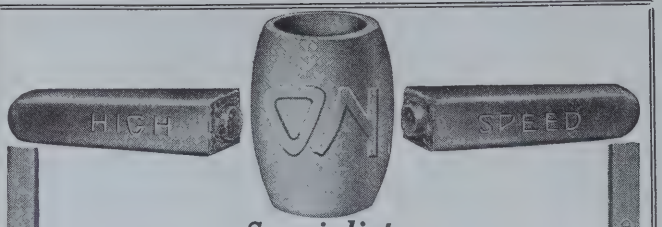
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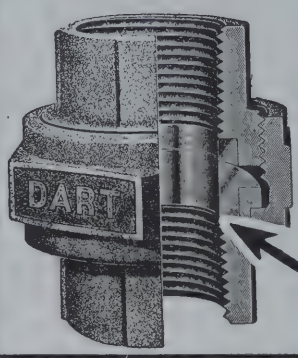
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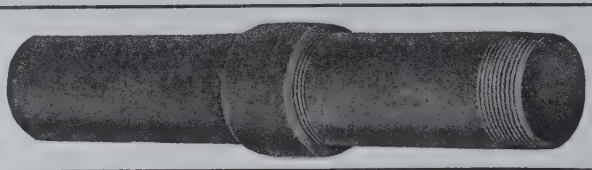


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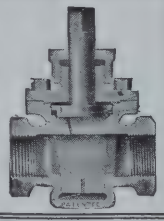
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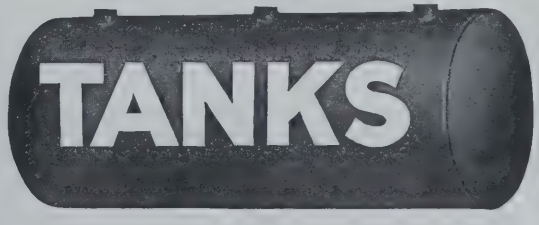
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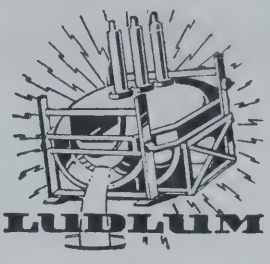
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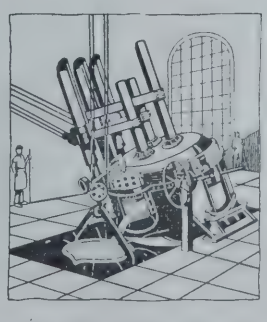
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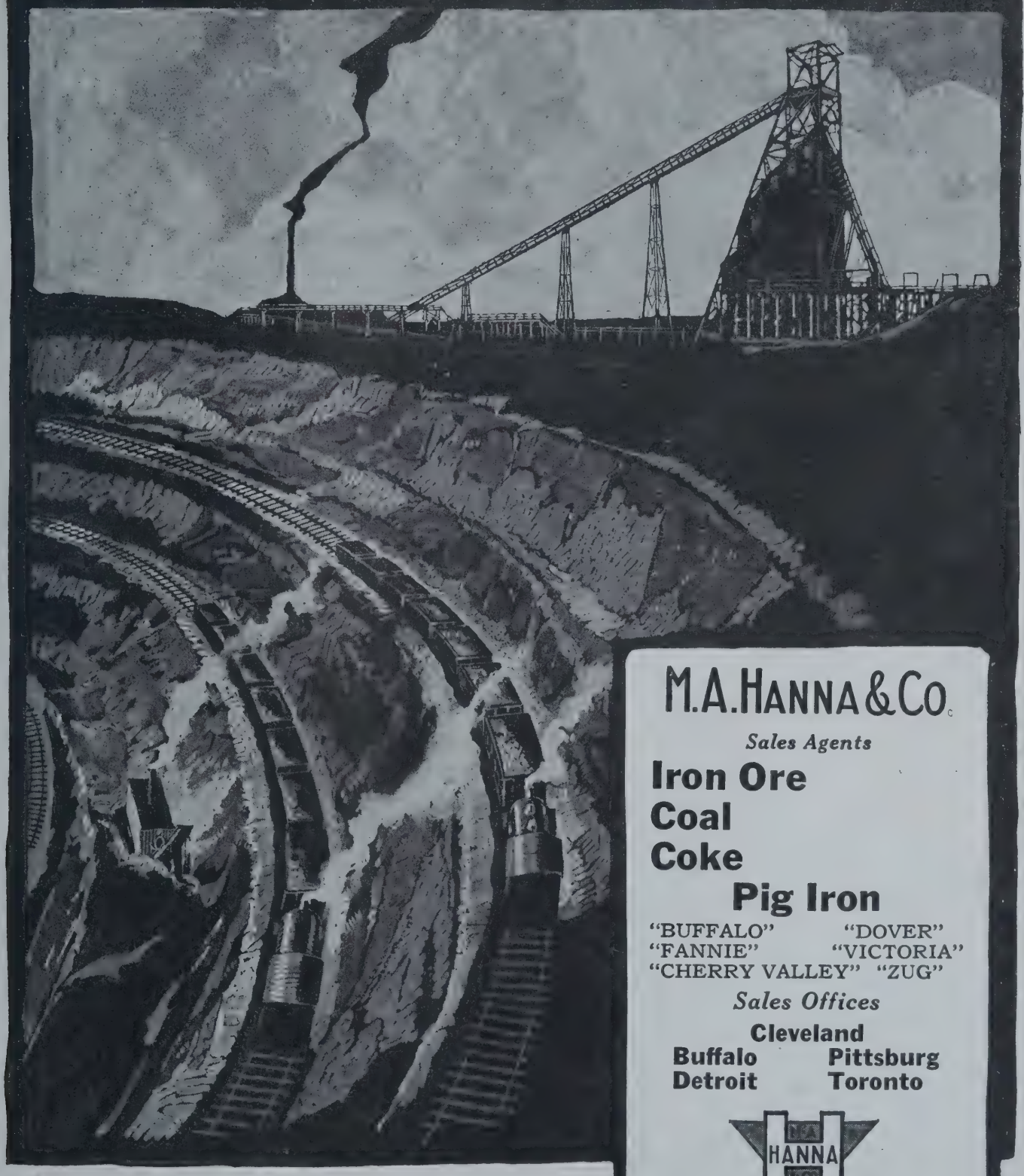
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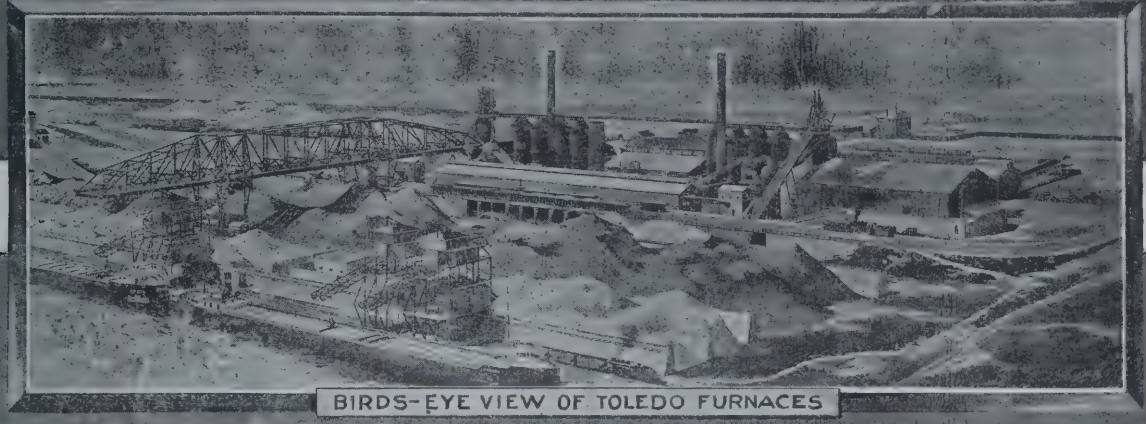
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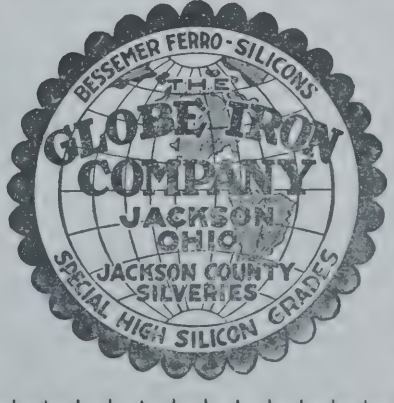
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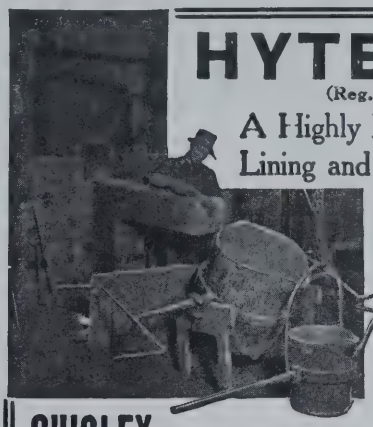
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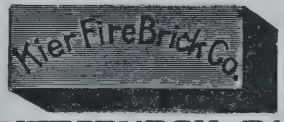
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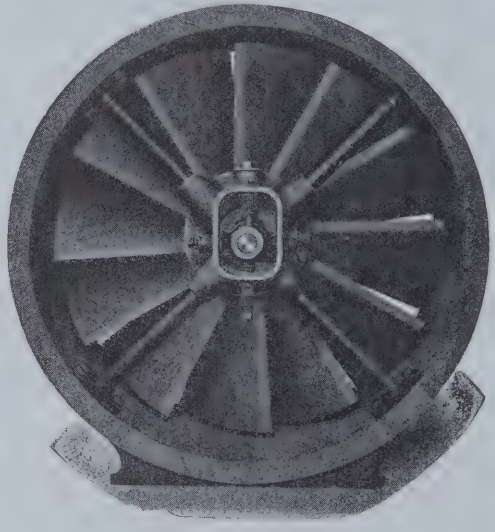
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WANTED BUILDING

Suitable for foundry purposes and a complete foundry outfit. Building should not be more than 240 ft. long. Prefer about 40 ft. wide. Ten ton crane.

Address P. H. BRIDGE
TROY, OHIO

FOUNDRY WANTED

Want to lease foundry or building suitable for same, must be about 20,000 square feet area, with considerable yard room and railroad siding.

Location near New York City preferred, but not absolutely necessary.

Address Box 862
THE IRON TRADE REVIEW
220 Broadway New York

Brass Foundry and Machine Shop

Small plant, fully equipped, operating on automobile accessories, with materials, to be sold en bloc as going concern, January 6, 1920. Modern brick six years old, 60' x 160', concrete floor, 2 acres land, on belt railroad.

MAX W. KRAUS, Receiver
PERU, INDIANA

PLATES FOR SALE

Open Hearth Tank Quality Soft Steel in Stock
Large Sizes 40" to 138" Wide by 6' to 29' long

LARGE PLATES

NEW MATERIAL

Thickness		Tons in Stock
7/16"	.....	125
9/16"	.....	115
11/16"	.....	310
13/16"	.....	300
		850 Total

At Less Than Mill Price

½ Standard extras for plates over 100" wide.

Immediate Shipment Subject to Prior Sale. Send for Accurate Lists.

It will pay you to use this material. Can be substituted for: 3/8", ½", 5/8", ¾" and 7/8" at a saving.

Good for Tank, Structural or Ship Work.

The Republic Structural Iron Works Co.

1200 E. 53rd St. Cleveland, Ohio

Equipment Wanted

For Machine Shops, Foundries, Iron and Steel Works, Mines, Railroads and Metal-Working Plants Generally

ADVERTISING RATES: 1" One Time $4.00; 2" One Time $7.50; 3" One Time $11.00; 4" One Time $14.00
RATES FOR LARGER SPACE OR LONGER PERIODS FURNISHED ON REQUEST

WANTED

Several automatic straightening and cutting machines for rounds from ⅛" to ½". Shuster prefered.

LAKE ERIE STEEL & WIRE CO.
Cleveland, O.

WANTED—TANKS

4—4000 to 10000 gal.
1—25000 to 50000 gal.
1—55000 Barrel or might use
2—30000 Barrel.

Describe fully and name lowest cash price in first letter.

Address Box 835
THE IRON TRADE REVIEW, Cleveland, O.

WANTED

Fuel Storage Tanks
Machine Tools

P. PETTLER & SON
First Nat'l. Bk. Bldg. Pittsburgh

TANK ON TOWER WANTED

Immediately. 50,000 gallon steel tank, conical top, hemispherical bottom on 80 ft. tower.

Address Box 875
THE IRON TRADE REVIEW, Cleveland, O.

WANTED

2500-lb. used steam drop hammer Erie, Chambersburg, Niles-Bement-Pond or Massillon preferred. Must be in good condition. State location, how long used, and price.

TWIN CITY FORGE & FOUNDRY CO.
Stillwater, Minn.

SECOND-HAND FOUNDRY EQUIPMENT WANTED

Including cupolas, ladles, tumbling barrels, etc. Quote price and state condition.

Address Box 431
THE IRON TRADE REVIEW, Cleveland, O.

WANTED

Soft Basic Wire in coils, from 1/8" to 9/32" in from 500 pound lots to carload lots.

Address Box 837
THE IRON TRADE REVIEW, Cleveland, O.

WANTED

25 to 50 tons No. 12 Gauge Coppered Wire. Could use gauges from No. 11 to No. 13. State quantity, gauge and price, also whether Open Hearth or Bessemer. Address

W. F. Robertson Steel & Iron Co.
Cincinnati, O.

WANTED

Angle bending rolls, capacity for 1/2" angle. State price and full particulars. Wicks preferred.

THE KIECHLER MFG. CO.
CINCINNATI, OHIO

WANTED

Double crank, double geared press, about 72" between uprights.

What have you?

Vitreous Enameling Co.
Cleveland, Ohio.

EXCEPTIONAL BUSINESS OPPORTUNITIES

are constantly being offered through the "Miscellaneous" Classified Section of

THE IRON TRADE REVIEW

It will pay you to look them over every week

640

WANTED

About 25 Tons, No. 18—27"x108" O.P.C.R.
" 35 " No. 18—32"x 72" O.C.R.R.
Advise size, price and stock on hand.

Address Box 854
THE IRON TRADE REVIEW, Cleveland, O.

WANTED

A new or second-hand grinder suitable for grinding flour mill rolls on their bearings. Rolls to be from 6" to 16" diameter and up to 36" long.

Carthage Foundry & Machine Works
Carthage, Mo.

Your every want can be quickly, satisfactorily and economically satisfied by placing a little classified advertisement in

THE IRON TRADE REVIEW

639

"Someone invariably wants what you have to sell!"

Equipment Wanted

For Machine Shops, Foundries, Iron and Steel Works, Mines, Railroads and Metal-Working Plants Generally

ADVERTISING RATES: 1" One Time $4.00; 2" One Time $7.50; 3" One Time $11.00; 4" One Time $14.00
RATES FOR LARGER SPACE OR LONGER PERIODS FURNISHED ON REQUEST

WANTED FOR SPOT CASH

Sheet Steel, any grade,
in Gauges No. 14-16-18 and No. 20.

ALSO

Cold & Hot Rolled Strip Steel in Coils
any width in No. 14-16-18 &
No. 20 Gauge.

Address Box 860,

THE IRON TRADE REVIEW, Cleveland, O.

URGENTLY NEEDED MACHINERY

For Shipment to South America
Must Buy At Once

LATHES: 14" to 24" swing, all styles.
MILLERS: Plain and universal, also 3 vertical millers.
SHAPERS: 14" stroke to 24" stroke.
RADIALS: 3' to 5' arm, late types.
AUTOMATICS: Up to ¾" capacity.

ALSO POWER PRESSES
Especially 1" to 4½" stroke, both inclinable and straight sided.

$45,000.00 CASH IMMEDIATELY AVAILABLE

We will consider either one machine or entire plants but must have immediate action.

Export Department

AETNA MACHINERY CORPORATION
15 Mechanic Street
Newark, N. J.

UPSETTERS

Wanted, in good condition, second-hand Upsetters; capacity from 3 to 4½ inches.

Give full particulars, including make, drive (motor or belt) etc.

Address Box 847,
THE IRON TRADE REVIEW, Cleveland, O.

WANTED

We contemplate the erection of a modern grey iron foundry, complete with usual equipment for castings running up to 2 ton. Capacity of cupola 5—10 tons. Require large core oven capacity. Northern Indiana. We will consider purchase of well designed and well built used equipment, provided same not over 3 years old. When writing advise date of original purchase each article and name maker.

Swenson Evaporator Company
945 Monadnock Bldg. Chicago, Ill.

WANTED

One covington machine for drawing coke from Beehive ovens. Must be in first class operating condition. Wire full information.

WOODWARD IRON CO.
Woodward, Ala.

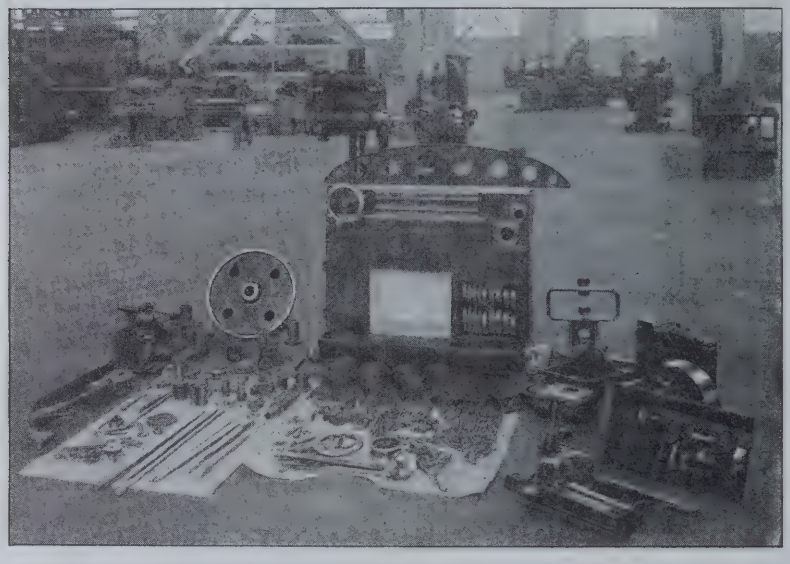
Ask here for what you need and get satisfied.

Used AND Rebuilt Equipment

For Machine Shops, Foundries, Iron and Steel Works, Mines, Railroads and Metal-Working Plants Generally

Advertising Rates: 1" One Time $4.00; 2" One Time $7.50; 3" One Time $11.00; 4" One Time $14.00.
RATES FOR LARGER SPACE OR LONGER PERIODS FURNISHED ON REQUEST

ReMANUFACTURED MACHINE TOOLS
-(ORIGINATED BY US)-



The Pledge Behind Every Machine

Hill, Clarke & Co. of Chicago owes its growth to the confidence of users of Remanufactured Machine Tools in the Remanufacturing process.

Once any sort of "re-made" or "re-built" machine was object of criticism. To overcome the objections to re-built tools, a process as thorough as that employed in making new tools was developed.

We named it the Remanufacturing process to distinguish it from any method which assured less than a machine of "new" value, as our process did.

Then to show our own confidence in Remanufactured tools, we accorded them as broad and unconditional a guarantee as was ever given to a new machine.

LATHES

42—14" x 6' Reed Ex. Hvy. Pl. Tng.
7—16" x 6' Reed Engine, C.R.
12—17" x 6' LeBlond Rapid Production, C.R., Q.C.G.
4—17" x 8' LeBlond Engine, C.R., Q.C.G.
21—18" x 8' Boye & Emmes Engine, D.B.G., C.R.
8—18" x 8' Boye & Emmes, D.B.G., C.R., Q.C.G.
18—18" x 8' LeBlond Engine, D.B.G., C.R., Q.C.G.
65—19" x 8' LeBlond Engine, D.B.G., C.R., Q.C.G.
35—19" x 8' LeBlond Engine, D.B.G., C.R., Q.C.G., P.F.T.
14—20" x 8' LeBlond Engine, D.B.G., C.R., Q.C.G.
16—20" x 8' American Engine, D.B.G., C.R., Q.C.G., P.F.T.
113—20" x 8' American Engine, D.B.G., C.R., Q.C.G.
58—21" x 10' LeBlond Engine, D.B.G., C.R., Q.C.G.
10—25" x 10' LeBlond Engine, D.B.G., C.R., Q.C.G.
33—26" x 10' Niles Engine, D.B.G., C.R., Q.C.G.
3—26" x 12' Putnam Motor Driven Engine, C.R., Q.C.G.
75—26" x 10' Bridgeford Engine, D.B.G., C.R., Q.C.G.
30—26" x 12' Bridgeford Engine, D.B.G., C.R., Q.C.G.
16—26" x 14' Bridgeford Engine, D.B.G., C.R., Q.C.G.
7—26" x 16' Bridgeford Engine, D.B.G., C.R., Q.C.G.
10—26" x 18' Bridgeford Engine, D.B.G., C.R., Q.C.G.
5—26" x 20' Bridgeford Engine, D.B.G., C.R., Q.C.G.
9—30" x 11' American Geared Hd. Engine, C.R., Q.C.G.
3—30" x 15' American Geared Hd. Engine, C.R., Q.C.G.
3—30" x 20' American Geared Hd. Engine, C.R., Q.C.G.
23—32" x 12' Pittsburgh Engine, D.B.G., C.R. Q.C.G.
4—40" x 12' Fifield Engine, Trip. Gd., C.R.
4—40" x 18' Fifield Engine, Trip. Gd., C.R.

MILLING MACHINES

1—No. 1-B Milwaukee Plain.
1—No. 20 Ohio Universal.
1—No. 1 Dow Plain.
1—No. 2-G Hendey Universal.
9—No. 2 Kempsmith Plain.
1—No. 2-A Garvin Plain.
2—No. 3 Cincinnati Plain.
1—No. 3 Cincinnati Universal.
1—No. 3 LeBlond Universal.
1—No. 4 Becker-Brainard Universal.
1—Type B Briggs Miller.

GRINDERS

1— 6" x 32" Norton Plain.
4—10" x 36" Norton Plain.
2—10" x 50" Norton Plain.
1—No. 2 Bath Surface.
1—No. 22 Brown & Sharpe Internal.
1—Pratt & Whitney Surface.

TURRET LATHES

5—19" LeBlond Universal.
34—19" LeBlond Combination.
16—20" American Combination.
12—21" LeBlond Universal.
4—21" Gisholts.
32—24" Steinle.
15—2-A Warner & Swasey.
14—3-A Warner & Swasey.

BORING MACHINES

2—30" Bullard Vertical.
1—51" Bullard Vertical.
1—2½" bar Cleveland Horizontal.
1—3½" bar Binsse Horizontal.
1—4" bar Niles Horizontal.
1—4" bar Niles Horizontal.
1—2 spindle Beaman & Smith Cylinder.

DRILLS AND RADIALS

5—2K Henry & Wright.
3—3K Henry & Wright.
2—4 spdl. Allen.
4—4B Henry & Wright.
3—5B Henry & Wright.
4—6B Henry & Wright.
4—3' American Sensitive Radials.

MISCELLANEOUS

3—18" Gould & Eberhardt Hobbers.
1—No. 3—26" Brown & Sharpe Gear Cutter.
3—No. 3—36" Brown & Sharpe Gear Cutters.
1—No. 2 Nazel Forging Hammer.
3—2½" Cleveland Automatics.
1—No. 6 Williams & White Bulldozer.

OUR GUARANTEE:

YOUR MONEY BACK IF YOU RETURN MACHINE WITHIN 30 DAYS OF DATE OF SHIPMENT, FREIGHT PREPAID

NO EXCUSES! NECESSARY!

HILL, CLARKE & CO. OF CHICAGO

649 WASHINGTON BLVD.

Used Rebuilt Equipment

FRANK TOOMEY Inc.

ESTABLISHED 1876 — ESTABLISHED 1876

127-131 N. THIRD ST. PHILADELPHIA, PA.

LATHES

13" x 5' 6" New Carroll-Jamieson.
14" x 6' New Carroll-Jamieson, quick change.
15" x 6' New Sidney D. B. G. quick change, swing 17".
16" x 6' New Canedy Otto.
16" x 6' Dalton.
16" x 10' New Carroll, D. B. G. quick change, swing 18".
16" x 24' New Rahn Larmon D. B. G. quick change.
17" x 8' New Sidney D. B. G. quick change, swing 19".
17" x 8' Sidney, D. G. B. Q. C. swing 19" (used).
17" x 10' New Sidney, D. B. G., quick change, swing 19".
18" x 8' Canedy Otto (new).
19" x 8' New Canedy Otto.
19" x 8' LeBlond D. B. G., quick change.
19" x 8' New Sidney D. B. G. quick change, swings 21".
19" x 8' Sidney, used, D. B. G. Q. C. swings 21".
20" x 8' Whitcomb Blaisdell D. B. G. Q. C.
21" x 8' LeBlond heavy duty D. B. G. quick change.
22" x 8' 6" Hamilton plain change.
25" x 14' New Sidney D. B. G. quick change swing 27".
26" x 12' Bridgeford D. B. G. quick change.
24" x 48" x 16' New Rahn Larmon Exten. Bed Gap.
36" x 16' New Haven triple B. G. quick change.

TURRET LATHES

No. 5 B. & O. back geared friction head.
2" x 24" Jones & Lamson geared head.
No. 1 Bardon & Oliver, wire feed.
No. 52 New National Acme Automatic.

CAR WHEEL LATHES

42" Pond center drive, motor driven.

VERTICAL BORING MILLS

42" Putnam car wheel boring machine.

PLANERS

18" x 18" x 3' Wheeler, one head.
26" x 26" x 8' Pond, one head.
30" x 30" x 10' Powell, two head.
31" x 23" x 68" Smith, one head.
36" x 36" x 10' Cincinnati, two heads.
36" x 36" x 16' Flather, two heads.
36" x 36" x 16' Hewes & Phillips, one head.
36" x 36" x 8' Gray, two heads.
40" x 40" x 10' Hamilton, four heads, motor drive.

SHAPERS

7" New Rhodes.
14" Smith & Mills.
14" New Steptoe, back geared.
16" New Smith & Mills.

MILLERS

No 6 Whitney.
No. 1½ Used Bilton.
No. 4 Brown & Sharpe, plain.
No. 22 Garvin vertical, rotary table.
No. 3-A Garvin universal.
No. 2 Van Norman Duplex.
No. 2 Cincinnati Plain.
No. 1½ New American, plain.
No. 1½ Valley City, plain.
No. 0 New Steptoe, hand.
No. 1 New U. S. Hand Miller.

GRINDERS

No. 1 Fraser Universal, new.
No 1 Bath, universal.
No. 1 Grand Rapids, new, cutter and reamer.

HORIZONTAL BORING MILLS

3" Bar Barnes.

RADIAL DRILLS

6' Western, universal motor drive.
48" Dresses, plain, gear box type.
42" New Canedy-Otto, post type.
30" Dresses, cone type.

DRILL PRESSES

14" New U. S. Sensitive.
16" New Canedy Otto.
20" New Champion, back geared, power feed.
20" New Superior, back geared, power feed.
24" New Superior, back geared, power feed.
25" Barnes, stationary head, back geared.
25" New Superior, sliding head.
28" New Superior, sliding head.
32" New Superior, sliding head.
36" New Superior, sliding head.
36" Bement Goose neck.
14" One Spindle Allen Sensitive.
14" Two Spindle Allen sensitive.
14" Four Spindle Allen sensitive.

HAMMERS

400-lb. Single Frame steam.
100-lb. New Little Giant.
50-lb. New Little Giant.
25-lb. New Little Giant.

PRESSES

78½ Bliss Twin Drive triple gear.
No 3 Bliss, double crank.
No. 138 Max Ams Inclinable.
No. 64 New Consolidated.

We also carry in stock a large assortment of Bench and Floor Grinders, Chucks, Vises, Small Bench and Floor Drill Presses, Hack Saw Machines, Blades, etc.

The above is only a partial list of our machinery in stock. Write for our complete list which has just been issued.

WRITE TOOMEY FIRST

"SPECIAL OFFERINGS"

21—No. 2-A WARNER & SWASEY HOLLOW HEXAGON TURRET LATHES 3¼" bar capacity, with automatic chuck—USED ONLY ONE MONTH.

18—No. 20 BRYANT CHUCKING GRINDERS—SOME NEW—OTHERS SLIGHTLY USED.

MACHINE TOOLS AT BARGAIN PRICES

Planers

1—24 x 24 x 12′ Cincinnati 2-head planers.
1—36 x 36 x 12′ Cincinnati 4-head planers.
1—42 x 42 x 14′ Gray 2-head planer.
1—36 x 36 x 8′ Dietrick & Harvey open side 2-head planer—1 head on cross rail; 1 head on side rail.
1—36 x 36 x 10′ Whitcomb 2-head planer.
3—48 x 48 x 14′ 4-head Powell planers.

Slotters

6—18" DILL TRAVELING HEAD SLOTTERS DIRECT CONNECTED TO 220 VOLT D.C. MOTOR WITH CONTROL APPARATUS—CONDITION ABSOLUTELY EQUAL TO NEW—will sell with or without motor, or substitute A.C. motor.
1—24" Niles-Bement-Pond slotter.

Radial Drills

1—3′ Fosdick plain cone driven radial drill.
1—6′ Reed-Prentice plain single pulley drive.
1—Hoefer horizontal type belt driven drilling.

Drilling Machines

25—Single and 2-spindle high speed Avey drills, ½" capacity.
2—24" Kern back geared drill presses, power feed to spindle.
2—24" Aurora sliding head drill presses.
An assortment of single, two, three, four and five spindle Allen high speed drill presses.

Plain and Universal Milling Machines

1—No. 4-A LeBlond Universal Milling Machine with dividing head.
1—No. 0 Brown & Sharpe plain.
12—No. 3½ Fox power feed plain.
1—No. 2 Becker-Brainerd Universal.
2—No. 2 Kempsmith plain milling machines.
1—No. 2 Van Norman duplex milling machine.
3—No. 3 Kempsmith universal.
3—No. 3 Kempsmith plain milling machine.

Manufacturing Milling Machines and Profilers.

1—No. 35 Kempsmith manufacturers, milling.
5—No. 32 Kempsmith manufacturers, milling.
7—No. 12 Brown & Sharpe plain, milling.
5—No. 7 Becker plain milling machines.
2—Becker duplex milling machines, 21" between spindles, 30" table feed.
6—Leland & Gifford No. 12 Profilers.
1—Pratt & Whitney 2" spline milling.

Turret Lathes

1—No. 4 Warner & Swasey universal turret lathe.
3—1" capacity Hercules machines with wire feed, hexagon turret and cross slide.
1—No. 00 Bardon & Oliver.
1—No. 1 Brown & Sharpe.
1—No. 4 Warner & Swasey Universal.
12—3 x 36 Jones & Lamson, geared feed with both bar and chucking equipment.
4—24" x 14" Prentice geared selective head.
6—No. 4 Warner & Swasey screw machines.

Engine Lathes

5—12 x 5 Hercules screw cutting.
1—14 x 6 Seneca Falls lathe.
8—18 x 8 American Q.C.G.
2—18 x 8 Chard lathes.
1—27 x 16 LeBlond driven by DC motor.
1—36 x 60 x 16′ LeBlond extension bed gap.
1—24 x 12 New Haven driven by DC motor.
8—18 x 8 Boye & Emmes lathes Q.C.G.
6—16 x 6 Reed Prentice lathes, Q.C.G.
2—19 x 8 Sidney heavy duty lathes, Q.C.G.
1—20 x 8 Whitcomb Blaisdell lathe, Q.C.G.
6—25 x 10 LeBlond heavy duty lathes, Q.C.G.
2—14 x 6 Sidney engine lathes, NEW.
2—14 x 8 Sidney engine lathes, NEW.
2—16 x 8 Sidney engine lathes, NEW.
2—20 x 10 Sidney engine lathes, NEW.

Grinders

2—No. 1½ LeBlond cutter grinders.
1—Norton Universal cutter grinder.
1—22 x 6 x 12 Abrasive surface grinder with magnetic chuck.
1—No. 1 Fraser Universal grinder.
12—No. 20 Bryant Chucking grinders.
2—Reed surface grinders.
1—Pratt & Whitney automatic thread milling machine cutter grinder.
5—Walker No. 2 surface with magnetic chucks.
1—Blanchard 26" A.C. motor driven heavy duty surface grinder.
2—10 x 36 Norton plain grinder.

Miscellaneous

1—No. 50 Little Giant power hammer.
2—Schuchardt & Schutte tooth rounding mach.
1—10′ Ohl Brake, 10′ between housings, 12 ga.

This is only part of our large stock of machinery—send us your inquiries. We may have just the machines you are looking for.

WE OFFER ONLY MACHINES THAT WE OWN OUTRIGHT. WE GUARANTEE THEM TO BE EXACTLY AS REPRESENTED.

WIRE, 'PHONE or WRITE 'PHONE CORTLANDT 8164

MOREY and COMPANY, Inc.

Formerly Machinery Merchants, Inc.

50 Church Street New York City

Machinery and Equipment

LATHES

48" x 16′ Niles Wheel Lathe, M. D.
38" x 18′ Pond Triple Geared.
30" x 14′ Marshall & Huschart, C. B.
27" x 12′ Pittsburgh Dbl. B. G.
26" x 16′ Draper Triple Geared.
26" x 10′ 6" Walcott Quick Change Gear.
24" x 16′ Johnson, C. R.
24" x 12′ Dietz, Schumacher & Boye.
20" x 8′ 6" Walcott Q. C. G.
19" x 10′ LeBlond Motor Drive, 220 Volt D.C.
19" x 8′ LeBlond, Q. C. G. Hvy. Duty.
18" x 8′ Mueller, Q. C. G. Hvy. Duty.
16" x 8′ LeBlonde, H. S.
14" x 6′ LeBlonde.
14" x 5′ American Speed Lathe Hand Rest.
24" Steinle and Gisholt Turret Lathes.
22" x 8′ Bullard Turret Lathe.
18" x 9′ Libby Turret Lathe.

PLANERS—SHAPERS

27" x 27" x 8′ Woodward-Powell Planer, 1 hd.
30" x 30" x 9′ Sellers Planer, 1 hd.
36" x 36" x 12′ Pond Planer, 3 hds.
72" x 56" x 12′ Betts Planer, 2 hds.
17" Economy S. G. Crank Shaper.
20" Gould & Eberhard B. G. Cr. Shapers.
26" Gould & Eberhard B. G. Cr. Shapers.

BORING MILLS

76" Bullard Vert., 2 hd.
72" Pond Vert., 2 hd.
42" Bullard Vert., 2 hd.
36" Bridgeport, 1 head.
48" Niles Car Wheel.

MILLERS—DRILLS

No. 0 Owen Plain Miller, new.
No. 1 U. S. Improved Hand Miller.
No. 1½ Kempsmith Plain Miller.
No. 0 and 1 (New) Burke Sensitive Bench Drills.
12" Fulton Bench Sensitive Drill.
20" (New) Silver Drills, Plain and Bk. Gd.
20" Foote-Burt Manufacturers Drill.
38" and 40" New Haven B. G. Drills.
Garvin 4 Spindle Drill, No. 3 Taper.
4½′ Bickford Plain Radial Drill, Tap. Attach.

TRIMMING PRESSES

2—Toledo No. 59¼ Double Geared Straight Column Trimming Presses with Friction Clutch. 6" Stroke. 95% New.

PUNCHES—SHEARS

No. 3-A Royersford S. E. Punch and Shear.
50" Th. Reade S. E. Punch & Shear 1¼" x 1".
Bliss 22" Foot Power Sq. Shear.
Wais & Roos Sq. Shear, Cap. 48" x ¼".

PRESSES

No. 56 Dbl. Housing Power Press, 24" width.
No. DG-76 Ferracute Press.
300, 500 and 700-Ton Mesta Forging Presses, 1500 lb. pressure.

SLOTTER

14" Niles, 30" Rotary Table.

MISCELLANEOUS

Gliem Cold Saw 22" dia. 6" cap.
Eaton, Cole & Burnham 8" Pipe Machine.
Acme 2" Bolt Cutter, Sgl. Hd.
Climax Engine and 6 H.P. Ver. S. F. Boiler.
Twist Drill Grinder, cap. to 2½" dia.
Plymouth Grinders No. 13, No. 14.
10" Dbl. End Emery Grinder on Column.
Diamond 12" Dbl. End Bench Grinder.
Barnes 20" Wet Tool Grinder.
20" Ransom 250 Volt D.C., Wet Tool Grinder.
Dbl. End Polishing Stand, 42" x ⅞" Arbor.
Cuyahoga Dbl. End Polishing Stand, 18" x 1¼".
Air Comp. Au. To No. 0—3" x 4".
Air Comp. Ingersoll-Rand 10¼" x 12".
Air Comp. Ingersoll-Rand 6" x 8".
Silent Chain Belt 16" x 8" x 1¼".
Root No. 3 Acme Hand Blower.
Brazing table, 17" x 29½". Gas Tank.
Set Hand forming Rolls, 3 rolls 36" dia.
Toledo Cold or Hot Mill, 12" x 22" Rolls.
10 H.P. Westinghouse Motor, 220 V., 2 Ph.
25 H.P. Allis-Chalmers Motor, 440 V., 3 Ph.
40 H.P. Allis-Chalmers, 440 V., 3 Ph.

RUSSELL MACHINE CO., Inc., 28th and A. V. Ry., Pittsburgh, Pa.

"Headquarters for Good Machines in Pittsburgh"

GRINDERS

Bath, Univ. Tool & Cutter, 14" x 40".
No. 13 B. & S. Univ. & Tool, 8" x 24½".
Brown & Sharpe, Plain, 12" x 12".
No. 5 Diamond wet tool, 36" single stand.
Yankee Drill Grinder, 12" wheels.

LATHES

48" x 12' Geared Head, T.A., motor 3-60-440.
44" x 30' Fifield, triple geared, belted.
36" x 30' Geared Head, T.A., motor 3-60-440.
26" x 14' Gleason, C.R., T.A.
24" x 12' S.B.&E., C.R.
24" x 10' LeBlond, Q.C.G., C.R.
20" x 10' LeBlond, Q.C.G., C.R.
20" x 8' LeBlond, Q.C.G., C.R., T.A.
17" x 8' Sidney, Q.C.G., C.R.
16" x 8' LeBlond, heavy, C.R.
16" x 6' Monarch and LeBlond, C.R.

MILLERS, PLANERS, SHAPERS

No. 2 Cleveland, Univ., Index Head, near new.
No. 3 B. & S. Univ., index head, cone drive.
No. 3 Cincinnati, plain, cone drive.
No. 2 Bristol Vertical Miller, rotary table.
16" Smith & Mills, 20" Steptoe, 24" Cincinnati.

ELECTRIC TRAVELING CRANES

10 ton P. & H., 3 motor, 220 V. DC., 70'7½" and 68'3" spans
20 ton Shaw, 3 motor, 110 V. DC., 55'10" span
Hoist, ¾ ton Box, 220 V. DC., 2 motor, clam shell bucket.

HAMMERS

Steam Drop, 3000 lb. Niles
Steam 2000 lb. Niles, single leg
Steam, 8000, 12,000 and 14,000 lb. double frame
Board Drop, 2,000 lb. Toledo
Helve, Upright, 200 lb. Bradley
Helve, 80 and 40 lb. Bradley

72" x 72" x 26' N.B.P., 3 heads.
72" x 48" x 16' Pond, 2 heads.
36" x 36" x 14' Ohio, 4 heads, motor 3-60-440.
36" x 36" x 10' Cincinnati, 1 head, motor 220 V. DC.
36" x 36" x 10' Liberty, 2 heads (new).
30" x 30" x 10' Sellers, 1 head.

PRESSES

No. 20-B Bliss, O.B.I., 3" stroke, 2750 lbs. (2).
No. 75 Toledo, geared, arr. for motor.
Consolidated, crank, 4" str., 5500 lbs.
No. SG-84 Ferracute, dbl. crank, 4" str., 16,000 lbs.
No. 6½ Bliss, dbl. crank, geared, 4" str., tie rod frame.
No. 1½ Bliss Toggle Drawing Press.

MISCELLANEOUS

Boring Mill, 36" Bridgeport, 2 heads, motor 220 V. DC.
Bulldozers, Nos. 2, 3, 4 and 6 Williams-White.
Drill, Gang, 8 spindle Foote-Burt, cap. 1⅜".
Drills, 20" Foote-Burt, No. 310 Baker, Heavy Duty.
Shears, Guillotine, cap. 1", 2" and 3".
Shear, Guillotine, cap. 2" sq., motor 3-60-440.
Shear, Squaring, 122", cap. ⅜" and 14 Ga. (2)
Shear, squaring, 8 ft., cap. 16 ga.
Shear, squaring, 52", cap. 14 ga.
Pipe Machines, 2", 6", 8", 10" and 12".

Partial List—Quick Shipments

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Woolworth Building **New York**

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1—No. 27K BLISS KNUCKLE JOINT EMBOSSING PRESS, 2½" STROKE. CONDITION AS GOOD AS NEW.
1—No. 64 CONSOLIDATED PRESS, 4 INCH STROKE, GEARED. NEW, NEVER UNCRATED.
3—No. 77½ BLISS PRESSES TIE ROD FRAME, 12 INCH STROKE, AUTO FRICTION CLUTCH.
2—No. 77½ BLISS PRESSES TIE ROD FRAME, 10 INCH STROKE, AUTO FRICTION CLUTCH.
1—No. 59¼ TOLEDO TIE ROD FRAME PRESS, 12" STROKE, DOUBLE GEARED.
4—No. 78½ BLISS TRIPLE GEARED PRESSES DOUBLE DRIVE 16" STROKE, TIE ROD FRAME. ONE YEAR OLD.
2—No. 87 BLISS CRANK PRESSES, DOUBLE GEARED 16 INCH STROKE FRICTION CLUTCH.
1—No. 87 BLISS CRANK PRESS, DOUBLE GEARED 12 INCH STROKE FRICTION CLUTCH.
1—No. 58 TOLEDO CRANK PRESS, STROKE 3½ INCH.
1—No. 58 TOLEDO SINGLE CRANK PRESS, stroke 2¾ INCH.
6—No. 69N BLISS DOUBLE ACTION CAM PRESSES, 2½" and 5" STROKE.
1—No. 5 BLISS DOUBLE ACTION CAM FLYWHEEL PRESS, with side cutting attachment, 3" and 6" stroke, 24" between housings. Condition as good as new.
4—BLISS 2W 20 INCH STROKE WIRING PRESSES.
2—No. 60½ Bliss Rack and Pinion Presses.
1—No. 29 Bliss 1500 Ton Knuckle Joint Embossing Press.
1—No. 37½ Bliss Straight Side Flywheel Press.
1—No. 407 Bliss Toggle Drawing Press.
1—No. 58½ Toledo Straight Side Geared Press, 12" stroke (New).
1—No. 39B Bliss Press, 1¼" stroke.
1—No. 39B Bliss Press, 2½" stroke.
1—No. 2 Bliss Press
1—No. 3½ Bliss Cam Double Action Press.
1—No. 1½ Bliss Cam Double Action Press.
1—No. 168½ Toledo Toggle Drawing Press.
1—No. 603 Consolidated knuckle Joint press.
2—No. 10 Zeh & Hahnemann Percussion Power Presses.
10—No. 171 B Zeh & Hahnemann Horizontal Reducing Presses, 14" stroke.
4—NEW TAYLOR & FENN VERTICAL MILLING MACHINES.
5—NEW CARTER & HAKES NO. 2 PLAIN MILLING MACHINES.
5—NEW BICKFORD (GREENFIELD) MILLING MACHINES, POWER FEED.
1—NEW 4 SPINDLE TAYLOR & FENN DRILLERS.
3—NEW NO. 6 DIAMOND DISC GRINDERS.
9—No. 1½ LANDIS INTERNAL GRINDERS.
1—No. 1 LANDIS INTERNAL GRINDER.
2—BULLARD VERTICAL BORING MILLS, TWO HEADS ON CROSS RAIL, SWING ABOUT 42" BETWEEN HOUSINGS.
1—New No. 1 Garvin back geared Universal Milling Machine.
3—No. 3 Cincinnati geared head Heavy duty Universal Millers with vertical attachment.
6—No. 25—24" Foote-Burt back geared high duty Drill Presses.
1—12' Bending Roll, Pyramid type drop end, capacity 5/8".
1—No. 4½ Aetna Swaging Machine.
1—96" x 30' Putnam Engine Lathe.
1—36" x 18' Woodlite Screw Cutting Engine Lathe, raising blocks to 52".
1—16" x 6' Hendey Engine Lathe with taper attachment.
1—26" x 14' Putnam Heavy duty, double back geared Engine Lathe.
2—2" Model A. Cleveland Automatics.
1—No. 1¼ Model A Cleveland Automatic.
1—Newton 60" Slotting Machine with 220 volt, D. C. Motor.
1—Baker Bros. 6 spindle Cylinder Boring Machine, 1916 Model.
1—No. N-55 Schatz Combination Punch and Shear, Capacity 1" through ¾".
1—2" Williams Pipe Machine.
1—2" Acme Bolt Cutter.
4—800 lb. Billings & Spencer Drop Hammers.
6—1000 lb. Billings & Spencer Drop Hammers.

PARTIAL LIST

LATHES:—

14 x 5 Seneca Falls lathe.
14 x 6 Seneca Falls lathe.
14 x 6 Sebastian lathe.
15 x 6 Monarch lathe.
15 x 6 Springfield lathe, Q.C.G.
16 x 6 Reed lathe.
20 x 8 Prentiss geared head lathe S.P.D.
21 x 36 x 16 Le Blond gap lathe.
18 x 8 Superior Q.C.G. lathe (new).

MILLERS:—

U. S. hand miller (new).
No. 1½ American plain miller (new).
No. 1½ Brown & Sharpe Universal Miller.
No. 2 Becker Universal Miller.
Brown & Sharpe manufacturing miller.
Lees-Bradner thread miller.
No. 25 Becker plain miller.
No. 13 Garvin Plain Miller.
No. 3½ Fox Plain Miller.
10 x 28 Bristol vertical miller.

GRINDERS:—

No. 2 Brown & Sharpe surface grinder.
No. 3 Brown & Sharpe universal grinder.
Yankee Twist Drill Grinder.
No. 1½ Cincinnati universal tool grinder.
Garner No. 1 Disc Grinder.
Besley No. 14 Disc Grinder.
12 x 36 Bridgeport plain grinder.
10 x 52 Landis cylindrical grinder.
14 x 50 Norton cylindrical grinder.

SHAPERS:—

24" Fellow gear shaper.
24" Gould & Eberhard b. g. shaper.
28" Smith & Mills shaper, planer type.
32" Smith & Mills b. g. spd. shaper.

PRESSES:—

Single spindle Henry & Wright drill presses.
2-Spindle Henry & Wright drill presses.
20" Excelsior b. g. new drill press.
26" Barnes G. H. sliding head drill press.
36" Fitchburg B.G. sliding head drill press.
36" Snyder B.G., sliding head drill press.
Henry Rueson power press 1½" stroke.
Zeh & Hahnemann reducing presses 14" stroke (horizontal).

PLANERS:—

24" Fay & Egan pony-wood planer.
30 x 30 x 10 Powell 2 heads on rail, equipped for motor drive (new) planer.
36 x 36 x 14 Woodward & Powell single head planer.
36 x 36 x 12 Niles, planer, 2 heads.

BORING MILLS:—

1—60" Niles 2 head, s.p.d. vertical boring mill.
90" Old Type boring mill.
No. 26 Epson Lucas horizontal boring mill 4" bar.

MISCELLANEOUS

1—5 Ton United Foundry Crane.
Little Giant Steam shovel.
2000-lb. Chambersberg steam hammer.
8" Shuhart & Schutte gear hobber.
No. 2 Norton Keyseater.
Williams Shreader.
Farrel Crusher.
2" Saunders pipe machine.
2-spindle Pratt & Whitney profiler.
Garvin single spindle profiler.
Blaisdell vacuum pump, D.C. motor.
1—Newboldt circular sheer, D.C. motor.
No. 5B United Engineering shear.
Grant Riveter $\frac{3}{16}$".
Racine Hack saws.
Morton traveling head slider.
5 Langlier swaging machines.
Garvin automatic tapping machine.
1½" 4-headed Webster and Perks bolt threader.
No. 2 Garvin Screw Machine wire feed auto. collets friction countershaft.

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1—Libby Lathe complete with equipment.

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1—Horizontal Boring, Drilling Milling Newton Floor type 4" bar.

1—30" Bullard.

Modern Self Contained Grinder 12x48

Millers

2—New No. 3 Owen Universal Milling Machines.
Less than factory price.

NO. 5 BROWN & SHARPE VERTICAL MILLER

TABLE INCLUDING OIL PANS AND CHANNELS 64"x16" WORKING SURFACE 52" x 16", 3 T SLOTS ¾" WIDE.

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1—3½' Prentice Radial Drill, with gear box, single pulley drive.
1—4' Universal Radial Drill, arranged motor drive.
1—No. 30 Natco 34 Spindle Multi. Drill, motor drive, good as new.
1—Bausch 12 Spindle Multiple Drill, equipped for 24 spindles, capacity ½" to 1¼".
4—Hoefer Drills, 21", 24", 26", 28".
1—26" Barnes Sliding Head Drill, tapping attachment, B. G. P. F.

Rolls & Bulldozers

1—No. 4 Rock River Bulldozer, arranged motor drive, 20" stroke, size cross head—57" x 12", die space at end of stroke 38".

Grinders

1—10 x 36" Thomson Full Universal Grinder.
1—No. 2-A Landis 16 x 32 Universal Grinder.
1—No. 2 Manhattan Surface Grinder, (new).
1—Grand Rapids Drill Grinder ¼" to 2½" capacity.
1—No. 2 Woods Universal Cutter and Tool Grinder.
1—No. 2 Brand New Oakley Universal Cutter and Tool Grinder.

Shapers

3—16" Whipp S. G. Crank Shapers (new).
2—20" Ohio B. G. Crank Shapers (new).
1—Each 16, 18, 21, 24" Hollingsworth Back Geared Crank Shapers (new).

Millers

2—No. 2½ American Plain Mills (New).
1—No. 2 American Plain Mill (used).
1—Each Nos. 2-B and 2 Rockford Universal Mills (new).
1—No. 0 Bickett Vertical Mill & Profiler.
2—No. 1 U. S. Hand Millers.

Lathes

1—24" Gisholt Turret Lathe, chucking equipment, Taper attachment, rapid traverse (modern).
1—26" x 16½' Solid Spindle Back Gear Compound Rest Engine Lathe.
1—16" x 6' Jones & Lamson Engine Lathe, Hollow Spindle, complete with plain rest, countershaft, face plate, wrenches, etc.
1—17" x 8' Perkins Engine Lathe, Hollow Spindle, complete with plain rest, countershaft, face plate, wrenches, etc., in first-class operative condition.
1—Each Sidney Medium Pattern Lathes, 14, 16, 18, 20", by 6, 8, 10' beds, 3-step cone, D.B.Q.C.G.
1—Each Sidney Heavy Duty Lathes, 15, 17, 19, 25, 27" by 6, 8, 10, 12, 14' beds, 3-step cone, D. B. Q. C. G.
1—14" x 6' Flather Lathe, P. R. H. S.

Miscellaneous

1—No. 6 Quickwork Rotary Shear, 48" throat, 1" cutting capacity.
24 x 24" x 6' Gray Planer, one head on cross rail.
1—26" x 24" x 8' Pond Planer, 2 heads.
1—No. 2 Royersford Double End Punch & shear, 7½" throat, cap. ⅞ x ¾".
2—No. 7 Long & Alstatter Punch & Shears, approx. 5" throat, cap, ⅜ x ⅜".
1—No. 3 Long & Alstatter 3½" Tire Welder.
1—6-A Toledo Butt Welder, cap. 1⅛ rd.
1—No. 38 Forbes Pipe Threading & Cut-off machine.
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1—11″ x 4′ New South Bend Engine Lathe
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2—36″ x 12′ Pond Machine Tool Co. Engine Lathes
1—36″ x 14′ F. E. Reed Engine Lathe
2—36″ x 16′ Niles-Bement-Pond triple geared Engine Lathes motor drive

MILLERS

1—#1½ American Milling Machine Co. plain (New)
3—#7-H Becker Lincoln Type M
3—#12 Pratt & Whitney Lincoln Type
1—#1 Standard Hand Miller

DRILL PRESSES

2—Allen Single spindle high speed
2—30″ Snyder Sliding Head
1—3′ Prentiss Plain Radial Drill with tapping attachment
1—6′ Bausch plain with tapping attachment
1—7′ Pond Machine Tool Co., plain

BORING MILLS

1—30″ Bridgeport (Bullard) Single Head
1—42″ Bullard Vertical—two swivel heads
1—8′ Pond Machine Tool Co. two swivel heads

GRINDERS

1—Gisholt Tool Grinder
1—#2½ Bath Universal Grinder

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1—#3 Adriance Inclinable
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3—#3 Superiors, complete with collets, etc.
2—#54 National Acme Automatics—4-spindle

SHAPERS

1—16″ Ohio Crank
1—24″ Potter & Johnson Tool Room with Universal Table

MISCELLANEOUS

1—2″ x 24″ J. & L. Geared Head with roll feed bar and chucking equipment
1—#1 Adams Automatic Gear Hobber
1—6′ Peck, Stow & Wilcox Power Geared Squaring Shear, #12 Gauge
1—Reed-Prentice Thread Miller
1—350-lb. Merrill Board Lift Drop Hammer
1—60″ Newton Portable Slotter
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74 LATHES—from 20" to 48", beds from 10' to 54', almost all heavy duty, double back geared, quick change gear, some face plate drive, others motor driven.

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2—600 lb. BILLINGS & SPENCER Board Drop Hammers.
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1—No. 59 TOLEDO Straight Sided Press, with tie-rod frame, Stroke 12″, Distance between uprights 40″, Double back geared, friction clutch.
1—DGG-55 FERRACUTE Press, 20″ stroke; DGG-56 FERRACUTE Press 20″ stroke;
D-102 FERRACUTE Press, 16″, 25″, 30″ and 42″ stroke;
Eg-6 FERRACUTE Press 2 stroke; EG-56 FERRACUTE 2¼″ stroke;
E-57 FERRACUTE Press, 2″ stroke.
1—72″ BULLARD Mill, two new heads.
1—38″ BULLARD Boring Mill, one turret, one plain head, thread cutting.
1—15′ HORIZONTAL Boring Mill, Floor type with 10″ bar.
1—12′ NILES Boring & Turning Mill, two swivel heads, table 68″ dia.
1—13B OWEN Plain Miller, Vertical Attachment.
4—No. 4 CINCINNATI Universal Millers, Vertical Head.
4—No. 3 KEMPSMITH Plain Millers, complete.
2—No. 4 BECKER Vertical Millers.
1—No. 3 CINCINNATI Vertical Miller, sliding head.
2—No. 2 CINCINNATI Vertical Millers, Sliding head, complete.
1—6′ PRENTICE Radial Drill, Single Pulley Drive.
1—5′ PRENTICE Radial Drill, Single Pully Drive.
1—4′ 6″ BICKFORD Radial, complete.
1—24″ x 24″ x 12′ POND Planer.
4—NEW 42″ x 42″ x 12′ OPENSIDE Planer, two heads, complete.
7—2¼″ GRIDLEY four spindle Automatics, complete.
3—1¼″ GRIDLEY four spindle Automatics, complete.
1—No. 0 BROWN-SHARPE Auto Screw Machine, 6 hole turret.
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1—40″ x 24′ FIFIELD LATHE, Triple Geared.
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3—18″ x 10′ HENDEY Lathes, Taper, Pan, Geared head, Relieving attch.
3—18″ x 10′ HENDEY Lathes, Taper, Pan, Geared head.
1—18″ x 10′ LEBLONDE Lathe.
1—27″ x 0′ AMERICAN Geared head lathe, single pulley, quick change.
4—24″ BEMENT Crank Slotters, complete.
3—18″ DILL Slotters complete, with motor.
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2—16″ CINCINNATI Shapers, complete.
1—No. 30 12-Spindle BAUSCH Drill, complete.
3—24″ AURORA Sliding Head Drill, complete.
1—26″ BARNES Upright Drill, complete.
1—36″ CINCINNATI Sliding Head Drill, complete.
3—No. 60 HEALD Cylindrical Grinders.

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30" Niles Slab Milling Machine.
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20 Ton 9½ x 113 x $\frac{5}{16}$".
15 Ton 16 x 96 x $\frac{5}{16}$".

CORRUGATED SHEET STEEL—New

6000 squares 22 gauge corrugated sheets 27½ x 120" and 27½ x 84", painted red two sides.
500 squares 12 gauge, 5" corrugations (four form a circle) 38 x 84" curved steel sheets.
100 squares 12 gauge 5" corrugations, 38 x 84" flat steel sheets.

CORRUGATED STEEL PLATES

200 Ton new corrugated Steel Plates manufactured for use of a large car company for corrugated car ends.

STORAGE TANKS

Vertical

50—20 ft. diam., 12 ft. high caulked inside and outside with top, side and bottom openings. Made mostly of $\frac{5}{16}$" Plate.
Cap. about 30,000 Gal. Have conical shaped tops. Will be shipped knocked down with all parts marked for re-erection.

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Diam.	Length	Cap.
6 ft.	24 ft.	5,500 Gal.
8 ft.	20 ft.	8,500 Gal.
7 ft.	36 ft.	10,500 Gal.
8 ft.	30 ft.	11,500 Gal.

These Tanks are of heavy construction, being made mostly of ½ in. plate and were used only a limited time for war purposes.

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4	170,000-gallon	New	Tanks
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3	19,500- "	New	"
8	16,000- "	Used	"
2	12,500- "	Used	"
1	12,250- "	Used	"
1	11,500- "	Used	"
9	6,000- "	Used	"

Other Tanks of Various Types and Capacities; also New and Used Tank Cars.

Prompt Shipment

Shippers' Car Line, Inc.
165 Broadway, New York
Cortlandt 4942

MORRISON & RISMAN
Buffalo, N. Y.

Besides our regular stock of
New 12, 16, 20, 25, 30, 35, 40, 45 lb. Rails
have just secured the following

RELAYERS

750 tons 56 lb.
240 tons 60 lb.
860 tons 65 lb.
175 tons 80 lb.
100 tons 85 lb.
425 tons 100 lb.

NEW RAILS RELAY

Frogs, Switches, Splices, Bolts, Nuts, Spikes, Accessories

New—RAILS—Relaying

10,000 Tons in stock. All sizes with accessories. Frogs, switches, crossings, etc.

L. B. Foster Co.

Park Bldg. Pittsburgh, Pa.
Tribune Bldg., 154 Nassau St., New York, N.Y.

New and Relaying
RAILS
All sections. Carried in stock in our yards for IMMEDIATE SHIPMENT

M. K. FRANK,
Frick Bldg., Pittsburgh, Pa.

FOR SALE
GAS ENGINE

185 horse power three cylinder Westinghouse vertical direct connected to Westinghouse generator 125 volt direct current in excellent condition. Write for full particulars.

R. Munroe & Sons Manufacturing Corporation,
23rd Street, Pittsburgh, Pa.

LOCOMOTIVE—FOR SALE

1—45 ton Locomotive, Good Condition, Standard Gauge.

LOUISVILLE, NEW ALBANY & CORYDON R. R. CO.
Corydon, Ind.

MACHINE TOOLS

We offer for sale the following machine tools which we have in our warehouse for immediate shipment. These are modern machines in excellent condition, upon which we are able to quote attractive prices.

1—No. 5 geared Toledo punch press. Like new.
6—No. 200 Heald Ring Grinders.
1—No. 6 Wood tilted turret lathe.
1—No. 4 Wood tilted turret lathe.
1—30x10 Harrington engine lathe.
1—22x16 Gleason engine lathe.
1—40x12 Gleason engine lathe.
1—No. 5 Becker vertical miller.
1—No. 1½ Rockford plain miller.
1—3′ Dresses radial drill, cone driven.
1—6′ Bickford radial drill, cone driven.
1—40″ sliding head drill press.
1—22″ sliding head drill press.
1—28″ Smith & Mills triple geared shaper.
1—No. 60 Heald cylinder grinder.
2—12x36 Modern plain grinders.
5—No. 51 Acme 4-spindle automatic screw machines.
1—36″ Niles boring mill, 2 swivel heads.
1—72″ Bullard boring mill, 2 swivel heads.
1—36″ Fellows gear shaper for spur and internal gears.
1—36x36x12 Wilson planer, new.
1—Detroit Centerless Cylindrical grinder, like new.

We will be pleased to send you full description of any of these machines upon receipt of your advice.

HOMER STRONG
No. 301 State St., Rochester, N. Y.
Branch Offices:
Albany, Buffalo, Syracuse, N. Y.

Heavy Lathes For Sale

We have just bought 20 Heavy Lathes which we are now overhauling and will sell them at fair prices.

36″ x 10′	Putnam Geared face plate Lathe, compound rest, Screw Cutting, no tailstock, fine condition, at.....	$1000.00
42″ x 16′	Lathe & Morse S. C. Lathe, compound rest, solid spindle, 4″ belt, b. g., complete and well worth.....	1250.00
28″ x 13′	Niles-Bement-Pond heavy duty compound, taper, P. C. F., very modern and fine condition.....	1750.00
26″ x 12′	Putnam H. S. Compound, overhauled and complete, at	800.00
24″ x 10′	Reed & Putnam and	
20″ x 10′	and 12′ Putnam. We have several, let us know what size and we will pick one out and send you the particulars, also photo.....	
24″ x 20′	Niles, compound, taper, H. S., and complete, 15′ 6″ between centers, fine order, at	1250.00
20″ x 8½′	Roulsted Double B. G. Compound, 2″ H. S., excellent condition and as good as new, at.....	700.00
20″ x 12′	Schumaker & Boye B. G., oil pan bed but not screw cutting, a big bargain at.....	375.00

10—14″ and 16″ x 8′ and 6′ Beds, from $300.00 to $450.00 each

HENDEY LATHES

1—20″ x 10′	Hendey, tie bar, oil pan, compound and taper attachment	$1800.00
1—16″ x 7′	Hendey, tie bar, taper and compound.....	900.00
3—16″ x 6′	Hendey, com., taper, oil pan bed.....	800.00
1—16″ x 6′	Hendey, comp., oil pan.....	750.00

We guarantee the condition of these lathes and can send you photos of most of them.

J. L. Lucas & Son, Inc., 3 Fox St., Bridgeport, Conn.

Have You Learned to "Rely on Reliance"?

LATHES

1—16″ x 6′ Blaisdell, plain change.
1—18″ x 8′ Superior, D.B.G., Q.C.G.
1—18″ x 9′ Chard, Semi Quick Change.
2—20″ x 8′ All Geared Head Lodge & Shipley.
1—22″ x 10′ Hamilton, Semi Quick Change.
1—22″ x 10′ Davis, D.B.G., Q.C.G.
1—24″ x 12′ Lodge & Shipley, Q.C.G., T.A.
5—26″ x 10′ Bridgeford, D.B.G., Q.C.G.
1—27″ x 10′ Pittsburgh, Q.C.G.
3—30″ x 14′ Pond, arranged for motor drive.
1—48″ Niles Car Wheel.

BORING MILLS

No. 1 Betts Horizontal, 3″ bar.
42″ Bullard, Vertical, 2 heads.
72″ Pond, Vertical, 2 swivel heads.
76″ Bullard, Vertical, 2 swivel heads.

SHAPERS AND PLANERS

1—20″ Gould & Eberhardt.
1—72″ x 48″ x 16′ Pond, 2 heads.
1—72″x 72″ 20′ Thurston-Gardner, 1 head.

PUNCHES AND SHEARS

1—No. 3 H. & J. D. E., throat 20″, cap. 1″ x 1″.
Reade S. E., Throat 50″, cap. 1¼″ x 1″.

MISCELLANEOUS

1—No. 1 Davis Keyseater, full bar equipment.
No. 70 Heald Grinder.
1—No. 3 B. & S. Univ. Cutter & R. Grinder.
1—No. 1 Williams Pipe Machine, cap. up to 2″.
1—12″ Gleason Bevel Gear Planer.
1—No. 4 B. & S. Univ. Milling Machine.
1—28″ New Haven Drill Press.
1—100-lb. Bliss Board Drop Hammer.
1 each—25-40-60 lb. Bradley Hammers.
2—1″ Acme Bolt Cutters.
1—No. 2 Pratt & Whitney Die Sinker.

Partial list. We solicit your inquiries.

Reliance Machinery Sales Co.
7110 West Park Way Pittsburgh, Pa.

"WORTH WHILE" USED EQUIPMENT

Forsyth 18″ x 10′ Engine Lathe, Pl. Rest.
Lapointe No. 3 Broaching Machine.
Brainerd No. 22 Plain Back Geared Milling Machine.
Bliss No. 59 Embossing Press, 200 tons capacity.
National-Acme No. 55, 1⅝″ cap. Auto. Screw Machine.
Allen Two-Spindle Ball Bearing Sens. Drill.

Lynd-Farquhar Company
Machine Tools of Quality
Dept. "A" BOSTON, MASS.

Cleveland Automatics

15 — 2¾" — 3¾" Cleveland Model "A", Automatic Screw Machines, good as new.

ANSON W. RICHARDS
Tele. Cortland 1777
149 Broadway New York City

SPECIAL BARGAIN

5—No. 60½ BLISS Rack & Pinion Motion Presses, heavily geared, 4 to 42″ stroke, weight 12,500 lbs. each. Practically new. Investigate. Many others. Large complete stock list forwarded on request.

A. G. Schoonmaker & Sons Inc.
25 Church Street
NEW YORK

Electric Cranes & Hoists

Material Handling Machinery
Quick Delivery.

N. B. PAYNE & CO.
Telephone Cortlandt 1800 25 Church St., New York

MACHINE TOOLS

Large stock of large and small tools available for immediate shipment write for our stock list just printed. Send us list of your requirements—SERVICE.

A. G. Schoonmaker & Sons Inc.
25 Church Street, New York City

Would you have machinery service-plus see

Cleveland-Duplex Machinery Co., Inc.
General Offices and Warerooms
1224 W. 6th St., Cleveland, Ohio

While They Last

A.C., 3-Phase, 60-Cycle, 220, 440-Volt, Electric Motors

100—¼-h.p. 1700 r.p.m.	$ 13.75 each	4—7½-h.p. 1700 r.p.m.	$120.00 each
32—½-h.p. 1200 r.p.m.	26.50 "	5—10-h.p. 1700 r.p.m.	140.00 "
30—¾-h.p. 1700 r.p.m.	32.50 "	5—10-h.p. 1200 r.p.m.	160.00 "
10—1-h.p. 1700 r.p.m.	38.75 "	2—10-h.p. 850 r.p.m.	195.00 "
2-h.p. 1160 r.p.m.	66.75 "	4—15-h.p. 1200 r.p.m.	190.00 "
4—2-h.p. 1700 r.p.m.	52.00 "	3—20-h.p. 1200 r.p.m.	245.00 "
3-h.p. 1200 r.p.m.	74.50 "	5—25-h.p. 1200 r.p.m.	280.00 "
18—3-h.p. 1700 r.p.m.	5900 "	8—35-h.p. 900 r.p.m.	365.00 "
15—5-h.p. 1200 r.p.m.	105.00 "	4—50-h.p. 900 r.p.m.	435.00 "
3—7½-h.p. 1200 r.p.m.	140.00 "		

All above in G. E. Whse., Allis-Chal., Fairbanks-Morse, Crocker-Wheeler, Wagner, etc., etc. Compensators extra. All brand new, used 4 months, and remember, GUARANTEED for ONE YEAR. Other sizes in proportion, A.C. or D.C. Largest stock of its kind in America. Some can be reconnected to 2-phase.

Nathan Klein & Co.

MOTORS - DYNAMOS

Centre, Baxter and Howard Sts., New York City, N. Y.

GENERATORS FOR SALE

1—Westinghouse 500 kw Turbine Generator 480 volt, 600 amps. 3 phase, 60 cycle 900 r.p.m., speed of turbine 6000 r.p.m. complete with switch board.. ..... $5000

1—Westinghouse Generator & Motor, 10 kw. 125 volt 80 amps. 1130 r.p.m. 16 H. P. 3 phase, 60 cycle, 440 volt, complete with switch board..$425

1—Westinghouse Motor and Generator, 37½ kw. 125 volt, 300 amps. 850 r.p.m. 60 H. P. 3 phase, 60 cycle, 440 volt, complete with switch board..$1000

SIMMONS MACHINE CO., Inc.
c/o Colt's Patent Fire Arms Co.,
Meriden, Conn.

For Sale

At Riveria, Texas

Ten Miles of Track

consisting of fifty-six and sixty pound rails with angle bars, spikes, fourteen complete switches, and 15,000 serviceable cypress ties.

ALSO

one 200 horsepower 72 feet McKeen

Motor Car

in first class condition. Will accept offers in track or loaded on cars at Riveria on Gulf Coast Railroad.

Riveria Beach & Western Railway
Riveria, Texas

HERE'S THE PLACE TO

Quickly Sell

OR ADVANTAGEOUSLY BUY ALL KINDS OF

Used Equipment

SAVE TIME AND MONEY BY MAKING YOUR WANTS KNOWN THRU

Used and Rebuilt Equipment Section

THE IRON TRADE REVIEW
CLEVELAND, OHIO

634

ANYTHING

you may need in the iron and steel field can be obtained by putting a classified ad in 638

THE IRON TRADE REVIEW

DERRICK—FOR SALE

1—5 ton steel Guy Derrick. Mast 50' boom 40' Six Gal. steel Guys, complete ready for hoist rope.
8—Triple 14" wire rope blocks.
4—Quadruple 14" wire rope blocks for ⅝" rope or less. Self lub. New.

Lafayette Engineering Company, Lafayette, Indiana

Reliable—POWER PLANT MACHINERY

DIRECT CURRENT GENERATORS
Belted and Direct Connected

1—7.5 K.W. Jantz & Leist 125 volt, 1000 R.P.M. compound wound, belted type Generator.
1—10.5 K.W. Western Electric 125 volt, 300 R.P.M. compound wound, belted Generator.
1—17½ K.W. Triumph, 115 volt, compound wound Generator, direct connected to an 8 x 8 Troy vertical automatic engine.
1—50 K.W. Allis-Chalmers, 125 volt, 250 R.P.M. compound wound Generator direct connected to a 12 x 12 Ball automatic engine with switchboard.
1—75 K.W. Ft. Wayne, 250 volt D.C. Generator direct connected to a 13 x 16 Russell automatic engine mounted on sub-base.
1—100 K.W. Westinghouse 250 volt, D.C. Generator, direct connected to a 16 x 16 Skinner automatic self-oiling engine.
1—150 K.W. Morgan-Gardner 250 volt, 550 R.P.M. 600 ampere, compound wound, belted type Generator.
1—150 K.W. Ridgway 250 volt D.C. Generator direct connected to an 18 x 19 McEwen automatic engine.
1—200 K.W. Jantz & Leist, 125 volt D.C. Generator, direct connected to a 22 x 22 Skinner automatic, heavy duty self-oiling engine.

DIRECT CURRENT MOTORS

No.	H.P.	Make	Volts	R.P.M.
1	50	Rebuilt Allis-Chalmers	250	1050
1	40	Rebuilt Western Electric	250	900
1	30	Rebuilt Northern	250	600
1	25	Rebuilt Fisher	250	500
2	20	New General Electric	230	1150
1	15	Rebuilt Allis-Chalmers	220	1200
2	10	Rebuilt Allis-Chalmers	220	1200
5	7½	New General Electric	230	1150
1	7½	Rebuilt Interpole	220	550–1100
6	5	New General Electric	230	1150

A. C. GENERATORS
Belted and Direct Connected

1—1250 K.W. Westinghouse-Parsons, 3 phase, 60 cycle, 2300 volt, 1200 R.P.M. Turbo Generator Set without condenser.
1—750 K.W. General Electric, 3 phase, 60 cycle, 2300 volt Turbo Generator Set with condenser.
1—New 675 K.V.A. General Electric, 3 phase, 60 cycle, 480 volt, 150 R.P.M. A.C. Generator with direct connected exciter and direct connected to a new 26 x 33 Ball Corliss type engine.
1—100 K.W. General Electric, 3 phase, 60 cycle, 2300 volt Turbo Generator Set with condenser.
1—85 K.W. Allis-Chalmers, 3 phase, 60 cycle, 2300 volt, 900 R.P.M. revolving field Alternator.
1—90 K.V.A. Electric Machinery Co., 3 phase, 60 cycle, 2300 volt, 1200 R.P.M. revolving field Alternator.
1—75 K.W. Westinghouse, 3 phase, 60 cycle, 440 volt, 720 R.P.M. revolving armature Alternator.

BOILERS

3—509 H.P. Babcock & Wilcox 200 lbs. pressure.
4—350 H.P. Sterling, 190 lbs. pressure.
2—400 H.P. Sterling, 160 lbs. pressure.
3—350 H.P. Babcock & Wilcox, 150 lbs. pressure.
2—250 H.P. Sterling, 150 lbs. pressure.
8—150 H.P. 72 x 18 high pressure return tubular.
1—125 H.P. 72 x 16 high pressure return tubular.
2—100 H.P. 66 x 16 return tubular.
1— 80 H.P. 60 x 16 high pressure.
1— 70 H.P. 54 x 16 return tubular.
1— 50 H.P. 54 x 14 high pressure.
1— 50 H.P. 48 x 14 return tubular.
1— 40 H.P. firebox or locomotive type on skids.
1— 30 H.P. 44 x 10 return tubular.
1— 20 H.P. 36 x 90" vertical.
1— 15 H.P. 36 x 7' vertical.
1— 10 H.P. 30 x 7½' vertical.

STEAM ENGINES

1—500 H.P. 26 x 48 Watts-Campbell Corliss.
1—350 H.P. 24 x 48 Bates Corliss.
1—250 H.P. 18 x 36 Hamilton Corliss.
1—125 H.P. 14 x 28 Filer & Stowell Corliss.
1—105 H.P. 14 x 20 H.S. & G.
1— 75 H.P. 13 x 16 Chandler & Taylor.
1— 50 H.P. 12 x 16 Industrial.
1— 45 H.P. 9 x 16 Brownell Automatic.
1— 40 H.P. 11 x 14 Brownell.
1— 35 H.P. 10 x 15 Erie.
1— 30 H.P. 8 x 14 H.S. & G.
1— 25 H.P. 8 x 8 Brownell.

MOTORS, A.C., 3 PHASE, 60 CYCLE
Slip Ring Type

No.	H.P.	Make	Volts	RPM.	Form
1	15	New General Elec.	440	1200	M
1	15	New General Elec.	220	900	M
1	25	New General Elec.	440	1200	M
1	30	New General Elec.	440	1200	M
1	40	New General Elec.	440	900	M
1	50	New General Elec.	440	900	M
1	50	New Allis-Chalmers	440	900	ANY
1	75	New General Elec.	440	900	M
1	100	New General Elec.	440	900	M
2	150	New General Elec.	440	600	M
2	200	Used Gen'l Elec. (Sy)	440	600	ATI

MOTORS—ALTERNATING CURRENT
3 Phase, 60 Cycle, Squirrel Cage

No.	H.P.	Make	Volts	R.P.M.
4	3	New Gen. Electric	220	1200
3	5	Used Gen. Electric	440	1200
1	7½	New Gen. Electric	220	1800
1	10	New Gen. Electric	220	1800
1	15	Used Crocker-Wh'er	440	850
1	15	Used Gen. Electric	440	1200
1	20	Used Westinghouse	220	1160
1	25	Used Gen. Electric	440	1200
1	25	Used Gen. Electric	440	600
1	25	New Gen. Electric	220	900
1	25	New Allis-Chalmers	220	575
1	30	New Gen. Electric	220	1200
1	40	New Gen. Electric	220	900
2	50	New Gen. Electric	220	900
2	50	Used Gen. Electric	440	720
2	75	New Gen. Electric	220	900
1	75	Used Westinghouse	220	1120
1	75	Used Westinghouse	220	700
2	100	New Gen. Electric	220	900
1	150	Used Westinghouse	2300	720

(Any of the above 220 volt motors can be furnished for 440 volts or vice versa)

MOTOR GENERATOR SETS

1—37½ K.W. Lincoln 125 volt, 900 R.P.M. D.C. Generator, direct connected to a 60 H.P. 3 phase, 60 cycle, 220 volt induction motor, with switchboard and instruments.
1—100 K.W. General Electric 250 volt Generator, direct connected to a General Electric, 3 phase, 60 cycle, 2300 volt synchronous motor with switchboard and instruments.
1—100 K.W. Westinghouse Synchronous Motor Generator Set as above.

THE RANDLE MACHINERY COMPANY
Established 35 Years

Located ONLY at 1747 POWER STREET, CINCINNATI, OHIO

PUMP & BOILER FOR SALE

1—100 gallon Tod Hydraulic Motor Driven Pump, 3000 lb. pressure, Motor Allis Chalmers, 440 RPM. Slip Ring, 250 H. P.

1—250 H. P. Bass Foundry & Machine Co. Watertube Boiler, steam drum butt strapped triple riveted, 150 lb. pressure.

W. A. CARRELL & CO.
211-213-215 Second Ave.
PITTSBURGH, PA.

AIR COMPRESSOR FOR SALE

One Heavy Duty Cross Compound Corliss Engine driven two stage Air Compressor, 2000 cubic feet, capacity, 100 pounds pressure equipped with Automatic Plate Valves (Iversen Patent).

MESTA MACHINE COMPANY,
P. O. Box 1124, Pittsburgh, Pa.

ATTENTION FUEL OIL USERS

TANKS

Immediate Shipment

15— 76" diameter x 40' long, 10,000 gallons
8—112" diameter x 19' 7" long, 10,000 gallons
6—112" diameter x 24' 5" long, 12,500 gallons
4—112" diameter x 29' 3" long, 15,000 gallons
8—112" diameter x 34' 1" long, 17,500 gallons
10—112" diameter x 38' 11" long, 20,000 gallons

Builders of plate work of every description for over fifty years. Send us your inquiries.

Sharpsville Boiler Works Co.
Sharpsville, Pa.

FOR SALE

Second Hand Weimer Blowing Engine in good running order.

Steam Cylinder 38" Diameter.

Air Cylinder 72" Diameter, 48" Stroke.

Located in Detroit, Mich.

M. A. HANNA & CO., Agents
408 Leader-News Bldg.
Cleveland, Ohio

BLOWERS—COMPRESSORS

100 Blowers all sizes for forges, cupolas, melting furnaces gas and oil fuel combustion, forced draft, waste heat, mill exhausters, etc. Positive pressure, Volume Blowers, gas and air exhausters, fans. **15 Air Compressors,** gas compressor. **8 Cupolas,** 40" to 96" dia. **7 Traveling Cranes,** hand power with or without hoists 3 to 15 tons. General line **new and used Foundry Equipment.**

Clifton-Pratt Co. Cincinnati, O.

YOU MAY BE OVERlooking a money-saving opportunity if you fail to read the advertisements in this Section each week.

841

Exceptional Power Plant Offering

Due to electrifying six plants of The City Ice Delivery Co., Cleveland, Ohio, we have purchased and offer for immediate sale—Boilers, Engines, Pumps and other machinery as follows:

BOILERS

Return Tubular

6—72x18 Hand fired 85 lbs. steam, 150 H.P.

Water Tube

2—133 H.P. B. & W. Hand Fired, 100 lbs. steam.
1—275 H.P. Sterling, 150 lbs. steam.
1—400 H.P. Sterling high pressure, 160 lbs. steam.

CORLISS ENGINES

Complete with balance wheels and outboard bearings, no belt wheel.

1—18x42 Right-hand Atlas.
1—22x42 Left-hand Atlas.
1—22x48 Featherstone left-hand.
1—22x42 Hamilton right-hand.
1—24x48 Lane & Bodley left-hand belt drive.

PUMPS

All Duplex and in fine condition.

1—4½x5x8
3—5x3x6
2—5¼x3½x5
1—5½x3½x5
3—6x4x6
1—6x5¾x6
1—6x4x7
1—6x4x8
6—7x4½x8
1—8x5x10
1—8x7x12
2—10x8½x12
1—12x8x12
1—12x8½x12
1—8x10x12 Vacuum pump

AIR COMPRESSORS

1—Westinghouse 11x11x11.
1—Weir 10x9x14.

VERTICAL ENGINES

1—6x6
1—6x8
1—7x7
3—8x8
1—8x10 double
1—8x12 side crank horizontal

WIRE OR WRITE FOR PARTICULARS

THE CLEVELAND BELTING & MACHINERY CO.,
1524 University Rd., CLEVELAND, OHIO

BOILERS

	Pressure
5—250 H.P. Wickes boilers,	150-lb.
1—300 H.P. Wickes boiler,	150-lb.
4—250 H.P. B & W boilers,	150-lb.
1—250 H.P. B & W boiler,	125-lb.
2—210 H.P. B & W boilers,	125-lb.
1—400 H.P. Stirling boiler,	150-lb.
1—260 H.P. Stirling boiler,	150-lb.
2—150 H.P. Stirling boilers,	150-lb.
1—400 H.P. Erie City boiler,	150-lb.
1—225 H.P. Geary boiler,	150-lb.
1—200 H.P. Scotch marine boiler,	125-lb.
1—500 H.P. Keeler boiler,	160-lb.
2—200 H.P. Scotch marine boilers, with wet back, good for marine purposes,	125-lb.
3—72″ x 18′ tubular boilers,	125-lb.
1—72″ x 16′ tubular boiler,	125-lb.
8—66″ x 16′ tubular boilers,	125-lb.
2—54″ x 14′ tubular boilers,	100-lb.

1—14 x 36 Corliss engine.
1800 agricultural gasoline engines (new).

OTHER MAKES AND SIZES

Steel smoke stacks.

J. F. DAVIS
1409 Harris Trust Building Chicago, Ill.

NEW BOILERS

All Sizes Immediate Shipment From Stock

Uniflow Return Tubular Boilers rated at 134, 155, 216, 259 and 313 H. P., 125 lbs. and 150 lbs. working pressure. Uniflow Boilers are noted for high efficiency, great overload capacity compactness and smokeless setting.

Wire or Write for Quotation
UNIFLOW BOILER CO., INC.
15th and Market Sts., Philadelphia, Pa.

FOR SALE

1—2000 Gallon high pressure gasoline tank.
2—Upright boilers, 15 and 18 H.P.
1—Stationary boiler, 60 H.P.
2—Fire Box Boilers, 25 and 70 H.P.
Prices reasonable.

THE U. S. TOOL & SUPPLY CO.
STEUBENVILLE, OHIO

POWER!
POWER!
POWER!

250 Volts D. C.

2—500 K. W. Westinghouse Generators, 250-275 Volts, Direct Connected with Hewes & Philips and Wetherill Cross compound, heavy duty, Rolling Mill Type Corliss Speed 90 R.P.M. Capable 50% overload. Equal to brand new.
1—300 K. W. CROCKER-WHEELER Generator, 250 Volts D. C., direct connected with Tandem Compound Corliss Engine, heavy duty.
1—160 K. W. GENERAL ELECTRIC Generator, 250 Volts D. C., direct connected with Compound Harrisburg Engine.

A. C. UNITS!

1—1000 K. W. 60 cycles, 2200 Volt Alternator direct connected with Cross Compound Corliss Engine.
1—100 K. W. 60 cycle, 2200 Volt Alternator, direct connected with Buckeye Tandem Compound Engine.
1—150 W. W. Stanley Belted Generator, 2 ph., 60 cycles, 2300 Volts.
1—150 K. W. a. 480 V. 60 cycles G.E. Generator with Pulley Rails and Exciter—A-1 condition.

BOILERS!

1—515 H. P. UNION IRON WORKS, W. T., built for 175-lb. pressure.
1—500 H. P. Aultman & Taylor (B. & W.) W. T. Boiler, built for 180-pound pressure.
1—350 H. P. Erie City, Heine type, built for 175-lb.
4—250 H. P. Stirling (B. & W.) 160-lb. pressure.
9—250 H. P. Aultman & Taylor (B. & W.) 160-lb. pressure.
1—250 H. P. Heine, 180-lb. pressure
3—150 H. P. Heine, 150-lb. pressure.
1—72″ x 20′ H. R. T., 135-lb. pressure.
2—72″ x 18′ H. R. T. Boilers, 125-lb. pressure Hartford Insurance, complete plant including stokers, piping, etc.
3—150 H. P. Steel Encased Boilers, 125-lb. pressure. No brickwork required.
2—350 H. P. Scotch Marine Boilers A. S. M. E. Constr., 150-lb. pressure.

"CORLISS ENGINES"

50 to 2500 H. P.
Simple or Compound.

2—200 to 400 H. P. Belted Engines, in A-1 condition, with or without belts.

FEEDWATER HEATERS,
TURBINES,
PUMPS, EXCITERS, STACKS

Complete Power Plants Designed and Erected.

Power Equipment Company

Engineers

1809 Buttonwood St.
Philadelphia, Pa.

BARGAINS
Stock Shipment

Direct Current motors

230-250 V.

All rebuilt

No.	H.P.	R.P.M.	Wdg.	Type	Make
1	¼	975	Sh.	MP	Peerless
3	2¼	700/900	Sh.	S	Westinghouse
1	3	1200	Sh.	MP	Fidelity
1	3	580/1160	Sh.	SA	Westinghouse
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